INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

WORLD METEOROLOGICAL ORGANIZATION

ARGOS JOINT TARIFF AGREEMENT

THIRTY-SECOND MEETING

Fremantle, Australia, 8-10 October 2012

JTA-32 record of decisions

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RECORD OF DECISIONS

NOTES

WMO DISCLAIMER

Regulation 42

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups, the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

Regulation 43

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation on behalf of the constituent body when the matter is, in his opinion, urgent, and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

Chairperson, Publications Board
World Meteorological Organization (WMO)
7 bis, avenue de la Paix
PO Box No. 2300
CH-1211 Geneva 2, Switzerland

Tel.: +41 (0)22 730 84 03
Fax: +41 (0)22 730 80 40
E-mail: Publications@wmo.int

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C O N T E N T S

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RECORD OF DECISIONS

1. INTRODUCTION

1.1 The Argos Joint Tariff Agreement (JTA) scheme has served as a robust example of international cooperation for more than 30 years. It continues to provide an effective, pragmatic, self-governing global forum through which users' needs are presented, reviewed, and carried forward in a constructive dialogue with the Argos agent. As such it may serve as a model for similar arrangements that may in due course be established with other service providers.

1.2 As in previous years, the report of the JTA-32 Session covers the following topics[1]:

- Introduction;
- Actions and decisions of past meetings with review status;
- Action sheet of this Meeting, with records of necessary information and decisions;
- Records of formalities, including elections and decisions for the next Meeting;
- Annexes containing all necessary supplementary information.

1.3 Mr Frank Grooters, the Chairperson of the Argos JTA, led the Meeting. Many participants subsequently assisted Mr Grooters and the secretariat in the production of this report.

1.4 The list of participants and the agenda are reproduced as ***Annex I*** and ***Annex II*** of this report. Twenty three participants, including eight Representatives of Country (ROCs) and Responsible Organizations (ROs), attended the Meeting.

2. REPORT OF THE CHAIRPERSON OF THE JTA

2.1 The Chairperson of the JTA, Mr Frank Grooters, presented a report on his activities in support of the participants in the JTA since the previous Meeting (JTA-31, Geneva, Switzerland, 3-5 October 2011).

2.2 The meeting agreed that the JTA EC would again review the Operating Principles and, if applicable, would propose changes and modifications as deemed needed, for discussion by the members during JTA-32.

2.3 The JTA EC met immediately after JTA-31 to review the session and to decide on necessary actions to be made in relation to the decisions and agreements reached at JTA-31. The report of the Fifth meeting of the JTA EC (JTA EC-5) is given in ***Annex III***. At JTA EC-5 it was agreed that the EC should meet again in the first half of 2012.

2.4 As agreed at JTA EC-5, the Executive Committee met from 25 to 27 April 2012 in Toulouse, France at the kind invitation of CLS. At this sixth JTA-EC meeting (JTA EC-6), the Executive Committee reviewed the Action Items from JTA-31, the JTA Operating Principles, the use of JTA funds, the management of Argos ID numbers, the 5-Year Plan, the status of the WMO plan for an International Forum of Satellite Data Communication Users, the status of the Secretariat Support to the JTA, the evaluation of the drifter programme, the progress in the Real Time Antenna Optimization Project, the agenda and document plan for JTA-32, and other JTA issues. The EC further agreed on action items for the EC and provided guidance to the Chairperson regarding issues to be reported at the 46th OPSCOM Meeting. The report of JTA EC-6 is provided in ***Annex IV***. An updated list of ROCs is now available (see ***Annex XIII***).

2.5 The Chairperson attended the 46th Meeting of the Argos Operations Committee (OPSCOM, Rocamadour, France, 17-19 June 2012), hosted by the Centre National d'Études Spatiales

1 : The format of the report was decided at the 28th Meeting (2008) and noted in the JTA Operating Principles. As in the case of previous meetings, the report will be available online via the JCOMM website.

(CNES). The main results of JTA-31 with regard to OPSCOM interest were presented, including the status of the 5-Year Plan (2010-2014). OPSCOM was particularly interested in the outcome of the preparatory SATCOM Workshop, and concluded on the JTA reporting issue once the Forum of Users of Satellite Data Communication Systems was established, the JTA would provide informational reporting to the Forum, and that the JTA was set up to report solely to OPSCOM. The report as presented by the Chairperson is given in ***Annex V***.

2.6 The meeting noted that the Chairman is planning to visit CLS in the period between JTA-32 and the 8th EC meeting in order to discuss several relevant issue, such as the next 5-Year Plan, the status of the drifter programme, the foreseen response on the user requirements from DBCP-28 and the Real Time Antenna Optimization Project. The results of the discussions will be included in the agenda for the 8th meeting of the JTA EC, in the first half of 2013.

3. REVIEW OF THE ACTION ITEMS FROM JTA-XXXI

3.1 Actions from previous Meetings, along with those arising at JTA-32, are listed and described in ***Annex VI***.

4. REVIEW OF THE 2012 GLOBAL AGREEMENT

4.1 CLS presented a report on activity within the 2012 Global Agreement. The full report, given in ***Annex VII***, is summarised below:

OVERALL USAGE TRENDS

4.2 The total number of active PTTs and PTT-years show a slight decrease over the last 12 months. The decrease has been mainly due to reduced buoy deployments. Although there is an increase in Wildlife active PTTs, it hasn't been sufficient to compensate for the total reduction of PTT-years.

4.3 Overall, the active PTTs and thus the number of transmitters in the field are stable. Even though the wildlife family continues to increase, the buoys numbers decline substantially. The "Subsurface floats and Fixed stations" are rather stable.

4.4 All animal categories are significantly benefiting from the time slots. As an average these PTTs are transmitting 40% of the day.

4.5 In 2011, by taking advantage of the time slot accounting the buoy programmes were able to reduce their consumption by **174.39 PTT Years.**

TIME SLOTS and 12 DAY CAPPING

4.6 Further to JTA-27 decision the consumptions for animal platforms are capped at 12 day-units (48 time slots). These features of the tariff have been used extensively by users in order to decrease Argos costs, as recommended during JTA-27 to JTA-29.

4.7 In 2011, **777** PTTs (average active PTT per month) took advantage of the capping, representing **177 PTT-years**. The number of animals taking advantage of the capping is increasing every year: 777 in 2011 compared to 690 in 2010.

4.8 Further to the large increase of birds PTTs deployment, we can notice that more and more birds PTTs benefit also of the capping (+21%) when the number of marine animal PTTs remains rather stable.

4.9 For 2012 the capping represents a projected impact of **167 PTT-years**.

INACTIVE STATUS[2]

4.10 As stated in the Terms and Conditions of the Global Agreement, this status is intended for those platforms that continue to transmit but for which the location or data collection are of no further use to the user or the community. The following conditions must be met to qualify:

(*1*) *Inactive Status will apply if, and only if, Inactive Status is declared by the signatory of the System Use Agreement for platforms which continue to transmit beyond the programme termination. In that case, further charges will no longer be levied.*

(*2*) *The platforms must have operated in Basic Service for a minimum of 2 months.*

(*3*) *Data or location information cannot be retrieved nor can the platform revert to any category of service.*

(*4*) *It is intended that Location and/or data collection may not be computed using a Local User Terminal or other direct readout facility.*

(*5*) *ID numbers of such platforms are actually returned to CLS who will recycle them after the platform stops transmitting.*

4.11 In 2011 the number of IDs in Inactive status greatly increased compared to 2010: more than 390 PTTs are counted every month compared to 189 in 2010 representing 137.47 PTT-year.

4.12 The JTA recalled that these PTTs are making wasteful use of system capacity, and urged users and manufacturers to consider this issue when programming their PTTs.

5. REPORT ON THE DEVELOPMENT AND OPERATIONS OF CLS

ARGOS OPERATIONS AND SYSTEM IMPROVEMENTS

5.1 Mr Bill Woodward (CLS America) presented reports on Argos operations and system improvements during 2011-2012. The JTA recalled that Argos is a global satellite-based location and data collection system dedicated to studying and protecting our planet's environment. CLS, as a unique operator of the Argos system on behalf of NOAA, CNES and EUMETSAT, continues to maintain and improve a high operational service for all Argos users, especially for the meteorological and oceanographic community.

5.2 Operational highlights from the last 12 months include the operational implementation of the Kalman Location Processing capability to all users and the installation/connection to 2 new regional antennas: i) METOP antenna at McMurdo and ii) NPOESS antenna at Svalbard. It was reported also that NOAA has successfully implemented the operational capability to collect blind orbit data from the NOAA satellites with the NPOESS antenna at Svalbard. These actions along with substantial progress in implementing the Real-time Antenna Upgrade Project have all combined to improve the global timeliness for data collected using the Argos system. Mr. Woodward also referenced the continuing request from the DBCP to explore the possibility of including Easter Island in the southeast Pacific as a candidate upgrade site in the CLS Real-Time Antenna Upgrade Project and will report on the status of this at JTA-33. CLS continues to provide the GTS processing for all DBCP Argos equipped drifters and moored buoys in compliance with WMO and DBCP Task Team on Data Management recommendations. The CLS GTS processing system as well as the quality of the data and the entire Argos system performance is monitored 24/7.

2 Recall: since year 2004, transmissions from Inactive IDs are no longer charged.

5.3 There are now 7 Argos instruments (5 Argos-2 and 2 Argos-3) onboard five NOAA POES (15 – 19) and two EUMETSAT spacecrafts (METOP-A and METOP-B). Update of the existing Argos ground segment has been accomplished this year in order to take into account the new generation of Argos-4 instrument that are planned to begin flying in the 2015-2016 time frame aboard a "free-flyer" satellite scheduled to be launched by NASA. An upgrade from GTS BUFR V3 format to BUFR V4 was successfully accomplished this year as well as the creation of the capability to send PMT commands via e-mail (commands via the web were already available). An "Argos chipset" project has been implemented to design, manufacture and test a prototype of a miniaturized and low-cost ARGOS-3/4 satellite transceiver that will enable two way communications and minimize power consumption. The project is expected to be completed in approximately 30 months. Finally, CLS is in the process of defining and implementing: 1) OLA (Operations Level Agreements) between CLS Operations Division and CLS internal entities involved in Argos matters as well as SLA (Service Level Agreements) between CLS and their customers and, 2) an Operational Risk Management Process, both of which are aimed at improving, securing and optimizing the CLS Operational Monitoring and Control Processes

5.4 Regarding JTA EC-6 action item no. 13(ii) "*to report on the satellite reception status of the antenna installed in La Reunion*", the JTA noted that there are two real-time reception antennas currently installed on La Reunion Island, one is operated by the French IRD (RE) and the other by Meteo France (RN). It is the RN antenna that has been upgraded by CLS to enable it to collect data from METOP-A & B and SARAL. RE regularly collects data from NOAA-16, NOAA-18 & NOAA-19. The upgraded RN antenna (now called FR) regularly collects data from NOAA-18 & NOAA-19 as well as METOP-A. CLS considers the antennas to be redundant although relies primarily on the Meteo France antenna, because it is part of the Hurricane Survey Network in the Indian Ocean and hence has a very high level of operation. That is the reason it was chosen for upgrading within the CLS Real-time Antenna Upgrade Project.

5.5 Regarding JTA-31 action item no. 3, "*EC and NESDIS to investigate negative trend in data timeliness from NOAA-18 and NOAA-19 [CLS, Scott Rogerson]*", the JTA recalled that this action was created based on the apparent deterioration of the % of data available within 60 minutes during the first half of 2011 from the two newest NOAA satellites. After close examination of several sets of statistics the following conclusions are drawn:

1. It appears that the situation recovered later in the year 2011 with 85% of the data from both NOAA-18 & NOAA 19 consistently being received within one hour.
2. The reasons behind the unexpected variability include:
   - Different data collection priorities at the regional antennas especially when orbital conflicts exist as they did between NOAA-18 & NOAA-19 during this time period. The orbits of the two satellites have since drifted apart thereby reducing the data collection conflicts and increasing the data availability
   - Technical problems in space and on the ground can also contribute to the variability. During this mid-2011 time period there were Gyro test conducted on NOAA-18 as well as database insertion driver problem that occurred in the global processing center
   - An important observation is that the METOP-A timeliness statistics have improved dramatically due to the addition of the McMurdo station (1/2 orbit data collection) as well as an increasing number of stations that are able to receive the HRPT data from METOP-A

5.6 In thanking Mr Woodward for his presentation, the Meeting noted that the full report on 2011-2012 operations, on system improvements and progress in projects is reproduced as ***Annex VIII***.

ID MANAGEMENT

5.7 The meeting recalled that at JTA-30, CLS was requested to create a project specifically dedicated to the recycling of 20-bit ID numbers. The management of ID numbers is an essential part of all communication systems. Applying an unused fee to ID numbers that have not transmitted in 24 months has been the management method of choice in recent years for the JTA.

5.8 The meeting recalled that JTA 31 meeting in Geneva requested that CLS provide an update of the number of Argos ID's recycled on a monthly basis for the past year. CLS continues to contact the Argos users to recycle their ID's. The project has been successful and 8,268 ID's were recovered this year compared to the 3,348 during the same period in the prior year. The JTA decided to continue charging the un-used ID fee to encourage the users to manage their ID's. The JTA thanked CLS for the good progress in this regard, and encouraged it to continue the efforts.

5.9 The JTA urged again ROCs to consult the national list of unused IDs on the website and to be proactive in contacting users with regard to ID recovery. The JTA also decided to continue charging the un-used ID fee for a further two years, to encourage users to recycle their IDs.

6 REVIEW OF USER REQUIREMENTS AND ISSUES

Requirements of the Data Buoy Cooperation Panel (DBCP)

6.1 The Chair of the Data Buoy Cooperation Panel (DBCP) Mr Al Wallace (Canada) spoke briefly to the JTA on user requirements. He noted that the 28th Session of the Panel did not have a specific item on user requirements for the JTA and that should be interpreted as a general level of satisfaction. It was noted that Panel members reaffirmed their need for timely reports on the GTS, and the Panel recognized and applauded the improvements in data timeliness from Argos that resulted from the establishment of the Cape Town, South Africa antenna and the downloading of blind orbits at the Svarlbard, Norway facility.

6.2 It was relayed to the JTA that DBCP members had noted that the use of iridium telecommunications resulted in delivery of data reports that exceeded standards for timeliness and reliability.

6.3 Mr Wallace noted that the DBCP had been focused on technical issues related with declining buoy lifetimes, early drogue loss and maintenance of the global array. He informed the JTA that the DBCP Task Team on Instrument Best Practices and Drifter Technology Development (TT-IBP) had formed a working group to address on an urgent basis the technological problems associated with water infiltration, battery leakage, etc. He also noted that power management with the new PMT functioning in PTT mode was problematic, but that one of the buoy manufacturer's had made a presentation to the DBCP on how to deal with the issue. Mr Wallace encouraged CLS to work with the TT-IBP to develop optimal configurations for the PMT.

Easter Island antenna

6.4 The DBCP had been aware for some time of a significant gap in real-time Argos coverage in the eastern S Pacific which was adversely affecting the timeliness of reports from that area. This gap, although partly improved by the eventual resolution of the blind-orbit issues, would not be finally resolved by the existing Argos antenna upgrade programme. The DBCP had moved to address this timeliness problem by funding the upgrade of a number of GDP drifters with Iridium for deployment in the area. Although this had been successful, it did not finally address the underlying shortfall in the Argos real-time coverage, and the Panel had suggested to CLS that the possibility of using existing antenna infrastructure on Easter Island to improve coverage be investigated. In drawing this matter to the attention of the JTA, it asked that the JTA consider using its influence and resources to seek an early resolution of the issue. The JTA-EC was requested to address this issue, and possibly propose solutions at the next JTA meeting.

Expanding Argos Data on line

6.5 CLS proposed preliminary options regarding extending the on-line availability of Argos data beyond the current 10-day cut-off:

Option 1: extending up to 20 days rolling online (Web service/ ArgosWeb/Telnet) instead of the current 10 days. Corresponding development cost would be 10 000 €.
Option 2: providing X* months online (Web service/ ArgosWeb) of the Argos and GPS decoded locations ONLY. No data collection available. Corresponding development cost would be 32 000 €.
Option 3: giving access to the archived data via an Online request tool (Web service/ ArgosWeb) for X* months. Data are sent by Email or FTP when file is completed. Corresponding development cost would be 30 000 €.

Content and cost of the three options should be refined based on the results of the actions proposed in paragraph 6.6 below.

* X to be defined later, further to more precise Users requirements.

6.6 The JTA noted that a questionnaire was sent to 60 of the main Argos Users but so far, only 8 replies were received. However, those returns were quite positive regarding user preferences. Option 3 for the online request tool was the option obtaining the majority of votes, option 1 opening to 20 days would please most of the Users. On the contrary, option 2 providing only the location, even over several months doesn't seem to answer Users need. At this stage, there is no specific requirement for a longer period than 12 months. Because CLS cannot implement developments on the basis of only 8 replies, it is proposed that the ROCs will contact the users of their respective countries to get more feedback. CLS will provide each ROC with additional information about the contents of each option and the list of selected users to be contacted.

6.7 A more complete analysis of the issue will be presented upon the next 2013 JTA-EC meeting.

7. REVIEW OF THE STRUCTURE OF THE TARIFF AGREEMENT AND RELATED MATTERS

Review of the guiding principles for negotiating the Tariff

7.1 Guiding principles for negotiating the tariffs remain unchanged as planed in the 5Y original plan.

Review the Five Year Plan

2011 FINANCIAL SITUATION : CLOSE OF ACOUNTS

7.2 Details of the finalized Argos operating costs for 2011 are given in ***Annex IX***, and are summarised below:

(i) For the calendar year 2011, total basic Argos operating costs were 11.98 M€ (- 3.7 % versus 2010) compared to a total Argos income of 13.50 M€ (- 3.5 %);

(ii) Within these overall figures, the costs attributable to the JTA were 6.88 M€ (- 3.7 %), compared to a JTA income of 7.44 M€ (- 5.9 % versus 2010);

(iii) The decrease in JTA costs reflects the decrease in JTA active PTTs as a proportion of total Argos active PTTs, this ratio being the basis for apportioning costs, the total consumption of JTA was 93,64% in 2011 as part of the ARGOS science activities;

(iv) JTA income in 2011 decreased by 0,49M€ due to the tariff reduction adopted in 2010 and also a significant decrease in the buoys activity due to technical failures, partially compensated by the retention of the Unused ID fee;

(v) In parallel, the JTA costs have been very closely monitored in order to mitigate risks and keep a positive yearly balance;

(vi) The JTA surplus for 2011 remains therefore positive by 0,57 M€, which, when added to previous years' surpluses, results in a net positive balance of 2.98 M€;

2012 JTA PROJECTION TO YEAR END

7.3 The JTA projection for the year 2012 is estimated from figures based on seven months of usage, extrapolated until the end of the year, and is detailed in ***Annex IX***.

7.4 The projection of the results is negative this year by a 10% decrease in terms of overall PTT.years consumption with a relative stability of the number of Active IDs, based on the following observations :

(i) The buoys program are facing significant decrease due to technological issues currently being recovered both by GDP and manufacturers, the observed decrease is 19% on GDP and 10% on the non large programs. Two manufacturers ceased their activity. Meanwhile the ARGO program is behaving well under plans;

(ii) The Wildlife activity has compensated such oceanography issues until 2011. In 2012, the wildlife consumption is facing also a reduction in growth, growth limited to 1,6%, due mainly to the lack of equipment on the manufacturing side, available for procurement and deployment, refraining the activity from growth. Actions have been done by CLS to search for new manufacturers i.e. in Russia, China and France;

(iii) The number of fixed stations is stable;

7.5 Overall, the JTA income is expected to be 6,82 M€, compared to 7,34 M€ which was the original 5Y plan.
The breakdown of expected income by platform type is shown in the table below:

	Total in M€
Buoys	0,67
Floats	0,52
Animals	4,00
Fixed stations	0,17
Large program Buoys/Floats	1,46
Total	**6,82**

7.6 The additional revenues are expected to remain quite high – possibly 300 K€ - based on the invoicing of unused Id.

7.7 As performed in 2011, the JTA costs have been closely controlled in 2012. It is anticipated that ARGOS basic costs attributed to JTA could be limited to 7,2 M€ showing a possible increase

by 4.7% compared to 2011. An initial annual increase by 4.4% was anticipated in the original 5Y plan to address ARGOS3 and ARGOS 4 developments. ARGOS3 developments have been achieved and ARGOS4 can be currently limited.

7.8 Non-JTA activity is expected to continue to show a gradual decline, meaning that the JTA share of Argos basic costs is expected to continue to rise.

7.9 Total projected income is expected to be 7.12 M€ (-8.4% versus 2011 and -9;6% versus initial 2012 plan), compared to projected costs of 7.2 M€ (up 4.7% versus 2011), resulting in a small negative year-end balance of -0.08 M€, and a net accumulated balance of 2.89 M€.

7.10 In conclusion, despite a significant risk, the expected financial situation for 2012 is considered safe. The accumulated balance would remain significantly positive due to significant costs savings performed in 2011 and already anticipated in 2012.
Nevertheless risks will continue to be monitored very closely by CLS.

2013 PROJECTION

7.11 A 2013 preliminary forecast has been presented this year for the first time. This forecast is voluntarily conservative taking into account the level of risks still identified for 2013.

Assumptions taken into account for forecast are:

(i) The total PTT.years is again back to a nominal growth of 4.4% in total (close to the 5% growth expected in the initial 5Y plan), being balanced between the buoys program deployment and wildlife growth.

(ii) The DBCP task teams have taken actions to resume risks and fasten the network redeployment in 2013. It is anticipated that the large drifter programs would come back to 1200 drifters deployed with a 10% increase in PTT.years.

(iii) The rest of oceanography and meteorological applications are considered stable in line with what is experienced since 3 years.

(iv) The wildlife projection is conservative until we have a clear picture of the situation of production at the manufacturers' level.

7.12 The forecasts are positively in favour of helping GDP to recover the network. In case they would not deploy as quickly as planned, the conservative approach in wildlife is securing the forecasted budget since upsides could be experienced on this figure.

7.13 In this context, the expected incomes for 2013 are 6,96 M€ which is -760K€ less than the original 5Y plan.

7.14 The projection for additional revenues from the unused ID fee is estimated to 194 K€.

7.15 The yearly balance is expected negative by 830 K€ with a significant drop of the cumulated balance to 2.07 M€. The panel expressed its concern to keep the balance sufficiently in order to provision remaining potential risks.

7.16 CLS is proposing to keep the balance to a safe level by acting on the technical level and reducing the costs attributed to JTA in 2013 at least to a level of 7.2 M€ instead of the 7.98 € originally planned. To do so, CLS informed the panel about major work to be performed in 2013 on the network upgrade and ARGOS4 ground segment development. CLS proposes to maintain the activity as planned on the network completion (to improve timeliness and benefit from receiving signals from new ARGOS3 new satellites) and to postpone part of the Argos-4 ground segment development one year more.

7.17 Based on costs savings the 2013 plan is now based on a yearly balance remaining to -0,05 M€ (50K€) and a cumulated balance kept to a level of 2,85 M€.

7.18 The JTA acknowledged that CLS has been successful to reduce the cost.

7.19 The JTA noted some uncertainties for next year (e.g. due to the high failure rate of surface drifting buoys, and uncertainties regarding impact of DBCP measures to fix the problem).

8. TERMS AND CONDITIONS OF THE 2013 GLOBAL AGREEMENT

8.1 Based on (i) the projections for 2012 and 2013, in which it was expected that the income was balancing the JTA cost, (ii) the positive situation in the accumulated balance in the FYP at this moment, (iii) the uncertainties and possible risks due to the technical problems of the drifters, the meeting decided not to change the Tariff in 2013. The Meeting adopted the Terms and Conditions for the 2013 Agreement as given in ***Annex X***.

8.2 The 2013 Agreement is materially identical to the 2012 Agreement, with the following minor amendments:

(i) 2012 is replaced by 2013;

(ii) 366 is replaced by 365;

8.3 The essential elements of the tariff remain unchanged for 2013, namely:

(i) "USER BASIC SERVICE CHARGES", A and B coefficients for all platform categories are as follows:

Category	A (€)	B (€)
Buoys and others	15	5
Fixed Stations	15	3
Animals*	15	7.5
Subsurface Floats	15	7.5

*12 days per month cap applied

(ii) "DISCOUNT SCHEME FOR LARGE PROGRAMMES", the rates are as follows:

Number of platform-years	PTT-day unit (B) Buoys & others	PTT-day unit (B) Floats
600	4	6
900	3	4.5
1200	2	3

8.4 As in previous years, CLS was requested to provide a scanned, signed copy of these Terms and Conditions to ROs and ROCs.

9. FUTURE PLANS AND PROGRAMMES

National reports

9.1 The Meeting then heard 8 oral national report presentations from Australia, Canada, China, India, UAE, South Africa, United Kingdom, and the USA, and was unanimous in agreeing that such reports were central to its prime motivation in being a practical and open forum for the exchange of information, experience (both positive and negative), problems and needs arising from the extensive Argos user community.

9.2 In his national report, Dr R. Venkatesan reported that India is using Argos services for Ocean Observation platforms such as Argo floats, drifting buoys, fish tagging and moored buoys. There are 131 PTTs per month operational in India in various platforms such as Buoys and Others, Profiling floats, Animals and fixed stations with total PTT years of 39.48. Out of 16 ARGOS transmitters used for moored buoy only one worked for 70% period and all others have worked between 10 to 40 % of life time expected (one year period). Cost involved in replacement is huge considering ship time cost. Since the bandwidth is low, we could not acquire higher vertical resolution of temperature and salinity. Also, the floats need to be longer time on the surface for transmission, it quickly drifting to the shore or beached. Further, we could not communicate to the float/buoy, once deployed. It is suggested to have higher bandwidth and also two way communication. Also, additional satellites are required for the low latitude regions for better repeatability, Improvement in location accuracy is good initiative by ARGOS.

9.3 Canada reported that Canadian researchers continued this year to make good use of the Argos system consuming over eighty-six platform years to the end of June. That number is projected to double by the end of year. Animal tracking was the dominant activity as policy makers, resource developers and habitat managers ask for hard data from researchers to guide their decisions. Populations of caribou, bison, grizzly and polar bears, sea birds, foxes and others are being monitored by Argos transmitters for their responses to rapidly changing conditions, especially in the Arctic. The Canadian Meteorological Service continues to operate data buoys and drifters along with the Canadian Ice Service and the Coast Guard Rescue units. Activity is maximum during the late spring and summer months as a reflection of the field season when new transmitters are deployed but the intensity of Argos activity declines only partly as most programs are designed to collect year-round data. Local issues typically involve transmission anomalies in wooded areas or snow cover affecting the antenna. One user has developed a method of attaching transmitters to cranes and is willing to share that with anyone with the same challenges.

9.4 The United Arab Emirates (UAE) started the satellite-tracking programme in 1994 through the National Avian Research Center (NARC) of the Environment Agency – Abu Dhabi. At the moment 8 programs and subprograms are currently in operation, all of them on wildlife. Of the 8 programs, four are on birds (Houbara bustard, Arabian Bustard, falcons, migratory raptor and water birds), three on marine turtles and one on Dugongs. Currently 361 PTTs are active, representing all the programs and accounting for nearly 75 PTT years. There are plans to deploy another 225-250 PTT by next year and we hope that around 400 PTTs would be in operation in 2013. The work undertaken using Argos has significantly improved our understanding of the species and is directly helping in the conservation of the species and their habitats. We now have better information on movement and migration of important species such as Houbara, Sooty Falcons, Flamingos, marine turtles and dugongs, some of them tracked for the very first time anywhere. The use of technology has helped in identification of key sites along the migratory routes of key bird species, discovery of new breeding sites and in influencing and shifting development projects. Users are general happy with Argos services, however they expect to see GPS mapping capabilities, more long-term availability of Argos data online as compared to the present 10 days.

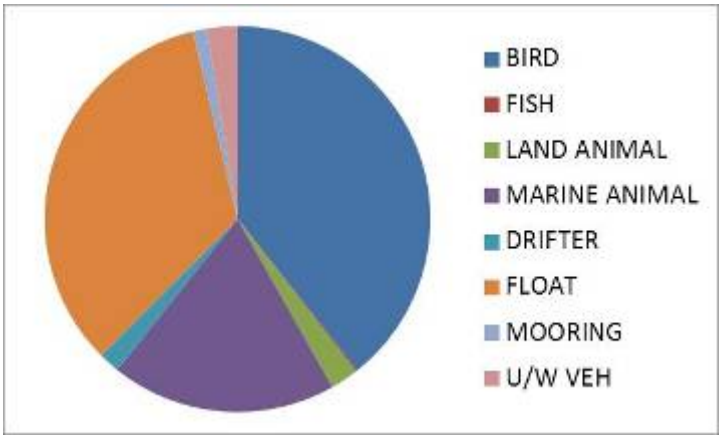
9.5 China reported that during the past 12 months, 31 programs have been using Argos to transmit data. The active PTTs per month of profiling floats increased significantly. The CLS Marine & Wildlife seminar organized by CLS France and CLS office in China in Tianjin in June

2012 was a great assistance to the Chinese Argos users. A suggestion was made by the users from the National Sea Turtle Nature Reserve Office to provide a solution to extend the life of the TAG battery to maintain the continuity of animal tracking data.

9.6 The U.S. ROC presented the national report to the JTA and began by acknowledging the long and important relationship between the U.S. and CLS in delivering satellite telecommunication capabilities. He summarized the U.S. usage as follows: Buoys and others 1,297 PTT years, profiling floats 169 PTT years, animals 449 PTT years and fixed stations for 75 PTT years. Total U.S. usage of Argos is estimated to be 1,980 in 2012. He went on to discuss an example of the use of Argos in tracking wild pig populations in California. The animal tags are used to help track the spread of disease amongst the wild pig populations as well as the domesticated pig populations.

9.7 The Australian ROC reported that all interaction with non-BOM Argos programs is handled by the Melbourne Argos office. The Bureau of Meteorology is no longer the biggest individual user: AAD uses 19.25 PTT years, CSIRO uses 17.74 PTT years (floats) and the BOM is 11.90 PTT years. Australia's use by type is summarized as follows: Buoys and others 12.78 PTT years, profiling floats is 17.02 PTT years, animals is 65.57 PTT years, and fixed platforms is 10.17 PTT years.

9.8 The United Kingdom ROC reported the following distribution of Argos users.



9.9 The South Africa ROC reported that apart from the National report already provided, it is important to note that it is extremely difficult to get all the reports from the animal communities. However, progress was made in this regard and efforts to build a relationship with them will continue. It has been requested of CLS, who do not have an office in South Africa, to see how they can assist Africa with regards to monitoring sensors for Rhino's. As you all know these animals are been slaughtered throughout our region and it will be good if CLS can assist by being part of a proactive monitoring process.

9.10 Written reports have also been provided by: National reports form China, South Africa, Botswana, Germany, Sweden, Canada, USA, New Zealand, United Arab Emirates, the Netherlands, India. These reports are appended in ***Annex XII***.

10. REVIEW OF THE OPERATING PRINCIPLES

10.1. The Meeting reviewed the JTA Operating Principles and approved them with modifications, as described in ***Annex XI***.

10.2 The Meeting reaffirmed that JTA's international status should be maintained and enhanced, and should seek continued WMO and IOC involvement and visibility.

11. ANY OTHER BUSINESS

International forum of Users of Satellite Data Telecommunication Systems

11.1 The meeting noted the outcome of the preparatory workshop for the establishment of an international Forum of users of satellite data telecommunication systems (Satcom Forum), which was held in Toulouse, France, from 23 to 27 April 2012.

11.2. The meeting recalled that the future Forum is meant to provide an international mechanism, covering the wide user base that exists within the co-sponsoring Organizations, to address remote data communication requirements – including tariff negotiations as needed – for automatic environment observing systems using satellite data telecommunication systems (Satcom systems). Regarding tariff negotiation issues, the workshop agreed that the current Argos Joint Tariff Agreement (JTA) should eventually operate as an independent sub-group of the future Forum.

11.3 The workshop reviewed the draft Terms of Reference of the Satcom Forum and proposed some changes. It also drafted operating principles, and updated the workplan leading to the formal establishment of the Forum by the co-sponsoring Organizations.

11.4 Mr Grooters reported that the co-chairs of Opscom-46 have decided to review the draft ToR of the Forum as this was discussed and agreed by the preparatory SATCOM Workshop and to submit their comments to the JTA "for further distribution with the intention to clarify the Argos JTA relationship to this (future) Forum so that the activities may be run in a constructive and efficient way". The JTA reviewed the proposed changes, proposed some adjustments, and agreed with the changes proposed in ***Annex XV***.

11.5 The JTA agreed to reword as follows Section 2.2 of the Operating Principles in order to reflect the reality of the Argos JTA status: *"The Argos Tariff Agreement (JTA) exists under the Argos OPSCOM authority. The Argos JTA contributes as a sub-programme of the Forum on the basis of the ToR and Operating Principles of the JTA agreed upon at the 31st session of the JTA. Its scope is to address requirement for using the Argos system, and to provide a mechanism for negotiating Argos Tariff amongst Argos governmental users."*

11.6 The JTA noted tentative plans to organize the *ad hoc* Satcom Forum meeting in conjunction with the DBCP and JTA meetings in fall of 2013. The JTA invited the Secretariat to consider organizing the Forum before the DBCP-29.

12. ELECTION OF THE EXECUTIVE COMMITTEE

12.1 The Meeting noted the Terms of Reference of the JTA Chairperson (Annex F to the Operating Principles), indicating the term for this position as two years. The Meeting recalled that Mr Frank Grooters has been elected at JTA-31 as its independent Chairperson, to hold office in principle until the end of JTA-33.

12.2 The Meeting noted the Terms of Reference of the JTA Vice-Chairperson (Annex G to the Operating Principles), indicating the term for this position as two years. The Meeting recalled that Mr Eric Locklear has been elected at JTA-31 as its unpaid Vice-Chairperson, to hold office until the end of JTA-33.

12.3 The Meeting noted the Terms of Reference of the JTA Executive Committee (Annex H to the Operating Principles), and recalled that the membership shall include the Chairperson, thn principle e Vice-Chairperson, the IOC Secretariat, the WMO Secretariat, and three additional members proposed by the Chairperson and elected by the JTA, serving a term of two years with an optional two-year re-appointment. The meeting noted that Mr Joe Linguanti (Canada) and Mr

Johan Stander (South Africa) have been elected at JTA-31 for a two-year term, therefore to hold office in principle until the end of JTA-33. The meeting re-elected Ms Birgit Klein for another two-year term.

12.4 The Meeting noted that the composition of the JTA EC was now comprised of:

- Chair, Frank Grooters until JTA-33, not available in principle for re-election to this post;
- Vice-chair, Eric Locklear until JTA-33, not available in principle for re-election to this post;
- Member, Joe Linguanti until JTA-33, not available in principle for re-election to this post;
- Member, Johan Stander until JTA-33, not available in principle for re-election to this post;
- Member, Birgit Klein until JTA-34, not available in principle for re-election to this post;
- Member, IOC secretariat, *ex officio;*
- Member, WMO secretariat, *ex officio;*
- Member, CLS representative, *ex officio;*

12.5 In order to prepare the elections for JTA-33, the meeting invited the ROCs to consider becoming JTA-EC members, and being candidates for the JTA Chair and Vice-Chair positions.

13. DATE AND PLACE OF THE NEXT MEETING

13.1 In line with the agreement of the preceding 28th session of the Data Buoy Cooperation Panel, it was agreed to hold the 33rd Meeting of the JTA in Paris, France to be hosted by the Intergovernmental Oceanographic Commission (IOC) of UNESCO. Tentative dates for the Meeting were provisionally noted as 30 September to 2 October 2013.

13.2 However the EC noted an action from the Meeting to consider how the proposed dates and venue might impact upon its desired representation at the session, and to debate this issue at EC-8 with a view to arriving at a consensus opinion as to where JTA-33 might be held.

14. CLOSURE OF THE MEETING

14.1 The meeting agreed that organizing a technical session in conjunction with the next JTA meeting should provide opportunities to strengthen the JTA, enhance the participation of ROCs, and make the meeting even more effective. The meeting also agreed that the industry and manufacturers of platforms transmitting through Argos should be invited to the meeting,

14.2 In closing the Meeting, the Chairperson, Mr Frank Grooters, thanked all participants for their contributions to the Meeting. In so doing, he particularly applauded the Australian Bureau of Meteorology (BOM) for the excellent organisation of the meeting and he thanked CLS for their continued openness in interacting as fully as possible with the JTA community, and for their efforts to reduce the operating cost induced by the JTA.

14.3 Mr Grooters also asked the Meeting to note and thank the important and continued contributions of the WMO and IOC secretariats in ensuring the success of the Meeting.

14.4 The Chairperson reminded the Meeting of the valuable work done by the Executive Committee during the inter-sessional period, which definitely contributes to an efficient and effective formal JTA meeting.

14.5 He particularly thanked the support and contributions from Mr Joe Linguanti (Canada) since this was his last JTA meeting before his retirement in 2013.

14.6 Mr Grooters and the host concluded in wishing all participants a safe journey back to their home destinations.

14.7 Finally the meeting thanked the Chair for his leadership to run this meeting and support the work of the JTA during intersessional period.

14.8 The Meeting closed at 11:30 on 10 October 2012.

ANNEX I

LIST OF PARTICIPANTS

PARTICIPANTS FROM MEMBER STATES

AUSTRALIA

Mr Graeme BALL
Manager, Marine Operations Group
Australian Bureau of Meteorology
700 Collins Street, Docklands
VIC, 3008, Australia
GPO Box 1289, Melbourne
VIC 3001, Australia
Tel: +61-3 9669 4203
Fax: +61-3 9669 4168
Email: g.ball@bom.gov.au

Dr Peter DEXTER
International Oceans Policy Advisor
Bureau of Meteorology
GPO Box 1289
Melbourne VIC 3001
Australia
Tel: +61 (0) 3 9669 4870
Fax: +61 (0) 3 9669 4725
Email: p.dexter@bom.gov.au

CANADA

Mr Joe LINGUANTI
Fisheries and Oceans Canada,
PO Box 6000
Sidney, B.C.
Canada, V8L2L4
Tel: +1 250 363 6586
Fax: +1 250 363 6746
Email: Joe.Linguanti@dfo-mpo.gc.ca

Mr Al WALLACE
DBCP Chairperson
Environment Canada, Meteorological Service of Canada, Pacific and Yukon Region
201-401 Burrard Street
VANCOUVER V6C 3S5
BC
Canada
Tel: +1 604 664 9090
Fax: +1 604 664 9004
Email: al.wallace@ec.gc.ca

CHINA

Ms Ting YU
National Marine Data and Information Service
No. 93, Liuwei Road
300171 Tainjin
Hedong District
China
Tel: +86-22-24010834
Fax: +86 22 24010926
Email: yuting@mail.nmdis.gov.cn

GERMANY

Kai HERKLOTZ
Head of section Marine Networks
Bundesamt fuer Seeschifffahrt und Hydrographie (Federal Maritime and Hydrographic Agency)
BSH, Bernhard-Nocht-Str. 78, 20359
Hamburg
Germany
Tel: +49-40-3190-3230
Fax: +49-40-3190-5000
Email: kai.herklotz@bsh.de

INDIA

Dr R. VENKATESAN
Programme Director – Ocean Observation Systems
National Institute of Ocean Technology
Ministry of Earth Sciences
Pallikaranai
Velachery – Tambaram Road
Chennai 600100 India
Tel: +91-44 6678 3533
Fax: +91-44 2246 0678
Email: dr.r.venkatesan@gmail.com, venkat@niot.res.in

REPUBLIC OF KOREA

Mr Yong Up KIM
Assistant Director, Marine Meteorology Division
Korea Meteorological Administration
45 Gisangchung-gil Dongjak-gu
Seoul 156-720
Korea Rep
Email: kimyu@korea.kr

SOUTH AFRICA

Mr Johan STANDER

Regional Manager
South African Weather Service / Cape Town Weather Office,
P O Box 21,
Cape Town International Airport
7525
South Africa
Tel: +27 (0) 21 934 0450
Fax: +27 (0) 21 934 3296
Email: Johan.Stander@weathersa.co.za

UNITED KINGDOM

Mr David MELDRUM
Research Fellow, Technology Development
Scottish Association for Marine Science
Scottish Marine Institute
Oban, Scotland
PA37 1QA
United Kingdom
Tel: +44 1631 559 273
Fax: +44 1631 559 001
Email: dtm@sams.ac.uk

UNITED ARAB EMIRATES

Mr Sálim Javed
Manager, Terrestrial Assesment & Monitoring
Biodiversity Management Sector
Environment Agency - Abu Dhabi
PO Box 45553, Abu Dhabi, United Arab Emirates.
Phone: +971-2- 681 7171
Phone: +971-2-6934711 (direct)
Fax: +971-2-4997282
E-mail: sjaved@ead.ae

UNITED STATES OF AMERICA

Ms Candyce CLARK
National Oceanic and Atmospheric Administration
NOAA/Climate Program Office
Climate Observation Division
1100 Wayne Avenue, suite 1202
Silver Spring MD 20910
United States
Tel: +1 301 427 2463
Fax: +1 301 427 0033
Email: candyce.clark@noaa.gov

Mr Eric R LOCKLEAR
National Oceanic and Atmospheric Administration
Climate Program Office
1315 East-West Highway,
Room 12107, SSMC 3
Silver Spring MD 20910-5603
United States
Tel: +1 301 734 1236
Fax: +1 301 713 0518
Email: eric.locklear@noaa.gov

Mr Christopher Kyle RUSHING
NAVOCEANO
Head, code NP322
United States
Tel: +1 228-688-5021
Email: christopher.rushing@navy.mil

INTERNATIONAL ORGANIZATIONS AND PROGRAMMES

Mr Frank GROOTERS
Chair, Argos Joint Tariff Agreement (JTA)
Prunuslaan 17
NL-3723 WC Bilthoven
The Netherlands
Tel: +31 30 229 3250
Email: fgrooters@gmail.com

Mr Etienne CHARPENTIER
Scientific Officer, Observing Systems Division,
Observing and Information Systems Department,
World Meteorological Organization
7 bis, Avenue de la Paix
Case Postale No. 2300
CH-1211 Geneva 2
Switzerland
Tel: +41 22 730 82 23
Fax: +41 22 730 8021
Email: echarpentier@wmo.int

Dr Thomas GROSS
Programme Specialist GOOS,
Intergovernmental Oceanographic Commission of UNESCO
1 rue Miollis
75732 Paris cedex 15
France
Tel: +33 1 45 68 39 92
Fax: +33 1 45 68 58 12
Email: t.gross@unesco.org

Mr Al WALLACE
DBCP Chairperson
Environment Canada, Meteorological Service of Canada, Pacific and Yukon Region
201-401 Burrard Street
VANCOUVER V6C 3S5

BC
Canada
Tel: +1 604 664 9090
Fax: +1 604 664 9004
Email: al.wallace@ec.gc.ca

Ms Louise Wicks
Programme Manager
Perth Regional Programme Office
In support of Intergovernmental Oceanographic Commission of UNESCO
c-/ Bureau of Meteorology
PO Box 1370
West Perth WA 6872
Tel : +61 8 9481 0406
Email : l.wicks@bom.gov.au

OTHERS

Ms Anne Marie BREONCE
Head of Department Sciences
Collecte Localisation Satellites
Parc Technologique du Canal
8-10, rue Hermès,
31520 Ramonville Saint-Agne
France
Tel: +33 5 61 39 47 21
Fax: +33 5 61 39 47 97
Email: abreonce@cls.fr

Ms Fabienne JACQ
Director, CLS Data Collection & Location
Collecte Localisation Satellites
Parc Technologique du Canal
8-10, rue Hermès,
31520 Ramonville Saint-Agne
France
Tel: +33 5 61 39 47 64
Fax: +33 5 61 39 47 97
Email: fjacq@cls.fr

Ms Holly LOURIE
CLS Australia
207/122 Toorak Rd,
South Yarra
VIC 3141
Australia
Tel: +61 0403855954
Email: holly@clsargos.com.au

Ms Seema OWEN
Controller
CLS America
4300 Forbes Blvd, Suite 110
LANHAM, MD 20706
United States
Tel: +1 240 492 1902
Fax: +1 301 925 8995
Email: sowen@clsamerica.com

Mr William WOODWARD
President, CLS America
CLS America
4300 Forbes Blvd, Suite 110
LANHAM, MD 20706
United States
Tel: +1 240 492 1901
Fax: +1 301 925 8995
Email: bwoodward@clsamerica.com

ANNEX II

AGENDA

1. ORGANIZATION OF THE MEETING

    1.1 Opening of the Meeting
    1.2 Adoption of the Agenda
    1.3 Working Arrangements
    1.4 Selection of the Writing Group (WG)

2. REPORT OF THE CHAIRPERSON OF THE JTA

3. REVIEW OF THE ACTION ITEMS FROM JTA-XXXI

4. REPORT ON THE 2012 GLOBAL AGREEMENT

5. REPORT ON THE DEVELOPMENT AND OPERATIONS OF CLS

6. REVIEW OF USER'S REQUIREMENTS AND ISSUES

7. REVIEW OF THE STRUCTURE OF THE TARIFF AGREEMENT AND RELATED MATTERS

    7.1 Review of the guiding principles for negotiating the Tariff
    7.2 Review the Five Year Plan

8. TERMS AND CONDITIONS OF THE 2013 GLOBAL AGREEMENT

9. FUTURE PLANS AND PROGRAMMES

10. REVIEW OF THE OPERATING PRINCIPLES

11. ANY OTHER BUSINESS

12. ELECTION OF THE CHAIRPERSON AND VICE-CHAIRPERSON

13. DATE AND PLACE OF THE NEXT MEETING

14. CLOSURE OF THE MEETING

ANNEX III

REPORT OF THE 5TH MEETING OF THE JTA EXECUTIVE COMMITTEE (JTA EC-5)
(Geneva, Switzerland,5 October 2011)

Participants:

- Frank Grooters (Chair, JTA-EC, the Netherlands)
- Birgit Klein (Germany)
- Anne-Marie Bréonce (CLS)
- Seema Owen (CLS America)
- Bill Woodward (CLS America)
- Fabienne Jacq (CLS)
- Eric Locklear (USA)
- Johan Stander (South Africa)
- Joe Linguanti (Canada)
- Julie Fletcher (New Zealand)
- David Meldrum (IOC)
- Etienne Charpentier (WMO)

1) Review JTA-31 outcome

This was a successful meeting.

National reports:
- National report should be presented at the beginning of the Session.
- National reports ought to be submitted earlier.
- Template needs to be followed. Detailed information can be annexed to the national reports.
- Columns “PTT . Years” to be removed. J. Stander to lead a group (J. Stander, S. Owen, A.M. Bréonce, and E. Locklear) for the review of the national report template and make a proposal at EC-6 (***action; J. Stander***).
- There is an entertainment value of the national reports. Synthesis should be prepared and presented during the Session as part of the user requirements review, to include challenges, problems, and requirements.

2) Issues to be discussed at next EC

Agenda for the session: F. Grooters to wotk with Secretariat and make proposal for EC-6 (agenda to include time information and names of people leading items) (***action; F. Grooters***).

International Forum of Satcom users. To be regarded as on opportunity. Impacts need to be evaluated. Opscom needs to be consulted. Discussions must take place at EC-6. JTA-EC recommends that the Working Group for the Satcom Forum should take place prior to the EC-6, e.g. the first 2-days of the same week (***action; D. Meldrum***).

Presentation of the financial information: Content must be reduced for JTA meetings and simple table presented. Opscom and JTA-EC still needs to see the detailed figures. F. Jacq to make a proposal at EC-6 for a simple and effective way of presenting the figures to the JTA (***action; F. Jacq***).

Drifter programme: evolution of the drifter programme needs to be followed up (how/whether problems are fixed; what are the new plans for purchasing and deploying new drifters, etc.). CLS to provide projections by the beginning of January to the JTA-EC, and warn whether there is any potential implication for the JTA, and need for further action (***action; F. Jacq***).

Five Year Plan: Populating the FYP with 2012 figures. Assessing whether there a reason for concern (end of January). Based on the projections for 2012, a discussion needs to take place.

Operating Principles: EC to review the operating principles depending on the outcome of the Satcom Forum WG meeting (***action; EC-6***). JTA ToR might have to be reviewed accordingly.

Next JTA Session (JTA-32): EC-6 needs to discuss about the date/place of the next JTA meeting (***action; EC-6***).

Renewal of the members of JTA-EC. EC-6 needs to discuss how to maintain the stability of the JTA. Status of the Chair needs to be discussed (independent, paid) at EC-6. People who want to resign from their EC position need to inform the Chair at least 6 months in advance. Number of terms of JTA-EC members needs also to be discussed. (***action; EC-6***)

User presentation: Two users (fish-tag, other) must be invited to make a presentation during the EC-6; CLS to make a proposal to the Chair, and the Secretariat to assist (***action; F. Jacq & A.M. Bréonce & Secretariat***).

3) Date and place of EC-6

Tentatively in Toulouse, the week of 25-27 April; preferably not starting on Monday.

ANNEX IV

ABRIDGED[1] REPORT OF THE 6TH MEETING OF THE JTA EXECUTIVE COMMITTEE (JTA EC-6)
(Toulouse, France, 25-27 April 2012)

Participants:

Members, JTA-EC:

- Frank Grooters (Chair, JTA-EC, the Netherlands)
- Eric Locklear (Vice-Chair, JTA-EC, USA)
- Birgit Klein (Germany)
- Johan Stander (South Africa)
- Joe Linguanti (Canada)
- Fabienne Jacq (CLS)
- Etienne Charpentier (WMO) – ex-officio
- David Meldrum (IOC – ex-officio)

Invited persons:

- Seema Owen (CLS America)
- Bill Woodward (CLS America)
- Sylvie Pouliquen (IFREMER)
- Philippe Gaspar (CLS)
- Gilles Larnicol (CLS)

1 Organization of the Meeting

1.1 Opening

The Chair thanked CLS for hosting the meeting.

1.2 Adoption of the Agenda

Presentations from Sylvie Pouliquen (IFREMER, France), Gilles Larnicol (CLS), and Philippe Gaspar (CLS) are planned on Thursday afternoon (see item 3.9).

1.3 Working arrangements

The meeting agreed on its working arrangements and working times.
The meeting agreed to have future meetings in two days; including this one if possible.
Documentation plan, and preparatory documents for future JTA-EC meetings should be posted on the events' website on the JCOMMOPS website in advance to the events.

1.4 Announcements/Logistics Chair/Facilitator

1 The annexes of the report have been removed to avoid duplication with other annexes of this JTA-32 report. The complete JTA-EC-6 report can be obtained upon request from the JTA Chair or the Secretariat.

2 Status of Action Items from JTA-XXXI)

(see Record of Decisions JTA-XXXI, Annex VI)

The meeting review action items from past JTA Sessions (see Annex I of the full JTA-EC-6 report).

The meeting decided to include all ongoing actions from previous JTA meetings in the operating principles.

3 Issues from the Fourth and Fifth Meeting of the JTA EC

3.1 Review of action items from JTA-EC-5

Action items from the JTA-EC-5 were reviewed. Most of them were either on the EC-6 agenda or completed.

3.2 Report of the Project Team on Unused IDs

No updated information is available at this time. CLS will present updated status on this issue at JTA-32.

3.3 JTA Logo (final decision)

A draft logo has been used by the Chair (see top of this report). The JTA EC agreed that this logo should now be used, pending approval from JTA-32.

3.4 Contact President CBS (Fred Branski) on JTA issues

Eric Locklear contacted the CBS President in the context of the developing international forum of users of satellite data telecommunication systems. However, no reply was received.

3.5 Other JTA-issues

3.5.1 Real Time Antenna Optimization Project (update)

The meeting discussed the status of the real time antenna optimization project. The CLS Regional Antenna Optimization Project is progressing very well. Two of the three CLS stations have been upgraded and are operational. Of the nine non-CLS stations, the one of La Réunion has been upgraded and the remaining eight stations will be completed by the end of 2012. The two new complete stations have been procured and the one of Cape Town has been installed. The one of Ascension Island is targeted for early 2013. The three Southern Hemisphere stations (Davis, Cape Ferguson, Wellington) are scheduled for upgrading by the end of 2012. The Bali station, which was destroyed by fire has been replaced and will soon be operational. Current status is summarized in Annex IV of the full JTA-EC-6 report.

The meeting requested CLS to report at JTA-32 on the satellite reception status of the antenna installed in La Réunion.

The Chief Executive Officer of the South African Weather Service (SAWS) Dr Linda Makuleni, wishes to thank CLS for the donation and installation of the new HRPT antenna at the SAWS Cape

Town office as well as the planned installation at Ascension Island. The Local, Regional and International community will surely benefit from this generous donation with regards to Numerical models and especially Marine forecasters within the SAWS who will be able to provide much more accurate weather forecast and warnings for the SOLAS area as this new antenna will assist in real time in-situ data becoming sooner available from our data scarce southern ocean areas.

Figure 1: Installation of Cape Town antenna, March 2012.

3.5.2 ARGOS-3 Pilot Project (update)

The pilot project is completed (see DBCP-27 report). There are still a number of Argos-3 buoys operating. A report summarizing the results will be produced by the Pilot Project Chair, Luca Centurioni (USA), to be hopefully available at DBCP-28 in October 2012.

The Chairman was requested to contact the DBCP Chair, to request to add discussion on the outcome of the Pilot Project to the DBCP-28 agenda.

3.5.3 Inactive Status

This is an ongoing issue. The meeting agreed that trends need to be monitored. CLS was requested to produce a simple sheet showing trends of inactive status over the last 12 months for inclusion in the CLS report for JTA-32, including in the powerpoint presentation to be delivered at JTA-32.

Argos-3 provides the opportunity to shut down transmission of inactive platforms. The meeting agree that this should be encouraged.

3.6 Five-Year Plan (update)

No major issue was identified by the meeting as far as the FYP, except maybe for the decline of the drifters due to hardware failures (Annex V of the full JTA-EC-6 report). It was agreed to consider the drifter issue as a risk, having potential negative impact on the tariff in the next few years (FYP).

The meeting noted a slow declining trend regarding PTTs in the inactive status, at a level of 87 PTT x years.

3.7 Proposal for simpler/reduced financial presentation to JTA

The meeting agreed on standard presentation to be made by CLS at forthcoming JTA meeting, along the following lines:

- 1 slide on Methodology, CLS ARGOS total income, CLS ARGOS basic services incomes, ARGOS total PTTs monitored, Shared between JTA; non JTA, percentage of Argos incomes.

- 3 slides on Activity, e.g. Curves, Last year evolution in%, Trends and statistics, per family and sub families over 3 years, over 5 years, Leading countries & institutes, Leaving countries & institutes, and Big deals of the year.

- 1 or 2 slides on Revenues, e.g. Last year : Provisioned / actual, Next year : provisioned. Comparison between (i) 5YP, forecast, actual, (ii) Share between platform types, and (iii) We suppress recall of the previous JTA activity report to the OPSCOM (as it is already in the JTA Chair report to the JTA Session, including OPSCOM outcome report).

- 1 or 2 slides on Expenses, e.g. Last year : Provisioned / actual, Next year : provisioned. Recall of elements presented to the OPSCOM (Technical investments, Main system actions, Report on agreement, Critical action list), and Last year expenses. Main planned actions, share of expenses by technical “work packages”, or by platform.

- 3 slides on the 5 Year Plan as usually presented at previous JTA Session, Initial, Recommendations for the year, Risk table.

3.8 Evolution in Drifter Programme

The meeting recalled that CLS had proposed a financial PMT incentive to the manufacturers ($100 rebate on the PMT) and the buoy operators ($100 rebate on the first month of Argos usage provided an “incentive” PMT is used). 950 buoys have been purchased taking advantage of the PMT incentive.

The meeting noted with concerns the situation of the drifter programme (see figure 2 below). Highlights include (i) high failure rates continue on the “legacy” drifters; (ii) the array size is still low at only 875 operational units despite more than 700 drifters deployed since November 2011; (iii) many buoys from the 2011 order are not yet deployed; (iv) one manufacturer is not in business anymore; (v) no buoys that have benefited from the 2012 “financial PMT incentive” have yet been deployed; (vi) the full strength array size is not expected to be achieved until late in 2012; (vii) this situation has significant negative impact on 2012 CLS JTA revenue; and (viii) there is significant positive impact on the NOAA Climate Programme Office’s 2012 spending plan.

The meeting thanked CLS for its pro-activeness, assuming the risks on its own budget, and asked CLS to monitor the situation, and inform the Executive Committee on possible impacts on the expenses, and the accumulated balance. The JTA EC should be consulted in the future prior to the development of such incentive schemes, and potential impact.

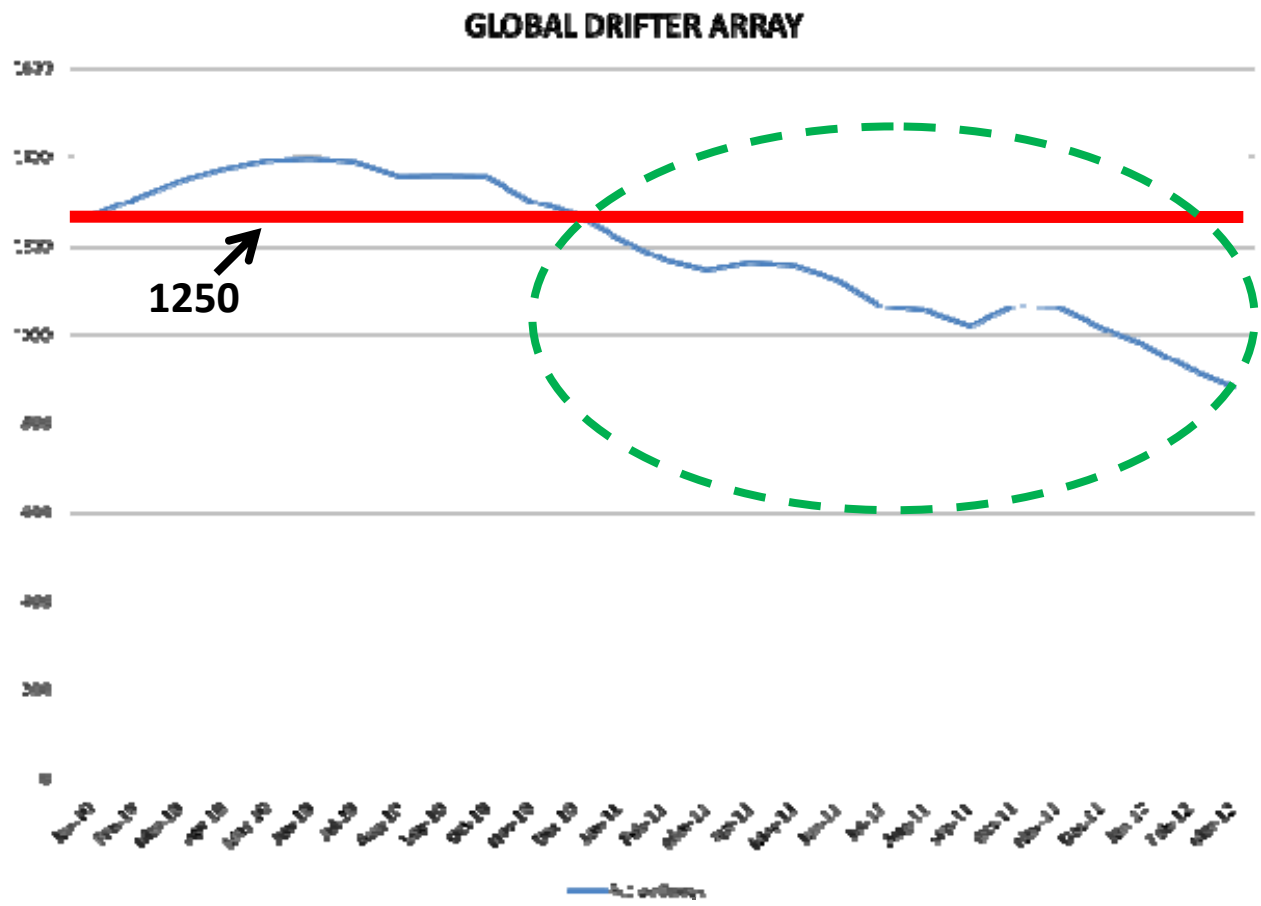


Figure 2: Evolution (drop) of the number of units under the drifter programme between January 2010 and March 2012.

3.9 User Presentations

The meeting received presentations from the following individuals on subjects of interest to the JTA :

- Sylvie Pouliquen (IFREMER, France) on Coriolis, an *in situ* service for operational oceanography ;
- Gilles Larnicol (CLS) on the MyOcean European project, Use of In-Situ data within MyOcean;
- Philippe Gaspar (CLS) on Satellite telemetry and marine acosystems monitoring, Achievements & future needs.

4 Review of the JTA Operating Principles

The meeting discussed the operating principles (see Record of Decisions JTA-XXXI, Annex XI). New proposed draft operating principles for discussion at JTA-32 are reproduced in Annex VI of the full JTA-EC-6 report.

5 International forum of users of satellite data telecommunication systems (Satcom forum)

5.1 SATCOM Workshop:

5.1.1 Short retrospect

The WMO Secretariat provided background information, and explained the rationale leading to WMO Sixteenth Congress (Cg-XVI, Geneva, Switzerland, 16 May – 3 June 2011) decision to initiate establishment of the forum.

The Forum is meant to provide an international mechanism covering a wide user basis from the co-sponsoring Organizations, to address remote data communication requirements – including tariff negotiations as needed – for automatic environment observing systems using satellite data telecommunication systems (Satcom systems).

The goal is to ensure appropriate coordination amongst users of Satcom systems in order to represent their collective interests with regard to Satcom systems requirements, and tariffs. By sharing knowledge and ideas, the users can make informed decisions about the use of Satcom systems, influence on the developments of those systems to better address their requirements, and provide for a strong user base for negotiating with the Satcom service providers in order to their observing systems in the most cost-effective way, and maximize usefulness of these systems (e.g. data return, data timeliness, platform life-time).

Forum's stakeholders will essentially include (i) representatives of co-sponsoring Organizations Members/Member Nations/Member States; (ii) representatives of Users Groups; and (iii) representatives of the Secretariats of the co-sponsoring Organizations. Representatives of the Satcom systems operator and service providers, and the satellite equipment manufacturers shall also be invited to Forum sessions as observers.

5.1.2 Review and discussion

The JTA-EC recognized that JTA will function as an independent body, a sub-programme, under the future Forum, and will report to the Forum as well as to the OPSCOM. The name of the JTA will appear in the Forum Terms of Reference. The JTA will continue to manage its own Terms of Reference and Operating Principles.

The meeting thanked the Secretariat for inviting the JTA to be represented at the preparatory workshop for the Forum.

5.2 Propose and decide on future position/status of JTA in Forum

The JTA-EC agreed that this was a positive development providing opportunities to JTA to continue its activities, and be formally recognized within the WMO and IOC frameworks.

JTA Chair to write to the Secretariat, to reaffirm that the JTA will continue to operate as an independent body under the Forum once established, and express the desire to have other communities (e.g. biologists, animal trackers, who are also using Argos and other Satcom systems) involved in the future Forum.

The meeting requested the Chair to invite the Satcom Forum interim committee Chair to approach the World Wide Fund (WWF) or other suitable body to seek their support to the Forum, and to send the final report of the Satcom Preparatory workshop to the WWF and other appropriate bodies

Secretariat support to the JTA is expected to remain at the same level in principle.

The JTA-EC agreed that the establishment of the Forum will be bringing both risks and opportunities regarding the future use of the Argos system. These should be evaluated.

5.2.1 Change in Operating Principles needed?

The meeting agree that there was no need to change the operating principles at this point to take into account the development of the future Forum.

6 JTA-XXXII

6.1 Draft Agenda

The meeting agreed on the provisional agendas for JTA-32.
See Annex III of the full JTA-EC-6 report.

6.2 Documentation Plan

Secretariat was tasked to issue the documentation plan, and seek contributions as needed.

6.3 Support WMO/IOC

The meeting agree to continue the current arrangements according to the Operating Principles.

6.4 Policy of writing the JTA Final Report

See item 6.3 above.

6.5 Place and Duration of the Meeting

The JTA-32 meeting is planned in Fremantle, Australia, from 8 to 10 October 2012. The meeting noted that the invitation letters have now been issued.

6.6 Discussion on how to secure/maintain stability in JTA (new members, new officers)

The current JTA Chair will be available for one more year as of JTA-32.
Elections are planned at JTA-33 in 2013.
Nominations for Chair, and Vice-Chair, and additional JTA-EC members will be needed at the time.
JTA-EC, and ROCs are invited to consider becoming JTA-EC members, and being candidates for the JTA Chair and Vice-Chair positions. Further discussions are planned at the next JTA-EC meeting in this regard.

7 46th OPSCOM Meeting

The 46th meeting of the OPSCOM is planned from 17 to19 July in Rocamadour, France.

The Chair will represent the JTA at the OPSCOM meeting based on the outcome of JTA-31 and JTA-EC-6.

8 Next Meeting of the JTA EC

The next JTA-EC (JTA-EC-7) meeting is planned to be organized just after JTA-32 on 10 October 2012. IT will review the outcome of JTA-32, and make proposals for discussion at JTA-EC-8.

9 Any Other Business

The meeting invited the Secretariat to use the JCOMM website for hosting JTA-EC preparatory documents, and managing documents for JTA-EC meetings.

The meeting discussed the term limits for the JTA Chair, Vice-Chair positions, and JTA EC positions. The meeting agreed that a proposal for updating the Operating Principles to remove the JTA-EC members term limit requirements should be presented to the forthcoming JTA Session. As the issue was brought by CLS, the meeting requested CLS to prepare a proposal with rationale for the forthcoming JTA Session. The JTA-EC had no objection to the proposal.

10 Closure of the Meeting

The meeting thanked CLS for organizing the meeting, and offering very nice facilities.

The Chair thanked the members of the JTA-EC, and the Secretariat for their support.

CLS thanked the Chair for his leadership during this meeting, and for the preparation of the meeting.

The meeting closed on 26 April 2012 at 17h15.

ANNEX V

REPORT ON THE 31ST JTA MEETING AT THE 46TH MEETING OF THE ARGOS OPERATIONS COMMITTEE (OPSCOM)

(Rocamadour, France, 17-19 June 2012)

H. Programs, Admissions and Finances

H-1. Programs

H-1-1. Report on JTA Meeting

Frank Grooters presented the report on the 31st JTA meeting.

- The 31st meeting on the ARGOS JTA was hosted by the Secretariat of the World Meteorological Organization in Geneva, Switzerland, from 3 to 5 October 2011. Twelve ROCs and representatives of User Groups were present at the meeting, together with the DBCP Chairman and representatives from CLS/Service Argos and CLS/America. The meeting was organized and served by the Joint Secretariat for JCOMM (IOC and WMO Secretariats).

- The Meeting reviewed and discussed in an appropriate way, several JTA issues, in particular
    - The activity under the 2011 Global Agreement,
    - The report on the Development and Operations of CLS,
    - User's Requirements,
    - Tariff Agreement and related matters,
    - The status of the 5-Year financial Plan,
    - The JTA Operating Principles, and
    - The proposed Forum of Satellite telecommunication Users.

- The Meeting noted with interest that usage of the Argos system has continued to grow, especially since 2007. The growth is mainly concentrated in the science segment, while fisheries and sensitive use domains have decreased in the last few years. JTA programmes consumed 63% of Argos capacity in 2010, and, overall, science represents 70% of the Argos system use. The growth in science is mainly attributed to increased usage by the wildlife community, representing 35% of total Argos system use in 2010. Physical oceanography and meteorology applications (28% of Argos system use in 2010) remain stable.
- The number of active PTTs shows a regular increasing trend in the period August 2010 to July 2011, whereas the number of PTT-years remains quite flat. This may be explained by time slot accounting and by the 12-days-per-month charging cap applied to animal platforms. Overall, the numbers of active PTTs and thus the number of transmitters in the field increased over the same period, mainly due to the wildlife category. Consumption by the floats and fixed stations category seems to be rather stable. Buoys and others have declined by nearly 16% during the period. In summary:
    (i) "Buoys and Others" is still the major player in terms of consumption despite a 16% decrease in PTT-years over the last year;
    (ii) "Animals" consumption has increased by 7.6% during this time;
    (iii) "Floats and Fixed Stations" consumption remains stable.
- All animal categories benefit significantly from time slots, as recommended during JTA-27 to JTA-29. As an average, these PTTs transmit for 40% of the day. In 2010 the benefits to the animal category from time-slot accounting was equivalent to 93 PTT-years.

Further to the JTA-27 decision that monthly charges for animal platforms be capped at 12 day-units (48 time slots), 690 PTTs took advantage of the capping in 2010, a saving of 173 PTT-years. The number of marine animals taking advantage of the capping is increasing every year. More than 400 in 2010 compared to 333 in 2009. For 2011, capping represents a projected impact in the order of 175 PTT-years. The Meeting agreed to continue the current scheme without modification.

- Under the User's Requirements the Meeting received a report by the Data Buoy Co-operation Panel (DBCP) Chairperson, Mr. Al Wallace (Canada), regarding the Panel's requirements and its recommendations to CLS.
  The Panel noted with approval the improvements in the antenna network, including the planned installation of new antennas at Cape Town and Ascension Island. The Panel appreciated the improvements in data timeliness as a result of the continued optimization of the Argos antenna and processing systems. While data timeliness had improved, the Panel nonetheless noted that there were still gaps where objectives were not being met, and it encouraged CLS to continue to work proactively to address those problem areas, particularly in the SE Pacific, where planned antenna upgrades would make little impact on data delays.
  The Panel noted with appreciation the CLS participation in the Argos 3 Pilot Project, and now that the project was complete, voiced its expectations that CLS would contribute to the final report. The Panel also noted the offer from CLS to work with manufacturers to facilitate a transition to Argos-3, demand for which was expected to grow after planned launch of the next two satellites with Argos-3 capability.
  The DBCP wished to explore opportunities for 'one stop shopping' for satellite data transmission systems, and welcomed the participation of CLS in studying this proposal. The Chairperson also noted that many operators have to manage fiscal pressures, and asked the JTA and CLS to pursue cost efficiency measures as a way of reducing costs.
- Since 2004, transmissions from inactive IDs are no longer charged (decision at JTA-27). The meeting noticed that in 2010 the number of IDs in Inactive status varies around 189 representing 87.37 PTT-years. Mainly "Animals & Drifters" platforms benefit from this service, continuing to transmit even when the data is no longer useful to the project. These PTTs are increasing the system occupancy. The Meeting insisted again on the recommendation to users and manufacturers to consider this by programming their PTTs for the duration of the experiment.
- The 5-Year financial Plan for 2010-2014 was reviewed. It was noted that the 2010 cost attributed to JTA had increased by 4.5% to 7.15 M€, compared to a JTA income of 7.91 M€, an increase of 4.1% due to a rapid increase in wildlife applications (despite an overall JTA tariff reduction). The resulting positive 2010 balance of 0.75 M€ was carried forward to the cumulated balance in the 5-Year Plan to an amount of 2.41 M€.
- The Meeting reviewed the projection for 2011 in the 5-Year Plan, calculated on the basis of a 7-months of usage and noted a number of opportunities and risks:
  (i) wildlife consumption is currently above expectations by 14%, although the year-end increase was expected to be less than this owing to northern hemisphere seasonally effects;
  (ii) although the US large buoy programme showed an unexpected increase of 10% in 2010 due to additional deployments from inventory, a decrease of 20% was observed at that time;
  (iii) the number of fixed stations has decreased by 13%.

  The overall JTA income was expected to be 7.36 M€ (down 7.5%), compared to projected costs of 7.48% (increase 4.6%), resulting in a small negative year-end balance of 0.12 M€ and a net cumulated balance of 2.29 M€. Despite a significant risk, the expected financial situation for 2011 was considered safe and the Meeting

decided to follow the 5-Year Plan for 2011 and requested CLS to monitor the risks continuously.

Proposed Forum of Satellite Telecommunication Users:

- The Meeting discussed the recommendation from the WMO Sixteenth Congress (Geneva, Switzerland, 16 May – 3 June 2011) regarding establishment of an international forum of users of satellite data telecommunication systems together with the IOC and FAO:
  Congress supported establishment of an international forum of users of satellite data telecommunication systems covering a wide user base, and to address remote data communication requirements - including tariff negotiations as needed - for automatic environment observing systems coordinated through WMO and partner organizations such as IOC and FAO.
  Congress requested the Secretariat to approach the partner organizations, and coordinate with the Argos Joint Tariff Agreement (JTA) with the view to establish such a forum during the next inter-sessional period. Congress emphasized that such a forum should not only consider tariff negotiations but should take a very broad view of available technologies, options and prices as well as cooperative mechanisms through the Data Collection Platform (DCP)services of meteorological satellites.
- The JTA, in discussing this item, was concerned that it be suitably represented in the planning process. The JTA wishes to ensure that its central purpose, enshrined in more than 30 years of successful activities, will not be negatively impacted, to the detriment of both the wider user community and CLS's future viability.
- In this regard, the Meeting was to some extent reassured by the secretariat view that the proposed forum would be entirely focused on maximising user benefit from satellite communications, that it would by no means be solely directed towards financial issues, and that it would be likely to promote the Argos JTA as a proven model of the sought-for dialogue between the user community and the service providers.
- The Meeting recommended that any tariff negotiations within the forum should be conducted system by system, and should be careful to respect any commercially sensitive information that might be requested or reported.
- The Meeting heard outline proposals from Mr. D. Meldrum, the JCOMM lead for developing the forum concept, that would seek to establish a small working group to sketch out the scope of the forum in advance of a wider consultation, and that such a group should draw heavily on the JTA methodology that had been evolved over more than 30 years. The Meeting asked its Executive Committee to work with Mr. Meldrum to see if this proposal might be feasible without imperilling its own activities. The Meeting also welcomed the offer of Mr. Scott Rogerson of NOAA-NESDIS, to be involved with this process as an informed observer.
- A preparatory workshop for the establishment of an international Forum of users of satellite data telecommunication systems (SATCOM Forum) was held in the international conference centre of Météo France in Toulouse, France, from 23 to 24 April 2012, and was chaired by Mr. David Meldrum (United Kingdom), with participation of WMO, IOC, JCOMM, DBCP, JTA, CLS, CGMS, IMSO, Iridium, Globalstar, Orbcomm and representatives from buoy manufacturers. A total of 26 persons were participating in the workshop.
- The workshop reviewed the WMO and IOC user requirements for the collection of meteorological data from remote areas (including Automatic Weather Stations, Polar Observations, Buoys and Floats, Ships, Sea Level, etc.), the available satellite data telecommunication systems that are currently being used for the collection of environmental data from remote areas, and discussed the role that they could play in the future Forum. The meeting noted that the future Forum is meant to provide guidance to the WMO and IOC users on the use of Satcom systems, including

guiding them on how to make the best arrangements for the purchase of airtime. The Forum will provide detailed information on satellite systems capabilities so that users will be able to make informed decisions on what system to use. The meeting agreed that discussions will have to take place regarding the need for a centralized system (One-Stop Shop) for data processing, quality control, formatting of collected observations in WMO & IOC formats, and distribution to end users. The workshop acknowledged the value of the One-Stop Shop proposal, and agreed that this should eventually be a matter of discussion for the future Forum.

- Regarding tariff negotiation issues, the workshop agreed that the current Argos Joint Tariff Agreement (JTA) should eventually operate as an independent sub-group of the future Forum.
- The workshop reviewed the draft Terms of Reference of the SATCOM Forum as proposed by WMO, discussed and drafted operating principles, including governance, roles and responsibilities of the SATCOM Forum Chair and Executive Committee, frequency of meetings, and reporting procedures. These Terms of Reference will be submitted to the Session of the WMO Commission for Basic Systems in September 2012.
- The workshop reviewed, discussed, and updated the workplan leading to the formal establishment of the Forum by the co-sponsoring Organizations. This includes in particular the timing of and planning for the first ad hoc Forum workshop in 2013, including agenda, and invited participants. The workshop established an organizing committee for the [informal] ad hoc SATCOM workshop to be held in 2013.

JTA Operating Principles

- The Meeting reviewed the JTA Operating Principles and approved them with modifications as proposed by the Chairman.
  The Meeting reaffirmed that JTA's international status should be maintained and enhanced, and should seek continued WMO and IOC involvement and visibility.

Elections

- The Meeting reelected Mr. Frank Grooters as the Chairperson, and Mr. Eric Locklear as its Vice-Chairperson. Following the Terms of Reference, both persons should hold office until the end of JTA-33.

On the JTA Executive Committee:

- The JTA Executive Committee, established at JTA-29 in 2009, has proven to be a very effective and efficient tool during the inter-sessional period.
- The JTA-EC held his 5th meeting on the 5th of October to review the results of JTA-31 and to decide on the issues to be discussed at the (mid-term) 6th meeting of the JTA EC.
- At the kind invitation of CLS, the 6th Meeting of the JTA EC was held at the CLS Headquarters in Toulouse, France, 25-27 April 2012. The EC reviewed the Action Items from JTA-31, the JTA Operating Principles, the status of the Five Year Plan and the outcome of the SATCOM Workshop. Also the status of the project for the management of Argos IDs and the proposed upgrade of the Argos regional antenna network, in relation with specific user requirements, were discussed.
- The EC further agreed on the agenda for JTA-32, together with the supporting documentation.
- The Committee noted with concerns the situation of the drifter programme. Highlights include:
  (i) high failure rates continue on the "legacy" drifters;
  (ii) the array size is still low at only 875 operational units despite more than 700 drifters deployed since November 2011;

(iii) many buoys from the 2011 order are not yet deployed; one manufacturer is not in business anymore;
(iv) no buoys that have benefited from the 2012 “financial PMT incentive” have yet been deployed;
(v) the full strength array size is not expected to be achieved until late in 2012;
(vi) this situation has significant negative impact on 2012 CLS JTA revenue; and
(vii) there is significant positive impact on the NOAA Climate Programme Office’s 2012 spending plan.

The EC asked CLS to monitor the situation, and inform the Executive Committee on possible impacts on the expenses, and the accumulated balance.

- Regarding the 5-Year Plan no major issue was identified by the EC, except maybe for the decline of the drifters due to hardware failures. It was agreed to consider the drifter issue as a risk, having potential negative impact on the tariff in the next few years.
- The EC noted with appreciation the progress made in the CLS Regional Antenna Optimizaton Project and welcomed the procurement of the two new complete stations, of which the one for Cape Town already had been installed and the one for Ascension Island was targeted for installation in early 2013.
- The EC noted further that the ARGOS-3 Pilot Project was completed, but that there were still a number of Argos-3 buoys operating. A report summarizing the results will be produced by the Pilot Project Chair to be hopefully available at DBCP-28 in October 2012.
- The Executive Committee reviewed and discussed the outcome of the preparatory SATCOM Workshop and recognized that JTA will function as an independent body, a sub-programme, under the future Forum, and will report to the Forum as well as to the OPSCOM. The name of the JTA will appear in the Forum Terms of Reference. The JTA will continue to manage its own Terms of Reference and Operating Principles.
- The JTA-EC agreed that this was a positive development providing opportunities to JTA to continue its activities, and be formally recognized within the WMO and IOC frameworks.
- The JTA Chair will write to the Secretariat, to reaffirm that the JTA will continue to operate as an independent body under the Forum once established, and express the desire to have other communities (e.g. biologists, animal trackers, who are also using Argos and other Satcom systems) involved in the future Forum.
- Once under the future Forum, the JTA EC expects that the Secretariat support to the JTA would remain at the same level in principle.
- The JTA-EC agreed that the establishment of the Forum will be bringing both risks and opportunities regarding the future use of the Argos system. These should be evaluated.

Discussion: It was agreed that the JTA would provide informational reporting to the Forum, and that the JTA was set up to report solely to OPSCOM.

ANNEX VI – LIST OF ACTIONS

1. Status of open actions from JTA-30

No (JTA-30).	Ref. (JTA-30)	Action item	By whom	Deadline	Status
1	3.1.2	Design a strategy for improving ROC participation, particularly comprising animal trackers and other type of users	JTA-EC	JTA-EC-8	Ongoing

2. Actions and decisions of JTA-31

No. (JTA-31)	Ref. (JTA-31)	Action/decision item	By whom	Deadline	Comment
2	JTA-31 Item 4.7	Action: users and manufacturers are urged to consider programming their PTTs to switch off after they have ceased to collect useful data	Users, manufac-turers	April 2013	Platforms in 'inactive status' wastefully use system capacity To become action by CLS to contact the ROCs in case there is an issue in the annual reports. JTA-EC to write a letter to all manufacturers on behalf of the JTA to propose new approaches to be investigated by them (liaise with CLS for drafting the letter)
3	JTA-31 Item 5.3	Action: EC and NESDIS to investigate negative trend in data timeliness from NOAA-18 and -19	CLS, Scott Rogerson	By EC8	Closed: CLS reported on this issue at JTA-32
4	JTA-31 Item 5.8	Action: DBCP to report to JTA-EC on its needs, if any, for access to archived raw data	Chair DBCP	By JTA-33	Pending. TC DBCP will inform CLS on DBCP investigations
5	JTA-31 Item 5	Action: CLS to investigate extending the online availability of Argos data beyond the current 10-day cut-off	CLS	By JTA-33	Completed: 3 options proposed by CLS.

No. (JTA-31)	Ref. (JTA-31)	Action/decision item	By whom	Deadline	Comment
6	JTA-31 Item 5.15	Action: activities by CLS to recover unused IDs to continue	CLS	Ongoing	Suggestions include sending fact-sheet to users along with annual catalogue of services and with SUA renewals, ID buy-back Ongoing Status to be reported at JTA-33
17	JTA-31 Item 10	Action: CLS and Secretariat to consider if a suitable international/intergovernmental body exists that might represent the needs of wildlife trackers (e.g. UNEP, CBD) within the JTA	CLS, assisted by Secretariat	JTA-33	CLS contacted WWF (will participate at JTA-33) and IUCN Pending

3 – Action items from JTA-EC-6

No. (JTA-EC-6)	Ref.	Action item	By whom	Deadline	Comment
3	JTA-EC-6	To request the Chair of the Argos-3 Pilot Project Steering Team to provide the report of the completed Pilot Project	Chair	2013	Put report on website
7	JTA-EC-6	To write to the Secretariat, to reaffirm that the JTA will continue to operate as an independent body under the Forum once established, and express the desire to have other communities (e.g. biologists, animal trackers, who are also using Argos and other Satcom systems) involved in the future Forum	Chair	1 Jan 2013	To be done (letter to be sent to the Chair of the Satcom Forum interim committee for the preparation of the ad hoc Satcom Forum in 2013)

No. (JTA-EC-6)	Ref.	Action item	By whom	Deadline	Comment
8	JTA-EC-6	To invite the Satcom Forum interim committee Chair to approach the World Wide Fund (WWF) or other suitable body to seek their support to the Forum, and to send the final report of the Satcom Preparatory workshop to the WWF and other appropriate bodies	Chair	1 Jan 2013	Chair to send to the Chair of the Satcom Forum interim committee for the preparation of the ad hoc Satcom Forum in 2013

4. Actions and decisions of the present JTA-32 meeting

No. (JTA-32)	Ref. (JTA-32)	Action/decision item	By whom	Deadline	Comment
1	JTA-32 Item 5	CLS to approach the wildlife community and invite them to consider best practices to limit impact of inactive PTTs	CLS	EC-8	
2	JTA-32 Item 5	Investigate what reasonable percentage of inactive PTTs could be acceptable	CLS	EC-8	
3	JTA-32 Item 5	Study further the online data access issue during intersessional period, and provide recommendation to JTA	JTA-EC	JTA-33	
4	JTA-32 Item 5	Survey requirements for online data access again through the ROCs (informing them that a new charge might be introduced) to the users	CLS & ROCs	EC-8	ROCs to be pro-active and seek information from the national users
5	JTA-32 Item 11	EC to ensure adequate interaction with the secretariat regarding the development of the IOC/ WMO satellite communications forum	JTA-EC	JTA-33	*ad hoc* workshop for the establishment of an international Forum of users of satellite data telecommunication systems (Satcom Forum), Paris, 2013

No. (JTA-32)	Ref. (JTA-32)	Action/decision item	By whom	Deadline	Comment
6	JTA-32 Item 6	Action: to address the issue of installing an antenna on Easter Island, and possibly propose solutions at the next JTA meeting	JTA-EC	JTA-33	

ANNEX VII - REPORT ON THE 2012 AGREEMENT

(submitted by CLS)

Country Name	Buoys and Others		Floats	
	Average Active PTTs/Month	PTT YEARS	Average Active PTTs/Month	PTT YEARS
AUSTRALIA	32	19,73	263	16,33
BELGIUM				
BOTSWANA				
BRAZIL	0	0,02		
CANADA	51	38,47	119	7,75
CHILE	1	0,13	3	0,36
CHINA	32	17,78	79	7,11
DENMARK				
EUROPE	2	1,63		
FINLAND	2	1,86	3	0,13
FRANCE	123	68,95	191	12,67
GERMANY	26	11,49	159	9,38
INDIA	35	23,56	84	6,64
ITALY	9	3,47	3	0,33
KOREA, REPUBLIC OF	10	7,02	87	5,19
NETHERLANDS	1	0,05	35	2,53
NEW ZEALAND	7	5,92		
NORWAY	9	3,61		
OTHERS	1	0,02	3	0,38
PORTUGAL				
RUSSIAN FEDERATION	6	4,95		
SOUTH AFRICA	2	0,06	1	0,06
SPAIN	32	15,04	32	2,01
SWEDEN	6	2,58		
SWITZERLAND				
TANZANIA, UNITED REPUBLIC OF				
UNITED ARAB EMIRATES				
UNITED KINGDOM	24	15,11	126	7,49
UNITED STATES	1942	1481,75	1695	146,87
Grand Total	2353	1723,20	2883	225,23

Table 1a: Average number of active PTTs per month and total PTT-years per country and per PTT category, in 2011 (First half table)

Note: we have added country “Europe” for E-Surfmar program since 2008.

Country Name	Animals		Fixed Stations	
	Average Active PTTs/Month	PTT YEARS	Average Active PTTs/Month	PTT YEARS
AUSTRALIA	316	50,07	12	10,64
BELGIUM	3	0,40		
BOTSWANA	9	1,17		
BRAZIL	19	2,26		
CANADA	1616	157,63		
CHILE	16	1,74		
CHINA	34	4,45	1	0,27
DENMARK	84	11,52	4	3,73
EUROPE				
FINLAND	28	3,10		
FRANCE	112	24,17	24	13,26
GERMANY	149	26,71	1	0,13
INDIA	29	4,32		
ITALY	49	8,13	12	11,2
KOREA, REPUBLIC OF	9	1,52	3	3
NETHERLANDS	18	1,86	32	15,15
NEW ZEALAND	6	0,85	1	1
NORWAY	118	14,40		
OTHERS	8	1,69		
PORTUGAL	37	6,58		
RUSSIAN FEDERATION	41	10,24		
SOUTH AFRICA	80	15,59		
SPAIN	330	51,66		
SWEDEN	26	3,91		
SWITZERLAND	22	2,95		
TANZANIA, UNITED REPUBLIC OF	4	0,55		
UNITED ARAB EMIRATES	361	74,60		
UNITED KINGDOM	279	53,50		
UNITED STATES	3212	437,47	78	70,45
Grand Total	7015	973,04	167	128,83

Table 1b: Average number of active PTTs per month and total PTT.years per country and per PTT category, in 2011 (Second half table)

All Applications, All Countries Average Active PTTs/Month	All Applications, All Countries PTT YEARS
12 418	3 050.30

Table 1c: Average number of active PTTs per month and total PTT.years all countries and all categories, in 2011

1. Average active PTTS per month per country

Country Name	Average 2011 Active PTTs/Month	2012 Extrapolated active PTTs/Month	Extrapolated progression
AUSTRALIA	623	750	20,39%
BELGIUM	3	0	-100,00%
BOTSWANA	9	10	11,11%
BRAZIL	19	36	89,47%
CANADA	1786	1771	-0,84%
CHILE	20	18	-10,00%
CHINA	146	162	10,96%
DENMARK	88	60	-31,82%
EUROPE	2	1	-50,00%
FINLAND	33	40	21,21%
FRANCE	450	465	3,33%
GERMANY	335	327	-2,39%
INDIA	148	132	-10,81%
ITALY	73	75	2,74%
KOREA, REPUBLIC OF	109	100	-8,26%
NETHERLANDS	86	88	2,33%
NEW ZEALAND	14	16	14,29%
NORWAY	127	114	-10,24%
OTHERS	12	20	66,67%
PORTUGAL	37	27	-27,03%
RUSSIAN FEDERATION	47	51	8,51%
SOUTH AFRICA	83	102	22,89%
SPAIN	394	392	-0,51%
SWEDEN	32	20	-37,50%
SWITZERLAND	22	28	27,27%
TANZANIA, UNITED REPUBLIC OF	4	4	0,00%
UNITED ARAB EMIRATES	361	403	11,63%
UNITED KINGDOM	429	423	-1,40%
UNITED STATES	6927	6547	-5,49%
Total	12418	12182	-1,90%

Table 2: Average number of Active platforms per month and per country, actual in 2011 and extrapolated in 2012 from January-July average

(*) E-SURFMAR program was attached is attached to “EUROPE” in 2008.

An active PTT is a PTT which transmitted at least once in a month. The average is the total number of Active PTTs divided by number of months.

2. Consumption per country (PTTs.years)

Country Name	2011 Actual PTTs.years	2012 Extrapolated PTTs.years	Extrapolated progression
AUSTRALIA	96,77	120,71	24,74%
BELGIUM	0,4	0,00	-100,00%
BOTSWANA	1,17	1,75	49,57%
BRAZIL	2,28	7,81	242,54%
CANADA	203,85	190,64	-6,48%
CHILE	2,23	1,74	-21,97%
CHINA	29,61	31,51	6,42%
DENMARK	15,25	9,24	-39,41%
EUROPE	1,63	0,58	-64,42%
FINLAND	5,09	6,29	23,58%
FRANCE	119,05	115,47	-3,01%
GERMANY	47,71	45,40	-4,84%
INDIA	34,52	29,97	-13,18%
ITALY	23,13	22,25	-3,80%
KOREA, REPUBLIC OF	16,73	14,08	-15,84%
NETHERLANDS	19,59	22,49	14,80%
NEW ZEALAND	7,77	5,22	-32,82%
NORWAY	18,01	12,03	-33,20%
OTHERS	2,09	2,90	38,76%
PORTUGAL	6,58	3,70	-43,77%
RUSSIAN FEDERATION	15,19	12,84	-15,46%
SOUTH AFRICA	15,71	15,86	0,95%
SPAIN	68,71	61,35	-10,71%
SWEDEN	6,49	3,26	-49,77%
SWITZERLAND	2,95	3,20	8,47%
TANZANIA, UNITED REPUBLIC OF	0,55	0,96	74,55%
UNITED ARAB EMIRATES	74,6	89,90	20,51%
UNITED KINGDOM	76,1	62,20	-18,27%
UNITED STATES	2136,54	1848,82	-13,47%
Total	3050,30	2742,17	-10,10%

Table 3: Numbers of PTT.years. Actual consumption in 2011 and extrapolation for 2012 based on January-July actual consumption

The PTT-years are the numbers of day units with time slot calculation where appropriate divided by 365 days

3. Consumption evolution over 1 year

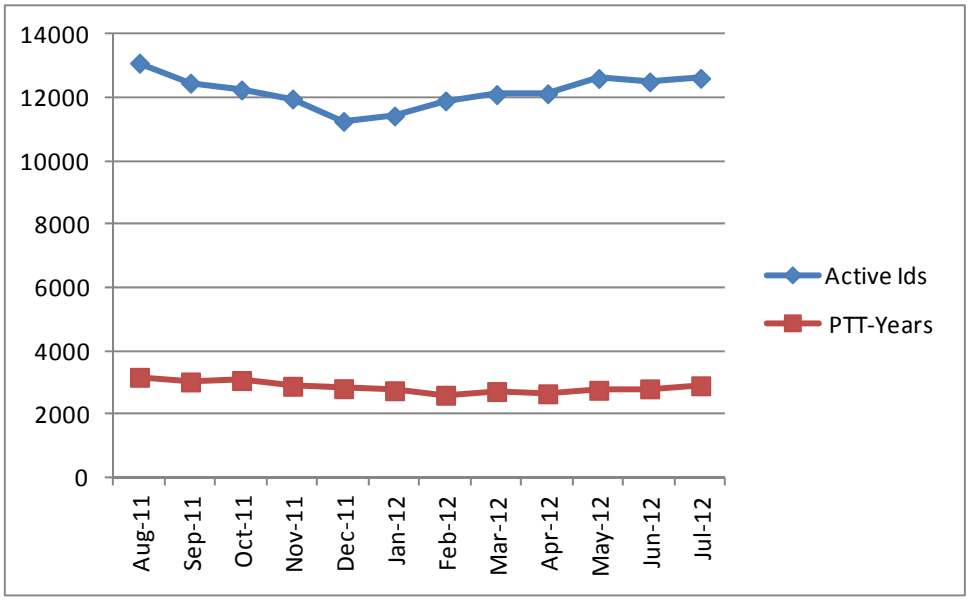
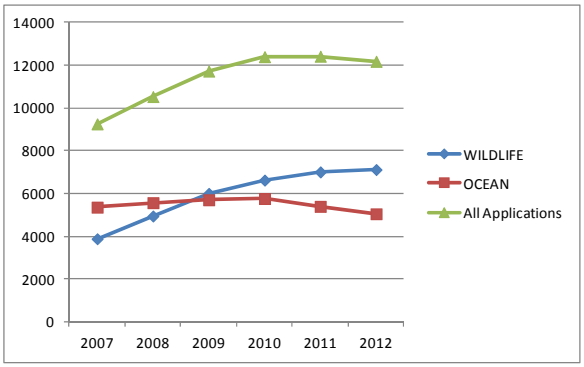


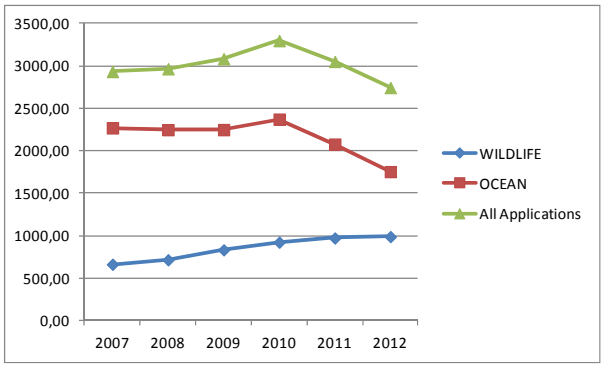
Figure 1: Consumption evolution over the previous 12 months in Active PTTs and PTT.years

The total number of active PTTs and PTT-years show a slight decrease over the last 12 months. The decrease has been mainly due to reduced buoy deployments. Although there is an increase in Wildlife active PTTs, it hasn't been sufficient to compensate for the total reduction of PTT-years. The charts below show the trends in the past five years with the extrapolated 2012 usage.

Active PTT



PTT-Year



4. Monthly evolution by platform category

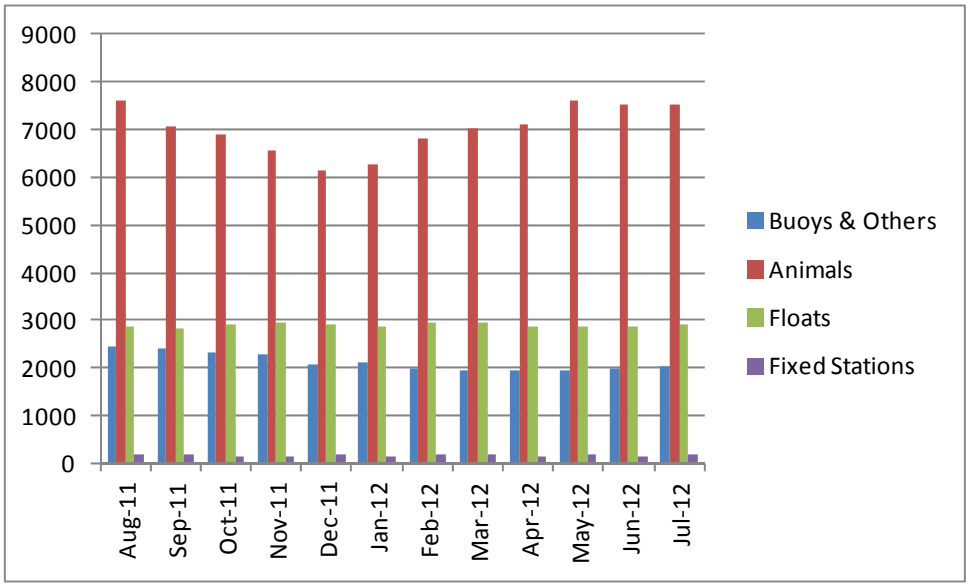


Figure 2: Active PTT evolution for 12 months

Overall, the active PTTs and thus the number of transmitters in the field are stable. Even though the wildlife family continues to increase, the buoys numbers decline substantially. The "Subsurface floats and Fixed stations" are rather stable.

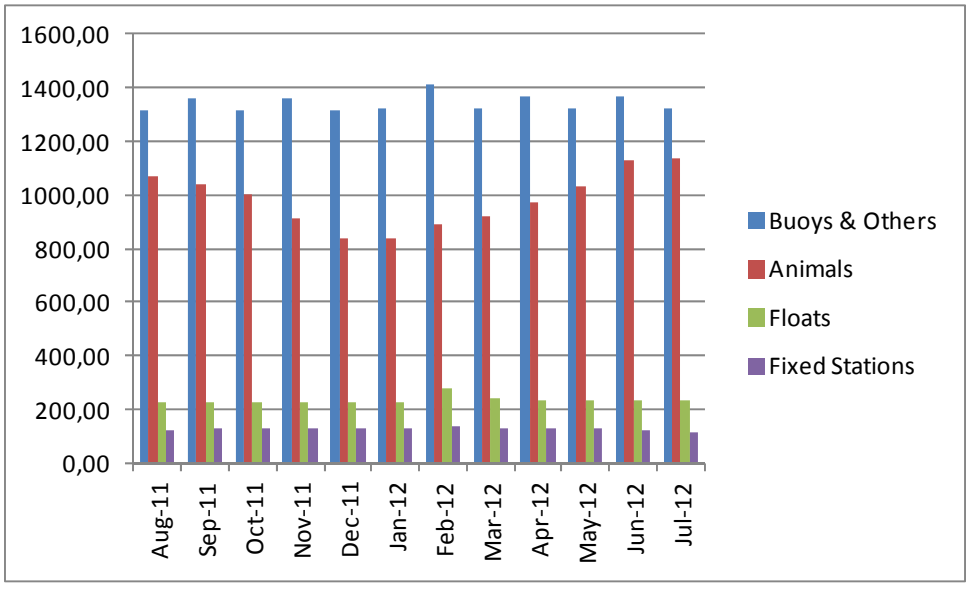


Figure 3: PTT-years evolution for 12 months

The PTT-years picture shows the differences in terms of actual consumption among categories:

- "Buoys & Others" still represent the most consumption of any category despite the reduced number of active PTTs.
- "Animals" consumption continues to increase. This year is expected to be 6.27%.
- "Floats" and "Fixed Stations" consumption in PTT-years remains stable.

5. Time slot analysis

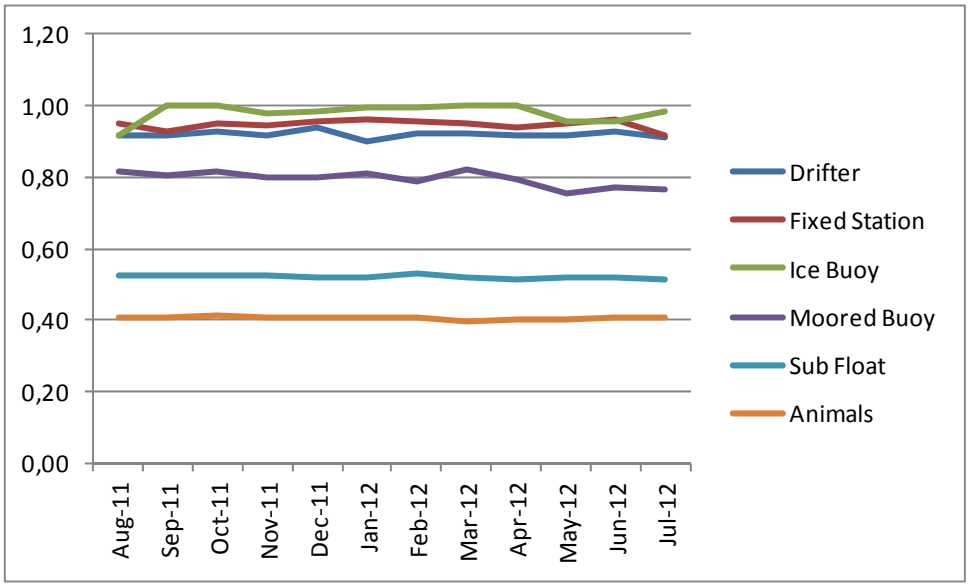


Figure 4: Average time slot level by platform category

This diagram shows the monthly evolution of the average time slot ratio for the all platforms categories.
("Animals and sub_floats" have benefited from time slot accounting since 2005. "Buoys & Others" and "Fixed Stations" started benefiting from time slot accounting in 2007).
For a given PTT, the monthly time slot ratio is calculated as the number of day units divided by the number of transmission days in the month.

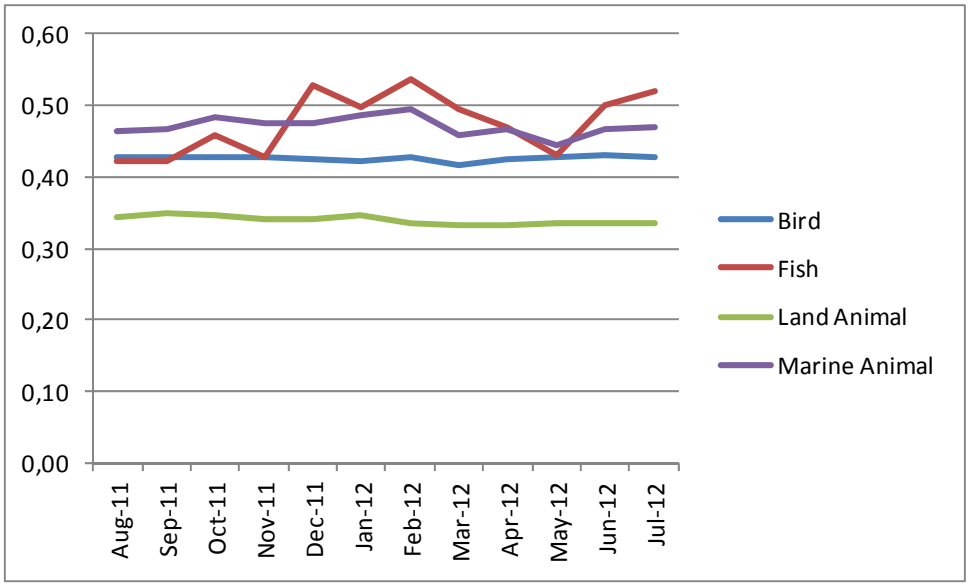


Figure 5: Average time slot level by Animals platform category

It can be noticed that all animal categories are significantly benefitting from the time slots. As an average these PTTs are transmitting 40% of the day.

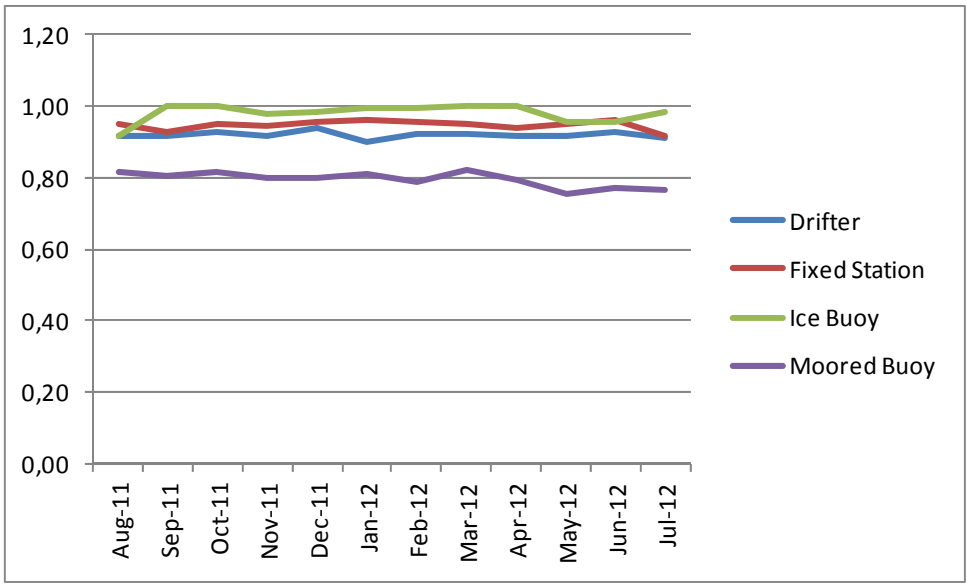


Figure 6: Average time slot level by platform category (buoys and others)

In 2011, due to the time slot accounting, the overall consumption of buoy platforms has decreased by **174.39 PTT Years.**

6. Impact of the 12 day.unit capping

Further to JTA XXVII decision the consumptions for animal platforms are capped at 12 day-units (48 time slots).

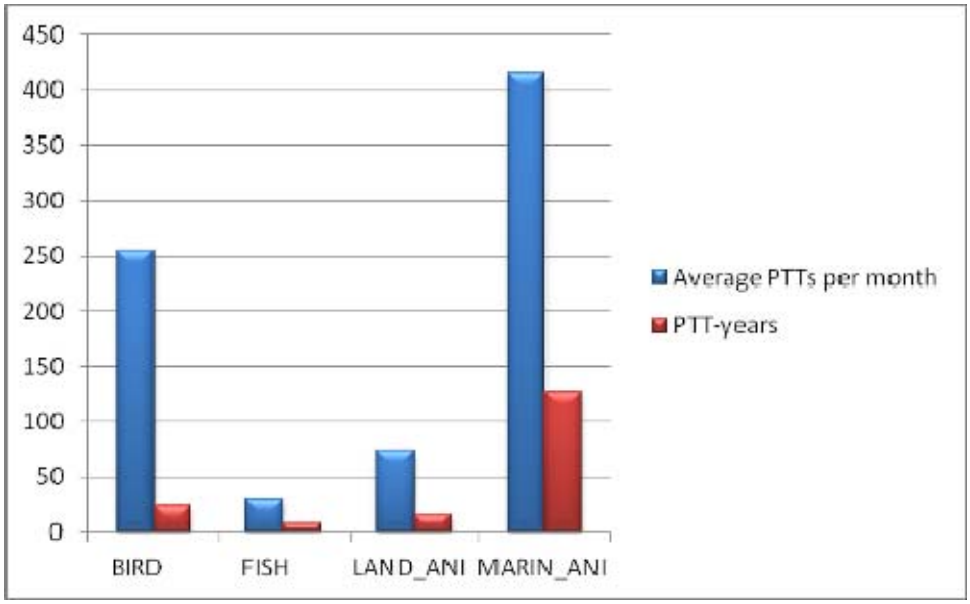


Figure 7: Average PTTs affected and Projected PTT-years "gain" by animal category

In 2011, **777** PTTs (average active PTT per month) took advantage of the capping, representing **177 PTT-years**. The number of animals taking advantage of the capping is increasing every year: 777 in 2011 compared to 690 in 2010.
Further to the large increase of birds PTTs deployment, we can notice than more and more birds PTTs benefit also of the capping (+21%) when the number of marine animal PTTs remains rather stable.

For 2012 the capping represents a projected impact of **167 PTT-years**.

7. Inactive status:

Recall: since year 2004, transmissions from Inactive IDs are no longer charged.

As stated in the Terms and Conditions of the Global Agreement, this status is intended for those platforms that continue to transmit but for which the location or data collection are of no further use to the user or the community. The following conditions must be met to qualify:

(*1) Inactive Status will apply if, and only if, Inactive Status is declared by the signatory of the System Use Agreement for platforms which continue to transmit beyond the programme termination. In that case, further charges will no longer be levied.*

(2) The platforms must have operated in Basic Service for a minimum of 2 months.

(3) Data or location information cannot be retrieved nor can the platform revert to any category of service.

(6) It is intended that Location and/or data collection may not be computed using a Local User Terminal or other direct readout facility.

(7) ID numbers of such platforms are actually returned to CLS who will recycle them after the platform stops transmitting.

In 2011 the number of IDs in Inactive status greatly increased compared to 2010: more than **390 Ptts** are counted every month compared to **189** in 2010 representing **137.47 PTT-year.**

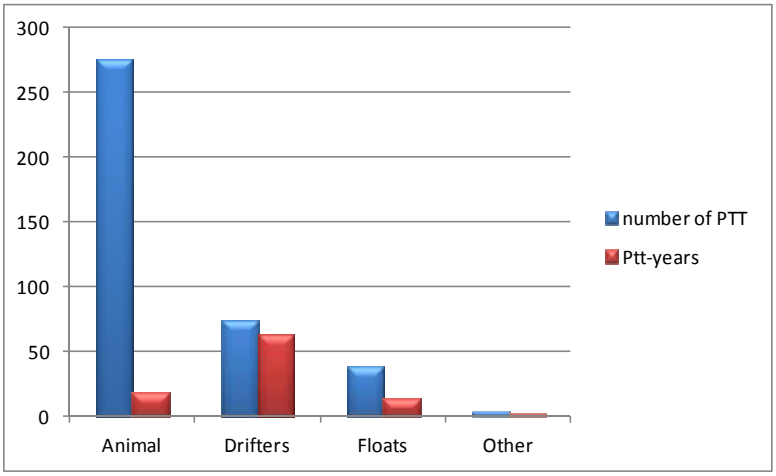


Figure 8: Inactive PTTs in term of number of IDs and PTT-Years for 2011

As already mentioned in previous JTA reports, these PTTs are increasing the system occupancy. CLS insists again on the recommendation to users and manufacturers to consider this by programming their PTTs for the duration of the experiment.

8. History of the JTA participation from 1982 to 2012

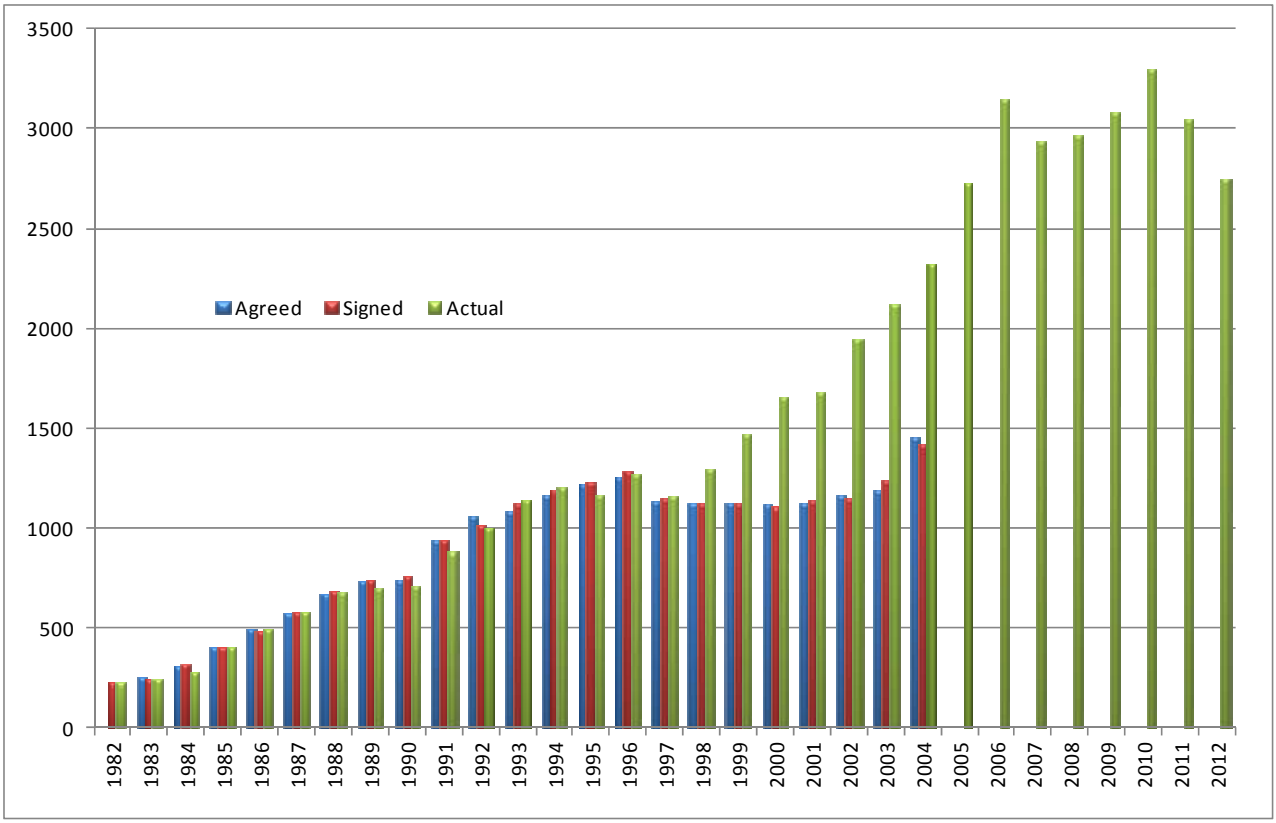


Figure 9: Agreed, signed and actual consumption in PTT-years for all countries

Notes:

1) Since the implementation of the new tariff structure in 2005, we only provide actual consumption.
2) Consumption decreased in 2007 (~46 PTT-year) by applying the time slots to all categories.
3) In 2008 and 2009, the consumption in PTT-years decreased by ~138 PTT-years due to the capping mechanism being applied to all animals, and also by applying the time slots to all categories.
4) The increase in 2010 is due to a combination of increased animal program activity and maximum deployment opportunities with increased buoy lifetimes for the Global Drifter program.
5) The decrease in 2011 and 2012 consumption is due to a combination of both premature buoy failures in the Global Drifter program and migration away from Argos (Value for 2012 is a projection based on January to July 2012 consumption).

ANNEX VIII

REPORT ON 2011-2012 OPERATIONS AND SYSTEM IMPROVEMENTS
(Submitted by CLS)

1. 2011-2012 Argos Highlights

1.1. Operations

- Kalman Filter Localization Processing On since 15 March 2011
- Two new NOAA Global Antennas: McMurdo (since 08/06/2011) and Svalbard (since 28/09/2011). Svalbard for NOAA satellites blind orbits and McMurdo for METOP-A only
- CLS America Processing Center move from Landover to Lanham on June 23rd 2011
- A86 Peru Regional Processing center stopped the 1st June 2011
- METOP-A platform restart performed by EUMETSAT on 22/10/2011
- METOP-A / A-DCS software error on 24/10/2011

1.2. System improvements

- The 3 global receiving stations (Fairbanks, Wallops and Svalbard) are working nominally.
- McMurdo station (Antarctica) is delivering METOP-A orbits and has improved the data availability time.
- The regional ground stations network is composed of 60 antennas. Three have been added in 2011 (Lajes, Ramonville, Ali El Salem).
- The architecture of the global processing centers is stable and no major improvements in 2011.
- New functionalities have been integrated to the Argos application software in 2011:
- Kalman Location processing improvements
- Preparation of METOP-B and SARAL Launches
- Switch from BUFRV3 to BUFRV4
- PMT Commands through Email (Web commands already available)
- Internal Developments to improve Argos Ground Segment Operation monitoring

1.3. Outlook

- METOP-B launch: 19/09/2012. Argos-3 instrument, Polar orbit, launched from Baikonur
- SARAL launch: October 2012. Argos-3 instrument, Polar orbit, launched from Satish Dhawan.
- CLS processing centre move in a new building in October 2012
- Development of the new Argos orbitography to not use OpenVMS anymore
- Development of new tools to monitor station network and delays
- Migration of Argos operating system (OS) which are obsolete
- Study for migration from Oracle 10g to Oracle 11g
- Study to migration screens developed with Forms to java screens
- Continue to setup the new HRPT optimized network
- Development of an Argos-3/Argos-4 receiver chipset with CNES and the Belgium space agency
- Observations available via the Argos WebService
- Study to extend the Argos data extraction period online
- Archiving Argos data from 1994 to 2007 (Argos 86) available for requesting

2. Argos space segments

2.1. Operational status

During 2011, Argos instruments were onboard 6 POES's spacecrafts. The status information on each spacecraft and its Argos various subsystems describes as follow:

Satellites	Launch date	NOAA status	Real time data (HRPT)	Stored data (STIP)	Data AVHRR
METOP-A (MA)	19-Oct-06	AM Primary	Ok/Nok*	Svalbard	Ok
NOAA-19 (NP)	06-Feb-09	PM Primary	Ok	Gilmore, Wallops, Svalbard	Ok
NOAA-18 (NN)	20-May-05	PM Secondary	Ok	Gilmore, Wallops	Ok
NOAA-17 (NM)	24-Jun-02	AM Backup	Ok	Gilmore, Wallops	Ok
NOAA-16 (NL)	21-Sep-00	PM Secondary	Ok	Gilmore, Wallops	Ok
NOAA-15 (NK)	13-May-98	AM Secondary	Ok	Gilmore, Wallops	Ok

Figure 10: Argos Constellation

* Scheduled activities define on Orbit Switch ON and Switch OFF (see below for more details).

2.2. METOP-A HRPT Switch Zone

To minimize the risk of failure to the AHRPT-B unit whilst still offering the user community a service, EUMETSAT has implemented a "partial" AHRPT service in those areas where the risk of damage from heavy ion radiation is reduced.

For southbound passes, AHRPT side B was activated for all orbits over the North Atlantic and European area, starting at around 60°N. The AHRPT will then be switched off before the spacecraft reaches the Southern Atlantic Anomaly region at around 10°N.

In January 2011, EUMETSAT announced the extension of this activation zone while maintaining the same operational restrictions over the polar caps and South Atlantic anomaly. Furthermore, AHRPT operations will also be made in ascending orbits, but with more stringent risk reduction measures than applied for the descending passes given the availability of data via the Fast Dump Extract System (FDES) to cover the North Hemisphere.

Figure 11 shows the extended activation zone of the AHRPT for both descending and ascending parts of the orbit. The extended AHRPT coverage is effective since 18 January 2011 as a pre-operational service.

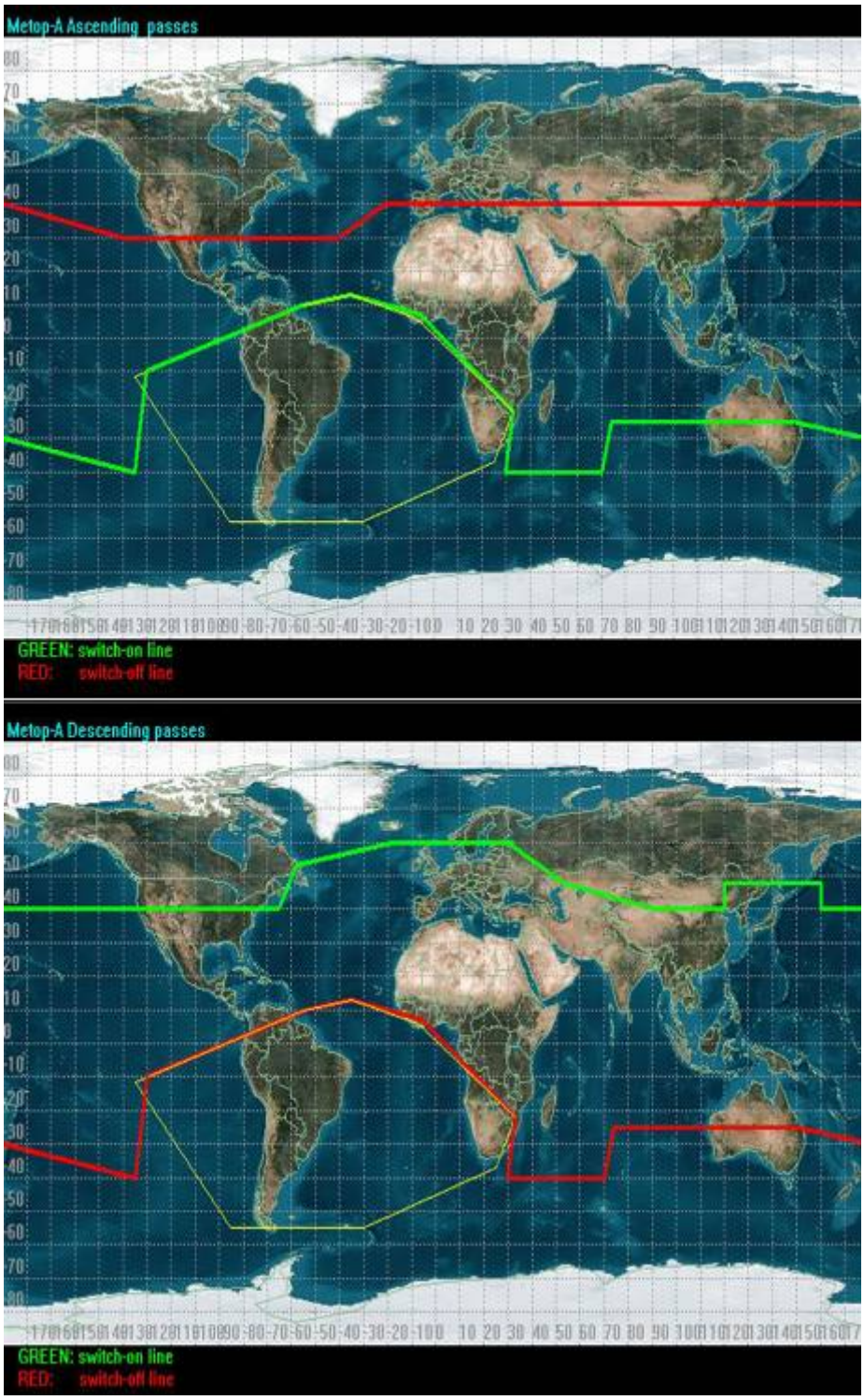


Figure 11 : A-HRPT Extended Switch Zone (Descending and Ascending orbits)

2.3. Ascending Nodes Local hour

The diagram here below presents the local time of ascending notes in February 2012

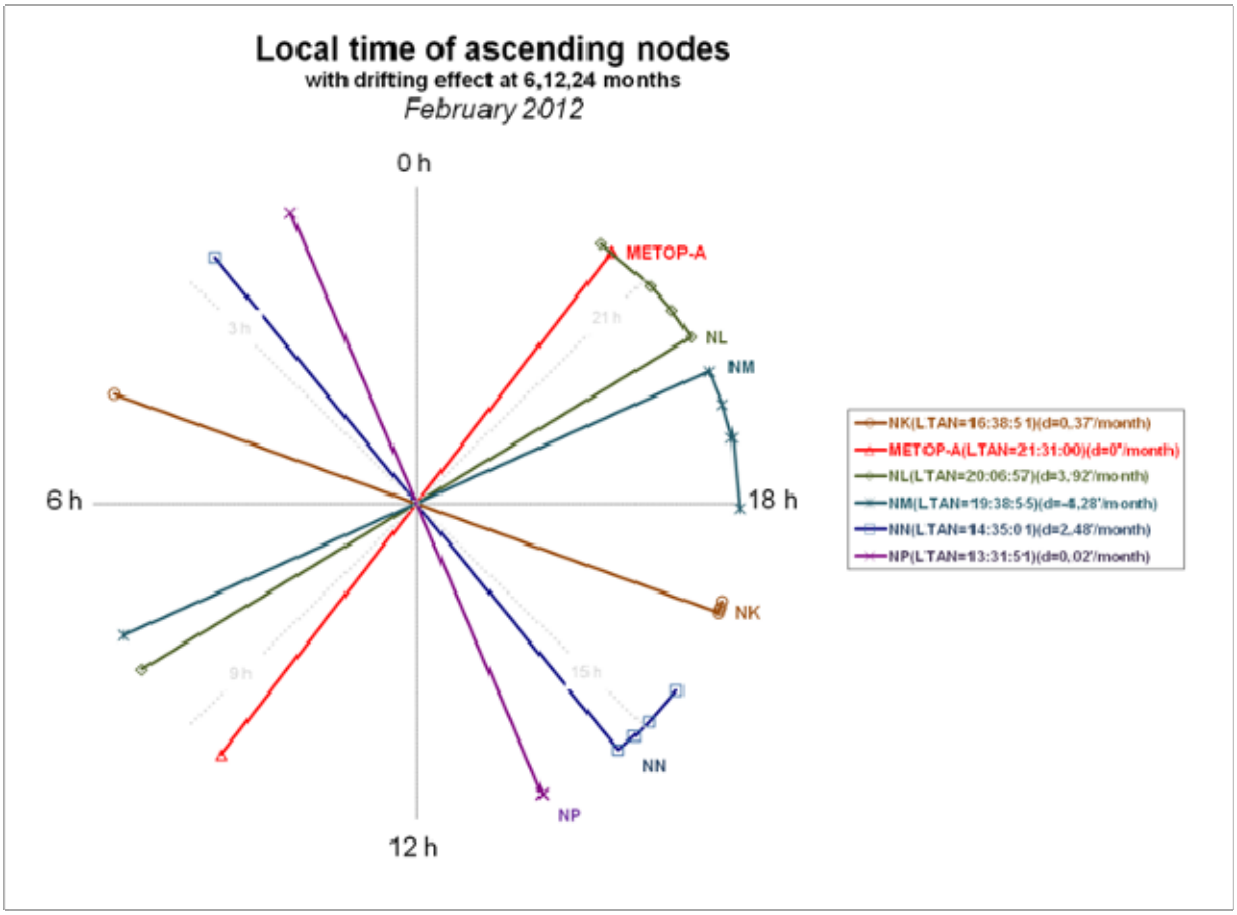


Figure 12: Local Equator crossing time in February 2012

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2.4. Next launches of satellites with Argos instrument

- METOP-B (EUMETSAT) with an Argos-3 instrument on 19/09/2012
- SARAL (ISRO) with an Argos-3 instrument in the second half of October 2012
- JPSS-1 (NOAA) with an Argos-4 instrument in 2015
- METOP-C (EUMETSAT) with an Argos-4 instrument in 2017
- JPSS-2 (NOAA) with an Argos-4 instrument in 2020

3. Argos ground segment

3.1. Global antennas (store and forward mode)

The Argos global antennas network is composed by five stations:

- The two NOAA global stations of Fairbanks and Wallops acquire the global recorded telemetry transmitted by N15, N16, N17, N18 and N19.

- The EUMETSAT global receiving station of Svalbard acquires the global recorded telemetry transmitted by Metop-A as well as the two daily blind orbits of N18 and N19 for NOAA stations.

- A new Svalbard antenna operated by NOAA that delivers NOAA 15/16/17/18 blind orbits when not in conflict with NOAA-19. Please note that these blind orbits were previously received from the EUMETSAT Svalbard antenna (via NOAA). This improves data delays because these orbits are now received directly after the pass.

Figure 13 : The Argos Global antenna network (without McMurdo)

- The NOAA McMurdo antenna in Antarctica that only received Metop-A half orbits. This antenna is operational since 08/06/2011. Timeliness for the provision of METOP-A data collected out of HRPT coverage to users has improved from 115 to 65 minutes.

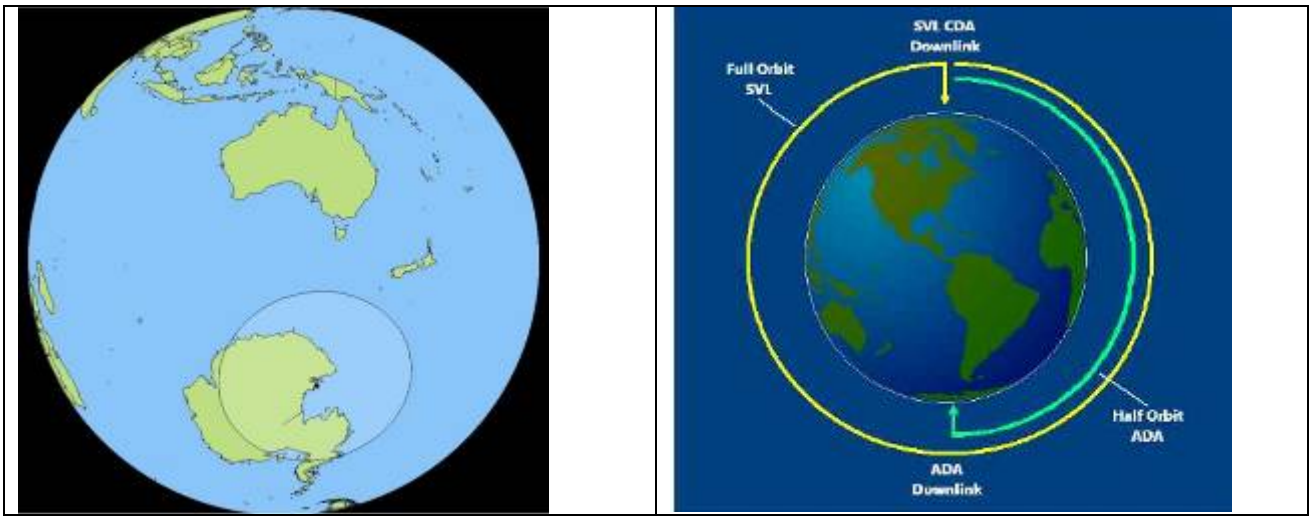


Figure 14 : METOP-A Mc Murdo Global antennas coverage and principle

Comparison of METOP-A data delivery time with and without Mc Murdo station:

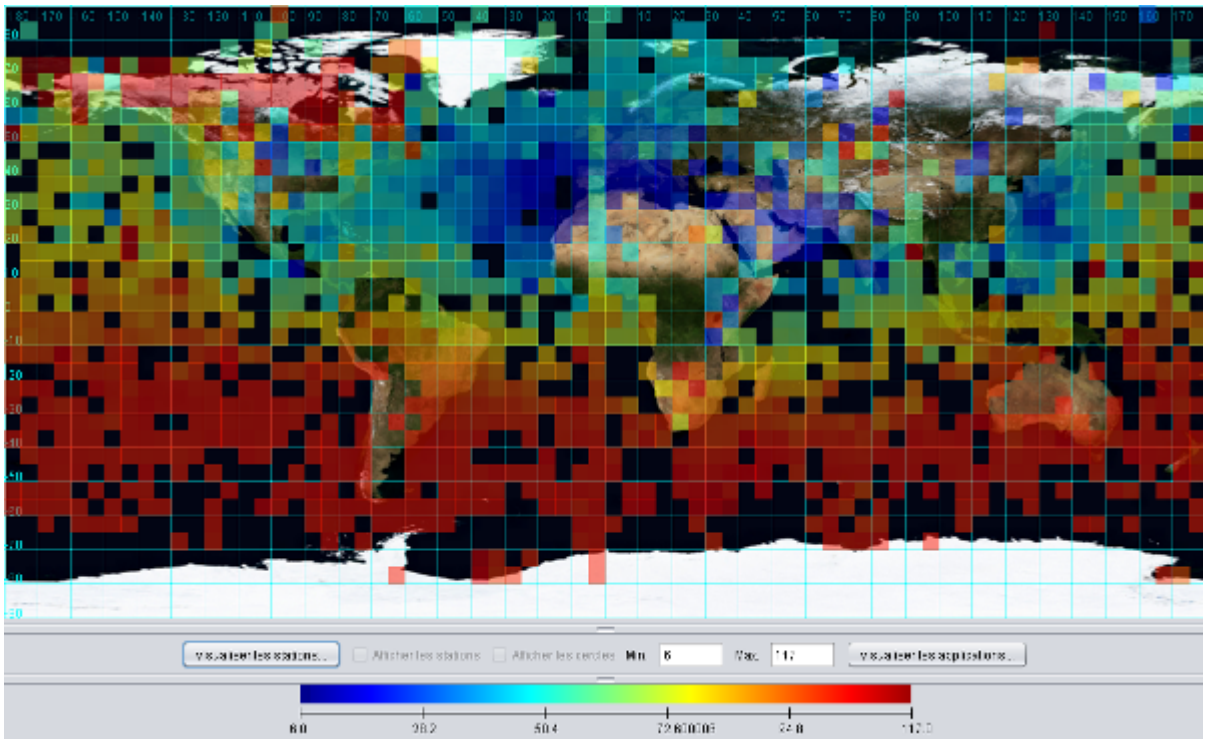


Figure 15 : METOP-A Data Mean Disposal Time in June 7, 2011 (in minutes)

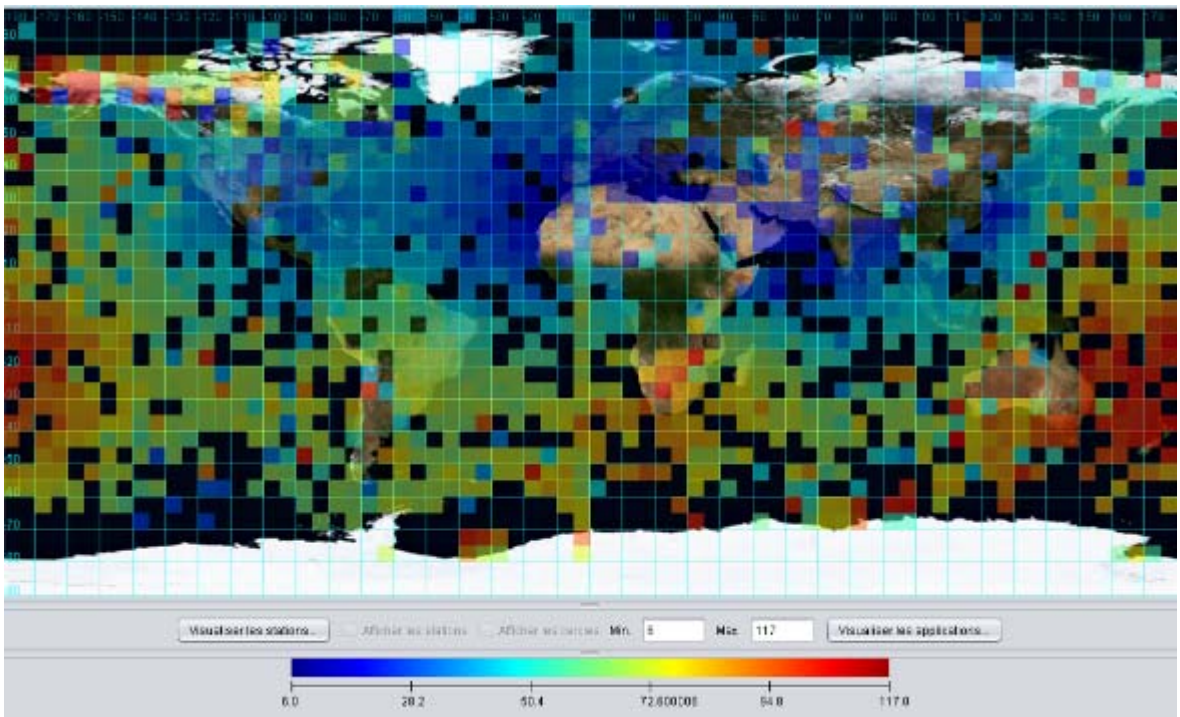


Figure 16 : METOP-A Data Mean Disposal Time in June 9, 2011 (in minutes)

3.2. Regional antennas (real-time mode)

3.2.1. Operation and improvements

In 2011, the real-time network is still growing, 3 HRPT antennas were added. Improvements are still focused on redundancy locations and coverage extension.

Operating date	Name	Code	Country	Operator	Possible satellites					
20/02/2012	Lajes	LA	PT	US AIR FORCE		NL		NN	NP	
04/01/2012	Ali Al Salem	AS	KW	US AIR FORCE	NK	NL		NN	NP	
11/05/2011	Ramonville	RV	FR	CLS	NK	NL	NM	NN	NP	MA

Figure 17 : List of new HRPT antennas added in 2011

In 2011, CLS was still focused on the HRPTA4 project that consists of upgrading selected antennas in order to be compatible with METOP and SARAL satellites. This project also aims to optimize in terms of performances the real-time receiving stations network (see paragraph 2.3.3 for further details).

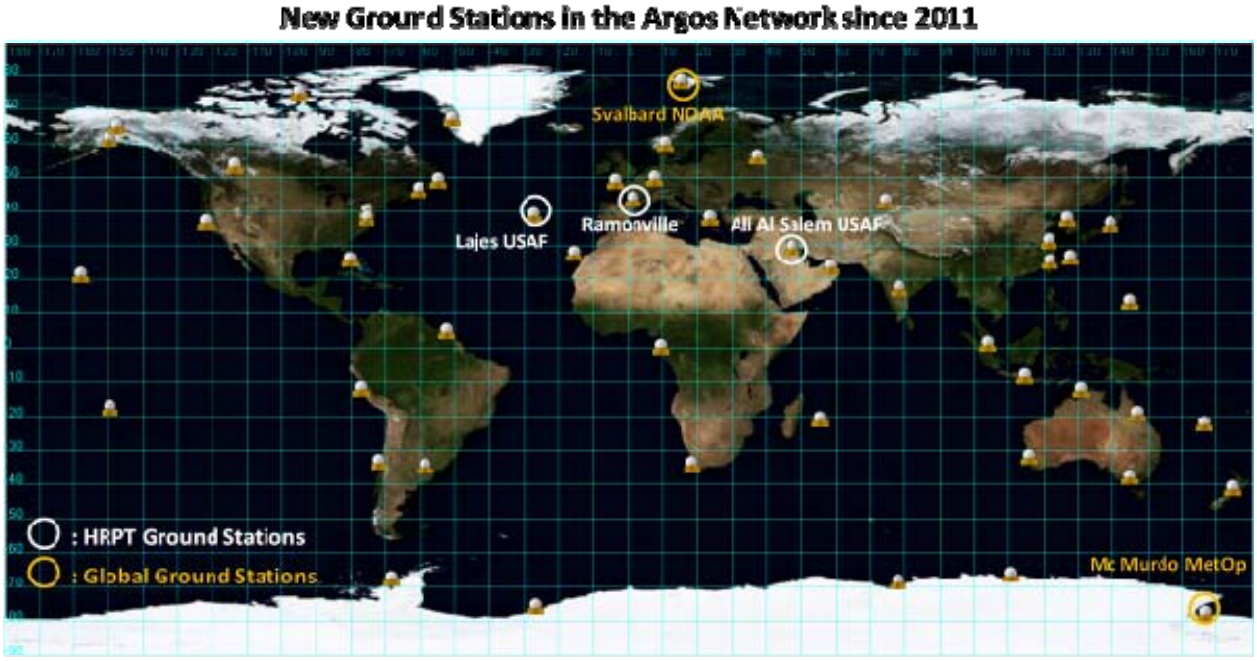


Figure 18 : New stations in 2011

Today, both Toulouse and Lanham processing centers receive Argos real-time data from 65 stations located all over the world.

Please note that the Aludeid antenna was decommissioned and removed from the network on February 2012.

Here below are displayed the Argos HRPT coverage world map and the list of the 65 operational stations part of the Argos real-time antennas network.

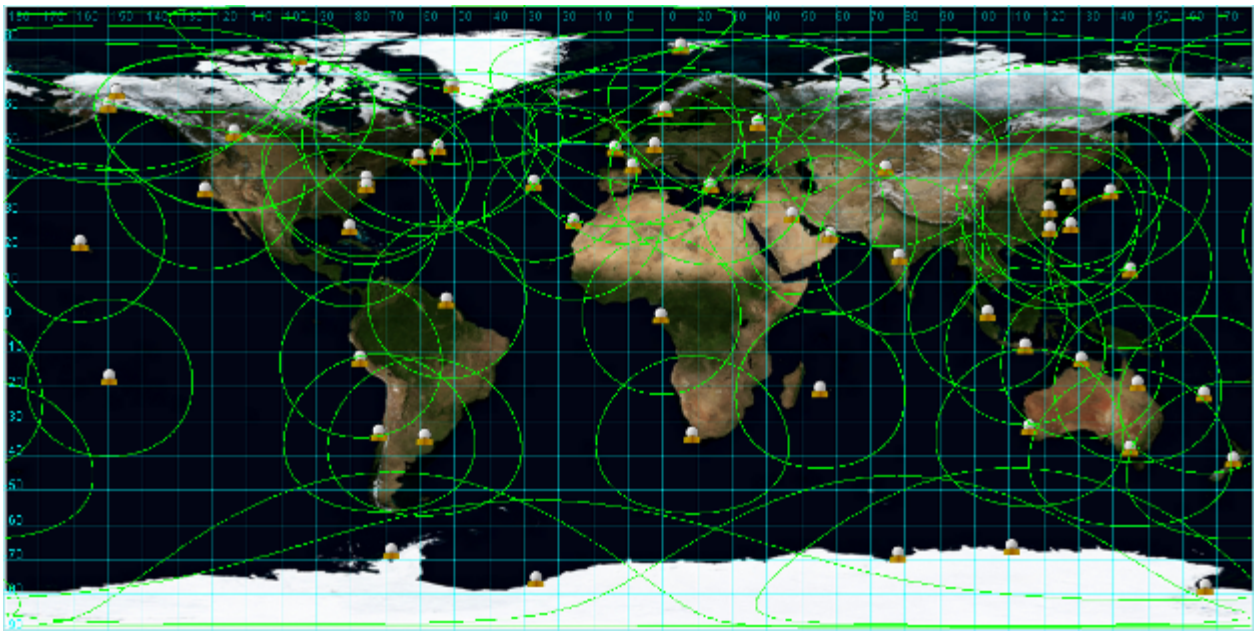


Figure 19 : April 2012 Real-time coverage map

Name	Code	Country	Operator	Possible satellites					
Ali Al Salem	AS	KW	US AIR FORCE	NK	NL		NN	NP	
Andersen	AN	GU	US AIR FORCE	NK	NL	NM	NN	NP	
Athens	AT	GR	CLS	NK	NL	NM	NN	NP	
Athens EARS	XA	GR	EUMETSAT		NL	NM	NN	NP	MA
Bali	BL	ID	PT CLS INDONESIA	NK	NL	NM	NN	NP	
Buenos Aires	BA	AR	INTA	NK	NL	NM	NN		
Cape Ferguson	CF	AU	NOAA NESDIS	NK	NL	NM	NN	NP	
Cape Town	SA	ZA	SAWB	NK	NL	NM	NN	NP	
Casey	CA	AU	BOM	NK	NL	NM	NN	NP	
Cayenne	CY	FR	IRD	NK	NL	NM	NN	NP	
Darwin	DA	AU	BOM	NK	NL	NM	NN	NP	
Davis	DV	AU	BOM	NK	NL	NM	NN	NP	
Edmonton	ED	CA	ENVIRONNEMENT CANADA	NK	NL	NM	NN	NP	
Edmonton EARS	XE	CA	EUMETSAT	NK	NL		NN	NP	
Elmendorf - Anchorage	EL	US	US AIR FORCE	NK	NL		NN	NP	
France Lannion	FL	FR	METEO-FRANCE			NM	NN	NP	MA
Gander EARS	XG	CA	EUMETSAT	NK	NL		NN	NP	
Gilmore Creek	GC	US	NOAA NESDIS	NK	NL	NM	NN	NP	
Halifax	HF	CA	CANADIAN COAST GUARD	NK	NL	NM	NN		
Halley	HR	GB	British Antarctic Survey		NL		NN	NP	
Hatoyama	HT	JP	Jaxa	NK	NL	NM	NN	NP	MA
Hawaïi	HW	US	NOAA NWS	NK		NM	NN	NP	MA
Hickam - Honolulu	HI	US	US AIR FORCE	NK	NL		NN	NP	
Hyderabad	HY	IN	INCOIS	NK	NL	NM	NN	NP	
Jamstec - Tokyo	JM	JP	CUBIC-I	NK	NL	NM	NN		
Kandena-	KA	JP	US AIR FORCE	NK	NL		NN	NP	

Okinawa									
Kangerlussuaq EARS	XK	GL	EUMETSAT	NK	NL	NM	NN	NP	
Lajes	LA	PT	US AIR FORCE		NL		NN	NP	
Las Palmas	LP	ES	IRD	NK	NL	NM	NN	NP	
Libreville - N Koltang	GB	GA	CLS	NK	NL	NM	NN	NP	
Lima	LM	PE	CLS PERU	NK	NL	NM	NN	NP	MA
Lima	PR	PE	CLS PERU	NK	NL	NM	NN	NP	
Manas	MN	KG	US AIR FORCE	NK	NL	NM	NN	NP	
Maspalomas EARS	XM	ES	EUMETSAT	NK	NL	NM	NN	NP	MA
Mc Murdo	MM	AQ	NOAA						MA
Melbourne	ME	AU	BOM	NK	NL	NM	NN	NP	
Miami	MA	US	NOAA AOML	NK	NL	NM	NN	NP	MA
Montererey	MO	US	NOAA NESDIS	NK	NL	NM	NN	NP	MA
Moscou EARS	XR	RU	EUMETSAT	NK	NL	NM	NN	NP	MA
Muscat EARS	XO	OM	EUMETSAT EARS	NK	NL	NM	NN	NP	MA
Nouméa	NC	NC	METEO FRANCE	NK		NM	NN		
Nouméa	NO	NC	IRD	NK		NM	NN	NP	
Oslo	OS	NO	NMI	NK	NL	NM	NN		
Papeete	TA	FR	IRD	NK		NM	NN	NP	
Perth	PE	AU	BOM	NK	NL	NM	NN	NP	
Ramonville	RV	FR	CLS	NK	NL	NM	NN	NP	MA
Resolute Bay	RB	CA	Environment Canada	NK	NL	NM	NN	NP	
Reunion Island	RE	FR	IRD	NK	NL	NM	NN	NP	
Reunion Island	RN	FR	METEO FRANCE			NM	NN	NP	
Reunion Island HRPT4	FR	FR	METEO FRANCE				NN	NP	MA
Rothera	RO	GB	British Antarctic Survey	NK	NL	NM	NN		
Santiago	CH	CL	METEO CHILE	NK	NL		NN	NP	
Sembach	SM	DE	US AIR FORCE	NK	NL		NN	NP	
Séoul	SE	KR	KMA	NK	NL	NM	NN	NP	
Shanghai	SH	CN	EAST CHINA SEA FISHERIES	NK	NL	NM		NP	
Singapore	SG	SG	SMM	NK	NL	NM	NN	NP	
Sondre	GR	GL	DMI	NK	NL	NM	NN	NP	
Svalbard	SN	NO	NOAA	NK				NP	MA
Svalbard	SV	NO	EUMETSAT	NK			NN	NP	MA
Svalbard EARS	XS	NO	EUMETSAT		NL	NM	NN	NP	MA
Svalbard NOAA	SW	US	NOAA	NK	NL	NM	NN		
Taïwan	TW	TW	NTOU	NK	NL	NM	NN	NP	
Valley Forge (Test)	UA	US	US AIR FORCE	NK	NL		NN	NP	
Wallops Island	WI	US	NOAA NESDIS	NK	NL	NM	NN	NP	
Wellington	NZ	NZ	NIWA	NK	NL	NM	NN	NP	

Figure 20 : List for Operational Antennas on April 2012 and tracked satellites

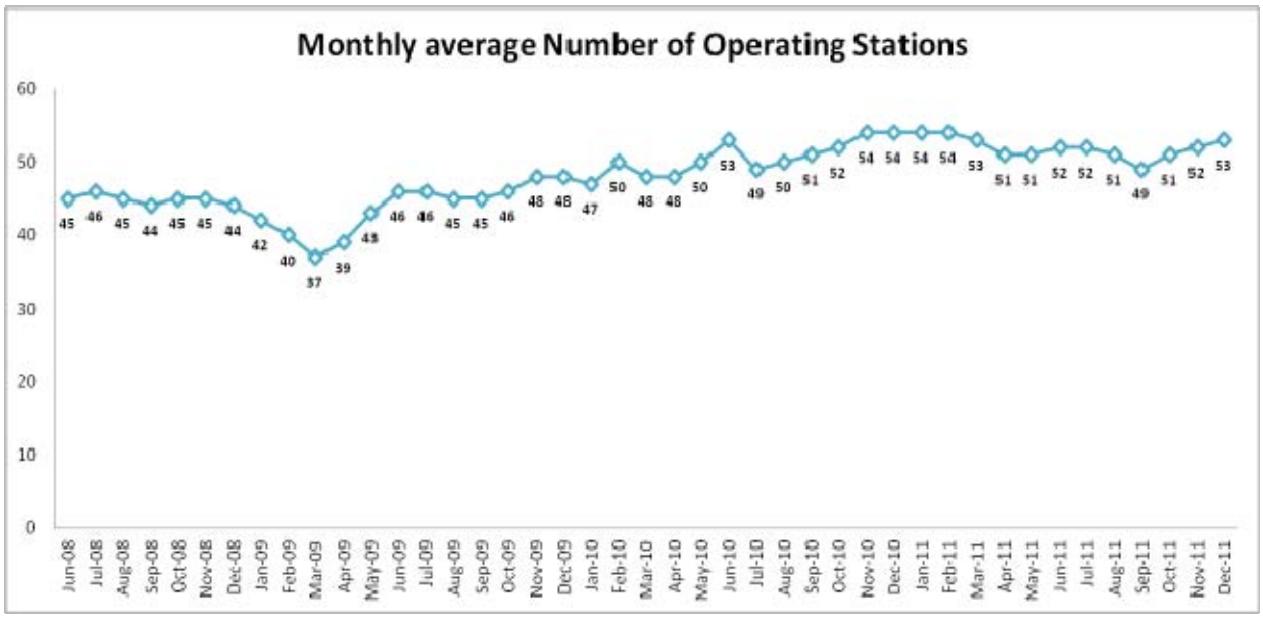


Figure 21 : Operational real-time antennas since January 2008

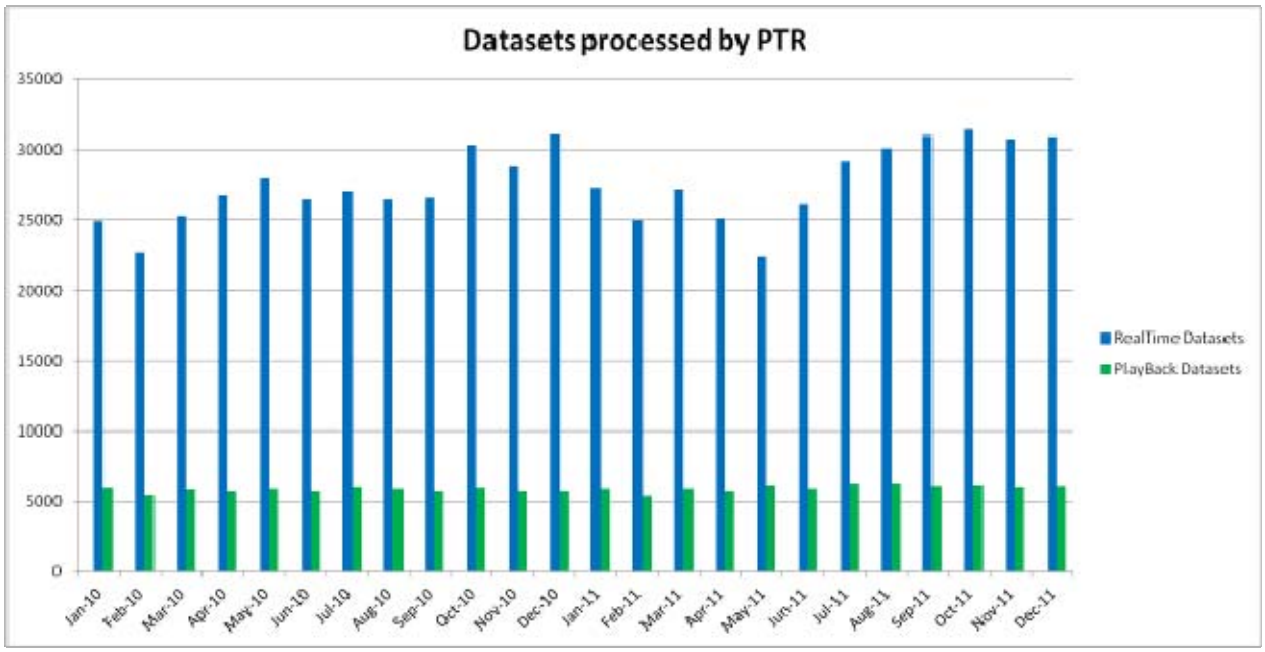


Figure 22 : NOAA and METOP Playback and Real-time datasets processed per Month

3.3. METOP real-time coverage

The regional antennas network dedicated to METOP satellites is still growing with 16 compatible stations in July 2012:

Name	Code	Country	Operator
Athens EARS	XA	GR	EUMETSAT
France Lannion	FL	FR	METEO-FRANCE
Hatoyama	HT	JP	Jaxa
Hawaïi	HW	US	NOAA NWS
Lima	LM	PE	CLS PERU
Maspalomas EARS	XM	ES	EUMETSAT
Mc Murdo	MM	AQ	NOAA
Miami	MA	US	NOAA AOML
Montererey	MO	US	NOAA NESDIS
Moscou EARS	XR	RU	EUMETSAT
Muscat EARS	XO	OM	EUMETSAT EARS
Ramonville	RV	FR	CLS
Reunion Island	FR	FR	METEO FRANCE
Svalbard	SN	NO	NOAA
Svalbard	SV	NO	EUMETSAT
Svalbard EARS	XS	NO	EUMETSAT

Figure 23 : List for METOP satellites compatible antennas on July 2011

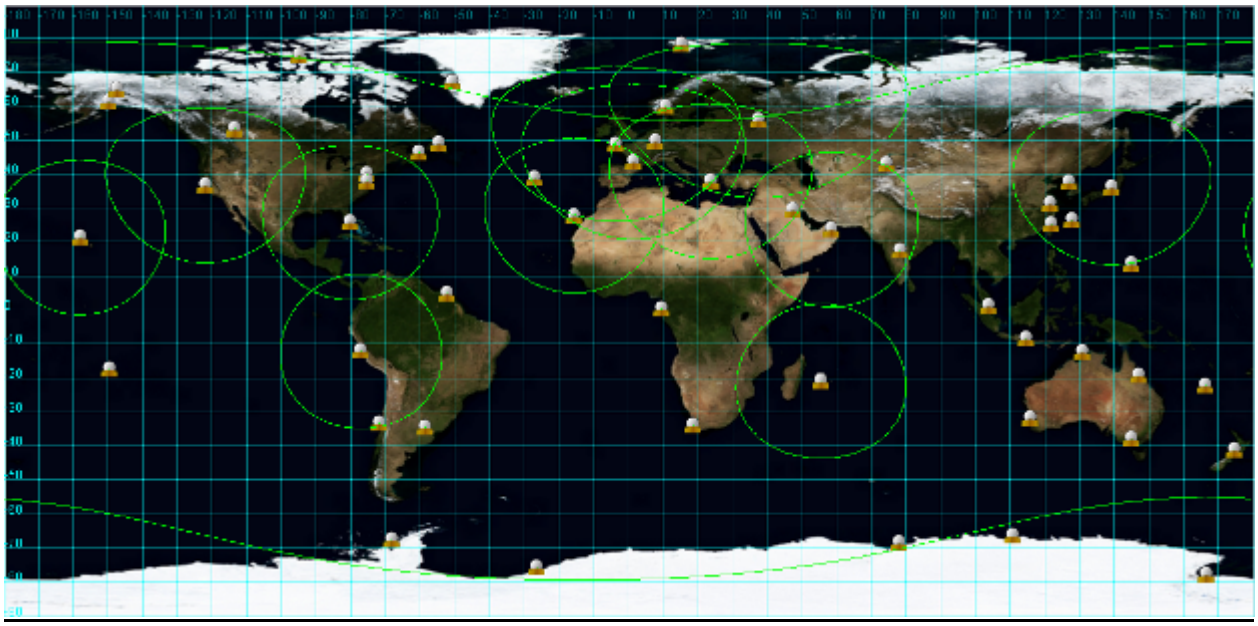


Figure 24 : Current METOP-A real-time coverage

3.3.1. HRPT-A4 project

This project had been initiated in 2010 and was presented for the first time during the 43th Argos Operation Committee. It consists in upgrading a significant part of the network so that it is capable of acquiring data from NOAA, METOP and SARAL satellites. Since the receiver developed in the frame of the upgrade is "agile" and multi missions, it should be possible to perform a light update to receive data issued from the future satellites which will carry the Argos-4 instruments. This project is led by CLS with the strong help and support of CNES.

On the base of the network defined during the system study, year 2011 was normally devoted to the deployment phase. Unfortunately, for technical reasons, it has not been possible to deploy our upgrade equipment in EARS network stations leading to a complete redefinition of the network. On that new basis, the network on which the upgrade will be applicable will be composed of 17 stations as shown on the map below. Among these 17 stations (see figure 25):

- 12 stations will be upgraded using our upgrade equipment (white circles)
- 2 new stations will be deployed (red circles)
- 3 stations will be upgraded in partnership with Australia (orange circles)

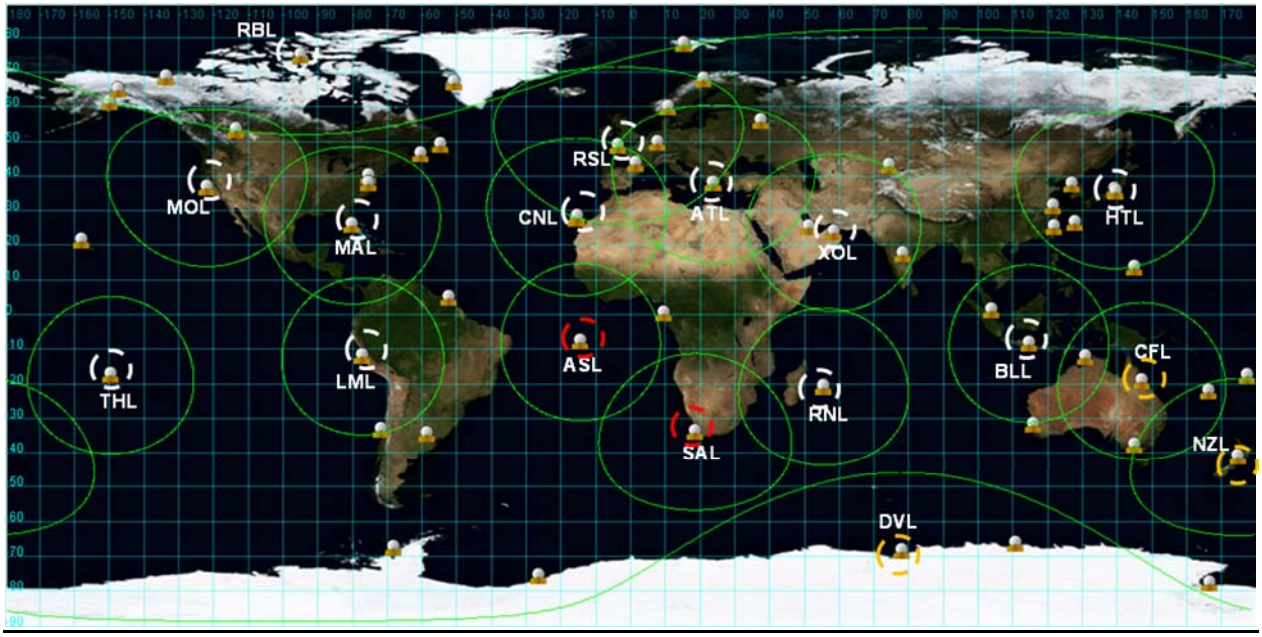


Figure 25 : Planned HRPT-A4 antenna network (upgrade in progress)

From an engineering point of view, all the equipment is tested and ready to be deployed (new station and upgrades).

From a deployment point of view, it has to be noticed that the negotiation with the host organizations take much more time than expected at the beginning of the project.

Over the 17 stations of the network, in July 2012 the status of the deployment is as follow:

Five antennas are already upgraded and currently received in production by both Argos processing centers (Toulouse & Lanham) in the HRPT-A4 network:

- Lima in Peru operated by CLS-PERU,
- Lannion in France operated by Meteo-France,
- Reunion Island operated by Meteo-France,
- Cape Town in South Africa operated by the South Africa Weather Bureau,
- Hatoyama in Japan operated by JAXA.

The next stations to upgrade in 2012 are:

- Athens, Greece in September 2012
- Bali, Indonesia in October 2012
- Oman, October 2012
- Davis, Australia in November 2012
- Las Palmas, Gran Canarias in December 2012.

3.3.2. Blind Orbits

“Blind orbits” from Svalbard have been implemented operationally! However, all secondary spacecraft do conflict with NPOESS Preparatory Program for 6-10 days at a time. Schedulers determine which spacecraft to schedule at NOAA Svalbard for a given period, selecting up to 10-20 double Global Area Coverage dumps (5-10 passes) for a given week. Due to conflicts, some weeks will have less than 10 passes, and only one spacecraft is selected for any given week.

In addition, it should be noted that NOAA Svalbard is a Global Area Coverage data retrieval site only. Still, this is progress – and is hopefully resulting in some improvements to data latency.

3.4. Processing centers

The two global processing centers in Toulouse and Largo were nominal over 2011 and first semester of 2012. Redundancy is used at least once a month (Up to two times on one month). Redundancy means all Argos users rerouted to CLS or CLSA during an anomaly on the nominal global processing center.

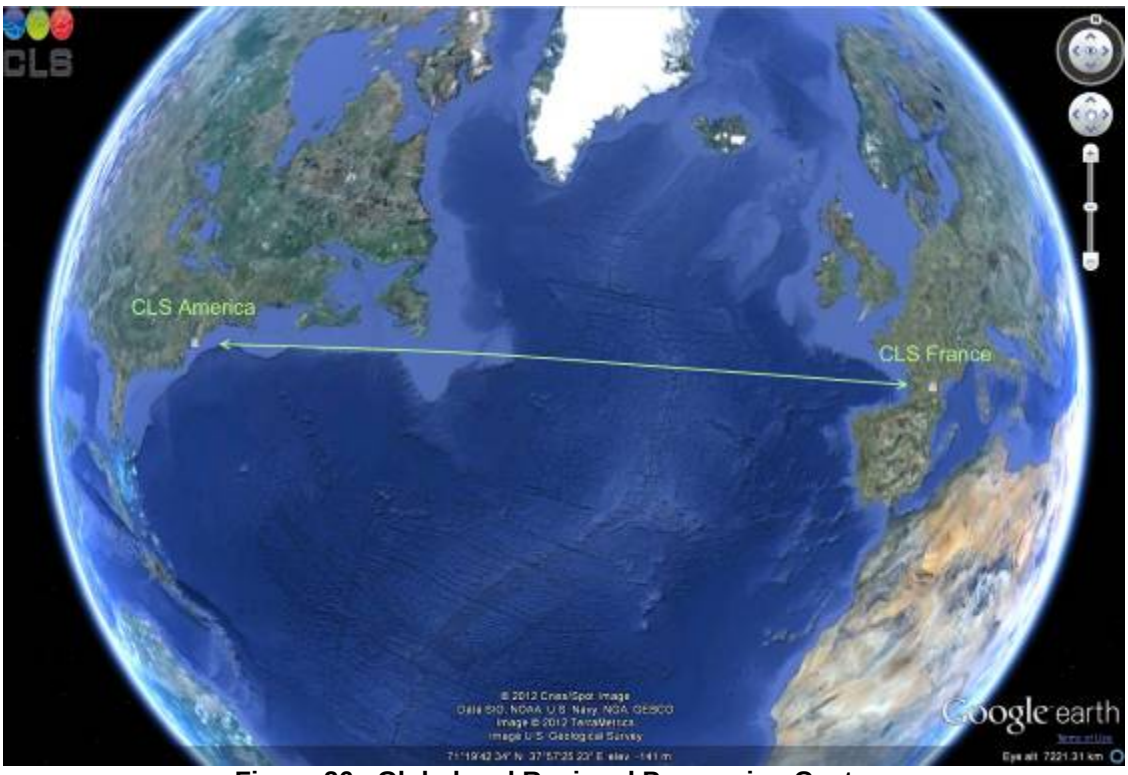


Figure 26 : Global and Regional Processing Centers

Figure 27 : CLS Toulouse Global Processing Center

Figure 28 : CLS America Global Processing Center

In June 2011, CLS America processing center moved to a new building in Lanham, Maryland. A double power outage occurred in July 2011 due to a generator issue.

The new building that will hosts the new CLS processing centre is still under construction in front of current CLS building. The project of moving Personnel, IT infrastructure and all operations staff into the new CLS building facilities will start in October 2012. This moving has to be transparent for our Argos customers and need to be prepared. A moving testing day is scheduled in September in order to be sure that all operations will be secured.

All Operations Staff is mobilized on this project in order to satisfy all Customer services and minimized the operations' impacts.

Figure 29 : New CLS control and monitoring room

3.4.1. Argos global processing centers architecture

Each global processing center is autonomous and can work alone. In normal mode, both processing centers receive process and distribute Argos data to:

- North American users for CLS America,
- Users of the rest of the world for CLS France.

In case of a problem with one of the two centers, the other one stays alive and is capable of receiving, processing and distributing Argos data to ALL users. The switch to the remaining alive center is completely transparent for the users. It means that the users continue to receive or to access their data, without changing anything on their side. CLS has a 99.64% system availability (see details in chapter 2.3.1.3 Data processing statistics) with three processing centers in back-up (two nominal and one disaster recovery).

In 2011, https architecture in CLS France was updated and CLS America firewalls were replaced to get the same hardware and software version as CLS France.

In 2011, we initiate a rebuilt of ARGOS application servers, in order to prepare the next decade. This process was started on the development configuration in CLS France. The application server is now based on CentOS Linux release 6.0, 64 bits (rather than RedHat, 32bits).

In 2012, progressively these changes on operating systems will be propagated up to the production environment, both in CLS America and CLS France datacenters.

In 2012, in order to address the increase of quantity of data to be processed (due to the launch of METOP-B and SARAL spacecraft), space disk will be increased. Moreover, the databases backup mechanism will be optimized and updated.

The architectures of CLS France and CLS America processing centers are quite similar and based on the same principle. Each has the same three main subsets:

- the Processing chain
- the Oracle database service
- the Web distribution

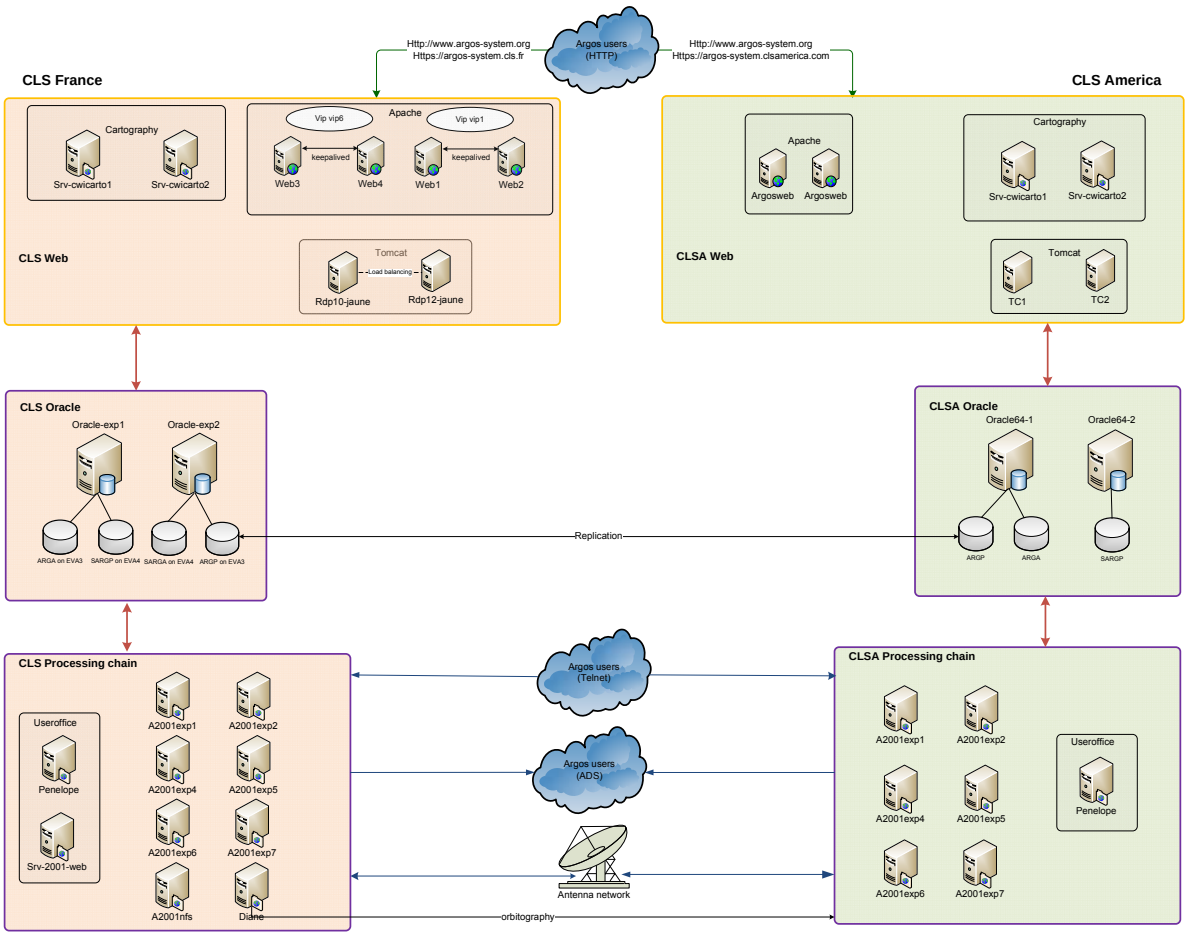


Figure 30: Architecture of the CLS France and the CLS America global processing centers

3.4.2. Disaster recovery architecture

Disaster recovery architecture implementation is completed. The computer room is located into CNES Toulouse. Some of the Argos architecture components are DR compliant in order to

improve services availability. However, the main backup is based on the 2 global processing centers (Toulouse & Lanham).

Figure 31 : Disaster Recovery Room located in CNES

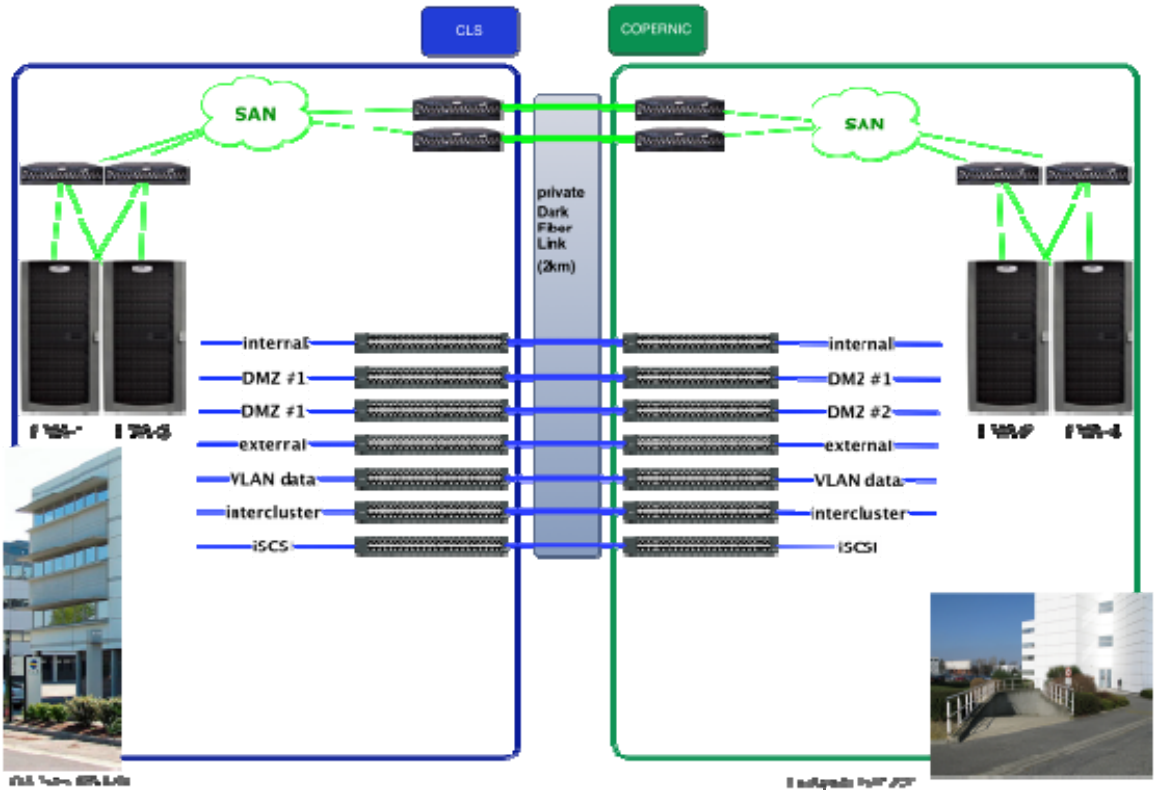


Figure 32 : Disaster recovery architecture diagram

3.5. The Argos processing chain

Composed of different software modules, the processing chain is in charge of receiving and processing the Argos data issued from the satellites and acquired by the global and real-time ground stations networks.

Argos data are processed in terms of collect and location, and stored into a database.

The processing chain is also in charge of distributing the data by ADS (Automatic Distribution System) or allowing users to access to their data using Telnet, ArgosWeb or the web services.

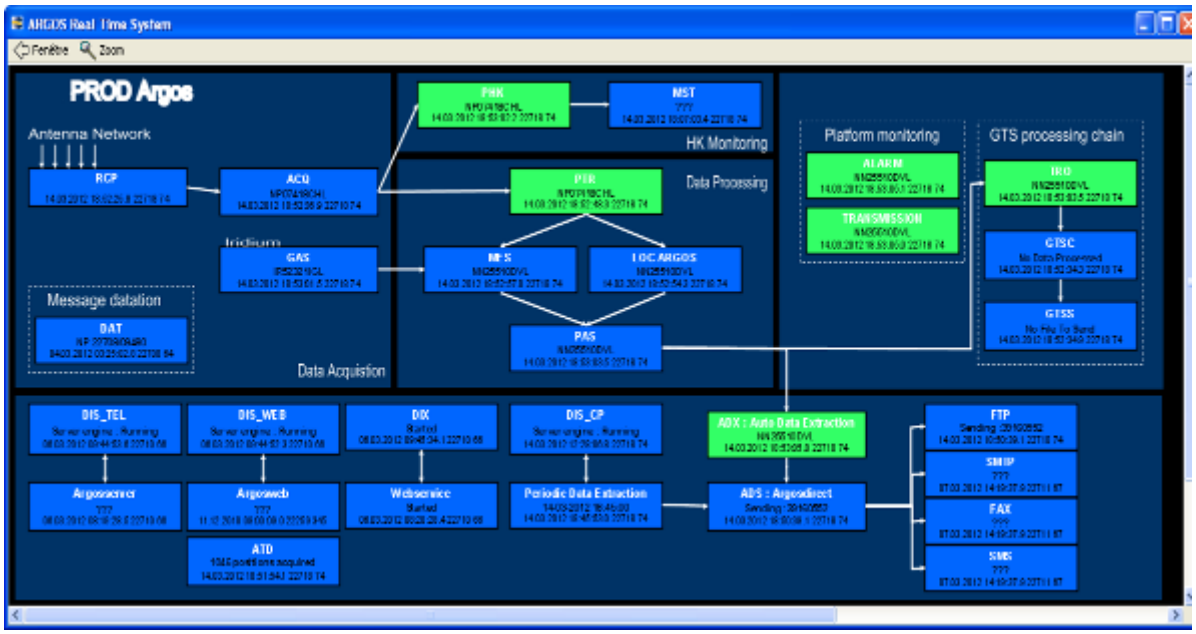


Figure 33: Synoptic of the CLS Argos processing chain

3.5.1. The Oracle database

At the heart of the computing architecture, the Oracle database is used to store the Argos declarative data as well as the processed data.

In order to keep a perfect coherency between CLS France and CLS America centers (mandatory to guarantee the redundancy between both centers), an automatic mechanism of replication is implemented between CLS France and CLS America databases.

3.5.2. The web distribution

Based on a farm of Apache Web servers, the Web distribution allows the users to access their data using a Web cartographic interface. The service of maps is supported by two cartographic servers on which are running the mapping engines C-Map for the marine cartography and MapInfo for the terrestrial one. The application server is supported by Tomcat.

3.5.3. Data processing statistics

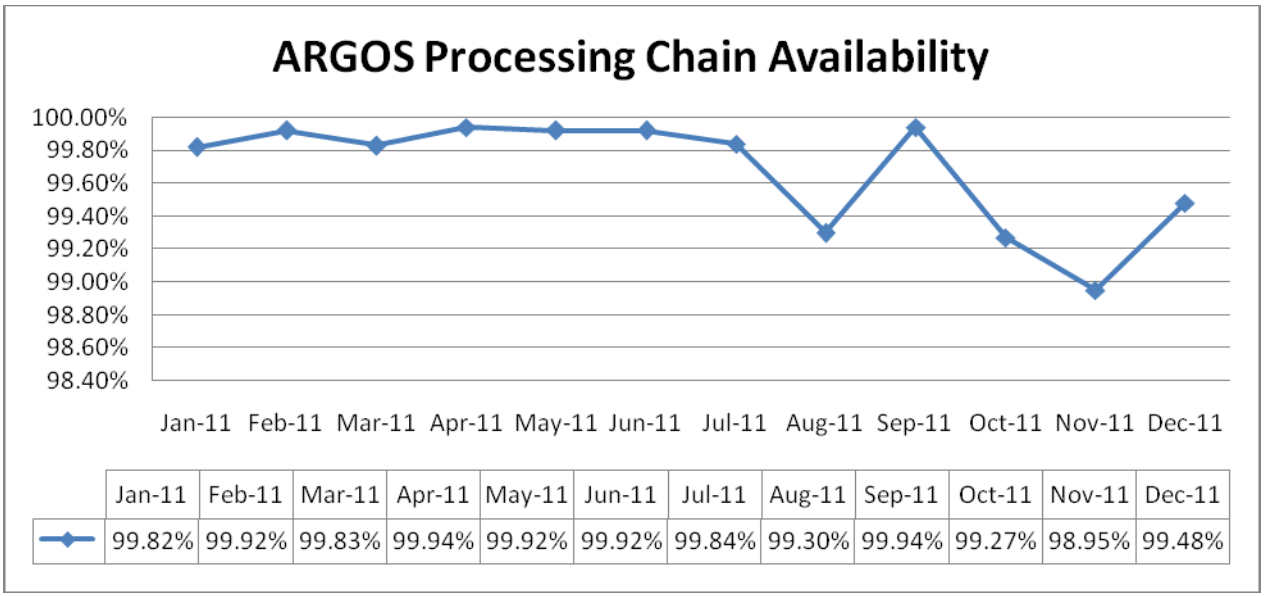
The Argos Operations missions at CLS are:

- Availability and reliability of Argos Products and Services in accordance with the SLAs,
- Support internal or external Argos projects, or proposals,
- Control and reduce operational risks and costs in order to ensure 24h/24, 7 days per week operational services.

In order to monitor the Argos processing centers, statistics are produced in real-time:

- on the availability of Argos data distribution tools,
- on the data delivery time for sample platforms,
- on Argos location delivery time for sample platforms,
- and on the percentage of data available in less than one hour.

In 2011, the average availability is **99,68%**. This indicator corresponds to the percentage of real time datasets processed in less than 10 minutes (Between Pre-Processing component PTR and PAS component in charge of inserting data in database for user requesting). This number does not include periods when French site was in backup mode on the US site.
In this context, decreasing availability could be observed in case of a module crashes and the time it takes to restart it. During these periods, other datasets are queued and are waiting to be processed increasing the time they passed between PTR and PAS modules.



	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	99.82%	99.92%	99.83%	99.94%	99.92%	99.92%	99.84%	99.30%	99.94%	99.27%	98.95%	99.48%

Figure 34 : Argos Processing SLA follow up in 2011

3.5.4. Number of Argos messages processed

The average number of messages received every day by the Lanham or Toulouse Centers in 2011 has been multiplied by 1.5 in 4 years.

Per day	2008	2009	2010	2011
Messages received	1 969 658	2 273 233	2 871 885	2 904 476

Figure 35 : Number of Argos messages received since 2008

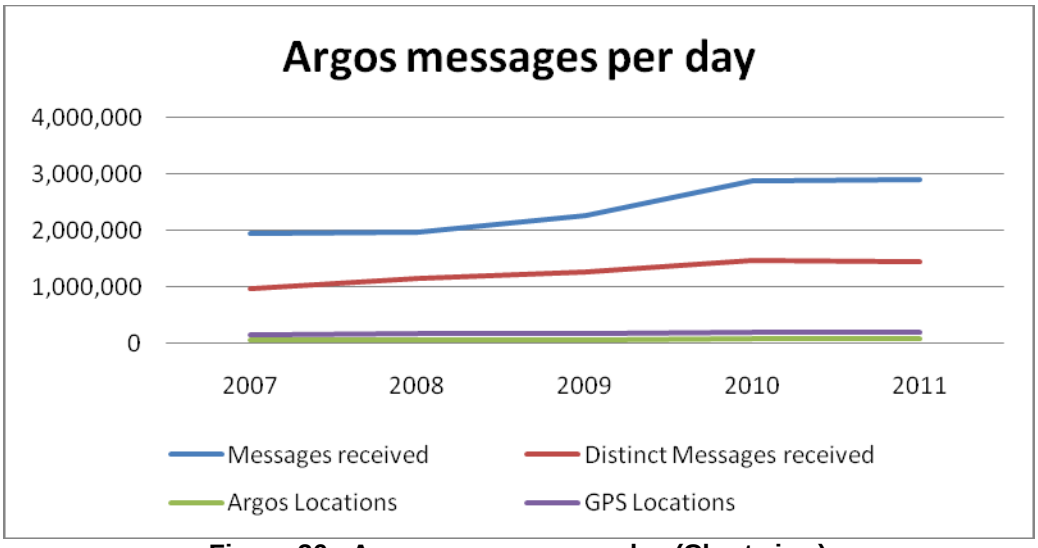


Figure 36 : Argos messages per day (Chart view)

3.5.5. Argos location and data collection latencies

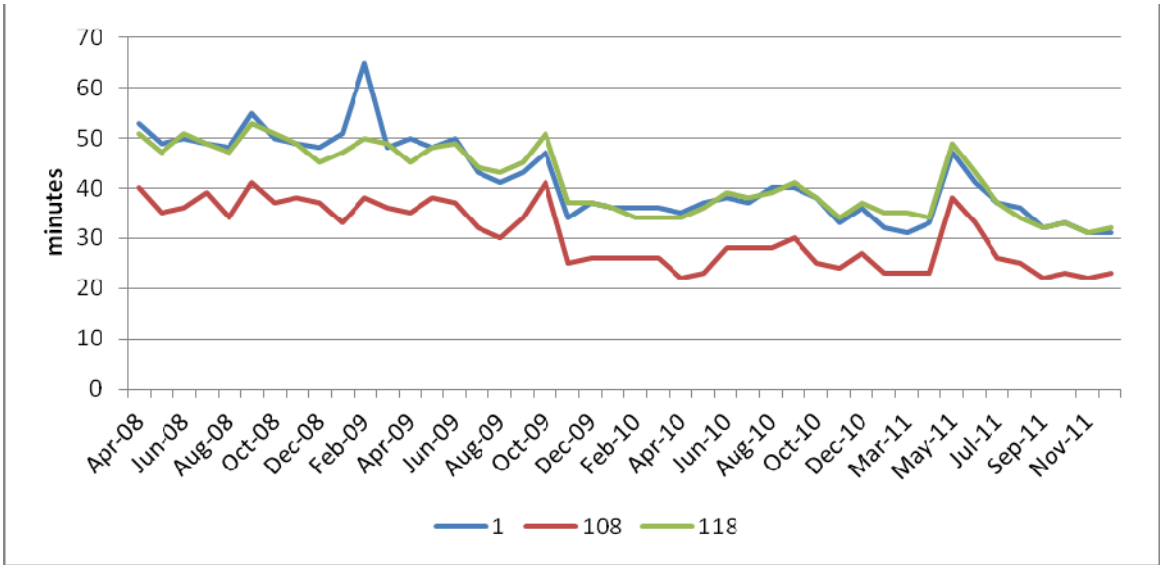


Figure 37 : Average latency on Argos data collection for sample platforms *

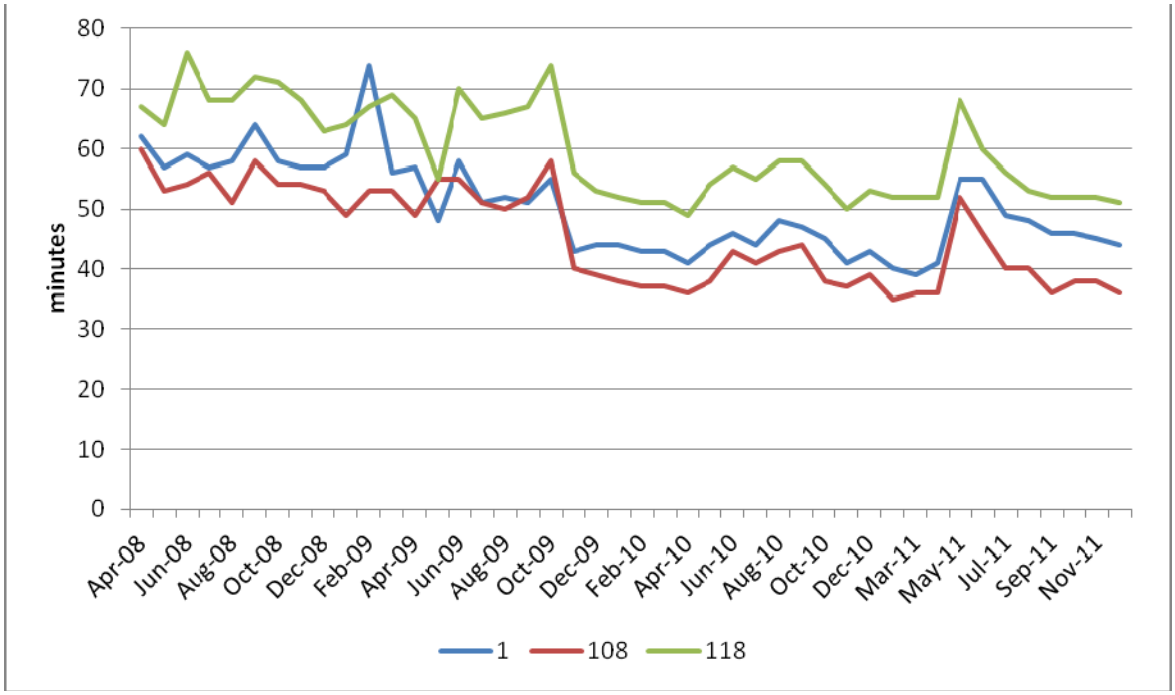


Figure 38 : Average latency on Argos locations for sample platforms*

* Sample platforms are timing and orbit determination platforms. Every hour, the last data collection and location times for these three platforms are controlled. Collection and location latency on ID 108 (Fairbanks) is under latency of Ids 1(Toulouse) and 118 (Wallops Island) due to the transmitter location and the higher number of passes over this transmitter.

We can see major improvement on data and Argos location delivery time since 2008 due to a better real-time antennas network, a sixth operational Argos satellite in 2009 (NOAA-19) and enhancements of the Argos data processing performance. Increase during May 2011 is due to processing issue on 07 May (Database insertion driver issue).

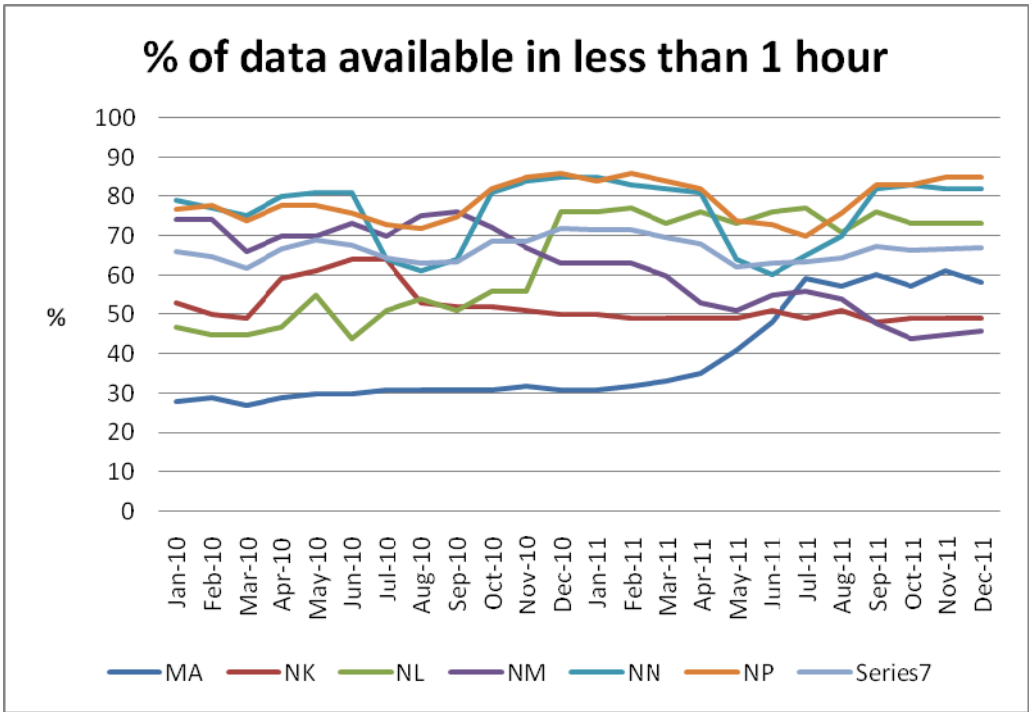


Figure 39 : Data available in 1 hour

Percentage of data available in less than one hour means which percentage of raw data has been processed one hour after its recording on board of the Argos Instrument.

The MA increase corresponds to the addition of the McMurdo antenna in the network. We remind that this Antarctic antenna receives METOP-A half orbits.

NOAA N (Secondary) and P (Primary) as well as NOAA L (Secondary) get better coverage than NOAA K (Secondary) and NOAA M (Backup)

3.6. System improvements

As every year, several software improvements were implemented in 2011 in order to fit with the user requirements. During this year 161 anomaly forms have been processed as 162 system change proposals.

3.6.1. Location processing improvements

Some improvements have been made on location processing. These improvements have concerned:

- Improvement of controls on locations with 1 message
- Possibility (or not) to compute and / or to distribute/filter locations with 1 message
- Addition of controls on declared mean speeds used in location quality controls
- Opening of a new service for reprocessing Argos locations

3.6.2. Preparation of METOP-B and SARAL launches

Some amendments and improvements have been made on the following modules for preparing METOP-B and SARAL launches:

- Acquisition (ACQ) and preprocessing (PTR) to be able to process the new telemetry formats
- Preprocessing of housekeeping telemetry (PHK) to be able to decode housekeeping of these 2 new satellites
- Monitoring of satellite housekeeping telemetry (MST) to be able to monitor housekeeping of these 2 new satellites
- Downlink Message Management Center (DMMC) to integrate these 2 new satellites
- System monitoring tools (SST) to adapt these tools for the 2 new satellites
- Orbitography (ORB) to be able to process the orbitography of theses 2 new satellites
- Datation (DAT) to integrate these 2 new satellites

3.6.3. Preparation of the BUFR migration V3 to V4

We have improved our BUFR coding module to be compliant with this new format.

Acceptance tests for these upgrades have been made successfully by Météo-France and the National Weather Service.

The GTS BUFR version will be upgraded to V4 on September 18, 2012.

3.6.4. Downlink message management system

The creation of a command to send to a PMT was only possible through Argosweb interface. Now it is possible to create and / or to monitor these commands by emails via the Downlink Message Management System (DMMS).

3.6.5. Various improvements

Many other improvements have been during this year to improve the Argos service:

- Modify CTA processing to integrate the decoding of Ifremer-Arvor Argos-3 Argo float
- Improve operation tools to improve CTA reliability
- Improve CTA processing to improve processing delays and redundancy
- BUFR : switch to tables version 15
- Integration of error ellipse display in kml files generated through ArgosWeb and Argos web services.

3.6.6. Others 2012 planned improvements

In the second half of the year 2012 will see new improvements. Among the ones which are already planned, we can list:

- Development of the new Argos orbitography to not use OpenVMS anymore
- Development of new tools to monitor station network and delays
- Migration of Argos operating system (OS) which are obsolete
- Study for migration from Oracle 10g to Oracle 11g
- Study to migration screens developed with Forms to java screens

4. DBCP requirements

4.1. Real-Time Antennas and Data Timeliness

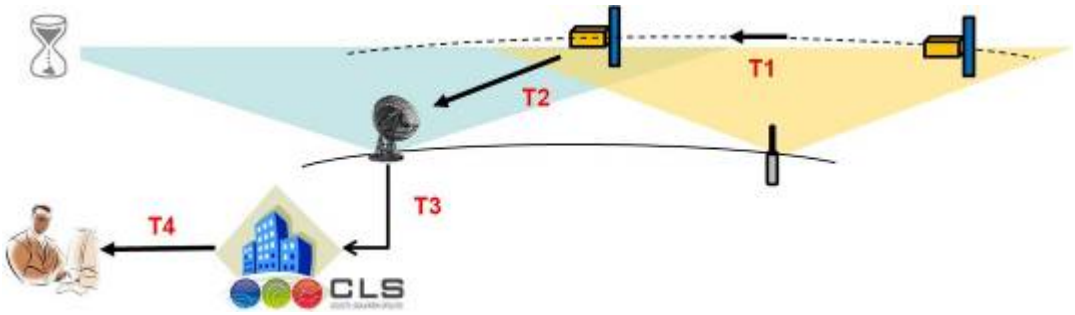
The CLS Real Time Antenna Upgrade Project (also called HRPT-A4 Project) is summarized in Section 2.3.3.1 of this report. The current upgrade/installation schedule is provided here for reference:

UPGRADE SCHEDULE

- **UPGRADE 3 CLS STATIONS:**
  - LIMA, HATOYAMA , LANNION — Completed
- **UPGRADE 9 'NON-CLS' EXISTING STATIONS:**
  - [La REUNION — Completed
  - MONTERY, MIAMI — end 2012 ?
  - BALI — April 2012 / SARAL update 2012/10
  - ~~RESOLUTE BAY~~ Closed–poss. alternates: Inuvik, Kiruna, Kangerlussuag — TBD
  - OMAN — 2012/10
  - ATHENS — 2012/9
  - LAS PALMAS — 2012/9
  - PAPEETE — 2013
- **PROCURE AND INSTALL 2 NEW STATIONS:**
  - [CAPETOWN] — Completed
  - [ASCENSION ISLAND] — Early 2013?
- **UPGRADE 3 EXISTING AUS/NZ STATIONS:**
  - [DAVIS, CAPE FERGUSON, WELLINGTON] — End 2012

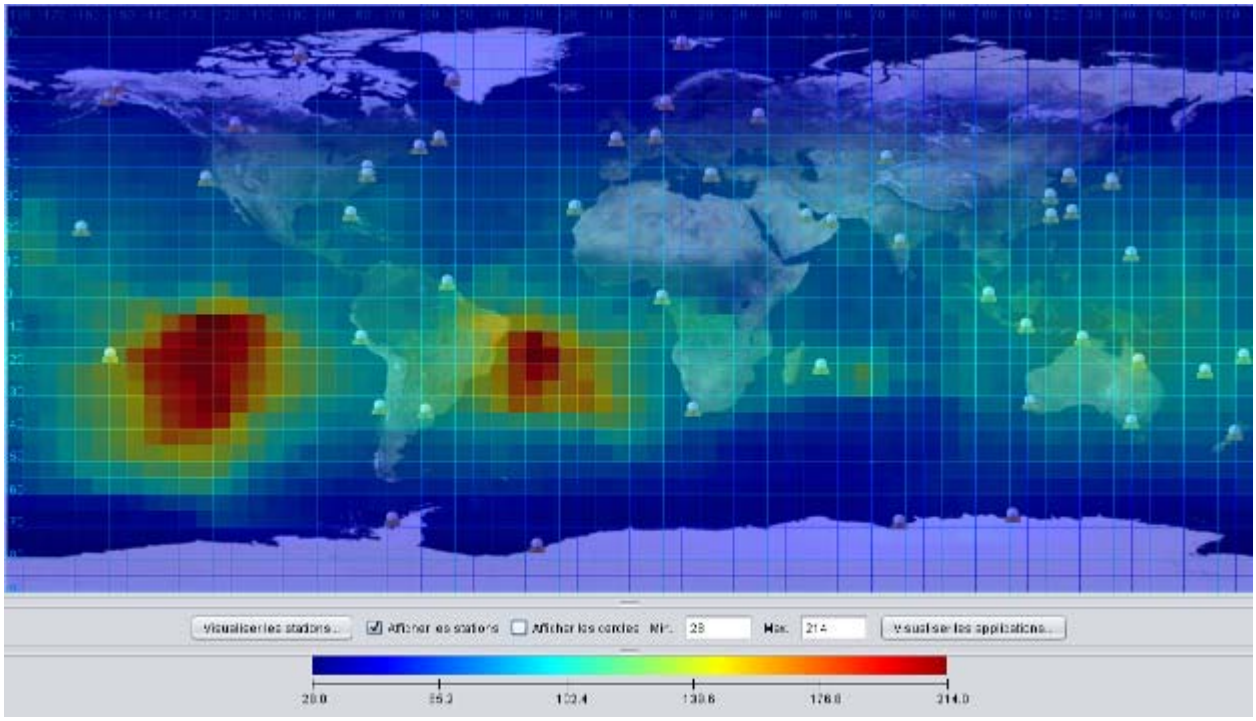
The improvements anticipated from this project are represented by improvements in the "Mean Data Disposal Time" of observations from the ocean platforms. In short, the Argos Mean Data Disposal time is defined as the elapsed time between when an observation is collected by an Argos platform and is available to the user and is composed of four typical delays:

- T1 = the revisit time (time for a platform to be seen by one of the Argos satellite),
- T2 = the time for the data to be downloaded to a ground station (it's nearly instantaneous for an HRPT station or it's the time for the satellite to reach a global station),
- T3 = the data retrieval time (average time for the data to be transmitted to the Argos Data Processing Centers),
- T4 = the processing time (requisite time for the data to be processed in the Argos Data Processing Center and to be available for the users).

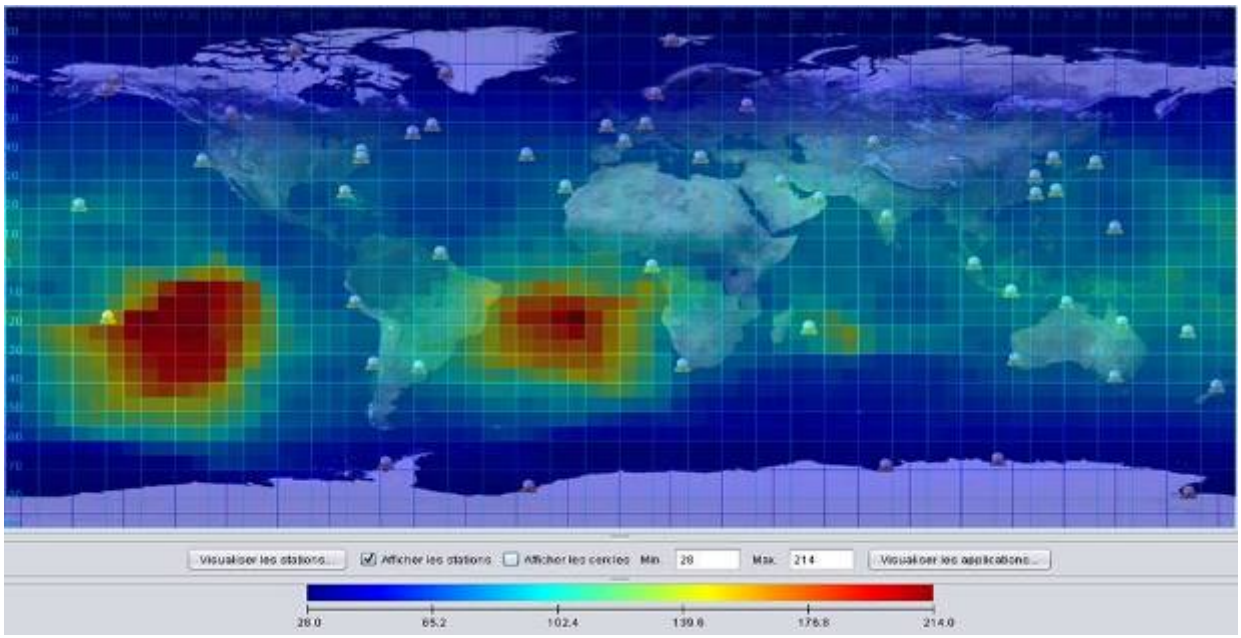


By using a simulation tool developed by CLS global maps of the mean data disposal times can be generated using existing and planned specifications for antenna locations and coverage.

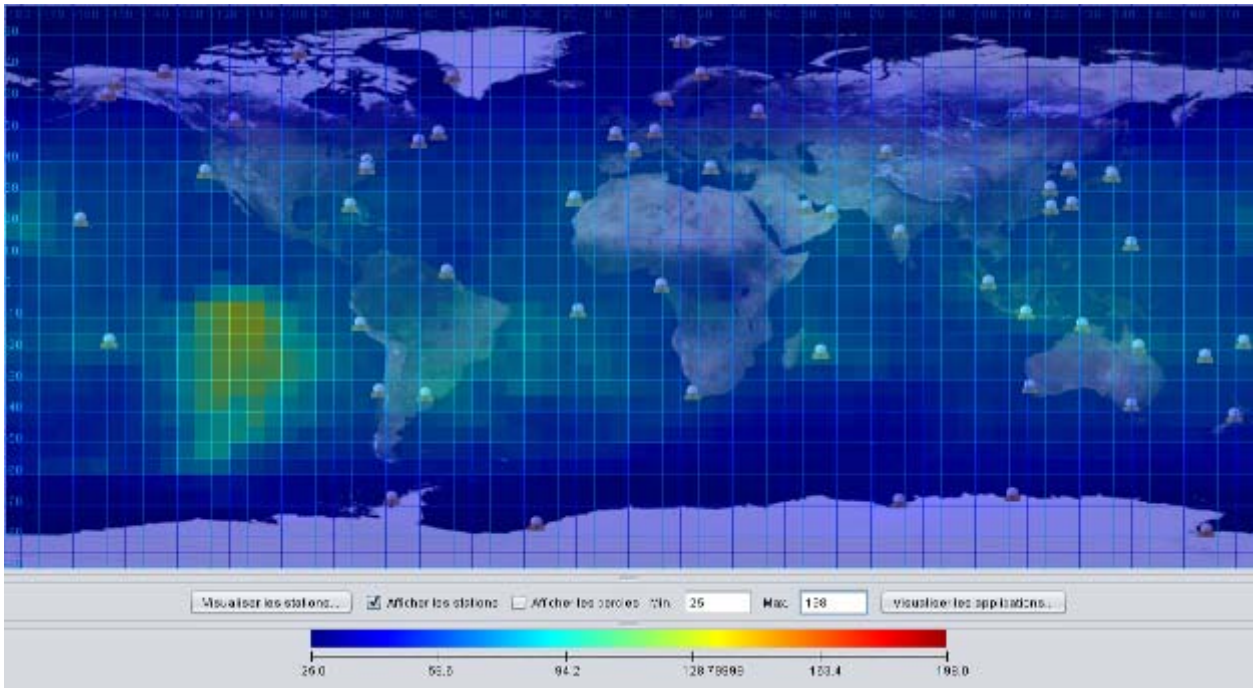
The maps below illustrate the global mean data disposal times using the antenna configuration that was in operation in May 2011, the current situation in May 2012, and the projected disposal times at the end of the antenna upgrade project. Because the operational status of the real-time antenna network is dynamic there will always be some differences in mean disposal times in certain regions from one map to the next. These differences can be both increases and decreases. For example, the map for May of 2012 shows an increase in disposal time for the eastern south Atlantic compared with the map for May 2011. This is because the antenna in Gabon has not been operating for almost a year.



Argos Data Mean Disposal Time in May 2011 (in minutes)



Argos Data Mean Disposal Time in May 2012 (in minutes)



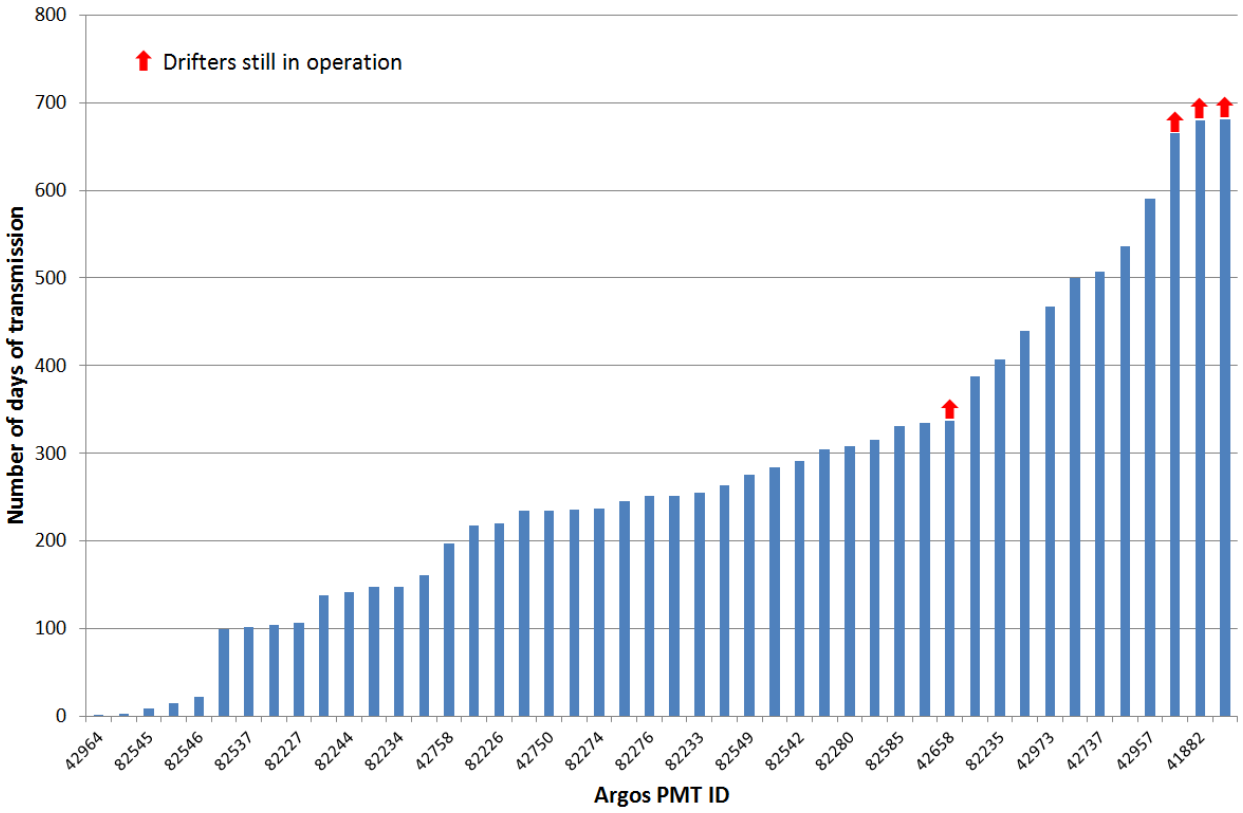
Argos Data Mean Disposal Time at End of Upgrade Project (in minutes – note different scale from the May 2011 figure))

4.2. Argos 3 Pilot Project

The DBCP agreed at DBCP-28 in Geneva that the Argos 3 Pilot Project provided a positive and constructive technology transfer and that the Pilot Project could now come to an end. The Panel also requested Dr. Luca Centurioni to summarize the conclusions of the Pilot Project and to

publish them as a DBCP Technical Document. This document is in process and CLS is assisting Dr. Centurioni as needed.

For information, below is a chart showing the lifetimes of the drifters that were deployed in the Argos 3 Pilot Project. Four of them are still in operation: **#42658: from Pacific Gyre (336 days) and three from Marlin-Yug (665, 679, & 680 days).**



Argos-3 drifters lifetime in number of days of transmission

4.3. Argos Data Buoy Financial Incentive Program

In late 2011 CLS introduced a program to provide financial incentives to both the buoy users and the buoy manufacturers. Under this program the price of an Argos PMT to commercial buoy manufacturers will remain at catalog prices. However, for each PMT purchased by the manufacturers, in quantities greater than 50, a cash-back incentive of $100US will be provided. Additionally, a one-time program discount of $100US will be provided to the user for each buoy, moored or drifting, that has an Argos PMT in it and is deployed in their Argos program in 2012. This “incentive” will be triggered upon activation of the PMT ID in the users program. It will be applied as a one-time deduction per buoy on the user’s program service. The Global Drifter Program decided to take advantage of this incentive program and CLS is currently providing technical assistance to several buoy operators and manufacturers as they implement the Argos 3 technology in their drifting buoys.

4.4. Blind Orbit Support (the text below is also included in Section 3.3.2 of Annex 7)

Text prepared by Scott Rogerson (NOAA Argos Program Manager) excerpted from the OPSCOM 46 Report:

"Blind orbits" from Svalbard have been implemented operationally! However, all secondary spacecraft do conflict with NPOESS Preparatory Program for 6-10 days at a time. Schedulers determine which spacecraft to schedule at NOAA Svalbard for a given period, selecting up to 10-20 double Global Area Coverage dumps (5-10 passes) for a given week. Due to conflicts, some weeks will have less than 10 passes, and only one spacecraft is selected for any given week.

In addition, it should be noted that NOAA Svalbard is a Global Area Coverage data retrieval site only. Still, this is progress – and is hopefully resulting in some improvements to data latency.

4.5. One-Stop Shopping

The DBCP Chair, Mr. Al Wallace, reported at JTA 31 that "the DBCP wished to explore opportunities for 'one stop shopping' for satellite data transmission systems, and welcomed the participation of CLS in studying this proposal. In response to this CLS has prepared with David Meldrum a position paper on the 'one stop shopping concept' that will be distributed to the DBCP community for their comments.

ANNEX IX

REVIEW OF THE STRUCTURE OF THE TARIFF AGREEMENT AND RELATED MATTERS

(Submitted by CLS)

9. Report and recommendations from the Operation Committee

9.1. Report on JTA XXXI Meeting

For the JTA Chairperson's report, see Annex V

9.2. Status of U.S. Programs

Mr. Eric Locklear thanked the OPSCOM chairs for the opportunity to present a status of the U.S. programs as the U.S. Representative of Country (ROC). He started off by outlining his presentation, which is focused on 2 areas, the current and future situation. He characterized the current situation as "strained" and the future as one affected by the WMO Forum of Users of Satellite Data Telecommunications Systems (SATCOM).

Mr. Locklear presented a snap shot of the U.S. usage from 2008 – 2012. He estimated that the 2012 usage will decline by a net of 191 ptt years with the principal reduction because of the U.S. Drifting Buoy Program. He recalled what a drifter actually is, and presented a graph of the # of drifters deployed over time and pointed out the dramatic decline starting in 2011. He discussed the goal of the program to have an array of 1,250 annual average with a 5 degree by 5 degree coverage of the oceans. The current array is 988. He discussed the causes of the decline and the efforts to fix the problems. Of particular concern is the power consumption of the PMT and the CLS conclusion that it is a manufacturing issue, not a telecommunications issue. He went on to discuss the second cause of the strain is the deep budget cut the U.S. program suffered in 2012 and the likely decline in 2013.

Next Mr. Locklear recalled for the OPSCOM the status of the unused IDs and how that within 3 years, the U.S. has returned 991.

In conclusion, Mr. Locklear expects the GDP program to build its array back to 1,250. He also said that the ARGOS system is important to the U.S., and that while cost is often a big concern, it is not the only factor. Consistency in satellite coverage and what the users can expect from the system and what the OPSCOM can expect from the users are also important. This is critical to the U.S. users to aide their ability to plan program development and implementation.

9.3. Financial Status of Agent

Calculation of ARGOS basic costs to be attributed to the JTA

Fabienne Jacq presented the meeting with the CLS methodology to derive the Argos basic costs to be attributed to the JTA.
While the total CLS costs have increased by 17.7% due to a significant progress of CLS total incomes last year, the ARGOS costs have been carefully mastered over the past year anticipating potential risks and reducing the expenses in advance in case the 2011 usage might not be at the required level to cover the costs, due to oceanography current technical issues.

It showed that the total Argos costs have been reduced by 7.6% for a total amount of 18 401 493 Euros. A significant effort (21,4 % decrease) has been made on salaries and related costs optimizing man power on added value ARGOS services. Operating costs have been also reduced by 10% mainly in optimising the use of operational infrastructures between CLS America and CLS. The reduction of expenses have been a 12,9% decrease on CLSA side and 4,5% on CLS side despite the fact that the overall ARGOS infrastructure has been upgraded for the final implementation of ARGOS3 and despite the renewal of the antennas network.

When analysing the ARGOS basic costs (used to calculate portion of the costs to be attributed to the JTA), we can see that basic costs have been also reduced by 3.6%: 4.6% effort on manpower, 3% on operating costs.

Then comparing incomes versus costs, we can see that JTA incomes have decreased to 7.43 M€ compared to 7.91 M€ in 2010, due to a second tariff reduction decided end 2010 for 2011. In parallel, optimisation of costs that have been anticipated allows ARGOS to keep at 85%, the ratio of costs versus incomes, with a reasonable provision for risks.

The calculation of the portion of the costs to be allocated to JTA has been calculated based on the number of JTA active platforms: 12694 active JTA PTTs over 13 556 overall active PTTs.
Based on the assumption that ARGOS basic costs attributed to science is 7 349 K€, the JTA related costs have been calculated to 6 882 K€.

Recall of financial status in 31th JTA meeting

At the 31th JTA meeting, the following was agreed:

> In 2010, CLS recorded revenues from JTA participating countries at a level of 7.9 M€. This was exceeded revenues that were expected to be lower due to the applied tariffs reduction by 9%. This is due to 3 major events:
>
> - The wildlife applications, supposed to increase by 5% in the plan, increased by more than 10% which was really promising.
> - The oceanography applications (especially floats and large program) were supposed to be slowed down because of OCO Plans postponed by 2 years. This had not occurred and the OCO plan remained nominal with deployments of floats already in store.
> - Lastly, the JTA decided to keep a dissuasive fee for unused ID that called for 300 k€ revenues.
>
> So in 2010, the JTA had an excess of 0.75 M€ to add to the excess carried forward from the previous year, bringing the cumulative balance to 2.41 M€.
>
> The JTA projection for the year 2011 was estimated from figures for seven months of usage, extrapolated until the end of the year, taking into account the following observations:
>
> (i) Wildlife consumption currently above expectations by 14%,
> (ii) Although the US large buoy program showed an unexpected increase of 10% in 2010 due to additional deployments from inventory, a decrease of 20% currently observed;
> (iii) The number of fixed stations has decreased by 13%.
>
> Overall, the JTA income from Argos basic costs was expected to be 7.17 M€, remaining positive by 0.10 M€ compared to the 5-Year Plan.
> Additional income attributable to the JTA was expected to be 0.19 M€, in part due to the continuation of the Unused ID fee.
>
> In conclusion, despite a significant risk, the expected financial situation for 2011 was considered safe, and the 5-Year Plan to be followed for 2012.

Confirmation of 2011 tariffs at 31th JTA meeting

At the date of the meeting, we believed the JTA in 2011 will likely be able to pay its portion of the cost.
The 31th JTA Meeting adopted the Terms and Conditions for the 2012 Agreement materially identical to the 2011 Agreement.

The 2012 tariffs were implemented:

- 0,5% budget was allocated to the JTA expenses
- The 2012 tariffs to be implemented are in agreement with the five year plan

Category	A (€)	B (€)
Buoys and others	15	5
Fixed Stations	15	3
Animals*	15	7.5
Subsurface Floats	15	7.5

"DISCOUNT SCHEME FOR LARGE PROGRAMMES", the rates are as follows:

Number of platform-years	PTT-day unit (B) Buoys & others	PTT-day unit (B) Floats
600	4	6
900	3	4.5
1200	2	3

2011 JTA financial close of accounts

In 2011, CLS recorded revenues from JTA participating countries at a level of 7,44 M€, 7,11 M€ from basic services and 0,33 M€ from additional revenues (unused ID fees). This was slightly above the projected revenues in the initial 5Y plan despite tariffs reduction applied in 2010 and 2011.
So in 2011, the JTA has an excess of 0,57 MEuros to add up to the excess carried forward from the previous years to bring the cumulative balance to 2.98 M€.

9.4. The Five Year Plan for 2010-2014

In euro	2010 actual	2011 actual	2012 original	2013	2014
JTA Costs (M€)					
cost increase %	5,0%	0,0%	4,4%	2,0%	2,0%
Actual & Forecast	7,15	6,88	7,81	7,98	8,15
Agreed 5YP JTA Cost	***7,10***	***7,48***	***7,81***	***7,98***	***8,15***
JTA Income	**2010**	**2011**	**2012**	**2013**	**2014**
Activity: Actual and *Forecast*					
Growth Active PTTs (%)	*5,7%*	*0%*	*7%*	*7%*	*7%*
Growth PTT-yrs (%)	*6,9%*	*-7,4%*	*4%*	*4%*	*2%*
Active Ptfs (Total)	*12 398*	*12 418*	*13 465*	*14 435*	*15 494*
PTT-yrs (Total)	*3 296*	*3 050*	*3 135*	*3 261*	*3 322*
Active PTTs (w/o large program)	8 886	9 234	9 995	10 793	11 667
PTT-yrs (Buoys & Others)	*454*	*382*	*489*	*489*	*489*
PTT-yrs (floats w/o large pgm)	*86*	*92*	*96*	*99*	*101*
PTT-yrs (Animal)	*916*	*973*	*895*	*940*	*987*
PTT-yrs (Fixed stations)	*140*	*129*	*152*	*152*	*152*
Active PTTs (large pgm)	*3 512*	*3 184*	*3 470*	*3 641*	*3 827*
PTT-yrs (large pgm) Buoys & Others	*1 572*	*1 341*	*1 361*	*1 429*	*1 429*
PTT-yrs (large pgm) Floats	*128*	*133*	*142*	*153*	*164*
Basic Service Income					
Monthly fee (€)	15,0	15,0	15,0	15,0	15,0
Daily fee (€) buoys and others	5,50	5,00	5,00	5,00	5,00
Daily fee (€) floats	8,25	7,50	7,50	7,50	7,50
Daily fee (€) animals	8,25	7,50	7,50	7,50	7,50
Daily fee (€) fixed stations	3,00	3,00	3,00	3,00	3,00
Monthly fee (€) OCO	15	15	15	15	15
Daily fee (€) OCO buoys	2,00	2,00	2,00	2,00	2,00
Daily fee (€) OCO floats	3,00	3,00	3,00	3,00	3,00
Month unit income (M€)	1,60	1,66	1,80	1,94	2,10
Day unit income (M€)	4,08	3,75	3,77	3,90	4,04
Large pgm Day Unit Income (M€)	1,92	1,70	1,77	1,87	1,91
Total basic service expected (M€)	**7,60**	**7,11**	**7,34**	**7,72**	**8,05**
Additional revenue	**0,301**	**0,335**	**0,194**	**0,194**	**0,194**
Year Balance	0,75	0,57	-0,27	-0,07	0,09
Carried forward from previous year	1,66	2,41	2,14	1,86	1,79
Cumulated Balance	2,41	2,98	1,86	1,79	1,89

10. Financial Statement

10.1. Annual Expenses (in kEuros) for Year 2011

		Personnel	Costs	Amortization	Total
Management		***406***	***481***	***0***	***887***
Operational costs					
	Quality	67	10	0	76
	Studies & development	730	102	341	1 173
	Processing center	1 487	197	238	1 922
	Client support/customer servic	1 009	347	0	1 356
Sub-total Operational		***3 293***	***655***	***579***	***4 527***
Marketing costs					
	Promotion Communication	1 388	1 151	23	2 561
	Travels, hosting	0	378	0	378
Sub-Total Marketing		***1 388***	***1 529***	***23***	***2 940***
Administrative costs					
	Administration, finance, audit	1 354	458	5	1 817
	Costs for presence	54	1 006	88	1 148
Sub-Total Administrative		***1 408***	***1 464***	***93***	***2 966***
Taxes, bad debts provision & financial costs					
	Taxes	0	206	0	206
	Financial costs	0	249	0	249
	Provisons	0	212	0	212
Sub-Total		***0***	***666***	***0***	***666***
Total		**6 495**	**4 796**	**695**	**11 986**

Detail on 2011 Expenses in k€

10.2. Details of Amortization Items

	Amortization	Description
Operational costs		
Quality	0	
Studies & development	341	*GTS, SSA3, Argos 2001*
Processing center	238	*Maintenance processing center (hardware and software)*
Sub-total	**579**	
Marketing costs		
Promotion	5	*Exhibit, International meetings, User Conference Costs*
Communication	18	*Exhibit, documentation Costs*
Sub-total	**23**	
Administrative costs		
Management control	5	*Accounting system, Argos registred mark*
Costs for presence	88	*Office furniture, safety, general equipment*
Sub-total	**93**	
Total	**695**	

Detail of Amortization Items in k€

10.3. Annual Incomes (in millions of Euros)

Incomes (M€)	**2010**	**2011**
JTA	7,90	7,44
Non JTA	6,08	6,06
Total	**13,99**	**13,50**

JTA and non JTA 2010, 2011 Incomes

10.4. Details of JTA and non JTA Incomes and Expenses (in million Euros)

	2010	2011	
Incomes			
JTA CLS	3,56	3,28	
JTA CLS America	4,35	4,16	
	7,90	**7,44**	**-5,88%**
Non JTA CLS	5,54	5,46	
Non JTA CLS America	0,54	0,60	
	6,08	**6,06**	
Total basic Argos incomes	**13,99**	**13,50**	**-3,48%**
Expenses			
Total basic Argos expenses	**12,44**	**11,99**	**-3,65%**

Detail of JTA and non JTA Incomes and Expenses

10.5. JTA Annual Balance (in millions of Euros)

	2010	2011
JTA Operating Costs	7,15	6,88
JTA Income	7,90	7,44
Difference	0,75	0,57
Cumulated Difference	2,41	2,98

The difference remaining from 2009 was 1.66 M€

For year 2011, the costs to be attributed to the JTA, calculated using the methodology developed by CLS since 3 years now, is 6.88 M€.

11. Other Issues Relating to Argos Funding

11.1. Management of ID numbers

The management of ID numbers is an essential part of all communication systems. Applying an unused fee to ID numbers that have not transmitted in 24 months has been the management method of choice in recent years for the JTA.

At the 4th JTA EC meeting held from 24-27 April 2011, CLS presented an update of Argos 20 bit un-used ID project: 602 programs with 7,187 un-used 20 bit ID's were contacted requesting the return of the unused id's.
The results far exceeded the expectations by the return of **1050** 20 bit ID's.

JTA EC proposal was to continue the recovery rate at the same pace for the near term and to continue the existing JTA unused ID fee for at least two years to encourage the management of IDs.

Argos Useroffices keep reminding the Users to give back their Unused IDs for recycling. For 2011 a total of **9665** additional unused IDs were recycled (**953** 20 bits IDs and **8712** 28 bits IDs).

Argos-3 (Downlink messaging and high data rate channel) tariff

It was decided that the Argos-3 pricing should be defined after gaining experience on the actual usage during the DBCP Argos-3 pilot project. Despite the end of the pilot project, the decision for Argos-3 pricing structure has been deferred until an adequate number of Argos Users take advantage of Argos 3 capabilities.

ANNEX X

TERMS AND CONDITIONS OF THE GLOBAL AGREEMENT FOR 2013

(As agreed at JTA-32, October 2012)

JTA-32 record of decisions, Annex X

ANNEX X

TERMS AND CONDITIONS OF THE GLOBAL AGREEMENT FOR 2013
(As agreed at JTA-32, October 2012)

These Terms and Conditions outline costs for and services to be provided by Collecte Localisation Satellites (affiliate of CNES).

TIME PERIOD OF COVERAGE:

These Terms and Conditions are valid for the time beginning on **January 1 and ending on December 31, 2013.**

DEFINITIONS

"Platform-year" is defined as 365 days of operation of an acceptable Platform Transmitter Terminal (PTT).

"ROC" is the Representative of Country representing a country or a group of countries.

"RO" is the Responsible Organization representing an agreed set of Argos User programmes for the purposes of their collective participation in the JTA.

The "Agreement" includes all those participating countries which agree to the Terms and Conditions contained herein and are listed in Annex A to this Agreement.

The "Large Programmes" are defined as those programmes that are funded and managed by a single organisation.

BASIC SERVICES PROVIDED BY CLS

CLS will perform the following categories of services associated with PTTs of the authorized users:

(1) Location determination or both location determination and data collection for PTTs with a repetition period equal to or less than 120 seconds, application of calibration curves to the data when appropriate, access to the data and distribution of the data according to the paragraph below entitled "Distribution of processed data" and archiving for three months;

(2) Data collection for (fixed station) PTTs with a repetition period equal to or greater than 200 seconds, application of calibration curves to the data when appropriate, access to the data and the distribution of the data according to the paragraph below entitled "Distribution of processed data" and archiving for three months;

(3) Location service plus / auxiliary location;

(4) On-line data access;

(5) GTS Processing and Distribution.

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JTA-32 record of decisions, Annex X

USER BASIC SERVICE CHARGES

BASIC SERVICE

Basic service charges for authorized users under this Agreement are in accordance with the payment on consumption.

They are calculated according to the following formula:

Price per month, per platform = **A** + **B** x **n**

where:

- **A** represents the monthly charge per active PTT (an active PTT is one that transmits at least once during a given calendar month);
- **B** represents the PTT-day unit rate;
- **n** is the number of day units. The day is divided into 4 time slots (0 - 6; 6 - 12; 12 - 18; 18 – 24 UTC). Any PTT transmission collected into a given time slot produces a 0.25 day unit.

A and B coefficients for all platform categories are provided in table below:

Category	A (€)	B (€)
Buoys and others	15	5
Fixed Stations	15	3
Animals*	15	7.5
Subsurface Floats	15	7.5

Buoys and others – PTTs in this category are drifting and moored buoys and, more generally, all those PTTs which do not belong to categories below.

Fixed Stations – PTTs in this category are land fixed PTTs.

Animals – PTTs in this category are those that are used to track animals.
*Charges for platforms in this category will be capped at n=12 Day Units per month.

Floats – PTTs in this category are subsurface floats such as the Argo programme floats.

DISCOUNT SCHEME FOR LARGE PROGRAMMES

Number of platform-years	PTT–day unit (B) Buoys & others	PTT-day unit (B) Floats
600	4	6
900	3	4.5
1200	2	3

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UNUSED IDs

PTTs which have not transmitted during a period of 24 months will be charged 5 € per month from the 25th month until the ID numbers are returned to CLS. This amount of unit charge will be applied until the ID number is formally returned to CLS by the User. The purpose of this fee is to recover IDs no longer required.

SILENT SERVICE

IDs remaining silent but still being used in an agreed programme will be considered by CLS on a case-by-case basis.

INACTIVE STATUS

This status is intended for those platforms that continue to transmit but for which the location or data collection are of no further use to the user or the community. The following conditions must be met to qualify:

(1) Inactive Status will apply if, and only if, Inactive Status is declared by the signatory of the System Use Agreement for platforms which continue to transmit beyond the programme termination. In that case, further charges will no longer be levied.

(2) The platforms must have operated in Basic Service for a minimum of 2 months.

(3) Data or location information cannot be retrieved nor can the platform revert to any category of service.

(4) It is intended that Location and/or data collection may not be computed using a Local User Terminal or other direct readout facility.

(5) ID numbers of such platforms are actually returned to CLS who will recycle them after the platform stops transmitting.

ADDITIONAL SERVICES PROVIDED BY CLS AND NOT INCLUDED IN BASIC SERVICES

Additional services such as ArgosDirect (the former ADS, Databank) service, ArgosMonitor, Moored Buoy monitoring and others are provided by CLS and charged according to the yearly catalogue of prices.

DESIGNATED ROC / RO

.....
.....
.....
.....

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JTA-32 record of decisions, Annex X

DISTRIBUTION OF PROCESSED DATA

(1) These Terms and Conditions do not cover the costs of special additional services made to provide the processed data back to the users. These must be made by the user directly with CLS.

(2) However, it is understood that CLS will continue to provide data from PTTs via the World Weather Watch Global Telecommunication System (WWW/GTS) of the World Meteorological Organization (WMO) according to procedures established by WMO.

BILLING AND PAYMENT

CLS will send invoices on a two monthly basis (CLS America on a monthly basis) based on consumption to the organizations covered by the country agreement.

GENERAL CONDITIONS OF AGREEMENT

(1) The designated ROC / RO and CLS jointly agree the list of users included in the Agreement and will update this list as appropriate. To assist in this process CLS will notify the ROC/RO of any new programmes that might qualify for this agreement.

(2) For additional services not provided within this Agreement, individual users under this Agreement must negotiate directly with CLS. Payments associated with these negotiations must be settled on receipt of the invoice. If these conditions are not met, CLS may stop the distribution of the user's processed data.

(3) Authorized users are defined as those implementing PTTs which are government funded. However, other users of agencies or organizations which are considered "non-profit" may be authorized. PTTs funded partly or entirely by private companies or organizations cannot be included in the conditions of this Agreement, even if data are supplied free of charge to national or international organizations. If these rules are not followed, CLS may stop the distribution of this user's data. Should this situation occur, CLS will immediately notify the ROC/RO. Nevertheless, active PTTs received by the system will be counted in the platform-year total and data stored.

(4) All authorized users must sign a purchase order for each programme, either for the current year or for the duration of the programme, in order to clearly specify the services they request, whether these services are provided under this Agreement or not.

(5) VAT will be charged to EU Members in accordance with EU rules.

Signed on behalf of the participating countries by the JTA Chairperson, Mr Frank GROOTERS

Signed by CLS Chief Executive Officer, Mr Christophe VASSAL

CLS

ANNEX XI

JTA OPERATING PRINCIPLES

(as agreed at the JTA-32 Meeting)

Table of contents

1. Introduction

The JTA provides for an international mechanism to provide for cost-effective location and data processing of data collected through the Argos system. The JTA is functioning through stakeholders whose roles are mainly to negotiate the Argos service level and tariff, and ensure appropriate coordination amongst Argos users in order to represent their collective interests with regard to Argos tariff and requirements. Stakeholders include:

i. Representatives of Country (ROCs) representing a country or a group of countries from responsible government organizations using Argos;
ii. Responsible Organizations (ROs) representing an agreed set of Argos user programmes;
iii. Representatives of Users Groups (RUGs);
iv. Representatives of the Argos satellite system operator and service provider;
v. Representatives of the Argos Operations Committee (OPSCOM);
vi. Representatives of the WMO and IOC Secretariats.

2. Basic aims and principles of the Argos Joint Tariff Agreement (JTA)

2.1 The basic aims and principles, based on the discussion at the JTA-23 (Angra dos Reis, 2003), was agreed at the JTA-29 (Paris, 2009) as follows:

i. The benefits of JTA participation should be shared equally amongst all participants (Users).
ii. The revenue collected from Users should meet the costs of providing the service.
iii. Developments required by Users should be funded by Users.
iv. Costs of developments not of benefit (or of marginal benefit) and not driven by User requirements should not fall on Users.
v. There should be a clear division between a basic (funded) service and other (e.g. value added) services.
vi. The Tariff structure should be simplified to reduce the number of service categories.
vii. System developments should be fully endorsed by JTA and those affecting Users agreed in advance.

2.2 The Terms of Reference of the Argos Joint Tariff Agreement (JTA) are given in Annex XI-B.

3. The stakeholders' representation

3.1 Representatives of Country (ROCs)

ROCs are representing a country or a group of countries from responsible government organizations using Argos. The role of the ROCs is detailed in Annex XI-A. The Terms of Reference of the ROCs, including mechanism for their nomination are provided in Annex XI-C.

3.2 Responsible Organizations (ROs)

3.2.1 An RO is the Responsible Organization representing an agreed set of Argos User programmes for the purposes of their collective participation in the JTA. The concept of RO can accommodate groups of countries such as E-SURFMAR, as well as large individual programmes as necessary or convenient.

3.2.2 As agreed at JTA-24, the functions of an RO include:

i. preparing consolidated estimates of Argos usage for the annual JTA budget planning and negotiation of tariff Terms and Conditions;

ii. representing the collective interests of the User programmes in respect of the Argos service provision and forward planning

3.2.3 A RO would provide local support for Argos applications, and facilitate the interface between CLS Argos and the User programmes for which the RO is responsible, including:

i. providing support to members of the RO's User group

3.2.4 The Terms of Reference of the ROs are provided in Annex XI-D.

3.3 Representative of a User Group (RUG)

3.3.1 A Representative of a User Group (RUG) is an individual who can fairly represent the overall consensus view of a significant Argos JTA user community. Such communities might reasonably include the operators of data buoys, floats, ice platforms, animal tags, land stations, ship stations and airborne stations, or bodies with agreed international responsibilities for the promotion, sponsorship or validation of any aspect of environmental observation using Argos (e.g. IOC, WMO, WWF). The RUG will work with CLS and the JTA Executive Committee to identify opportunities that might bring the JTA session into closer contact with his/her user group, with a view to establishing within that group the benefits of the JTA process.

3.3.2 The Terms of Reference of a JTA Representative of a User Group (RUG), including mechanism for their nomination are provided in Annex XI-E.

3.4 CLS

3.4.1 CLS is the designated agent of CNES to operate the Argos system ground segment and to promote the use of it. Those Argos basic services are provided at cost to the users under the oversight of the Argos Operation Committee (CNES, NOAA, EUMETSAT).

3.4.2 CLS role with regard to the Argos and the JTA is:

i. to report to the JTA on developments and operations, related to the use and performances of the system;
ii. to report to the JTA on overall costs and recovery of expenditures through service charges; this includes, in particular, the preparation of and the annual assessment of the JTA Five Year Plan (FYP);
iii. to collect requirements from the user community and implement required solutions when possible;
iv. to interface with the participating space agencies to assist in providing system upgrades if requested;
v. to interface with manufacturers to certify their transmitter products and to provide engineering assistance to them to insure their hardware operates correctly and efficiently with the Argos system, thereby increasing and optimizing Argos system usage;
vi. to develop and maintain the ground system and the Global data processing centres;
vii. to operate the Argos ground segment;
viii. to operate the Global processing centres under quality of service agreements and deliver data collected to the user community according to international standard data exchange requirements and protocols;
ix. to perform multiple levels of quality of control on the data;
x. to store all data processed for a duration of 12 months and to make it easily extractable in response to user requests;
xi. to monitor and control the overall performances of the systems so as to guarantee the level of quality and continuity of service;
xii. to promote the use of the Argos system and market new user communities, with the goal of minimizing the cost of using Argos;
xiii. to support users through responsive customer service for any request, claim or declaration of equipment;
xiv. to support the JTA Executive Committee in JTA management and operations;

xv. to support ROCs and ROs as needed especially by facilitating access to and interaction between them and the user communities;
xvi. CLS to present breakdown of JTA income by platform type.
xvii. to ensure web availability of data required by ROC's

3.5 The Argos Operations Committee (OPSCOM)

3.5.1 The Argos Operations Committee (OPSCOM) was established by the Memorandum of Understanding (MoU) signed by the National Oceanic and Atmospheric Administration (NOAA) of the United States of America, and the Centre National d'Etudes Spatiales (CNES) of France, who affirmed their desire to conduct a space applications project of mutual interest for peaceful purposes. The MoU was intended to govern the cooperation between NOAA and CNES for the implementation and the use of the Argos Data Collection and Platform Location System (Argos Data Collection System).

3.5.2 Agencies signing the MoU recognize their common interest in promoting maximum use of the Argos system through enhanced service and cost-effective operations. In this context, one of the objectives is to achieve a self-sustaining system with revenues from users fully offsetting operating costs. The Argos Operations Committee is reviewing the implementation and supervising the operations of the Argos Data Collection System. The Committee meets in principle, annually.

3.5.3 The OPSCOM in particular reviews the Argos Data Collection System development and implementation activities and recommends to the Project Managers and the signatories to the MOU appropriate measures for accomplishing the objectives of the project. It reviews and approves applications and formulates criteria for approval of applications received from prospective platform operators for the use of the Argos Data Collection System.

3.5.4 The arrangements, including cost considerations, for the performance of platform allocation, verification of the calibration data, system quality control, conversion of telemetry data into physical parameters, and computations for platform location is delegated by CNES to its agent and operations capacity according to the tariff structure and other guidelines submitted to and approved by the Operations Committee.

3.5.5 Tariffs associated with these functions are collected to offset the operating costs of the Argos Data Processing System. Tariff receipts that exceed these costs are used for Argos Data Processing System improvements and/or to reduce tariffs to System platform users as approved by the Operations Committee.

3.6 The WMO and IOC Secretariats

The World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO recognize that satellite data telecommunication systems are important components for the implementation and sustainability of global met-ocean observing networks. WMO and IOC endorse the JTA as a mechanism to cost-effectively address the requirements of WMO and IOC Programmes and Co-sponsored Programmes, in particular in terms of Argos satellite data telecommunication and related data processing, quality control, data encoding according to international standards, and data distribution to their end users. In order to facilitate the JTA achieving its goals, the Secretariats of both Organizations will provide support for the following functions:

Support the JTA Chairperson in the following manner:

i. Working with the JTA Executive Committee (JTA-EC), and its Chairperson to identify hosts for the regular meetings; and to work with the hosts to gather and disseminate logistical information to the participants;
ii. Providing financial assistance and administrative support to JTA participants who have been nominated by the JTA-EC to receive such assistance;

iii. Issuing JTA meetings' invitation letters to the Argos JTA Representatives of Countries (ROCs) with copies to the Permanent Representatives of WMO Members participating in JCOMM activities;
iv. Managing the documentation in preparation of the JTA meetings;
v. Participating at the Sessions of the JTA and its Executive Committee meetings;
vi. Preparing the session's final report template, and collaborating with the Chair, and the JTA Executive Committee for recording the Session's decisions, and issuing reports of JTA Sessions;
vii. Finalizing the issuance and distribution of Session reports of the JTA to WMO Members, IOC Member States, as well as to the ROCs and other participants;
viii. Coordinating and communicating with the ROCs, the JTA Chair and the Executive Committee on all related issues during the intersessional periods;
ix. Need to capture actions and issues from national reports, and provide them to the Chairperson;
x. Serve as members of the JTA Executive Committee (*ex officio*).

The representatives of WMO and IOC will participate in JTA Sessions as stakeholders, representing the interests of both Organizations.

Reimbursement to the IOC and WMO for Administrative support should be made by the JTA. The amount reimbursed is to be reviewed annually by the JTA-EC and approved by the Chairperson for the upcoming session.

4. JTA office bearers

4.1 The JTA elects a Chairperson and vice-Chairperson at JTA Sessions. The primary duty of the Chairperson is to ensure that the JTA negotiations proceed in as open and equitable a way as possible, and to assist in reconciling the needs of Argos stakeholders through an agreed negotiation process regarding future service level provision and costs. The vice-Chairperson shall deputize for the Chairperson in his/her duties if required by the Chairperson.

4.2 The Terms of Reference for the JTA Chairperson, and the JTA vice-Chairperson, details about their election and terms are provided in Annexes XI-F and XI-G respectively.

5. The JTA Executive Committee (JTA-EC)

5.1 The function of the JTA Executive Committee (JTA-EC) is to conduct the sessional and intersessional business, as well as all other matters in support of the Chairperson's duties to meet the needs of the JTA members.

5.2 The Terms of Reference of the JTA Executive Committee are provided in Annex XI-H.

6. Regular meeting of the JTA

6.1 Structure

The structure of the meeting consists of deliberative and report producing sessions over 3 days that are directed by the Chairperson to achieve the desired outcome. It is expected that the agenda, as adopted by the JTA at the start of the session, will be followed.

6.2 Desired outcome:

The desired outcome of the JTA Session is to be an open forum for all members to discuss and agree by consensus on any matter that affects their use of the Argos satellite data communications and processing system.

6.3 Invited participants

There is an open invitation to all members of all stakeholder groups to attend the JTA annual meeting. However, official invitation by the IOC and WMO will be made to the following:

- Representatives of Country (ROCs) representing a country or a group of countries from responsible government organizations using Argos
- Responsible Organizations (ROs) representing an agreed set of Argos user programmes
- Representatives of the Argos satellite system operator and service provider
- Representatives of the Argos Operations Committee (OPSCOM)
- The Executive Committee may appoint a consultant(s) /advisor(s) which may not necessarily be formally related to a particular group, organisation or country to assist in specific tasks.
-

6.4 Secretariat

It is expected that Secretariat support for the JTA meetings will be provided by the WMO and IOC on a rotating basis. Responsibilities of the Secretariats in administering the meeting are outlined in letters from IOC and WMO to the JTA Chair.

6.5 The typical agenda for JTA meetings is provided in Annex XI-I.

6.6 Frequency

The JTA Session should be held annually, but the schedule may be changed at the discretion of the Chairperson.

7. Typical intersessional workplan and reporting process

The following schedule is proposed. The actual workplan will be implemented by the Chairperson and will include a combination of meetings, teleconferences, and email. A typical intersessional workplan and the reporting process is detailed in Annex XI-J.

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ANNEX XI-A

ROLE OF THE JTA REPRESENTATIVE OF COUNTRY (ROC)
(as agreed at the JTA-28)

HISTORICAL OVERVIEW

The concept of ROC was introduced at the first meeting on Argos Joint Tariff Agreement (JTA-I) (Geneva, Switzerland, December 1981). The Meeting adopted a proposal «which foresees that agreements will be signed directly between the user Representative* and Service Argos.» The note under the * reads: «Representative is a unique Representative Organization for a country or a group of countries as given in the Global Agreement.» The Global Agreement starts with the following sentence: «These Terms and Conditions outline costs to and services to be provided by Service Argos of CNES and the (*)..... jointly providing support to their own authorized users for the location and data processing associated with the implementation and testing of remote platforms communicating with the satellites of the TIROS-N series.» The note under the (*) reads: «Quote the country and its own organization in charge of the Agreement with regards to CNES Service Argos. Hereafter defined by "ROC", i.e., a unique Representative Organization for a Country or a group of countries.»

That wording remained unchanged (except «Service Argos of CNES» being replaced by «Collecte Localisation Satellites», beginning in 1987, and «the satellites of the TIROS-N series» being replaced by «Argos capable satellites», beginning in 2003) until and including the "usual" Global Agreement for 2005. In the Agreement for 2005 regarding the Pilot Programme for the New Tariff Scheme, one reads: «These Terms and Conditions outline costs to and services to be provided by Collecte Localisation Satellites (1) hereafter referred to as "CLS" and the countries listed below, but not be limited to: [etc.]», and the note reads: «Quote the country and its own organization in charge of the Agreement with regard to CLS. Hereafter defined by "ROC / RO / Programme Manager", i.e. a unique Representative Organization for a country, a group of countries, or a single programme.» In addition, under DEFINITIONS, the following is added: «"RO" is the responsible Organization representing an agreed set of Argos User programmes for the purpose of their collective participation in the JTA.»

The Global Agreement for 2006 comes back to the initial wording, with a slight change in the note: «Quote the country and / or the organization in charge of the Agreement with regard to CLS, hereafter defined by "ROC / RO"» and the addition, under DEFINITIONS, of: «"ROC" is the Representative of Country and "RO" is Responsible Organization.»

The Global Agreement for 2007 reads: «These Terms and Conditions outline costs to and services to be provided by Collecte Localisation Satellites (affiliate of CNES in charge of operating the Argos system), hereafter referred to as "CLS" and all the countries participating in the JTA.» The definitions of ROC and RO remain unchanged.

Lastly, the Global Agreement for 2008 reads: «These Terms and Conditions outline costs for services to be provided by Collecte Localisation Satellites (affiliate of CNES).» The definition of ROC becomes the one adopted by JTA-27 and used in this document.

CONTEXT

The terms of the Joint Tariff Agreement require that the agreement is negotiated within an intergovernmental forum. This is achieved because, and only because, the invitation letters to the meetings are addressed by the joint Secretariat to the official representatives of Members / Member States of WMO / IOC. These invitation letters are systematically copied to the ROCs, who therefore may attend the meetings, whatever their official status may be (governmental representatives or "advisers"). This has been done on purpose since the first meeting because: (i) the ROCs are the only really knowledgeable people in their countries regarding JTA activities; and

(ii) nobody could foresee what might be the official status of the ROC in each and every country (see "NOMINATION AND RECOGNITION OF ROC" below).

The tariff agreement has been negotiated annually since its inception, with the objective of assuring the long term viability and development of the CLS / Argos data service, and in turn securing preferential (cost-recovery) and globally-consistent pricing arrangements for government or not-for-profit funded environmental monitoring programmes within the JTA participant countries.

The Representative of Country (ROC) is the person representing a country or a group of countries from a responsible government organization. The ROC may be required to keep other government agencies informed of the activities of CLS / Argos in order to justify the use of the Argos transmitters (PTTs) within national boundaries and their status within current communication policies. The ROC is the Responsible Authority representing an agreed set of Argos User programmes for the purposes of their collective participation in the JTA.

The tariff structure, price-setting arrangements and relationships between CLS / Argos, User Programmes and the ROCs have changed significantly since 2005. Changes include the introduction of a simplified tariff, the establishment of direct contracts and billing arrangements between CLS / Argos and end-user programmes, and, in some cases, the entry of local CLS / Argos representatives with the capacity to provide end user support. In the process, the “traditional” role of ROCs, their relationship with users and with CLS / Argos, and their contribution to annual tariff negotiations have been altered. ROCs’ roles around the world have also become less homogeneous.

This document sets out the role of a ROC, and the relationships, expectations and obligations between ROCs, end users, CLS / Argos and other stakeholders (e.g. OPSCOM), in the context of the current tariff structure.

NOMINATION AND RECOGNITION OF ROC

Each and every country nominates (or not, see below) its ROC as it wishes. In general, the ROC is nominated by an official representative of the Member / Member State of WMO / IOC and has therefore the status of a governmental representative. But this is not always the case: in some instances, for example, the ROC may be just "defined" through an agreement between a programme manager and CLS, and accepted as such by the JTA Meeting because of its de facto position. Other possibilities may (and do) happen. None would impinge upon the intergovernmental status of the Meeting on Argos Joint Tariff Agreement (see 1st paragraph in the "CONTEXT" section above).

ROLE OF THE ROC - GENERAL

The ROC is to ensure that the Argos system meets the basic requirements of all system user groups in the most cost-effective way within the principles of fairness, openness and the promotion of science.

ROC ROLES – CLS/ARGOS INTERFACE

- Tariff charge rate negotiation. Review CLS / Argos financial analyses, and approve the level of expenses to be attributed to JTA user programmes support. Negotiate tariff structures (including for Iridium services) that will fund the costs of the JTA service, to achieve globally consistent, predictable and equitable service pricing arrangements for all user classes (i.e. across the range of environmental science applications);

- High level advocacy of user programmes and user service classes. Provide high level collective advocacy of all user programmes and user service classes to CLS /

Argos to assure long term stability of the environmental data service for all end user service classes, and effective management of service or charge rate transitions;

- Representation of user requirements: Gather user requirements (current service, shortcomings, enhancements and future requirements) and relay to CLS/Argos as a basis for system enhancement, ground system corrective actions, enhancements or strategic investment.

- Endorsement of service investments. Review and endorse investments needed to sustain and enhance the CLS / Argos provision of basic services, and ensure the forward funding basis for such investments;

- Provision of independent advice to end-users. Represent CLS / Argos service capabilities to end-users (existing or candidate) and provide limited support to enable users to make appropriate decisions, and to resolve service problems. Support may be in the form of technical advice, referral to peer programmes, etc. It is to be provided in the context of existing primary support through equipment suppliers and CLS / Argos channels, not as an alternative to those arrangements;

- Adjudication of JTA programme eligibility. On referral from CLS / Argos, adjudicate the eligibility of new user programmes for inclusion in the JTA;

- Submission of a National Report to the JTA Meeting. Provide a National Report to the JTA meeting, at least one month prior to the meeting. The content shall follow the current report guidance; and

- Attendance at JTA meetings. ROCs are expected to attend JTA meetings. Alternatively they are to consider the materials circulated prior to the JTA meeting, and to ensure that the interests of the user programmes they represent are adequately conveyed through a ROC who will be attending the meeting, or else through their National Report.

- News items. Provide suitable Argos news items to CLS and to NESDIS

Enabling Actions to Support the ROC's Role

- CLS / Argos is to provide transparent and timely disclosure of the costs attributed to providing JTA services, and the basis for such cost attribution, at least 3 weeks in advance of new tariff negotiations;

- Outcomes of the most recent OPSCOM review of CLS finances are to be made available to ROCs through the JTA Chairperson's report to the JTA;

- CLS / Argos is to notify ROCs of user sign-ups as they occur, and to provide regular reporting of service usage by programmes in the country (or countries) represented by a ROC. The CLS / Argos Usage Reports are to be provided quarterly, in a spreadsheet form that enables ready analysis of the data;

- The CLS / Argos is to provide advice to all users on the ROC's role, and the contact details of the local ROC at the time of initiating new service contracts; and

- ROCs are to invite user communication, and may solicit specific user feedback on matters pertinent to their role, but are not expected to initiate formal user group surveys. CLS/Argos shall notify ROCs of user forums that it organizes.

Issues

- Commercial sensitivity of material. The potential for the introduction of competitors to CLS / Argos in data communications and data management services may further affect the role of the ROC, and the nature of the JTA's strategic planning and budgeting process. It may also increase the potential for perceived conflict in the relationships between CLS / Argos and ROCs, and the sensitivity of information disclosures needed for the tariff negotiation. In such circumstances, it may become prudent to conduct some aspects of tariff negotiation through a smaller group, operating on behalf of the full ROC membership; and

- Funding of ROC participation in JTA. CLS / Argos is requested to consider options for collecting funding through the JTA revenues for funding of ROC participation in the JTA. Any funding of the ROC through CLS must be done very carefully to avoid a real or perceived conflict of interest.

  Decision regarding the use of the funds should be made by the JTA Chairperson after consultation with the EC. The JTA Chairperson will then inform the DBCP Chairperson who will in turn request WMO to make expenditures.

ROC ROLES - INTERFACE WITH END USER PROGRAMMES

ROCs provide the following value to end users:

- Insight into CLS / Argos operation and directions. Provide insight into the operations of the CLS / Argos data service, how it (and the tariff) operates, how it might change in the future, and what affect that might have on user programmes;

- Assurance of global tariff consistency, stability and predictability;

- Opportunities for cross - fertilization. Provide a point of reference to other (like or complementary) programmes, nationally or globally; and

- Impartial, high-level representation to CLS / Argos. Provision of an influential, impartial voice in tariff negotiations and in specific problem resolution.

ROC ROLES - SUPPLIER INTERACTIONS

- There is no formal relationship or exchange required between ROCs and suppliers, but ROCs are encouraged maintain a level of familiarity with PTT technology appropriate to their role.

Enabling Actions to Support the ROC's Role

- CLS / Argos is to ensure suppliers are familiar with the ROC's role, and to encourage supplier contact with ROCs; and

- CLS / Argos is to facilitate ROC / supplier interactions, e.g., by invitation to user-supplier forums organized by CLS / Argos.

ROC ROLE - OPSCOM RELATIONSHIP

OPSCOM requires nationally-based user representation in tariff negotiations. No formal direct relationship is required with the ROC, only interactions through the JTA.

ROC - ROC RELATIONSHIP

- It would be a time challenge but regular teleconferences (once every three months), to discuss user issues and provide recommendations to the JTA meeting, might be an idea. It is probably more realistic to have the discussion using email in which case a ROC's mailing list needs to be hosted somewhere; and

- *To be further developed*.

ANNEX XI-B

TERMS OF REFERENCE OF THE ARGOS JOINT TARIFF AGREEMENT (JTA)

The JTA provides for an international mechanism to provide for cost-effective location and data processing of data collected through the Argos system. The JTA is functioning through stakeholders whose roles are mainly to negotiate the Argos service level and tariff, and ensure appropriate coordination amongst Argos users in order to represent their collective interests with regard to Argos tariff and requirements. Stakeholders include:

i. Representatives of Country (ROCs) representing a country or a group of countries from responsible government organizations using Argos;
ii. Responsible Organizations (ROs) representing an agreed set of Argos user programmes;
iii. Representatives of Users Groups (RUGs);
iv. Representatives of the Argos satellite system operator and service provider;
v. Representatives of the Argos Operations Committee (OPSCOM);
vi. Representatives of the WMO and IOC Secretariats.

The JTA shall:

1. be responsible for negotiating on a yearly basis fair, cost-effective, and simple terms and conditions of the global agreement covering Argos user charges that are applicable to Argos programmes funded by national governments of WMO and IOC Members/Member states and/or other JTA approved organizations;

2. review requirements from Argos user groups and make proposals for inclusion of specific developments in the Argos development programme taking into account their potential impact on the Argos tariff;

3. approve the role of the ROCs;

4. elect an Executive Committee, chaired by the JTA Chairperson, and including the vice-Chairperson, and stakeholder representatives;

5. review and agree on its operating principles;

6. report, through the Chairperson, to the Argos Operations Committee (OPSCOM) and submit its recommendations regarding Argos tariff and required Argos system developments for agreement.

Decisions shall be agreed unanimously by the JTA. If decisions cannot be agreed unanimously, they will be deferred to the Executive Committee for further discussion and decision.

ANNEX XI-C

TERMS OF REFERENCE OF THE
REPRESENTATIVE OF COUNTRY (ROC)

The Representative of Country (ROC):

1. should be nominated by a (semi-) governmental (e.g. non-profit) organization being an Permanent Representative of a Member (State) of WMO or IOC; ROCs are designated through either of the following mechanisms:

   i. An agency or consortium who wishes to become a ROC consults with CLS to check whether there is already a ROC in the country, and whether there are other institutions using Argos in the country;

   ii. The agency or consortium consults with other Argos users in the country;

   iii. If not being the Permanent Representative of a Member (State) of WMO or the IOC Action Addressee, the agency or consortium writes to the Permanent Representative of a Member (State) of WMO or the IOC Action Addressee asking the Permanent Representative of a Member (State) of WMO or the IOC Action Addressee to inform the JTA Chairperson that the agency is to be added in the list of ROCs;

   iv. In case there are two or more agencies in a country asking to be a ROC, the JTA Chairperson writes to the WMO or IOC Secretariats asking them to contact the Permanent Representative of the Country with WMO, or the IOC Action Addressee from that country in order to suggest that the country makes a formal nomination through the WMO and/or IOC channels, i.e. by means of either:

      a. A letter issued by the Permanent Representatives of a country to WMO to the Secretary General of WMO;
      b. A letter issued by the IOC Action Addressee of a country to the Executive Secretary, IOC;

2. should collect (changes in) requirements from national users and bring these to the attention of CLS/Argos at JTA meetings;

3. could designate an alternate to act on its behalf at JTA meetings by means of a letter to the JTA Chairperson;

4. decides on nominations and proposals put forward by the Executive Committee (EC);

5. is the only authority in the JTA to represent the user groups in a country and to decide on matters related to the global tariff and service level;

6. should initiate interaction with their users, or act as the focal point when deemed to be appropriate or being considered necessary;

7. will provide basic support to (new) users based on information made available by CLS;

8. interacts with CLS when deemed to be necessary or required;

9. participates in the yearly negotiation for the tariff and service level based on a financial review by the OPSCOM and the EC;

10. monitors the usage of the Argos system by its users using statistical information made available by CLS on the Argos Website;

11. will provide a report to the JTA meeting at least 1 (one) month prior to the meeting date, in a format following the current reporting structure which will include the capturing of actions and issues from the national report for circulation prior to the meeting and for discussion;

12. will, at the request of CLS, agree on new user programmes that qualify for inclusion under the Global Agreement;

13. may, if national law requires that, be obliged to keep other national governmental agencies informed about the activities of CLS in order to justify the use of the Argos transmitters (PTTs, PMTs) within national boundaries and their status within current communication policies;

14. should, upon request of CLS, not distribute or communicate commercially sensitive information provided by CLS to the ROCs;

15. Need to capture actions and issues from national reports, and provide them to the Chairperson;

16. to consult web list of unused IDs and to be proactive with their users;

17. to provide suitable Argos news items to CLS.

ANNEX XI-D

TERMS OF REFERENCE OF THE
REPRESENTATIVE OF ORGANIZATION (RO)

The Representative of Organization (RO):

1. should be nominated by a (semi-) governmental (e.g. non-profit) organization being an official representative of a Member (State) of WMO or IOC;

ROs are designated through either of the following mechanisms:

i. An agency or consortium who wishes to become a RO consults with CLS to check whether there is already a RO for the consortium, and whether there are other institutions using Argos in the corresponding country(ies);
ii. The agency or consortium consults with other Argos users and ROCs in the corresponding country(ies);
iii. If not being the Permanent Representative of a Member (State) of WMO or the IOC Action Addressee, the agency or consortium writes to the Permanent Representative of a Member (State) of WMO or the IOC Action Addressee asking the Permanent Representative of a Member (State) of WMO or the IOC Action Addressee to inform the JTA Chairperson that the agency is to be added in the list of ROs;
iv. The ROs are formally endorsed at the annual JTA session.

2. should collect (changes in) requirements from its users and bring these to the attention of CLS/Argos at JTA meetings;

3. could designate an alternate to act on its behalf at JTA meetings by means of a letter to the JTA Chairperson;

4. decides on nominations and proposals put forward by the Executive Committee (EC);

5. is the only authority in the JTA to represent the agency or consortium and to decide on matters related to the global tariff and service level;

6. should initiate interaction with their users, or act as the focal point when deemed to be appropriate or being considered necessary;

7. will provide basic support to (new) users based on information made available by CLS;

8. interacts with CLS when deemed to be necessary or required;

9. participates in the yearly negotiation for the tariff and service level based on a financial review by the OPSCOM and the EC;

10. monitors the usage of the Argos system by its users using statistical information made available by CLS on the Argos website;

11. will provide a report to the JTA meeting at least 1 (one) month prior to the meeting date, in a format following the current reporting structure which will include the capturing of actions and issues from the national report for circulation prior to the meeting and for discussion;

12. will, on request of CLS, agree on new user programmes that qualify for inclusion under the Global Agreement;

13. may, if national law requires that, be obliged to keep other national governmental agencies informed about the activities of CLS in order to justify the use of the Argos transmitters (PTTs, PMTs) within national boundaries and their status within current communication policies;

14. should, upon request of CLS, not distribute or communicate commercial sensitive information provided by CLS to the ROs;

15. Need to capture actions and issues from national reports, and provide them to the Chairperson;

16. to consult web list of unused IDs and to be proactive with their users;

17. to provide suitable Argos news items to CLS.

ANNEX XI-E

TERMS OF REFERENCE OF A
JTA REPRESENTATIVE OF A USER GROUP (RUG)

The Argos JTA meeting is an open meeting that solicits views from Argos 'stakeholders' (representatives of user groups, ROCs, intergovernmental and international bodies, the satellite operators and service providers), and attempts to address and reconcile the needs of these bodies through negotiation regarding future service level provision and costs.

RUGs are designated through either of the following mechanisms:

i. An agency or consortium who wishes to become a RUG consults with CLS to check whether there is already a RUG for the consortium, and whether there are other institutions using Argos in the corresponding country(ies);
ii. The agency or consortium consults with other Argos users, ROCs, and ROs in the corresponding country(ies);
iii. If not being the Permanent Representative of a Member (State) of WMO or the IOC Action Addressee, the agency or consortium writes to the JTA Chairman that the agency is to be added in the list of RUGs
iv. The RUGs are formally endorsed at the annual JTA session.

In this context a Representative of User Group' (RUG) is defined as follows, with the following Terms of Reference:

i. A RUG will be an individual who can fairly represent the overall consensus view of a significant Argos JTA user community. Such communities might reasonably include the operators of data buoys, floats, ice platforms, animal tags, land stations, ship stations and airborne stations, or bodies with agreed international responsibilities for the promotion, sponsorship or validation of any aspect of environmental observation using Argos (e.g. IOC, WMO, WWF).
ii. It is accepted that for certain user groups (e.g. animal trackers), accreditation as above might be difficult to establish in the short term. Nonetheless the JTA-EC will work proactively to seek and encourage the identification of RUGs as essential components of any meaningful JTA negotiation process, and will be lenient in applying the above constraint.
iii. Notwithstanding the above, the JTA sessions are open with observer status to any interested person (see JTA TORs).
iv. If accredited, a RUG will be obliged to consult as widely as possible with his/her user community regarding their use and expectations of the Argos system, and to make the results of these consultations publicly available well in advance of JTA sessions.
v. The RUG will also be expected to act as an impartial focal point for the dissemination of relevant information regarding Argos that might be of benefit to his/her user community.
vi. In return, the RUG will receive a letter of accreditation, and may be able to request some level of financial support from CLS for attendance at meetings and for other activities approved by the JTA-EC and CLS.
vii. The RUG will work with CLS and the JTA-EC to identify opportunities that might bring the JTA session into closer contact with his/her user group, with a view to establishing within that group the benefits of the JTA process.
viii. Need to capture actions and issues from national reports, and provide them to the Chairperson;
ix. To consult web list of unused IDs and to be proactive with their users;
x. To provide suitable Argos news items to CLS.

ANNEX XI-F

TERMS OF REFERENCE OF THE
JTA CHAIRPERSON

The Argos JTA meeting is an open meeting that solicits views from Argos 'stakeholders' (representatives of user groups, ROCs, intergovernmental and international bodies, the satellite operators and service providers), and attempts to address and reconcile the needs of these bodies through an agreed negotiation process regarding future service level provision and costs. The primary duty of the Chairperson is to ensure that these negotiations proceed in as open and equitable a way as possible.

The JTA shall elect a Chairperson from WMO and IOC Members/Member States at JTA Sessions. The term for the Chairperson will be for two years. The Chairperson shall be eligible for re-election in his/her capacity as Chairperson, but in principle only for one subsequent term.

Terms of Reference for the JTA Chairperson:

1. The Chairperson shall be impartial and shall not favour any particular group, organisation or country.

2. In consultation with the Secretariat, the Executive Committee (JTA-EC) and CLS, the Chairperson shall prepare the agenda, and confirm the venue for the annual session for distribution by the secretariat.

3. The Chairperson shall conduct the annual session of the JTA, and promote free, equitable and open discussion of agenda items.

4. The Chairperson shall convene intersessional meetings of the JTA-EC as necessary.

5. The Chairperson shall regularly liaise with CLS with regard to developments that might impact the JTA and its members and may visit CLS as the need arises;

6. The Chairperson shall routinely circulate information to the JTA participants during the intersessional period as appropriate;

7. The Chairperson shall deputize the vice-Chairperson if required.

8. The Chairperson shall represent the agreed views, decisions, and requirements of the JTA at OPSCOM and other sessions as appropriate, and report back on the outcomes to subsequent meetings of the JTA-EC and JTA.

9. The Chairperson, assisted by the secretariat and members of the JTA-EC if required, shall prepare and finalize reports of the JTA and its JTA-EC, and submit them to the Secretariats for publication if necessary.

10. The Chairperson, in consultation with the JTA-EC and other stakeholders, shall nominate membership of the JTA-EC, and approve new ROCs and ROs.

11. Need to capture and summarize actions and issues from national reports.

ANNEX XI-G

TERMS OF REFERENCE OF THE JTA VICE-CHAIRPERSON

The Argos JTA meeting is an open meeting that solicits views from Argos 'stakeholders' (representatives of user groups, ROCs, intergovernmental and international bodies, the satellite operators and service providers), and attempts to address and reconcile the needs of these bodies through an agreed negotiation process regarding future service level provision and costs. The primary duty of the Chairperson is to ensure that these negotiations proceed in as open and equitable a way as possible.

The JTA shall elect a vice-Chairperson from WMO and IOC Members/Member States at JTA Sessions. The term for the vice-Chairperson will be for two years. The vice-Chairperson shall be eligible for re-election in his/her capacity as vice-Chairperson, but in principle only for one subsequent term.

Terms of Reference for the JTA vice-Chairperson:

- The Chairperson shall deputize the Vice-Chairperson for all of the duties (except for item number 7 of the JTA Chairperson's ToR) if required.

ANNEX XI-H

TERMS OF REFERENCE OF THE
JTA EXECUTIVE COMMITTEE

The function of the JTA Executive Committee (JTA-EC) is to conduct the sessional and intersessional business, as well as all other matters in support of the Chairperson's duties to meet the needs of the JTA members.

Terms of Reference

The specific tasks of the JTA-EC are to:

1. Assist the chairperson and secretariat in the preparation of reports, and their submission, if needed, to the IOC and WMO Secretariats for distribution.

2. Annually review the functions and duties of the JTA and recommend any changes to the Chairperson for discussion and approval at the JTA Session.

4. Annually review the tariff structure and recommend changes to the chairperson.

5. Analyze the JTA administrative costs to be reimbursed by the JTA, and make recommendations to the Chairperson.

Membership

1. The membership shall include:

i. Chairperson
ii. Vice-Chairperson
iii. Representative of the IOC Secretariat (ex officio)
iv. Representative of the WMO Secretariat (ex officio)
v. Three additional members proposed by the Chairperson and elected by the JTA. These members will serve for one term and may in principle be eligible only for one subsequent term.
vi. Representative of CLS Argos

2. Careful consideration should be made to ensure a proper mix that represents nations, user groups, and subject matter experts.

3. JTA members may attend the JTA-EC meetings as an observer, subject to the availability of adequate meeting room space. If required, the Chairperson of the JTA-EC will make a final decision as to which observers may attend, and may also invite other persons to attend at his / her discretion

Meetings

1. As necessary, the Chairperson will convene and organize all JTA-EC meetings. The meetings can be in person, or teleconference.

2. If decisions are needed by the JTA-EC as permitted/requested by the JTA Session or the Chairperson during the intercession, elections for those decisions may be organized with a quorum

consisting of at least four members of the JTA-EC, including the Chairperson or his nominated deputy.

ANNEX XI-I

TYPICAL AGENDA FOR A JTA SESSION IN YEAR *YYYY*

1. ORGANIZATION OF THE MEETING

    1.1 OPENING OF THE MEETING
    1.2 ADOPTION OF THE AGENDA
    1.3 WORKING ARRANGEMENTS
    1.4 SELECTION OF THE WRITING GROUP (WG)[4]

2. REPORT OF THE CHAIRPERSON OF THE JTA

    2.1 REPORT ON THE EC

3 REVIEW OF ACTIONS

4. REPORT ON THE *YYYY* GLOBAL AGREEMENT

5. REPORT ON THE DEVELOPMENT OF CLS

6. REVIEW OF USER'S REQUIREMENTS AND ISSUES

7. REVIEW OF THE STRUCTURE OF THE TARIFF AGREEMENT AND RELATED MATTERS

8. TERMS AND CONDITIONS OF THE *YYYY*+1 GLOBAL AGREEMENT

9. FUTURE PLANS AND PROGRAMMES

10. REVIEW OF THE OPERATING PRINCIPLES

9. NATIONAL REPORTS

11. ANY OTHER BUSINESS

12. ELECTION OF THE CHAIRPERSON, VICE-CHAIRPERSON, and EC MEMBERSHIP

13. DATE AND PLACE OF THE NEXT MEETING

14. CLOSURE OF THE MEETING

4 : The purpose of the WG is to assist the Secretariats in taking the minutes and compiling a draft report of the proceedings for approval of the JTA.

ANNEX XI-J

TYPICAL JTA INTERSESSIONAL WORKPLAN AND REPORTING PROCESS

- JTA Session : 0 Months October

- E-mail from the Secretariat informing ROCs about the achievements of the meeting (final report on the web) 2 Months December

- Intersession #1 3 Months January
  - Email from Chairperson that outlines the work to be accomplished and assign actions to JTA-EC.

- Intersession #2 6 Months April
  - Prepare documents and Chairperson for OPSCOM meeting in June

- Intersession #3 7 Months May
  - Secretariat issues invitation letters
  - Agenda, and documentation plan for the next Session

- Intersession #4 9 Months July
  - Status of actions assigned in Intercession #1. Make adjustments as necessary
  - Report from the OPSCOM Meeting
  - Chairperson communicating to the JTA on recent outcomes, and plans for the next Session

- Intersession #5 11 Months September
  - Preparatory documents for the JTA Session made available to all participants

- JTA Session: 12 Months October

ANNEX XI-K

FORMAT FOR THE NATIONAL REPORTS TO THE JTA

JTA National Report

Year:
Country:

Section 1. Overall Summary

The objective of this section is to provide a short narrative statement that characterizes a country's Argos participation, programme, and future directions. This section can also be looked at as an abstract of section 2 – section 6.

Section 2. Future Plans

Please provide information on national future plans.

Section 3. Technological Changes that affect User Requirements

This objective of this section is to provide information on any advances in instrument development, techniques, or other technology that may affect future development of the Argos system.

Section 4. User issues, problems, and level of satisfaction with Argos

The objective of this section is to highlight any user issues that need to be brought to the attention of the JTA and CLS Executives.

Section 5. Successful programme use of Argos

The objective of this section is to highlight the successful use of Argos in helping users achieve their objective.

Section 6. Analysis of Local Operational Issues

The objective of this section is to present any Argos issue that affects users in a particular location, country, or platform family that may not shared by other user groups.

ANNEX XII

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**CHINA**

Section1. Overall Summary

In 2012, there are 24 institutes or organizations operating 31 programs using Argos to transmit data in China. The total of average active PTTS per month is 154.08 and profiling floats take up larger proportion which is about 64%.

Section2. User Types by family (Table of PTT use by the country)

Family	Average active PTTS per month until July	Total PTT. Years until July
Buoys and others	30.58	16.21
Profiling floats	98.92	9.98
Animals	24.25	2.95
Fixed stations	0.33	0.18
Total	154.08	29.32

Section3. Technological changes that affect user requirements

If the life of TAG battery could be extended to 2 years, or even up to 5 years, it will greatly help the continuity of the data.

Section4. User issues, problems, and level of satisfaction with ARGOS

The new CLS office in China set up in July 2011 in Tianjin Haihua: the subsidiary of NOTC (National Ocean Technology Center) will provide technical supports and assistances to the Chinese customers. CLS France and CLS office in China organized a dedicated CLS Marine & Wildlife seminar in Tianjin on 27, June 28 for Chinese scientific users. The main topics were the collection of in-situ oceanographic data with Argos and Iridium, tracking animals with Argos, Space oceanography remote sensing and modeling. Thirty clients from all over China (Beijing, Hangzhou, Tianjin, Qingdao, and Shanghai…) made the trip to attend our seminar. The seminar offered a great assistance to the Chinese users.

Section5. Successful program use of ARGOS

China Argo Project and Satellite Tracking Green Sea Turtles in China.

Section6. Analysis of Local Operational Issues

There are many transmitted signals from Tags without specific longitude and latitude information. How to use the Argos system website to gather the effective tracking data?

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**SOUTH AFRICA**

Role Player 1 – South African Weather Service

Role Player 2 – University of the Witwatersrand

Role Player 3 – University of Pretoria – Mammal Research Institute

Role Player 4 - Ezemvelo KZN Wildlife

Role Player 5 – Department of Environmental Affairs

Section 1. Overall Summary

RP1: As active members of the ISABP, IPBIO and IPAB, the South African Weather Service uses the Argos System to transmit data from the drifting weather buoys as well as the fixed stations (on the Islands of South Thule and Tristan da Cunha).

RP2: The research programme uses ARGOS technology in association with GPS receivers in telemetry collars. We are satisfied with the ARGOS service to date, and do not anticipate any changes in our requirements.

RP3: Argos Project 3234: Elephant seal and fur seal (Subantarctic & Antarctic fur seals) tracking from Marion Island. Due to the expected battery life of PTTs used on fur seals (~3 months), elephant seals (up to 12 months), and the varying attrition rate, the active number of PTTs per month is unpredictable and an overestimate. The projects continue to 2014 at the current rate of deployments, and perhaps beyond that date.

RP4: Argos GPS solar PTTs are currently being used for wildlife tracking purposes. These PTTs have been fitted to bearded Vultures whose distribution range covers the Maluti-Drakensberg Mountain range in southern Africa. The project is part of the implementation of the Bearded Vulture Biodiversity Management Plan which aims to determine and address the threats to the species to reduce the decline in population numbers.

RP5: Six of the ten sub Antarctic fur seals tagged at Prince Edward Island continued to transmit from 2011 into 2012 when they returned to give birth and were monitored until the moult in February 2012. These instruments covered their entire foraging range during lactation.

Nine loggerhead turtles were tagged in January at Sordwana Bay (KZN) of which four are still presently transmitting one on the edge of the Agulhas Bank, one at Bazaruto and two off Madagascar.

During the team change-over at Marion Island, the following seabirds had instruments deployed and are presently transmitting from the ice edge to Western Australia: 4 sooty Albatross, 4 southern giant Petrels, 3 macaroni penguins, 2 rockhopper penguins and 2 northern giant petrels.

In July a total of 8 lactating Cape fur seals will be instrumented at Vondeling island (a colony decimated during 17th century harvesting and now over being recolonized, in the process overrunning existing seabirds breeding on the island. Ptt's will monitor the seals maternal foraging range and overlap with that of foraging African penguins in order to understand the competition and possible effect on the latter species..

In November 2012, up to 5 humpback whales foraging in upwelling areas at plankton blooms on the West coast will be tagged with specialized limpet Splash TDR in order to understand their co-operative feeding behavior in relation to the oceanography within the area.

Five small vertebrates such as mongoose will be tagged to monitor relocation away from seabird colonies (predation) on the west coast.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others	41	41
Profiling floats		
Animals	RP2: 2 RP3: 5 (July – Nov) 15 (Dec –March) 25 (April – June) RP4: 16 RP5: 15 – 25 instruments*	RP2: 2 RP3: < 12 RP4: 16 RP5: 14.7
Fixed stations	2	1.5
TOTAL	**45**	**<87.2**

* Six of the ten sub Antarctic fur seals tagged PEI followed in 2012 (Jan – March 2012) = 12 months
Nine loggerheads deployed at Sordwana and 4 presently transmitting in Mozambique, Madagascar and the Agulhas Bank (Jan – Oct) = 54 months
Fifteen seabirds deployed at Marion covering wide geographic areas between S America and Australia to the ice edge (April - December) = 44 months (transmitting 5 hour only)
8 Cape fur seals tagged on west coast (Vondeling Island) (July – December) = 48 months
5 humpback whales (Nov to Dec) – West coast 10 months
5 small vertebrates on the west coast (on land) 8 months (transmitting 5 hour only)

Section 3. Technological Changes that Affect User Requirements

RP1: CNES/CLS installed a new HRPT receiver station at the Cape Town Weather Office during March 2012. This should decrease the time that it takes to transmit and therefore lower costs.

RP2 – 5: None

Section 4. User issues, problems, and level of satisfaction with ARGOS

RP1: The South African Weather Service is satisfied with the service that we receive.

RP2: None. We are very satisfied with the service.

RP3: No Complaints. Could warn us in advance when PTTs have not transmitted for 2 years = to recycle those ID numbers.

RP4: Reduced costs for wildlife monitoring programs are welcome since this program is funded by provincial conservation organisations and donors.
The immobility detection works to a limited extent. Although error messages are often received, no message was received in a recent case where the animal was stationary (dead) for a few days.

RP5: Satellite costs to the user are becoming a major proportion of costs with respect to user's budget requests.

Section 5. Successful program use of ARGO

RP1: Apart from using ARGOS to track the buoys that we had deployed, we also make use of ARGOS to do pre-deployment checks on the buoys. This makes our paperwork a lot easier to be able to confirm the buoy's operation before deployment.

RP2: ARGOS has been very helpful in getting real-time data on resource use and distribution of our study animals.

RP3: Successful

RP4: To date 20 Bearded Vulture of various ages have successfully been tracked using the Argos system. Valuable data on their seasonal movement patterns and threats to the species (i.e. cause of death) have been obtained.

RP5: The Kalman filtering has made a significant difference to the accuracy of reports.

Section 6. Analysis of Local Operational Issues

RP1: We have no problems with ARGOS. The site is always fast and data is available quickly.

RP2 and 3: No problems were experienced.

RP4 and 5: No comment

Compiled by S.Marais and S. du Toit and approved by Johan Stander
For the JTA National Report, July 2012

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**BOTSWANA**

Section 1. Overall Summary

The use of the Argos system in Botswana continues to be primarily for animal tracking mostly via GPS/Argos collars. Users in Botswana are all small NGOs or research groups that operate independently of each other and appear to have little interest in sharing information or forming a 'community of interest'. As such I have little specific information of what collars are being used on what species.

Section 2. Future Plans

As users of the Argos system is by small NGOs and research organizations there are no national plans that I am aware of.

Section 3. Technological Changes that affect User Requirements

None that I am aware of.

Section 4. User issues, problems, and level of satisfaction with Argos

The ongoing issue for Argos users in Botswana is the price and the "6-hourly charging blocks". This often means use of the collars is determined by the charging mechanism rather than the biology of the animal.

For example, if you have a crepuscular animal such as a wild dogs for example - you might want to take fixes and transmit these from 0400-0800 and 1600-2000 hours. This covers all four Argos charging blocks so you are charged for a full day.

It would be better for biologists if Argos divided the day into 24 hours. If you transmit within an hour you pay for that hour. In this way biologists can set the PTT duty-cycles to match the animals behaviour and not have to set them to match Argos time slots.

Section 5. Successful programme use of Argos

The only program using the Argos system that I am aware of is our own. We have successfully had 3 cheetah collared over the last year using Sirtrack collars, recording movement and, territory size information. All three collars have been retrieved, using automatic timed drop off units, and we currently have no collars active.

Section 6. Analysis of Local Operational Issues

Amongst users I have talked to it is generally thought that a large number of data is not transmitted from the collars via the Argos system. This is particularly true for small projects on a limited budget trying to minimize the amount of communication time with the Argos system. Often these users calculate a minimum amount of satellite communication to theoretically transmit the information they require, but find that in practice that this amount of time does not allow enough data to be transmitted. This may be due to the relatively poor satellite coverage for users nearer the equator, poor communication links caused by animals moving under trees and other areas where communication with the satellites is poor or for some other reasons I am not aware of.

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

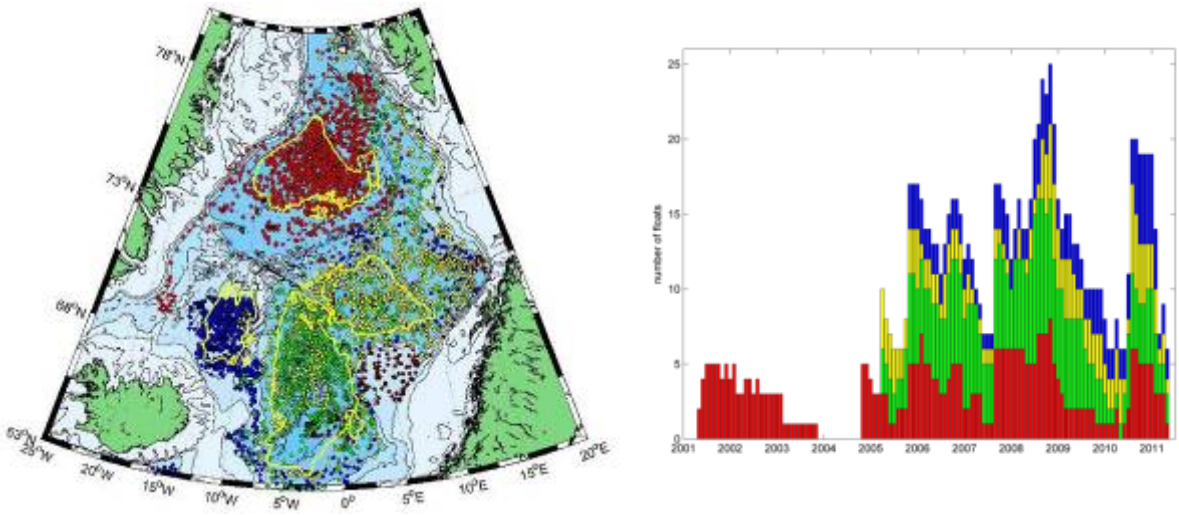
Year	**2012**
Country	**GERMANY**

Section 1. Overall Summary

1. Water masses in the Nordic Seas

Detlef Quadfasel, DETLEF.QUADFASEL@ZMAW.DE
Hamburg University,Zentrum für Meeres- und Klimaforschung, Insitut für Meereskunde, Bundesstr. 53, 20146 Hamburg, Germany
ARGOS Programme Number 592

The aim of the program is to monitor the water masses in the different basins of the Nordic Seas with the data from profiling floats (Greenland Sea , Norwegian Sea, Iceland Sea, Lofoten Basin). Since 2001 floats were deployed in the Greenland Sea, since 2004 also in the Norwegian Sea and Lofoten Basin and since 2005 in the Iceland Sea. Changes in the water mass transformation processes and therefore also in the water mass characteristics in the context of climate change are examined. The floats are part of the international ARGO programme. No more floats have been deployed in the report period. More information is available at http://www.ifm.zmaw.de/forschung/regionale/projekte/mersea/



Data profiles collected from Argo Floats in the period 2001-2011.

2. Hamburg Ice Buoy Programme

Burkhard Bruemmer, BURGHARD.BRUEMMER@ZMAW.DE
Meteorological Institute, ZMAW, University of Hamburg, Bundesstr. 55, 20146 Hamburg, Germany
ARGOS Programme Number 636

The project studies processes in key regions of the climate system using air crafts and data buoys. Examples are atmospheric cold air outbreaks and their influence on deep water production in the North Atlantic and the influence of cyclones on the advection of Atlantic waters into the Arctic.
More information is available at http://www.mi.uni-hamburg.de/8.0.html

3. IFM-GEOMAR: Mooring ARGOS beacon

Jürgen Fischer, JFISCHER@GEOMAR.DE
Helmholtz-Zentrum für Ozeanforschung Kiel, GEOMAR, Düsternbrooker Weg 20, 24105 Kiel, Germany
ARGOS Programme Number 783

The aim of the project is to monitor subsurface moorings that get accidentally are at drift by using ARGOS beacons. The beacons are equipped with a pressure or conductivity sensitive switch which activate them when at the sea surface. More information is available at http://www.ifm-geomar.de/index.php?id=physoz&no_cache=1

4. Sea ice processes in polar regions

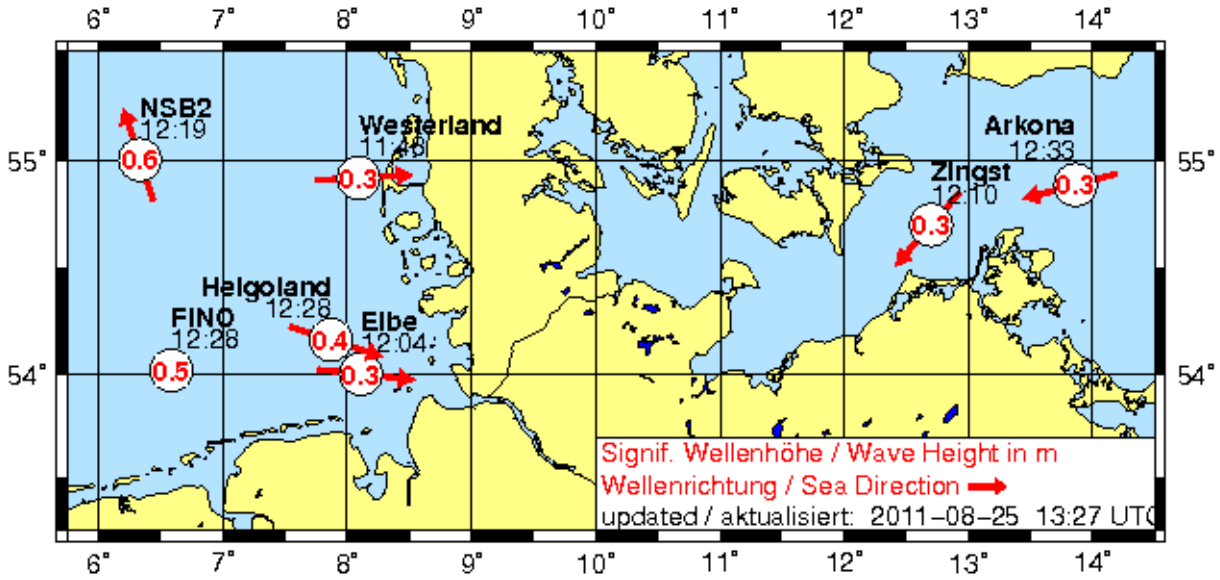
Gerd Rohardt, Gerd.Rohardt@awi.de
Alfred Wegener Institute, P.O.Box 120161, 27515 Bremerhaven, Germany
ARGOS Programme Number 919

The aim of the project is to monitor moorings with Argos watchdogs. More information is available at
http://www.awi.de/de/forschung/fachbereiche/klimawissenschaften/messende_ozeanographie/instrumente/verankerungen/

5. Norwave

Kai Herklotz, kai.herklotz@bsh.de
Bundesamt für Seeschifffahrt und Hydrographie, Bernhard-Nocht-Str. 78, 20359 Hamburg, Germany
ARGOS Programme Number 948

The Norwave measurements take place at fixed monitoring stations in the North Sea and Baltic Sea (see Marnet programme). Waverider buoys are measuring sea state conditions, one of these is transmitting data through the ARGOS satellite system. Watchdog services are used for the other buoys. More information is available at http://www.bsh.de/de/Meeresdaten/Beobachtungen/Seegang/index.jsp



Permanent measurement stations in the North Sea and Baltic equipped with wave instruments.

6. Bird migration in Africa and Eurasia - a pilot study

Max Planck Research Centre for ornithology, Migration and Immuno-ecology (Vogelwarte Radolfzell), Schloß Möggingen, Schloßallee 2, 78315 Radolfzell, Germany
Martin Wikelski, martin@ORN.MPG:DE
ARGOS Programme Number 983

The International Cooperation for Animal Research Using Space (ICARUS) mission is working towards establishing a remote sensing platform for scientists world-wide that can track small organisms globally, enabling observations and experiments over large spatial scales. A white paper is available at http://www.icarusinitiative.org

Global satellite tracking of small animals by ICARUS - International Cooperation for Animal Research Using Space

7. Migration of raptors

Bernd Meyburg, BUMeyburg@aol.com
World working group on birds of prey and owls (Berlin), Wangenheimstr. 32, D-14193 BERLIN, Germany.
ARGOS Programme Number 1126

The W.W.G.B.P. has been active for thirty years now and today plays an important role in the promotion of raptor conservation and research on an international level. Its membership list today comprises over 3,000 raptor specialists and enthusiasts in all parts of the world, and anybody with an interest in raptors is welcome to become a member. The W.W:G.B.O tracks birds of prey world-wide since 1992. Theses raptors are belonging to 14 species. Resulting publications are available as PDF files: www.raptor-research.de".

More information is available at http://www.raptors-international.de/index.htm

8. Migratory behaviour of Antarctic seals

Joachim Plötz, JPLOETZ@AWI-BREMERHAVEN.DE
Alfred Wegener Institute, P.O.Box 120161, 27515 Bremerhaven, Germany
ARGOS Programme Number 1535

The Marine Mammal Tracking (MMT) project of AWI and its Partner Institutions concentrates on the Southern Ocean. Variations in the foraging ranges and movements of marine mammals are an important source of information about environmental variability integrated over a wide range of spatial and temporal scales. The complex synthesis of data on marine mammal positioning and feeding locations with oceanography and bathymetry aims to identify those parameters which are characteristic for feeding areas of top predators in the respective regions, and will provide clues as to why some areas of the Antarctic Ocean are important to these animals while others are not. This will further our understanding of the distribution patterns of marine mammals in Antarctic and Subantarctic marine ecosystems of the Southern Ocean. More information is availabe at http://www.wdc-mare.org/projects/mmt.html

Tagged southern elephant seal.

9. IfM-Geomar: gliders

Gerd Krahmann, gkrahmann@geomar.de
Helmholtz-Zentrum für Ozeanforschung Kiel, GEOMAR, Düsternbrooker Weg 20, 24105 Kiel, Germany
ARGOS Programme Number 1783

The gliders are equipped with Argos beacons to be located in case other navigational and communication devices fail. More information is available at
http://www.ifm-geomar.de/index.php?id=glider

Testing a glider at sea.

10. Bigset

Olaf Pfannkuche, OPFANNKUCHE@GEOMAR.DE
Helmholtz-Zentrum für Ozeanforschung Kiel, GEOMAR, Düsternbrooker Weg 20, 24105 Kiel, Germany
ARGOS Programme Number 1806

The project BIGSET (in situ experiments using benthic chamber landers) studies processes at the benthic boundary layer. The autonomous instrument carrier systems are equipped with ARGOS beacons for retrival. The landers are usually deployed on the seafloor at depths of several hundred to 6,000 metres beyond the reach of remote sensing and conventional systems. More information is available at
http://www.ifm-geomar.de/index.php?id=mg_observatorien

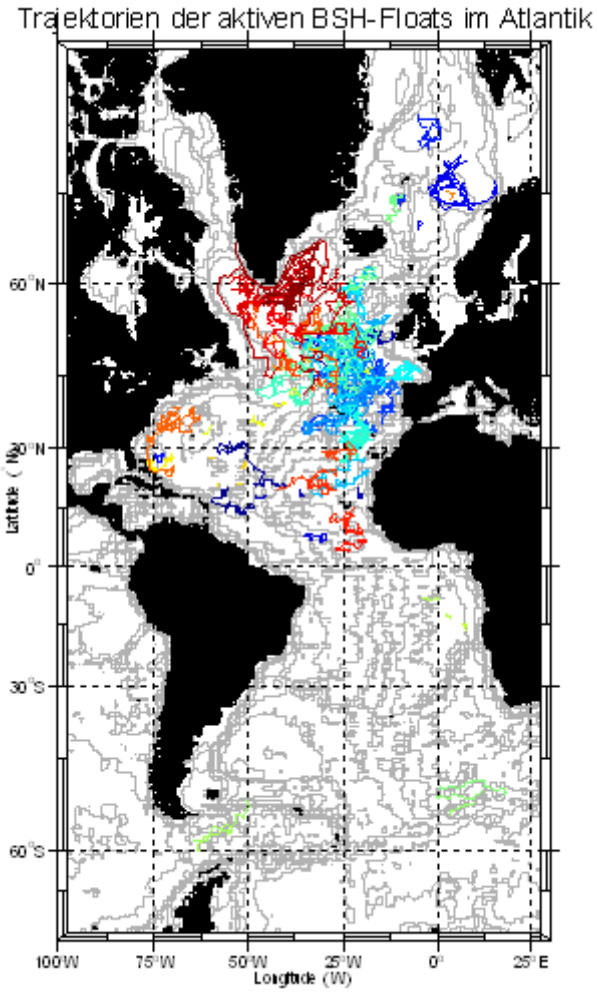
11. Tracking of penguins at sea

Klemens Pütz, KLEMENS.PUETZ@EWETEL.NET
Antarctic Research Trust, Am Oste-Hamme-Kanal 10, 27432 Bremervörde, Germany
ARGOS Programme Number 1857
In this project the foraging behavior of penguins and other seabirds in the Southern Ocean is investigated on a seasonal and inter-annual scale. The project is momentarily suspended but is expected to continue in 2013. More information is available at http://www.antarctic-research.de/

12. German-Argo/BSH

Birgit Klein, BIRGIT.KLEIN@BSH.DE
Bundesamt für Seeschifffahrt und Hydrographie, Bernhard-Nocht-Str. 78, 20359 Hamburg, Germany
ARGOS Programme Number 1895

The aim of the program is to contribute to the international Argo programme with about 50 floats per year. Presently all 165 BSH floats are transmitting their data through the ARGOS system. The BSH is using Argo data to monitor water mass changes in the North Atlantic since they are changing inflow conditions for waters entering the North Sea. Main deployment areas will be the Atlantic and source regions in which deep water formation occurs in the polar areas. More information is available at http://www.german-argo.de.

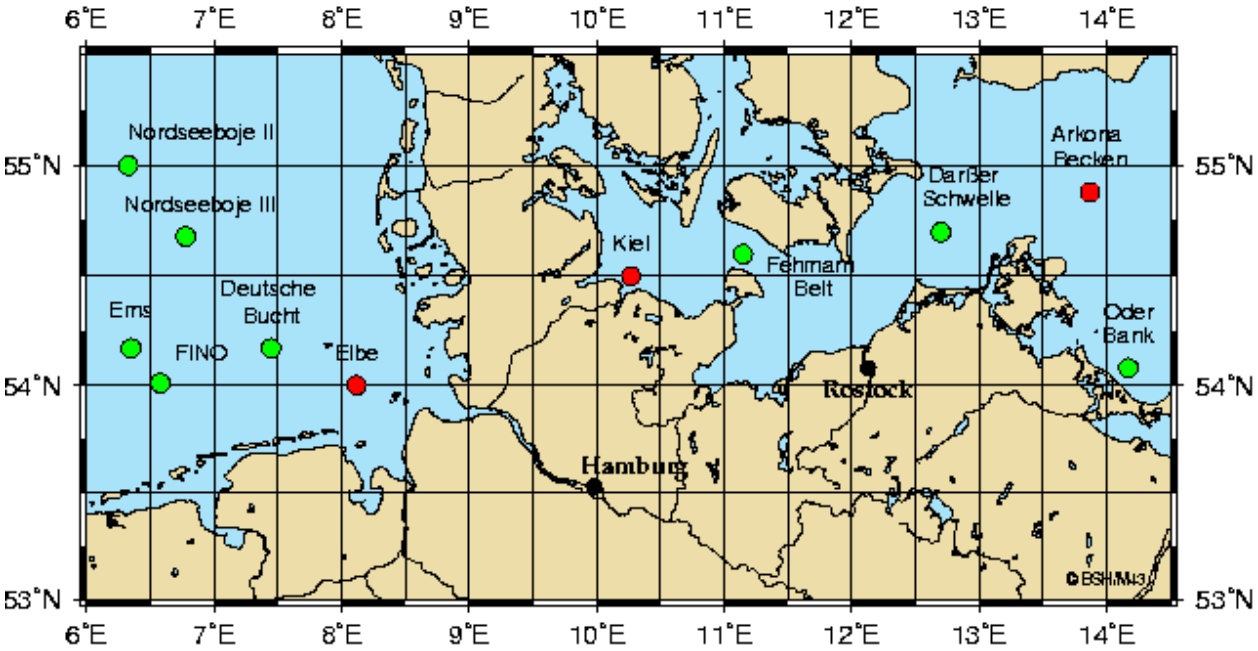


Positions and tracks of active floats in the BSH Argo-programme in the Atlantic

13. Marnet, BSH

Kai Herklotz, KAI.HERKLOTZ@BSH.DE
Bundesamt für Seeschifffahrt und Hydrographie, Bernhard-Nocht-Str. 78, 20359 Hamburg, Germany
ARGOS Programme Number 2120

The Marnet program consists of fixed monitoring stations in the North Sea and Baltic Sea which measure oceanic parameters as temperature, salinity, oxygen and currents in the water column. Waverider buoys are measuring sea state conditions, one of these is transmitting data through the ARGOS satellite system. Watchdog services are used for the other buoys. More information is available at
http://www.bsh.de/de/Meeresdaten/Beobachtungen/MARNET-Messnetz/index.jsp



Positions of fixed measurement stations in the North Sea and Baltic (MARNET).

14. IfM-Geomar: moored data buoys

Johannes Karstensen, jkarstensen@ifm-geomar.de
Leibniz-Institut für Meereswissenschaften, IFM-GEOMAR, Düsternbrooker Weg 20, 24105 Kiel, Germany
ARGOS Programme Number 2736

The project uses Argos telemetry to transmit mooring data in near-real time to land. A surface module collects data from subsurface instrumentation which are inductively coupled to the mooring wire. Subsequently the surface module transmits the data via ARGOS telemetry to a land station. More information is available at http://www.ifm-geomar.de/index.php?id=telemetrie and http://www.eurosites.info/cis/data.php

Number of active beacon PPTs: 1

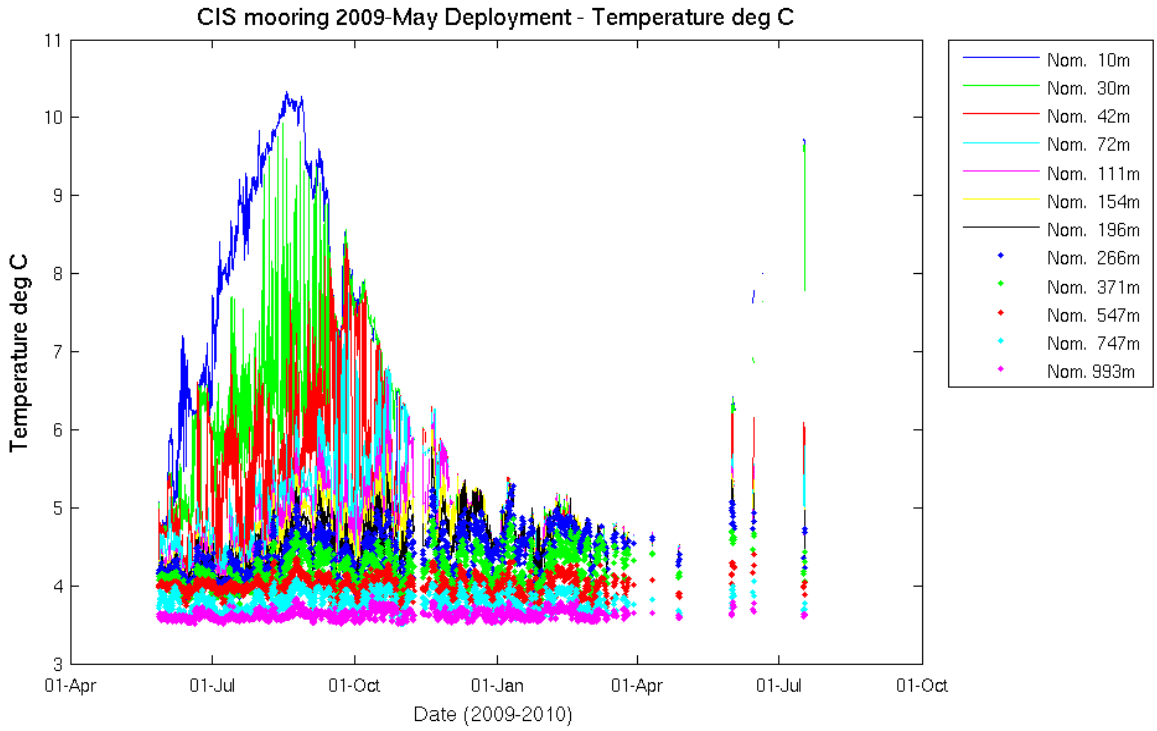


Figure: Temperature data from 12 instruments between 10 and 1000m depth from the Central Irminger Sea. This data has been transmitted between June 2009 and April 2010 via an ARGOS based surface telemetry buoy.

15. Iffezheimer Störche auf Reisen

Herbert König, KINGSCASTLE@T-ONLINE.DE
Initiativgruppe Naturschutz, Severin-Schäfer-Str. 3, 76473 Iffezheim
ARGOS Programme Number 3100

The conservation initiative Iffezheim has ringed a storch in 2006 which hatched in Iffezheim. The Argos transmitter is used to study the migrationary behaviour of this bird. More information is available at http://www.iniffezheim.de/

16. European Whitefronted Geese ResearchProject, European whitefronted goose (Blessgans)

Helmut Kruckenberg, HELMUT.KRUCKENBERG@BLESSGANS.de
Europäisches Blessgans Forschungsprogramm, Am Steigbügel 3, D-27283 Verden (Aller), Germany
ARGOS Programme Number 3189

The project studies the European White-fronted Goose (Anser albifrons)- its migration, behavior, and ecology. The White-fronted Goose is the most numerous goose species wintering in Western Europe. By satellite tracking important new facts about migration behavior and routes were found. The project used microwave GPS transmitters for 36 birds and relays data via ARGOS, a special internet tool (live tracking) based on GoogleEarth was developed in 2006. With support of Vogelschutz-Komitee e.V. and Alterra Institute Wageningen. More information is available at http://www.blessgans.de

Reports / Publications:
Kruckenberg, H., A. Kondratyev, J.H. Mooij, C. Zöckler & E. Zaynagutdinova (2008): White-fronted Goose Flyway Population Status. – Angewandte Feldbiologie 2: 1-63. ISSN 1861-227X
Kruckenberg, H., G.M.M.J. Müskens & B.S. Ebbinge (2007): Satellitentelemetrie von Blässgänsen Anser albifrons albifrons auf dem Frühjahrszug 2006 und 2007. – Vogelwarte 45: 330-331
Kruckenberg, H., G.M.M.J. Müskens & B.S. Ebbinge (2008): Satellite tracking of Greater White-fronted Geese Anser albifrons during spring migration 2006 - preliminary results. – Vogelwelt 129: 338-342.
Kruckenberg, H., J. Bellebaum, G. Müskens, B.S.Ebbinge & A.Kondratyev (eingereicht): Tracking European Greater Whitefronts Anser albifrons by satellite transmitters during spring migration in 2006, 2007 and 2008. Ornis Svecica spec. issue.
van Wijk, R. E., A. Kölzsch, H. Kruckenberg, B. S. Ebbinge, G.J.D.M. Müskens & B.A.Nolet (eingereicht): Individually tracked geese follow the green wave during spring migration. OIKOS

Transmittered bird (Geert) with its mate (c) K. Veldkamp

17. Montagu's Harrier

Klaus-Michael Exo, MICHAEL.EXO@IFV-VOGELWARTE.DE
Institut für Vogelforschung, "Vogelwarte Helgoland", An der Vogelwarte 21, 26386 Wilhelmshaven, Germany
ARGOS Programme Number 3338

The project studies the migration routes as well as the location of stopover sites and wintering areas of Circus pygargus (Montagu's Harrier, Wiesenweihe) breeding in NW- and NE- Europe, respectively. Circus pygargus is an endangered long distance migrant, breeding in northern Europe and wintering in sub-Saharan W-Africa. Reports can be downloaded at

http://www.ifv-vogelwarte.de//downloads/96/wiesenweihe_dbu_abschlussbericht_ifv_jan_2009.pdf
http://www.ifv-vogelwarte.de/files/Dateien/DBU_Bericht_2011_IfV.pdf

Montagu‘s harrier *Rudi on its migration*

18. Biota Maroc, Hamburg University

Manfred Finckh, MFINCKH@BOTANIK.UNI-HAMBURG.DE
Biozentrum Klein Flottbek, Systematik der Pflanzen, Ohnhorststr. 18, D-22609 Hamburg, Germany
ARGOS Programme Number 3455

Biota Maroc is part of the BIOTA AFRICA project invented by African and German researchers aiming at the establishment of research supporting sustainable use and conservation of biodiversity in Africa. The project tracked movements of 3 nomadic herds in the Atlas mountain range using ARGOS and GPS transmitters. More information is available at http://www.biota-africa.org/

Photos from Biota MAROC testsides

19. ESA precursor, Tracking of individual birds

Klaus-Michael Exo, MICHAEL.EXO@IFV-VOGELWARTE.DE
Institut für Vogelforschung, "Vogelwarte Helgoland", An der Vogelwarte 21, 26386 Wilhelmshaven, Germany
ARGOS Programme Number 3490

The project is carried out in the context of the ESA FlySafe activities. It analyses the technical prospects and limits in using satellite based bird tracking and monitors small scale and large scale movements. The work includes analyses of medium- and long-range bird migration behavior as well as smale scale feeding flights (study species: Herring Gull *Larus argentatus*, Lesser black-backed Gull *Larus fuscus*, Barnacle Geese *Branta leucopsis*). A report is available at
http://www.ifv-vogelwarte.de//downloads/96/esa_report_sovon_cover_2008-10.pdf

Figure 5.1 (ESA report): Colour marked Herring Gull (M.AFH) carrying a GPS PTT on the beach of Texel, Netherlands, on 24-10-2007. Photograph by Pieter Veeling

20. Transdrift–TR

Guenther Heinemann, HEINEMANN@UNI-TRIER.DE
Umweltmeteorologie, Uiniverstität Trier, Behringstraße 21 (Campus II), 54286 Trier, Germany
ARGOS Programme Number 3635

The project uses data buoys to study the effects of polynjas in the Laptev sea for the system atmosphere-ocean-sea ice. More information is available at http://www.uni-trier.de/index.php?id=15138&L=2#c21459

21. Hobby falcon

Bernd Meyburg, BUMeyburg@aol.com
World working group on birds of prey and owls, Wangenheimstr. 32, D-14193 BERLIN, Germany.
ARGOS Programme Number 4126 (sub-PGM of PGM 1126)

The W.W.G.B.P. has been active for thirty years now and today plays an important role in the promotion of raptor conservation and research on an international level. Its membership list today comprises over 3,000 raptor specialists and enthusiasts in all parts of the world, and anybody with an interest in raptors is welcome to become a member. The W.W:G.B.O tracks birds of prey world-wide since 1992. Theses raptors are belonging to 14 species. Resulting publications are available as PDF files: www.raptor-research.de".
More information is available at http://www.raptors-international.de/index.htm

22. Argo Floats

Jürgen Fischer, JFISCHER@GEOMAR.DE
Helmholtz-Zentrum für Ozeanforschung Kiel, GEOMAR, Düsternbrooker Weg 20, 24105 Kiel, Germany
ARGOS Programme Number 8165

The project studies the circulation and water mass anomalies in the tropics using autonomous profilers. The floats are part of the international ARGO programme. Most of the floats are equipped with additional oxygen sensors and float in the Pacific for the SFB-754. More information is available at http://www.sfb754.de

23. Subsurface mooring monitoring

Gerd Rohardt, Gerd.Rohardt@awi.de
Alfred Wegener Institute, P.O.Box 120161, 27515 Bremerhaven, Germany
ARGOS Programme Number 8919 (sub-program 919)

The aim of the project is to monitor moorings with Argos watchdogs. More information is availabe at
http://www.awi.de/de/forschung/fachbereiche/klimawissenschaften/messende_ozeanographie/instrumente/verankerungen/

24. Norwave

Kai Herklotz, kai.herklotz@bsh.de
Bundesamt für Seeschifffahrt und Hydrographie, Bernhard-Nocht-Str. 78, 20359 Hamburg, Germany
ARGOS Programme Number 9948 (see 948)

The Norwave measurements take place at fixed monitoring stations in the North Sea and Baltic Sea (see Marnet programme). Waverider buoys are measuring sea state conditions, one of these is transmitting data through the ARGOS satellite system. Watchdog services are used for the other buoys. http://www.bsh.de/de/Meeresdaten/Beobachtungen/Seegang/index.jsp

25. Bulgaria

Bernd Meyburg, BUMeyburg@aol.com
World working group on birds of prey and owls, Wangenheimstr. 32, D-14193 BERLIN, Germany.
ARGOS Programme Number 10126 (SS PGM 1126)

The W.W.G.B.P. has been active for thirty years now and today plays an important role in the promotion of raptor conservation and research on an international level. Its membership list today comprises over 3,000 raptor specialists and enthusiasts in all parts of the world, and anybody with an interest in raptors is welcome to become a member. The W.W:G.B.O tracks birds of prey world-wide since 1992. Theses raptors are belonging to 14 species. Resulting publications are available as PDF files: www.raptor-research.de".
More information is available at http://www.raptors-international.de/index.htm

26. Argo sub-surface

Olaf Boebel, OBOEBEL@AWI-BREMERHAVEN.DE
Alfred Wegener Institute, P.O.Box 120161, 27515 Bremerhaven, Germany
ARGOS Programme Number 10919 (Sub-program of program 919)

The project studies variability and long-term changes in warm deep water in the Weddell Gyre. It also monitors convection events. The floats are equipped with special ice sensing technology to withstand the ice season during winter. The floats are part of the international ARGO programme. Due to winterly surface ice coverage the transmission of the floats are switching to Iridium, due to shorter surface transmission times. More information is available at
http://www.awi.de/en/research/research_divisions/climate_science/observational_oceanography/projects/weccon/

Nemo float deployed in the polar ocean.

27. Red Kite

Bernd Meyburg, BUMeyburg@aol.com
World working group on birds of prey and owls, Wangenheimstr. 32, D-14193 BERLIN, Germany.
ARGOS Programme Number 11126 (Sub-program of PGM 1126)

The W.W.G.B.P. has been active for thirty years now and today plays an important role in the promotion of raptor conservation and research on an international level. Its membership list today comprises over 3,000 raptor specialists and enthusiasts in all parts of the world, and anybody with an interest in raptors is welcome to become a member. The W.W:G.B.O tracks birds of prey world-wide since 1992. Theses raptors are belonging to 14 species. Resulting publications are available as PDF files: www.raptor-research.de".
More information is available at http://www.raptors-international.de/index.htm

28. Seismic ice flow drifter

Gerd Rohard, Gerd.Rohardt@awi.de
Alfred Wegener Institute, P.O.Box 120161, 27515 Bremerhaven, Germany
ARGOS Programme Number 12919 (sub-program of 919)

The project uses Argos beacons to locate seismometers on ice floats during expeditions. The use of the beacons is suspended at the moment and will be used again in 2013. More information is available at *http://www.awi.de/en/research/research_divisions/geosciences/geophysics/projects/seismology/seismology_ridges_move/agave2007/?0=*

A lonely seismic station on an ice floe

29. Imperial eagle

Bernd Meyburg, BUMeyburg@aol.com
World working group on birds of prey and owls, Wangenheimstr. 32, D-14193 BERLIN, Germany.
ARGOS Programme Number 21126 (sub-PGM OF PGM 1126)

The W.W.G.B.P. has been active for thirty years now and today plays an important role in the promotion of raptor conservation and research on an international level. Its membership list today comprises over 3,000 raptor specialists and enthusiasts in all parts of the world, and anybody with an interest in raptors is welcome to become a member. The W.W:G.B.O tracks birds of prey world-wide since 1992. Theses raptors are belonging to 14 species. Resulting publications are available as PDF files: www.raptor-research.de".
More information is available at http://www.raptors-international.de/index.htm

30. Eagles

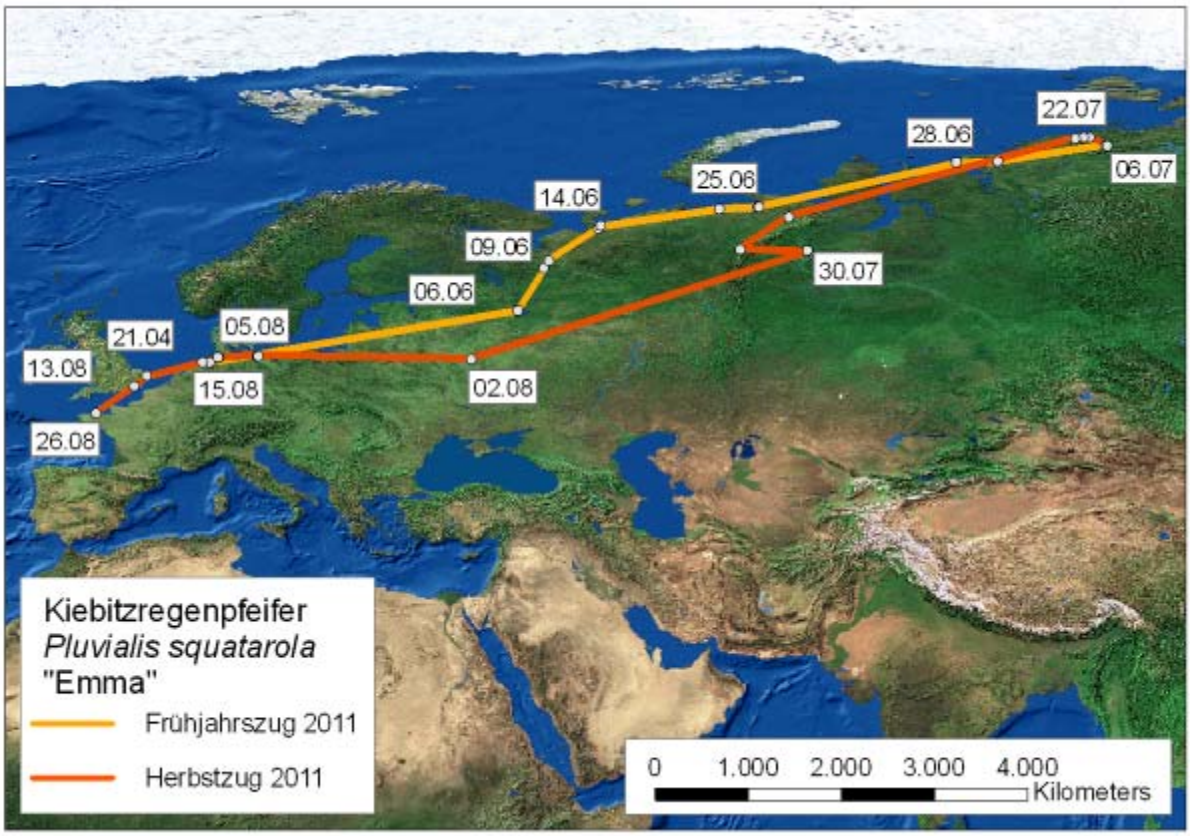
Bernd Meyburg, BUMeyburg@aol.com
World working group on birds of prey and owls, Wangenheimstr. 32, D-14193 BERLIN, Germany
ARGOS Programme Number 31136 (sub-PROGRAM OF PGM 1126)

The W.W.G.B.P. has been active for thirty years now and today plays an important role in the promotion of raptor conservation and research on an international level. Its membership list today comprises over 3,000 raptor specialists and enthusiasts in all parts of the world, and anybody with an interest in raptors is welcome to become a member. The W.W:G.B.O tracks birds of prey world-wide since 1992. Theses raptors are belonging to 14 species. Resulting publications are available as PDF files: www.raptor-research.de".
More information is available at http://www.raptors-international.de/index.htm

31. Studies to understand the decline in migratory waterbirds using the German Wadden Sea

Klaus-Michael Exo, MICHAEL.EXO@IFV-VOGELWARTE.DE
Institut für Vogelforschung, "Vogelwarte Helgoland", An der Vogelwarte 21, 26386 Wilhelmshaven, Germany
ARGOS Programme Number 4852

About 40% of the birds using the Lower Saxon Wadden Sea during migration declined during the last decades. The main aim of the project is to analyze (ecological) factors that may cause the decline, therefore migration routes and connectivity between the Wadden Sea and Arctic breeding grounds as well as African wintering areas will be analyzed for a few selected species, the Grey Plover Pluvialis squatarola and the Bar-tailed Godwit Limosa lapponica, using satellite transmitters as well as geolocators.



Spring and autumn migration routes of a Grey Plover marked April, 4, 2011 with a 5 g PTT (from Exo et al. 2012, Jber. Institut für Vogelforschung 10: 10-12).

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others	34	
Profiling floats	~200	
Animals	hundreds	
Fixed stations	37	
TOTAL		

Section 3. Technological Changes that Affect User Requirements

Section 4. User issues, problems, and level of satisfaction with ARGOS

Programme 6 is in contact with ARGOS to establish a link to MOVEBANK http://www.movebank.org/#page=search_map .

Programme 2 mentioned precision problems using ARGOS location in ice drift measurements. Temperature data were spiky. Is there a problem with interference from other transmitters?

Programme 16 mentioned the need for individual bills for each transmitter. The project costs are sponsered by private associations which would prefer to pay only for the transmitter for their respective animal.

Programme18 mentioned precision problems using ARGOS locations. Mountain effects resulted in few and imprecise locations. The allocation of a single time slot for transmission was also problematic and the costs of transmission were high compared to the project budget.

The bird trackers in general mentioned higher accuracy needs in locations and needs for smaller and lighter transmitters.

The collection of data for table 2 is difficult. Argos itself probably would be able to provide much more accurate numbers.

Section 5. Successful program use of ARGO (good news)

Section 6. Analysis of Local Operational Issues

The compilation of a list of users for each individual country helped a lot in compiling the national report.

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**SWEDEN**

A. STATUS FOR ARGOS PROGRAM OF THOMAS ALERSTAM, LUND UNIVERSITY

Section 1. Overall Summary

Satellite tracking of migrating birds (project nr 1204)

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals	12	1,5
Fixed stations		
TOTAL		

Section 3. Technological Changes that Affect User Requirements

Section 4. User issues, problems, and level of satisfaction with ARGOS

Tomas Alerstam is satisfied with the support Argos is giving to the research program.

Section 5. Successful programme use of ARGOS

Section 6. Analysis of Local Operational Issues

B. STATUS FOR ARGOS PROGRAM OF SUSANNE ÅKESSON, LUND UNIVERSITY

No active trackers during 2012

Section 1. Overall Summary

Tracking migration of sea turtles and sea birds

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals		
Fixed stations		
TOTAL		

Section 3. Technological Changes that Affect User Requirements

Section 4. User issues, problems, and level of satisfaction with ARGOS

Section 5. Successful programme use of ARGOS

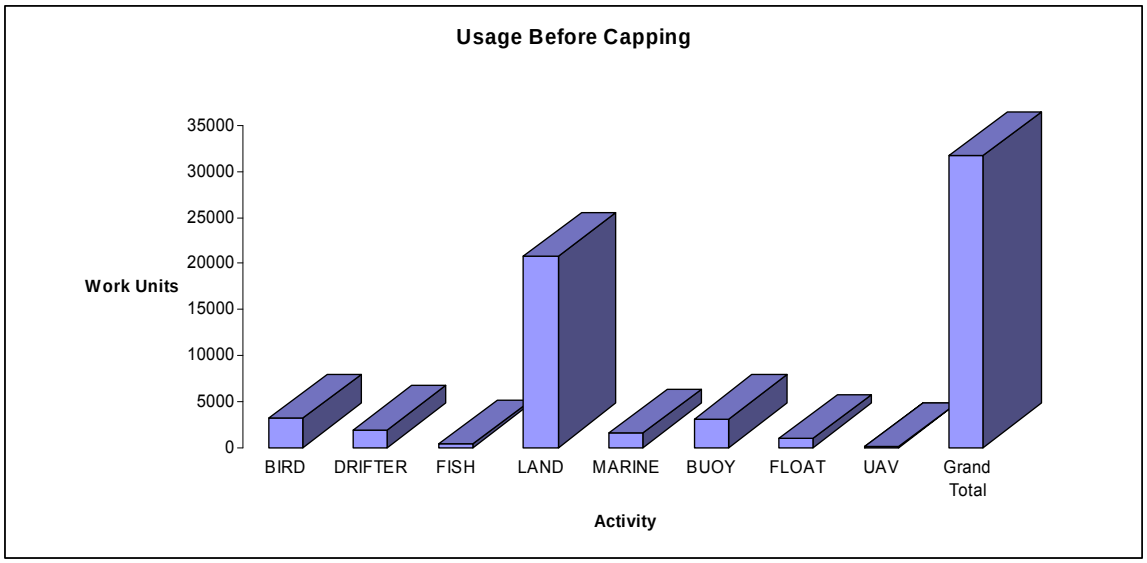
Section 6. Analysis of Local Operational Issues

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**CANADA**

Section 1. Overall Summary

Canadian researchers continued this year, 2012, to make good use of the Argos system consuming over eighty-six platform years to the end of June. That number is projected to double by the end of year.



Canadian usage in 2012. Work Units are essentially transmitter-days. The LAND and MARINE categories refer to animal tracking, the dominant activity for Argos users in Canada.

Animal tracking was the dominant activity as policy makers, resource developers and habitat managers ask for hard data from researchers to guide their decisions. Populations of caribou, bison, grizzly and polar bears, sea birds, foxes and others are being monitored by Argos transmitters for their responses to rapidly changing conditions, especially in the Arctic.
Government agencies have long been using Argos for operational programs as well as research activities. The Canadian Meteorological Service continues to operate data buoys and drifters along with the Canadian Ice Service and the Coast Guard Rescue units. Fisheries and Oceans maintains its share of the Argo float program as well as fish and marine mammal research programs. Some of these activities are in decline due to government budget reductions but can be expected to continue because of their recognized high priority.
Activity is maximum during the late spring and summer months as a reflection of the field season when new transmitters are deployed but the intensity of Argos activity declines only partly as most programs are designed to collect year-round data.
Local issues typically involve transmission anomalies in wooded areas or snow cover affecting the antenna. One user has developed a method of attaching transmitters to cranes and is willing to share that with anyone with the same challenges.
A lot of users mention the issue of cost and it is apparent that many programs are under cost pressure. This, and the decline in usage this year, are perhaps a reflection of increased difficulty in getting research funding in Canada. Individual comments are in Appendix 4.
See Appendix 1 for individual program summaries

Section 2. User types by family (projected to year-end)

Overall, bird, fish and land animal tracking accounts for 81% of usage in Canada and the total usage is conservatively expected to exceed 173 PTT-Years down from 215 PTT-Years estimated last year. See Appendix 2 for additional information.

	Average active PTTs per month	**Total PPT Years**
Buoys and others	39	27.6

Profiling floats	96	5.1
Animals	1636	141.6
Fixed stations	0	0
TOTAL	1771	173.1

Section 3. Technological Changes that Effect User Requirements

In regard to technological issues, users seem to be generally happy with the hardware especially with GPS fixes. Some users are switching to Iridium for the greater data volume and, in some cases, reduced cost. There have been some cases where lithium batteries have not lasted as long as expected possibly because the transmitter is on for longer periods. See Appendix 3 for individual comments.

Section 4. User Issues, Problems and Level of Satisfaction with Argos

There are no reported major issues or problems. The level of satisfaction with the service is mostly high, with the exception of costs for some Argos programmes which is encouraging a search for alternate technologies and satellite providers. See Appendix 4 for individual comments.

Section 5. Successful Programme Use of Argos

Program success using Argos has been very good with many publications coming from the research characterizing migration patterns, oceanographic conditions and animal behaviour such as Arctic foxes capable of detecting food from great distances and travelling up to 90 km per day to reach it. See Appendix 5 for individual comments.

Section 6. Analysis of Local Operational Issues

One particularly interesting issue is the shortened lifespan of collars attributed to the animals frequenting heavily timbered areas causing increased length of time to get a satellite fix. For more details and additional individual comments see Appendix 6.

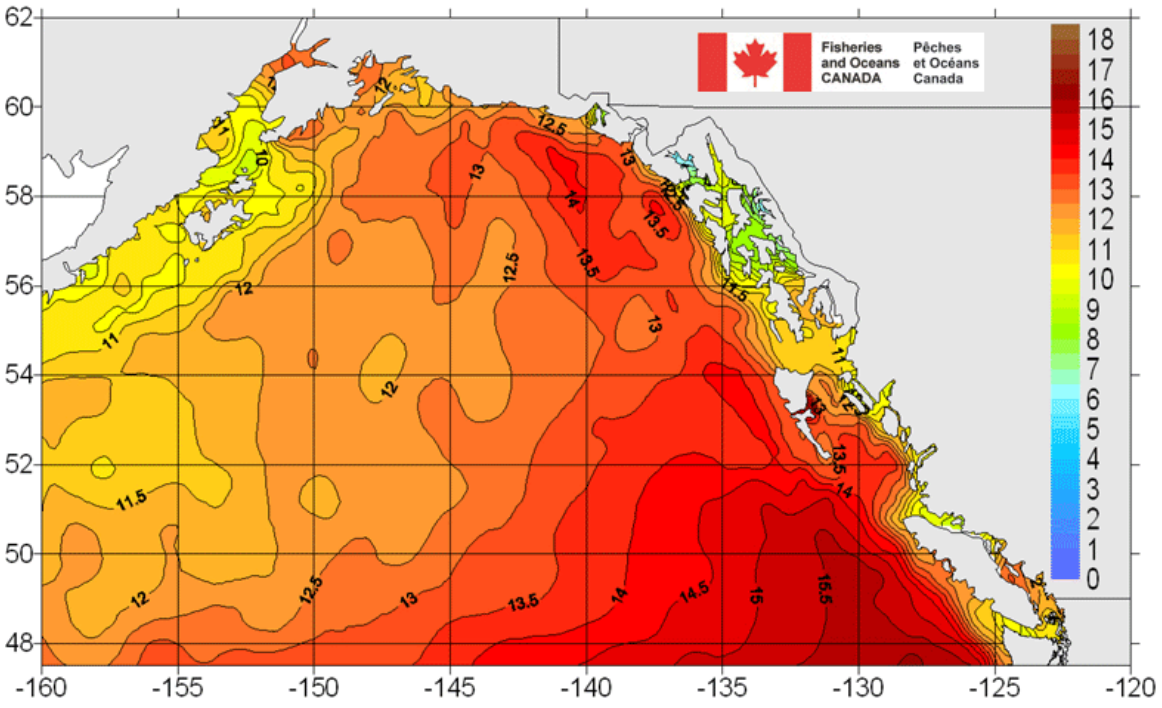
Appendix 1. Summaries of Programs

As in previous years, animal tracking has dominated Argos activity in Canada this year with meteorological and oceanographic applications being significant Argos participants. The effects of Arctic climate change on migration and dispersion of species such as caribou, polar bears, arctic fox, snowy owl and seals are being studied intensely and Argos technology is contributing strongly to wildlife management efforts.
Only twenty operational programmes replied to the questionnaire, some overlapping with related programs. Among these, animal trackers dominate with strong representation from large ungulate and seabird research. Ocean moored and drifting buoys operated by Environment Canada are also significant programs along with the Argo programme of drifting, profiling floats operated through the Department of Fisheries and Oceans.
Below are the responding programmes. All responders were very well satisfied with their service with some suggesting improvements which will be covered in the appropriate sections below.

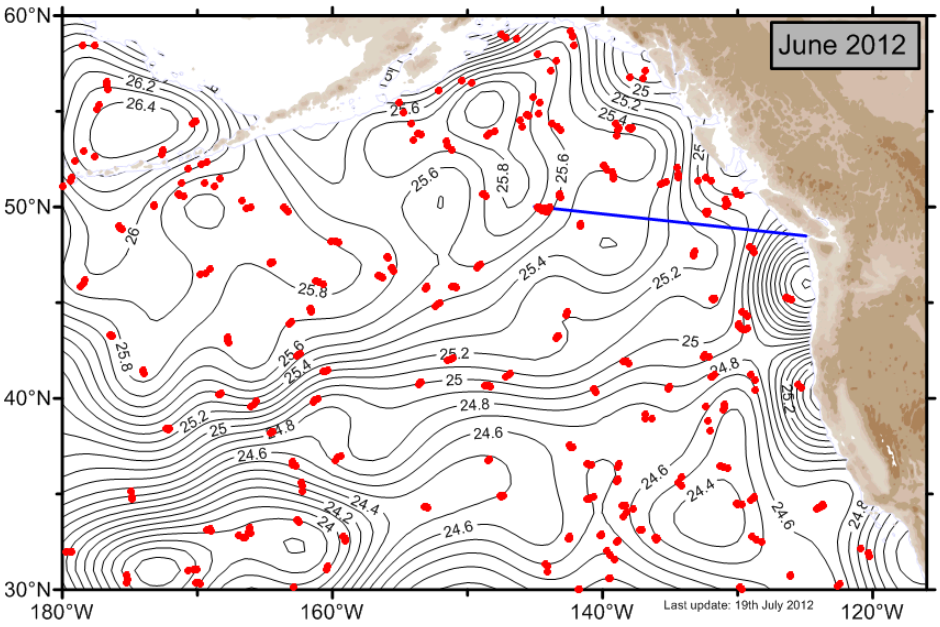
1. Canadian Argo Profiling Floats
Argos Programme Number 2442
Agency: Department of Fisheries and Oceans

http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/argo/index-eng.html
Canada is deploying profiling floats in the north Atlantic and north Pacific in support of Argo, which is a component of the Global Ocean Observing System. Data from around the world within this program is freely available to all and can be accessed through two Argo data centres. Examples of Canadian data products can be found at: http://www.pac.dfo-mpo.gc.ca/science/oceans/Argo/Alaska-Argo-eng.htm

As of July 2012, Argo Canada was still operating 84 floats relying on Argos for data telemetry. This number of Argo profiling floats using Argos telemetry is rapidly declining for two main reasons: 1) Many floats purchased between 4 and 6 years ago have run out of battery power; 2) The new floats purchased in the past year rely on Iridium telemetry.



NEUTRAL Summer Ocean Temperature (°C) at 0010 m depth



Mixed Layer Density in sigma-t units in the NE Pacific derived from Argo floats (red dots).

2. Grey Seals Tracking
Argos Programme Number 0988
Agency: Department of Fisheries and Oceans

Population Ecology Division, BIO in collaboration with Dalhousie University deployed 20 Agros tags on adult grey seals at Sable Island, Nova Scotian. The purpose of this work, funded largely by the Ocean Tracking Network (NSERC, CFI), is to study the spatial and temporal nature of encounters among grey seals and between grey seals and prey that have been acoustically tagged. Seal detect tagged fish via a mobile transceiver fitted to the seals at the time the Argos tag was deployed.

3. Arctic Fox Tracking
Argos Programme Number 3297
Agency: Université du Québec à Rimouski

The main objective of our program is to better understand habitat use and large scale movements of arctic foxes throughout the seasons in the Canadian Arctic. Our program also include red foxes, which are gradually expanding their range to higher latitudes. In addition to characterizing both species movements, our objective is to better understand interactions between these two species, factors influencing their movements such as food resources availability, sea ice composition, and juvenile dispersal in the current climate change context. This program will continue again for 2012 with 41 collars active. We are overall satisfied by ARGOS data obtained and we will maintain our program in the next few years.

4. Government of Quebec Has Three Caribou Tracking Programs
Argos Programme Numbers 959, 22857, 4229
Agency: Ministère des Ressources naturelles et de la Faune du Quebec

The Argos service is used to locate barren ground caribou. The data is used for scientific research and management purposes.

5. Canadian Ice Service, Ice Fragment Tracking
Argos Programme Number 633
Agency: Canadian Ice Service (CIS)

CIS has been involved in tagging Multi-year ice floes, Ice Island fragments, ice shelf fragments and icebergs in the past decades. The daily track obtained for each beacon eventually serves to validate Ice or Iceberg drift model over the Arctic and east coast domain.
2012 marks the last year of Argos telemetry beacon deployments by CIS; planned deployments this year could provide information for another 2 years due to Lithium battery usage.

6. Ring-Billed Gull Tracking
Argos Programme Number 4203
Agency: Université du Québec à Montréal

We purchased 22 22-g solar GPS PTTs to track Ring-billed gulls breeding in a colony near Montreal, Quebec. Our main objective is to study the post-breeding dispersal of these birds and to identify their migration routes and wintering areas. This is part of a larger study on the ecology of this species (http://gull.uqam.ca). A total of 25 birds were marked between 2010 and 2012 because some PTTs were

recovered and deployed for a second time. Eleven units have been lost due to predators, car accidents or have ceased transmitting for unknown reasons. A proportion of birds dispersed rapidly in late summer in all directions before they undertook their fall migration to their wintering areas. Some birds, however, remained in the Montreal area before leaving for the winter. We will continue our tracking until the PTTs will last. Tracking the same birds over a year is particularly interesting to determine repeatability in their dispersal pattern and fidelity to their migration routes and wintering areas.

7. Department of National Defence Search and Rescue
Argos Programme Number 2019
Agency: Department of National Defence (Canada)

DND utilizes Argos to track and report location on the Self Locating Datum Marker Buoy (SLDMB) that is used to refine search area parameters for Search and Rescue. The SLDMB is programmable to one of 99 discrete channels to permit flexibility for multiple searches. Annual usage is highly variable since it depends on the number and types of searches. Usage tends to be highest in late Summer and early Fall.

8. Greater Snow Geese Tracking
Argos Programme Number 3082
Agency: Service canadien de la faune, Environnement Canada

The main objective of the program is a large monitoring program on Greater Snow Geese. The Greater Snow Goose is an overabundant population and conditions that led to this situation are still present of even increasing (development of agriculture and climate changes) and the impacts on their staging and reproductive habitat are not well known. The Canadian Wildlife Service from Environment Canada had published a management plan. The conclusions of this project will help us for a good follow-up of the population and habitat, one of the objectives of the plan. The data from the Argos system will be used on two different projects. The first one is to validate the survey methodology used to evaluate population size from the annual spring survey. The proportion of radio marked geese detected during the spring survey will be used to estimate the proportion of the population not photographed by the survey. This will allow us to develop an index enabling us to evaluate the real population size, the management plan basis. The second project is the monitoring of bird migration from the East Coast of the United States where they overwinter, to the High Arctic (Bylot Island) where they reproduce. We want to learn more about the landscape structure of the habitat use by the geese and their related reproductive output. The Argos system is the only way to follow them over such a large range. Environment Canada (Canadian Wildlife Service) has three main partners in these projects, Université de Sherbrooke, Université du Québec à Rimouski et Université du Québec à Montréal.

9. Snowy Owl Tracking
Argos Programme Number 3471
Agency: Department of Biology and Centre d'études nordiques, Université Laval

The objective of my program is to study annual movements, habitat use and breeding dispersal of arctic-nesting birds. The main species of interest is the snowy owl. During the first phase of the project, we deployed 12 PTTs on Bylot Island (NU) in summer 2007 and 4 additional ones on Herschel Island (YK) in 2008. We successfully tracked these animals across the Canadian Arctic for up to 3 years, until summer 2010. This program has revealed new and expected information on migratory movements, habitat use and breeding dispersal of this nomadic species. Winter use of sea-ice by snowy owls in the eastern Canadian Arctic was documented, a behaviour that was previously unknown.

We currently have only 1 transmitter “on air”, although we intend to deploy more (we have 16 transmitters ready) during next summer.

10. Tracking Problem Bears
Argos Programme Number 1015
Agency: Parks Canada

Radio telemetry collars with Argos satellite & GPS technology have been used successfully for monitoring bears in scientific research projects in Kluane National Park for many years. We hope to continue to use this technology to monitor bears that have been involved in negative human bear interactions and have been deemed problem bears. These bears are difficult to monitor and in many cases end up being destroyed. By being able to capture and radio collar these bears and monitor their activities in real time it may provide additional opportunities for alternative management response (i.e. aversive conditioning) rather than simply destroying the bear. Continuing to utilize a limited number of GPS collars with Argos uplink capability on bears that we handle as part of our management activities may result in fewer control kills as well as an opportunity to augment existing data. As bears become increasingly pressured by human development and activity it is crucial that we develop new methods to deal with human wildlife problems if we ultimately want to preserve grizzly bears and their habitat.

11. Drifters in the Great Lakes
Argos Programme Number 3041
Agency: Environment Canada

The purpose of this program is to track four Clearwater, surface layer drifters which will be deployed during periodic times throughout the summer months (April-October). The units will be deployed during selected periods (while other experiments are being conducted at the same location) throughout the summer season, mainly in the Great Lakes (and elsewhere in Canada) to assist in measuring the water velocity at the surface for these water bodies.

12. Wolf Tracking in the Northwest Territories
Argos Programme Number 4201
Agency: Government of the NWT, Dept. of Environment & Natural Resources

Collared wolves tracked by satellite are required to estimate the number of wolves associated with caribou on the Bathurst winter range. GPS locations of collared wolves, in association with other field surveys, are used to quantify predation rate on caribou in winter. The number of collared wolves will need to be

augmented for one or two more winters. Collared wolves also assist in a pup survey in late August to estimate recruitment.

13. Sandhill Crane Tracking
Argos Programme Number 4157
Agency: Long Point Waterfowl

Program 4157 employs NorthStar Science and Technology, Inc.® solar-powered GPS transmitters mounted on PVC leg-bands to track the migration chronology of Eastern Population Sandhill Cranes (Grus canadensis). We captured 17 cranes in 2010 and affixed nine transmitters to collect GPS fixes every six hours for 3-5 years. At present, six of the original nine units deployed remain functional. Remote data collected via transmitters and relayed through the Argos satellite system will be analysed in conjunction with ground-based data to provide a comprehensive understanding of migration in a previously understudied population of the species.

14. Caribou Tracking
Argos Programme Number 2814
Agency: Government of Northwest Territories, Department of Environment & Natural Resources, Fort Simpson

Two programs both with similar goals but with different species of northern large ungulates; boreal woodland caribou and wood bison. Location information addresses movements, range use, seasonality, calving timing/location, critical habitats, use/avoidance of naturally disturbed (forest fire) and anthropogenic disturbed areas at landscape level as well as finer detail.

For Caribou, we use a majority of GPS collars, currently 28 fully functioning. Should be maintaining 25-35 for at least another 4 years.
For Bison, we use Argos and GPS collars, currently 5 fully functioning. These will be monitored throughout the remainder of their 8 month lifespan. After this future undecided on more collaring.

15. Sea Duck Tracking
Argos Programme Number 3262
Agency: Environment Canada

In the past fiscal year, we have been following over 40 scoters that had been implanted with satellite transmitters. This has resulted in extending the breeding range of both Black and White-winged scoters and to establish relationships among breeding, moulting and wintering areas. It also resulted in pertinent data on migration timing which proved useful in estimating the period of vulnerability of shellfish aquaculture operations in Atlantic Canada to sea duck predation. We plan to implant a similar number of birds next year (2012) and pursue our studies of the ecology and migration of sea ducks.

16. Hudson Bay Polar Bears
Argos Programme Number 00947
Agency: Environment Canada

The program objective is to study the use of sea ice habitat in Hudson Bay, Canada by polar bears by using satellite telemetry to monitor seasonal movements of up to 5 (five) individuals starting in September 2012.

17. Wild Turkey Tracking
Argos Programme Number 4196
Agency: Quebec Ministère des ressources naturelles et de la faune

We will use GPS/ARGOS transmitters to identify precisely habitat used by wild turkey. We have put PTT on 13 wild turkey in January 2012 and with the 2 captured in 2011 and alive at this time, we follow a total of 15 PTT.

18. Caribou and Grizzly Bear Tracking
Argos Programme Numbers 1572, 14572, 31572, 12445, 9572
Agency: Government of Northwest Territories, Department of Environment & Natural Resources

Caribou and grizzly bear populations are being studied in relation to resource development and habitat changes. The ARGOS program has been and continues to be used by the department since 1996 to monitor the movements of various species of animals in the Inuvik region including caribou, grizzly bears and polar bears.

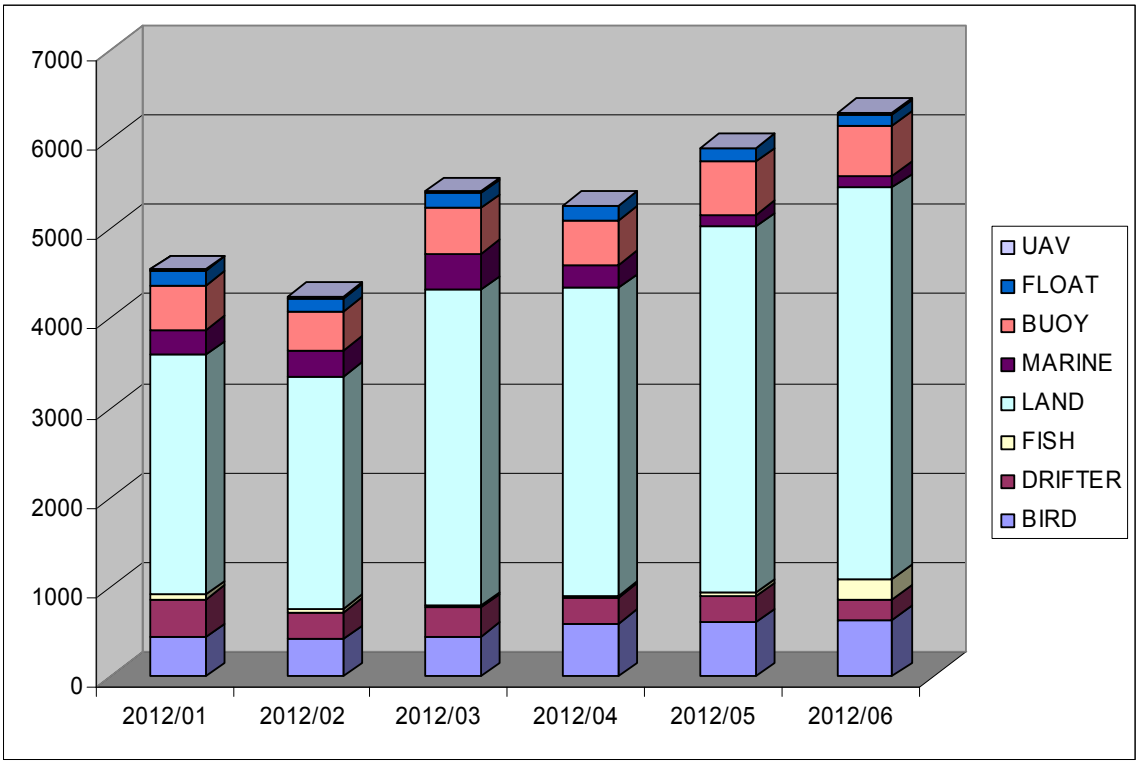
19. Moose and Wolf Tracking
Argos Programme Number 4195
Agency: British Columbia Ministry of Forests

My PTTs allow me to follow the movements of moose and wolves at both a landscape and fine scale resolution. My use of the system in future years is uncertain.

20. Raptors and Owls Tracking
Argos Programme Number 2900
Agency: Environment Canada

This study tracks raptors, burrowing owls, short-eared owls and snowy owls in 2012, to determine their seasonal movements, habitats used in breeding, migrations and winter seasons, and to measure breeding dispersal (annual fidelity to breeding sites.

Appendix 2. User Types by Family



Canadian usage in 2012 Work Units. Activity increases in the spring and summer.

Appendix 3. Technological Changes that Effect User Requirements

Comment	Program
With the NOVA floats recently that we recently purchased, we use Iridium data telemetry (SBD = Short Burst data). The next version of the Iridium modem on that float will likely use RUDICS instead of SBD.	2442
The one aspect I find good is the omni-directional signal provided by Argos PTT handles wet snow and total snow cover effects better than Iridium-type beacons.	633
The next deployment of wolf collars in March 2013 will likely involve more Iridium GPS collars (i.e., non-Argos). This is because I should be able to obtain twice the location data at half the cost. Also, about 1/3 of the GPS-Argos collars I have on wolves right now aren't working. The collar design of the GPS-Argos collar may be adversely affecting performance (re: external antenna). The current Argos PTTs will still be active until these collared wolves are re-captured in March 2013 or the collar drops off via its programmed release mechanism the following year.	4201
Everett Hanna at Long Point Waterfowl implements a mounting system for transmitter devices specific to his study species, the Sandhill Crane. If other researchers/organizations are seeking to capture, mark, and track the same species, we recommend they contact us for invaluable input and support.	4157
We are working with Vemco and SMRU Incorporated to develop a Bluetooth link between an Argos PTT and the mobile transceiver. This puts further pressure on the bandwidth issue.	988
We implement a mounting system for transmitter devices specific to our study species, the Sandhill Crane. If other researchers/organisations are seeking to capture, mark, and track the same species, we recommend they contact us for invaluable input and support.	4157

Appendix 4. User Issues, Problems and Level of Satisfaction with Argos

Comment	Program
We have been very satisfied with services provided by Argos. However, we note the lack of two-way communications with conventional Argos and limited data throughput, problems that we hear will be partly solved by the newer Argos-3 technology.	2442
Nothing but satisfaction; the only problem has to deal with cost of usage. CIS is part of the Meteorological Service of Canada (MSC) and MSC is moving more towards Iridium PTT because of cost saving issues.	633
Issue regarding ARGOS web access. An enhanced web access for files download (superior number of lines per files) and to more than the last 10 days of data would be much appreciated.	3297
The monthly cost for wolf Argos collars (program 4201) is much higher than expected. In mid-March, 18 Argos-GPS collars were deployed. The duty cycle was changed in the last week prior to deployment to accommodate revised study objectives, re: 8 GPS locations/day in all winter months instead of just November and March. Still, I expected no more than about US $680/month for data collection charges. Are the non-JTA services adding that much to the overall cost? My Argos invoice for March 2012 (1/2 month) was US $1,148.24, then a whopping US $4,036.44 for April. Some PTTs weren't reporting as hoped in May, so the data charges in May were less at US $3522.63. If all PTTs were functioning as programmed and I was incurring data charges of US $4,000/month, that cost would be prohibitive for me (est. $50,000/year)! I wonder if the PTT reporting is going beyond a 6-hr interval and hence more usage is being charged? Perhaps CLS America can look into why my cost so high? **(ROC's note: This issue was resolved when the user was informed that the data was available at no cost through the CLS website.)**	4201
We continue to have issue with the rigidity of breaking a transmission day down into four 6-hour periods 0000-0559, 0600-1159, 1200-1759, and 1800-2359 UTC. This creates unnecessary restrictiveness when setting transmission schedules that are of 4-6 hours in length. Can't we be billed for actual usage given some minimum?	2814
The cost of data acquisition remains high. Collars are being developed using alternative technologies that are more cost efficient.	1572
No problems – just the ongoing limitation of Argos bandwidth.	988

Appendix 5. Successful Programme Use of Argos

Comment	Program
Using Argos, we have been successful in obtaining ocean temperature and salinity profile data from over 300 floats since the start of the Argo Canada program	2442
CIS has maintained a perfect deployment records in the past few years – some of them being dropped from airplane. The only caveat is the duration of the signal transmission. Some lithium equipped beacons have not lasted as long as expected due to the location or targets they were deployed onto. However, one beacon has been "beeping" for more than 2 years!	633
We are overall satisfied by ARGOS data obtained and we will maintain our program in the next few years.	3297
We are still in the process of getting the data but we have already showed some fidelity in dispersal patterns.	4203
DND is unable to provide specific details; however, the data provided by the SLDMB through Argos has been instrumental in the successful completion of many Search and Rescue incidents since 1999 and has also contributed significantly to DND's knowledge and understanding of ocean currents and conditions.	
So far, 2 of our papers on Snowy Owls describe successful use of the Argos system. Therrien, J. F., G. Gauthier, and J. Bêty. 2011. An avian terrestrial predator of the Arctic relies on the marine ecosystem during winter. Journal of Avian Biology 42:363-369. Therrien, J. F., G. Gauthier, and J. Bêty. 2012. Survival and reproduction of adult snowy owls tracked by satellite. Journal of Wildlife Management (in press).	3471
Nothing current however past use of Argos combined with GPS technology used very successfully to monitor Grizzly Bear movement over large tracts of habitat within Kluane national park	
Some of our collaborative caribou program has been highlighted in an ARGOS article. For boreal caribou work has been essential in our providing information at the national level for critical habitat and ultimately the production of a recovery strategy. The quality of has been critical in describing how boreal caribou use the landscape in the south western Northwest Territories. For wood bison data has been critical in establishing range of occupancy which has greatly expanded to the north and west. It has also highlighted the use of linear features to move around the landscape. First Nation's people have begun to embrace the importance of the information provided by collared animals and have been using this scientific knowledge along with local traditional knowledge based studies to better understand boreal caribou and wood bison ecology. A thesis and a number of scientific publications have resulted from the boreal caribou location data collected over the past 5-8 years in the NT.	2814
Data from Argos were extremely useful in characterising the migration patterns of several species of sea ducks, especially the White-winged Scoter and the Black Scoter. It also permitted to determine the relationships between breeding, moulting and wintering areas. All this information will prove extremely useful in establishing conservation plans for these species.	3262
Argos has proved invaluable for efficiently relaying invaluable tracking data	4157
We have used these drifters to successfully determine surface water velocity for a number of different studies in Lake Ontario, Lake Erie and a small mountain lake (Lake O'Hara) in Eastern British Columbia.	3041

Appendix 6. Analysis of Local Operational Issues

Comment	Program
The NOVA float model that we recently purchased exclusively uses Iridium.	2442
For Canadian Ice Service the precise location of a unit is not as critical as other user's need. As such we have little use for GPS accuracy. Unfortunately, this is not the only driver within the organisation; communication cost is a much bigger issue.	633
We have discovered a result that is not unexpected but has to be accounted for in our study of boreal caribou. In some localized parts of the boreal forest in this region there are relatively expansive stands of high density tall timber. Some of the individually collared caribou whose annual home ranges include these stands tend to spend more time in them than other caribou. The collars on these caribou that frequent these stands have had shorter life spans than anticipated and shorter than the other caribou in the study. We have attributed this to the increased length of time it will take to get a satellite fix from within these more heavily timbered stands.	2814
Satellite coverage in the north is excellent and platforms perform well.	1572

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**UNITED STATES OF AMERICA**

Section 1. Overall Summary

The data management services provided by CLS have been an important partner in delivering satellite telecommunication capability to U.S. users for over 30 years. The ability to monitor animal and marine mammal movement as well as the world oceans is critical to improving our understanding of these vital systems and the role they play within the earth system.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others	1,665.7	1,287.0
Profiling floats	2,145.8	169.0
Animals	3,311.9	449.0
Fixed stations	84.8	75.0
TOTAL	**7,208.2**	**1,980.0**

Section 3. Technological Changes that Affect User Requirements

The one technology change that continues to positively affect user requirements. is PTT/PMT weight. As technology improves and PTT/PMT weight decreases, new monitoring applications will continue being developed. This is most beneficial for the Animal component.

Section 4. User issues, problems, and level of satisfaction with ARGOS

An issue has arisen within the Buoys and others user group regarding the apparent increased power requirement of the new PMT for use with the Argos 3 sensors. Tests are currently being conducted to determine solutions that would extend the battery life of the buoys and consequently, the life of a drifting buoy. If a solution can not be found that would extend the drifter life, then there may be a shift towards more efficient telecommunication packages.

Section 5. Successful program use of ARGOS

Of the many programs using ARGOS in the USA, the one being highlighted in this years report is wild pig tracking in California.

5Wild Pig Tracking: Wild pig populations continue to expand within the United States. This expansion has the potential to be a major factor in the spread of disease among wild pig populations as well as U.S. domesticated pig stocks. ARGOS is used to monitor pig movements with the resultant data used to develop models to better understand how migratory patterns coupled with infectious diseases can spread. Better understanding of pig movements can help improve vaccination and mitigation control processes within the U.S.

Section 6. Analysis of Local Operational Issues

No known issues. CLS America remains very responsive to user needs.

5 www.orau.gov/dhssummit/abstract_example.doc

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**NEW ZEALAND**

Section 1. Overall Summary

The NZ JTA Argos usage in 2012, consists of the MetService Buoy programme, plus about 12 small programmes tracking animals and one fixed monitoring station. The animal applications track a range of birds, fish and mammals. An application monitoring crater lake levels and lake temperatures on an active volcano has been ongoing since 2009.

Section 2. User Types by family (Table of PTT use by the country)

The Table below shows the best estimate of NZ usage for 2012. Only a subset of NZ users provided input to this report.

	Average active PTTs per month	**Total PTT.Years**
Buoys and others	3	2.3
Profiling floats		
Animals	Number unknown	2.5
Fixed stations	1	1
TOTAL	**?**	**Approx. 5.8**

Section 3. Technological Changes that Affect User Requirements

During 2012, only half of the MetService NZ buoys used Argos communications, the others used Iridium, so this has significantly reduced the amount of Argos PTT time purchased by MetService. The hourly data from the Iridium buoys is available on GTS by H + 12 which is very timely.

A shark tracker commented that the introduction of solar powered animal transmitters will generate more transmissions since they are not battery-limited. They need a simple mechanism to 'switch them off' to prevent excessive satellite use and transmission costs.

Section 4. User issues, problems, and level of satisfaction with ARGOS

In general, a high level of satisfaction with Argos was expressed by Users. MetService reported that User Office support was excellent and the processing and QC of buoy data for GTS is highly reliable. Users did not report any problems.

Section 5. Successful program use of ARGOS (good news)

The MetService buoy programme is an operationally excellent programme for which data has been delivered 24/7 since the late1980s. A Shark tracking programme reported almost 100% success rate was achieved with white shark tag transmissions.

The volcano crater lake monitoring programme reported that over the last four years Argos has been used to monitor the temperature and level of the Ruapehu Crater Lake every hour or so, even when the transmitter was buried by snow. This makes it much more likely that eruption precursory heating of the lake will be detected.

Section 6. Analysis of Local Operational Issues

NZ Users are happy with the level of service and technical support provided by the Argos User Office in Melbourne. Users like the pay on consumption tariff, it is simple and easy to understand. Trial use of Iridium buoys by MetService during 2012 has demonstrated that Iridium communications costs are cheaper than Argos, so MetService has some concerns about how migration to Iridium use will impact on the future Argos JTA tariff.

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**United Arab Emirates (UAE)**

Section 1. Overall Summary

The United Arab Emirates started the satellite-tracking programme in 1994 through the National Avian Research Center (NARC) of the Environment Agency – Abu Dhabi, primarily for studying movement and migration of the Asian Houbara. So far, nearly 350 Asian Houbara bustards have been tagged and tracked. In 2005, EAD started tracking programme for flamingos and other birds and so far, nearly 50 birds have been tagged and tracked. In 2010, the Emirates Wildlife Society-WWF started a satellite-tracking programme for the marine turtles in the Arabian Gulf Region. A programme to track Dugong started in 2010 followed by another tagging in 2012. During 2012, on an average 155 PTT under Houbara Programme, 12 under Bird Programme, four under Dugong Programme and 36 under Marine Turtle Programme were active.

The use of Argos programme in the country has been successful in improving our understanding of migration routes, stopover sites and local habitat use and even to the discovery of important areas, thus helping the overall conservation of the species and their habitat.

Family	*Program number*	*Program name*	*Organization name*
Birds	3763	EMIRATES CENTRE FOR THE CONSERVATION OF HOUBARA	Emirates Center for the Conservation of Houbara
Birds	1440	WILDLIFE IN ASIA AND AFRICA	International Fund for Houbara Conservation
Birds	3416	SURVEY OF HOUBARA BUSTARD	Emirates Centre for Wildlife Propagation (ECWP)
Birds	3657	BIRDS ARABIA	Environment Agency-Abu Dhabi
Marine Animals	23657	BIRDS ARABIA -SOUS PROGRAMME DU 3657	Environment Agency-Abu Dhabi
Marine Animals	4189	GULF TURTLE PROJECT	Emirates Wildlife Society-WWF
Marine Animals	14189	GULF TURTLE PROJECT (SUB-PROGRAM 4189)	Emirates Wildlife Society-WWF
***Marine Animals**	5073	BURJ AL ARAB	Burj Al Arab

Asian Houbara Programme 1440 (NARC-SKHBC-IFHC):

The Argos programme run by the National Avian Research Center (Abu Dhabi) and the Sheikh Khalifa Houbara Breeding Center (SKHBC, Kazakhstan), under the leadership of the International Fund for Houbara Conservation (IFHC, Abu Dhabi – United Arab Emirates), aims to study the ecology and behaviour of the Asian Houbara Bustard (*Chlamydotis macqueenii*) over its distribution range. It helps collecting information resident and migrant populations (routes, main stopover areas and dates of migration), breeding behaviour and survival of wild and released captive-bred individuals.

The ARGOS programme 1440 is active since 1994 and was previously shared between NARC and EAD (former ERWDA). Between 1994 and September 24th 2012, 834 satellite transmitters (PTT of GPS-PTT) were registered under this programme and fitted on more than 10 animal species totalling 988 individuals monitored. Microwave Telemetry produces 90% of all transmitters used in this programme. Others were from North Star. Transmitters on animals other than bustards or falcon were then registered under other ARGOS programmes, as those of EAD.

Since 1994, 680 transmitters were deployed on 823 Asian Houbara (44 rehabilitated birds after confiscation by UAE customs, 417 captive bred released and 362 wild). Transmitters were deployed mainly in UAE and Kazakhstan, but also in less numbers in Yemen, Iran, Pakistan, China and the Kingdom of Saudi Arabia.Other aspects of the programme include post-release monitoring of rehabilitated falcons (survival, migration routes) with 119 transmitters used on 122 falcons, and ecological studies of the Arabian Bustard in Yemen with 7 transmitters used on 9 bustards. Few other transmitters offered to third party to assist them in the study and conservation of Bengal Florican in Cambodia are still running (21 transmitters deployed on 21 individuals).

Currently, 251 PTT are functioning in the field (229 on Asian Houbara, 5 on Arabian bustard, 3 on rehabilitated falcons and 14 on Bengal Florican). By the end of 2012, 70 additional PTTs are planned to be deployed on captive bred Asian Houbara to release in the Arabian Peninsula.

North African Houbara Programme 3416 (ECWP-IFHC):

The Argos programme run by the Emirate Center for Wildlife Propagation (Missour, Morocco), under the leadership of the International Fund for Houbara Conservation (IFHC, Abu Dhabi – United Arab Emirates) aims to study the ecology and behaviour of the North African Houbara Bustard (*Chlamydotis undulata undulata*) over its distribution range. Microwave Telemetry produces all transmitters used in this programme. Few PTT were also deployed on rehabilitated vultures (*Gyps fulvus).*

Since 2004, ECWP deployed 151 satellite transmitters (PTT or GPS –PTT), allowing to monitor 222 African Houbara (45 wild and 177 captive bred released birds) and 2 vultures (re-usage of transmitters from dead animals).Currently the project monitored 74 Houbara with GPS-PTT and one vulture over four countries (Libya, Morocco, Tunisia and Senegal). By the end of 2012, 70 additional GPS-PTT are planned to be deployed on captive bred release Houbara in North Africa.

Asian Houbara Programme 3763 (ECCH):

The Emirate Center for Conservation of the Houbara (ECCH, Navoi Region, Republic of Uzbekistan) deployed 30 transmitters (GPS-PTT) allowing to monitor 35 Asian Houbara in Uzbekistan between 2010 and 2012 (17 wild and 18 captive bred released houbara).

Currently, 25 GPS-PTT are in function (7 wild and 18 captive-bred released). Microwave Telemetry produces all transmitters used in this programme.

Marine Turtles Programme 04189 (EWS-WWF):

EWS-WWF Marine Turtle Conservation Project is a three-year research project to monitor post-nesting Hawksbill turtles in the Gulf region to identify their migratory routes and key foraging grounds. The sub- programme 14189 has been created under the programme 04189 to be used by the Environment Society of Oman and the Ministry of Environment and Climate Affairs of Oman, project partners in Oman. From 2010 to 2012, 75 Sirtrack transmitters have been deployed which include 31 deployed during 2012. By the end of July 36 transmitters have been active.

Bird Programme 03567 (EAD):

Started in 2005 with the tracking of Greater Flamingos, the programme has expanded to cover a range of species. Species such as Ospreys, Marsh, Harriers, Sooty Falcon, Steppe Eagle and Spotted Eagle and some waterbird species such as Sooty Gulls, Crab Plovers and Terns have been tagged under the Programme. Currently, 12 PTTs are active on Marsh Harriers, Flamingos, Osprey, Spotted Eagle and Crab Plovers.

Dugong Programme 23657 (EAD):

The Dugong programme was started in 2010 by EAD to understand movement and habitat use patterns of Dugongs. The UAE Dugong populations are the second largest after Australia and it was planned that the use of the technology would provide new insights into movement patterns of the species. Four individuals were tagged during 2012. This programme is the sub-programme of Bird Programme (3657) run by EAD.

Section 2. Future Plans

Under the Houbara Program (01440) nearly 150 PTTs are planned to be deployed in 2013. Therefore, it is expected that between 150 and 300 PTT would be active during 2013, depending on mortality and losses. About 10 PTTs are planned to be deployed on birds in 2013 under Programme 3657 and another 4 PTTs on Dugongs under sub-programme 23657.

Section 3. Technological Changes that affect User Requirements

As raised in 2011 report development of a service providing movement alerts or mortality alerts by email or text message (SMS) according to user-defined criteria would be value addition to the programs being implemented in the UAE and elsewhere.

Section 4. User issues, problems, and level of satisfaction with Argos

Generally satisfied of the service, but still same concern as in 2011 (NARC). More reliability in determining flight altitude. Users also expect reduced Argos tariff, particularly for programmes using large number of transmitters. Data retrieval at ARGOS website is maximum for a period of 10 days, it would be better if it could be made available for a month.

Section 5. Successful programme use of Argos

UAE has successfully used Argos for tracking animals and birds. Use of technology has helped in determining migration routes, measuring survival, and identifying breeding events for Asian Houbara. NARC - IFHC continues to successfully use the Argos technology to monitor changes in migration routes and dates, variations in survival, and in measuring breeding parameters for Asian Houbara. The bird programme has also successfully used the technology on some key bird species in the country, documenting migration routes, stopover sites and habitat use, some of which for the first time for species such as Sooty Falcon and Crab Plover. The use of Argos system for tracking marine turtles, scientists were able to analyze the signals from post-nesting hawksbill turtles to identify migration routes, create density plots and map potentially new and key foraging grounds used by the tagged turtles.

Section 6. Analysis of Local Operational Issues

Some of the other programs such as 5073 and 3416 are there but we are not aware about the details of the programs and no reports have been received from them.

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**THE NETHERLANDS**

A. ROYAL NETHERLANDS METEOROLOGICAL INSTITUTE (KNMI)

Section 1. Overall Summary

Royal Netherlands Meteorological Institute
Dutch Argo (2936)

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats	37	1
Animals		
Fixed stations		
TOTAL		

Section 3. Technological Changes that Affect User Requirements

n/a

Section 4. User issues, problems, and level of satisfaction with ARGOS

highly satisfied – no problems

Section 5. Successful program use of ARGO (good news)

n/a

Section 6. Analysis of Local Operational Issues

n/a

B. FREE UNIVERSITY OF AMSTERDAM (VU)

Section 1. Overall Summary

Tracking of nomadic routes that are followed by pastoralists in the Afar State, Ethiopia.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals		
Fixed stations		
Herders	**2**	**2**
TOTAL		

Section 3. Technological Changes that Affect User Requirements

na

Section 4. User issues, problems, and level of satisfaction with ARGOS

na

Section 5. Successful program use of ARGOS

First results still to be expected.

Section 6. Analysis of Local Operational Issues

na

C. DUTCH CENTRE FOR FIELD ORNITHOLOGY (SOVON)

Section 1. Overall Summary

Sovon is organising monitoring of wild bird populations in the Netherlands and carries out research to study population demography in bird populations. Results of censuses and research projects are used for nature management policies, management plans en spatial planning.

Sovon is working in close cooperation with governmental bodies, universities and several other institutions. Survey fieldwork is mainly carried out by about 8,000 dedicated amateur birdwatchers.

Dutch Eagle Owl Porject
At the end of the summer in 2011 two Eagle Owl's are equipped with a GPS-PTT. One owl has been successful followed until May/June of 2012.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals	2	1
Fixed stations		
TOTAL	2	1

Section 3. Technological Changes that Affect User Requirements
-

Section 4. User issues, problems, and level of satisfaction with ARGOS
The impression of the Argos-system is quite positive. Not all data-transmisson (PTT-satellite-transmitter) passed perfectly, but this probably had more to do with the behaviour of the owl's (the owl's were located in dense wooded areas or caves and stone pits) rather than with the functioning of the Argos-system.

Section 5. Successful program use of ARGO (good news)

Section 6. Analysis of Local Operational Issues
See section 4.

D. ROYAL NETHERLANDS INSTITUTE FOR SEA RESEARCH (NIOZ)

D.1 NIOZ PROCS (1996) PROGRAMME

Section 1. Overall Summary

Royal Netherlands Institute for Sea Research (NIOZ)
PROCS (1996)
NIOZ has 40 transmitters with ARGOS ID numbers. Currently, 7 of these transmiters are being deployed in the Atlantic and Indian Oceans. All NIOZ ARGOS transmitters are used in a silent alert mode in (fixed) moorings.
They are only supposed to send out an alert if the moorings surface.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals		
Fixed stations	7	7
TOTAL		

Section 3. Technological Changes that Affect User Requirements

Section 4. User issues, problems, and level of satisfaction with ARGOS

Section 5. Successful program use of ARGOS

ARGOS transmitters and the ARGOS service have proven to be very effective when recovering moorings, especially in case of unexpected and unduly surfacing of a mooring.

Section 6. Analysis of Local Operational Issues

In the near future NIOZ will replace all ARGOS by Iridium systems, mainly because of the much lower costs of the Iridium system. It is expected that the replacement will be effective in two to three years.

D.2 NIOZ NWO PROJECT

Section 1. Overall Summary

Royal Netherlands Institute for Sea Research (NIOZ)
NWO project: Shorebirds in space. Development and application of individual tracking tools for all relevant temporal and spatial scales.
In this project the application of third generation of tracking tools are tested —ones that will extend the resolution of previous findings, and facilitate breakthroughs in the emerging fields of *ecological demography* and *spatial and cognitive ecology*. Especially, the application of state-of-the art satellite tags on small birds are tested and used to collect data on bird migration.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per	Total PTT.Years

	month	
Buoys and others		
Profiling floats		
Animals	15	4
Fixed stations		
TOTAL	**15**	**4**

Section 3. Technological Changes that Affect User Requirements

Section 4. User issues, problems, and level of satisfaction with ARGOS
Very satisfied.

Section 5. Successful program use of ARGOS
In 2012 15 PTT's were used to monitor the migration of Great Knot's in NW Australia to China. This has produced very valuable information.

Section 6. Analysis of Local Operational Issues

E. NATUURMOMUMENTEN

Section 1. Overall Summary

Natuurmomumenten
Protection of spoonbills along the west-palearctic (3685)

All PTT's are mounted on spoonbirds and make contact with an ARGOS satellite every three daysto send PGS data

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals	2 (until March)	2
Fixed stations		
TOTAL		

Section 3. Technological Changes that Affect User Requirements

No changes

Section 4. User issues, problems, and level of satisfaction with ARGOS

None

Section 5. Successful program use of ARGOS

Section 6. Analysis of Local Operational Issues

No issues

F. INSTITUTE FOR MARINE AND ATMOSPHERIC RESEARCH (IMAU)

Section 1. Overall Summary

Institute for Marine and Atmospheric Research (IMAU)
Land ice change and sea level change monitoring (1238)
As a contribution to the European Project on Ice Coring in Antarctica (EPICA) IMAU has installed at one time a maximum of eight Automatic Weather Stations (AWS) in Dronning Maud Land, Antarctica. Four are currently operational. These AWSs were installed on a transect ranging from the coast to the plateau Amundsenisen, along the Swedish research stations Wasa and Svea.. The goal of this project is to extend the knowledge of the climatological conditions of this particular part of Antarctica and to obtain a better understanding of the surface energy and mass balance of the Antarctic ice sheet. Therefore surface and subsurface (bore holes up to 600 meters) temperatures, relative humidity, wind speed and direction, snow height, air pressure, short and long wave incoming and outgoing radiation is measured. Together with GPS positioning the data are transmitted as two hour averaged values through the ARGOS system. See for more information: http://www.phys.uu.nl/~wwwimau/research/ice_climate/aws/aws_antarctica.html.

Beside the AWS we have also a combine ARGOS / GPS system, Automatic Velocity Monitoring System(AVMS) in Svalbard and Antarctic. At the end of this year/beginning next year our total number of ;
AVMS (GPS Svalbard 12 (2012).
AVMS (GPS) Antarctica 5 (2012).
AWS Antarctica 7 (2012).

Section 2. User Types by family (Table of PTT use by the country)

(please complete the table below based on actual and estimated use for the current year)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals		
Fixed stations	28 (2012)	17 (2012)
TOTAL	28 (2012)	17 (2012)

The objective of this section is to provide some data on platform distribution and use. Historical graphs and charts depicting the country's program is encouraged.

Section 3. Technological Changes that Affect User Requirements

This objective of this section is to provide information on any advances in instrument development, techniques, or other technology that may affect future development of the ARGOS system.

Section 4. User issues, problems, and level of satisfaction with ARGOS

The objective of this section is to highlight any user issues that need to be brought to the attention of the JTA and CLS Executives.

Section 5. Successful program use of ARGO (good news)

The objective of this section is to highlight the successful use of ARGOS in helping users achieve their objective.

Section 6. Analysis of Local Operational Issues

The objective of this section is to present any ARGOS issue that affects users in a particular location, country, or platform family that may not shared by other user groups.

G. BUREAU WAARDENBURG FOR THREE DIFFERENT CUSTOMERS

Section 1. Overall Summary

Bureau Waardenburg for three different customers
Dutch Purple Herons *Ardea purpurea,* Eurasian Bittern *Botaurus stellaris* with Satellite Transmitters (3447)

Herons and bitterns are equipped with transmitters. These include standard solar PTT transmitters as well as GPS-PTT transmitters. The aim is to track down migration routes and habitat use of birds in order top get information about protection of habitats. The project started in 2007 and continues in 2012-2013.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others		
Profiling floats		
Animals	5-7	2007-2013
		In 2012 a maximum of 7 platforms were active;
Fixed stations		
TOTAL		**7**

Section 3. Technological Changes that Affect User Requirements

Bureau Waardenburg; no comments.

Section 4. User issues, problems, and level of satisfaction with ARGOS

Bureau Waardenburg; no comments

Section 5. Successful program use of ARGOS (good news)

Bureau Waardenburg; The data handling and speed of data provision is satisfactory. Additional overviews of costs per transmitter ID provided by CLS, make it very easy to split costs for our subsequent customers.

Section 6. Analysis of Local Operational Issues

Bureau Waardenburg; no issues to address.

H. JTA PROGNOSE 2013

1238 IMAU
Land ice sea level change
We expect for 2013, 24 PTT's to be active and to use for approx. 16 PTT years

1996 NIOZ
PROCS

We expect to have 7 active PTTs during 2012. Thus 7 PTT years.

2936 KNMI
Dutch Argo
No large changes expected, so 40 active PTT's and use of 1 PTT years

3447 Bureau Waardenburg
Dutch Purple Herons *Ardeapurpurea,* Eurasian Bittern*Botaurusstellaris* with Satellite Transmitters
Only the currently still active animals will make use of the ARGOS satellite communication system: Active PTT's in 2012; 2 herons and 5 bitterns, to be expected also active in 2013.

3676 SOVON
Dutch Eagle Owl Porject
No use of PTT's in 2013. In 2014 use of PTT's might be restarted.

3685 Natuurmonumenten
Protection of spoonbills along the west-palearctic
The use of PTT's is stopped and will not be continued in the near future.

4891 SOW-VU
Following the Afar
Two PTT's will be distributed to herders in the Afar State, Ethiopia, in September 2012. The herders will be tracked for a period of 6-9 months, depending on the battery's capacity.

4968 NIOZ
NWO Grant: Shorebirds in space
Next year it will be tried (starting in February 2013) to use 15x 5 g solar sattags (Microwave) with the purpose to monitor the northward migration of Godwit birds from Spain to the Netherlands. 15 PTT's will be used in 2013.

NATIONAL REPORTS TO THE JTA
(JTA National Report on Current and Planned Argos Use)

Year	**2012**
Country	**INDIA**

Section 1. Overall Summary

India is using ARGOS services for Ocean Observation platforms such as Argo floats, drifting buoys, fish tagging and moored buoys.

Section 2. User Types by family (Table of PTT use by the country)

	Average active PTTs per month	Total PTT.Years
Buoys and others	21	19.77
Profiling floats	82	7.42
Animals	20	5.51
Fixed stations	8	6.78
TOTAL	**131**	**39.48**

Section 3. Technological Changes that Affect User Requirements
Since the bandwidth is low, we could not acquire higher vertical resolution of temperature and salinity. Also, the floats need to be longer time on the surface for transmission, it quickly drifting to the shore or beached. Further, we could not communicate to the float/buoy, once deployed. Hence, we started using some of the floats with Iridium communication. ARGOS can think about higher bandwidth and also two way communication.

Section 4. User issues, problems, and level of satisfaction with ARGOS
Though ARGOS could cater many useful services with low cost, bandwidth need to be increased. Also, more number satellites are required for the low latitude regions for better repeatability,

Section 5. Successful program use of ARGOS
Low cost, low power one way communication is very much suitable for some platforms, but it will not cater all platforms. Improvement in location accuracy is good initiative by ARGOS.

Section 6. Analysis of Local Operational Issues
Nil

ANNEX XIII

LIST OF REPRESENTATIVES OF COUNTRY (ROCS) FOR THE ARGOS JTA
(October 2012)

AUSTRALIA

Mr Graeme BALL
Manager, Marine Operations Group
Australian Bureau of Meteorology
700 Collins Street, Docklands
VIC, 3008, Australia
GPO Box 1289, Melbourne
VIC 3001, Australia
Tel: +61-3 9669 4203
Fax: +61-3 9669 4168
Email: g.ball@bom.gov.au

BELGIUM

Didier Vangeluwe
Institut Royal des Sciences Naturelles de la Belgique
Centre Belge de Baguage
29, rue Vautier
1000 Bruxelles
Belgique
Telephone: +32 2 6274355
E-mail :
didier.vangeluwe@naturalsciences.be

BOTSWANA

Dr. Gavin Reynolds
Programs Manager
Cheetah Conservation Botswana,
Mokolodi Nature Reserve,
Private Bag 0457,
Gaborone,
BOTSWANA
Telephone: +(267) 72356782
Telefax: + (267) 3500613
E-mail: ghanzicamp@cheetahbotswana.com

BRAZIL

Mr Wilson Yamaguti
Instituto Nacional de Pesquisas Espaciais (INPE)
Av. dos Astronautas, 1758
12227-010 SAO JOSE DOS CAMPOS
Brazil
Telephone: +55-12 3322 9977
Telefax: +55-12 3321 8743
E-mail: yamaguti@dss.inpe.br

CANADA

Mr Joe Linguanti
Fisheries and Oceans Canada
9860 West Saanich Road
SIDNEY, BC V8L 4B2
Canada
Telephone: +1-250 363 6584
Telefax: +1-250 363 6746
E-mail: joe.linguanti@dfo-mpo.gc.ca

CHINA

Mrs Lin Shaohua
State Oceanic Administration
National Marine Data and Information Service
93 Liuwei Road.
Hedong District
Tianji, 300171
P.R. China
Telephone: +86-22 24010 859
E-mail: ioi@mail.nmdis.gov.cn

DENMARK

Mr Claus Nehring
Danish Meteorological Institute
100 Lyngbyveg
DK-2100 COPENHAGEN 0
Denmark
Telephone: +45 3915 7500
Telefax: +45 3927 1080
E-mail: cn@dmi.dk

FINLAND

Milla Johansson
Finnish Meteorological Institute
Erik Palménin aukio 1
PO Box 503
FI-00101 Helsinki
Finland
Telephone: +358 9 1929 6425
Telefax: + 356 9 3231 025
E-mail: Milla.Johansson@fmi.fi

GERMANY

Dr Birgit Klein
Bundesamt fuer Seeschifffahrt und
Hydrographie (BSH)
Bernhard-Nocht-Strasse 78
D-20359 Hamburg
Telephone.: 0049-40-3190-3228
Telefax: 0049-40-3190-5000
E-mail: birgit.klein@bsh.de

ICELAND

Mr Arni Snorrason
Icelandic Meteorological Office
Vedurstofa Islands
Bustadavegur 9
150 REYKJAVIK
Iceland
Telephone: +354 560 0600
Telefax: +354 552 8121
E-mail: office@vedur.is

INDIA

Dr K. Radhakrishnan
Director
INDIAN NATIONAL CENTRE FOR OCEAN
INFORMATION SERVICES (INCOIS)
Plot No 3, Nandagari Hills Layout
Jubilee Hills
HYDERABAD 500 033
India
Telephone: +91-40 355 3542/43
Telefax: +91-40 355 1096
E-mail: director@incois.gov.in

ISRAEL

Yossi Leshem
Faculty of Lye Sciences
69978 TEL AVIV
Israel
E-Mail : yleshem@post.tau.ac.il

ITALY

Mr Stephano Fioravanti Ph.D
NATO Saclant Undersea Research Centre
Viale San Bartolomeo 400
19138 LA SPEZIA
Italy
Telephone: +39 1875271
Telefax: +39 187524600
E-mail: steve@saclantc.nato.int

NEW ZEALAND

CEO, MetService New zealand
c/o Julie Fletcher
Meteorological Service of New Zealand Ltd
P.O. Box 722
WELLINGTON
New Zealand
Telephone: +64 4 4700 789
Telefax: + 64 4 4735 231
E-mail: fletcher@metservice.com

NORWAY

Mr Anton Eliassen
Norwegian Meteorological Institute
Attn: Lilian Swenden
P.O. Box 43, Blindern
N-0313 OSLO 3
Norway
Telephone: +47-22 963000
Telefax: +47-22 963050
E-mail: met.inst@met.no
Lillian.Swendsen@met.no

REPUBLIC OF KOREA

Jang-Won Seo
Senior Research Scientist
National Institute of Met. Research, KMA
45 Gisangcheong-gil
Dongjak-gu
Seoul 156 720
Republic of Korea
Tel: +82 2 841 2786
Fax: +82 2 841 2787
E-mail: jwseo@kma.go.kr

RUSSIAN FEDERATION

Dr Viatcheslav V. Rozhnov
Head of the Laboratory of Behaviour and
Behavioural Ecology of Mammals
Deputy-Director
A.N. Severtsov Institute of Ecology and
Evolution
Russian Academy of Sciences
33, Leninsky prospect
119071 Moscow
Russian Federation
Tel: (+7) 495 952 73 05
Telefax: (+7) 495 954 55 34
E-mail: rozhnov.v@gmail.com

SOUTH AFRICA

Mr Johan Stander
P O Box 21, Cape Town International Airport,
7525 South Africam
Cape Town
7525
Western Cape
South Africa
Telephone: + 27 (0)21 934 0450
Telefax: +27 (0) 21 934 4590
E-mail: Johan.Stander@weathersa.co.za

SPAIN

Ms Ana Bermejo
Centro de Migración de Aves
Área de Estudio y Seguimiento de Aves
C/ Melquiades Biencinto, 34
28053 MADRID
Spain
Telephone: +34-91 434 0910
Telefax: +34-91 434 0911
E-mail: abermejo@seo.org

SWEDEN

Mr Ilmar Karro
Swedish Meteorological and Hydrological
Institute (SMHI)
Folkborgsvägen 1
S-601 76 NORRKOPING
Sweden
Telephone: +46-11 158000
Telefax: +46-11 170207
E-mail: gunlog.wennerberg@smhi.se

SWITZERLAND

Dr Adrian Aebischer
Museum of Natural History
Chemin du Musee 6
CH-1700 Fribourg
Switzerland
Tel: +41 26 300 9040
Fax: +41 26 300 9760
E-mail: adaebischer@pwnet.ch

TANZANIA

Neil Baker
Tanzania Bird Atlas Project
TANZANIA
E-mail: TZBIRDATLAS@YAHOO.CO.UK

THE NETHERLANDS

Mr Hans Roozekrans
Co-ordinator International Relations
International Relations
Royal Netherlands Meteorological Institute
(KNMI)
Ministry of Infrastructure and Environment
PO BOX 201
3730 AE De Bilt
The Netherlands
Tel: +31 30 2206421
Fax: +31 30 2211371
Mobile: +31 6 52062552
E-mail: Hans.Roozekrans@knmi.nl

UNITED ARAB EMIRATES

Mr Sálim Javed
Manager, Terrestrial Assesment & Monitoring
Biodiversity Management Sector
Environment Agency - Abu Dhabi
PO Box 45553, Abu Dhabi, United Arab Emirates.
Phone: +971-2- 681 7171
Phone: +971-2-6934711 (direct)
Fax: +971-2-4997282
E-mail: sjaved@ead.ae

UNITED KINGDOM

Mr David Meldrum
Scottish Association for Marine Sciences
Dunstaffnage Marine Laboratory
Dunbeg
PA37 1QA OBAN ARGYLL
Scotland
United Kingdom
Telephone: +44-1631 559204 / 559000
Telefax: +44-1631 559001
E-mail: dtm@sams.ac.uk
d.meldrum@unesco.org

USA

Mr Eric Locklear
Climate Program Office
NOAA
1100 Wayne Avenue Suite 1210
Silver Spring, MD 20910
USA
Telephone: +1 301 427 2361
Telefax: +1 301 427 2222
E-mail: eric.locklear@noaa.gov

OTHER

Dr I-Jiunn Cheng
National Taiwan Ocean University
Institute of Marine Biology
No. 2 Pei-Ning Road
202 KEELUNG
Taiwan
Telephone: +886-2 2462 2192-5303
Telefax: +886-2 2462 8974
E-mail: b0107@mail.ntou.edu.tw

ANNEX XIV

ARGOS JOINT TARIFF AGREEMENT (JTA) EXECUTIVE COMMITTEE BUDGET

Argos Joint Tariff Agreement (JTA) budget within DBCP Trust Fund
(as of 28 June 2012, estimates in blue)

Year	Item	Income & Expenditure CHF	1 CHF USD	Income & Expenditure USD	Expenditure for JTA USD	JTA balance USD	Expenditure for WMO USD	WMO balance USD	Comment
2010	**Initial JTA balance**					***0***		**0**	
	CLS Contribution to DBCP TF at WMO (2010)			55.000,00	45.000	45.000	10.000	10.000	
	Mission, J. Stander, JTA-EC, Sydney, 04/2010			-4.273,00	-4.273	40.727	0	10.000	
	Mission, E. Charpentier, JTA-EC, Sydney, 04/2010			-3.321,00	-3.321	37.406	0	10.000	
	Mission, J. Stander, JTA-30, Oban, 10/2010			-2.402,00	-2.402	35.004	0	10.000	
	Mission, Greg Reed, IPET-DMI, 4/2010			-1.823,00	0	35.004	-1.823	8.177	
	Frank Grooters JTA contract (SSA), 10/2010			-15.437,00	-15.437	19.567	0	8.177	
2011	**CLS Contribution to DBCP TF at WMO (2011)**			**35.269,00**	**25.269**	**44.836**	**10.000**	**18.177**	
	Mission, J. Stander, JTA-EC, Miami, 4/2011			-1.224,00	-1.224	43.612	0	18.177	
	Mission, D. Meldrum, RMIC2, Tianjin, 7/2011			-3.247,00	0	43.612	-3.247	14.930	
	Mission, S. Issara, RMIC2, Tianjin, 7/2011			-3.829,00	0	43.612	-3.829	11.101	
	Mission J. Trinanes, IPET/DRC, Melbourne, 9/2011			-1.638,00	0	43.612	-1.638	9.463	
	Mission ROC Botswana, JTA-31, Geneva, 9/2011			-4.051,00	-4.051	39.561	0	9.463	
	Mission J.Stander, JTA-31, Geneva, 9/2011			-3.781,00	-3.781	35.780	0	9.463	
	Frank Grooters JTA contract (SSA), 10/2011			-15.000,00	-15.000	20.780	0	9.463	
	Mission, E. Charpentier, Toulouse, 12/2011			-2.178,00	0	20.780	-2.178	7.285	
2012	**CLS Contribution to DBCP TF at WMO (2012)**			**34.028,00**	**24.028**	**44.808**	**10.000**	**17.285**	
	Mission J. Stander, JTA-EC, Toulouse, 4/2012			-3.231,00	-3.231	41.577	0	17.285	
	Mission E. Charpentier, JTA-EC, Toulouse, 4/2012	-2216	1,06045	-2.349,96	-1.175	40.402	-1.175	16.110	Combined with Satcom preparatory workshop mission, to be shared equally between WMO & JTA
	Mission J. Stander, JTA-32, Fremantle, 10/2012	-3151	1,06045	-3.341,48	-3.341	37.061	0	16.110	Planned expenditure; CHF 3151
	Frank Grooters JTA contract (SSA), 10/2012			-15.000,00	-15.000	22.061	0	16.110	Planned expenditure; USD 15000
2013	**CLS Contribution to DBCP TF at WMO (2013)**			**32.939,46**	**22.939**	**45.000**	**10.000**	**26.110**	**Proposed income for 2013**
	RMIC workshop for RA-I, Casablanca, October 2012	-10000	1,06045	-10.604,50	0	45.000	-10.605	15.506	Planned expenditure; CHF 10000
	Frank Grooters JTA contract (SSA), 10/2013			-15.000,00	-15.000	30.000	0	15.506	Planned expenditure; USD 15000

ANNEX XV

PROPOSED CHANGES TO THE TERMS OF REFERENCE OF THE SATCOM USERS FORUM

The co-chairs of Opscom-46 have decided to review the draft ToR as this was discussed and agreed by the preparatory SATCOM Workshop and to submit their comments to the JTA "for further distribution with the intention to clarify the Argos JTA relationship to this (future) Forum so that the activities may be run in a constructive and efficient way".
The comments made by the Opscom co-chairs read as follows:

- *Page 1 - Section 1 last bullet : we would recommend that the bullet (" Recommend certain providers for certain requirements ?") be reworded into "Maintain an up to date matrix of the compatibility between the proposed capabilities of the different systems and the user requirements" so that the forum does not appear as interfering with the negotiation that the users may have with the different operators;*
- *Page 1 - Section 3 : What is understood as DCP service and the type of cooperative mechanisms which are addressed in this section is unclear.*
- *Page 2 - Section 8 : reference is made to stakeholders in this section but there is no definition of such stakeholders; such a definition should be introduced in order to guarantee consistency with the membership rules which are described at the end of Page 2. Since the ToR make reference to the operating principles, the draft version of the operating principles have been reviewed by the Argos OPSCOM co-chairs and the resulting comments are here below :*
    - *Page 2 - Section 2.2 - In order to reflect the reality of the Argos JTA status, it is requested that the section is reworded into "The Argos Tariff Agreement (JTA) exists under the Argos OPSCOM authority. The Argos JTA contributes as a sub-programme of the Forum on the basis of the ToR and Operating Principles of the JTA agreed upon at the 31st session of the JTA. Its scope is to address requirement for using the Argos system, and to provide a mechanism for negotiating Argos Tariff amongst Argos governmental users."*

The OPSCOM co-chairs thank [you] in advance for transmitting the here above provided comments and request for rewording.

[Proposed changes are highlighted in yellow]

The International Forum of users of satellite data telecommunication systems is an entirely self-funded body jointly sponsored by the World Meteorological Organization (WMO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO, of the United Nations in the view to address the requirements of these two Organizations for the timely collection of environment data from observing platforms.

Main goals

- It ensures proper coordination amongst the users of satellite data telecommunication systems and represents their collective interests in working with the satellite telecommunication service providers in order to advance the awareness and understanding of user requirements
- to advance the awareness and understanding of available and planned capabilities
- to facilitate adoption of interoperability and quality standards and principles
- to provide guidance to best meet user needs of each considered application.

Activities

The Forum shall:

1. Review available technologies, share experiences, and address the following requirements in the view to document capabilities, and identify strengths and weaknesses of the different satellite data telecommunication systems to address the requirements of specific uses.

    - Global and regional coverage; specifically polar regions and third pole
    - Network services and data access technology;
    - Data transmitter technology, including radio-frequencies, interface programming, and electric power consumption;
    - Data transmission rates;
    - Data transmission quality;
    - Real-time capability and data timeliness;
    - Location capability;
    - One-way vs. two-way data communication;
    - Ground segment data processing, quality control, and distribution requirements;
    - Data collection, and ground segment data processing pricing;
    - Etc.
    - Reliability
    - Future developments / maintaining current system
    - Size
    - Bandwidth

    - Maintain an up to date matrix of the compatibility between the proposed capabilities of the different systems and the user requirements

2. If appropriate, propose common approaches for specific user needs, and identify the best and more cost-effective satellite data telecommunication systems options to be used for the relevant observing platforms;

3. Make proposals for establishing cooperative mechanisms through the Data Collection Platform (DCP) services of meteorological satellites;

[Item 3 above needs to be clarified; define DCP; define what cooperation mechanisms are proposed]

4. Facilitate negotiations between users and the satellite data telecommunication system operators for

    - Inclusion of specific user requirements in their respective development programmes;
    - Continuity of cost-effective data telecommunication services by encouraging tariff negotiating schemes such as the existing Argos Joint Tariff Agreement (JTA).

5. Facilitate negotiations with the manufacturers of platform transmitters for the inclusion of specific user requirements in future models of the transmitters;

6. Review and agree on its operating principles. The operating principles define the aims and principles of the Forum; the roles and responsibilities of the stakeholders and the Secretariats of the co-sponsors; the Terms of Reference of the Executive Committee; the structure and frequency of meetings; and their desired outcome; as well as the reporting procedure of the Forum;

7. Elect a Chairperson, and vice-Chairperson from its participants;

8. Elect an Executive Committee, chaired by the Forum's Chairperson, and including the vice-Chairperson, and stakeholder representatives; Amount of users/service providers?

[In item 8 above, the stakeholders need to be defined; operating principles of the Satcom Forum should make reference to the operating principles of the JTA]

9. Report through the Chairperson to the Executive Bodies of the Co-Sponsor Organizations, and submit its recommendations as appropriate for their agreement;

Decisions shall be agreed unanimously by the Forum. If decisions cannot be agreed unanimously, they will be deferred to the Executive Committee for further discussion and decision.

Membership:

Membership is open to all representatives of the co-sponsors stakeholders. Invitations to participate in the Forum are issued by the Secretariats of the co-sponsors to their respective Members/Member States, as well as to their relevant programmes and bodies. Representatives of the satellite data telecommunication providers, and the platform transmitter manufacturers can participate in the Forum as observers. Representatives of the Secretariats of the co-sponsors participate as ex-officio members of the Forum.

These Terms of Reference are agreed upon by the Executive Bodies of the Co-sponsors.

_____

LIST OF ACRONYMS AND OTHER ABBREVIATIONS

5YP	Argos JTA Five Year Plan
ADS	Automatic Distribution System (Argos)
AHRPT	Advanced High Rate Picture Transmission
AOML	Atlantic Oceanographic and Meteorological Laboratory, NOAA (USA)
Argo	International profiling float programme (not an acronym)
ASAP	As soon as possible
BOM	Bureau of Meteorology (Australia)
BUFR	Binary Universal Form for Representation of Meteorological Data
BUOY	Report for Buoy Observations
CBS	WMO Commission for Basic Systems
CDA	Command Data Acquisition
CLS	Collecte Localisation Satellites
CLSA	Collecte Localisation Satellites America
CNES	Centre National d'Etudes spatiales (France)
DBCP	Data Buoy Cooperation Panel (WMO-IOC)
DCS	Data Collection System
EC	JTA Executive Committee
E-SURFMAR	Surface Marine programme of the Network of European Meteorological Services, EUMETNET
EUMETNET	Network of European Meteorological Services
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EUROArgo	European component of the Argo array
ESPC	NOAA Environmental Satellite Processing Center (USA)
FAO	Food and Agriculture Organization
FRGPC	French Argos Global Processing Centre
FTP	File Transfer Protocol
FYP	Five-Year Plan (of JTA)
GAC	Global Area Coverage
GDP	Global Drifter Programme
GIS	Geographic Information System
GTS	Global Telecommunication System (WMO)
HRPT	High Rate Picture Transmission
IABP	International Arctic Buoy Programme
IBPIO	International Buoy Programme for the Indian Ocean
ICT/IOS	CBS Implementation/Coordination Team on the Integrated Observing Systems
ID	Platform Identification Number
IJPS	Initial Joint Polar-Orbiting Operational Satellite System (NOAA, EUMETSAT)
IMB	Ice Mass-balance Buoy
INCOIS	Indian National Centre for Ocean Information Services
INPE	Instituto Nacional de Pesquisas Espaciais (Brazil)
IOC	Intergovernmental Oceanographic Commission of UNESCO
IRD	Institut français de Recherche scientifique pour le Développement en coopération (formerly ORSTOM)
ISABP	International South Atlantic Buoy Programme
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS	JCOMM *in situ* Observations Programme Support Centre
Jrev	permanent JTA review mechanism
JTA	Argos Joint Tariff Agreement
JTA-EC	JTA Executive Committee
KML	Keyhole Markup Language
LAC	Local Area Coverage
LDR	Low Data Rate
LUS	Limited Use Service (Argos)
LUT	Local User Terminal (Argos)

METOP	Meteorological Operational satellites of the EUMETSAT Polar System (EPS)
MOU	Memorandum Of Understanding
NARC	National Avian Research Center
NESDIS	NOAA Satellites and Information Service
NOAA	National Oceanographic and Atmospheric Administration (USA)
NPDBAP	North Pacific Data Buoy Advisory Panel
NPOESS	National Polar-orbiting Operational Environmental Satellite System (USA)
NWP	Numerical Weather Prediction
OCO	NOAA Office of Climate Observation (USA)
OPSCOM	Argos Operations Committee (NOAA, CNES, EUMETSAT)
PDF	Adobe Portable Document Format
PMT	Platform Messaging Transceivers
POES	Polar-orbiting Operational Environmental Satellite
PTT	Platform Transmitter Terminal
PTT-year	Equivalent to a PTT reporting in every time-slot during one year
QC	Quality Control
RO	Responsible Organization representing an agreed set of Argos User programmes (JTA)
ROC	Representative of Country representing a country or a group of countries participating in the JTA
RUG	Representative of a User Group
SAI	Service Argos, Inc. (USA, now CLS America)
SATCOM	Satellite Data Telecommunication
SAWS	South African Weather Service
SCD	Satélite de Coleta de Dados (Data Collection Satellite, Brazil)
SLA	Service Level Agreement
SOOP	Ship-Of-Opportunity Programme
SOOPIP	JCOMM Ship-Of-Opportunity Programme Implementation Panel
SOT	Ship Observations Team (JCOMM)
SSA3	Argos 3 Ground Segment project
SST	Sea Surface Temperature
STIP	Stored TIROS Information Processing
SUA	Argos System Use Agreement
TAO	Tropical Atmosphere Ocean array
TIP	TAO Implementation Panel
TT	Task Team
TT-DM	DBCP Task Team on Data Management
TT-IBP	DBCP Task Team on Instrument Best Practices and Drifter Technology Development
UAE	United Arab Emirates
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States (of America)
USD	US Dollar
VOS	Voluntary Observing Ship
WMO	World Meteorological Organization
XML	Extensible Markup Language

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