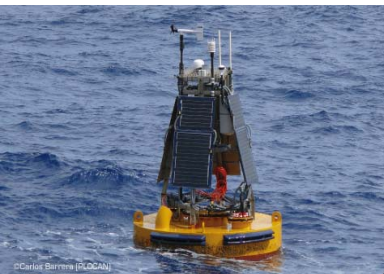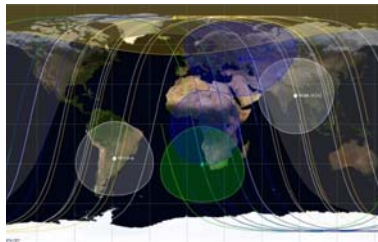# System Improvements

DBCP 29 Meeting - Paris

September 2013

CLS Company profile

- CLS is a subsidiary of the French Space Agency created in 1986

- Unique operator of the Argos system

- Main provider Iridium services dedicated to ocean platforms

- CLS is the privileged partner of ocean in-situ programs

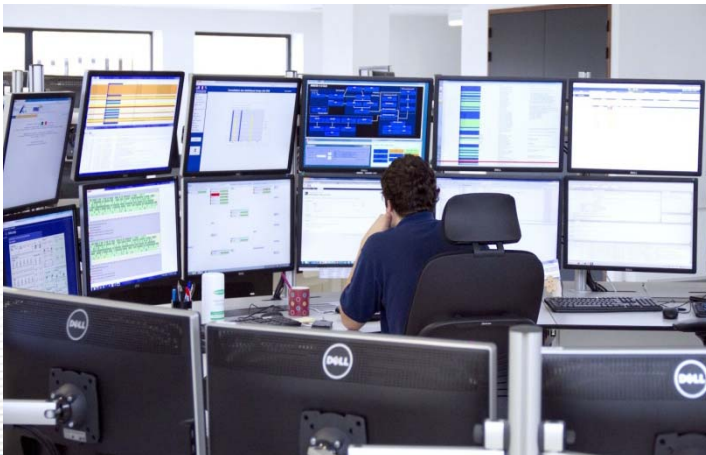# A new building for providing better services

Since October 2012

Receiving, processing, monitoring, distributing and archiving data from satellites

24/7 hotline = there is always someone to answer

Disaster recovery center

Argos frequency plan

New dedicated bandwidth for platforms with low output power (wildlife tracking)

High data rate platforms

Argos-1

Argos-2

Argos-3

Argos-4

First launch year

1978

1998

2006

2016

401.580

401.650

401.690 MHz

399.9 MHz

401.105 MHz

401.185 MHz

401.300 MHz

401.380 MHz
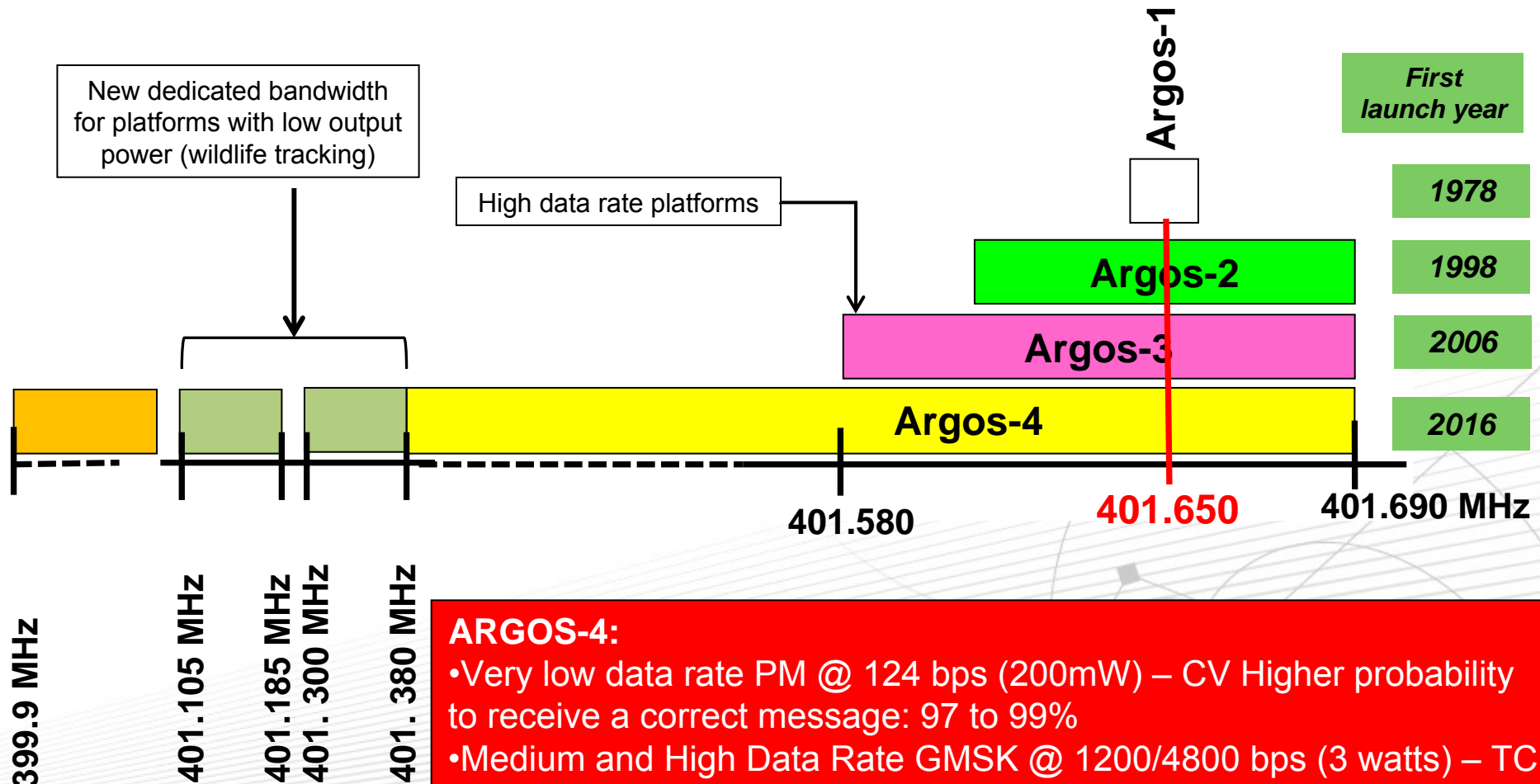
ARGOS-4:
- Very low data rate PM @ 124 bps (200mW) – CV Higher probability to receive a correct message: 97 to 99%
- Medium and High Data Rate GMSK @ 1200/4800 bps (3 watts) – TC
- Frequency band: 640 KHz at satellite level (8 freq. bands)

METOP-B & SARAL satellites

2 new Argos satellite recently successfully launched !!!

METOP-B on September 17, 2012

SARAL on February 25, 2013

April 29th 2013: EUMETSAT & CNES declared MA & SR as the 2 Argos-3 operational satellites
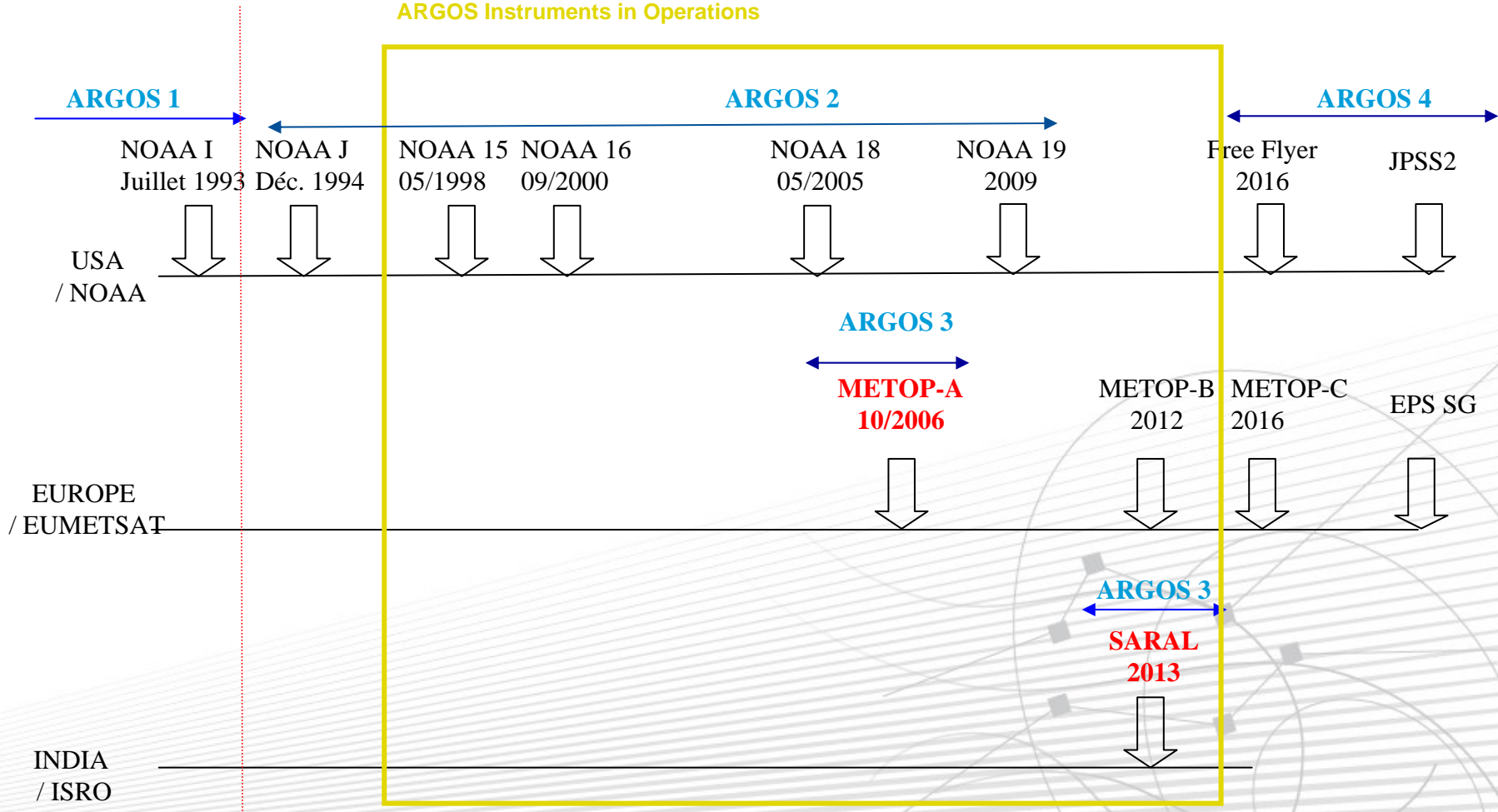
Space Agency collaboration
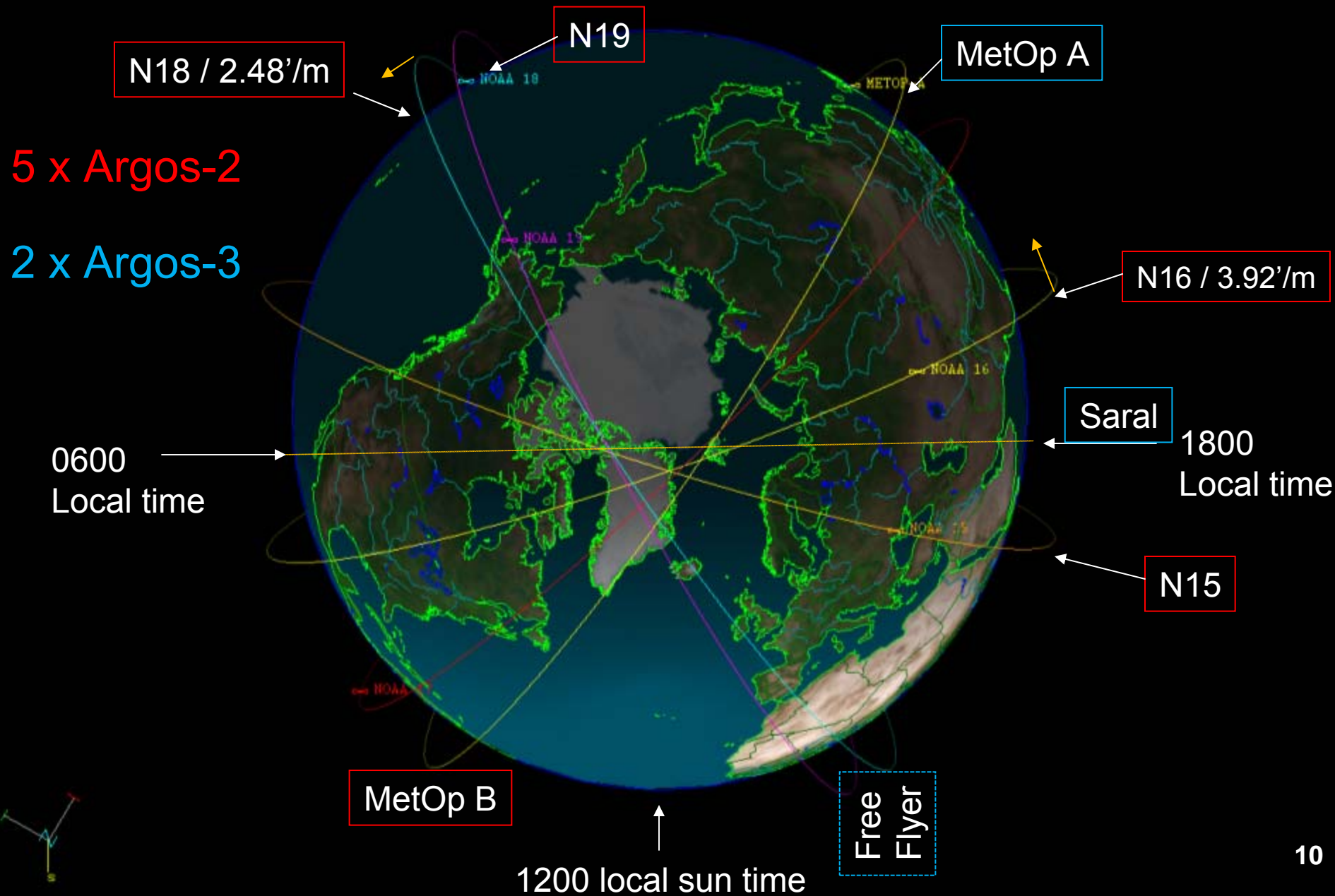
From April 29th : 7 Argos operational satellites:

- 5 x Argos-2
  - NOAA 15
  - NOAA 16
  - NOAA 18
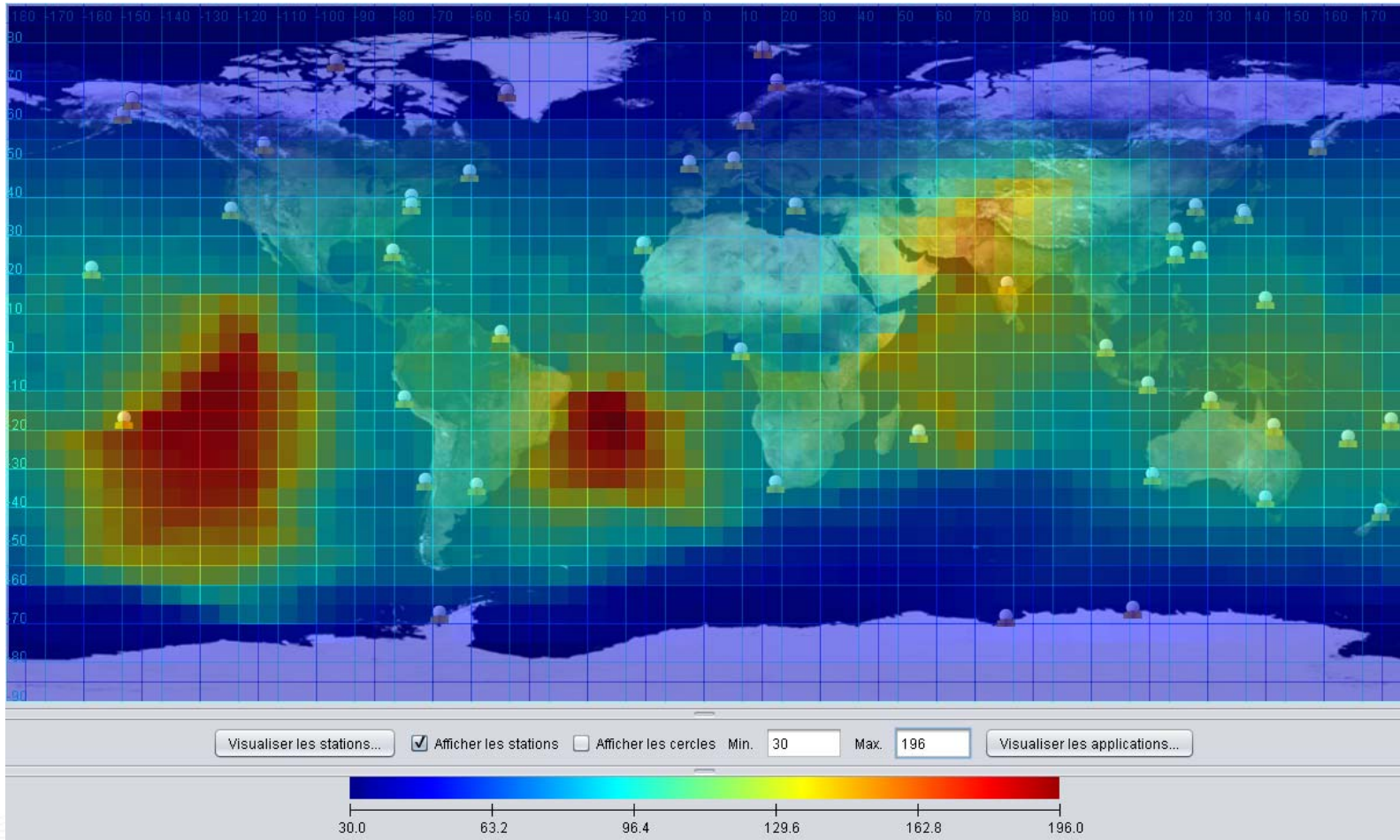 - NOAA 19
  - METOP B

- 2 x Argos-3
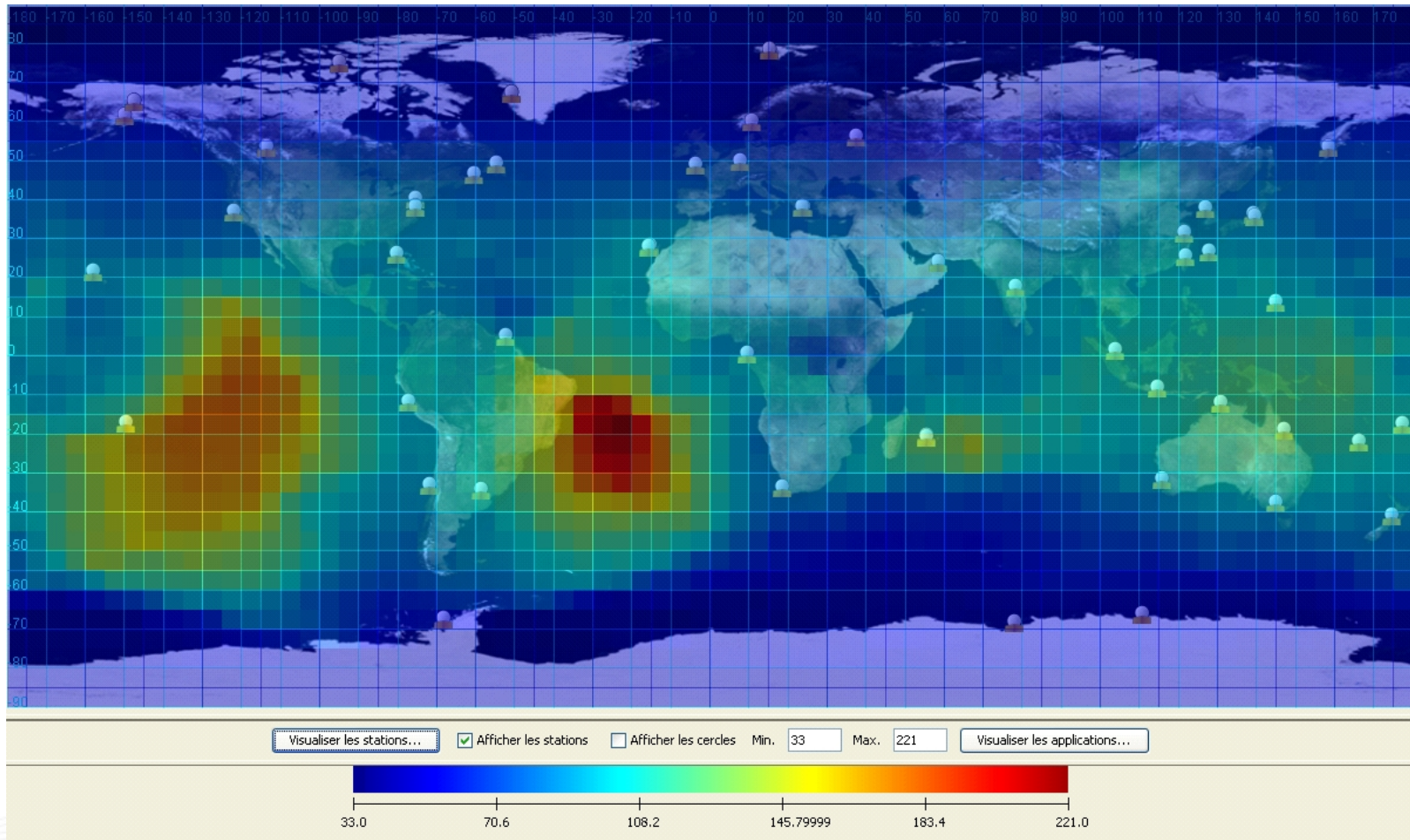 - METOP A
  - SARAL

Argos system status
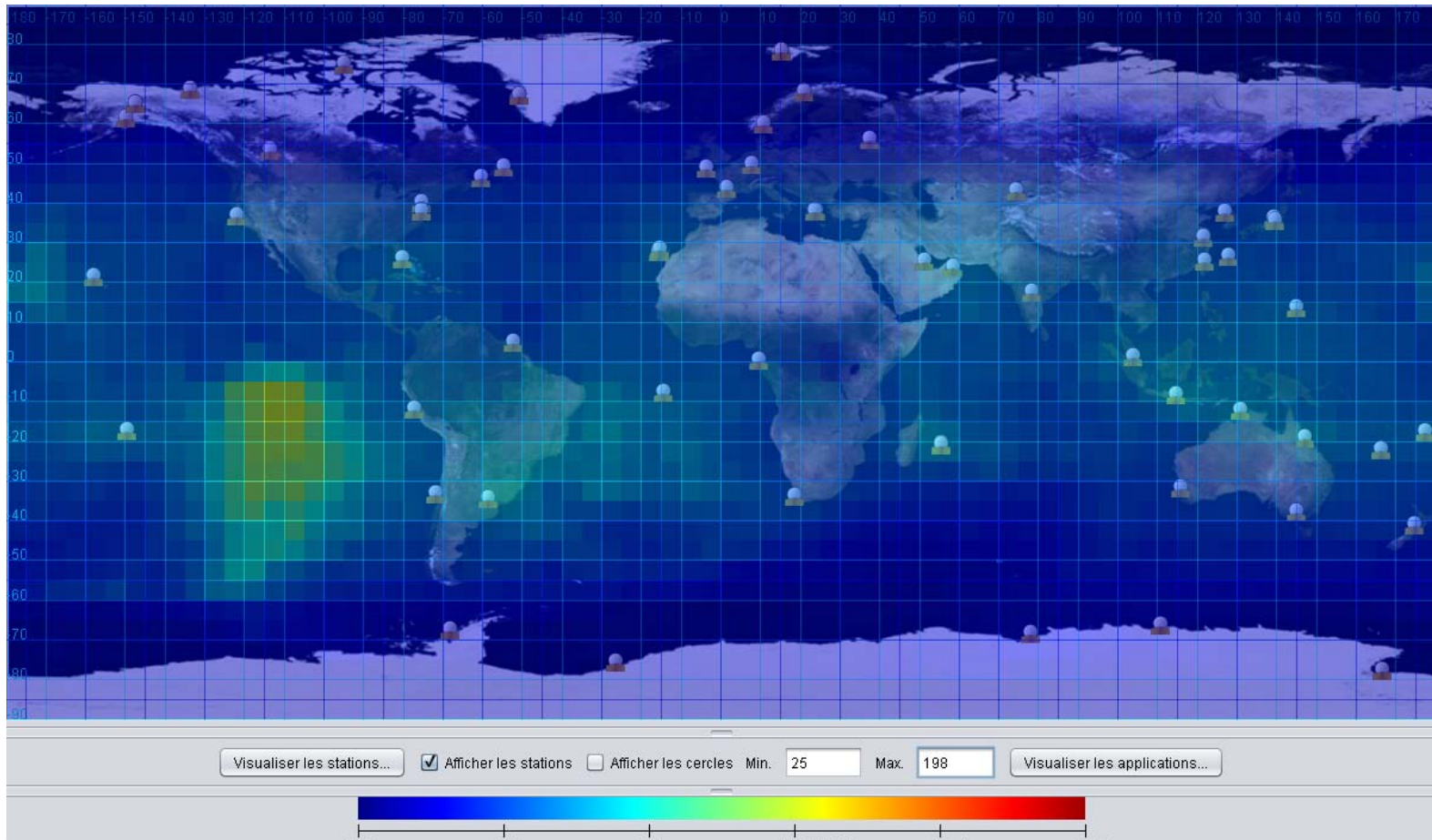

5 x Argos-2

2 x Argos-3

N18 / 2.48'/m

N19

MetOp A

N16 / 3.92'/m

Saral

0600 Local time

1800 Local time

N15

MetOp B

Free Flyer

1200 local sun time

Sept 23rd
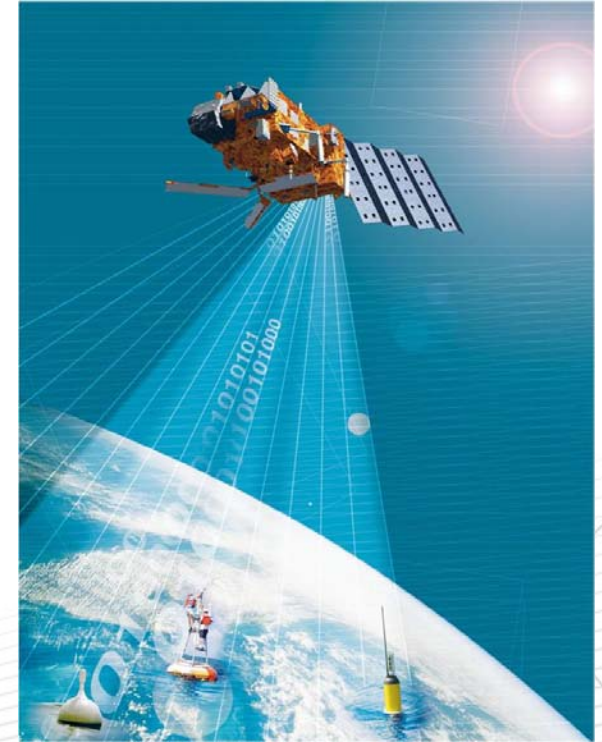
New Station (2)

Remaining installations: Monterey, Las Palmas; Athens, Muscat, Ascension, Libreville

http://www.cls.fr

GLOBAL Data time availability Mar. 10

GLOBAL Data time availability Sep. 11

Expected status in December 2013

System improvements

- Ongoing action: Antenna network: MetOp & SARAL-ready

- Sept 23rd: new antenna installed in Tahiti.

- In the coming days: Sensor Reprocessing on archived data base….in case template was incorrect,

- Development of the new Argos orbitography to get rid of OpenVMS

- Argos computed trajectories download feature on ArgosWeb since July, 2013

- Observations data available via the Argos WebServices since April, 2013

- Studies to improve message receptions. Communication to be done in 2014

- Kalman reprocessing is available,

- Additional manufacturers including China
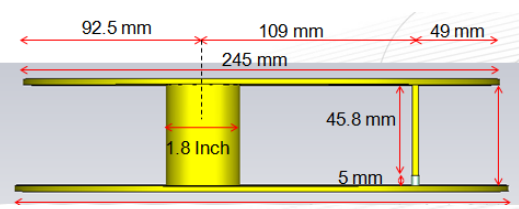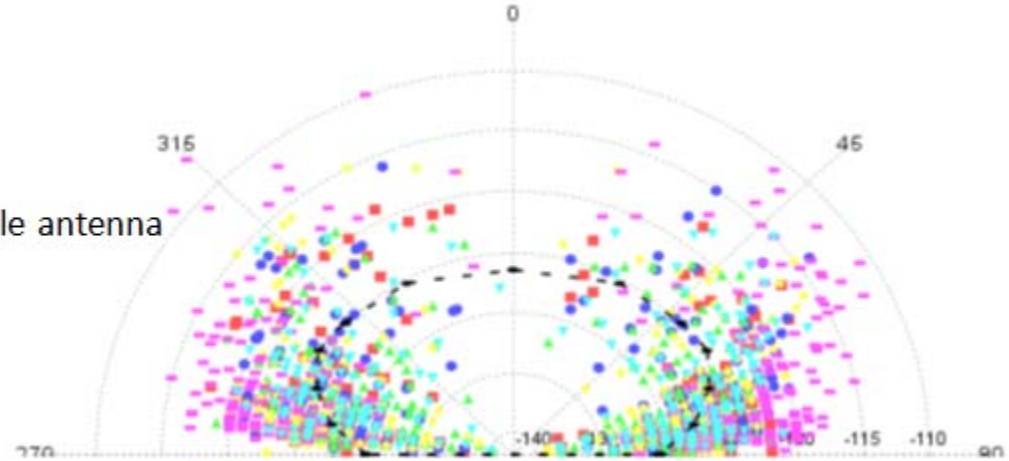
Argos-3 implementation
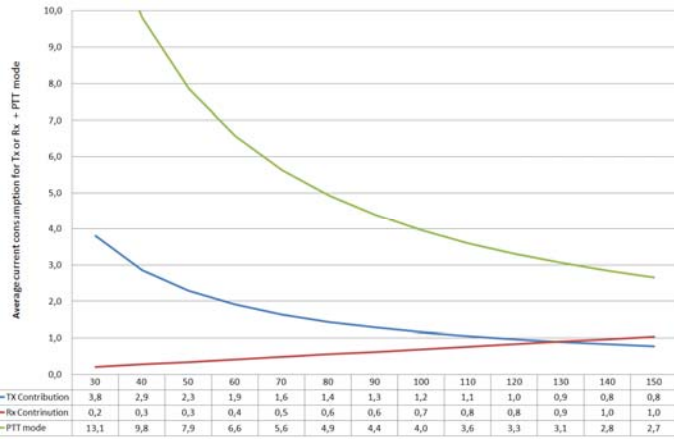
dipole antenna

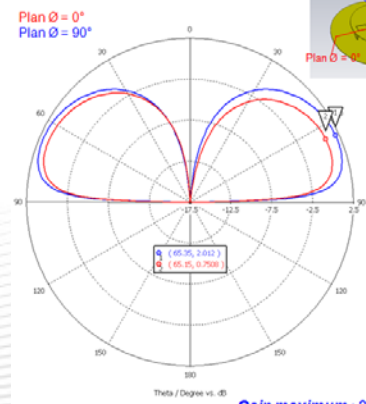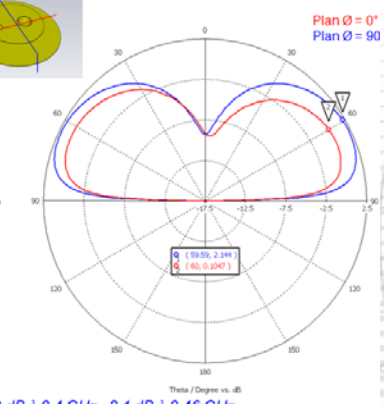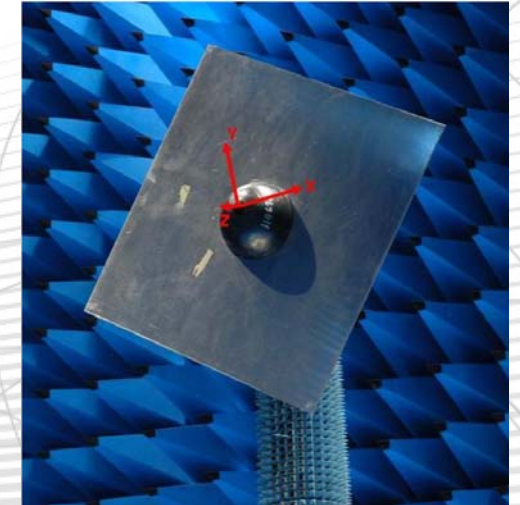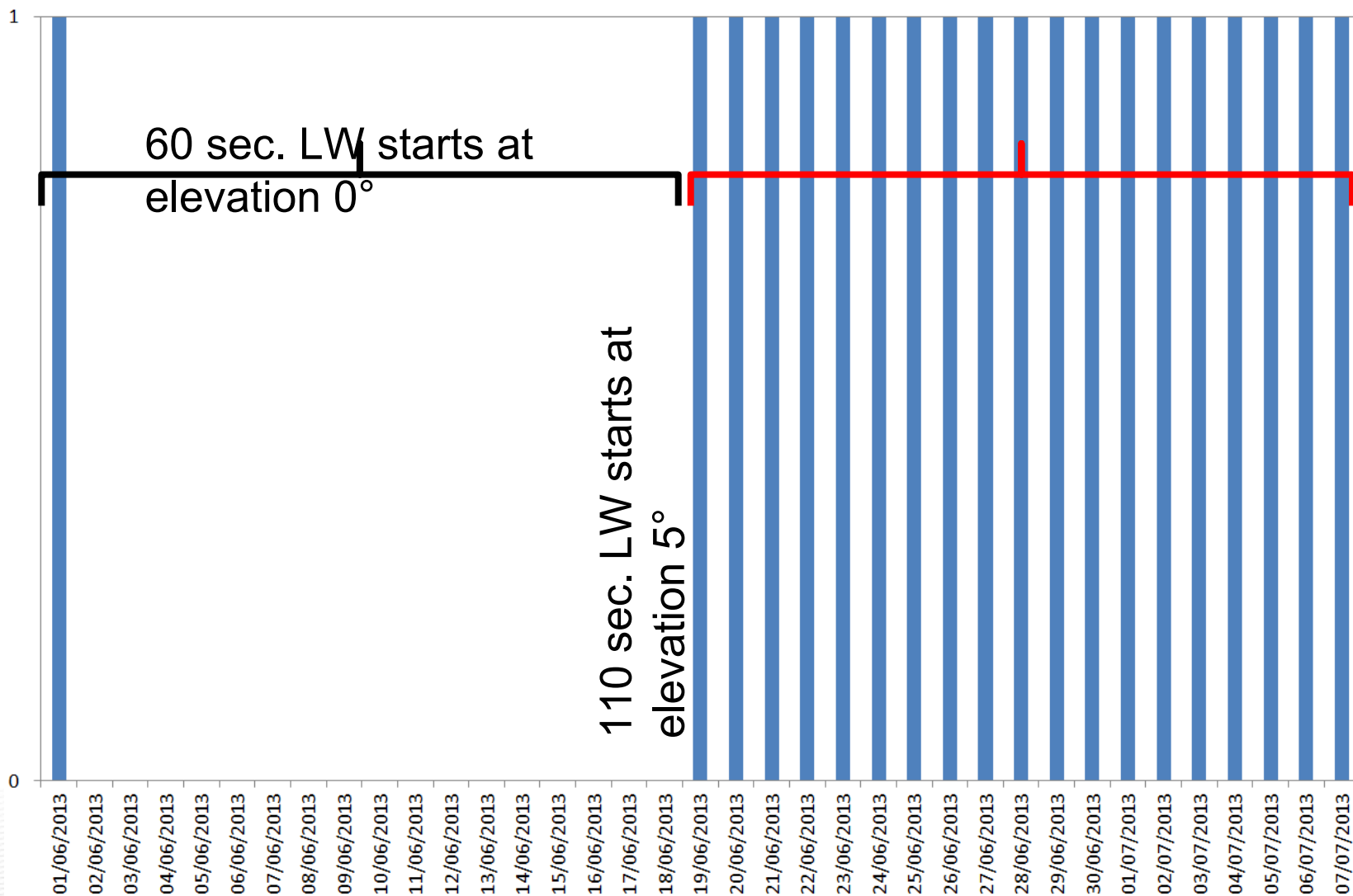Diagramme de rayonnement 2D à 0.4 GHz dans 2 plans d'élévations

Plan Ø = 0°
Plan Ø = 90°

Diagramme de rayonnement 2D à 0.46 GHz dans 2 plans d'élévations

Plan Ø = 0°
Plan Ø = 90

Gain maximum : 2 dB à 0.4 GHz , 2.1 dB à 0.46 GHz
Ondulation azimuthal: 1.25 dB à 0.4 GHz et 1.9 dB à 0.46 GHz

PMT position reception (ACK)

PMT 109221

60 sec. LW starts at elevation 0°

110 sec. LW starts at elevation 5°

SHARC Project

- SHARC: **S**atellite **H**igh-performance **AR**GOS-3/-4 Receive/transmit **C**ommunication

- 30-month Project to develop and produce Argos-3/4 XCVR

- ESA funding: For the development of the Argos-3/4 chipset as well as PTT prototypes dedicated to track marine animals.

- License-free component!

What will be available?

- ## All Argos in a 6mm x 6 mm chip 🙂

- ## Beta components are expected by summer 2014

  - Dual supply, 1.8V and 3.3V

  - Serial interface (SPI) for communication with MCU

  - Selectable output power:

  - Integrated high power PA (>250mW)

 - Integrated PA (0dBm) to combine with external PA

  - 0.18µm TSMC CMOS technology
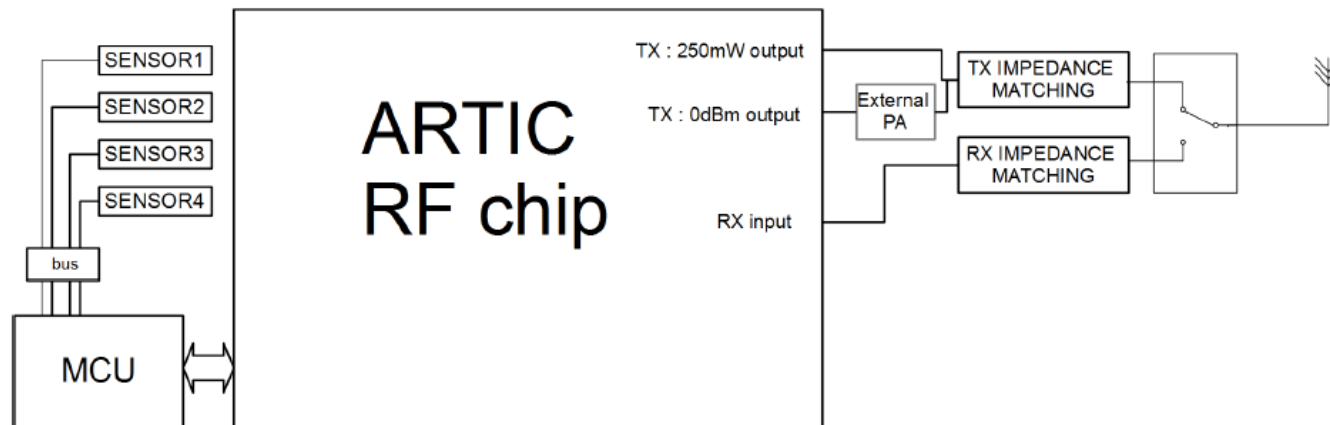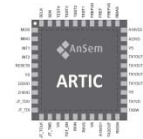
Argos tools for recovery: A new A2/A3 GONIO
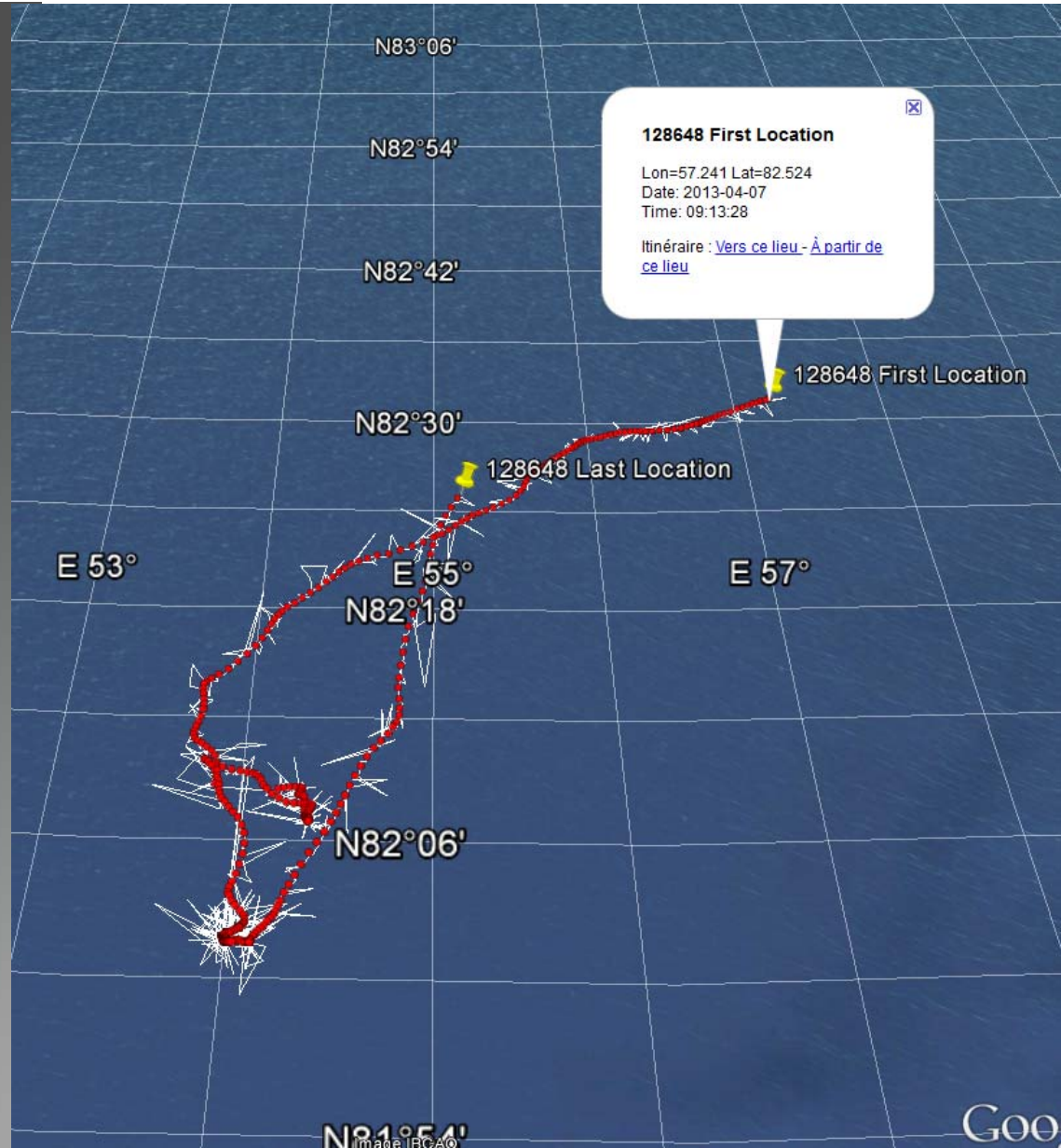
Argos Goniometer

▪ CLS developed a new high sensitive direction finder that provides for field recovery:

✓ the direction to find an Argos platform
✓ an indication of the signal strength
✓ GPS positions transmitted by the platform (if exist)

▪The Argos signal can be received on the field from few meters to more than 100 km (depending of the altitude/power)
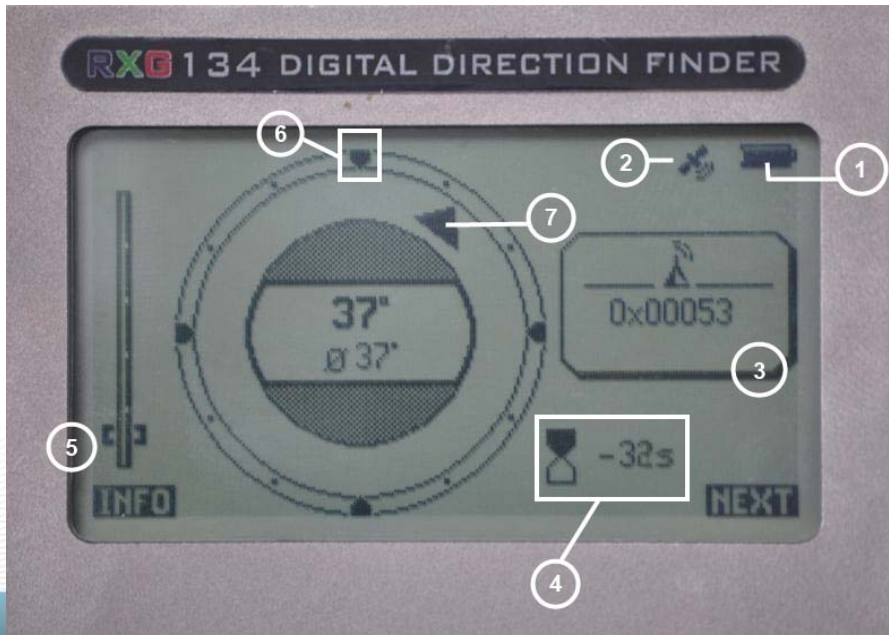
(1)	Battery level
(2)	GPS activated
(3)	Transmitter ID
(4)	Estimated time remaining until next reception
(5)	Received-signal strength indicator
(6)	Reference azimuth (red pointer on antenna)
(7)	Direction of bearing relative to the reference azimuth

ArgosWeb

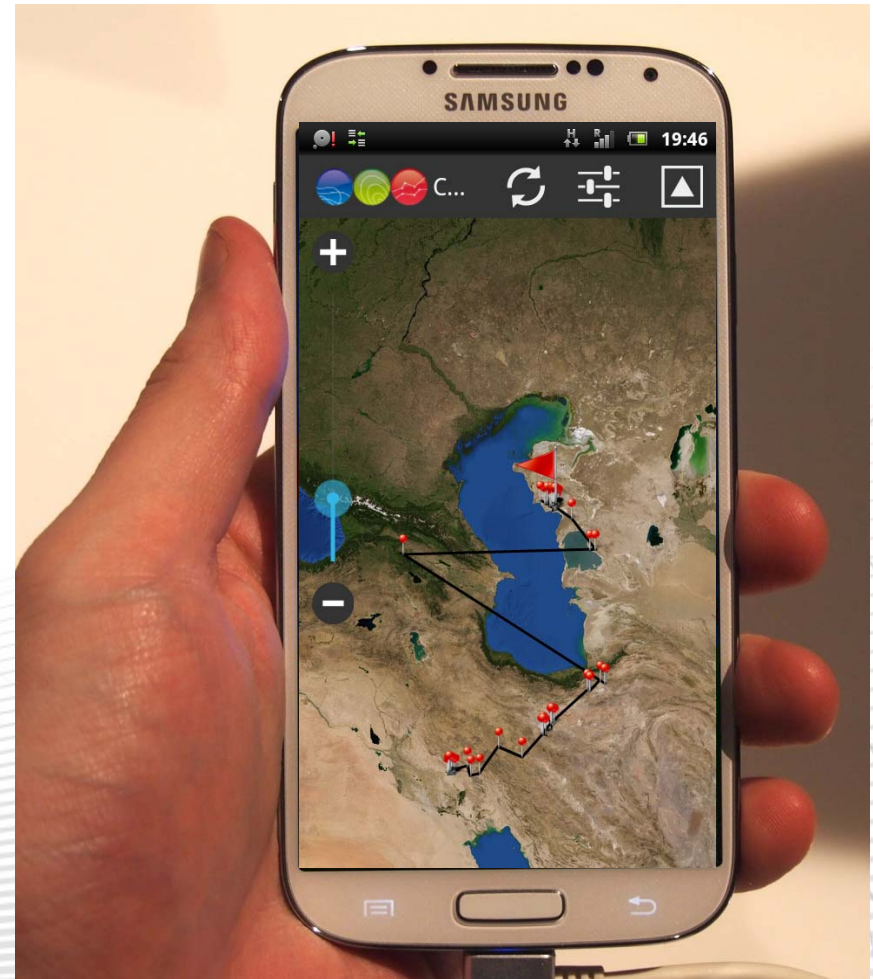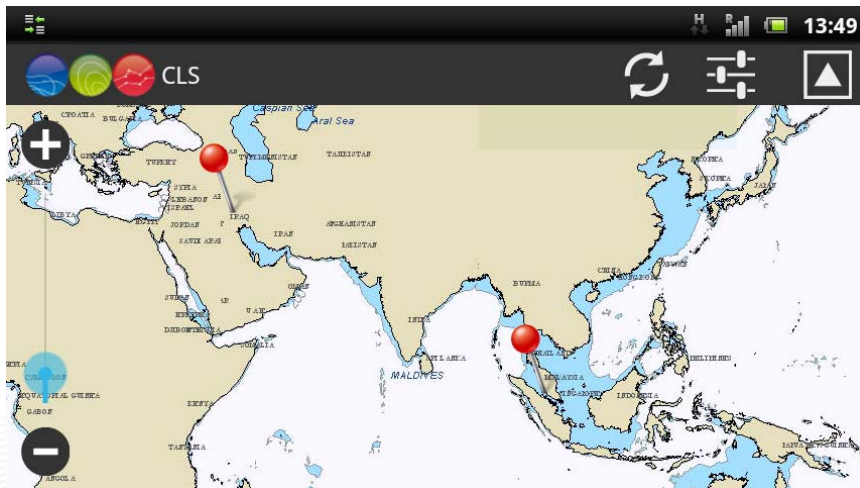**A single secured web site to:**

From Nov. 2013:

• View all positions on map (20 days)
• Up to one year of archived data

• View Argos messages

• Download data

• Export on Google Earth with error ellipses

• Manage users settings

• Put on copy other users or create guest

accounts

https://argos-system.cls.fr
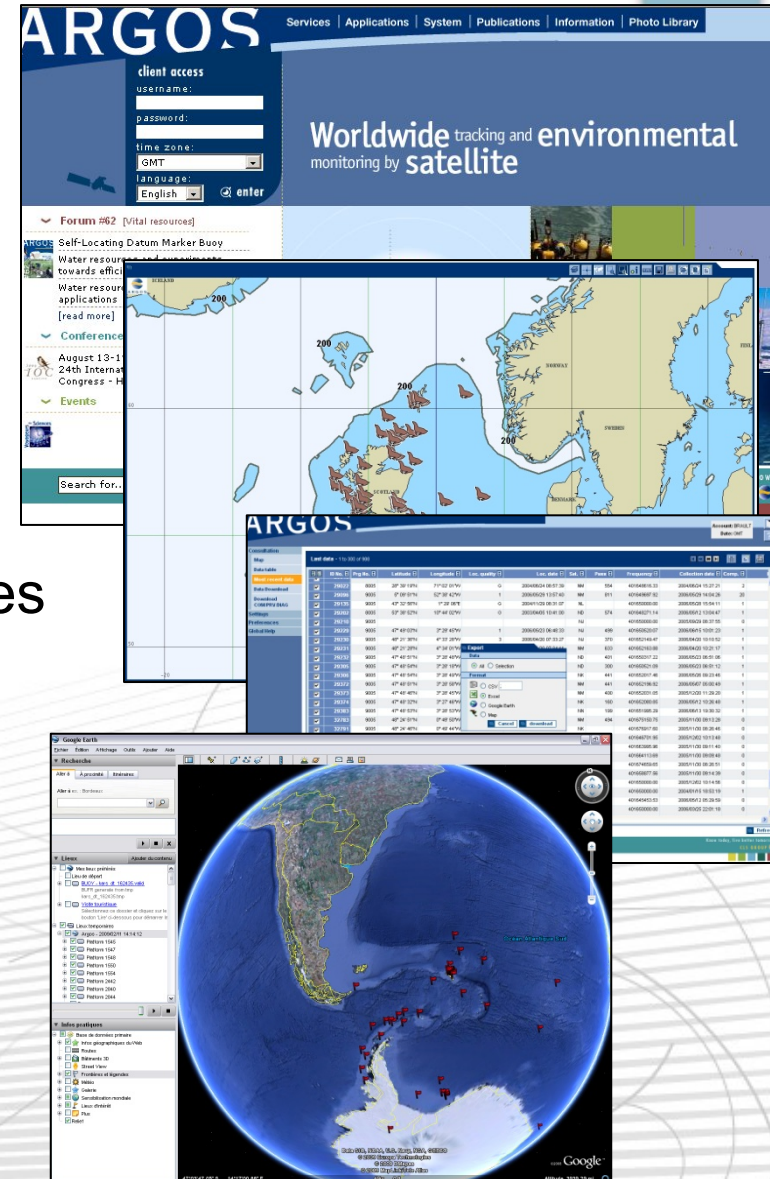
Android application

✓ An Android application available to consult Argos tracks (available end 2013) from a smartphone/pad.

Thank you!