

REGIONAL ASSOCIATION V (SOUTH-WEST PACIFIC)

EIGHTH SESSION OF THE RA V MANAGEMENT GROUP

GENEVA, 28 JUNE AND 2 JULY 2012

FINAL REPORT



WORLD METEOROLOGICAL ORGANIZATION

EIGHTH SESSION OF THE RA V MANAGEMENT GROUP
(Geneva, 28 June and 2 July 2012)

1. OPENING OF THE SESSION (AGENDA ITEM 1)

1.1 The eighth session of the RA V Management Group (MG-8) was held at the WMO Secretariat on Thursday, 28 June and Monday, 2 July 2012 during the sixty-fourth session of the Executive Council (EC-64). The list of participants is given in Annex I to this report.

1.2 Dr Sri Woro B. Harijono, president of RA V, opened the session at 13:10 hours on 28 June 2012. The president extended a warm welcome to all participants and thanked the members for accepting her invitation to attend the session. She also thanked the WMO Secretariat for the arrangements made for this session. The president highlighted the importance of the MG-8 session for the discussions on the development of RA V Strategic Operating Plan, activities of RA V subsidiary bodies, and the promotion of contribution of RA V to the Global Framework for Climate Services (GFCS).

1.3 Mr Robert O. Masters, Director, Development and Regional Activities Department welcomed the participants, and expressed his wish that this session would follow up the seventh session of MG (Honiara, Solomon Islands, 4 November 2011) and the Regional Seminar on Climate Services (Honiara, Solomon Islands, 1-4 November 2011) and discuss various issues of RA V.

1.4 The Management Group adopted the agenda of the session, which is given in Annex II to this report.

1.5 The Group was informed that all documents submitted for the session and presentations delivered at the session had been posted on the WMO website at <http://www.wmo.int/pages/prog/dra/rap/meetings/RAVMG8DocPlan.html>.

2. MATTERS ARISING FROM THE SEVENTH SESSION OF THE RA V MANAGEMENT GROUP (AGENDA ITEM 2)

2.1 The Management Group reviewed the final report of the seventh session of the RA V Management Group (MG-7: Honiara, Solomon Islands, 4 November 2011), which focused mainly on the implementation of the RA V Strategic Operating Plan (2012-2015); the working mechanism of the Association; the development of a Regional WIGOS Implementation Plan for RA V, the Implementation of GFCS; regional events in the sixteenth financial period (2012-2015); the Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project (SWFDDP); and the Pacific Meteorological Council. With the agreement of the Group, the president approved the report of MG-7.

2.2 The Group noted that the WMO Integrated Global Observing System (WIGOS) had been promoted under the Inter-Commission Coordination Group on WIGOS (ICG-WIGOS). The Group was pleased to note that a Workshop on the Development of a Regional WIGOS Implementation Plan for RA V had been planned by the RA V Working Group on Infrastructure in conjunction with CBS-15 (Jakarta, Indonesia, September 2012).

2.3 The Group was informed that a project entitled "Improvement of Weather Radar Products for Severe Weather Monitoring: standardization of data processing procedures, quality control and calibration; radar products (rainfall, wind field products) inter-comparison/validation, real-time distribution/exchange" given in Annex III had been developed by the ASEAN Sub-Committee on Meteorology and Geophysics (SCMG) targeting 10 ASEAN members countries (five in RA II and five in RA V) and the project had been proposed to be included in the Regional WIGOS Implementation Plan for RA II, which was to be adopted at the fifteenth session of RA II (Doha, Qatar, December 2012). The Group welcomed this proposal and suggested that the project be discussed at the RA V workshop in September 2012.

2.4 The Group noted the report of SWFDDP given in Annex IV. The Group recalled that the proposal on the Western Window of the SWFDDP was introduced at MG-6. The Group noted that Indonesia agreed to the proposal and Australia supported it in principle. The Group felt that further consideration would be needed concerning the benefits of relevant Members, the workload required for the forecasting center(s) and the selection of partners.

3. FOLLOW-UP TO THE REGIONAL SEMINAR ON CLIMATE SERVICES (AGENDA ITEM 3)

3.1 Implementation of GFCS

3.1.1 The Group was informed of progress in implementation of the Global Framework for Climate Services (GFCS). GFCS and its implementation are a key priority for WMO. Discussions on GFCS at EC-64 reflected that planning for the Extraordinary Congress in October 2012 is on track, as is development of the Implementation Plan. The Secretary-General of WMO at the opening of EC-64 indicated strong interest from partnering agencies in GFCS and its success. Keen interest was shown in possible Governance structures for GFCS. Several highlights of the discussions (still in progress at the time of this RA V MG session) were:

- The agreement to establish a new group to consider Resolution 40 (Cg-XII) and Resolution 25 (Cg-XIII), the emerging data needs for GFCS implementation and operations, and to consider a data policy for GFCS, following a decision of Cg-XVI (2011) on that matter.
- Adoption of a Resolution (within item 3.2) on a joint mechanism to support implementation of the Climate Services Information System (CSIS).
- Expression of encouragement on the matter of possible inclusion of Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) as a fourth component of the World Climate Programme, to replace the former World Climate Impact Assessment and Response Strategies Programme (WCIRP), reflecting the overall (not unanimous) opinion of this Council that both WMO and UNEP would benefit from increased collaboration on matters related to impacts and adaptation.
- The Commission for Climatology (CCI) is supporting activities in all 5 pillars of GFCS, particularly strongly with respect to implementation of the CSIS, and has embarked on a new task, in collaboration with the Education and Training Office of WMO, to elaborate the competency standards for performance of all aspects of climate services. This will support Members' needs with respect to training of existing personnel, and hiring for new work that could arise as GFCS is implemented.

3.2 Southeast Asian Climate Outlook Forum (SEACOF)

3.2.1 The Group noted and welcomed the decisions of the RA V Working Group on Climate Services (WG-CLS) with respect to the Southeast Asian Climate Outlook Forum (SEACOF), to share a detailed concept note on the Forum with the Working Group members by end 2012, to facilitate identification of a host and to facilitate session preparations. The timeframe of holding the inaugural SEACOF in the first half of 2013 is possible to achieve, if the precursor tasks are performed on the schedule agreed by the Working Group. The Management Group was informed that there would be a benefit to the planning of the SEACOF, if plans for RCC establishment for the Region were to be advanced as the first priority, as hosting a Climate Outlook Forum would be a natural task for an RCC or RCC-Network to perform for the benefit of the Region.

3.2.2 In discussion, with respect to funding for and administration of the proposed Forum, it was noted that various WMO Secretariat bodies can organize some expert and resource support for inaugural sessions to assist the local organizing groups in both preparations and conduct of the sessions. Experience has shown that both the professional climate expert community and user communities engaged in these Forums benefit, and that many agencies are interested to support COFs, with in-kind and small financial contributions as well as expertise. The involvement of the

regional experts in identifying the host, selection of appropriate experts and identification of user communities to engage is always invaluable to the COF success. Ultimately, most mature COFs are sustained and managed within the Region, although in some areas, continued international support remains important to COF sustainability. The MG was informed that the ASEAN Specialized Meteorological Centre (ASMC) in Singapore already produces consensus-based climate outlooks for the summer monsoon season, and is extending this work to the winter monsoon, to serve 10 ASEAN member countries. In this light, RA V would have to identify which group of countries should be served by the proposed SEACOF, and cooperation between the two forums would be beneficial.

3.3 RA V RCC Network

3.3.1 With respect to establishment of RCCs in the Region, the decision of the RA V WG-CLS to conduct a survey and analyze it by end of December 2012 (on the matter of capabilities for provision of and requirements for RCC services), was noted and welcomed. On this basis, it was recalled to the RA V Management Group that procedures and criteria for establishment of RCCs and RCC-networks has been developed by CCI and CBS, and agreed by the Executive Council, and are embedded now in the WMO Technical Regulations, in the Manual on the Global Data Processing and Forecasting System (GDPFS), in WMO No. 485, available at: http://www.wmo.int/pages/prog/www/DPFS/Manual_GDPFS.html .

3.3.2 It was noted that information on RCCs, including their status of implementation; WMO guidance on how to establish and run a WMO RCC; brochures, and other materials are available on the WMO web site at: <http://www.wmo.int/pages/prog/wcp/wcasp/RCCs.html#Functions> .

3.3.3 The Group noted that following the analysis of capabilities and requirements, RA V could proceed quickly to identify the structure preferred (e.g., an RA II type structure with one or more individual RCCs collectively serving the entire RA V, or an RA VI type structure of one RCC-Network serving the entire region) and to identify hosts for the desired RCCs or RCC-Network nodes. With these decisions of the RA V, the CCI and WMO Secretariat would be able to facilitate establishment of a demonstration phase. It was noted that Dr Michael Coughlan (Australia) was the leader of the CCI-CBS Expert Team on RCCs, and that he would be a valuable source of information and guidance to the region on RCC implementation. The MG was informed that there is interest in setting up an RCC in Jakarta, which was welcomed. Hopefully a full coverage for RA V will be determined as a result of the survey. It was also noted that there may be a need for a trans-regional centre, perhaps hosted within RA V, to cover climate interests that fall in overlap between RAs II and V, and that information sharing with the RA II RCC-Tokyo should be helpful in this regard.

4. DEVELOPMENT OF THE RA V STRATEGIC OPERATING PLAN (2012-2015) (AGENDA ITEM 4)

4.1 The MG reviewed the development of the RA V Strategic Operating Plan (SOP) for 2012-2015 as given in Annex V and noted that at the 2012 Meeting of Presidents of Regional Associations (January 2012), the RA presidents agreed to develop the Operating Plan of RAs as part of the WMO-wide Operating Plan by adjusting the current regional strategic (operating) plans to align with the Congress decisions and the WMO-wide operating Plan. The MG requested the RA V Task Team for Strategic Planning to consider the above decision and draft an Operating Plan for RA V.

5. REPORTS OF THE WORKING GROUPS (AGENDA ITEM 5)

5.1 Reviewing the reports submitted by the Leads of Working Groups on: Hydrological Services (HYS); Climate Services (CLS); Weather Services (WXS); and Infrastructure (INFR), which are given in Annexes VI.1-4, the Group was pleased to note the progress and outcomes of the activities carried out by working groups and task teams according to their terms of reference.

5.2 Proposals on the future meetings of working groups were discussed under agenda item 7.

6. CAPACITY DEVELOPMENT IN RA V (AGENDA ITEM 6)

6.1 Mr Masters delivered a presentation on the Strategy of WMO for Capacity Development including the resolution of CG-XVI; roles of NMSs, categorization; areas of competencies in capacity development; the development of the Capacity Development Strategy (CDS); its strategic approach; the Implementation Plan; and NMHS CDS process as given in Annex VII. The Group welcomed the development of CDS and felt that the CDS and its implementation plan be incorporated in the work of the Regional Association.

6.2 The Groups was informed of the training events conducted in RA V as given Annex VIII.

7. PLAN FOR REGIONAL EVENTS (AGENDA ITEM 7)

7.1 The Group considered the plan for the budgeted regional events of RA V during the sixteenth financial period (201-2015) as given in Annex IX. After reviewing the proposals from the Leads of RA V working groups, they agreed to hold the following meeting:

- A meeting of WG on Infrastructure in Melbourne, Australia, March/April 2013 in conjunction with the AusAID funded Regional Workshop on WIS and TDCF:
- A workshop on development of the Regional WIGOS Implementation Plan for RA V in Jakarta, Indonesia, September 2012 in conjunction with the fifteenth session of CBS.

7.2 The Group noted that meetings of RA V Tropical Cyclone Committee (TCC) had been held in conjunction with the sessions of RA V in the past. Taking into consideration that it would take three (3) weeks for the conjoint TCC meeting and RA V session, which might not be convenient for some delegations, and it will take some time to prepare a TCC document for the session of RA V, it was suggested that the TCC meeting and the RA V session be held separately. It was also suggested that a Technical Conference be held in conjunction with the next RA V session (2014) to facilitate the participation in the RA V session and provide opportunities to discuss high priority issues of RA V as well as to present the achievements of subsidiary bodies in detail prior to the RA V session.

7.3 The Group requested the Secretariat to further coordinate and discuss the plan of the meetings with the Leas of working groups and the president of RA V.

8. REVIEW OF THE LOCATION OF THE REGIONAL OFFICE FOR ASIA AND THE SOUTH-WEST PACIFIC (AGENDA ITEM 8)

8.1 The Group recalled that the Sixteenth WMO Congress (Cg-XVI) noted that (1) the relocation of the Regional Director for the Americas from Geneva to Paraguay in January 2010 has brought some benefits for Regions III and IV by fostering closer collaboration with Members and between the two Regions; and (2) XV-RA I urged the Secretary-General to explore relocation of the Regional Office for Africa to the Region in order to improve the communication with Members and partner organizations, and enhance its effectiveness in the governance and coordination of the regional activities.

8.2 The Group further noted that, considering the concerns of RA I and the benefits for Regions III and IV achieved through the relocation of the Regional Director to the Region, as well as opinions that the location of the Regional Directors and Offices in Geneva has advantages in terms of coordination with the WMO Secretariat and Programmes, Congress recommended that the Secretary-General consider, in consultation with the presidents of RAs concerned, conducting a comprehensive review of the regional offices resources and location and propose measures to enhance their efficiency and effectiveness.

8.3 In this respect, the Group was pleased to note the on-going Secretariat initiative to review the Regional Office location, with a special focus on efficient and effective management and

operation of the Regional Office for Asia and the South-West Pacific (RAP Office). It recognized that the location of RAP Office was maintained in Geneva since its establishment in 1979. Tenth Congress (Cg-X: 1987) agreed that RAP Office should continue to be at the WMO Headquarters and that the future location should be decided on the basis of the future sessions of RAs II and V. The Group also recalled that XIV-RA V (Adelaide, Australia, May 2006) expressed support for the idea of the XIII-RA II (Hong Kong, China, December 2004) that the Regional Office for Asia and the South-West Pacific should remain in Geneva in view of the advantage of its location at WMO Headquarters to ensure effective and efficient implementation of activities related to the Regional Programme.

8.4 The Group further noted with pleasure that there are some potential Members (Macao, China; Republic of Korea; Singapore; Thailand, etc.) offering to host the RAP Office and expressed its appreciation to potential host countries for their expected valuable contributions to operate the Regional Office in the Region.

8.5 The MG-8 reviewed the proposed criteria for consideration of the Regional Offices and timeline for decision and selection of the location of RAP Office. The Group agreed in principle on the proposals and expressed views that this issue should be carefully reviewed by RA V Members. The agreed criteria for consideration of location of the Regional Office for Asia and the South-West Pacific are given in Annex X.

9. PACIFIC METEOROLOGICAL COUNCIL (AGENDA ITEM 9)

9.1 The Group was pleased to note the progress of the Pacific Meteorological Council (PMC) which was established in August 2012 succeeding the Regional Meeting of Meteorological Service Directors (RMSD) and the Pacific Meteorological Desk Partnership (PMDP) as given in Annex XI. The Groups was also pleased note that the Pacific Islands Meteorological Strategy (PMS) 2012-2021 had been finalized and submitted to 23rd SPREP Officials and Ministers of Environment Meeting in August/September 2012.

10. OTHER BUSINESS (AGENDA ITEM 10)

10.1 The Group noted the reports of the WMO support for the Fiji Meteorological Service (FMS)/RSMC Nadi in 2011 and 2012 as given in Annex XII. The meeting was informed that after exceptional flood situation in early 2012 in Fiji, a WMO fact-finding mission was planned to be carried out in July 2012 to: (a) assess the existing meteorological and hydrological facilities and services; (b) review the progress at the Fiji Meteorological Service on the recommendations emanating from the WMO mission in 2007; (c) assess the short-term, medium-term and long-term requirements; and (d) recommend the appropriate organizational structure and resources to ensure the sustainable operation of FMS/RSMC Nadi and a new Hydrological Service.

11. CLOSURE OF THE SESSION (AGENDA ITEM 10)

11.1 The eighth session of the RA V Management Group was closed at 14:40 on 2 July 2012.

EIGHTH SESSION OF THE RA V MANAGEMENT GROUP
(Geneva, 28 June and 2 July 2012)

LIST OF PARTICIPANTS

1. Members of RA V Management Group and Representatives of Members of RA V

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EIGHTH SESSION OF THE RA V MANAGEMENT GROUP
(Geneva, 28 June and 2 July 2012)

AGENDA

1. Opening of the Session
 2. Matters arising from the seventh session of the RA V Management Group
 - Regional WIGOS Implementation Plan
 - Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project (SWFDDP)
 3. Follow-up to the Regional Seminar on Climate Services
 - Implementation of GFCS
 - Southeast Asia Climate Outlook Forum
 - RA V Regional Climate Center (RCC) network
 4. Development of the RA V Strategic Operating Plan (2012-2015)
 5. Reports of the Working Groups
 6. Capacity development in RA V
 7. Plan for regional events
 8. Review of the location of the Regional Office for Asia and the South-West Pacific
 9. Pacific Meteorological Council
 10. Other business
 - WMO support for the Fiji Meteorological Service/RSMC Nadi
 11. Closure of the Session
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Regional WIGOS Implementation Plan

Capacity Building in Radar Techniques in the Southeast Asia

Draft Implementation Project Design

1	Task/Project II.	Observing systems integration for supporting disaster risk reduction and aviation services
2	Subtask/Subproject II.2	Improvement of Weather Radar products for severe weather monitoring: standardization of data processing procedures, quality control and calibration; radar products (rainfall, wind field products) inter-comparison/validation, real-time distribution/exchange
3	Type	Cross-regional Implementation Project (RA II and V)
4	Status	Draft Design
5	Overview	<p>Project Title: Capacity Building in Radar Techniques in the Southeast Asia</p> <p>Developing countries in the Southeast Asia share common challenges for severe weather monitoring and forecasting. In spite of many radars having been installed in the region, they are not fully utilized due to lack of their expertises in weather radar techniques. Thus, capacity building in weather radar techniques is crucial concern for the countries.</p> <p>Although their levels of operational usage of radar vary, they are often facing common technical challenges. In this regard, sharing their technical issues and lessons learnt among countries in the region and developing the regional strategy on development of the radar network in the region will enable them to tackle those challenges collaboratively with help from the WMO community in an effective and efficient manner.</p> <p>This project, initiated by Thailand and Malaysia, within the framework of the ASEAN Sub-Committee on Meteorology and Geophysics (SCMG), aims at establishing a collaborative mechanism within SCMG through the following steps.</p> <p>1) Thailand and Malaysia, as leaders of this project, will develop their national reports toward operational rainfall estimation/forecasting based on radar data. In order to share their experiences and lessons learnt among the participating organs, and to identify technical problems to be solved and necessary technical supports for, the reports should include the following items in a well-structured format:</p> <ul style="list-style-type: none"> a) overview of the current radar systems b) organization (department, division, staff, and budget)

		<p>c) specification of radar systems d) maintenance of equipment e) data processing (QC, calibration, and composite technique) f) radar products g) details of current technical problems associated with (a) to (f) h) lessons learnt from the past experiences i) recent progress j) future development plans</p> <p>The reports will be submitted to the 35th SCMG meeting.</p> <p>2) The other ASEAN developing countries will also develop their national reports in the same format as that of <u>Thailand and Malaysia</u>, and submit their reports to 36th SCMG meeting. Based on the submitted report, the meeting will develop a regional strategic plan on radar which identifies common technical issues and necessary actions to be taken.</p> <p>*All the above Members will be requested to update their national reports and submit the latest version to a SCMG meeting every year. Thailand and Malaysia are requested to encourage the other Members to develop and keep their national reports up to date. The regional strategic plan is also to be updated at every SCMG meeting.</p> <p>*Each Member will consult with the WMO or advanced RA II members about appropriate technical missions focused on identified technical issues in the reports such as dispatch of radar experts to recipient countries, with the VCP or other funds. On completion of such a mission, the recipient Member is requested to update its national report by including details of the outcomes of the mission.</p>
6	Aim(s)	This project aims to develop effective early warning systems building on radar data in the Southeast Asia.
7	Benefits	Capacity in monitoring and forecasting of the severe weather using radar data will be enhanced by shared experiences and lessons among the participating organs and technical missions focused on technical issues indentified in national reports and the regional strategic plan.
8	Role/Involvement of WMO Regional Centres in RA II	
9	Key Regional Player	Thailand, Malaysia
10	Capacity Building requirements	
11	Partners/Participants	All the ASEAN countries(Vietnam, Cambodia, Lao P.D.R., Myanmar, Indonesia, Singapore, Brunei, the Philippines)
12	Relationship with	- Radar composite map in the Southeast Asia, one of the

	existing project(s)	<p>on-going projects under the Meteorological Working Group of the WMO/ESCAP Typhoon Committee.</p> <ul style="list-style-type: none"> - Severe Weather Forecasting Demonstration Project (SWFDP). RAIL - Southeast Asia. - ASEAN Sub-Committee on Meteorology and Geophysics(SCMG)
13	Funding Source(s)	This project will rely on existing budget allocations at the national level. The project will build on existing national observational networks and information management infrastructures. Additional funding will be needed for technical cooperation for those countries by dispatching appropriate experts and/or providing training workshops.
14	Overall Costs	To be determined.
15	Timescale	2013 – 2017
16	Expected Key Deliverables / Key responsible body	<ul style="list-style-type: none"> - National reports in the Southeast Asia toward operational rainfall estimation/forecasting based on radar data. - Regional strategic plan on development of the radar network
17	Main risk(s)	<ol style="list-style-type: none"> 1) Failure of development of national reports by participating organs. 2) Lack of available experts. 3) Lack of funds available.
18	Website	Not to be established
19	Summary	
20	Date of the update	16 April 2012
21	Contact Person 1 Name Organization Address Telephone Fax E-Mail	Thailand
22	Contact Person 2 Name Organization Address Telephone Fax E-Mail	Malaysia

Annex IV

**Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project
(SWFDDP)**

Full Demonstration Report No 4 for period: 1 November 2011 to 29 February 2012

LARGE WAVES

Observations from both Niue and the Cook Islands indicate there was a significant wave event (Combined northwest sea and swell) during 3-7 February.

Month	November			December			January			February		
Target days (UTC)										3	4-7	7
Solomon Islands												
Vanuatu												
Kiribati												
Tuvalu												
Fiji												
Samoa												
Tonga											Est Comb NW sea & swell 3.5-6m (4,3,2,1,0)	
Niue												3-4m (3,2,1,0)
Cook Islands										5m (3,2,1,0)		

STRONG WINDS

Aside from the tropical cyclone impact on Aneityum Island, Vanuatu, there was a northwest wind event during 6-7 February which was marginally gale force over Samoa, Tonga and Niue.

Month	November			December			January			February		
Target days (UTC)	15-16			6-7			10	22-23		6-7	8	11-17
Solomon Islands												
Vanuatu								-	-		100kt Aneityum Island (4,3,2,1,0)	
Kiribati												
Tuvalu												
Fiji	25kt (4,3,2,1,0)							25kt (1,0)		-	-	-
Samoa								-	-	G87km/hr (4,3,2,1,0)		
Tonga								E25kt		E30kt (3,2,1,0)		E25kt
Niue										G65km/hr (3,2,1,0)		
Cook Islands												

Legend:

25kt (4,3,2,1,0) = Max 10-minute average wind in knots. Event appeared on SPG charts from 4 days out to actual day (= 0). Underlined means widespread.
 G87km/hr (4,3,2,1,0) = Max 3-sec gust in kilometres per hour. Event appeared on SPG charts from 4 days out to actual day (= 0). Underlined means widespread.
 125mm (NIS) = Max observed 24 hour rainfall = 125mm. Event Not In SPG charts (NIS). Not underlined means localised.

2. OVERVIEW OF NWP PRODUCTS

US Satellite hydro-estimation data are also proving useful in estimating how much rainfall has occurred up to the start of the forecast period or an indication of how much might have fallen during an event just completed.

The following statements have appeared in previous reports but still hold true now:

- The UKMO and ECMWF precipitation probability charts continue to give a weak signal at 100mm over 24 hours and a good signal for 50mm. Wellington forecasters rely on both these products, together with the help of pattern recognition, to estimate rainfall totals \geq 100mm in 24 hours.
- The change in the wind criteria now better matches the guidance produced by UKMO and ECMWF; hence the number of over-forecast strong wind areas remains small. Forecasters continue to rely on local observations to help determine the areal extent of 30kt winds on days one and two.
- Wave guidance continues to appear on the charts in high frequency, but the change in criteria has made a significant difference to the amount of wave guidance south of 15S. Forecasters continue to access ECMWF wave data specifying each half metre, allowing easier determination of waves \geq 2.5m, north of 15S and \geq 3.5m, south of 15S. The model guidance has proved to be very reliable with forecasters picking large wave events from 4 days out.

3. PROJECT EVALUATION AGAINST SWFDDP GOALS

This table is designed for NMHSs to give the appropriate feedback

SWFDDP GOAL	COMMENT ON PROGRESS TOWARDS EACH GOAL
To improve the ability of NMHSs to forecast severe weather events	Awaits feedback from NMHSs.
To improve the lead time of alerting these events	Awaits feedback from NMHSs.

To improve the interaction of NMHSs with Disaster Management and Civil Protection authorities before, during and after severe weather events	Awaits feedback from NMHSs.
To identify gaps and areas for improvements	Awaits feedback from NMHSs.
To improve the skill of products from Global Centres and RSMCs through feedback from NMHSs	Awaits feedback from NMHSs.

4. EVALUATION OF METCONNECT PACIFIC and SOUTH PACIFIC GUIDANCE CHARTS

Users of the SWFDDP website (version 2 since 15 December 2010), **MetConnect Pacific** (<http://swfddp.metservice.com/>) view the South Pacific Guidance charts on the RSMC Wellington page on first entering the SWFDDP web site.

MetConnect Pacific has continued to operate without any outages and the South Pacific Guidance charts were always updated twice a day.

The RSMC Darwin images on MetConnect Pacific updated twice a day without any hitches. Under 'Wind Diagnostics', there are still a number of fields unavailable.

South Pacific Guidance charts

The criteria for producing the South Pacific Guidance charts were changed on 1 December 2010. The thresholds for rain, wind and waves are now \geq 100mm/24hrs, winds \geq 30 knots and waves \geq 2.5m north of 15S and \geq 3.5m at & south of 15S

The following table show the number of South Pacific Guidance Charts produced from 1 November 2011 to 29 February 2012 under the various categories and different countries. A total of 1210 South Pacific Guidance charts were produced by RSMC Wellington Lead meteorologists and posted on MetConnect Pacific. Only 20% of these charts contained NIL SIG. The rest contained guidance including 87% with Heavy Rain; 56%, Large Waves; 35%, Strong Wind and 22%, TC references.

Heavy rain/Strong Wind/Large Wave guidance was often combined for disturbances that showed potential for growing into a tropical cyclone. Heavy Rain guidance was prominent for the Solomon Islands, Vanuatu, Fiji and Tonga signifying the location and persistent nature of the South Pacific Convergence Zone (SPCZ) over this period. Kiribati's guidance was exclusively for 'Large waves' originating from long period north or north-easterly swells from the North Pacific Ocean.

Nov/Dec/Jan/Feb	SWFDDP area	Solomon Islands	Vanuatu	Kiribati	Tuvalu	Fiji	Samoa	Tonga	Niue	Cook Islands
Heavy rain	834	344	299	0	82	376	161	271	203	225
Strong wind	339	41	94	0	1	58	23	70	57	55
Large waves	541	79	117	221	2	63	40	63	45	136
TC references	207	3	54	0	0	13	0	56	25	12
Combination of one or more of above	962	345	313	221	83	380	170	311	208	293
NIL SIG	248	865	897	989	1127	830	1040	899	1002	917
Total	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210

There is potential for individual countries to take responsibility for keeping a tally of their own statistics including South Pacific Guidance charts. At the same time, they could match up forecasts and warnings issued and keep a score of how useful the South Pacific Guidance charts were in leading to a warning, and for any warnings they issue, the probability of success and false alarm ratio for each event. This is something that needs to be explored further and addressed in a future training programme.

The appendix contains SPG charts in the days leading up to the formation of a tropical cyclone or the start of a heavy rainfall or strong wind event NOT associated with a tropical cyclone.

5. SUMMARY

- Steve Ready represented the region at the 4th WMO SWFDDP Steering group meeting in Geneva from 29 February to 2 March 2012. A copy of the Final Report will be circulated separately but there was a lot discussion about what happens after the Demonstration phase (Phase 3) and the sustainability of the various Projects when they reach the operational phase 4.
- The second round of SWFDDP in-country training is planned to be completed before the 2012/2013 cyclone season starting with Samoa and Niue, in May; Fiji and Kiribati, in June; Cook Islands, in September; Tuvalu and Tonga, in October and Solomon Islands and Vanuatu, late October/early November.

- Check out the SPG chart for Jasmine (1500 UTC issue on 30-January-2012 (5 days before Jasmine was named)) to see how the dashed line along 15°South marks the boundary for the change in the wave criteria.
- During the 2011/2012 cyclone season, whenever a Tropical Cyclone Outlook is in force during day 1 and day 2 and no tropical cyclone has been named, Wellington forecasters have been including extra rain/wind/wave information as part of the 'TC Outlook' area instead of in a separate area (See below for the first SPG chart for tropical cyclone Fina).
- RSMC Wellington is continuing to provide useful guidance on potentially heavy rain and/or strong winds and/or large waves, possibly hinting at tropical cyclone, on day 4 and day 5 to supplement, Nadi's 3-day TC Outlook.
- In the absence of radar and a good network of raingauges, satellite hydro-estimators provide the only tool for monitoring the environment closely and helping with the forecasting of short period rainfalls.
- Steve Ready is still liaising with Ray Tanabe, the Director of the Central Pacific Hurricane Center about USA progress in getting the WRF model to run over the South Pacific area. At this stage, the USA is likely to provide images from WRF12km run over the entire SWFDDP domain as well as a WRF 4km run over a smaller domain, including Samoa and Niue. Will advise when something more is known.
- **The big challenge ahead is for NMHSs to find a way to introduce new or revised products (using values especially for rainfall and waves) based on the guidance information available on MetConnect Pacific**

6. CASE STUDY

Refer to case study (in appendix xxx) produced by New Caledonia on the torrential rain from the main cloud band feeding tropical cyclone Fina.

7. APPENDICES

A. Tropical cyclone events

The following are South Pacific Guidance charts leading up to the naming of tropical cyclones Fina, Jasmine and Cyril.

FINA: Named 1500 UTC on 21-December-2011

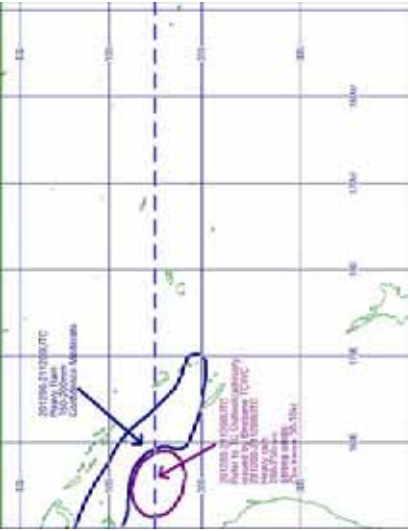
Comment: Fina was short-lived tropical cyclone and difficult to pick from more than 2 days out.

1500 UTC issue on 20-December-2012 (Day before Fina was named)



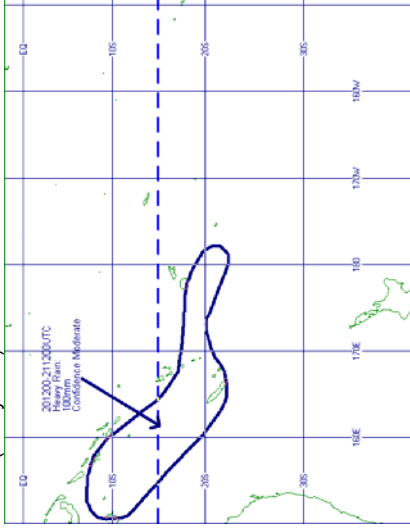
TC Outlook	Yes	200-250mm	Mod
Rain		30-35kt	Mod
Wind			

1500 UTC issue on 19-December-2012 (2 days before Fina was named)



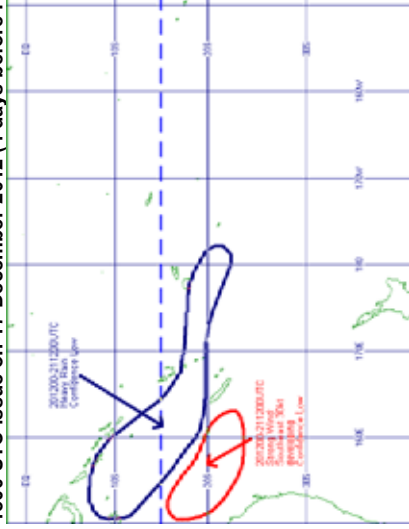
TC Outlook	Yes	200-250mm	Mod
Rain		30-35kt	Mod
Wind			

1500 UTC issue on 18-December-2012 (3 days before Fina was named) 19/AM (2 Days out)



TC Outlook	No	100mm	Mod	Solomon Islands	Vanuatu
Rain					
Wind					

1500 UTC issue on 17-December-2012 (4 days before Fina was named)



TC Outlook	No	Heavy	Low	Solomon Islands	Vanuatu
Rain					
Wind		30kt	Low		

1500 UTC issue on 16-December-2012 (5 days before Fina was named)

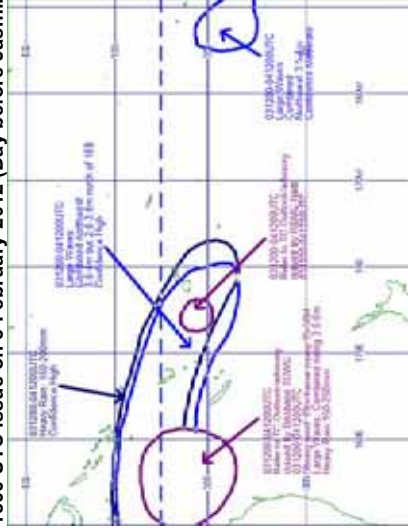


TC Outlook	No	Heavy	Low
Rain			
Wind		30kt	Low

JASMINE: Named 1200 UTC on 4-February-2012

Comment: The cyclonic feature that gave rise to Jasmine was well-flagged by the global models from 5 days out.

1500 UTC issue on 3-February-2012 (Day before Jasmine was named)



TC Outlook	Yes		
Rain		150-250mm	Mod
Wind		35-50kt	Mod
Waves		3.5-5m	Mod

1500 UTC issue on 2-February-2012 (2 days before Jasmine was named)



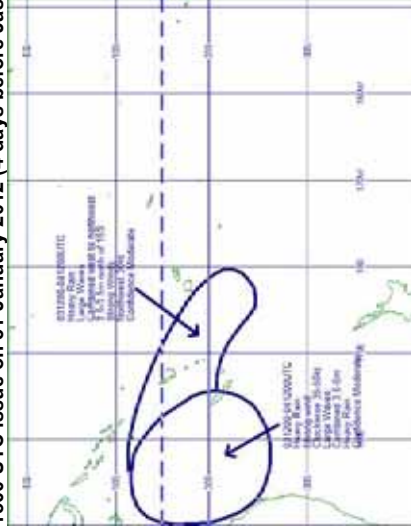
TC Outlook	Yes		
Rain		200mm+	Mod
Wind		35-50kt	Mod
Waves		3.5-5m	Mod

1500 UTC issue on 1-February-2012 (3 days before Jasmine was named)



TC Outlook	No		
Rain		Heavy	Mod
Wind		35-50kt	Mod
Waves		3.5-5m	Mod

1500 UTC issue on 31-January-2012 (4 days before Jasmine was named)



TC Outlook	No	Heavy	Mod
Rain		35-50kt	Mod
Waves		3.5-5m	Mod

1500 UTC issue on 30-January-2012 (5 days before Jasmine was named)



TC Outlook	No	Heavy	Mod
Rain		35-45kt	Mod
Waves		3.5-5m	Mod

CYRIL: Named 1800 UTC on 6-February-2012

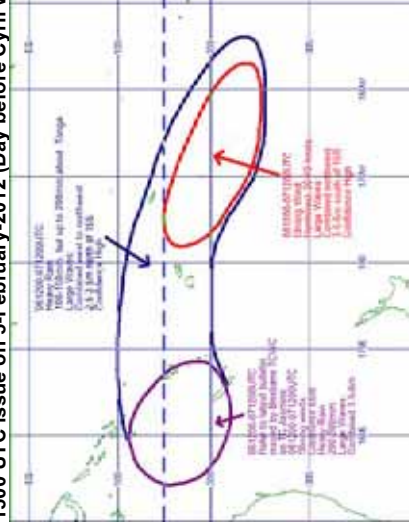
Comment: It was difficult to plot Cyril's formation from a few days out due to its small size. It wasn't until the day before it was officially named that cyclogenesis seemed a distinct possibility.

1500 UTC issue on 6-February-2012 (Few hours before Cyril was named)



TC Outlook	Yes				
Rain		150-200mm	High	Tonga	Niue
Wind		30-40kt	High	Tonga	Niue
Waves		3.5-5m	High	Tonga	Niue

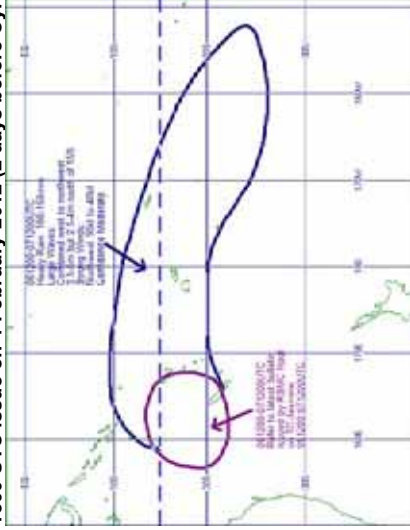
1500 UTC issue on 5-February-2012 (Day before Cyril was named)



TC Outlook	No				
Rain		200mm	High	Tonga	Niue
Wind		30-40kt	High	Tonga	Niue
Waves		3.5-6m	High	Tonga	Niue

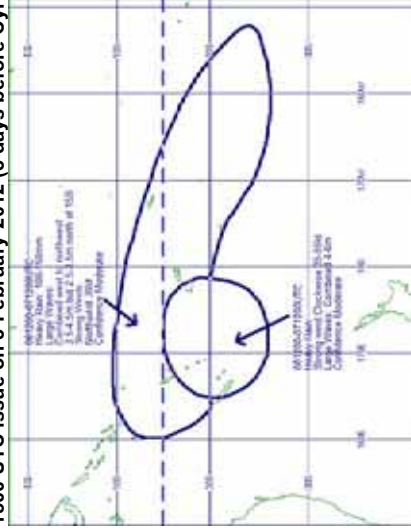
					S Cooks
					S Cooks
					S Cooks

1500 UTC issue on 4-February-2012 (2 days before Cyril was named)



TC Outlook	No	Mod	Tonga	Niue	S Cooks
Rain	100-150mm	Mod	Tonga	Niue	S Cooks
Wind	30-40kt	Mod	Tonga	Niue	S Cooks
Waves	3.5-5m	Mod	Tonga	Niue	S Cooks

1500 UTC issue on 3-February-2012 (3 days before Cyril was named)



TC Outlook	No	Mod	Tonga	Niue	S Cooks
Rain	100-150mm	Mod	Tonga	Niue	S Cooks
Wind	30kt	Mod	Tonga	Niue	S Cooks
Waves	3.5-4.5m	Mod	Tonga	Niue	S Cooks

1500 UTC issue on 2-February-2012 (4 days before Cyril was named)



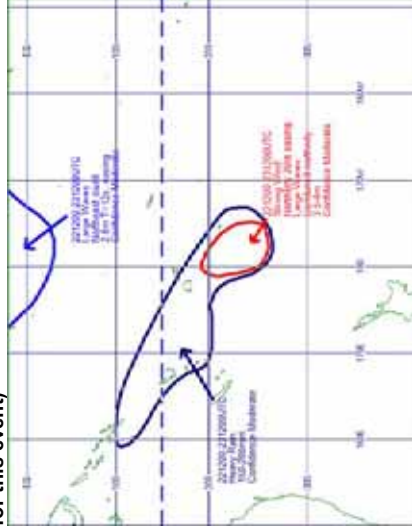
TC Outlook	No	Mod	Tonga	Niue
Rain	100-150mm	Mod	Tonga	Niue
Wind	30kt	Mod	Tonga	Niue
Waves	3.5-4.5m	Mod	Tonga	Niue

B. Non-tropical cyclone events (5 have been referenced below)

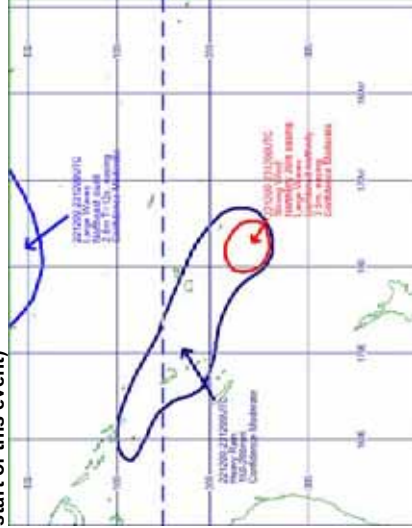
- **EXTREME RAINFALL and FLOODING EVENT over FIJI: 22-25 January – 591mm (119mm/6hr on 24th)**

Comment: Heavy rain forecast 4 days in advance. Note the mention of 150-200mm per day on the chart, the day before the event started when any warning would've been issued. This event also caused two fatalities in the big island of Savaii

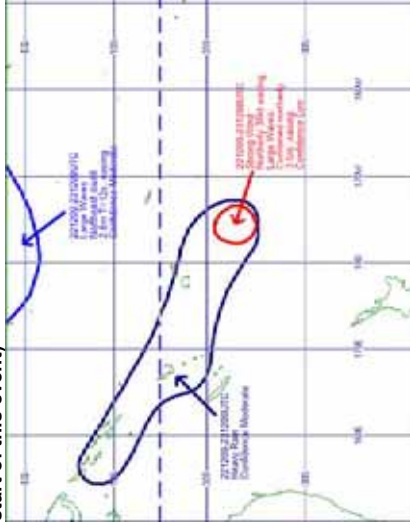
1500 UTC issue on 22-January-2012 (starting day for this event)



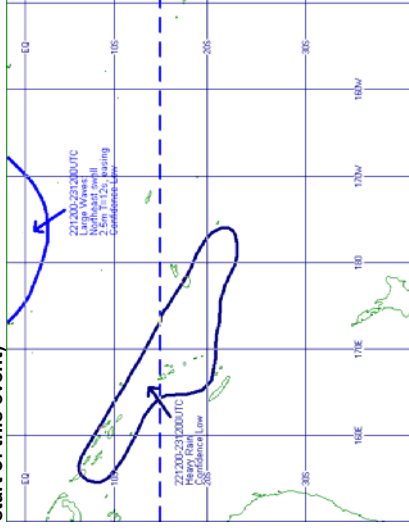
1500 UTC issue on 21-January-2012 (day before start of this event)



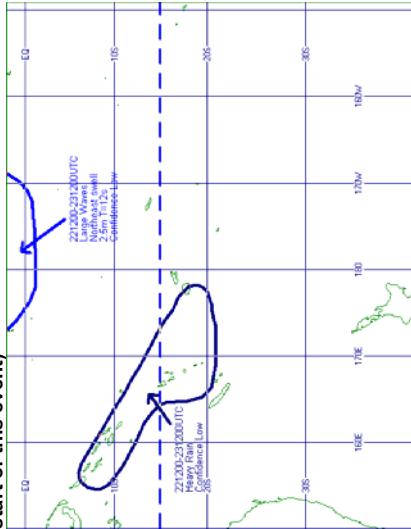
1500 UTC issue on 20-January-2012 (2 days before start of this event)



1500 UTC issue on 19-January-2012 (3 days before start of this event)



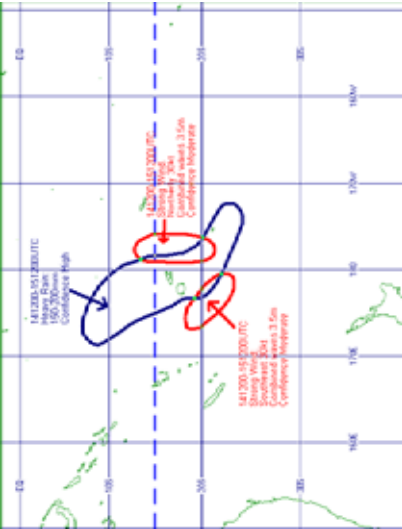
1500 UTC issue on 18-January-2012 (4 days before start of this event)



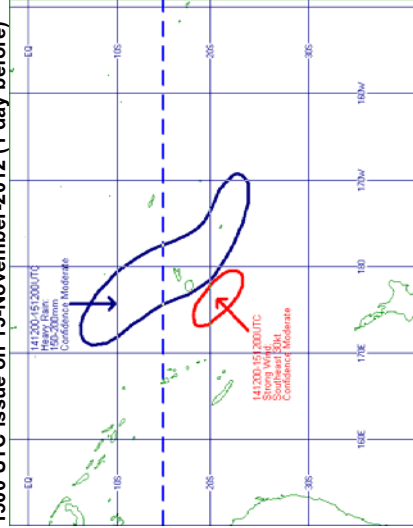
- HIT for HEAVY RAIN and FALSE ALARM for WIND over FIJI: 14-15 November – Nabouwailu 157mm and 25kt.

Comment: Heavy rain and strong winds forecast 4 days in advance associated with 01F. Note the mention of 150-200mm per day on the chart from 2 days before the event started..

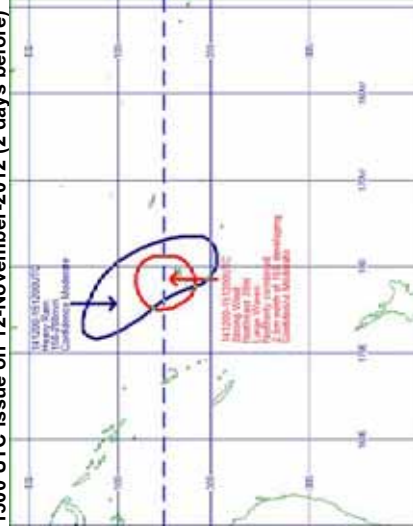
1500 UTC issue on 14-November-2012 (actual event day)



1500 UTC issue on 13-November-2012 (1 day before)



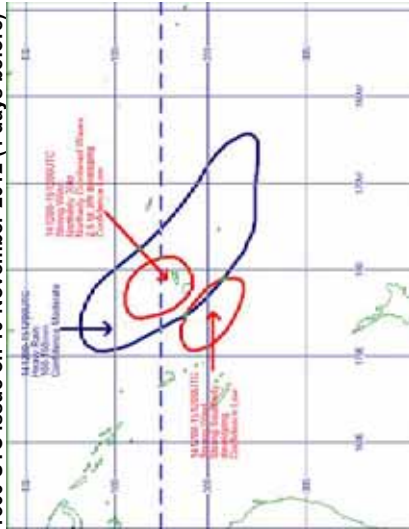
1500 UTC issue on 12-November-2012 (2 days before)



1500 UTC issue on 11-November-2012 (3 days before)



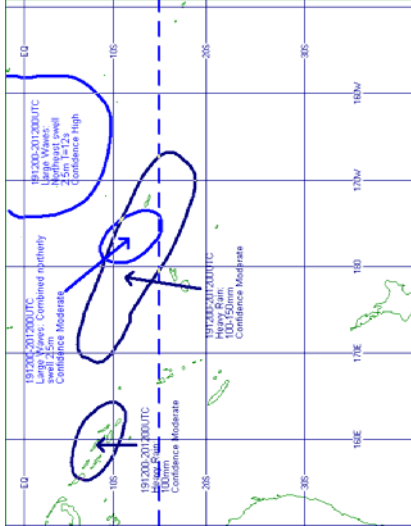
1500 UTC issue on 10-November-2012 (4 days before)



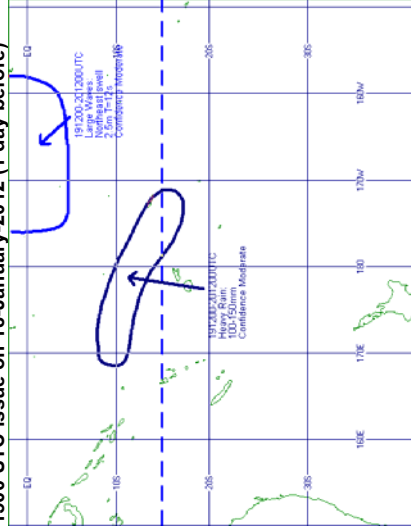
- **HEAVY RAIN and FLOODING over SAMOA: 19-20 January – Alaoa on Upolu (central)**
251mm

Comment: Heavy rain was forecast from 4 days out. The event caused 2 deaths on the big island of Savaii

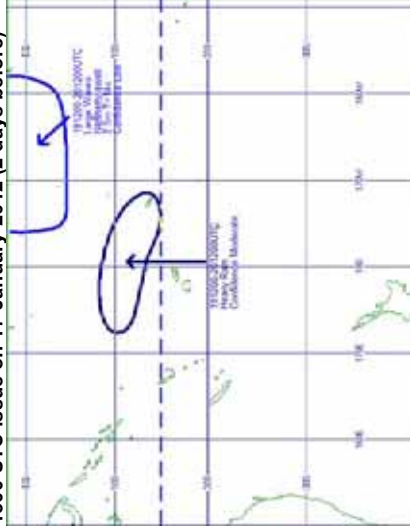
1500 UTC issue on 19-January-2012 (actual event day)



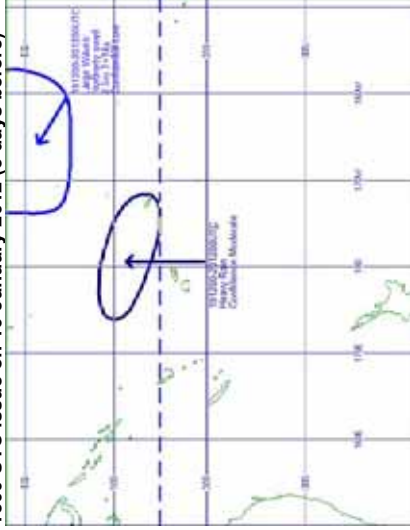
1500 UTC issue on 18-January-2012 (1 day before)



1500 UTC issue on 17-January-2012 (2 days before)



1500 UTC issue on 16-January-2012 (3 days before)



1500 UTC issue on 15-January-2012 (4 days before)



RA V STRATEGIC PLANNING BACKGROUND

FURTHER DEVELOPMENT OF THE RA V STRATEGIC OPERATING PLAN (SOP) 2012-2015

WMO Strategic Plan and Operating Plan 2012-2015

1. Cg-XVI (Geneva, May/June 2011) approved the WMO Strategic Plan 2012-2015 ([WMO-No. 1069](#)), that reflects its decisions and directions that will guide decision-making by the Organization and its constituent bodies during the period 2012-2015 to ensure focused and coordinated approaches across the Organization. Within the five Strategic Thrusts and eight Expected Results, WMO as a whole has identified the following five priority areas:

- Global Framework for Climate Services (GFCS);
- Aviation meteorological services;
- Capacity Building for the developing and least developed countries;
- Implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS); and
- Disaster Risk Reduction (DRR).

2. Cg-XVI noted that the draft WMO-wide Operating Plan (2012–2015) provided details on *key outcomes, deliverables and activities*, which have been used to guide resource estimates and allocations as presented in the Secretary-General's Budget Proposal for the sixteenth financial period. Congress requested the Secretary-General to finalize the Plan taking into account all the decisions of the Sixteenth Congress and requested the Executive Council to further improve the Operating Plan consistent with the guidance provided by Congress regarding the future strategic and operational planning.

3. The [WMO-wide Operating Plan \(OP\) for 2012-2015](#) will be composed of the following four parts: (Part 1) Introduction; (Part 2) WMO Programme Activities planned and funded for Implementation in 2012-2015 (formerly considered as the Secretariat Operating Plan 2012-2015); (Part 3) the Operating Plans of eight Technical Commissions; and (Part 4) the Operating Plans of six Regional Associations. A template, as given in [Annex I](#), has been prepared by the WMO Secretariat to facilitate the work of Technical Commissions and Regional Associations to develop and finalize their Operating Plans.

Development of RA V Strategic Operating Plan for 2012-2015

Strategic Plan for the Enhancement of NMHSs in RA V (South-West Pacific) (2010-2011)

4. The fifteenth session of RA V (XV-RA V) adopted the Strategic Plan for the Enhancement of National Meteorological and Hydrological Services (NMHSs) in Regional Association V (South-West Pacific) (2010-2011), which identified 87 action-oriented deliverables, categorized under 35 Regional Expected Results in accordance with WMO's set of Expected Results.

5. Region V agreed at its fifteenth session in May 2010 to attach the highest priority to the following five areas, which are very consistent with the overall WMO priorities.

- (a) Better climate services;
- (b) Sustainable aviation services;
- (c) Capacity building;
- (d) Improved infrastructure (data and information services) for weather, climate and

- water; and
(e) Improved end-to-end Multi-Hazard Early Warning Systems (MHEWS).

Development of the Strategic Operating Plan 2012-2015

6. With reference to the preliminary draft RA V Strategic Operating Plan (SOP) for 2012-2015 (as presented by XV-RA V/INF. 8), which remapped the identified 87 deliverables into the new five Strategic Thrusts and eight Expected Results of the draft WMO Strategic Plan 2012-2015, and with respect to the five highest priorities in the future work agreed by XV-RA V, the MG-4 (Geneva, June 2010) agreed that:

- (1) SOP deliverables should be further streamlined by identifying needs and priorities under the above five priority areas and be mapped to eight Expected Results of the new WMO Strategic Plan; and
- (2) SOP 2012-2015 should be concise (possibly 10-20 pages) with indication of primary responsible action players and budget for the implementation.

7. The MG-4 requested Dr N. Gordon (New Zealand) to take the lead in accomplishing this task. It further recalled that the Management Group was requested by XV-RA V to develop and conduct a periodical survey of the basic capability of NMHSs in RA V.

8. A draft RA V Strategic Operating Plan (SOP) 2012-2015 was presented to the MG-5 (Citeko, September 2010) by Dr N. Gordon (New Zealand). A total of 40 Regional Key Outcomes (RKO) were introduced with identification of primary responsible action players to supplement the Key Outcomes (KOs) of the draft WMO Strategic Plan 2012-2015. Each RKO had associated deliverables based largely on those from the previous preliminary draft RA V SOP but supplemented by existing plans and initiatives underway. A total of 23 deliverables were identified under the RA V priority-area RKO.

9. The MG-5 reiterated that the Regional Association subsidiary bodies did not necessarily need to be responsible for implementing all the necessary activities (Members and other programmes do much of this), and expressed the following general views:

- (1) Deliverables should be achievable and not just a wish list;
- (2) Implementation of RA V Regional Climate Centres (RCCs) should be more highlighted in the SOP;
- (3) A single or two key performance indicator(s) could be identified for each RKO; and
- (4) Key responsible players should be identified; e.g., Members, Technical Commissions and RA V WGs.

10. The MG-5 considered that a possible table format would have columns of: (1) RKO; (2) relevant regional Key Performance Indicators (KPIs); and (3) identification of those primarily responsible for activities to achieve the RKO.

11. Following extensive discussions and a process of consolidation of the RKO and identification of the regional KPIs, making use of the previous deliverables, a revised draft SOP was produced. This revised draft has a total of 19 RKO and a total of 46 KPIs. Five RKO were identified as Priority Areas, with 17 associated KPIs. The MG-5 agreed on the necessary actions to finalize the SOP by the end of December 2010.

12. The revised draft had been finalized with the inputs from RA V Members after MG-5 for approval by the president. The final draft has a total of 20 Regional Key Outcomes (RKO) and a total of 49 regional Key Performance Indicators (KPIs). Five RKO were identified as Priority Areas, with 18 associated KPIs. In this connection, the MG-6 (Geneva, May 2011) was pleased to affirm that the RA V Strategic Operating Plan (SOP) (2012-2015) was adopted in December 2010.

13. The adopted RA V Strategic Operating Plan 2012-2015 is given in **Annex II**.

Development of RA V Operating Plan (OP) for 2012-2015

Adjustment to the RA V SOP to align with Cq-XVI decisions

14. At the 2012 Meeting of Presidents of Regional Associations (Geneva, 30-31 January 2012), the RA presidents agreed to (further) develop RA's Operating Plan as part of the WMO-wide Operating Plan by adjusting to the current regional strategic (operating) plans to align with Congress decisions and the WMO-wide Operating Plan.

15. With reference to the proposed template given in **Annex I**, the following are already identified in the RA V SOP 2012-2015:

- Regional Key Outcomes (RKO's);
- Regional Key Performance Indicators (KPIs); and
- Responsibilities.

16. Further work is therefore required for identification of:

- Deliverables;
- Concrete Activities;
- Baseline (survey is required) and Target.

17. The president of RA V proposed that a Task Team for Strategic Planning be established under the Management Group to work on the above to complete the RA V Operating Plan 2012-2015. The Task Team will be composed of experts from a few Members and is expected to complete the task by mid-June 2012 for review by the next RA V Management Group session (MG-8) planned for June/July during EC-64.

18. The key milestones related to the development and adoption of the RA V Operating Plan would be:

- Establishment of Task Team for Strategic Planning (by end-March 2012);
- Draft Operating Plan to be prepared (by mid-June 2012);
- Review of Draft OP by the MG-8 (in end-June 2012);
- Improvement of RA V OP (by end-August 2012);
- Adoption of RA V OP (by end-September 2012);

19. The Preliminary draft RA V Operating Plan, developed by the Task Team (Mr Jon Gill, Australia (Chair); Mr Alipate Waqaicelua, Fiji; Dr Ardhasena Sopaheluwakan, Indonesia; Dr Wan Azli, Malaysia; Mr Pene Lefale, New Zealand; and Mr 'Ofa Fa'anunu, Tonga) will be presented separately to the eighth session of the Management Group (MG-8), for consideration.

ANNEX I
Template for Operating Plan
(Sample of CIMO)

Additional Activities Submitted by Technical Commissions and Regional Association										
CIMO Operating Plan 2012-2015										
Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable surface-based and space-based systems for weather, climate and hydrological observations, as well as related environmental observations, based on world standards set by WMO(ER4).										
Key Outcome 4.1	WMO Integrated Global Observing System is implemented									
	Completion of WIGOS milestones according to WIGOS implementation plan									
Key Performance Indicators	Deliverables	Activities	Programme	TC	Resp. Dept.	2012	2013	2014	2015	Target
	Report on performance	Intercomparisons	IMOP	CIMO	OBS				2015	
	Material for CIMO Guide Updates	Standardization – CIMO Guide	IMOP	CIMO	OBS					
	Completed Tests of Instruments	Testbeds	IMOP	CIMO	OBS					
	Review and development of training material	Capacity Building	IMOP	CIMO	OBS					
	IOM reports	Capacity Building	IMOP	CIMO	OBS					
	Instrument Exhibition (METEOREX)	Capacity Building	IMOP	CIMO	OBS					
	TECO	Capacity Building	IMOP	CIMO	OBS					

ANNEX II

Draft RA V Strategic Operating Plan 2012-2015

Context - The Structure of the WMO Strategic Plan 2012-2015

Starting with the three Global Societal Needs (GSNs), the WMO Strategic Plan defines five Organization-wide Strategic Thrusts (STs) and eight Expected Results (ERs) to achieve its vision, as shown in Table 1.

Table 1: Schematic representation of the structure of WMO Strategic Plan 2012-2015

		5 Strategic Thrusts		8 Expected Results	
WMO Strategic Plan 2012-2015	3 Global Societal Needs		Improving Service Quality and Service Delivery	1. Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate and water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by all relevant societal sectors	
	<p>1. Improved protection of life and property (related to the impacts of hazardous weather, climate, water and other environmental events and increased safety of transport on land, at sea, and in the air)</p>			2. Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate and water and related environmental elements	
			<p>2. Poverty alleviation, sustained livelihoods and economic growth (in connection with the Millennium Development Goals) including improved health and social well-being of citizens (related to weather, climate, water and environmental events and influence)</p>		Advancing Scientific Research and Application as well as Development and Implementation of Technology
	3. Enhanced capabilities of NMHSs to produce better weather, climate, and water and related environmental information, predictions and warnings to support in particular climate impact and adaptation strategies				
	4. Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth-and space-based systems for weather, climate and hydrological observations, as well as related environmental observations, based on world standards set by WMO				
	<p>3. Sustainable use of natural resources and improved environmental quality</p>		Strengthening Capacity-building		5. Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and environment science and technology development
6. Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfill their mandates					
		Building and Enhancing Partnerships and Cooperation		7. New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategies	
		Strengthening Good Governance		8. An effective and efficient Organization	

Context - Priorities

Within the five Strategic Thrusts and eight Expected Results, WMO as a whole has identified the following five priority areas that have significant contribution to the achievement of the expected results:

- Global Framework for Climate Services (GFCS);
- Aviation meteorological services;
- Capacity Building for the developing and least developed countries;
- Implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS); and
- Disaster Risk Reduction (DRR).

Region V agreed at its fifteenth session in May 2010 (paragraph 5.2.6) to attach the highest priority to the following five areas, which are very consistent with the overall WMO priorities. They have been re-ordered to show how they correspond to these WMO global priorities.

- (f) Better climate services;
- (g) Sustainable aviation services;
- (h) Capacity building;
- (i) Improved infrastructure (data and information services) for weather, climate and water; and
- (j) Improved end-to-end Multi-Hazard Early Warning Systems (MHEWS).

Global and Regional Key Outcomes

The eight ERs have been further delineated by Key Outcomes (KOs) at the global level, and their associated Key Performance Indicators (KPIs) to measure the success in achieving the results.

Within the following sections, each of the ERs and table of resultant KOs has been supplemented by a table showing **Regional** Key Outcomes (**RKOs**) for RA V.

The RKOs are numbered to show the global KO they relate to – for example, RKO 1.1.3 for “Public weather services are improved” supports the global KO 1.1 for “improved access to seamless weather, climate, water, and related-environmental products and services (e.g., warnings, forecasts and supporting information)”.

Each RKO is expressed in the form of “something” (e.g., “Public weather services”) followed by a description of how we would like to characterize them (e.g., “are improved”).

Also, for each RKO those primarily involved in activities to achieve the RKOs are listed. Many of these are for the Members themselves to carry out. There are also supporting WMO Programmes or parts of them. Some (but not all) activities will have explicit involvement of RA V subsidiary bodies. Some RKOs which match and support the five priorities agreed at XV-RA V are identified as **Priority Areas**.

Detailed activities to support these RKOs will come through approved work plans for the individual RA V subsidiary bodies (e.g., the elaboration of the Tropical Cyclone Operational Plan) as well as through the activities of the Scientific and Technical Programmes, Technical Commissions, and other WMO working groups.

In terms of this plan and the overall work plans, there of course needs to be recognition of the diversity in the region of:

- Capabilities of NMHSs;
- User communities and requirements; and

- Funding sources and access to resources and staffing.

Monitoring and Evaluation

Monitoring and evaluation are important tools in results-based management to help improve performance and achievement of results. Information will be regularly gathered from Members through surveys, and from information already gathered or held by the WMO Secretariat. This will be used to establish a “baseline” for the Regional KPIs listed in this plan, and then for regular tracking of progress against those Regional KPIs.

Expected Result 1 (ER 1):

Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate and water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by all relevant societal sectors

The Key Outcome (KO) under ER 1 addresses the rapidly changing paradigm for the provision of weather, climate, water and related environmental services.

Key Outcomes	Key Performance Indicators	Contributing Programmes
KO 1.1: Improved access to seamless weather, climate, water and related environmental products and services (for example, warnings, forecasts and supporting information)	<ul style="list-style-type: none"> Analyses showing the social and economic benefits of the improved services NMHSs with regular access to products provided by global and regional centres 	Aeronautical Meteorology Programme Agricultural Meteorology Programme Emergency Response Activities Programme Marine Meteorology and Oceanography Programme Overall coordination of the Scientific and Technical Programmes Public Weather Services Programme World Weather Watch Programme / Data Processing and Forecasting
KO 1.2: Delivery of weather, climate, water and related environmental products and services to users' communities is improved	<ul style="list-style-type: none"> Increase in users with timely access to an increased number and range of products 	Marine Meteorology and Oceanography Programme Public Weather Services Programme

REGIONAL KEY OUTCOMES (RKO)s	Regional Key Performance Indicators	Primary Leads to Implement Activities
RKO 1.1.1: Aviation weather services are effective and sustainable	<ul style="list-style-type: none"> Level of compliance with ICAO standards and recommended practices (SARPS) 	Priority Area <ul style="list-style-type: none"> Members Aeronautical Meteorology Programme WG Weather Services
RKO 1.1.2: Marine services are improved	<ul style="list-style-type: none"> Level of satisfaction of users Level of accuracy of marine forecasts and warnings 	<ul style="list-style-type: none"> Members Marine Meteorology and Oceanography Programme WG Weather Services

RKO 1.1.3: Public weather services are improved	<ul style="list-style-type: none"> • Level of satisfaction of users • Level of accuracy of public forecasts and warnings 	<ul style="list-style-type: none"> • Members • Public Weather Services Programme • WG Weather Services
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Expected Result 2 (ER 2):

Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate and water and related environmental elements

Key Outcomes	Key Performance Indicators	Contributing Programmes
KO 2.1: Multi-hazard early warning systems are implemented	<ul style="list-style-type: none"> • Increase in the number of NMHSs with multi-hazard early warning systems • Number of NMHSs integrated into national emergency management systems • Developing country Members providing disaster risk reduction products and services 	Disaster Risk Reduction Programme Tropical Cyclone Programme World Weather Watch Programme / Data Processing and Forecasting
KO 2.2: National integrated flood management plans are developed	<ul style="list-style-type: none"> • Number of Members establishing flood management plans • Number of regional hydrological forecasting systems established in transboundary basins 	Hydrology and Water Resources Programme
KO 2.3: Drought early warning systems are improved	<ul style="list-style-type: none"> • NMHSs and Regional Centres issuing drought early warnings • Satisfaction in drought early warnings issued by NMHSs and Regional Centres 	Agricultural Meteorology Programme

REGIONAL KEY OUTCOMES (RKO)	Regional Key Performance Indicators	Primary Leads to Implement Activities
RKO 2.1.1: Multi-hazard early warning systems are implemented and improved.	<ul style="list-style-type: none"> • Completion of Tropical Cyclone Operational Plan (TCOP) milestones • Level of success of the Severe Weather Forecast and Disaster risk reduction Demonstration Project (SWFDDP) including any western window extension • Level of implementation including coverage and number of hazards of multi-hazard early warning systems • Number and degree of integration of NMHSs into national emergency 	<p>Priority Area</p> <ul style="list-style-type: none"> • Members • World Weather Watch Programme / Data Processing and Forecasting • Tropical Cyclone Programme • Disaster Risk Reduction Programme • Tropical Cyclone Committee (linked to

	<p>and disaster management systems</p> <ul style="list-style-type: none"> • Level of cooperation and interaction between NMHSs and their marine/ocean/geophysical agency counterparts, and between WMO and IOC in supporting national and regional tsunami early warning systems 	RSMT for SWFDDP)
RKO 2.2.1: Flood warnings are improved	<ul style="list-style-type: none"> • Level of accuracy and timeliness of flood warnings 	<ul style="list-style-type: none"> • Members • Hydrology and Water Resources Programme • WG Hydrological Services

Expected Result 3 (ER 3):

Enhanced capabilities of Members to produce better weather, climate, water and related environmental information, prediction and warnings to support in particular climate impact and adaptation strategies

Key Outcomes	Key Performance Indicators	Contributing Programmes
KO 3.1: Improved long-range forecasts and long-term projections	<ul style="list-style-type: none"> • Number of standardized products (for example, monthly and seasonal predictions, climate watches) provided by Members • Number of Members providing standardized products 	<p>World Climate Programme / World Climate Data and Monitoring Programme</p> <p>World Weather Watch Programme / Data Processing and Forecasting</p>
KO 3.2: Climate information and prediction products for climate adaptation and risk management are improved	<ul style="list-style-type: none"> • Number of operational Regional Climate Centres providing inputs for the National Climate Centres • Number of Members with formal National Climate Centres, accessing global and regional products, using the guidance materials and transmitting climate products for national needs • Number of Members interacting with users while providing climate services, through formal mechanisms including National Climate Outlook Forums, in support of adaptation and climate risk management in key socio-economic sectors • Members using best practices for climate adaptation and risk management in key socio-economic sectors 	<p>Agricultural Meteorology Programme</p> <p>World Climate Programme</p>
KO 3.3: Hydrological information and products, including water resource assessments, are	<ul style="list-style-type: none"> • Number of Members having established Quality Management Frameworks for Hydrology using current guidance materials for hydrology and water 	Hydrology and Water Resources Programme

improved	<p>resource management</p> <ul style="list-style-type: none"> • Number of regional hydrological databases developed in transboundary river basins 	
KO 3.4: Drought information and prediction for risk management is improved	<ul style="list-style-type: none"> • NMHSs and Regional Centres issuing drought information and prediction • Satisfaction in drought information and predictions issued by NMHSs and Regional Centres 	<p>Applications of Meteorology Programme</p> <p>World Climate Programme</p>
KO 3.5: Provision of improved comprehensive climate observations	<ul style="list-style-type: none"> • NOTE – included for reference as a possible additional KO specifically related to GFCS implementation through voluntary resources 	
KO 3.6: Improved and sustained interaction between the research, the operational prediction and product development and the sectoral user communities for putting climate and applied climate research advances into practice under GFCS	<ul style="list-style-type: none"> • NOTE – included for reference as a possible additional KO specifically related to GFCS implementation through voluntary resources 	
KO 3.7: Improved infrastructure and standardized technical procedures and tools, for development and coordinated flow of GFCS information and products	<ul style="list-style-type: none"> • NOTE – included for reference as a possible additional KO specifically related to GFCS implementation through voluntary resources 	
KO 3.8: Enhanced and expanded user interface and communications mechanisms and user-driven outlook forums for improved climate services	<ul style="list-style-type: none"> • NOTE – included for reference as a possible additional KO specifically related to GFCS implementation through voluntary resources 	

REGIONAL KEY OUTCOMES (RKO)	Regional Key Performance Indicators	Primary Leads to Implement Activities
RKO 3.1.1: Climate information and prediction services are improved	<ul style="list-style-type: none"> • Level of accuracy of monthly/seasonal predictions • Level of application of, and satisfaction with, climate services • Level of implementation of regional aspects of GFCS including RCCs • Level of contribution of RA V Members to the WMO Annual Climate Summary 	<p>Priority Area</p> <ul style="list-style-type: none"> • Members • World Climate Programme • WG Climate Services

<p>RKO 3.3.1: Hydrological information is improved</p>	<ul style="list-style-type: none"> • Accuracy of information, and coverage, and density, of hydrological observations 	<ul style="list-style-type: none"> • Members • Hydrology and Water Resources Programme • WG Hydrological Services
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Expected Result 4 (ER 4):

Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable surface-based and space-based systems for weather, climate and hydrological observations, as well as related environmental observations, based on world standards set by WMO and partner organizations

Key Outcomes	Key Performance Indicators	Contributing Programmes
<p>KO 4.1: WMO Integrated Global Observing System (WIGOS) is implemented</p>	<ul style="list-style-type: none"> • Completion of WIGOS milestones according to WIGOS implementation plan • Increased availability of observations for users 	<p>Space Programme</p> <p>Global Climate Observing System</p> <p>World Weather Watch Programme</p> <p>World Climate Programme / Global Observing System</p> <p>World Weather Watch Programme / Instruments and Methods of Observation Programme</p> <p>World Weather Watch Programme / WMO Integrated Global Observing System</p>
<p>KO 4.2: WMO Information System is developed and implemented</p>	<ul style="list-style-type: none"> • Implementation of WIS by NMHSs with continuous access to observations and products to meet the needs of the NMHSs and national users and to enhance capabilities of Members to access data and products • Enhanced capabilities for data processing and management 	<p>World Weather Watch Programme / WMO Information System Programme</p> <p>World Climate Programme</p>
<p>KO 4.3: Accessible climate observations and climate data archives at the NMHSs and global data centres are increased</p>	<ul style="list-style-type: none"> • Progress in implementing the Global Climate Observing System • Increase in projects to rescue and digitize climate data, to improve the use and exchange of high quality climate data sets and to assess the state of the global climate system • Number of Members developing and implementing modern climate monitoring systems, including climate watch systems 	<p>World Climate Programme / Global Climate Observing System</p>

REGIONAL KEY OUTCOMES (RKO _s)	Regional Key Performance Indicators	Primary Leads to Implement Activities
<p>RKO 4.1.1: WIGOS is implemented</p>	<ul style="list-style-type: none"> • Traceability of observations • Availability of station metadata • Regional WIGOS Demonstration Project initiated • Regional priorities for observing system development documented 	<p><i>Priority Area</i></p> <ul style="list-style-type: none"> • Members • Space Programme • Global Climate Observing System • World Weather Watch Programme • World Climate Programme / Global Observing System • World Weather Watch Programme / Instruments and Methods of Observation Programme • World Weather Watch Programme / WMO Integrated Global Observing System • WG Infrastructure
<p>RKO 4.1.2: Observing networks are implemented</p>	<ul style="list-style-type: none"> • Level of implementation of RBSN and RBCN including GSN and GUAN • Level of implementation of hydrological networks • Level of implementation of marine observations • Progress against GOOS, GTOS and GCOS Regional Action Plans 	<ul style="list-style-type: none"> • Members • World Weather Watch Programme • World Climate Programme / Global Observing System • Hydrology and Water Resources Programme • Marine Meteorology and Oceanography Programme • WG Infrastructure • WG Hydrological Services
<p>RKO 4.2.1: WIS is implemented</p>	<ul style="list-style-type: none"> • Extent of participation in international exchange through the WIS / GTS • Existence of, and progress against, a regional implementation strategy for WIS / DAR services • Extent to which communication needs of members are met • Level of use of NWP products accessed via WIS 	<p><i>Priority Area</i></p> <ul style="list-style-type: none"> • Members • World Weather Watch Programme / WMO Information System Programme • World Climate Programme • WG Infrastructure

<p>RKO 4.3.1: Historical climatological data are preserved</p>	<ul style="list-style-type: none"> • Level of availability of long period, rescued, digitized climate records with appropriate metadata 	<ul style="list-style-type: none"> • Members • World Climate Programme • WG Climate Services
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Expected Result 5 (ER 5):

Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and environmental science and technology development

Key Outcomes	Key Performance Indicators	Contributing Programmes
<p>KO 5.1: Research in climate prediction/projection to improve the skills of seasonal, decadal, and longer time scales</p>	<ul style="list-style-type: none"> • Increase in projects to advance climate research • NMHS in developing and least developed countries contributing to relevant regional and international research initiatives • Measures of skill and value of climate predictions and projections to national and regional climate services 	<p>World Climate Research Programme</p>
<p>KO 5.2: Research in the prediction of high-impact weather on time scales of hours to seasons is enhanced</p>	<ul style="list-style-type: none"> • Increased research on operations products and services • NMHS in developing and least developed countries contributing to relevant regional and international research initiatives • Improvements in the number of internationally coordinated weather research initiatives and/or forecast demonstration projects completed 	<p>World Weather Research Programme / Global Atmospheric Watch Programme</p> <p>World Weather Research Programme</p>
<p>KO 5.3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments</p>	<ul style="list-style-type: none"> • Regular bulletins on global atmospheric chemistry are provided to environmental conventions and policy assessments • Number of technical reports, measurement guidelines and scientific analyses linking atmospheric chemistry to weather, climate, water and the environment 	<p>Global Atmospheric Watch Programme</p>
<p>KO 5.4: Seamless forecasts of weather, climate, water and the environment from months to seasons are developed</p>	<ul style="list-style-type: none"> • Increase in the implementation of WMO Global Integrated Forecast System by NMHSs • Improvement in skill of monthly to seasonal forecasting systems 	<p>World Weather Research Programme</p>
<p>KO 5.5: Predictions/projections of El Niño/Southern Oscillation (ENSO) and monsoons are improved</p>	<ul style="list-style-type: none"> • Improvements in the skills of ENSO and monsoon forecasts • Satisfaction in the predictions/projections of ENSO and monsoons 	<p>World Weather Research Programme</p>

REGIONAL KEY OUTCOMES (RKO)	Regional Key Performance Indicators	Primary Leads to Implement Activities
RKO 5.3.1 Atmospheric chemistry observations and assessment meet regional needs	<ul style="list-style-type: none"> Level of implementation of GAW 	<ul style="list-style-type: none"> Members Global Atmospheric Watch Programme
RKO 5.4.1: THORPEX GIFS benefits warning services	<ul style="list-style-type: none"> THORPEX GIFS products trialled as part of SWFDDP 	<ul style="list-style-type: none"> Members World Weather Research Programme Tropical Cyclone Committee (linked to RSMT for SWFDDP)
RKO 5.5.1: ENSO, IOD, monsoons and MJO predictions are improved	<ul style="list-style-type: none"> Level of understanding of these phenomena Level of predictive skill for these phenomena 	<ul style="list-style-type: none"> Members World Weather Research Programme WG Climate Services

Expected Result 6 (ER 6):
Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfil their mandates

Key Outcomes	Key Performance Indicators	Contributing Programmes
KO 6.1: Visibility and relevance of NMHSs and Regional Centres in regional and national development agendas is improved, particularly in developing and least developed countries	<ul style="list-style-type: none"> Number of NMHSs and WMO Regional Centres with defined roles in national and regional socio-economic development activities, in cooperation with international and regional development agencies Number of NMHSs with [programmes attracting increased support from national and international partners Cg-XVI Doc 8.3] [programmes and networks for collaborating on service delivery at regional levels Cg-XVI Doc 8.2] 	Least Developed Countries Programme / Regional Programme
KO 6.2: Infrastructure and operational facilities of NMHSs and Regional Centres are improved, particularly in developing and least developed countries	<ul style="list-style-type: none"> Number of NMHSs with improvement in infrastructure and operational facilities to address identified deficiencies Number of NMHSs with modernized capacities to develop and disseminate products to their customers Number of NMHSs with programmes and networks for collaborating on service delivery at regional levels 	Least Developed Countries Programme / Regional Programme Resource Mobilization and Development Partnerships Programme Education and Training Programme (with contributions from various applications programmes)

<p>KO 6.3: Education and Training activities for NMHSs and Regional Centres are improved, especially in developing and least developed countries</p>	<ul style="list-style-type: none"> • The number of Regional Training Centres providing education and training support for GFCS related activities • The degree to which Members are getting value for money from the WMO Fellowship Programme • The degree to which the Regional Training Centres support the regional training demands in particular for students from developing and least developed countries 	<p>Education and Training Programme</p>
<p>KO 6.4: Capacities of NMHSs are enhanced through cooperation and partnerships with other national and regional organizations</p>	<ul style="list-style-type: none"> • Development projects and activities funded through voluntary resources 	<p>Resource Mobilization and Development Partnerships Programme</p> <p>Education and Training Programme</p> <p>Least Developed Countries Programme / Regional Programme</p>

<p>REGIONAL KEY OUTCOMES (RKO)</p>	<p>Regional Key Performance Indicators</p>	<p>Primary Leads to Implement Activities</p>
<p>RKO 6.1.1: Regional and national meteorological and hydrological services are more effective</p>	<ul style="list-style-type: none"> • Extent of implementation of recommendations of SPREP review on regional meteorological services • Availability of, and progress against, national plans for improved products and services 	<ul style="list-style-type: none"> • Members • Least Developed Countries Programme / Regional Programme (in partnership with SPREP) • Hydrology and Water Resources Programme / Regional Programme (in partnership with SOPAC/SPC) • WG Weather Services
<p>RKO 6.3.1: Education and Training Development activities at national and regional levels are improved</p>	<ul style="list-style-type: none"> • Capacity for providing, and satisfaction with, regional training services • Capacity for providing training at national level in accordance with WMO No. 258 • Level of compliance of meteorological and hydrological staff with WMO No. 258 	<ul style="list-style-type: none"> • Members • Regional Training Centres • Education and Training Programme • WG Weather Services
<p>RKO 6.4.1: Donor funding is coordinated and effective</p>	<ul style="list-style-type: none"> • Level of funding support for regional programmes and activities 	<ul style="list-style-type: none"> • Resource Mobilization and Development Partnerships Programme • Least Developed Countries Programme /

		Regional Programme
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Expected Result 7 (ER 7):

New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategies

Key Outcomes	Key Performance Indicators	Contributing Programmes
KO 7.1: WMO leadership and contribution in relevant UN system and other international partners' initiatives and programmes is improved	<ul style="list-style-type: none"> • Reports of WMO and its co-sponsored programmes to international conventions, particularly the United Nations Framework Convention on Climate Change (UNFCCC), United Nations Convention to Combat Desertification (UNCCD), and United Nations Convention on Biological Diversity (UNCBD), and enhanced interaction with their Subsidiary Body for Scientific and Technical Advice (SBSTA) and Conference of the Parties (COP) processes • United Nations and other international organizations reports quoting WMO and co-sponsored reports, assessments, bulletins and other authoritative outputs • Active strategic partnerships with UN and other international organizations supporting priority activities 	Aeronautical Meteorology Programme Agricultural Meteorology Programme Executive Management Hydrology and Water Resources Programme External Relations World Climate Programme / Intergovernmental Panel on Climate Change Regional Programme
KO 7.2: Public, decision-makers and other stakeholders are increasingly aware of key WMO and NMHSs issues, activities and priorities through enhanced communication	<ul style="list-style-type: none"> • Uptake of WMO reports, bulletins and other provisions; number of website visitors and ranking of WMO Website • Percentage of target audiences indicating utilization of WMO materials and increased awareness • NMHSs trained in communication 	Communication and Public Affairs

REGIONAL KEY OUTCOMES (RKO)	Regional Key Performance Indicators	Primary Leads to Implement Activities
RKO 7.1.1: Collaborations with other agencies add value	<ul style="list-style-type: none"> • Updated MoU between WMO and SPREP • Updated MoUs between WMO and other relevant regional 	<ul style="list-style-type: none"> • Regional Programme • Resource Mobilization and Development Partnerships

	organizations <ul style="list-style-type: none"> • Number of international agencies taking part in WMO-coordinated projects that benefit Members 	Programme
RKO 7.1.2: GEOSS involvement is increased	<ul style="list-style-type: none"> • Number of RA-V Members who are also Members of GEO 	<ul style="list-style-type: none"> • Members • Regional Programme

**Expected Result 8 (ER 8):
An effective and efficient Organization**

Key Outcomes	Key Performance Indicators	Contributing Programmes
KO 8.1: Effective and efficient WMO Congress and Executive Council	<ul style="list-style-type: none"> • Member satisfaction with documentation for Congress, Executive Council and its working groups • Member satisfaction with supporting services for Congress and Executive Council (interpretation, conferences services and facilities) • Reduction in the cost of sessions 	Policy Making Organs (PMO) Languages and Conferences Programme
KO 8.2: Effective and efficient WMO Secretariat	<ul style="list-style-type: none"> • Timely and cost effective completion of management objectives, and oversight recommendations for improved business effectiveness, e.g. from external auditor and Executive Council subsidiary bodies • Unqualified audits and effective internal controls • Cost-effective fulfilment of requirements for linguistic and publishing services 	Executive Management Overall Coordination Languages and Conferences Programme
KO 8.3: Effective and efficient constituent bodies (regional associations and technical commissions)	<ul style="list-style-type: none"> • Member satisfaction with constituent body documentation • Member satisfaction with constituent body supporting services (interpretation, conferences services and facilities) • Reduction in the cost of constituent body sessions 	Resource Management Constituent bodies, and their subsidiary bodies

REGIONAL KEY OUTCOMES (RKO_s)	Regional Key Performance Indicators	Primary Leads to Implement Activities
<p>RKO 8.3.1: RA V subsidiary bodies are well organized and effective</p>	<ul style="list-style-type: none"> • Completion of the 2012-2015 Strategic Operating Plan • Establishment of the Working Groups and work plan approved by Management Group. • Availability to Members of regular, useful reports on progress by RA V Subsidiary Bodies • Level of awareness of and satisfaction with work carried out by RA V Subsidiary Bodies • Level of explicit reference to RA V activities and requirements in the work plans of WMO working groups, Scientific and Technical Programmes, and Technical Commissions • Completion of the 2016-2019 Strategic Operating Plan 	<ul style="list-style-type: none"> • RA V Management Group • All other RA V Subsidiary Bodies • Regional Programme

Working Group on Hydrological Services (WG-HYS)

Report of the Working Group on Hydrology

WMO Regional Association V
(South West Pacific)

Education, training and capacity building

- Research Center for Water Resources and Agency for Meteorology Climatology and Geophysics is now embarking on actions towards the establishment of a Regional Training Centre for Meteorology, Climatology and Hydrology for the region, called as the **Indonesian Regional Training Center (Ina-RTC)**. The Centre will act as coordination and support hub for training, furthering education and capacity building as well as information networking activities on meteorology, climatology, hydrology and water resources at national and international levels in the region. The proposal has been discussed on 25th Session EC Panel on Education and Training meeting in India and it will be recommended on EC 64th in Geneva.

- Developing a new approach to education and training in the field of meteorology, climatology, hydrology and water resources in the region, RCWR has plan to develop ***distance learning*** method. RCWR will conduct a workshop regarding distance learning preparation of Ina-RTC that will be held in **October 2012** in Indonesia. The participants shall comprise local universities and institutes with experiences in distance learning. RCWR hopes that WMO could support this plan by sending experts from Education and Training of WMO Offices and also experts from India (which has experiences conducting distance learning), and also cover their cost for transportation from origin country to Indonesia and daily allowance.

- In October 2012 RCWR will conduct a training of Flood and Drought Early Warning System (using a system that was developed by Deltares which can combine and manage on-line data from various sources such as weather satellite, weather radar, telemetring system and output from global/regional climate model). The expected training participants are members of RA V and River Basin Organizations in Indonesia. RCWR hopes that WMO could support by covering the cost for participants of members of RA V (transportation from origin country to Indonesia and daily allowance). RCWR will cover the cost for local transportation, meals and accomodation in Indonesia.

Sea Hycos

- The need of a HYCOS project for South-East Asia was considered at RA V-WGH meetings in 2005, 2007 and 2009. Indonesia, Malaysia and Philippines expressed interest in participating in the WHYCOS programme.
- To follow up this program RCWR will conduct Sea Hycos meeting on 2013. The meeting provided good opportunity to plan for the establishment of the SEA-HYCOS, in order to strengthen the human and technical capacity of National Hydrological Services (NHSs) for water resources management.

Working Group on Climate Services (WG-CLS)

Report of the WMO RA V Working Group on Climate Services

WMO Regional Association V (South-
west Pacific

Erwin Makmur

RA V Working Group on Climate Services

- The meeting of the Working Group on Climate Services for Regional Association V (RA V WG CLS) met 2-4 November 2011, hosted by the Solomon Meteorology Service at Honiara, Solomon Islands
- **The Meeting of the RA V Working Group on Climate Services –held in conjunction with the *RA V Regional Seminar on Climate Services***
- The meeting was chaired by Erwin Makmur, working Group Chair, assisted by Mr. Peer Hechler, WMO Secretariat

RA V Working Group on Climate Services

- In its deliberations, the Meeting referred to the presentations, discussions and outcomes of the *RA V Regional Seminar on Climate Services*.
- The Working Group reviewed its Terms of Reference, its working structure and its work plan as reflected in Annex VI of the *Final Report of the 6th RA V Management Group Meeting* (cf. <http://www.wmo.int/pages/prog/dra/rap/documents/FinalReport-RAVMG6.pdf>).
- The Group felt that strict prioritization is needed in light of the limited resources and time available in the current inter-annual period (2010-2014) and decided to focus on a small yet specific and tangible set of deliverables.

3

STRENGTHENING OF CLIMATE SERVICES IN RA V

Establishment of WMO Regional Climate Centre(s) in RA V

- WMO RCCs are considered as an important element of the GFCS Climate Services Information System (CSIS), providing mandatory and highly-recommended regional-scale climate-related services to NMHSs and thereby strengthening the capacities of WMO Members to deliver better national climate services. WMO RCC functions comprise services in the domains of climate predictions and projections, climate monitoring, climate data, training, research coordination and user liaison.

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STRENGTHENING OF CLIMATE SERVICES IN RA V

Implementation of Watch Systems in RA V

- WMO's Climate Watch concept aims at enabling Members to issue climate advisories on observed and/or predicted monthly- to seasonal scale climate anomalies with potential negative impacts on societies. Elements of a Climate Watch system comprise, beside others, adequate observing and data management systems as well as climate monitoring and prediction services including regional guidance products from WMO RCCs and RCOFs.

5

WORK PLAN, DELIVERABLES AND TIMELINES

- Based on the discussions held during its meeting as well as during the RA V Regional Seminar, the Working Group concluded on five specific activities during the current inter-sessional period (2010-2014)

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Activity/Deliverable (cf explanatory notes below the table)	Co- ordinator	Milestones	Reference to ToR of the RA V WG CLS*
1) Development of a document 'Best practices and resource guide for data management and data rescue'	Howard Diamond	Structure of document shared amongst WG members by 31 March 2012 1 st draft of document available by Dec. 2012	To provide advice on methods to strengthen and improve climate system monitoring, analyses and indices
2) Facilitation of a first Southeast Asian Climate Outlook Forum (SEACOF) in 2012	Erwin Makmur	Detailed concept note shared amongst WG members by 31 January 2012 Facilitation of host identification Facilitation of SEACOF-1 session preparations SEACOF-1 in second half 2012/first half 2013	To provide advice on and assist in the implementation of various climate information and prediction services in RA V ... To provide advice on ... climate-related training workshops ... To ... provide advice on the use of ... downscaling to produce useable regional and national climate forecasts and products
3) Facilitation of a RA V RClimDex training workshop including a report/peer-reviewed journal paper on RA V climate indices analyses	Chew Kian Hoe	Concept paper to be shared amongst WG members by April 2012 Facilitation of sponsor- and host identification Facilitation of workshop preparations Training workshop by end of 2013	To provide advice on methods to strengthen and improve climate system monitoring, analyses and indices To provide advice on and assist in the implementation of various climate information and prediction services in RA V ...
4) Assessment of current RCC-related functions being performed in RA V vis-à-vis the mandatory and highly-recommended RCC functions and subsequent gap analysis	James Renwick	Structure of survey shared within WG by 31 March 2012 1 st draft analysis document available by Dec. 2012	To provide advice on and assist in the implementation of various climate information and prediction services in RA V ... To provide further advice and proposals on the role, structure and mechanism of the RCCs in the region Res 2 (RA V-XV)
5) Development of a review document on the current use of climate information for agriculture in RA V	Andrew Tait	Structure of document shared amongst WG members by 31 March 2012 1 st draft of document available by Dec. 2012	To provide advice on and assist in the implementation of various climate information and prediction services in RA V ... including agriculture ...

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WORK PLAN, DELIVERABLES AND TIMELINES

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WORK PLAN, DELIVERABLES AND TIMELINES

Activity/Deliverable	Coordinator	Milestones	Reference to ToR of the RA V WG CLS*
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5) Development of a review document on the current use of climate information for agriculture in RA V	Andrew Tait	Structure of document shared amongst WG members by 31 March 2012 1 st draft of document available by Dec. 2012	To provide advice on and assist in the implementation of various climate information and prediction services in RA V ..., including agriculture ...

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Progress Reports of WMO RA V WG on Climate Services

Activity/Deliverable	Coordinator	Milestones	Reference to ToR of the RA V WG CLS*
1) Development of a document 'Best practices and resource guide for data management and data rescue'	Howard Diamond (Theme Leader for Climate Data Management/Data Rescue, howard.diamond@noaa.gov)	- Document outlined completed in April 2012 - In addition to the two experts from Tonga and Vanuatu, we have enlisted the help of some persons from both the Australian Bureau of Meteorology as well as the Indonesian BMKG, to assist in populating the outline and producing a first order version of the guide.	- The goal is to have a first draft of the document prepared by December 2012, but finding the resource time to do this is always a challenge. - The group will do its best to meet this deadline
2) Facilitation of a first Southeast Asian Climate Outlook Forum (SEACOF) in 2012	Erwin Makmur (Chair of WG CLS, erwin.makmur@bmkg.go.id)	Detailed concept note still on progress	The membership of SEACOF will be involved countries from RA II. Group have to discuss with RA II how to finalize SEACOF Concept facilitated by WMO Secretariat

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Progress Reports of WMO RA V WG on Climate Services

Activity/Deliverable	Coordinator	Progress until June 2012	Barriers
3) Facilitation of a RA V RclimDex training workshop including a report/peer-reviewed journal paper on RA V climate indices analyses	Chew Kian Hoe (Theme Leader for Climate Change, Chew_kian_hoe@met.gov.sg)	There was already a Rclimdex workshop for the Pacific islands in New Caledonia, sponsored by Australia, in May this year. Singapore will be hosting a Rclimdex discussion for SE Asia as well next week	Some of these recent and current Rclimdex studies have not included Indonesia, which is a big region. It is possible to pitch a Rclimdex workshop with focus on Indonesia, Malay Peninsula and close by Pacific islands PNG, East Timor and northern Australia.
			11

Progress Reports of WMO RA V WG on Climate Services

Activity/Deliverable	Coordinator	Progress until June 2012	Barriers
4) Assessment of current RCC-related functions being performed in RA V vis-à-vis the mandatory and highly-recommended RCC functions and subsequent gap analysis	James Renwick (Theme Leader for CLIPS including Regional Climate Centre, Regional Climate Outlook Forums and Climate Extreme Prediction, j.renwick@niwa.co.nz)	Drafted a questionnaire for RA-V members, on RCC functions. Circulated to members of RA-V management group in early 2012, and received feedback. In the process of revising draft for circulation to RA-V members.	Lack of time to devote to this task has slowed progress. Presently aim to have final draft questionnaire finished and circulated during July, with responses back by end of October.
5) Development of a review document on the current use of climate information for agriculture in RA V	Andrew Tait (Theme Leader for Use of Improved Tools for Operational Agro meteorology including Coping with Impact of natural Disaster on Agriculture, a.tait@niwa.co.nz)	<ul style="list-style-type: none"> • “Climate Services for Agriculture” questionnaire will be sent to all RA V countries. • Updating the for contact list 	Still miss contact people from RA V member
			12

Working Group on Weather Services (WG-WXS)







WMO REGIONAL ASSOCIATION V TASK TEAM ON QUALITY MANAGEMENT (TT-QM)

STATUS REPORT

1. OVERVIEW	
Members	Theme Leader: Mr Saw Bun Liong, Malaysia Expert: Ms Helen Tseros, Australia Expert: Mr Misaeli Funaki, Fiji
Objective	To assist and encourage National Meteorological And Hydrological Services (NMHS) in adopting a quality management approach to the delivery of weather services and the pursuit of achieving certification of compliance with the ISO: 9001:2008 Quality Management Standard.
Terms of Reference	The Terms of Reference of the Task Team are: <ul style="list-style-type: none"> • Maintain awareness of current quality management issues, principles and practices; • Maintain awareness of the implementation of quality management systems within NMHS in RA-V, • Assist in the development and implementation of QMS within NHMS in RA-V; particularly with reference to the need to have a quality management system in place for aviation weather services by November 2012; • Continually seek ways to improve the effectiveness of implementing QM by regional collaboration and mentoring; • Provide advice to the WG-WXS on the above issues.
Work Program	The work to be addressed by the Task Team includes: <ul style="list-style-type: none"> • Establish an understanding of the level of knowledge, training and adoption of quality management within RA-V; • Develop a set of strategies appropriate to RA-V that complement the objectives and activities of WMO's Quality Management Framework (QMF), working closely with representative(s) of the WMO ICTT-QMF; • Develop guidelines to assist RA-V members in implementing a quality management framework; • Assist with the implementation, in one or more NMHS in RA-V, of a quality management pilot project for certification of compliance of the member(s) with the ISO 9001:2008 Quality Management Standard; • Provide 3 monthly status reports to the WG-WXS.
Performance Measures	<ul style="list-style-type: none"> • Workplan endorsed by RA-V WG-WXS. • WMO TT-QMS survey conducted and report complete. • Resource on QMS implementation available to RA-V members. • Availability of TT-QM expertise for support.

2. PROGRESS SUMMARY	
Progress Summary	<ul style="list-style-type: none"> • Established contact with TT-QM members. • Draft workplan complete. • Survey questions complete. • Status report complete. • BoM hosted WMO webpage for QM developed. • WMO QM Forum up and running. • Practical Guide for the Implementation of a Quality Management System for NMHS finished and awaiting endorsement.

3. STATUS REPORT AGAINST MILESTONES

Milestone	Baseline Date	Revised Date	Status	Achievements	Issues & Solutions
Milestone 1: Workplan complete.	Nov 11			Draft workplan complete.	
Milestone 2: WMO TT-QMS Survey for RA-V	Dec 11			WMO TT-QMS have developed a comprehensive survey to be distributed to all NMHSs for completion in November 2011	RA-V TT-QM will promote this within RA-V and obtain the results for RA-V.
Milestone 3: Guidance on QMS Implementation sent to RA-V members.	Apr 12			<ul style="list-style-type: none"> a) BoM hosted WMO webpage for QM developed. b) A Practical Guide for the Implementation of a Quality Management System for NMHSs completed and available on the Bureau hosted WMO QM web site in six languages. c) WMO QM forum active and access is available to all WMO Members d) COMET QM module developed and promoted via the WMO QM Forum. 	<p>5 out of 20 RA-V countries have access to the Bureau hosted WMO QM website.</p> <p>2 out of 11 RA-V countries have access to the Bureau hosted WMO website who have not started or have started QMS implementation.</p> <p>9 out of 20 RA-V countries have a mature QMS.</p>
Milestone 4: Guidance and support on QMS provided to RA-V members during implementation.	2014			<ul style="list-style-type: none"> a) Build a "WMO QM Community" actively promoting the WMO QM website and Forum. b) Members operating a well developed QMS to form twinning partnerships with Members currently planning or developing a QMS. c) Implement the "twinning process" by tapping into aid organisation funds promoting the capacity building benefits that QM brings with it. The Bureau has a QM proposal currently being assessed by AusAID under the PSLP 2012-13. 	<p>Limited resources (financial and human) to form twinning partnerships and facilitate internal auditor training.</p> <p>Difficulty in obtaining information on the status implementation of RA-V members.</p>

				<p>d) Continue to update and analyse the results of the ongoing WMO QMS Implementation Status survey and identify remedial actions to rectify problem areas.</p> <p>e) Facilitate internal auditor training by encouraging Members to facilitate a "Silent Observer" participation in a mature internal audit program of a "friendly Member"</p> <p>f) Encourage Members to facilitate a "mock audit" with participation of an expert from a "friendly Member" in person or via remote media.</p>	
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Complete



On schedule



Minor delays



Serious delays



WMO REGIONAL ASSOCIATION V TASK TEAM ON FORECASTER COMPETENCIES & TRAINING (TT-TRG)



STATUS REPORT

1. OVERVIEW	
Members	<p>Theme Leader: Mr Christopher Webster, New Zealand Expert: Ms Michelle Hollister, Australia Expert: Mr Moleni Tuuholoaki, Tonga Expert: Ms Lih Mei Lim, Singapore (to be confirmed) Expert: Mr Misaeli Funaki, Fiji Expert: Mr Rition Kabunateiti, Kiribati</p>
Objective	Assist with the implementation of a forecaster competency framework in RA-V which meets the standards and recommendations of WMO and ICAO.
Terms of Reference	<p>The Terms of Reference of the Task Team are:</p> <ul style="list-style-type: none"> • Maintain awareness of current international developments in forecaster competency and training, in particular the work of WMO CAeM Task Team on Education & Training (ET/ET) and the Task Team on the Competency Assessment Toolkit (TT-CAT); • Maintain awareness of current and developing expectations and requirements for the implementation of competency assessment systems within the NMHS, particularly the need to demonstrate compliance with competency requirements for aeronautical meteorological personnel by November 2013; • Assist in the development and implementation of competency assessment systems in RA-V, based on the replacement of the 4th edition of WMO 258 (plus supplements) and the TT-CAT framework. • Encourage the collaboration of RA-V countries in implementing the TT-CAT framework; • Maintain awareness of current and developing expectations and requirements for the qualifications of staff within the NMHS, particularly the future need for aeronautical meteorological forecasters to have successfully completed the BIP-M training programme by November 2016; • Provide advice to the WG-WXS on the above issues.
Work Program	<p>The work to be addressed by the Task Team includes:</p> <ul style="list-style-type: none"> • Establish an understanding of the current level of adoption of competency assessment & management within RA-V; • Develop a set of strategies appropriate to RA-V that complement the objectives and activities of WMO's TT-CAT, working closely with representative(s) of the WMO TT-CAT; • Develop guidelines to assist RA-V members in implementing the TT-CAT framework and an overall competency management framework; • Assist with the implementation, in one or more NMHS in RA-V, of a competency assessment pilot project for implementation of the TT-CAT framework; • Provide 3 monthly status reports to the WG-WXS.
Performance Measures	<ul style="list-style-type: none"> • Information obtained from RA-V MG-5 survey, or other survey if required, to determine the current level of adoption of competency assessment, and current processes for the initial training of any AMFs • Completion of a set of strategies and guidelines, in consultation with TT-CAT • Initiation of a pilot project in an NMHS in RA-V of a competency assessment pilot project • Status reports sent to WG-WXS every 3 months

2. PROGRESS SUMMARY

<p>Progress Summary</p>	<ul style="list-style-type: none"> • Welcome sent to all members of TT-TRG, mid-April 2011 • TT-TRG members informed of relevant outcomes from WMO Cg-XVI, June 2011 (see "PINK11-6_AERONAUTICAL_MET_en.doc" in ftp://ftp.wmo.int/Documents/SESSIONS/Cg-XVI/English/Approved%26Corrected/ and http://www.caem.wmo.int/moodle/ ("Regulatory and Reference material", log-in as a guest). • Teleconferencing software located via BoM GoToMeeting, August 2011 • First Teleconference held with members from Singapore, Australia & NZ, 24 August 2011 (members from Tonga, Kiribati and Fiji missing) <i>Agenda items were:</i> <ul style="list-style-type: none"> ○ <i>Confirmation that the online meeting software is working for everyone (Michelle).</i> ○ <i>Welcome (Chris).</i> ○ <i>Informal introductions, individuals describe their backgrounds and roles, encourage exchange of photos (All).</i> ○ <i>An outline of issues for the TT-TRG, including a review of key dates following Cg-XVI (Chris).</i> ○ <i>Any questions or concerns from the members (All).</i> ○ <i>Next meeting date and format (Michelle/Chris).</i> • TT-TRG survey drafted, then sent to contacts representing all member countries of RA-V, 2 September 2011 • First survey response received, 2 September 2011 (Australia). Subsequent responses (in Chronological order) from New Zealand, Federated States of Micronesia, Philippines, Singapore, Tonga, Cook Islands, W Samoa, Timor-Leste, Fiji, Vanuatu, Brunei Darussalam, Malaysia, French Polynesia, Papua New Guinea, Kiribati and Indonesia. No response as of 25 Oct 2011 from: Solomon Islands and Niue. New Caledonia intends to complete the survey but has not yet done so. • Several Survey responses have required follow-up due to inconsistent answers to Survey questions • Latest Workplan, Status Report and an additional short paper sent to Lead of WG-WXS, 25 October 2011 • Test of online meeting with Kiribati failed due to their poor internet connection, 16 Nov 2011. • Remaining outstanding survey responses received, 25 Nov 2011. • Survey results collated and disseminated to TT-TRG members 9 Dec 2011, for discussion. • Investigated alternative means of holding a teleconference with all TT-TRG members, i.e. other than GoToMeeting, Jan 2012. • Requested members from Tonga, Fiji and Kiribati if they can connect to Skype, 1 Feb 2012. • Requested test of Skype with Tongan member, 14 Feb 2012. Await response from Fiji, Kiribati. • Successful Skype test with Tonga, 28 Feb 2012. Email sent to Fiji, Kiribati, cc others, requesting information on their ability to use Skype. Waiting for response. • Email sent to TT-TRG members, and copied to all RA-V participants at WMO VCP workshop on Implementing Competency Assessment (HK, Dec 2011), advising of CAeM ET-ETC discussion forum, and requesting advice on suitable dates for teleconference, 11 Apr 2012. • Variable response from TT-TRG members to request for suitable dates for teleconference. After one year of not being able to arrange a teleconference, change the primary means of communication to email until further notice, 3 May 2012. • Advised TT-TRG members by email, copied to all RA-V participants at WMO-VCP workshop, of EC Panel on ET report outcomes related to AMP, and new CoMet module on QMS, 4 May 2012. • Advised TT-TRG members by email, copied to all RA-V participants at WMO-VCP workshop, of two new online presentations about competency assessment on CAeM website, 24 May 2012.
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3. STATUS REPORT AGAINST MILESTONES

Milestone	Baseline Date	Revised Date	Status	Achievements	Issues & Solutions
Milestone 1: Establishment of Teleconference communications	Sep 11	Nov 11			Internet connections for a few TT members are not robust enough to run "GoToMeeting". Investigating other options, e.g. Skype.
Milestone 2: Completion of initial TT-TRG Survey of all member countries of RA-V	Sep 11	Nov 11		As of 25 Nov 2011, responses received from all 20 NMHSs in RA-V	"Survey Monkey" (www.surveymonkey.com) provides excellent free software for this
Milestone 3: Arrange a Start-Up meeting of the TT-TRG group, possibly combined with TT-QM and TT-CR, subject to availability of funding	Tba				
Milestone 4: tba					



Complete



On schedule



Minor delays



Serious delays

Working Group on Infrastructure (WG-INFR)

WMO RA-V WORKING GROUP ON INFRASTRUCTURE

Progress report (June 2012)

Recommendations

1. that Paul Seymour (US, NOAA NESDIS) be included as a volunteer expert to contribute to the work of WG-Infrastructure, subject to confirmation that the appropriate formal nomination has been received by WMO;
2. that a new Task Team (on Satellite User Requirements) be activated for a period of about 18 months, to be Coordinated by Agnes Lane (Australia) who is our Theme Leader for GEOSS and Satellite Utilisation. The role of TT-SUR would be to give dedicated attention to documenting satellite user requirements in RA-V, in response to (i) the initiative of CBS (described in ET-SUP report to recent ICT-IOS-7 meeting) to provide guidelines on standard procedures to follow to conduct such an exercise, and (ii) the changes in available satellite services looming in future years.
3. that the Key Performance Indicators for RKO 4.1.1 "WIGOS is implemented" be updated as follows: the former KPI "Regional WIGOS Demonstration Project initiated" be replaced by the following KPI:
 - "Regional WIGOS Implementation Plan is developed"

General progress

Overall Objective: The objective of the Working Group on Infrastructure (WG-INFR) is to contribute to the improvement of infrastructure (data and information services) for weather, climate and water in Region V through implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS).

Monitoring by CBS and the WMO Secretariat of the performance of WMO basic observing networks is described in recent papers to CBS ICT-IOS:

[http://www.wmo.int/pages/prog/www/OSY/Meetings/ICT-IOS7/documents/ICT-IOS-7-Doc.4\(8\)_Monitoring-Results.doc](http://www.wmo.int/pages/prog/www/OSY/Meetings/ICT-IOS7/documents/ICT-IOS-7-Doc.4(8)_Monitoring-Results.doc)

and

http://www.wmo.int/pages/prog/www/OSY/Meetings/ICT-IOS7/documents/ICT-IOS-7-Doc.4.1_Status_RBSN-RBCN.doc

Monitoring statistics show:

- Surface synoptic observations from the RBSN at WMO observing times have increased and are now achieving about 80% of expected observations overall. However there remains a large (16%) component of stations which appear to be silent. Some of these are manual stations which report at times offset from the WMO standard times;
- Upper air TEMP reports have increased slightly and are now achieving about 70% of expected observations overall. However a large part of the Australian network operates on only one radiosonde flight per day and there are sparsely covered areas in the south west Pacific;
- In October 2011, monthly CLIMAT reports were received from around 80% of expected stations, leaving 20% apparently silent.

To some extent these statistics can be improved by Regional efforts to: review, update and provide accurate metadata for the stations included in WMO Regional networks lists; check the successful delivery, receipt and recognition of messages; undertake capacity building in support of basic networks.

The GCOS website shows that WMO Region V contributes 151 of the global set of 1023 GSN stations, as well as 38 of 171 GUAN stations which is more than any other Region. The GRUAN web site shows that of the 15 initial sites, 4 are located within the WMO Region V (Manus, PNG; Nauru; Darwin Australia; Lauder, New Zealand).

Task Team on Pacific Satellite Communications

Objective: To identify effective and achievable means for Pacific countries to obtain time-critical and operation-critical meteorological and related information and to provide observations and other hazards information.

A range of correspondence, coordination and upgrade activities has been undertaken by Ed Young (U.S. NWS, Hawaii) and others to deal with a number of changes in satellite communications and services in the south west Pacific:

- The transition of the US NOAA GOES-West satellite from GOES-11 to GOES-15 on December 14th 2011 required a lot of planning, preparation and response. The new satellite provides direct readout (GVAR) data in an updated format, requiring ingest software changes by recipients. It also provides enhanced EMWIN broadcasts with changed frequency and format, requiring legacy users to upgrade to an EMWIN II receiver or alternatively to access EMWIN when rebroadcast through the new RAPIDCast service. Some of the challenges have been:
 - Rolling out EMWIN II receivers to all users was scheduled over a period of time and benefited through coordination with visits for the 2nd phase of the WMO RA-V LRIT-WEFAX Replacement Project. However not all Pacific Island countries could be completed prior to the satellite changeover; until contracts could be put in place to support the country installation visits.
 - Excellent support was provided by SOPAC and SPREP in making arrangements for the two consultants who carried out the work.
 - New Zealand and Fiji needed to modify systems to utilise the new direct readout (GVAR) data format;
 - EMWIN systems were upgraded at almost all national meteorological service offices in the South Pacific, and new EMWIN systems were also installed at National Disaster Management Offices.
 - Some technical challenges were encountered and overcome.
 - A complete outage of the data services on the NOAA GOES-15 satellite occurred on 22-23 March. As an operational NOAA system that is utilized in the eastern half of WMO RA V, a better way to communicate operational satellite system status is needed.
 - JMA sent NOAA a request to disseminate MTSAT LRIT to NOAA. NOAA is currently evaluating the request from JMA to push the MTSAT. When that process is complete, NOAA will receive, re-process the JMA LRIT into GOES LRIT files and transmit a limited set of data to the GOES West LRIT Broadcast. This whole process should be finished in the next few months..
 - In the framework of a NESDIS-JMA exchange of letters concluded March 7, 2012, NESDIS and JMA held technical discussions in March 2012 and are exchanging information on their respective future geostationary meteorological satellite, including plans for data product and dissemination, with a view to enhancing the usefulness of data to users worldwide. The discussions explored options for communication of data from Himawari 8/9 data and JMA plans and studies for Himawari-8/9 data products and distribution.

- The RAPIDcast project will introduce a DVB-S broadcast service for the central and western Pacific. In the past year it has spun up the broadcast and will soon reach another milestone by shortly testing a ground station configuration. Once the equipment specification is fully tested, the project plans to begin shipping stations later this year. The RAPIDCast project will initially focus on providing NMHSs, emergency managers and others with critical observations, forecasts, and warnings that are produced by recognized national and regional authorities. Further work and support will be needed to expand the number of ground systems to countries that would benefit from this service;
- The RANET Chatty Beetle Demonstration Project is continuing, with more of the Chatty Beetles now being deployed beyond the Pacific Island national meteorological service offices out to remote islands and villages. In the Marshall Islands, 3 Chatty Beetles are now being utilized by outer island observers, with plans to deploy six more. Synoptic weather reports, which previously were transmitted by HF radio, are now being sent via the Chatty Beetle to the main NWS office in Majuro, for forwarding onto the GTS. Additional Chatty Beetles will be deployed in other islands and atolls in the north Pacific in the upcoming months, and a system upgrade will allow them to e-mail their observations directly to regional meteorological centers.
- CBS (ET-SUP) has developed a best-practice guide "Procedure for Documenting Regional Satellite Data Requirements". There has been some correspondence about the need and opportunity to complete such a study in RA-V, in collaboration with the WMO Space Programme, the ET-SUP and relevant satellite operators. The 2nd Asia-Oceania Satellite Users Conference (Tokyo, Dec. 2011) provided an opportunity for two team members to consult with each other and others on this topic. It is hoped that future conferences will provide further opportunities for collaboration towards addressing the needs of RA-V members. ET-SUP is currently undertaking the 2012 repeat of their global survey of satellite usage by Member countries. Once completed it will provide a helpful baseline on which to build a more specific Regional assessment of requirements and priorities.

Task Team on Regional Implementation Strategy for new WIS data DAR services

Objective: To assist Member countries in RA V to work together to achieve a coordinated approach to the implementation of new WIS data Discovery Access and Retrieval (DAR) services in RA V.

Progress so far includes:

- There has been steady progress towards implementation of GISC Melbourne. In Resolution 51 of the 16th World Meteorological Congress, the Australian Bureau of Meteorology was conditionally designated as a Global Information System Centre (GISC) within the WMO Information System (WIS) framework, pending on the endorsement from CBS before EC-64 (June 2012). As part of the OpenWIS consortium, Australia has now installed the OpenWIS system and recently passed the audit process required by CBS;
- WMO recently requested Member countries to nominate a Principal GISC. It is understood that many RA-V Member countries nominated GISC Melbourne;
- Collaboration is underway with NZ Met Service on progress to becoming a DCPC;
- Initial steps have been taken towards provision of information and training support for Member countries, designed to cover all aspects of operating a WIS National Centre and, where relevant, the operation of a DCPC. If funding assistance can be secured, a training program will be built around a WIS workshop to be held in Melbourne during 2012-13, aiming to enable all Members to participate in the implementation of WIS.

Task Team on WIGOS Interpretation and Opportunities

Objective: To identify actions needed at the Regional level to implement the WIGOS framework, and to identify opportunities and priorities for immediate progress including through Demonstration Project/s.

A presentation and discussion on WIGOS in RA-V was held during the REGIONAL SEMINAR ON CLIMATE SERVICES IN REGIONAL ASSOCIATION V (SOUTH-WEST PACIFIC), held at Honiara, Solomon Islands, 1-4 November 2011. Subsequently the RA-V Management Group meeting agreed that a Regional WIGOS Implementation Plan (R-WIP) will be developed and that the Lead of WG-I will be the focal point for this development.

At a global level, the EC ICG-WIGOS Task Team on the WIGOS Implementation Plan (WIP) developed the WIP ready for submission to EC-64. The identified activities needed for the implementation of WIGOS include a number of activities to be tackled at a Regional level, as well as activities which need to be tackled nationally by all Member countries. This provides helpful input to the development of R-WIP for RA-V which needs to include the Regional activities and also strategies to support Member countries in tackling relevant national activities.

Task Team on Migration to Table Driven Code Forms in RA V

Objective: To assist the coordination amongst Member countries of RA V of their plans for, and progress on, migration to the use of TDCF in accordance with WMO plans.

Progress so far includes:

- WMO monitoring information related to the migration to TDCF for RBSN surface and upper-air stations can be seen in the report provided to CBS IPET-DRC:
http://www.wmo.int/pages/prog/www/ISS/Meetings/IPET-DRC_Melbourne2011/Documents/IPETDRC-III_Doc5-1-1_1_monitoring_migration_rev.doc
Results up to July 2011 indicate that RA-V is progressing comparatively well, with over 60% of both surface and upper air stations providing reports in BUFR format;
- A summary of RA-V progress can be seen in the report provided to CBS ET-OI:
http://www.wmo.int/pages/prog/www/WIS/wiswiki/tiki-download_wiki_attachment.php?attId=1517
At May 2012, migration includes Australia (new BUFR bulletins implemented since 2010), Fiji, New Caledonia, French Polynesia, New Zealand, Philippines, Indonesia and Singapore. RTH Melbourne also compiled and distributed BUFR bulletins converted from TAC SYNOP, TEMP, PILOT and CLIMAT bulletins on behalf of PNG and Solomon Islands. Samoa provides surface observations in TDCF from its new AWS, using systems that were recently upgraded in a JICA sponsored project. Member countries that have not started delivering TDCF are Malaysia, Brunei Darussalam, East Timor and the Pacific Island countries including Cook Islands, Kiribati, Niue, Tokelau, Tonga, Tuvalu, Vanuatu and other detached islands;
- Plans are being developed to further assist Pacific countries to build their capacity to receive and send data in the new formats. One possible approach, if funding support is available, is to assist Member countries by providing of an off-the-shelf software system for converting data between the old and new formats. Such an approach would include sharing knowledge for running and supporting the system, integration of the system in the existing operational environments together with implementation and training.

Task Team on Traceability of Observations

Objective: To assist the coordination amongst Member countries of RA V of their plans for, and progress on, migration to the use of TDCF in accordance with WMO plans.

The Region already benefits from having Regional Instrument Centres in Australia (Melbourne) and the Philippines (Manila). CIMO held a workshop WMO TRAINING WORKSHOP ON METROLOGY FOR SOUTHWEST PACIFIC RA V ENGLISH SPEAKING COUNTRIES, Melbourne, Australia, 21-25 November 2011 at which about twenty participants received training in practical and theoretical aspects of measurements, uncertainty and calibration methods.

A further workshop on calibrations and field inspections will be held in July/August 2012 by the Fiji Meteorological Service as part of the Japan International Cooperation Agency (JICA) Third Country Training Programme, and supported by WMO.

Capacity development in RA V
Strategy of WMO for Capacity Development



World Meteorological Organization
Working together in weather, climate and water

Strategy of WMO for Capacity Development

RAV MANAGEMENT GROUP

2 July-2012

by Rob Masters
Director Development and Regional Activities Department

WMO


www.wmo.int



WMO Strategy for Capacity Development : Why?

Resolution 49 Cg-XVI

- Congress noted that a coordinated and cohesive approach for capacity development is needed to enhance capabilities of **NMHSs in developing countries** to meet growing Societal Needs at different levels.
- Capacity Development is a crosscutting activity and contributes to all Expected Results (ER), especially **ER 6** and **Strategic Thrust 3** of the 2012-2015 Strategic Plan.
- Requested EC to establish a CD Strategy to ensure, in a holistic approach, all actors in Met/Hydro/Climate work towards the same overall objective : **Facilitating sustainable development of NMHS**

		5 Strategic Thrusts	8 Expected Results
 3 Global Societal Needs	Strategic Plan 2012-2015	Improving Service Quality and Service Delivery	1. Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate and water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by all relevant societal sectors
			2. Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate and water and related environmental elements
		1. Improved protection of life and property (related to the impacts of hazardous weather, climate, water and other environmental events and increased safety of transport on land, at sea, and in the air)	Advancing Scientific Research and Application as well as Development and Implementation of Technology
2. Poverty alleviation, sustained livelihoods and economic growth (in connection with the Millennium Development Goals) including improved health and social well-being	Strengthening Capacity-building	4. Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth-and space-based systems for weather, climate and hydrological observations, as well as related environmental observations, based on world standards set by WMO	
3. Sustainable use of natural resources and improved environmental quality	Building and Enhancing Partnerships and Cooperation	5. Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and environment science and service to sustainable development	
	Strengthening Good Governance	6. Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfill their mandates	
		7. New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategies	
		8. An effective and efficient Organization	

Strategic Thrust n3
Expected Result n6



Roles of National Meteorological Services

- NMHSs own and operate most of the infrastructure that is needed for providing the weather, climate, water and related environmental services, including observing systems, data management, prediction, communications and data exchange, etc.
- Many NHMSs lack institutional, infrastructure, HR, procedural resources
- Interdependence in Regional and Global Context

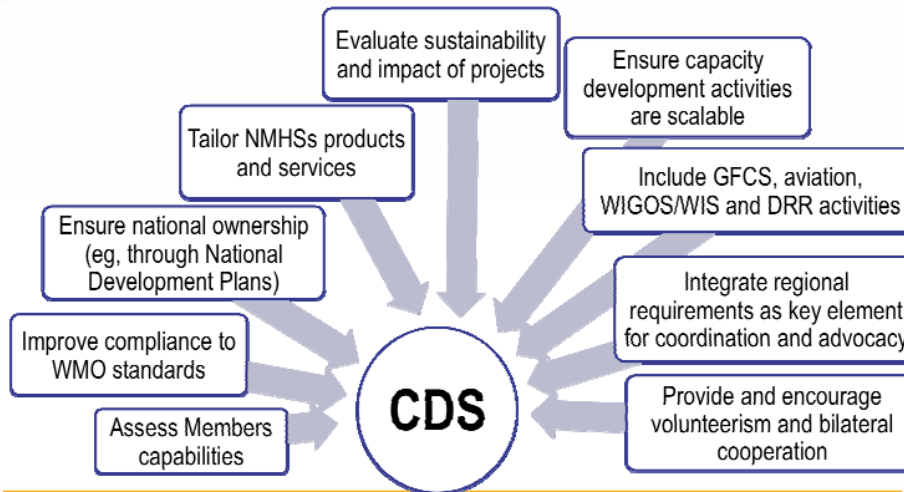





4



Areas to be considered by CDS from Resolution 49 (Cg-XVI)

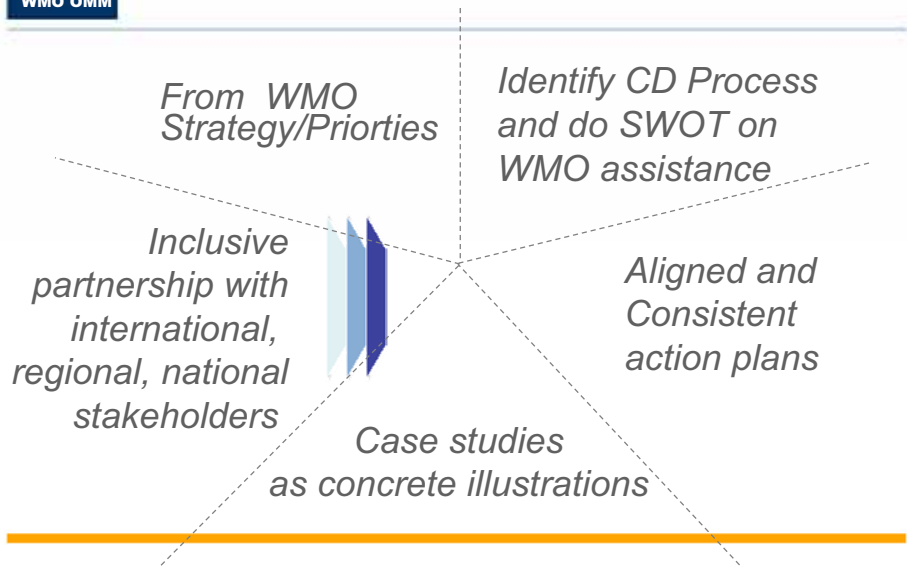


EC Working Group on Capacity Development meeting December 2011 in Geneva





Development of CDS

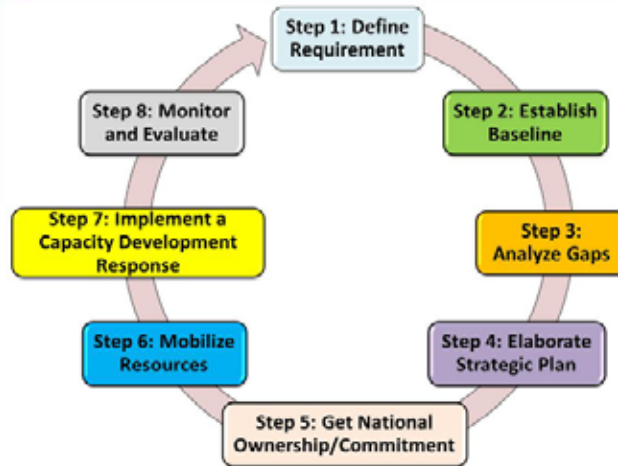


EC-WG/CD Outcomes

- WG agreement on WMO Cap/Dev process (8 Steps)
- SWOT on WMO's contribution to Cap Dev of NMHSs
- Consider 10 Case studies in light of SWOT and 8 Steps
- Considered tools to help manage CD and monitor baseline and progress (Role&Op Guide, CPDB, Survey, etc)
- Considered proposals for strengthening program elements (RO, LDC, ETR, RMO)
- Special side-meeting focus on 2 priority areas (GFCS and WIGOS: regional aspects and cooperation with Technical Programs)
- Agreed on outline and approach to drafting CDS
- Proposal to EC to amend WG Terms of Reference



Recalling the CDS process



SWOT

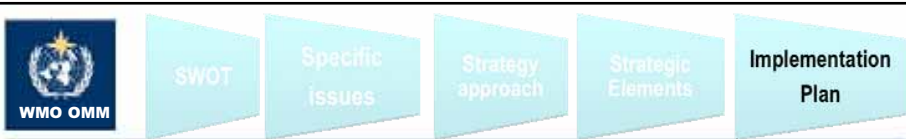
Issues

Strategic Approach

Strategy Elements

Implementation Plan

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
Continuing to meet specifications by Members	Need to conduct timely needs assessments of the capabilities in NMRBs	Provision of resources wherever applicable	Development of capacity in strategic planning	National ownership and commitment to CD initiatives to ensure long-term sustainability	WMO has a limited capacity to reach Donors efficiently and effectively	Operational models of national capacity development implementation, by WMO's, DPs	Regular updates of WMO indicators in the CDS
Making available and use of examples of other countries to help define national requirements	Need for harmonized times for assessing baseline	Use of the WMO platform, such as TICs and TICs to enhance perceptions of NMRBs	Integration of WMO priority areas in NMRBs strategic plans	Outreach and participation of national policy-makers in WMO activities	Making available success stories as sales tools	Development of capacities in project implementation and management	Compiling and implementing the WMO/IME system in the CDS to measure progress
Well-defined and clear set of national requirements by WMO for operations of NMRBs	Need for improvement in quality and response rate	Increased teaching/learning process	Need for consistent approach to development of sub-regional and national strategic plans	WMO conferences (WCCS, WMO/IME) calling for national support and enhanced capacity of NMRBs	WMO co-sponsored programmes enhances access to external funds	Integration of WMO priority areas in national strategic plans and ensure implementation	Need for SME plan implemented in CDS
Better personnel at each level of national requirements	Need for establishing network of qualified experts	Need for establishing network of qualified experts	Need for establishing network of qualified experts	Recognition of the services provided by NMRBs among and across policy makers	Need for better coordination and enhanced coordination with DPs	Need for establishing network of qualified experts, with skills in project management	Need to trial use of SME in NMRBs
Need for guidance in defining national requirements	Use of the global information to get an accurate baseline	Need for local resources (human, material, institutional)	Ability of NMRBs and institutional arrangement in favor of NMRBs	Need to increase reach and connectivity to other relevant national institutions and particularly the decision makers (policy of NMRBs)	WMO's CD/ARMO providing access to external funds	Need to develop NMRB leadership and management capacities	Need for SME tool kit
Use of global user requirements (national requirements being)	Use of the ICTs infrastructure to share and disseminate the information and knowledge	Need for better coordination	Integration of NMRBs strategic plans into National Development Plans	Adequate recognition of the role of NMRBs, implementing such international agreements	Building new business model for NMRBs	Making available and use of such good examples	Need for updating GME in all services by NMRBs
Building partnerships with other organizations to improve understanding of global user requirements (ICAO requirements for GMS and necessary certifications, ICAO)	WMO to coordinate with partners in Weather, Water and Climate to establish expanded baseline due to global issues (Paris Agreement)	Use of global standards and techniques for analysis	Outreach and communication	Outreach and communication	Making available of success stories	Need for guidance in implementing strategy	Advocacy in making a culture of transparency and accountability
Clarity of WMO mission and coordination with partner organizations	Volume in communications	Integrate outreach and communication for recognition by governments of economic input of NMRBs services	Work coordination with partners and organizations resulting in duplication of efforts and confusion in terms of assistance to NMRBs in developing a strategic plan	Development of advocacy actions at national level	WMO accreditation as implementing agency to the GEF Regionals Funds	Need for sustainable capacities implementation	Need to enhance management skills in project management and oversight
Mission creep and/or overlapping mandates resulting in duplication of efforts and confusion	Willingness to open information by NMRBs regarding existing capacity level, and result in accurate assessment and application of CD initiatives	Integrate outreach and communication for recognition by governments of economic input of NMRBs services		Use use of opportunity	Competition in getting funds with other implementing actors		
				Clearly defined "raison d'être" of WMO in national setting	Need for better coordination with implementing agencies		
				Enhanced regional networks for backup in case of fallout of funding by a donor	Need for a strategy approach to funding agencies		



• **Example of concrete tool to implement : The country profile Database**

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
...
...
...
...

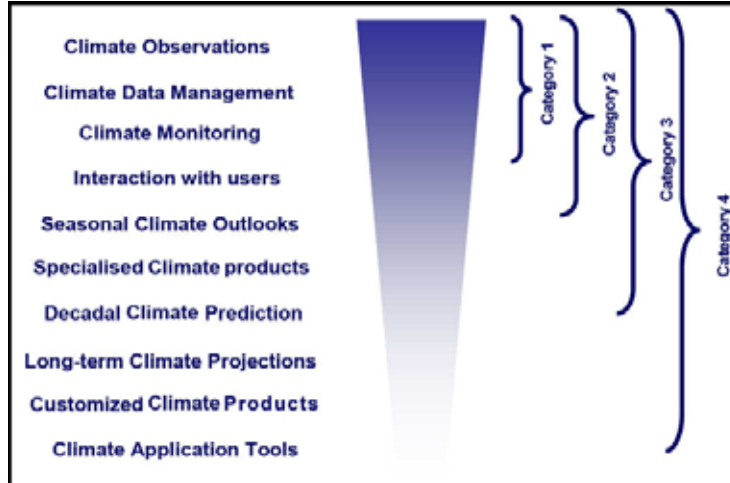
⇒As to ensure an **optimized knowledge management** system within the NMHS community and:

- Follow the status and development needs of Members
- Improve planning, implementation and monitoring of WMO related projects and activities
- Promote synergies between Members, the secretariat, cooperating partners, funding agencies and other stakeholders
- Develop a Monitoring and Evaluation plan

Country Profile Database (CPDB) Project
<http://www.wmo-sat.info/~wisuser/cpdb/>

Levels of services categories
 NMHSs to provide 4 different climate services levels

1. Basic
2. Essential
3. Full
4. Advanced

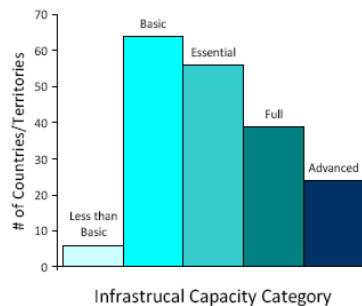




Profile of climate service providers

- Many countries lack the infrastructural, technical, human and institutional capacities to provide high-quality climate services.

Infrastructural Capacities of Countries as of Aug 2010 to provide Basic, Essential, Full and Advanced Climate Services.



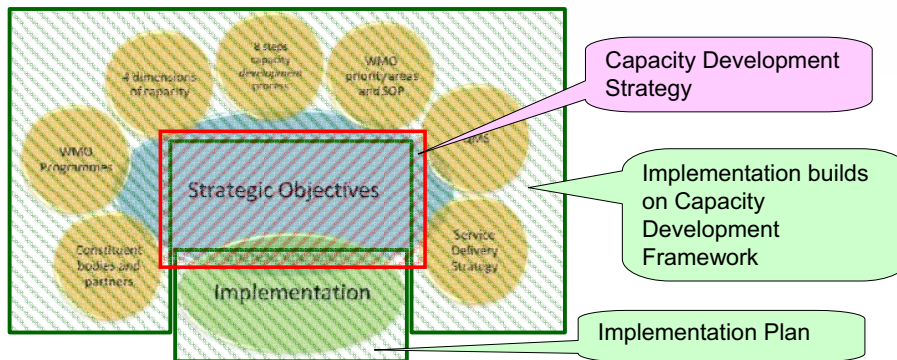
4 areas of competencies in Capacity Development (as articulated by HLT-GFCS)

- **Human resource** capacity
 - equipping individuals with the understanding, skills, information, knowledge and training to enable them to generate, communicate and use decision-relevant climate information;
- **Infrastructural** capacity
 - enabling access to the resources that are needed to generate, archive and use climate data and decision-relevant information, including observing networks, data management systems, computer hardware and software, internet, manuals and scientific literature;
- **Procedural** capacity
 - defining, implementing and advancing best practices for generating and using climate information;
- **Institutional** capacity
 - elaborating management structures, processes and procedures that enable effective climate services, not only within organizations but also in managing relationships between the different organizations and sectors (public, private and community, including international collaboration).



Capacity Development Strategy (CDS) and its Implementation Plan

EC-WG/CD developed the draft CDS and draft Implementation Plan based on the outcomes of its first meeting. PTCs and PRAs also had an opportunity to comment on the CDS and its Implementation Plan.



WMO EC Working Group on Capacity Development



Capacity Development Strategy (CDS)



WMO CDS

4 page document

Chapters of CDS:

1. Introduction
2. Strategy
 - 2.1 Vision and Mission
 - 2.2 Strategic Objectives and Strategic Approaches

WMO EC Working Group on Capacity Development



Vision

WMO Capacity Development Strategy

Capacity Development Vision

Stronger NMHSs to meet society's need for information on weather, water and climate for the safety and well-being of people throughout the world



Mission

WMO Capacity Development Strategy

Capacity Development Mission

To facilitate a holistic and integrated approach to sustainable Capacity Development of NMHSs especially in developing countries, LDCs and SIDSs through: advocacy, Education and Training, Outreach, Partnerships and Resource Mobilization, Demonstration and pilot projects, Service Delivery and Research.





Strategic Objectives

WMO Capacity Development Strategy

- Objective 1: Define required capacities and identify deficiencies
- Objective 2: Increase visibility and national ownership
- Objective 3: Optimize Knowledge Management
- Objective 4: Reinforce Resource Mobilization and Project Management
- Objective 5: Strengthen Global, Regional and Sub-Regional Mechanisms
- Objective 6: Increase Education and Research Opportunities



Strategic Approaches

WMO Capacity Development Strategy

Objective 1: Define required capacities and identify deficiencies

- 1.A: Emphasize compliance with WMO technical requirements to address priorities
- 1.B: Assist countries in identifying deficiencies of the NMHSs
- 1.C: Encourage development of services to address specific user needs
- 1.D: Establish modalities for partner and stakeholder engagement

Objective 2: Increase visibility and national ownership

- 2.A: Emphasize socio-economic benefits of services provided by NMHSs to decision makers
- 2.B: Assist NMHSs to incorporate requirements into national policy, legislative frameworks and national development plans
- 2.C: Enhance outreach to end users and decision makers
- 2.D: Develop leadership and management capacities
- 2.E: Reinforce national support to meet societal needs for weather, climate and hydrology services





Strategic Approaches

WMO Capacity Development Strategy

Objective 3: Optimize Knowledge Management

- 3.A: Enhance mechanisms for collecting and sharing of up-to-date information relating to NMHSs development
- 3.B: Share best practices and success stories relating to the development of NMHSs
- 3.C: Enhance communities of practice dealing with the development of NMHSs

Objective 4: Reinforce Resource Mobilization and Project Management

- 4.A: Enhance coordination and actively explore new funding opportunities and develop proposals through dialogue with stakeholders and development partners
- 4.B: Enhance capacity to develop, implement, monitor and evaluate projects
- 4.C: Encourage innovative voluntary and bilateral cooperation



Strategic Approaches

WMO Capacity Development Strategy

Objective 5: Strengthen Global, Regional and Sub-Regional Mechanisms

- 5.A: Strengthen the work of global and regional centres
- 5.B: Strengthen global, regional and sub-regional mechanisms to provide support for weather, climate and hydrological services

Objective 6: Increase Education and Research Opportunities

- 6.A: Improve access to and provision of fellowships
- 6.B: Strengthen applications of research findings





Example of Key Activities

Implementation for CDS

Strategic Objectives	Strategic Approaches	Key Activities	WMO SOP 2012-15 Key Outcome	WMO SOP 2012-15 Key Performance Indicator
Objective 1: Define required capacities and identify deficiencies	1A: Emphasize compliance with WMO technical requirements to address priorities	<ul style="list-style-type: none"> •clarifying WMO standards, technical requirements, practices and priorities •compiling compliance reports •organizing training activities 	6.3: Education and training development activities at national and regional levels are improved, especially in developing and least developed countries	6.1.2: Number of NMHSs with programmes and networks for collaborating on service delivery at regional levels 6.6.2: Number of NMHSs with modernized capacities to develop and disseminate products to their customers
	1B: Assist countries in identifying deficiencies of the NMHSs	<ul style="list-style-type: none"> •organizing stakeholder fora to guide national and regional requirements process and to show global interdependence •organization of national, regional users' events •developing guidance material on the role and operation of NMHSs •country assessments and independent analysis. 	6.1: Visibility and relevance of NMHSs and Regional Centres in regional and national development agendas is improved, particularly in developing and least developed countries	6.1.2: Number of NMHSs with programmes and networks for collaborating on service delivery at regional levels



WMO EC Working Group on Capacity Development



Implementation Plan

- This part will come in a form of an action plan using for example the 5W+2H model (*Who does What for When, Where, How and How much does this action cost? Saying that the «for What» column = strategic objective mapped in the CDS linked to WMO SOP*)
- Finalized in 2012, with broad consultation within Secretariat, EC-CD, IPM, and Members



THANK YOU

Capacity development in RA V

Training events in RA V (June 2011-June 2012)

- Meteorological Technicians Training Course, WMO RTC Philippines, Quezon City, Philippines, 1 August - 19 December 2011
 - Training Workshop on Satellite Applications for Meteorology and Climatology, Citeko, Indonesia, 19-27 September 2011
 - Workshop for Human Resources Development for NMHSs in Asia (RA II) and South-West Pacific (RA V), Quezon City, Philippines, 17-21 October 2011
 - Meteorologists Training Course, WMO RTC Philippines, Quezon City, Philippines, 9 November 2011 - 10 October 2012
 - CIMO Training Workshop on Meteorology for the English Speaking Countries in Region V (South-West Pacific), Melbourne, Australia, 21-25 November 2011
 - International Training Course on Satellite and Radar Data Interpretation, Citeko, Indonesia, 21-25 May 2012
-

**PLAN FOR
REGIONAL EVENTS
DURING THE SIXTEENTH FINANCIAL PERIOD (2012-2015)**

Regional Events \ Years	2012	2013	2014	2015
Sixteenth Session of the Association			X	
Meeting of the Management Group	28.VI.2012 Geneva		X	
Tropical Cyclone Committee for the South Pacific and the South-East Indian Ocean	16-20.VII.2012 Apia, Samoa		X	
Working Group on Hydrological Services				
Working Group on Climate Services				
Working Group on Weather Services				
Working Group on Infrastructure				
Sixth Technical Conference on Management of Meteorological and Hydrological Services		X		
Regional Seminar				X

Budget Allocation approved by Cg-XVI (ref. [WMO Operating Plan 2012-2015](#))

• Regional Association V session	2014	CHF 159,772
• RA V Regional Seminar	2015	CHF 29,872
• RA V Technical Conference	2013	CHF 92,132
• RA V Management Group Meeting	2014	CHF 24,964
• Tropical Cyclone Committee	2012	CHF 13,819
	2014	CHF 13,481
• Working Group sessions	2012	CHF 16,377
	2013	-
	2014	CHF 15,977
	2015	CHF 15,932
• Assistance to President of RA V	2012-2015	CHF 16,166
• Regional Workshop for South-West Pacific	2012	CHF 20,472
• Regional Workshop for SIDS	2012	CHF 20,472

Proposals on the regional events

PR of Cook Islands

Considering that the Cost Recovery Working Group is a small group, we could look for an opportune time in the near future to get together and decide on the fate of Cost Recovery in RA V. I presume that a small amount of funds ought to be allocated for a meeting in the very near future and to catch up with the other Working Groups.

Lead of WG on Weather Services

1. Support for in-country internal audits of countries implementing a quality management system to be conducted by Members with a mature certified QMS. This is the highest priority as the implementation deadline is November 2012.

2. a) Combined meeting of Task Teams on Training & Competencies, Quality Management & Cost Recovery to further develop workplan and implementation strategies.

b) Seminar/workshop (in conjunction with the Task Team meeting) on qualifications and competency assessment, implementation of quality management systems and mechanisms for cost recovery.

Lead of WG on Infrastructure

1. Highest priority - face to face meeting of the core Working Group to review, manage and plan ahead the overall work activities of the group. As we discussed recently, a meeting in Melbourne for a week in about Mar/Apr 2013 would be ideal from a number of perspectives:

- * many members live in Melbourne so will not be required to travel
- * With only 3 core members needing to travel to Melb it is desirable to also invite 4 of the volunteer experts in order to maximise the opportunity for input by Member countries and to tackle details on a couple of specific tasks (WIS implementation and communications)
- * the timing allows the Secretariat to tackle a very busy 2012 without additional burden
- * the timing may be optimised to the end of the wet season, depending on the requirements of participants

2. Workshop on WIGOS implementation in RA V

I believe discussions are underway about a possible side meeting at CBS in Jakarta later in 2012. This would be an extremely valuable opportunity to make progress on this topic with the benefit of both RA-V participants and a broad range of WIGOS experts and Secretariat accessible to us. I would prefer to see this achieved without significant imposition on the RA-V budget, as I wouldn't like to see it prevent the WG-I from meeting to cover its other task areas.

3. WIS Regional workshop

We are currently exploring opportunities for AusAID funding for a Regional WIS workshop, which would provide a critical step forward in tackling the newer aspects of WIS implementation (in association with Melb GIS becoming operational). If this is not successful we might want to look more broadly for funding opportunities. We could also use the opportunity to help the progress of TDCF migration.

REVIEW OF REGIONAL OFFICE LOCATION

BACKGROUND INFORMATION

Background

1. Cg-XVI (Geneva, May 2011), considering the concerns of RA I and the benefits for Regions III and IV achieved through the relocation of the Regional Director to the Region, as well as opinions that the location of the Regional Directors and Offices in Geneva has advantages in terms of coordination with the WMO Secretariat and Programmes, recommended that the Secretary-General consider, in consultation with the presidents of RAs concerned, conducting a comprehensive review of the regional offices resources and location and propose measures to enhance their efficiency and effectiveness.

Historical review of the establishment of Regional Offices and Subregional Offices

2. The historical background of the Regional Programme and the establishment of Regional Offices and WMO Offices in the Regions (Subregional Offices) was reviewed with a special focus on the procedures and the host country agreements for the establishment of Offices in the Regions (see attached Annex I). The list of premises, services and office furniture and equipment provided by the Governments of Nigeria, Kenya, Bahrain, Paraguay, Costa Rica and Samoa is given in Annex II.

Visits to/discussion with potential candidates for hosting RAP Office

3. Three potential places (Bangkok, Macao and Singapore) were visited during July-September 2011 to discuss with PRs and relevant staff on the possibility of hosting the Regional Office for Asia and the South-West Pacific (RAP Office).

4. UNESCAP indicated its support to the relocation of RAP Office at the UNESCAP premises (although the space is currently fully occupied) in view of closer link to UN and regional organizations located in Bangkok. The running cost for renting a WMO Office (with three offices for D1, P4 and Secretary) is estimated at around USD 1,000 per month including costs of security, facility management (electricity, cleaning, IT support, etc.), Internet use and parking.

5. ICAO has its own Regional Office in Bangkok with full support (i.e., no cost to ICAO) of the Ministry of Transport, Government of Thailand. A similar approach would be sought to have RAP Office in Bangkok city, in collaboration with the PR of Thailand with WMO and through the Ministry of Information and Communication Technology, which supervises the Thai Meteorological Department (TMD). The possibility of hosting RAP Office at TMD premises was also discussed. TMD showed interest in the idea but indicated that it would take a long process to obtain the government approval and support.

6. PR of Macao, China indicated the full support of the Macao Government (and that of People's Republic of China) for hosting RAP Office (similar to the ESCAP/WMO Typhoon Committee Secretariat Office already hosted by Macao, China), and the possible support for technical staff, a secretary, a clerk/office boy and a driver. The Government support is also expected for office premises, installations, furniture and equipment, as well as recurrent cost and some programme activity cost (e.g., funding regional events in Macao).

7. PR of Singapore (as well as CEO of the National Environment Agency) indicated the interest of the government and introduced two potential premises for RAP Office (in the Centre for Climate Research, Singapore; and the HQ at Changi Airport). WMO requirements were discussed also with the Ministry of Foreign Affairs. PR stressed the need for a clear guidance from WMO on

concrete procedures, including the criteria and timeline for selection of the location of RAP Office from several candidates.

8. There might be some other potential candidates for hosting RAP Office (e.g., Indonesia indicated its interest in hosting subregional-level office for Southeast Asia).

Criteria for consideration of location of Regional/Subregional Offices (in the Regions)

9. The generic criteria for the assessment of appropriate location of WMO Offices in the Regions are being considered in light of ensuring the *efficient, cost-effective and sustainable* operation and management of the Regional Office. [Additional region-specific criteria could be identified.] The generic criteria should include the following:

(a) Efficiency [*The criteria for efficiency are proposed from the standpoint of how efficiently Regional Director can perform duties and responsibilities of the Regional Director/Office.*]:

- linkage with WMO programmes and technical and administration departments/ offices for collaboration and coordination [*<- time difference to be considered*];
- Connection to Members, RA presidents and subsidiary bodies, and Technical Commissions;
- Connection to partners (UN, international and regional organizations, and financial institutions and potential donors) for collaboration and increased advocacy;
- Accessibility/geographical convenience (number of available direct flights to major cities, flight time to possible venues of regional events, visa issuance, etc.);
- Accessibility to the info/data and info exchange [*with IT support*];
- Availability of international conference facilities;

(b) Cost-effectiveness:

- Staff salary rate (post adjustment);
- Cost of living and quality of life for staff (e.g., housing, education, healthcare services; crime rate);
- Office running cost (including security cost);
- Accessibility (mission cost for Office staff and participants for the meetings; cost for holding sessions);
- Availability of Government support (including staff costs, office space, furniture and running cost; and programme/activity cost);

(c) Sustainability:

- Political stability of the government (neutrality of country and overall social stability);
- Security;
- Environmental friendliness;
- Government commitment to support for longer term (e.g., 4-year period of initial agreement, and continuation).

10. The Regional Office is expected to be composed of:

- 1 Regional Director (D1) to be funded by WMO [core staff];
- 1 Programme Officer (P4) to be funded by WMO [core staff];
- 1 Secretary provided by the host country [core staff];
- 1-2 Programme Officer(s) financially supported by the host country;
- 1-2 Seconded Expert(s) from Member(s), if applicable; and
- 1-2 other support staff (clerk, driver, etc.) provided by the host country, if applicable.

Procedures for the selection of the location of RAP Office

11. The assessment will be made by considering the “pros and cons” of location of RAP Office in Geneva and in the Region (with three candidate locations), based on the above criteria. After the decision of RA II (and RA V) on the relocation of RAP Office from Geneva to the Region, the selection of the location of RAP Office will be made by objective analyses of the regionally-agreed criteria for all the candidate locations.

12. The procedures and timeline for relocation of the RAP Office, as well as the criteria, was proposed to the fourth session of the RA II Management Group (MG-4: Doha, Qatar, 29 February - 2 March 2012). The RA II MG-4 agreed in principle on the proposed criteria and timeline and expressed the view that pros and cons should be carefully studied and analysed before taking the decision.

13. The procedures and timeline for relocation of the RAP Office, as well as the criteria will be proposed to the eighth session of the RA V Management Group (MG-8: Geneva, 27 June 2012) for their comments and further development.

14. Possible procedures and timeline would be:

- (i) Approval by the Management Groups during EC-64 concerning the criteria (late-June 2012);
 - (ii) Assessment of candidates based on Regionally-approved Criteria (September 2012);
 - (iii) Decision by XV-RA II on relocation of RAP Office in the Region (December 2012);
 - (iv) Decision by RA V Management Group on relocation of RAP Office in the Region (February 2013);
 - (v) WMO letter to RA II/RA V Members to seek other potential candidates (March 2013);
 - (vi) Assessment of all potential candidates based on Regionally-approved Criteria (December 2013);
 - (vii) Decision on selection of location of the Office by the Management Groups of RA II and RA V then SG in light of assessment results (April 2014);
 - (viii) Agreement by Cg-XVII to the relocation of RAP Office at the selected place (May 2015);
 - (ix) Finalization of arrangements for and conclusion of official agreement with the host government (September 2015);
 - (x) Completion of relocation of RAP Office (December 2015).
-

HISTORICAL BACKGROUND

Regional Programme

1. First Congress established Regional Associations (RAs) in 1951 (Res. 32 (Cg-I)). The progressive development of WMO's programmes has naturally led to a corresponding growth in the regional activities, which were therefore given a separate identity by Seventh Congress (1975) under the title "Regional Programme".
2. The WMO Regional Programme (RP) represents a framework for the implementation of WMO programmes at the regional level, taking into account the range of development of Members in the respective WMO regions and considering their regional priorities. The RP provides support to WMO RAs, including their sessions, and to their subsidiary bodies.
3. The RP is largely composed of the activities of the RAs whose task include the promotion of the execution (or implementation) of the resolution of the Congress and the EC in their respective regions. The RAs study, from the regional point of view, the scientific and technical programmes of the Organization; coordinate, as necessary, the relevant implementation activities undertaken by the Members concerned; and recommend to the Congress and to EC measures to assist Members, particularly in developing countries, in the implementation of the programmes.
4. The RP is closely associated with, and derives considerable benefit from, certain activities of regional importance within other WMO programmes.

Regional Offices

5. The Regional Offices within the WMO Secretariat provide support to the Regional Associations, thus the Regional Programme (and also currently the Technical Cooperation Programme).
6. The establishment of supporting regional structure in the Secretariat started with the decision of Fourth Congress (Cg-IV: 1963) to establish a post entitled "Regional Representative for Africa", in response to a recommendation of the third session of RA I (Africa) (III-RA I: 1962). The post was established at the WMO Secretariat in Geneva in 1964. A similar post for "Latin America" was subsequently approved by Fifth Congress (Cg-V: 1967) and was established at the Secretariat in 1968. The Regional Offices for "Africa" and "Latin/South America" have evolved from these posts of Regional Representatives. Fifth Congress (Cg-V: 1967) adopted the term "Regional Offices", while Seventh Congress (Cg-VII: 1975) changed the title "Regional Representative" to "Regional Director".
7. Eighth Congress (Cg-VIII: 1979) endorsed the recommendation of the seventh session of RA I (VII-RA I: 1978) urging the transfer of the Regional Office for Africa to the Region.

[At the invitation of the Government of Burundi, the Regional Office for Africa was transferred to Bujumbura and officially opened on 19 February 1981. Due to social unrest in Burundi in 1990s, the Regional Director for Africa moved to Geneva in 1998. The staff of the Regional Office for Africa was transferred to Lagos, Nigeria in March 2003 (following the establishment of the Sub-regional Office for Western Africa in Lagos, Nigeria in February 1997).]

8. Eighth Congress (Cg-VIII: 1979) also decided that the Regional Office for South America should also serve Region IV (North and Central America) and Ninth Congress (Cg-IX: 1983) changed the name of the Office to "Regional Office for the Americas" to reflect its area of responsibility.

[Seventh Congress (Cg-VII: 1975) considered the option of transferring the Regional Office for Latin America from Geneva to a location in the Region. The decision had been postponed for some time due to budgetary limitations. The financial difficulties have been resolved due to a kind offer made by the Government of Paraguay to host the Office in Asuncion. The EC-XIII (1978) approved the transfer of the Office to Asuncion. The agreement concluded with the Government of Paraguay on 5 December 1983. The Regional Director for Americas was relocated to Geneva from 2005 to 2009 and from the beginning of 2010 the Regional Director was again transferred to Asuncion.]

9. The Regional Office for Asia and South-West Pacific was set up in 1979 at the Secretariat, initially under the title "Regional Office for Asia" upon a recommendation of the sixth session of RA II (VI-RA II: 1975). Subsequently, Eighth Congress (Cg-VIII: 1979) decided that this office should serve both Region II and Region V. Ninth Congress (Cg-IX: 1983) later changed the title of the Office to the "Regional Office for Asia and the South-West Pacific".

[The location of the Regional Office for Asia and the South-West Pacific was maintained in Geneva since its establishment in 1979. Tenth Congress (Cg-X: 1987) agreed that the Regional Office for Asia and South-West Pacific should continue to be at the WMO Headquarters and that the future location should be decided on the basis of the future sessions of RAs II and V.]

[Noting the advantages and effectiveness of having regional and sub-regional offices closer to the Members concerned, the Executive Council, at its fifty-sixth session (EC-LVI: 2004), had requested the Secretary-General to take the measures required, in consultation with regional presidents, to relocate the Offices based in Geneva. The issue was discussed at the thirteenth session of RA II (XIII-RA II: Hong Kong, China in December 2004). RA II Members, however, expressed support for the idea that the Regional Office for Asia and the South-West Pacific should remain in Geneva in view of the advantages of its location at WMO Headquarters to ensure effective and efficient implementation of the RP and related activities. In that regard, the Association agreed that the Office should remain in Geneva for the time being and that that issue would be addressed after a careful evaluation of the operations of the Sub-regional Office for West Asia.]

[The fourteenth session of RA V (XIV-RA V: Adelaide, Australia, May 2006) expressed support for the idea of the thirteenth session of RA II that the Regional Office for Asia and the South-West Pacific should remain in Geneva in view of the advantages of its location at WMO Headquarters to ensure effective and efficient implementation of activities related to the Regional Programme.]

[XIV-RA II, noting with satisfaction that the WMO Office for West Asia has played a key role in the subregion, expressed its appreciation to the Government of the Kingdom of Bahrain for its considerable support for the establishment and operation of the WMO Office and requested Members to continue support for this Office.]

10. A Sub-regional Office for Europe was established on 13 March 2003 at the WMO Secretariat in Geneva. The Office was transformed to a Regional Office for Europe on 22 November 2006 following the recommendation of the XIV-RA VI session for strengthening the support to regional activities in Europe.

[Since no regional office existed for Region VI, it was agreed by EC-XXXIII (1981) that the president of RA VI, in consultation with the Secretary-General, take the necessary action to study the problems existing in the developing countries of the Region. In the Secretariat, the External Relations Office had looked after the RA VI issues until 2003.]

WMO Offices in the Regions (WMO Sub-regional Offices)

11. Twelfth Congress (Cg-XII: 1995) agreed to the proposal for the establishment of sub-regional offices to provide increased support to Members in the most cost-effective manner. Subsequently, the Secretary-General took actions to establish sub-regional offices, as follows:

- Lagos, Nigeria – for North, Central and West Africa (Agreement concluded with the Government of Nigeria on 17 December 1996; established on 3 February 1997 by SN); the Office moved from Lagos to Abuja in 2007;
- Nairobi, Kenya – for Eastern and Southern Africa (Agreement concluded with the Government of Kenya on 17 April 1998; established in July 1998);
- Manama, Bahrain – for West Asia (Agreement concluded with Bahrain Government on 25 November 2004; and became operational on 12 March 2007);
- Apia, Samoa – for the South-West Pacific (Agreement concluded with the Government of Samoa and SPREP on 1 May 1998; and became operational on 12 April 1999);
- San José, Costa Rica – for North America, Central America and the Caribbean (Agreement concluded with the Government of Costa Rica on 13 December 1996; established on 3 February 1997 by SN; and became operational on 8 February 1997);

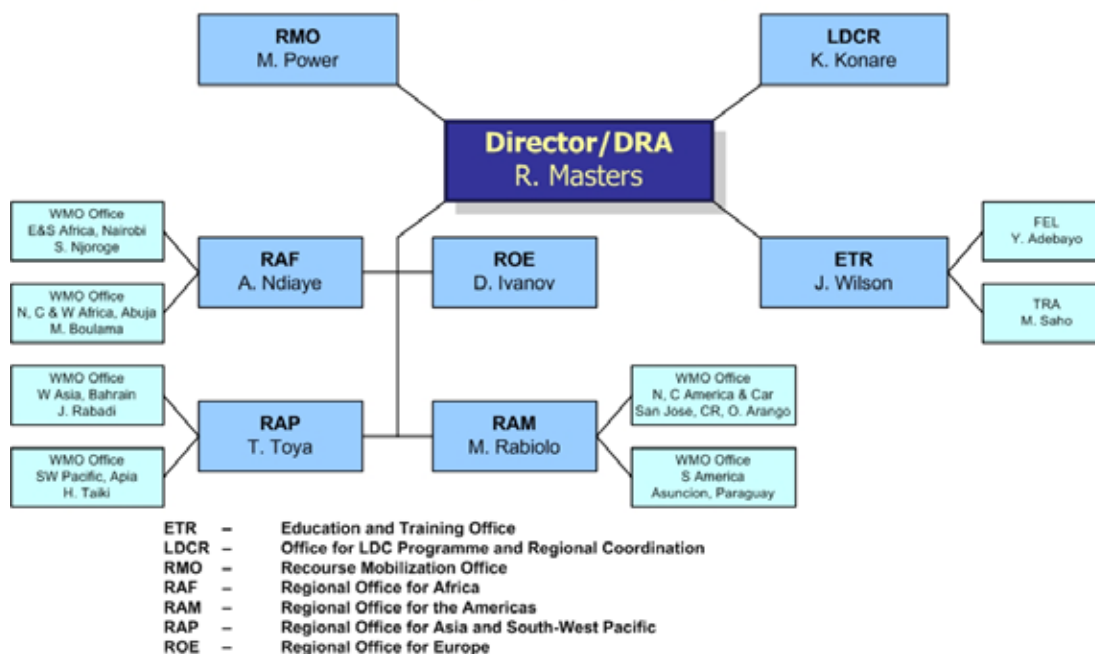
12. Since the Fifteenth Congress (Cg-XV: 2007), the Sub-regional offices have been referred to as WMO Offices in the Regions (e.g., WMO Office for West Asia; WMO Office for the South-West Pacific). Currently, there are five such WMO Offices.

	City	Country	Located in	Agreement signed on/in	Establishment announced on/in	Became operational on
WMO Office for NCW Africa	Lagos/Abuja	Nigeria	Nigeria Met Agency/UN House	17.12.1996	03.02.1997	
WMO Office for ES Africa	Nairobi	Kenya	Kenya Met Dept.	17.04.1998	July 1998	
WMO Office for West Asia	Manama	Bahrain	UN House	25.11.2004	22.11.2006	12.03.2007
WMO Office for SW Pacific	Apia	Samoa	SPREP Campus	01.05.1998	15.05.1998	12.04.1999
WMO Office for NCAC	San José	Costa Rica	Met Service HQ	13.12.1996	03.02.1997	08.02.1997
WMO Office for South America (Regional Office for the Americas)	Asunción	Paraguay	Min. of Defense	05.12.1983	22.11.2006	

Regional Office staff

	Director	P.5 Staff	P.4 staff	National Programme Officer	Secretary	Other G staff (Driver/Messenger)
Regional Office for Africa	1		1		1	
WMO Office for NCW Africa			1	1	1	1
WMO Office for ES Africa			1		1	2
Regional Office for Asia & SWP	1		1 + 1 (seconded)		1	
WMO Office for West Asia			1			
WMO Office for SW Pacific			1 (P.3)			
Regional Office for Americas			1		1	
WMO Office for NCAC		1		1		
WMO Office for South America	1			1	2	1
Regional Office for Europe		1	1 (P.2)		0.5	

Development and Regional Activities Department (DRA) Organizational Structure



Organizational Structure of the Development and Regional Activities (DRA) Department
(as of July 2011)

ANNEX II

List of Premises, Services and Office furniture and equipment provided by the Government

	Paraguay (RO)	Costa Rica	Bahrain	Samoa	Nigeria	Kenya
SERVICES						
PO Box and Postal Service	x	x	x	SPREP		
Fax	x	x	x	SPREP		
Telephone (Intn'l)	x	x	x	SPREP		
Telephone (National only)	x	x	x	SPREP		
Internet connection	x	x	x	SPREP		
PREMISES AND INSTALLATIONS						
Office for Representative	1	1	1	x	1 (28m ²)	1 (28m ²)
Other Offices for SRO officers and consultants	3 (14m ² each)	3	4	when necessary	3 (14m ² each)	3 (14m ² each)
Secretary and archive	x	x	x	x	1 (28m ²)	1 (28m ²)
Library	x	x	x		1 (14m ²)	1 (14m ²)
Meeting room for 8 persons	x	x	UNDP	SPREP	1 (28m ²)	1 (28m ²)
Toilets	x	x	UNDP	SPREP	x	x
Parking lot	x	x	4	SPREP	x	x
Office Car	WMO	WMO	1	WMO	WMO	WMO
Fuel (under Agreement)	x	x	x	WMO	WMO	WMO
OFFICE FURNITURE AND EQUIPMENT						
Large desks with armchairs	x	3	1	SPREP	3	3
Medium-size desks with chairs	x	2	4	SPREP	2	2
Typing desks	x	2	2	SPREP	2	2
Conference table with chairs	x	1	1	SPREP	1	1
Book shelf (with doors and locks)	x	1	x	SPREP	1	1
Book shelves	x	3	5	SPREP	3	3
Book stands with partitions	x	2	5	SPREP	2	2
Metal cabinets	x	2	3	SPREP	2	2
Coffee table	x	1	1	SPREP	1	1
Chairs	x	5	4	SPREP	5	5
Air conditioning equipment	x	3	x	SPREP	3	3
Telephone tables	x	2		SPREP	2	2
Other office accessories	x	x	x	SPREP	x	x
Safe		1	1		1	1
STAFF SUPPORT						
Secretary	1 + WMO	WMO	1	1 (SPREP)	WMO	WMO
Clerk typist	1					
Office boy/Driver	1	WMO			WMO	WMO
RECURRENT COST						
Electricity	x	x	x	x	WMO	x
Telephone fee	WMO	WMO	x	WMO	WMO	WMO
Internet fee	WMO	WMO	x	WMO	WMO	WMO
Fuel (actual)	WMO	WMO	x	WMO	WMO	WMO
Postage	WMO	WMO	x	WMO	WMO	WMO

PACIFIC METEOROLOGICAL COUNCIL

(Submitted by the Secretariat)

91 Background

9.1.1 The background information on the establishment of the Pacific Meteorological Council (PMC) and the Pacific Meteorological Desk Partnership (PMDP) are presented during the 7th session of RA V Management Group (Honiara, Solomon Islands, 4 November 2011), as per document RA V/MG-7/Doc.4.2.

9.2 Introduction

9.2.1 This document, RA V/MG-8/Doc.8 provides information on the progress of the PMC including the implementation of recommendations from its 1st session (Majuro, Republic of Marshall Islands, 12 August 2012) through the PMDP.

9.3 Pacific Meteorological Council

9.3.1 The PMC's Terms of Reference (TOR) is presented in to Appendix 1 (RA V/MG-8/Doc.8) to this report. The PMC was established in 2011. It serves as the conduit through which NMHSs in the Pacific region coordinate their activities to build capacity and improve information gathering and dissemination. The SPREP Secretariat and the WMO Office for the South-West have undertaken to provide the secretariat support for the PMC through the establishment of the PMPD.

9.3.2 Recommendations emanating from the 1PMC are presented in Appendix 2 (RA V/MG-8/Doc.8) to this report.

8.4 Pacific Meteorological Desk Partnership

9.4.1 Refer to Appendix 3 (RA V/MG-8/Doc.8) for a background information and description of the PMDP. The PMPD is the SPREP Secretariat, SPREP members, development partners and donors modality for serving the needs of the NMSs in the Pacific region, PMC and their bi-annual meeting.

8.4.2. The goal of the PMDP is to improve regional coordination and advancing and sustaining the delivery of weather, climate and related services for the protection of life and property of Pacific island communities and fulfilling their international and regional obligations under international agreements and conventions, in particular, the UNFCCC, GFCS, WMO Convention, and the Pacific Plan. The PMDP provides a platform for a coordinated and sustained support at regional and national level: (i) to implement capacity building activities (inclusive of technological and infrastructural) in the Pacific region related to weather and climate services; (ii) to implementation the other recommendations of the Report on Reviewing of Weather and Climate Services in the Pacific; (iii) to integrate efforts by various agencies working to develop weather and climate services of the Pacific region, to better plan, and make more efficient the resources used and efforts put in to work together with NMS;s in the Pacific region and; (iv) ultimately be linked closely in support of the PMC, with the SPREP Secretariat role strengthened to ensure a lead coordinating role of both the PMDP and the PMC and; (v) to provide the secretariat and technical services for the PMC.

9.4.2 The WMO and SPREP Secretariats concluded a Letter of Agreement (LoA) on the PMDP in October 2011, followed by a financial support of US\$50,000 to support the operation.

9.4.3 The SPREP Secretariat has recruited the Meteorology and Climatology Adviser, funded by the Commonwealth Secretariat for a 2 year time period. The SPREP Secretariat has advertised the post for a Meteorology and Climatology Officer (MCO), and it is funded by the AusAID.

9.5 The Pacific Islands Meteorological Strategy (PIMS) 2012-2021

9.5.1 The 1PMC also tasked the SPREP Secretariat with the coordination of further development and finalization of a draft Pacific Islands Meteorological Strategy (PIMS) 2012-2021 to replace their first strategy which ends in 2011. The SPREP Secretariat and the WMO Office for the South-West Pacific (PMPD Secretariat) were responsible for undertaking this task which included hiring of a consultant and working with that consultant for a month, held back to back discussions with partners and NMSs representatives during the Regional Seminar on Climate Services in Region V (South-West Pacific) in Honiara, the Solomon Islands, November 2011 and collating inputs through email. The PIMS highlights NMSs' priorities for action for the next ten years. The PIMS is for development partners, donors, countries to implement and for the PMPD to provide the coordination, fundraising efforts, technical advice and monitoring and evaluation roles and accountable to donors, the PMC and the SPREP Officials Meetings.

9.5.2 The PIMS is closely aligned with the WMO RA V Strategic Operation Plan (SOP) 2012-2105, however, focusing on Pacific NMSs' needs. With the implementation of the PIMS the Pacific also contributes to the implementation of the RA V SOP.

9.5.3 The PIMS vision is for 'National Meteorological Services (NMSs) of the Pacific Island Countries and Territories (PICTs) are able to provide relevant weather and climate services to their people to make informed decisions for their safety, socio-economic wellbeing and prosperity, and sustainable livelihoods'. Its overall objective is to provide a strategic framework for building and strengthening the capacity of NMSs, either through direct national support or through coordinated, coherent, and sustained regional support. The PIMS focuses on the following priority areas for action:

- (a) Improved aviation services;
- (b) Improved end-to-end Multi-Hazard Early Warning Systems (MHEWS); and
- (c) Enhanced development of climate services.

9.5.4 The PIMS is finalized in March 2012, and the PMC through its Chair has endorsed it. It is now will then be presented to, and launched during, the 23rd SPREP Officials and Ministers of Environment Meeting, in Noumea, New Caledonia, 30 August to 7 September 2012. A copy of the PIMS 2012-2021 can access via the web link <http://www.sprep.org/attachments/Publications/PacificIslandsMeteorologicalStrategy.pdf>.

9.6 Conclusion

9.6.1 Some of the 1PMC recommendations are addressed directly to, and are also focus on current priorities of the WMO Secretariat, as presented below. It is important that the WMO Secretariat addresses these recommendations and report on progress to the 2nd session of the PMC, in 2013.

- (a) The WMO Secretariat prepares an information paper outlining its key achievements in the region in the past 10 years and highlights the benefits that have accrued to the region as a result. It was noted that WMO visibility has not been high enough and that its support for NMHSs has not been recognized by some partners and, further support in particular from RA V is required;
- (b) The WMO Secretariat is requested to increase resources of its Office for the South-West Pacific, based in Apia, and to provide clear communication about roles and

responsibilities for the Officer, and the Assistant as proposed at the RA V sessions. The respective roles in coordination of the WMO and SPREP Secretariats must be communicated to the PMC for their input and guidance. They also called for more information on the coordination efforts between the WMO Headquarters, the WMO Office for the South-West Pacific and the NMHSs;

- (c) A Task Team is needed to evaluate the capabilities and make recommendations on priorities that have to be a part of the WMO RA V Working Group on Infrastructure, and be part of the Operating Plan for the WMO RA V TCC.
- (d) Investigation is required on organizational structures and functions at the regional level to support climate services consistent with the GFCS, to minimize gaps and overlaps, and to align climate service activities that already exist in the region. The investigation should consider geographic, sectoral and functional core capabilities (e.g., observations and data management) as a basis for supporting the effective delivery of climate products and services.

9.6.2 The 2nd session of the PMC, the Pacific Climate Change Roundtable (PCCRT) and the Pacific Platform for Disaster Risk Management Platform are tentatively scheduled from 15 to 19 July 2013, in the Federated States of Micronesia.

Terms of Reference

For the Pacific METEOROLOGICAL Council

1. Introduction

1.1. The Pacific Meteorological Council (PMC) is a specialized subsidiary body of the SPREP Meeting, established at the 14RMSD meeting in Majuro, RMI, to facilitate and coordinate the scientific and technical programme and activities of the Regional Meteorological Services. The PMC replaces the RMSD and provides policy relevant advice to the SPREP Meeting on the needs and priorities of SPREP member countries and territories in relation to meteorology (weather and climate) and related fields. These Terms of Reference describe the vision, objectives, principles, core roles and functions of the PMC, including its governance and administrative arrangements within the SPREP framework.

2. Vision

2.1 National Meteorological Services (NMHSs) of the PICTs are able to provide appropriate weather, climate, and early warning services to their nations and communities to safeguard life and property and contributing to national development programmes through sustained observing systems, telecommunications, and data processing and management systems serving end users.

3. Objective

3.1. The PMC will work to strengthen the capacity of the National Meteorological Services thus contributing to maximization of the safety, well-being, and development aspirations of the people of the Pacific with respect to provision of weather, climate, and related development services¹¹ by:

- (a) Providing an open forum for members to discuss and collaborate on issues related to the advancement of meteorological services in the Pacific;
- (b) Building on mutual and complementary strengths in order to develop innovative approaches that support the sustained achievement of agreed national and regional development goals;
- (c) Collaborating with partner organizations and agencies in related sectors.

3.2. This Terms of Reference is a tool to guide the Pacific Meteorological Council as to PMC membership, governance, meetings and principles of engagement. and provide record of how Members of the PMC would like to work together, with a view to achieving a common understanding on its role, capacity and framework of operation.

4. Membership

4.1 The PMC comprises the Directors/heads of Meteorological Services of SPREP Members,

4.2 The PMC will actively engage with relevant CROP agencies, international agencies, development partners and donors. Representatives of these organizations shall be invited to PMC meetings to participate in and contribute to any PMC deliberations related to mutual and complementary fields of activity.

5. Governance

1. ¹The PMC and the nature of its linkages to fields of disaster management, climate change, hydrology, and others will require that its Members shall coordinate their work mutually to facilitate enhanced effectiveness of services nationally and regionally.

2.

5.1 The SPREP Rules and Procedures will apply to the PMC.

5.2 The Pacific Meteorological Council is established by endorsement of the 21st SPREP Meeting, Madang, Papua New Guinea, 2010. It is designated as a subsidiary body of the SPREP Meeting, operating within the bounds of the legal framework of the SPREP Agreement.

5.3 The PMC shall make reports to the SPREP Meeting on decisions and resolutions and other relevant outcomes from its meetings.

5.4 Secretariat support for the PMC shall be provided by the SPREP Secretariat. This includes planning and logistical support for PMC meetings and for managing documentation and procedures relating to planning and administration.

6. Meetings

6.1 The PMC will generally meet biennially, but may meet as required intersessionally.

6.2 At the commencement of each meeting of the PMC, a Chair and Vice-Chair shall be appointed. The Chair and Vice-Chair shall serve intersessionally, working closely with the Secretariat to ensure that decisions agreed by the Council are acted upon, and that adequate preparations are made for forthcoming Council meetings, including the timely preparation of relevant working papers and reports.

6.3 Secretariat support to the meetings of the PMC shall be provided by the SPREP Secretariat as per

6.4 The PMC and Secretariats of the SPREP and WMO shall also seek opportunities for intersessional meetings where these present themselves and as when such meetings may be required.

7. Roles and Functions of the PMC

7.1 The PMC shall:

- (a) Provide an open forum for its members to discuss and collaborate on the needs of Pacific Island Countries and Territories with respect to weather and climate services, and related issues;
- (b) Promote capacity development within the region, focused on improving members' capability to provide accurate, timely and reliable weather forecasts, and warnings of severe weather, climate outlooks and scenarios, and associated hazards;
- (c) Develop strategies with associated goals and targets to support the advancement of meteorological and related services in the Pacific, in collaboration with WMO and relevant partner organizations;
- (d) Oversee progress in the implementation of strategies to support the advancement of meteorological and related services in the Pacific.
- (e) Provide guidance to Members and the SPREP Secretariat and partner organizations with respect to programs related to weather, climate and associated environmental matters in the Pacific
- (f) Collaborate with the Pacific Meteorological Desk Partnership on the implementation activities and priorities of Members, and contribute to the monitoring and evaluation of the Pacific Meteorological Desk Partnership.

- (g) Report regularly on the activities of the NMS so as to assist the advancements of meteorological services in the Pacific.

8. Principles of Engagement

8.1. The PMC subscribes to the following key principles:

- (a) *An open, trusting and safe environment:* The Pacific Meteorological Council will work to enhance transparency and accountability of its decision making process, through open dialogue and constructive engagement among the Council's members.
- (b) *Participatory approach:* The Pacific Meteorological Council will promote a participatory and inclusive environment incorporating gender equity which will continue to strengthen its participatory approach to decision-making. Decisions will be made by consensus and through a consultative process. Where this should prove unfeasible, the Chair will make a decision taking into account the majority of the views expressed by the Council
- (c) *Teamwork:* The Pacific Meteorological Council's members will create an environment to work collaboratively to achieve better results, learn from one another, and ensure the enhanced delivery of measurable results in support of the national, regional and international development agenda.
- (d) *Coherence:* Within the context on each NMHS objectives, deliverables and performance indicators the Council will proactively work to identify opportunities and synergies for joint regional approach.
- (e) *Respect for diversity:* The Pacific Meteorological Council will invest the necessary time and effort to understand each of its Member national goals, objectives, deliverables and performance indicators, and recognize and appreciate the cultural diversity among the Members program modalities, operational activities and capacities.
- (f) *Creativity and innovation:* The Pacific Meteorological Council will explore means of improving work towards achieving the desired outcomes for all NMSs in the Pacific region to being able to provide all relevant and appropriate meteorological services to their nations, and bringing them closer to their clients and partners.
- (g) *Accountability for results:* National ownership and leadership will drive the renewed focus on creativity and innovation. The Pacific Meteorological Council will be guided, to the extent possible by the national governments and authorities to determine the most appropriate actions to be taken both programmatically and operationally.
- (h) *Build on existing capacities:* Rather than creating new institutional units, the Pacific Meteorological Council will work with the capacities available within SPREP and WMO and NMSs to drive weather climate, and related fields in the Pacific region.

9. Update of the Terms of Reference

9.1. The Pacific Meteorological Council may update this Terms of Reference as the need arises.

OUTCOMES OF THE 14TH RMSD AND 1ST SESSION OF PMC

The RMSD convened for its 14th session at the International Conference Centre in Majuro, Republic of the Marshall Islands from 9-12th August 2011. It was preceded by a Pacific Regional Meteorological Services Directors Workshop in Support of Climate Adaptation Planning in the Pacific Islands on 8th August. The objectives of the meeting were for participants to formulate and establish a clear understanding of the Pacific Meteorology Council (since renamed the Pacific Meteorological Council, PMC), the Pacific Desk Partnership (since renamed the Pacific Meteorological Desk Partnership) concept, and the Strategic Operational Plan for Meteorology in the Pacific (2012-2015). A total of 54 participants attended the meeting. Primarily the participants were Meteorological Service Directors and representatives from American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, New Caledonia, New Zealand, Palau, Papua New Guinea, Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, United States of America and Vanuatu. Representatives of NOAA, NIWA, the Finnish Meteorological Institute, SPREP, SPC, WMO, UNESCO-IOC, Institute for Global Environmental Services, University of Oklahoma, Pacific ENSO Applications Climate (PEAC) Centre (collocated at the University of Hawaii and the University of Guam) were also present.

Dr. Netatua Pelesikoti, Pacific Futures Programme Manager, speaking on behalf of the SPREP Director, noted that the RMSD was launching a new era in the field of meteorology in the region. Based on the outcomes of the review of the regional Meteorological strategy (2010) and bearing in mind the decisions of the 21st SPREP Meeting in 2010, she remarked that this 14RMSD meeting would be launching the PMC a way forward on a new strategic plan for developing and supporting meteorology in the region, and the Pacific Meteorological Desk Partnership. She also outlined the approach that SPREP is seeking to take on climate change adaptation and disaster risk reduction and how meteorological services underpin those efforts. The host country aptly demonstrates the sheer vulnerability of atoll and small island countries. She emphasized that there is now a chance of meaningful change to assist Pacific meteorological services to provide much needed assistance for the enhancement of livelihoods of the peoples of the region.

The Honourable Ruben Zackhras, Minister in Assistance to the President of RMI, thanked the RMSD for agreeing to meet in RMI. He welcomed the participants on behalf of the Government, and noted that the Pacific is a major driver of the global climate system, while on the other hand the islands are the smallest and most vulnerable to climate change. He stressed the importance of the role of the Meteorological services in providing advice and assistance to policy and decision makers.

The RMSD elected Reginald White of Marshall Islands as Chair of the 14th RMSD and Salesa Kaniaha of Vanuatu as Vice-Chair by acclamation.

The RMSD:

Organizational matters and national reporting

1. Agreed that the future host country for the PMC would no longer be automatically tied to the country from which the Vice-Chair is elected as consideration is being made for convening the next meeting back to back or in parallel with other relevant regional forums such as the Pacific Climate Change Roundtable and the Pacific Platform for Disaster Risk Management;
2. Noted the progress made at the regional level in relation to the implementation of decisions and recommendations arising from the 13th RMSD and commended the Secretariat and partners for their support to national and regional meteorology support activities in the Pacific Island Countries and Territories;
3. Acknowledged the reports by National Meteorological Service Directors for the richness of their contributions to the regional knowledge base on best practices, challenges and future directions for cooperation in the region;
4. Appreciated the valuable contributions to improve services and observations infrastructure by the many international and regional partners in support of Meteorological Services in the region;
5. Noted that certain issues raised in country presentations required further discussion during the meeting, and these included ICAO requirements for nuclear dispersion products and baseline measurements to support their development, space based information such as WIS and WIGOS, and its application in the region. A number of announcements of planned training opportunities were made in the presentations;
6. Agreed that the key developments presented by the National Meteorological Service Directors are encouraging steps in the right direction, but noted that there are still many challenges. In particular, capacity and funding issues remain key to the further development and enhancement of Meteorological Services in the region. There were valuable lessons learned from the presentations by National Meteorological Service Directors such as the experience of those who have been able to engage with other sectors in order to secure more resources, such as with adaptation projects in the water and climate change sectors, and encouraged others to do the same;
7. Recognized that organizational restructuring in some countries has resulted in greater general capacity which has enabled those NMS to be more effective in providing services and working across other sectors, in particular in disaster risk reduction.
8. Also recognized that a number of countries have been affected by recent tsunami events and as a result numerous Meteorological Services are reconsidering their mandates to tackle this, including capacity needs. In this regard, NMS articulated the need for assistance with these efforts including policy and technical support.

16th WMO Congress

9. Welcomed the outcomes of the 16th WMO Congress (Cg-XVI), in particular, the new WMO Strategic Plan, 2012-2015 and the WMO Regional Association V (RA V) Strategic Operational Plan, 2012-2015, and took note of progress so far in the implementation of those decisions. WMO requested inputs from Meteorological Service Directors for the regional operationalization of the Strategic Plans. The meeting endorsed the priority areas for WMO and RA V, as agreed to under both Plans, namely; Global Framework for Climate Services (GFCS), Sustainable aviation services, Capacity Building for developing and Least Developed Countries (LDCs), Implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information system (WIS), and Disaster Risk Reduction (DRR).
10. Reiterated the need to have representation from the National Meteorological Service on national delegations to key global conferences that will consider the sustainability of Meteorological Services, such as the UNFCCC Conference of the Parties at its 2011 and 2012 sessions and Rio+20. It was also noted that such participation should be considered in the regional preparatory

processes for these meetings. National Meteorological Service Directors also agreed to make such representation requests through their own national decision making processes;

11. Noted the importance of highlighting the linkages between the global and the regional strategies for enhancing meteorological services;

Pacific Meteorological Strategic plan

12. Agreed that there was general agreement that the strategic plan needed to be simplified to clearly articulate scope, audience, objectives and application;

13. Noted that there was general agreement to ensure that the plan is generic to be used by non-meteorological professionals, policy makers and the wider community;

14. noted also that there was general agreement that the plan should be country driven and reflect national NMS priorities;

15. Acknowledged the links to other regional strategies and frameworks;

16. agreed on the need for a strong governance structure;

17. Noted the proposal to task the Secretariat to commission a Technical expert to further consultations and prepare a re-draft of the strategic plan for consideration by early 2012;

18. Noted the need for specific references to national priorities on drought.

Road map towards an integrated regional strategy for DRM and CCA and Mitigation by 2015.

19. Confirmed their support for a joint meeting of the PCCR, DRM communities and the Regional Meteorological Services Directors in 2013;

20. Agreed on the need to ensure input from the meteorological community into the CCA/CCM & DRM Technical Working group;

21. Endorsed in principle the roadmap.

Climate Services Workshop

22. A presentation was made regarding the workshop on Climate Services held on Monday 8th August 2011. A number of recommendations were put forward for consideration by PMC. These have been attached as Annex 1 and were adopted by the PMC.

RANET and Telecommunications Meeting

23. A presentation was made regarding the meeting on RANET and Telecommunications held on Saturday 6th August 2011. A number of recommendations were put forward for consideration by PMC, and presented by the Chair of this meeting, Mr. Edward Young (NOAA). These have been attached as Annex 2 and were adopted by the PMC.

Pacific-Finland Project

24. Acknowledged the successes to date of the project and commended the FMI and the Government of Finland for their excellent efforts in working with the Pacific Island Countries and SPREP on this project. They support the continuation of this partnership and agreed that the next phase SPREP-Finland (through its MFA) Project Document be circulated for review and comments to the Met Directors;

25. Noted that, since 2002, the U.S. has funded the PI-GCOS position at SPREP; however, instead of being dedicated to coordinating and moving forward with the PI-GCOS program, the PI-GCOS role has been used primarily to fulfil the duties of the long-dormant, but clearly required, SPREP Meteorology and Climatology Officer (MCO). An example of this is the ongoing use of the PI-GCOS Officer to administer the RMSD (and now PMC) process. Use of the PI-GCOS position in

this way will continue to be an obstacle to the effective and sustainable advancement of meteorological and climate services in the region;

26. Emphasized the importance of building in the costs of on-going maintenance to ensure the sustainability of any new equipment purchased by projects;

27. Noted the opportunity for this project to build upon the existing RANET work;

28. Agreed on the need to take a multi donor approach to this project, and invited additional partners to provide support;

29. Emphasized that the project should take into account other projects happening in the region, the smallness of NMHS and their capacity constraints, and take a holistic regional approach;

30. Noted the role of the Pacific Desk Partnership as an important tool for coordinating with donors to assist in the leverage of additional partnership support and ensure the sustainability of projects.

Pacific Tsunami Warning Centre

31. Presentations were made by NOAA and a number of issues raised were noted by the participants as requiring further consideration, such as guidance products, Pacific Wave Exercise 2011, updating of contact points in-country etc.

RANET

32. A presentation was made regarding the workshop on RANET held on Saturday 6th August 2011. A number of recommendations were put forward for consideration by RMSD. These have been attached as Annex 2 and were adopted by the PMC.

Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project

33. Noted that there was a request to extend the scope of this project to include tsunamis, but as this is currently outside the scope of this initial phase of the project it will not be considered at this time. Furthermore, some concern was expressed about the effectiveness of the DRR aspect of the project and that more attention needed to be given to engaging with, and meeting the needs, of the DRR community.

COSPPac

34. Welcomed the proposal to include two representatives of Meteorological Directors into the Steering Committee of the COSPPac initiative to be nominated by the PMC, and recommended that the representative of the Pacific Desk Partnership also be included as a member of the Steering Committee;

35. Requested that a copy of the draft design for the COSPPac Initiative be shared with Meteorological Directors, regional partners and relevant stakeholders, before it is finalised;

36. Noted the need to include national and regional organisations as partners in the delivery of training initiatives in the region, and to ensure the sustainability of such skill transfer beyond the life cycle of projects/initiatives.

Pacific Australia Climate Change Science and Adaptation Programme (PACCSAP).

37. Noted the need for climate initiatives to engage with the Pacific Desk Partnership and coordinate with other partners to be taken into account in the development of PACCSAP.

The RMSD recommended:

a) That the Secretariat and partners be requested to further enhance their support with more targeted efforts in relation to outcomes and decisions of meetings of the RMSD.

b) That a regularly updated events calendar be created and disseminated by the Secretariat in cooperation with partner organizations, particularly WMO, and that the announced new applications and technologies by several partners should be made available by email distribution and websites.

c) That Meteorological Service Directors should become engaged in other national climate change initiatives, in particular for adaptation in the water and food security sectors as well as for mitigation resource analysis, in order to contribute expertise and to benefit from these new funding opportunities.

d) The Secretariat be requested to provide regular updates on developments relating to staffing support for the Pacific Desk, and to enhance the visibility of its partnerships with SPC (in particular its SOPAC Division).

e) The Secretariat be requested to synthesize the specific needs identified by National Meteorological Service Directors in their presentations and country papers and to regularly update these for information and dissemination.

f) That the WMO Secretariat prepare an information paper outlining its key achievements in the region in the past 10 years and highlight the benefits that have accrued to the region as a result. It was noted that WMO visibility has not been high enough and that its support for National Meteorological Services has not been recognized by some partners, and further support in particular from RA V was required.

g) That WMO Secretariat be requested to strengthen resources of the sub-regional office and provide clear communication about roles and responsibilities for the officer and the assistant proposed at the RA V meeting. The respective roles in coordination of the WMO and SPREP Secretariats must be communicated to the RMSD/PMC for their input and guidance. They also called for more information on the coordination efforts between WMO, its sub- regional office and national meteorological services;

h) That the Secretariat in consultation with RMSD and partners develop a Terms of Reference for a consultancy to further refine and develop the draft strategic plan, through consultation with RMSD, partners and regional organizations and other stakeholders as far as possible, and requested the Secretariat to report back to the RMSD in early 2012 with the outcome of that work.

i) That Pacific Island Countries and Territories (PICTs) be encouraged to participate in the work of the IOC Tsunami Early Warning System working groups. PTWC requested inputs and participation from the RMSD:

- review of new warning products
- participation in the November 9-10 PACWAVE focused on local events
- designation and regular updates of tsunami focal points who will receive tsunami early warning messages and the method of delivery and dissemination noting the prohibitive costs of the fax method and the need for costs efficiency

j) To support a continuation of the partnership between the FMI and the Government of Finland, SPREP and PICTs.

k) That national meteorological directors be urged to provide comments on the development of the new FMI project, and requested the Secretariat to ensure that there would be sufficient personnel available for implementing the new project without detriment to other programme areas, and called for active engagement between Directors, partners and SPREP management in this regard.

l) That in developing new projects and programmes for the region, that regional met service directors are consulted in relation the national resources and capacity to respond to project needs and request partners to be cognizant of national mandates that may inhibit their full participation, requiring alignment with national strategic and operational plans.

m) That the role of the Pacific Desk Partnership, should involve coordination with donors to ensure the sustainability of projects and assist in the leverage of additional partnership support.

n) That in relation to the DRM/CCA roadmap agreed to provide input to SPREP/SPC(SOPAC Division) by 31/8/2011

The Pacific Meteorological Council

1. The Pacific Meteorological Council (PMC) was formally convened on the 12th of August, 2011, and upon nomination by Tonga and USA elected Reginald White (RMI) as Chair, and Salesa Kaniaha (Vanuatu) as Vice-Chair.
2. The PMC endorsed the RMSD meeting outcomes, including the resolution and the terms of reference for the PMC.
3. The PMC noted the process for the completion of the Pacific Meteorological Strategic Plan.
4. The PMC agreed on the need for active participation in the Pacific Wave 11 exercise and requested National Meteorological Service Directors to follow up with their national tsunami focal points.
5. The PMC noted the importance of having in-country capacity building and training for tsunami preparedness and early warning systems and called on partners to give consideration to such requests from National Meteorological Services.
6. All PMC Members and several partner organizations offered their thanks to the Chair and the Vice-Chair for their able handling of the meeting, expressed their gratitude to the Government and People of the Republic of the Marshall Islands for the excellent hosting facilities and hospitality, and thanked the Secretariat for organizing the meeting.
7. The Chair offered his thanks to the participants and to the partners who had funded the RMSD and the PMC, and officially closed the 1st meeting of the PMC.

ANNEX 1

Report on the Outcomes of the Pacific Regional Meteorological Services Directors Workshop in Support of Climate Adaptation Planning in the Pacific Islands - Majuro, Marshall Islands - August 8, 2011

The September 2009 World Climate Conference-3 (WCC-3) Declaration decided to establish a Global Framework for Climate Services (GFCS) to strengthen the production, availability, delivery, and application of science-based climate prediction and services. The GFCS with the following components was endorsed by the 16th WMO Congress held in Geneva from 31 May to 3 June 2011:

- The User Interface Platform
- The Climate Services Information system
- The Observations and Monitoring component
- The Research, Modeling, and Prediction component
- The Capacity Building component

Many in the Pacific Islands region recognize the importance of providing climate services to their communities to achieve sustainable development. Coupled with this understanding, and in response to the outcomes of the WCC-3, this “Pacific Regional Meteorological Services Directors Workshop in Support of Climate Adaptation Planning in the Pacific Islands” was organized with the following theme:

“Global Framework for Climate Services (GFCS): The role of Pacific Islands National Meteorological Services (NMSs) and development partners in implementing the GFCS to support National Programs of Action for climate change adaptation in the Pacific”

This workshop report, for delivery ahead of the 2011 APEC Leaders meeting in November in Hawaii, summarizes the outcomes of the Pacific Regional Meteorological Services Directors Workshop in Support of Climate Adaptation Planning in the Pacific Islands, held in Majuro, Republic of the Marshall Islands, on August 8, 2011.

The objectives of the workshop included assessing the role of Pacific Islands NMSs and development partners in implementing the GFCS; improving technical and substantive engagement in regional efforts related to climate services and promoting expert and practitioner-level relationships at the technical level; and identifying mechanisms to incorporate applied science and research to support climate change adaptation activities.

Outcomes of the workshop discussions fall into six general areas:

- 1) The role of Pacific Islands NMSs in implementing the GFCS;
- 2) Engagement in regional efforts related to climate services;
- 3) Climate data exchange and WMO Resolution 40;
- 4) Linking climate change adaptation with disaster risk reduction and sustainable development activities;
- 5) Building the capacity of institutions, infrastructure and human resources; and
- 6) Integrating regional climate-related web-portals for all users.

1) The role of the Pacific Islands NMSs in implementing the GFCS

NMS directors and development partners identified NMSs as the linkage between users and providers. NMSs provide a vital role in delivery of climate products and services to the people that need it. Examples of effective communication of climate-related data, information, and services were shown from Samoa, Vanuatu and Kiribati, consistent with the GFCS components and structure.

It was recognized that:

- Community consultation is a key element of effective delivery and adoption of climate products and services. An on-going and sustained evaluation process is needed to ensure that climate information is used effectively for decision-making.
- Coordination between NMSs and other sector-based agencies, institutions, national climate change committees, and organizations is vital to ensure data and information is available and is tailored to the users needs in terms of content, format, and timing.
- Sustained observations and monitoring that support weather services are the foundation for the development of data and information of a quality needed to support climate services. Dedicated resources are needed in NMSs to support continued sustainable data monitoring, coordinated data management and stewardship. Adherence to WMO standards for the collection and analysis of information should be encouraged across the region as a means to ensure quality and consistency of data from multiple sources.

It was further recognized that some Pacific Island nations have limited capacity for delivering climate services. There is a need for capacity mapping across the region to identify where additional resources and support are needed to raise all NMSs to a comparable level of effective climate service delivery. Such information could be used to identify potential 2012-2015 fast-track projects under the GFCS.

2) Engagement in regional efforts related to climate services

NMS directors and development partners recommended that further investigation is required on organizational structures and functions at the regional level to support climate services consistent with the GFCS, to minimize gaps and overlaps, and to align climate service activities that already exist in the region. The investigation should consider geographic, sectoral and functional core capabilities (e.g., observations and data management) as a basis for supporting the effective delivery of climate products and services.

This recommendation is consistent with WMO RA V Resolution 2 (XV-RA V) "Establishment of Regional Climate Centres" which calls for an assessment of current RCC functions that occur within the region and a subsequent gap analysis.

Good examples were demonstrated of cross-region collaboration, research and integrated delivery of climate services that already exist within and between agencies, institutions, and organizations (including NMSs) in the region, conducting activities such as: PI-GCOS, PI-GOOS, Pacific HYCOS, PI-CPP, APAN, SPSLCMP, PCCSP, PASAP, CLIMRAP, METPI, CliDEsc, PaCIS, PEAC, PICCC, PRIMO, Pacific RISA, and PCCR, amongst others.

3) Climate data exchange and WMO Resolution 40

NMS directors discussed issues surrounding data sharing across and outside of the region as it relates to the GFCS and relating to the provision of a solid basis for climate products and services in the region. NMS directors identified the following issues:

- Benefits of data sharing need to be returned to the NMSs;
- Ensure high quality data are available for sharing;
- Lack of resources to respond to data requests;
- The Intellectual Property of the data needs to be recognized and preserved;
- Costs of data collection, management and delivery need to be recovered;
- Sovereignty of data needs to be recognized;
- National policies and legislation need to be considered;
- Capacity for data sharing varies across the region;
- Ownership of data needs to be respected;
- Leverage for obtaining funds should be retained; and
- Revenue generation from data provision should not be compromised.

NMS directors particularly noted the need for re-investment locally to support infrastructure and data management systems. They also noted that MOU/MOAs represent a practical mechanism for data exchange, yet these mechanisms are not necessarily the most effective tools.

NMS directors and development partners recommended that further investigation is required to address the above issues related to data sharing.

4) Linking climate change adaptation with disaster risk reduction and sustainable development activities

NMS directors and development partners highlighted the need to link climate change adaptation (CCA) activities with disaster risk reduction (DRR) and sustainable development (SD) initiatives. Such linkages provide opportunities to support continued sustainable data monitoring, coordinated data management and ongoing provision of climate products and services. They also highlighted the need to acknowledge existing and on-going partnerships within and outside of the region between donors, agencies, and communities.

NMS directors and development partners recommended that future RMSD/PMC meetings be linked with those of the Pacific Platform for disaster risk management and the Pacific Climate Change Roundtable.

5) Building the capacity of institutions, infrastructure and human resources

NMS directors and development partners emphasized the need to support systematic development of the necessary institutions, infrastructure and human resources to provide effective climate services. Areas identified where capacity building is needed included:

- Coordinated data rescue, digitization and management;
- Sustainable observations, monitoring and communications equipment meeting WMO standards and related physical infrastructure;

- Additional staff and training to enable the continuing development and delivery of local products and services;
- Effective interaction through dialogue and workshops with sector representatives and other users to inform product and service requirements; and
- Web-based and other IT systems and tools to enhance the access and use of data and products.

6) Integrated regional climate-related web-portals for all users

NMS directors and development partners recommended the coordination of web-based portals, clearing houses etc. aimed at the discovery of and access to regional information on climate data, activities, products and research. The aim of this coordination is to minimize overlaps, identify gaps, and align current and future dissemination of information from projects within the region.

There was also recognition that web-based platforms should not be the sole mechanism for information dissemination due to poor internet access in some countries within the region.

**Resolution on the Outcomes of the Pacific Regional Meteorological Services Directors
Workshop in Support of Climate Adaptation Planning in the Pacific Islands - Majuro,
Marshall Islands - August 8, 2011**

**14th Meeting of Regional Meteorological Services Directors Meeting - Majuro, Marshall Islands - 9-12
August 2011**

Recognizing that the climate is changing and that the Pacific Islands are among the most vulnerable to the impacts of climate change.

Recognizing that the provision of climate services is critical to the sustainable development of Pacific Island countries.

Recalling that the September 2009 World Climate Conference-3 (WCC-3) Declaration decided to establish a framework to strengthen the production, availability, delivery, and application of science-based climate prediction and services.

Recalling that the Global Framework for Climate Services (GFCS) with the following components was endorsed by the 16th WMO Congress held in Geneva from 31 May to 3 June 2011: The User Interface Platform; The Climate Services Information system; The Observations and Monitoring component; The Research, Modeling, and Prediction component; and The Capacity Building component.

Reflecting on the outcomes of the "Pacific Regional Meteorological Services Directors Workshop in Support of Climate Adaptation Planning in the Pacific Islands" (the Workshop) held in Majuro, Marshall Islands on August 8, 2011.

Acknowledging and appreciating the assistance of agency, institution and organization-based development partners operating in the region.

Requests the RA V Meteorological Service Directors adopt the findings and recommendations (listed below) of the Report on the outcomes of the Workshop:

Recommendation 1:

NMS directors and development partners recommended that further investigation is required on organizational structures and functions at the regional level to support climate services consistent with the GFCS, to minimize gaps and overlaps, and to align climate service activities that already exist in the region. The investigation should consider geographic, sectoral and functional core capabilities (e.g., observations and data management) as a basis for supporting the effective delivery of climate products and services.

Recommendation 2:

NMS directors and development partners recommended that further investigation is required to address identified issues related to data sharing.

Recommendation 3:

NMS directors and development partners recommended that future RMSD/PMC meetings be linked with those of the Pacific Platform for disaster risk management and the Pacific Climate Change Roundtable.

Recommendation 4:

NMS directors and development partners recommended the coordination of web-based portals, clearing houses etc. aimed at the discovery of and access to regional information on climate data, activities, products and research.

Annex 2

Recommendations of the RANET Telecommunications Meeting

14RMSD, Saturday 6 August 2011, Malele Conference Room, Marshall Islands Resort.

The RANET Telecommunications Meeting was held on 6 August, at the Marshall Islands Resort, and drew the participation of Directors of Pacific National Meteorological Services (NMS), representatives of technical agencies from the US, Australia, and New Zealand as well as representatives from CROP and other agencies in the region. The meeting dealt primarily with the telecommunications issues and development work recently undertaken in the past two years since the previous meeting at the 13th Regional Meteorological Services Directors meeting in 2009. It also spent time discussing the planned work on RANET and telecommunications in the next couple of years. Discussion was had on several aspects of the progress of the implementation of several works in the past year including upcoming works. This brief report presents the key recommendations from this meeting for consideration of the Directors at their 14RMSD meeting. Mr. Edward Young, Deputy Director of NOAA Pacific Region Headquarters, chaired and facilitated this meeting.

Recommendation 2011-1 RANET systems needs more formalized and clear guidance with a thrust towards recommendations for new technologies, expanding past current RANET systems into different and newer forms of technology.

Recommendation 2011-2 Other avenues should be investigated to improve meteorological communications networks for Met Service Offices.

Recommendation 2011-3 A task team is needed to evaluate the capabilities and make recommendations on priorities, that have to be a part of the WMO RA V Working Group on Infrastructure, and be part of the Operating Plan for the WMO RA V Typhoon Committee.

Recommendation 2011-4 RMSD meeting should its priorities are reflected in the Pacific Islands Meteorological Strategic Plan, and how to evolve these backup communications systems. The strategy should address questions about the direction and need for connectivity to regional networks, national, and local networks, and reduce overlapping programs where possible

Recommendation 2011-5 Plans for regional systems that support national and local communications needs should be better linked to national development and assistance plans, which is where AID agencies are looking to fund national priorities. Expressions of needs should come from Pacific Islands Countries and Territories (PICTs).

Recommendation 2011-6 Closer follow-up for ongoing efforts to strengthen tsunamis capacity building efforts between the national tsunami warning entity and the NDMO is needed.

Recommendation 2011-7 A small team be tasked with working with Met Service Directors to assess their technical maintenance training needs for the communications systems they utilize, and that the curriculum be identified to match those identified priorities and technical competencies.

Recommendation 2011-8 Recommended HF communications be included as part of the Pacific Islands Meteorological Strategic Plan.

Recommendation 2011-9 Recommend SPREP work with SOPAC to review its capability to provide technical training and instrument calibration support to the Met Service community, and report back its findings.

Recommendation 2011-10 Ensure coordination of plans to deploy RapidCast receiving systems with Met Offices occurs, instruction manuals are received prior to deployment, and on-site training plans are confirmed with receiving Met Service Offices.

Recommendation 2011-11 Endorsed a key outcome on Early Warning Systems from the 3rd Session of the Pacific Platform for Disaster Risk Management, held August 1-5, 2011, in Auckland, New Zealand, that recommends the establishment of a "Pacific regional early warning working group to coordinate and complement the efforts of other working groups and Pacific Island Countries and Territories to assist in the development of early warning systems both a regional and national levels and to establish clear standard operating procedures for relevant agencies, as well as simplify and standardize early warning messages and alerts for inclusion in ongoing education and public awareness programmes".

Recommendation 2011-12 A copy of the draft installation schedule for installing EMWIN and RapidCast systems be made available for review and endorsement.

Recommendation 2011-13 Ensure tsunami regional and national products and warning messages are placed on EMWIN, and insure that resources are identified to sustain the replacement EMWIN system once it has been re-deployed to the NDMOs and refreshed at the Met Service Offices.

Recommendation 2011-14 Review the need for EMWIN type systems beyond the national Met and Disaster Management Offices, consistent with national action plans.

Recommendation 2011-15 Re-circulate the Communications Survey of 2010 to Met Service Directors, and urge them to complete the survey, so the results can be utilized to identify national and regional priorities for communications requirements.

Recommendation 2011-16 Agreed to survey Met Service Directors on their priorities for 3 new products needed to be uploaded to the new GOES-West broadcast.

Recommendation 2011-17 Recommended a broader approach for coordination between SPREP, SOPAC Division, and SPC, utilizing the results of the Pacific Communications Survey and the SOPAC Tsunami Warning and Mitigation Systems.

Recommendation 2011-18 Recommended that Met Service Directors review the current Tsunami SMS Distribution List and coordinate corrections with the International Tsunami Information Center (ITIC) and UNESCO/IOC Regional Officer in Suva, Fiji.

Recommendation 2011-19 A task team should be appointed to work out protocols and standard operating procedures for use of the RANET Chatty Beetles among participating agencies.

PACIFIC METEOROLOGICAL DESK PARTNERSHIP

Pacific Meteorological Desk Partnership: a regional coordinated response to meeting weather and climate services development in the Pacific Islands region.

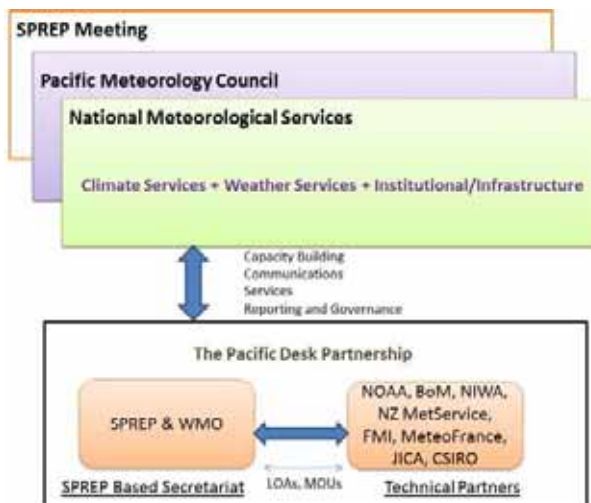
Background

SPREP Officials during their 21st 2010 requested the Secretariat to form a Pacific Meteorological Desk Partnership (PMDP) based on the recommendations of the Report on Review of Regional Meteorological Services in the Pacific. In their 22nd Meeting in 2011, SPREP Officials endorsed a new Pacific Island regional mechanism urgently needed to develop capacity and advance the sustainability of weather and climate services in Pacific Island Countries and Territories (PICTs) region.

Design and arrangements

PMDP will serve as the regional weather and climate services coordination mechanism managed by SPREP Secretariat to deliver a regionally coordinated effort to service Pacific National Meteorological Services (NMSs) needs in the area of weather and climate services. PMDP comprises of two core components;

- i. a Secretariat based component - an arrangement of Secretariat resources (staffing) and dedicated PMSDP resources .
- ii. a Partners' Consortium component - the arrangement of technical partner agencies to PMDP and includes the organization of their related activities and outputs (note that donor partners are included elsewhere in a governance role rather than in this arrangement).



Goal and Objectives

The goal of PMDP is to *improve regional coordination and advancing and sustaining the delivery of weather, climate and related services* for the protection of life and property of Pacific island communities. Other core objectives are:

- coordination of PICTs national and regional priority needs with regard to weather and climate services development;
- joint planning and design of technical projects and programmes for delivery by technical agencies to build on complementation and replication of efforts, and minimizing inefficient resource use; and
- governance relationship through the Pacific Meteorological Council (PMC) and implementation guidance through use of Pacific Strategic Action Plan for Meteorology 2012 – 2015.

Operational Overview

PMDP is made up of two core components as described below. Both components play specific roles and interact closely together to provide combined efforts and outputs as a Partnership function.

i. The Apia Secretariat Component

This component is made up of the Apia-based Secretariats of SPREP and the WMO working in close collaboration, and represents two key coordination elements:

- Overall coordination and leadership of PMDP function in terms of linking national and regional priority needs; and
- Overall reporting responsibility of PMDP function to SPREP Meeting through PMC and to WMO constituent bodies through WMO Secretariat.

ii. The Partners Component

The Partners Component refers to the collective of technical expert institutions that will form the key technical expertise that will be delivered to build the capacity of Pacific NMS. Key SPREP partners institutions include the US NOAA, Australian Bureau of Meteorology, New Zealand MetService and NIWA, JICA among others. The Partners component will look to deliver focused capacity building in areas such as:

- Meteorologist, climatologist and technician training;
- End user services and products for agriculture, fisheries, water resource management etc., and
- Infrastructural support in expanding and maintaining observation networks, meteorological telecommunications hardware and software, database management systems etc.,

The Added Value of PMDP

The improved coordination mechanism offered by PMDP should see overall a better coordination of capacity building activities and programmes put in place at the national and regional levels, benefiting all Pacific NMSs. Advantages in utilizing PMDP strategy include:

- improved highlighting, profiling, and tracking of individual country needs and monitoring of progress;
 - improved assessment of shared national needs/regional priorities;
 - improved coordination and making efficient targeted capacity building priorities of Partners Consortium;
 - matching specific country needs with specific technical expertise of Partners Consortium;
 - Desk flexibility to expand Partners Consortium where needed to resource expertise as required
 - SREP monitoring of regional progress against PIFACC and DRRM frameworks;
 - Improved visibility of NMSs issues at national level and Leaders level;
 - Incorporation of Regional Strategy will provide regional strategic guide for implementation of needs;
 - Incorporation of PMC to provide high level overview and guidance on implementation of PMDP; and
 - Collective efforts in this coordination could lead to a development of a trust fund to fund needs of Pacific NMSs.
-

WMO support for the Fiji Meteorological Service/RSMC Nadi

Reports of WMO missions

**Report of the Mission to Fiji
3 to 8 June 2012**

Mr Henry Taiki, PO, WMO Office (Apia)

Purpose: To represent WMO and to participate in the Joint Meeting between the UN Missions in the Pacific and the Heads of CROP agencies; and to visit FMS / RSMC Nadi.

Mission's objectives include:

- (a) To represent WMO at the Joint Meeting between the UN Missions in the Pacific and the Heads of CROP agencies; and
- (b) To visit FMS / RSMC Nadi.

Mission's activities include:

- (a) Participation in the following meetings:
 - (i) Joint Meeting between the UN Missions in the Pacific and the Heads of CROP agencies;
 - (ii) High Level Dialogue on the "Policy and Practice Note for Climate and Disaster Resilient Development in the Pacific Islands Region – Acting Today for Tomorrow";
 - (iii) Workshop on CC and DRR; and
 - (iv) Regional Inception Workshop on National Reporting in PICs, on HFA and PRDFA.
- (b) Visitation to FMS / RSMC Nadi.
- (c) Side meetings with representatives from: (i) PACE – SD / USP; (ii) World Bank; and (iii) UNDP Pacific Centre.

Outcomes of mission include:

- (a) The UN Missions in the Pacific and the Heads of CROP agencies established a Joint Working Group;
- (b) Agreement that outcomes of 2011-2013 national processes review of HFA and PRFA to contribute to the development of an Integrated Regional Strategy for CCA/DRM, the development of JNAPs for the PICs, and the development of PICs' NIPs for EDF / ACP - EU NDF (Euro 20 million);
- (c) Clarifications from PACE – SD / USP on the "Potential USAID Project to Build Capacity for Tropical Cyclone Forecasters in RA V (South-West Pacific)"; and
- (d) World Bank proposed to organize joint initiative(s) with WMO in the PICs region.

1. Introduction

1.1. I undertook a mission to Fiji, from 3 to 8 June 2012. The purpose of the mission is to participate in the Joint Meeting between the United Nations (UN) Missions in the Pacific and the Heads of the Council Regional Organizations of the Pacific (CROP) agencies; and to visit the Fiji Meteorological Service / Regional Specialized Meteorological Centre in Nadi (FMS / RSMC Nadi).

1.2. In addition to these, I participated in following meetings: (i) the High Level Dialogue on the "Policy and Practice Note for Climate and Disaster Resilient Development in the Pacific Islands Region – Acting Today for Tomorrow"; (ii) the Workshop on Climate Change (CC) and Disaster Risk Reduction (DRR); and (ii) the Regional Inception Workshop on National Reporting in the Pacific Island Countries (PICs) on the Hyogo Framework for Action (HFA) and the Pacific Regional Disaster Reduction and Disaster Management Framework for Action (PRDFA) 2005-2015.

1.3. A few side meetings with representatives of the Pacific Centre for Environment and Sustainable Development (PACE – SD), located the University of the South Pacific (USP); the World Bank and; the UNDP Pacific Centre.

2. Joint Meeting between the UN Missions in the Pacific and the Heads of CROP agencies

2.1. The UN missions in the Pacific and the Heads of CROP agencies met for the first time in a high level session. The purpose of the meeting is to strengthen collaboration and coordination at all levels, with a specific focus on reducing the burden of disjointed multiple partner engagement at the national level, in the PICs. The session agreed on the followings:

- (a) To establish a joint working group to strengthen collaboration and coordination amongst the UN and CROP agencies;
- (b) To focus UN and CROP agencies' efforts on national-level actions and gains; and
- (c) To jointly develop annual statement between the UN Secretary-General and the Pacific Islands Forum Leaders.

2.2. CROP agencies include the Pacific Islands Forum Secretariat (PIFS), Fiji School of Medicine (FSM), Forum Fisheries Agency (FFA), Pacific Islands Development Programme (PIDP), the Secretariat of the Pacific Community (SPC), the Secretariat of the Pacific Environment Programme (SPREP), the South Pacific Tourism Organization (SPTO), the University of the South Pacific (USP), the Pacific Power Association (PPA) and, the Pacific Aviation Safety Office (PASO).

The UN missions in the Pacific include UNDP, UNICEF, UNFPA, WHO, ILO, UN Women, UNAIDS, OHCHR, UNESCAP, OCHA, UNISDR, UNESCO, FAO, WMO, UNEP, UNV, IFAD, UNHABITAT, IMF / PFTAC, UNHCR and, OIM

3. Visit to FMS / RSMC Nadi

3.1. The purpose of the visit is: to provide briefing to the PR of Fiji with WMO on the outcomes of meetings which I attended and, the discussions which I had with various development partners during the week; and (ii) to discuss with the PR of Fiji with WMO, Fiji's request(s) to WMO. Outcomes of the discussions including the PR of Fiji with WMO:

- (a) Re-iterated the importance of Fiji's request to WMO for a feasibility and/or need analysis/study to identify the best way forward for hydrological services in Fiji, he requested that it should go ahead;
- (b) Provided clarification on the purpose of the Review of FMS. The Review is focusing on how and what is needed to make FMS to improve the services to the people of Fiji; and
- (c) Confirmed that (a) is neither part nor included in (b) – Review of FMS.

3.2. During the visit to FMS / RSM Nadi, I was invited to join the FMS's staff and the consultants during a further consultation on the Review of FMS. Although a preliminary draft report is not yet available, the consultants made available the outcomes of their findings. These include past reports' recommendations to improve FMS, which have not been implemented and are still valid today. These have formed the basis and provided guidance for further dialogue among FMS staff and the consultants. There is also a discussion on the future organizational structure and functions of FMS.

4. High Level Dialogue on the Policy and Practice Note for Climate and Disaster Resilient Development in the Pacific Islands Region – Acting Today for Tomorrow

4.1 This is a half a day session, jointly convened by the World Bank, SPC and SPREP. It brought together the Heads of CROP agencies, PICs, UN agencies, Civil Society Organizations (CSOs), development partners and aid donors, to have further discussion on the “Policy and Practice Note for Climate and Disaster Resilient Development in the Pacific Islands Region – Acting Today for Tomorrow”. The Policy and Practice Note is prepared by the World Bank, in collaboration with CROP agencies. It highlighted the fact that PICs continue to be among the most vulnerable in the world in terms of a combination of high exposure to frequent and damaging natural hazards (tropical cyclones, earthquakes and floods) with low capacity to manage the resulting risks.

4.1. Common themes keep coming up during the discussions include:

- (a) Better link between climate change adaptation (CCA) and DRR;
- (b) Use “risk” instead of CC and DRR, as a new and future common platform for discussing CC and DRR for development;
- (c) Further improvement coordination and partnerships; and
- (d) Grounding risks consideration in development.

4.3. The session is followed by a workshop on CC and DRR.

5. **Workshop on CC and DRR**

5.1. This is a 1 and half days workshop, started immediately after the High Level Dialogue on the “Policy and Practice Note for Climate and Disaster Resilient Development in the Pacific Islands Region – Acting Today for Tomorrow”. This Workshop and the High Level Dialogue followed the development of the Pacific Programme on Climate Resilience (PPCR) developed jointly between the World Bank, ADB, PIFS, SPC and SPREP. The PPCR has national and regional components and elements. The regional components are allocated between the CROP agencies.

5.2. The workshop and the positive involvement of the World Bank in the Workshop and the High Level Dialogue reflect an increased interest and engagement of the World Bank in the PICs region and in particular with the issue of climate and disaster resilient development. WMO should look for opportunities to expand cooperation with the World Bank, through their Sydney Office, on areas relevant to WMO mandates.

6. **Regional Inception Workshop on National Reporting in PICs on HFA and the PRDFA**

6.1. This is a 2-day workshop, organized by UNISDR, SPC and SPREP. I attended the first day of the workshop, but I have to leave and go to Nadi for a visit to FMS / RSMC Nadi which is scheduled for Friday, 8 June 2012. The workshop discussed the followings:

- (a) Process for 2011-2013 national progress review of the implementation of HFA and PRDFA;
- (b) Development of PICs national work plans for 2011-2012 progress review of the implementation of HFA and PRDFA;
- (c) The EDF10 ACP-EU (Euro 20 million) National Disaster Facility (NDF) 2013-2017, for PICs; and
- (d) Outcomes of the 2011-2012 national progress review of the implementation of HFA and PRDFA will contribute:
 - (a) To the National Implementation Plans (NIPs) for the EDF10 ACP-EU (Euro 20 million) NDF 2013-2017;

(ii) To the development of Joint National Action Plans (JNAPs) for CC and DRR, in the PICs; and

(iii) To the development of an Integrated Pacific Regional Strategy for CC/DRM by 2015.

7. Side Meetings

7.1. **Professor Elisabeth Holland** (Elisabeth.holland@usp.ac.fj), is the Director of the Pacific Centre for Environment and Sustainable Development / University of the South Pacific (PACE – SD / USP), and she is also a Professor of climate change at USP. The focus of discussion is on the “Potential USAID Project to Build Capacity for Tropical Cyclone Forecasters in RA V (South-West Pacific)”. She provided clarification on the project’s concept note. The project’s concept note has been presented to USAID. The project would provide “bridging courses in meteorology and climatology” for students at USP taking undergraduate and postgraduate courses in climate change, disaster risk reduction and environmental sciences, who may wish to pursue a career in climatology or meteorology. The project would also establish institutional linkages between USP and FMS / RSMC Nadi. If the USAID response is positive, a full project document need to be developed, and this is where other stakeholder would contribute to developing the project’s outcomes and activities. In addition to this, Professor Holland indicated that PACE – SD / USP in collaboration with other CROP agencies are planning to organize a Pacific Regional Climate Services Forum, tentatively in January 2012; and they are also planning to organize a Regional Forum for Women in Climate Change. PACE – SD / USP has many talented students doing their postgraduate studies in climate change, climate modelling, oceans and other related fields of science. They are interested to pursue career in meteorology or climatology. Hopefully, the “Potential USAID Project to Build Capacity for Tropical Cyclone Forecasters in RA V (South-West Pacific)” would provide bridging courses for the students to help them move into a career in meteorology or climatology.

7.2. **Mr Michael-Bonte Grapentin** (mbonte@worldbank.org), is a disaster risk reduction specialist with the World Bank, Sydney Office. Mr Grapentin is keen to get the World Bank to do some works on hydro-meteorology in the PICs region. He also suggested to WMO to co-organize with the World Bank an event for PICs NHMSs and National Disaster Management Officers (NDMOs), and to use it as an entry point for further discussion with the World Bank to support hydro-meteorological services in the PICs region.

7.3. **Ms Karen Bernard** (Karen.bernard@undp.org), is a programme specialist on natural disasters reduction and transition at UNDP Pacific Centre, in Suva, Fiji. The discussion focus on the current and potential future project on South-South Cooperation for DRR. The exiting project is coming to an end in December 2012, and to be followed by a review. The review will provide guidance for a possible future project.

8. Lessons Learnt

8.1. These lessons learnt and related recommendations form are part of the Recommended Actions for WMO Secretariat in the Summary of this report.

(a) The Joint Meeting between the UN missions in the Pacific and the Heads of CROP agencies is a very important meeting. WMO should continue to participate in future joint meetings as well as participating in follow up initiatives such as the Joint Working Group.

(b) The topic of climate change is becoming increasingly linked with disaster risk reduction in the PICs region. It is important that WMO continue to work with both SPREP and SPC (SOPAC Division) and other CROP agencies on the increasing linkage of these two topics. WMO should look at becoming an official a partner to the Pacific Climate Change Roundtable (PCCRT), the Pacific Platform for Disaster Reduction (PPDR), and the development of the Integrated Pacific Regional Strategy for CC/DRR.

- (c) The 2012 PPDR will be held from 17 to 21 September 2012, in Noumea, New Caledonia.
 - (d) The 2013 PPDR, the 2013 PCCRT and the Second Session of the Pacific Meteorological Council (PMC) are planned to be held from 15 to 19 July 2012, in the Federated States of Micronesia.
 - (e) The Policy and Practice Note for Climate and Disaster Resilient Development in the Pacific Islands Region – Acting Today for Tomorrow” focuses on PICs continue vulnerability in terms of high exposure to frequent and damaging natural disasters (tropical cyclones, earthquakes and floods) with low capacity to manage the resulting risk. WMO should look for opportunities to expand its cooperation with the World Bank, through their Sydney Office, on areas relevant to WMO mandates.
 - (f) PACE – SD / USP has many talented students doing their postgraduate studies in climate change, climate modelling, oceans and other related fields of science. They are interested to pursue career in meteorology or climatology. WMO should work with PACE-SD / USP in the areas of education, training and capacity development, to provide bridging courses for the students to help them move into career in meteorology or climatology.
 - (g) PACE-SD / USP in collaboration with other CROP agencies are planning to organize a Pacific Regional Climate Services Forum and a Regional Forum for Women in Climate Change, in 2012. WMO should work with them to organize these events.
 - (h) The EDF10 ACP-EU NDF (Euro 20 million) 2013-2017 for the PICs. 75 percent of the fund would be allocated for national components in the PICs and 35 percent is allocated for regional component through SPC (SOPAC Division). WMO should work closely with PICs’ NMSs and SPC (SOPAC Division) when developing the related NIPs, which will start in early 2013.
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Report of the mission to Fiji and Samoa
Mr Robert O. Masters (D/DRA)
Mr Henry Taiki (PO, WMO Office in Apia)

6 to 17 August 2011

Purpose: To visit FMS/RSMC Nadi; to have meeting with relevant Ministries of the Government of Fiji, JICA, SPC (SOPAC Division) and UN RCO, in Fiji; and to participate in SPREP Officials Meeting and have a meeting with SPREP Secretariat, in Samoa.

Mission's objectives include:

- (i) To have discussions with the:
 - (a) Director of FMS/RSMC;
 - (b) Relevant ministries of the Government of Fiji;
 - (c) Representative of JICA Fiji Office;
 - (d) Staff of SPC (SOPAC Division);
 - (e) Representative of UN RCO in Fiji;
 - (f) Representative of UNDP in Fiji; and
 - (g) Participate in SPREP Officials Meeting in Samoa.
- (ii) To have discussions with the Director-General of the SPREP Secretariat.

Mission's activities include:

- (i) Had meetings and discussions in Fiji with the:
 - (a) Director and staff of FMS/RSMC Nadi;
 - (b) Deputy Permanent Secretary of the Ministry of Foreign Affairs and International Cooperation;
 - (c) Deputy Permanent Secretary of the Ministry of Transport and Public Utilities;
 - (d) Representative and staff of JICA Office in Fiji;
 - (e) Staff of SPC (SOPAC Division); and
 - (f) Representative of UNDP in Fiji.
- (ii) Represented WMO at the SPREP Officials Meeting in Samoa.
- (iii) Had meetings and discussions with the Director-General and staff of the SPREP Secretariat that resulted in the finalization of the LOA between SPREP and the WMO on the Pacific Meteorological Desk Cooperation.

Refer to Annex 1 of this mission report – a summary of discussions. It also highlighted some of the mains activities undertaken during the mission. Annex 2 of this mission report is a list of names of persons with whom we had discussions with, during the mission.



Annex I
MISSION to FIJI and SAMOA
(7 to 17 September 2011)
SUMMARY OF DISCUSSIONS

A. The Meteorological Service; Ministry of Works, Transport and Public Utilities and the Ministry of Foreign Affairs and International Cooperation

ITEMS	SPECIFIC ISSUES OF DISCUSSION - FOR FURTHER DISCUSSION AND ACTION	WHO IN WMO SECRETARIAT TO FOLLOW UP AND ACTION?
1. The Government of Fiji's Foreign Policy.	<p>(a) The Ministry of Foreign Affairs and International Cooperation (MFAIC) supporting Fiji Meteorological Service (FMS) including its national, regional and international responsibilities and roles in weather and climate services, contributing safety of life, protection of property and sustainable development.</p> <p>(b) Although the Government of Fiji is suspended from the Pacific Islands Forum, Fiji is continuing engagement with other Pacific Island Countries (PICs). The Government of Fiji is entering into Memorandum of Understanding (MOU) with each of the other PICs in areas of technical assistance and bi-lateral cooperation.</p> <p>(c) The Government of Fiji foreign policy to assist other PICs would also apply to FMS, designated as a Regional Specialized Meteorological Center (RSMC Nadi) providing weather services including cyclone warnings to PICs. FMS agreement with other PICs for weather services including cyclone warnings could be included in that MOU and FMS to further discuss it with MFAIC.</p> <p>(d) Given that Fiji has been suspended from the Pacific Islands Forum, the Melanesian Spear-head Group (MSG) would be the appropriate regional or intergovernmental body for Fiji to continue regional cooperation in the Pacific region.</p>	DRA (RAP), WDS (TCP) and RA V TCC to assist FMS and PICs to take necessary actions for items A1(c). Also refer to item A2(f) below.
2. Fiji Meteorological Service (FMS) Institutional Reform.	<p>(a) The aims of institutional reforms for Government of Fiji institutions include: improving efficiency, decreasing allocation of budget and, generation of revenue.</p> <p>(a) The Ministry of Works, Transport and Public Utilities (MWTPU) used the final report of "Reviewing of Weather and Climate Services in the Pacific (August 2010) to charter the roadmap for FMS reform.</p> <p>(b) The Government of Fiji /Cabinet of Ministers has already mandated FMS reform to be completed in 2013.</p>	<p>DRA (RAP) and WDS (TCP) to work closely with Fiji to provide update on progress of FMS reform, in particular under item A2(b), to relevant Members of RA V</p> <p>DRA (RAP), WDS (TCP) and RA V TCC to assist FMS</p>

	<p>(c) The Government of Fiji is not expecting FMS to generate 100 % revenue, hence its support to FMS would continue.</p> <p>(d) FMS, as a RSMC Nadi would continue to assist and provide weather services including warnings to other PICs.</p> <p>(e) While, there might be some policy changes, FMS responsibility as a RSMC Nadi would continue.</p> <p>(f) FMS to enter into some form of agreement with other PICs for weather services including cyclone warnings.</p> <p>(g) The Government of Fiji is giving high priority to support FMS.</p>	and PICs to take necessary actions for item A2(f). Also refer to item A1(c) above.
3. Education, Training and Human Resources Development.	<p>(a) 2 more university graduates (BSc) to undertake training to meteorologists and cyclone forecaster level^s.</p> <p>(b) Training of 2 staff to the level of radar technicians (Partial funding assistance requested from WMO)</p> <p>(c) Training of 2 staff to the level of climatologists.</p>	DRA (ETR, RAP & RMO), OBS and CLW to take necessary actions for items A3(a) to (c).
4. Future Access of Meteorological Satellite Information via Internet.	(a) Japan Meteorological Agency (JMA) is moving towards distributing meteorological satellite information via internet. PICs have limited and vulnerable capacity and very high operational costs of internet. Any other alternative(s) to internet?	OBS and RA V WG-INFR to provide advice on how to address item A4(a).
5. Future Installation and Operation of Doppler Radar(s) 2012-2013.	(a) To stay with Vaisala for supply of radiosondes or to tender it?	OBS to have further discussion with FMS on item A5(a).
6. AMDAR Observations.	(a) All Air Pacific aircrafts have installed appropriate equipment for collecting and relaying AMDAR observations to FMS. Other developed centers accessibility to the information.	OBS to compile information on item A6(a) and make it available to RA V WG-INFR.
7. Automatic Weather Stations (AWSs) Verses Manual or Human Operated Weather Stations (MHOWSs).	(a) FMS have had the experiences in operating AWSs and have decided to replace all of them with MHWOSs.	OBS to ask FMS to document experiences with operating AWSs
8. Aviation Weather Services.	<p>(a) Fiji continues to provide regional support for neighboring PICs, but would like to see WMO help in seeing these countries develop stronger services of their own.</p> <p>(b) Stronger commitment to improving on aviation national and regional weather services. FMS/RSMC Nadi, as an International Civil Aviation Organization (ICAO) designated Meteorological Watch Office (MWO) for Fiji, and ICAO Tropical Cyclone Advisory Center (TCAC) to provide tropical cyclone advisories and warnings for aviation within the Pacific islands region, is also required to provide advisories on nuclear radiation clouds.</p>	DRA (RAP) and WDS to assist PICs to develop weather services capability.

9. FMS's Director Networking with Counterparts in other Government's Ministries and Departments.	(a) First time for FMS's Director to meet the Deputy Permanent Secretary for MFAIC. To ensure regular dialogue between FMS and MFAIC.	DRA to send follow-up letter [Completed]
10. Participation of PICs National Meteorological and Hydrological Services (NMHSs) at the United Nations Framework Convention for Climate Change (UNFCCC) Conference of the Parties (COP) and other related events.	(a) WMO to consider providing financial support for selected PICs' NMHSs participation at UNFCCC COP	DRA and CLW to consider item 10(a) and advice if funding is available to address it.
11. Accessing the Adaptation and Green Funds.	(a) The possibility of WMO and Fiji working together to access the Adaptation and Green Funds.	DRA (RMO & RAP) to initiate discussion on item A11(a) with Fiji.

B. JICA Fiji Office

ITEMS	SPECIFIC ISSUES OF DISCUSSION - FOR FURTHER DISCUSSION AND ACTION	WHO IN WMO SECRETARIAT TO FOLLOW UP AND ACTION?
1. Regional and National Sustainable Development Frameworks	(a) JICA Fiji Office intervention in PICs are in line with the various regional sustainable development frameworks such as the Pacific Plan, Pacific Platform for Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) Framework, etc,	DRA (RAP) to ensure WMO participation in, sharing of information with Members on, events relating to regional development frameworks.
2. JICA Fiji Office Project(s) in PICs Related to WMO Programmes.	(b) Third Country Programme with Fiji. (c) Fiji is requesting JICA for an upgrading of FMS training center facilities. (d) Project for Community Early Warning System for Ba river, in Fiji. (e) Project for community early warning system for a river in the Solomon Islands. (f) Project for earthquake monitoring system in Tonga.	DRA (RAP), CLW and WDS collect information on these projects and make it available to Members of RA V and relevant RA V WGs.
3. Holistic Approach to DRR and CCA.	(a) Project for mainstreaming DRR and CCA at national and regional level	DRA (RAP), CLW and WDS (DRR) to co-organize with SPREP and SPC (SOPAC Division) a regional workshop on DRR and CCA. Also refer to items C6(a) and (b) below.

C. SOPAC Division of the Secretariat of the Pacific Community (SPC)

ITEMS	SPECIFIC ISSUES OF DISCUSSION - FOR FURTHER DISCUSSION AND ACTION	WHO IN WMO SECRETARIAT TO FOLLOW UP AND ACTION?
1. Socio-economic Studies of NMHSs in	(a) SPC (SOPAC Division) is implementing the WMO initiative. Requested benchmark	DRA to send copies of documents to SPC

Selected PICs.	paper done by World Bank and other relevant materials. Also GFCS materials.	(SOPAC Division).
2. Pacific-HYCOS.	(a) What is WMO plan for continuing the Pacific HYCOS?	DRA (RAP), CLW and RA V WG-HYS to start discussion on item C2(a).
3. Drought Monitoring System.	(a) Kiribati drought monitoring system could be replicated in other PICs. (b) Weather and climate products to predict drought in PICs. (c) Use satellite images of plants to predict drought in PICs.	DRA (RAP), CLW and RA V WG-HS to work with SOPAC to replicate item C3(a) in at least 1 PICs.
4. AusAID Funded Sea Level and Climate Monitoring Project.	(a) New project document currently under development to include access to near real-time information, formulating the data into policy to enable PICs to make informed decisions, and capacity development.	DRA (RAP) to ensure that information on item C4(a) are distributed to relevant Members of RA V and RA V WGs.
5. Geographic Information System (GIS).	(a) SPC (SOPAC Division), a globally recognized center for GIS. WMO could utilize this facility for its capacity development initiatives related to the use of GIS.	DRA (RAP & ETR) to organize training in GIS for PICs' NMHSs
6. DRR	(a) Holistic approach to DRR. (b) Mainstreaming CCA and DRR at national and regional level. (c) Mainstreaming DRR into development sectors.	DRA (RAP), CLW and WDS (DRR) to co-sponsor with SPREP and SPC (SOPAC Division) a regional workshop on DRR and CCA. Also refer to item B3(a) above.

D. SPREP

ITEMS	SPECIFIC ISSUES OF DISCUSSION - FOR FURTHER DISCUSSION AND ACTION	WHO IN WMO SECRETARIAT TO FOLLOW UP AND ACTION?
1. WMO/SPREP Letter of Agreement (LoA) – Support for the Pacific Meteorological Desk Partnership (PMDP)	(a) SPREP internal comments to be finalized on LoA before handing it to WMO. WMO to clear LoA through internal process then send it back to SPREP for signature. (b) Compilation of a list of activities for use of USD50000 to be made available by WMO in late 2011 under the LoA. (c) In terms of the Pacific Meteorological Council (PMC), a compilation of a work plan to include a list of potential priority activities for implementation. (d) SPREP team to devise plan on branding PMDP and other reports from now on to ensure high level of visibility of WMO in all PMDP and other related meteorological works undertaken together with SPREP. (e) WMO Office in Apia to be part of SPREP Climate Change Team. (f) WMO and SPREP will work closely	DRA (RAP) to liaise with SPREP (i) For finalization and signing of LoA under items D1(a) and (b); (ii) To address items D1(c) to (g).

	<p>together on the development of the Global Framework on Climate Services (GFCS), looking at developing potential activities related to GFCS based on SPREP's advantages and opportunities to engage end user needs from its diverse scope of works, thereby cooperating on developing the GFCS Implementation Plan. SPREP may be invited to attend GFCS Implementation Plan planning sessions.</p> <p>(g) WMO to assist in searching for funding opportunities for the Pacific Islands Global Climate Observing System (PI-GCOS) Officer position in SPREP.</p>	
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E: UNDP Office in Suva, Fiji		
ITEMS	SPECIFIC ISSUES OF DISCUSSION - FOR FURTHER DISCUSSION AND ACTION	WHO IN WMO SECRETARIAT TO FOLLOW UP AND ACTION?
1. Climate Financing including the Global Environment Facility (GEF) and Green Fund	(a) PICs are continually requesting for easy and direct access to these funds. (b) Limited capacity of PICs to utilize climate fund, once made available to them.	DRA (RMO & RAP) to work closely with Members of RA V and SPREP to access climate financing
2. Aid Effectiveness – Paris Declaration on Aid Effectiveness, Doha Declaration on Financing Development and Forum Compact	(a) UN agencies including WMO, as development partners to provide annual report to the Pacific Islands Forum Secretariat (PIFS) on their efforts to support the Forum Compact	DRA to work with Finance to obtain information on WMO assistance to each of its Member in the Pacific region, especially PICs.
3. Pacific Subregion United Nations Development Assistance Framework (UNDAF) 2013-2017	(a) All UN agencies based in the Pacific region are required to participate and contribute to the development and implementation of UNDAF 2013-2017.	DRA: (i) To participate in the development of UNDAF 2013-2017; and (ii) To include climate services in the UNDAF 2013-2017.

Annex 2
MISSION to FIJI and SAMOA
(7 to 17 September 2011)
LIST OF PERSONS MET DURING THE MISSION

FIJI ISLANDS	
1	<p>Mr Sila Balawa Deputy Permanent Secretary Ministry of Foreign Affairs and International Cooperation Level 1, South Wing BLV Complex 87 Queen Elizabeth Drive, Nasese, P O Box 2220, Government Building, Suva Fiji Islands</p> <p>Tel: +679 323 9607 & 3309 645 Fax: +679 3317 580 & 3301 741 Email: sila.balawa@govnet.gov.fj</p>
2	<p>Mr Malakai Tadulala Deputy Secretary – Transport Ministry of Works, Transport and Public Utilities 87 Ratu Mara Road, Level 3, Nasilivata House, Samabula, Private Mail Bag, Suva Fiji Islands</p> <p>Tel: +679 3384 111 & 3384 181 Fax: +679 3384 114 Email: malakai.tadulala@govnet.gov.fj</p>
3	<p>Mr Alipate Waqaicelua Permanent Representative of Fiji with WMO Director – Fiji Meteorological Services Korowai Road, Namaka, Private Mail Bag NAP 0351, Nadi Fiji Islands</p> <p>Tel: +679 6724 888 Fax: +679 6720 430 Email: alipate.waqaicelua@met.gov.fj</p>
4	<p>Mr Ravind Kumar Principal Climatologist Fiji Meteorological Services Korowai Road, Namaka, Private Mail Bag NAP 0351, Nadi Fiji Islands</p> <p>Tel: +679 6724 888 Fax: +679 6720 430 Email: ravind.kumar@met.gov.fj</p>
5	<p>Mr Yutaka Fukase Deputy Resident Representative JICA Fiji Office Japan International Cooperation Agency Level 8, Suva Central Building, Corners of Pratt Street & Renwick Road JICA Private Mail Bag, Suva</p>

	<p>Fiji Islands</p> <p>Tel: +679 3302 522 Fax: +679 3302 452 Email: fukase.yataka@jica.go.jp</p>
6	<p>Mr Yohei Hashimoto Assistant Resident Representative JICA Fiji Office Japan International Cooperation Agency Level 8, Suva Central Building, Corners of Pratt Street & Renwick Road JICA Private Mail Bag, Suva Fiji Islands</p> <p>Tel: +679 3302 522 Fax: +679 3302 452 Email: hashimoto.yohei@jica.go.jp</p>
7	<p>Mr Toily Kurbanov Deputy Resident Representative United National Development Programme (UNDP) Level 8, Kadavu House, 414 Victoria Parade Private Mail Bag, Suva Fiji islands</p> <p>Tel: +679 3312 500 Fax: +679 3301 718 Email: toily.kurbanov@undp.org</p>
8	<p>Ms Paula Holland Manager – Natural Resources Governance Applied Geoscience and Technology Division (SOPAC) Secretariat of the Pacific Community (SPC) SPC Suva Regional Office Mead Road, Nabua, Private Mail Bag, Suva Fiji Islands</p> <p>Tel: +679 3381 377 Fax: +679 3370 040/3384 461 Email: paulah@sopac.org</p>
9	<p>Dr Wolf Forstreuter GIS & RS Team Leader Applied Geoscience and Technology Division (SOPAC) Secretariat of the Pacific Community (SPC) SPC Suva Regional Office Mead Road, Nabua, Private Mail Bag, Suva Fiji Islands</p> <p>Tel: +679 3381 377 Fax: +679 3370 040/3384 461 Email: wforstreuter@yahoo.co.uk</p>
10	<p>Mr Peter Sinclair Adviser - Pacific Hydrological Cycle Observing System (HYCOS) Applied Geoscience and Technology Division (SOPAC)</p>

	<p>Secretariat of the Pacific Community (SPC) SPC Suva Regional Office Mead Road, Nabua, Private Mail Bag, Suva Fiji Islands</p> <p>Tel: +679 3381 377 Fax: +679 3370 040 Email: peter@sopac.org</p>
12	<p>Miss Litea Biukoto Adviser – Hazard Assessment Applied Geoscience and Technology Division (SOPAC) Secretariat of the Pacific Community (SPC) SPC Suva Regional Office Mead Road, Nabua, Private Mail Bag, Suva Fiji Islands</p> <p>Tel: +679 3381 377 Fax: +679 3370 040 Email: litea@sopac.org</p>
11	<p>Ms Tagaloa Cooper Regional Communication and Coordination Adviser Pacific Sea Level and Climate Monitoring Project Applied Geoscience and Technology Division (SOPAC) Secretariat of the Pacific Community (SPC) SPC Suva Regional Office Mead Road, Nabua, Private Mail Bag, Suva Fiji Islands</p> <p>Tel: +679 3381 377 Fax: +679 3370 040 Email: tagaloa@sopac.org</p>
SAMOA	
12	<p>Mr David Sheppard Director-General Secretariat of the Pacific Regional Environment Programme (SPREP) P O Box 240, Apia Samoa</p> <p>Tel: +685 21929 Fax: +685 20231 Email: davids@sprep.org</p>
13	<p>Mr Kosimiti Latu Deputy Director Secretariat of the Pacific Regional Environment Programme (SPREP) P O Box 240, Apia Samoa</p> <p>Tel: +685 21929 Fax: +685 20231 Email: kosil@sprep.org</p>

14	<p>Dr Netatua Pelesikoti Programme Manager – Pacific Future Programme Secretariat of the Pacific Regional Environment Programme (SPREP) P O Box 240, Apia Samoa</p> <p>Tel: +685 21929 Fax: +685 20231 Email: netatuap@sprep.org</p>
15	<p>Mr Dean Solofa Programme Officer Pacific Islands Global Climate Observing System (PI-GCOS) Pacific Future Programme Secretariat of the Pacific Regional Environment Programme (SPREP) P O Box 240, Apia Samoa</p> <p>Tel: +685 21929 Fax: +685 20231 Email: deans@sprep.org</p>