

# **REGIONAL ASSOCIATION V (SOUTH-WEST PACIFIC)**

**TWELFTH SESSION OF THE RA V MANAGEMENT GROUP**

**GENEVA, 23 JUNE 2014**

## **FINAL REPORT**



**WORLD METEOROLOGICAL ORGANIZATION**

**TWELFTH SESSION OF THE RA V MANAGEMENT GROUP**  
*(Geneva, Switzerland, 23 June 2014)*

**1. ORGANIZATION OF THE SESSION**

1.1 The twelfth session of the RA V Management Group (MG-12) was held at the WMO Headquarters in Geneva on Monday, 23 June 2014, during the sixty-sixth session of the Executive Council (EC-66). The Group adopted the provisional agenda as given in **Annex I**.

**2. MATTERS ARISING FROM THE ELEVENTH SESSION**

2.1 The Group recalled that the eleventh session of the RA V Management Group (MG-11: Jakarta, 7 May 2014) focused mainly on the review of the key outcomes from the sixth Regional Conference for Regional Association V and the sixteenth session of Regional Association V including identification of the regional challenges and future priorities, establishment of a new working mechanism of the Association, and the follow up to the outcomes and recommendations from the sixteenth session of Regional Association V including the completion of membership of the new subsidiary bodies, development of the RA V Operating Plan 2016-2019, and development of Work Plans for Working Groups (WGs) and the Tropical Cyclone Committee (TCC) to facilitate the activities of the subsidiary bodies.

2.2 The Group underscored the importance of addressing the regional priorities to the members and delegate the individual priorities to the subsidiary bodies, and recommended that the Terms of Reference for the MG should be reviewed during the following MG meetings or through online focusing on the inclusion of capacity development and research.

**3. REPORT ON THE KEY OUTCOMES FROM THE 16<sup>th</sup> SESSION OF REGIONAL ASSOCIATION V**

3.1 The Group expressed its appreciation to the Government of Indonesia for hosting the sixteenth session of the Regional Association V (South-West Pacific) (RA V-16, Jakarta, Indonesia, 2-7 May 2014), and congratulated again the newly elected office bearers of RA V, the president, Dr. Andi Eka Sakya (Indonesia) and the re-elected vice president, Mr. 'Ofa Fa'anunu (Tonga).

3.2 The Group noted with pleasure the report of the newly elected president of RA V to the sixty-six session of the Executive Council (EC-66), with a focus on the major outcomes from the RA V-16. The most important achievements of the RA V included, among others:

- (a) Identification of challenges and high priority areas in the Region;
- (b) Refinement and implementation of the RA V Strategic Operating Plan 2012-2015 and the development of the RA V Operating Plan 2016-2019;
- (c) Adoption of a Regional WIGOS Implementation Plan (R-WIP-V) and a Regional WIS Implementation Plan (R-WIS-IP);
- (d) Adoption of a new working mechanism for the RA V and establishment of a Management Group, four Working Groups and a Tropical Cyclone Committee; and
- (e) Engagement and contribution to the Third International Conference on Small Island Developing States (SIDS) to be held in Apia, Samoa from 1 to 4 September 2014.

3.3 The Group recalled that the challenges in the Region include:

- (a) Lack of qualified personnel and the need for ongoing competency assessments, particularly in the field of aeronautical and marine meteorology;

- (b) Need to improve institutional arrangements of Member NMHSs, including enabling legislation, support effective fiscal management, and securing of financial resources from Governments and other sources;
- (c) Need to improve partnerships with key national, regional and global bodies, including funding agencies in order to enhance the service delivery and sustainability of the Member NMHSs;
- (d) Need to improve access to, and usage of, NWP guidance material as underlying support to make service delivery better;
- (e) Need to address inadequacies in regional observing and telecommunications systems for monitoring, forecasting, and dissemination of products for weather, water and climate;
- (f) Need to address inadequacies of early warning services supporting DRR;
- (g) Need to fully implement and sustain a quality management system; and
- (h) Need to improve communication with users and stakeholders for better delivery of user-focused services (e.g. climate services to support the agriculture sector) through the implementation of GFCS perspective.

3.4 The Group recalled that the priorities in the Region include:

- (a) **Implementation of WIGOS and WIS** in each Member country focusing on concrete and urgent needs related to the maintenance and improvement of the observing and communications systems, and the quality of observations, including radar and upper air observation systems;
- (b) **Strengthen Regional climate services** including improvement of existing climate services and the start of implementation for GFCS at regional and national levels: specific activity to include implementation of Regional Climate Centre networks in the Pacific and in South East Asia which was also raised during the 16<sup>th</sup> RA-V Session;
- (c) **Full implementation and maintenance of a Quality Management System (QMS)** in each Member of the Association and the consolidation and maintenance of competence standards consistent with QMS implementation;
- (d) **Improve Service Delivery** of hydrological and meteorological services of Members aligned with technical standards and best practice especially with a major focus on strengthening of the SWFDDP and demonstration of the social and economic benefits of these services through tailor made information and effective communication;
- (e) **Enhance partnerships** to demonstrate the benefit of weather, water, and climate services to the community by increasing cooperation and partnership for outreach; this will be done through engagement with regional partners, national and local government and NGOs.
- (f) Improve the effectiveness and efficiency of the regional activities, building common position on issues like data policy, commercialization and public/private sector relationships;
- (g) Enhance partnerships with existing development partners and create new partnerships that will lead to long term sustainability of the services; and
- (h) Undertake capacity building to address issues relating to education and training needs, budget and staff resource deficiencies (including cost recovery), NWP utilization and insufficient qualified personnel through optimally utilizing the existing RTCs,

and the Group further recalled that (f)-(h) are necessary to make the improvements in (a)-(e), which will result in improved service delivery at regional, national, and local levels.

3.5 The Group noted that the RA V-16 agreed on the following four priorities for the Region for the period 2016-2019:

- (a) Maintenance and improvement of observations and telecommunication networks at the regional and national level through completion of the implementation of the WMO Information System (WIS) and the WMO Integrated Observing System (WIGOS);
- (b) Delivery of improved climate services through the establishment of the optimum network of the Regional Climate Centers (RCCs) to sustainably implement the Global Framework for Climate Services (GFCS);
- (c) Implement effective education and training programmes that build the capability of NMHSs in resource management, advocacy and outreach, and the National Weather Prediction (NWP) utilization;
- (d) Achievement by all Members of the standards required for quality management and staff competencies, with a focus on aviation and marine meteorology.

3.6 The Group also recognized the importance of strengthening existing multi-hazard early warning systems in light of disastrous tropical cyclones/typhoons, floods, drought, earthquakes and tsunamis such as Typhoon Haiyan (Yolanda) in the Philippines in November 2013, and Tropical Cyclone Ian in Tonga in January 2014.

#### **4. REPORT ON THE FIFTEENTH SESSION OF THE RA V TROPICAL CYCLONE COMMITTEE**

4.1. The Group was pleased to note that the fifteenth session of the Tropical Cyclone Committee for the South Pacific and Southeast Indian Oceans (TCC-15) was held in Port Vila, Vanuatu from 26 to 30 May 2014, and it expressed its appreciation to the Government of Vanuatu for hosting and providing support for the TCC-15.

4.2. The Group was pleased to note that the TCC-15 designated its current Chairperson, Mr Mike Bergin (Australia) to continue to lead the Committee. The Group also welcomed Australia's offer to officially communicate and confirm to the Secretariat of Mr Bergin's designation as Chairperson of the TCC.

4.3. The Group also noted that Mr Bergin would like seek a new Chairperson of the TCC and the Committee would discuss the matter during its sixteenth session in 2016. The Group was also pleased to note that Mr Bergin has offered to continue providing support to the work of the TCC as a mentor to the new Chairperson.

4.4. The Group noted that the TCC-15 discussed the idea of designating a vice-Chairperson, but the Committee decided to continue discussion on the idea during its sixteenth session in 2016. In the meantime, the TCC would maintain its current practice of designating a vice-Chairperson during, and for a period of each of its sessions. The Group further noted that the transition of leadership and mentoring arrangement highlighted in paragraph 4.3 would also provide an opportunity to introduce a vice-Chairperson for the Committee.

4.5. The Group also noted that the TCC-15 acknowledged the RA V-16 decision on the formation of the Task Team on Severe Weather Forecast Demonstration Project including Data Processing and Forecasting Systems (TT-SWFDP/DPFS) and the Task Team on Coastal Inundation and Storm Surges (TT-CISS). It was recognized that although the TCC focuses in general on Southern Hemisphere tropical cyclone matters, the SWFDP and CISS activities are of interest to all RA V Members, including northern hemisphere Members who are not formally represented on the TCC. The Group therefore reflected on how all RA V Members might participate in this work, and that although the TCC decided to postpone discussion on TCC membership until its sixteenth session in 2016, the Group felt that the matter needed to be addressed more urgently. In this connection, the Group requested the Chairperson of the TCC, in consultation with the Secretariat in particular the Tropical Cyclone Programme (TCP), Marine Meteorology and Oceanography Programme (MMOP), and the Data Processing and Forecasting

Systems Programme (DPFSP), to prepare a way-forward, including addressing the questions of Terms of References, memberships, and institutional arrangement for inclusion of the TT-SWFDP/DPFS and TT-CISS in the TCC, for the Management Group to consider during its thirteenth session.

4.6. The Group was pleased to note that the TCC-15 built upon the regional priorities as agreed to by the RA V-16 for Region V for 2016-2019, and discussed and identified the Committee's specific regional priorities and activities for 2016-2019 as given in [Annex II](#).

4.7. The Group also noted that the TCC has provided deliverables and activities as contributions to the RA V Operating Plan 2016-2019.

## **5 FOLLOW UP THE SIXTEENTH SESSION OF REGIONAL ASSOCIATION V**

### **5.1 Nomination of Membership**

5.1.1 The Group recalled that the RA V-16 decided its future working mechanism as contained in the document - *RA V-16/Doc. 5.3(1), 7.V.2014, APPROVED* including: (a) Resolution 5.3(1)/1 (RA V-16) – RA V Management Group (MG); (b) Resolution 5.3(1)/2 (RA V-16) – RA V Tropical Cyclone Committee for the South Pacific and South-East Indian Ocean (TCC); (c) Resolution 5.3(1)/3 (RA V-16) – RA V Working Group on Hydrological Services (WG-HYS); (d) Resolution 5.3(1)/4 (RA V-16) – RA V Working Group on Weather Services (WG-WXS); (e) Resolution 5.3(1)/5 (RA V-16) – RA V Working Group on Climate Services (WG-CLS); and (f) Resolution 5.3(1)/6 (RA V-16) – RA V Working Group on Infrastructure (WG-INFR).

5.1.2 The Group also recalled that the RA V-16 encouraged Members to nominate the Leads and vice Leads of the Working Groups and the Chairperson of Tropical Cyclone Committee, and members of the Task Teams, and the Secretariat circulated an official nomination letter along with nomination form as given in [Annex III](#) to Members.

5.1.3 The Group noted that the nominations were received from four members (Indonesia, New Zealand, Philippines, and Singapore) for the Leads/vice Leads of the Working Groups and experts for the Task Team. The Group was informed that the fifteenth session of the Tropical Cyclone Committee for the South Pacific and Southeast Indian Oceans (TCC-15, Port Vila, Vanuatu, 26-30 May 2014) designated its current Chairperson, Mr. Mike Bergin (Australia) to lead the Committee.

5.1.4 The Group endorsed Mr. Mike Bergin (Australia) designated by the TCC-15 as the Chairperson of the TCC.

5.1.5 Recognizing that more nominations should be added through additional nomination process, the Group requested the Secretariat to inform the RA V Members of the outcomes by emails of the membership status agreed at the MG-12 and solicit further nominations for the vacancies by the end of July 2014. The Group also agreed that the president should finalize the membership of Leads/vice Leads of WGs in consultation with MG members, and the newly appointed Leads/vice Leads of WGs and the Chair of TCC should submit the membership of experts of Task Teams in consultation with MG members to the president of the Region for approval.

### **5.2 DEVELOPMENT OF THE RA V OPERATING PLAN 2016-2019**

5.2.1 The Group noted that the RA V-16 requested its president with the assistance of the MG, to develop the RA V Operating Plan 2016-2019 as part of the WMO-wide Operating Plan 2016-2019 in alignment with the decisions on the regional priorities of Region V for the period 2016-2019, and to reflect activities contained in the Pacific Islands Meteorological Strategy (PIMS) 2012-2022,

which are based on the needs of the Pacific National Meteorological and Hydrological Services, into the WMO Operating Plan and RAV Operating Plan 2016-2019.

5.2.2 The Group reviewed the draft RA V Operating Plan 2016-2019 as given in **Annex IV**, and was pleased to note that it provided an excellent basis for the comprehensive list of deliverables and activities in the Region for the next fiscal period 2016-2019. The Group also noted that the draft Operating Plan 2016-2019 would require further improvements based on the future priorities in the Region decided by the RA V-16. The Group requested the RA V Task Team on Strategic and Operating Planning (TT-SOP) to improve the draft Operating Plan 2016-2019 in consultation with Members of RA V, Leads of the Working Groups (WGs), and Chairpersons of the Tropical Cyclone Committee (TCC) and the WMO Technical Departments by the end of September 2014, for consideration by the seventeenth session of World Meteorological Congress (Cg-17).

5.2.3 The Group expressed its appreciation to Mr Jon Gill (Australia), Chairperson of TT-SOP for the preparation of the draft RA V Operating Plan 2016-2019, and commended the Leads of WGs, the Chairperson of the TCC, and WMO Technical Departments for providing inputs to the RA V Operating Plan 2016-2019.

## **6. OTHER BUSINESS**

## **7. CLOSURE OF THE SESSION**

7.1 The president thanked all the participants for their fruitful discussion and expressed his satisfaction with the outcomes made in the session, and the list of participants is attached as **Annex V** to this report. He also thanked the WMO Secretariat for the arrangements for the session.

7.2 The twelfth session of the RA V Management Group closed at 14:40 on Monday, 23 June 2014.

---

## **ANNEX I**

### **TWELFTH SESSION OF THE RA V MANAGEMENT GROUP (Geneva, Switzerland, 23 June 2014)**

#### **AGENDA**

1. Organization of the Session
  2. Matters arising from the Eleventh Session
  3. Report on the key outcomes from the sixteenth session of Regional Association V
  4. Report on the fifteenth session of RA V Tropical Cyclone Committee
  5. Follow up to the sixteenth session of Regional Association V
    - 5.1 Nomination of Membership
    - 5.2 Development of the RA V Operating Plan 2016-2019
  6. Other Business
  7. Closure of the Session
-

## TCC REGIONAL PRIORITIES AND ACTIVITIES FOR 2016-2019

Regional priorities for Region V 2016-2019	Regional priorities for TCC 2016-2019	TCC activities 2016-2019
Maintenance and improvement of observations and telecommunications' networks at the regional and national level through completion of the implementation of the WMO Information System (WIS) and WMO Integrated Global Observing System (WIGOS).		
Delivery of improved climate services through the establishment of the optimum network of Regional Climate Centers (RCCs) to sustainably implement the Global Framework for Climate Services (GFCS)		
Implement effective education and training programs that build the capability of NMHSs in resource management, advocacy and outreach, and Numerical Weather Prediction (NWP) utilization.	Capacity development including education and training in the areas of tropical cyclone forecasting.	Organize session(s) of the RA V TCC.
		WMO Southern Hemisphere Training Courses tropical Cyclones (biennial).
		Updating and training in the implementation and of the tropical cyclone module.
		Organize annual forecaster attachment training at RSMC Nadi –TCC.
		Pacific International Training Desk at RSMC Honolulu.
		Develop and implement competencies assessment for tropical cyclone forecasters.
		Provide support to TCC members to participate in IWTC(s).
	Access to and utilization of satellite data and information.	WMO-CGMS Virtual Lab for Education and Training in Satellite Meteorology (centre of excellence, supported by BoM and JMA).
		Assist Members to receive meteorological satellite information / images from new and advanced generations of satellite systems such as the replacement of MTSAT.
	Access to and utilization of the NWP including wave and storm surge models.	Access to, and utilize available tools, techniques and information to predict wave heights.
Establish and operationalize early warning system for storm surges.		
Access to, and utilize available tools, techniques and information to predict storm surges.		
Continued implementation of the Severe Weather Forecast and Disaster Risk Reduction Demonstration Project (SWFDDP).	Transition of the SWFDDP to operational stage.	
	Establish and operationalize national early warning system for severe weather events other than tropical cyclones.	
Achievement by all Members of the standards required for quality	Delivery and communicating tropical cyclone warnings to the users including	NMHSs transmit / communicate advisories/warnings to disaster



management and staff competencies, with a focus on aviation and marine meteorology.	the "last mile".	management agencies.
		Regular briefings from NMHSs to the disaster management agencies on early warnings for disasters related to tropical cyclones.
		Establish and operationalize early warning system for severe weather events other than tropical cyclones
		Establish national back-up or redundant system(s) related to early warning system for tropical cyclones.
		Regular discussions between NMHSs and local communities to help them to improve understanding of early warnings for disaster related to weather.
		Develop weather related hazard/disaster response plans for local communities.
		Develop weather related hazard/disaster response plans for economic sectors.
	Research and transition of research to operation of tropical cyclone forecasting techniques.	Develop case studies of high impact weather events.
		Conduct research on high impact weather events related to monsoons such as heavy rainfall episodes due to cold surge.

## NOMINATION OF MEMBERSHIP



World Meteorological Organization  
Organisation météorologique mondiale

Secrétariat  
7 bis, avenue de la Paix – Case postale 2300 – CH 1211 Genève 2 – Suisse  
Tél.: +41 (0) 22 730 81 11 – Fax: +41 (0) 22 730 81 81  
wmo@wmo.int – www.wmo.int

Weather • Climate • Water  
Temps • Climat • Eau

Our ref.: DRA-AP/RAV-16/WGM

GENEVA, 22 May 2014

Annexes: 3 (available in English only)

Subject: Nomination of experts for RA V subsidiary bodies

Action required: To return to the WMO Secretariat a completed nomination form for each expert not later than **13 June 2014**

Dear Sir/Madam,

I wish to refer to the decision of the sixteenth session of Regional Association V (South-West Pacific) (RA V-16) held in Jakarta, Indonesia from 2 to 7 May 2014 concerning the new working mechanism of the subsidiary bodies of the Association.

The Association agreed on the future working structure of RA V subsidiary bodies as illustrated in the Annex I, and urged the Management Group to complete the establishment of the subsidiary bodies for approval by the President of the Region.

In this context, I would like to kindly invite you to nominate appropriate experts from your country who could be candidates for undertaking the duties of members of Working Groups (WGs) and Tropical Cyclone Committee (TCC) and their Task Teams during the forthcoming four-year intersessional period. I am attaching the structure of RA V subsidiary bodies in Annex I for your easy reference. Additional details on the duties for WGs and TCC could be referred to the approved resolutions of RA V-16 on its WGs and TCC as given in Annex II.

It would be appreciated if you could nominate your candidates by completing one nomination form (see Annex III) for each expert. Please send completed form(s), accompanied by one-page curriculum vitae, to the Secretariat as soon as possible, but preferably not later than **13 June 2014** in order to ensure that this information will be available for consideration by the Management Group.

Yours faithfully,

(Robert O. Masters)  
Director

Development and Regional Activities Department

To: Directors of Members of Regional Association V

REGIONAL ASSOCIATION V (SOUTH-WEST PACIFIC)

PARTICULARS OF EXPERTS PROPOSED FOR CONSIDERATION AS MEMBERS OF  
WORKING GROUPS

Member: \_\_\_\_\_

**1. Personal Information:**

Surname (Dr, Mr, Ms) \_\_\_\_\_ First name: \_\_\_\_\_

Tel: \_\_\_\_\_ E-mail: \_\_\_\_\_

Institution: \_\_\_\_\_

Position held: \_\_\_\_\_

**2. Participating Working Group/Task Team (see Annex I):**

(i) Lead/Vice-lead of Working Group on: WXS ( ) ; CLS ( ) ; HYS ( ) ; INFR ( ) ; or  
Chair of TCC ( ) ; or

(ii) Member of Working Group on: WXS ( ) ; CLS ( ) ; HYS ( ) ; INFR ( ) ; or  
TCC ( ) *with expertise relevant to the following Task Team(s):*

Task Team on \_\_\_\_\_

Task Team on \_\_\_\_\_

Task Team on \_\_\_\_\_

Task Team on \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_  
(Permanent Representative)

✓ Please return this form with one-page curriculum vitae to:

The Secretary-General  
World Meteorological Organization  
7bis, avenue de la Paix  
Case postale No. 2300  
1211 GENEVA 2

Attention: Dr Yongseob LEE  
Tel: +41 22 730 85 76  
Fax: +41 22 730 81 18  
E-mail: ylee@wmo.int

## RA V OPERATING PLAN 2016-2019 (DRAFT)

DEPT	BRANCH	ER	KEY OUTCOME	KEY PERFORMANCE INDICATOR	DELIVERABLE	PRORGRAMME	TC	REGION	LDCs, SIDS, GENDER	ACTIVITY	Y2016	Y2017	Y2018	Y2019	Total		
DRA	RAP	1	1.1	1.1.2	Improved coordination of weather services in the Region.	PWS, WXS, TCC	CBS	RA V		Organize session of RA V WG/WXS.							
DRA	RAP	1	1.1	1.1.1	Enhanced timely and accurate weather forecast / warning for aviation.	AeMP, WXS	CAeMP	RA V		Aviation client survey to be done at least once a year							
										RA V		Attachment/training at world class meteorological centres in weather analysis, forecast and warning for aeronautical purposes (military and civil aviation)					
										RA V	LDCs, SIDS	Regional workshop to raise awareness and improve understanding of ICAO-WMO requirements among NMHSs and various agents of aviation sectors in the Pacific region on aviation meteorological services.					
										RA V	LDCs, SIDS	Assist to develop inter-agency formal agreements for aviation weather services between Fiji Meteorological Services / RSMC-Nadi and other NMHSs in the Pacific Islands (Cook Islands, Kiribati, Nauru, Niue, Samoa, Tonga, and Tuvalu).					
										RA V	LDCs, SIDS	Assist to develop national inter-agency formal agreements for aviation weather services between NMHSs and Civil Aviation Authorities or equivalents in the Pacific Islands (Cook Islands, Fiji, Kiribati, Nauru, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu).					
										RA V	LDCs, SIDS	Assist to harmonize or align legislations or equivalents of NMHSs and Civil Aviation Authorities or equivalents to meet ICAO-WMO requirements.					
										RA V	LDCs, SIDS	Resolve Asia/Pacific deficiencies as identified by ICAO in the area of SIGMET, especially in the Pacific Islands (Cook Islands, Kiribati, Nauru, Solomon, Islands, and Tonga)					
										RA V	LDCs, SIDS	Install equipment including hardware and software for verification of TAF in NMHSs of Pacific Islands (Fiji, Papua New Guinea, and Vanuatu).					
DRA	RAP	1	1.1	1.1.1	Implemented QMS for aviation meteorological service providers	AeMP, WXS	CAeM	RA V									
										RA V		QMS guidance (WMO webpage & forum, input into WMO/ICAO publications and COMET module)					
										RA V		Internal Auditor Training					
										RA V		'Twinning' to mentor Members on QMS processes and audits					

								RA V		Lead Auditor training (international qualification)									
								RA V	LDCs, SIDS	Assist Pacific Islands Meteorological Authorities, NMHS and Civil Aviation Authorities to enhance QMS for aviation meteorological services.									
DRA	RAP	1	1.1	1.1.1	Implemented cost recovery for aviation meteorological service providers	AeMP, WXS	CAeM	RA V	LDCs, SIDS	Conduct a survey on cost recovery for aviation meteorological services in RA V Members.									
								RA V	LDCs, SIDS	Develop and provide guidance on cost recovery for aviation meteorological services.									
								RA V	LDCs, SIDS	Assistance to Members with cost recovery implementation including development of policies and guidelines.									
					Implemented competency assessment for aviation meteorological service providers	AeMP, WXS	CAeM	RA V	LDCs, SIDS	Conduct a survey to determine current status of the implementation of competency assessment for AMO and AMF in RA V Members.									
								RA V		Develop and provide guidance to assist Members in RA V to implement competency assessment for AMO and AMF.									
								RA V	LDCs, SIDS	Assist Members with implementation through in-countries training and visits including competency assessment training for AMO and AMF Cook Islands, Federated States of Micronesia, Kiribati, Niue, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.									
DRA	RAP	1	1.1	1.1.2	Enhanced wave modeling and NWP products.	MMOP, WXS, TCC	JCOMM	RA V		Enhance wave modeling capability, including 3 wave models with wind inputs from NCEP-GFS and NAVGEM (now running operationally).									
								RA V	LDCs, SIDS	Install equipment including hardware and software in, and/or make available tools, techniques and information to, NMHSs in Pacific Islands to predict wave heights.									
								RA V	LDCs, SIDS	Install equipment including hardware and software in, and/or make available tools, techniques and information to, NMHSs in Pacific Islands to predict storm surges.									
DRA	RAP	1	1.1	1.1.2	Strengthened ferry operators / inter-islands boat operators, port authorities and enforcement agencies obtain marine forecasts.	MMOP, WXS, TCC, PWS	JCOMM	RA V		Provide forecasts for marine activities									
								RA V		Client summary at least once a year									
								RA V	LDCs, SIDS	Strengthen relationships between NMHSs and relevant marine agencies through developing agreements or equivalents with port authorities									
								RA V	LDCs, SIDS, Gender	Develop and conduct public awareness and education in the Pacific Islands for inter-island boats operators and small crafts operators on the use and interpretation of marine weather information and forecasts.									
								RA V	LDCs, SIDS,	Installation of marine weather and climate observations <b>equipment</b> on ferries / inter-island shipping / boats.									
DRA	RAP	1.1	1.1	1.1.2	Implemented QMS for marine meteorological service providers	MMOP, WXS	JCOMM	RA V	LDCs, SIDS	Provide guidance to Members on the implementation of QMS for marine meteorological services.									
DRA	RAP	1	1.1	1.1.2	Improved accuracy of public forecasts and warnings	PWS, WXS,	CBS	RA V		Inter-agency committee is formed to conduct research on the improvement of forecast accuracy									



DRA	RAP	2	2.1	2.1.1	Improved communities and other stakeholders safety	WWW, TCP, DRR, TCC	CBS	RA V		Engage with stakeholders to develop new products					
								RA V		Conduct regular community surveys					
								RA V		Regular completion of verification spread sheets by NHMs					
								RA V		Regular completion of in-country progress reports for SWFDDP					
								RA V	LDCs, SIDS, Gender	Regular discussions between NMHSs and local communities to help them to improve understanding of early warnings for disaster related to weather.					
								RA V	LDCs, SIDS, Gender	Develop weather related hazard/disaster response plans for local communities.					
								RA V	LDCs, SIDS, Gender	Develop weather related hazard/disaster response plans for economic sectors					
DRA	RAP	2	2.2	2.2.1	Improved flood forecasting systems and techniques	HWRP, HYD, TCC	Chy, CBS	RA V		Implementation of FFGS in Region V					
								RA V		Reports on regional applications; IFAS, TopNet, IFFRM, Delft-FEWS etc.					
								RA V	LDCs, SIDS, Gender	Strengthen or establish early warning systems for floods in Members of RA V.					
DRA	RAP	2	2.2	2.2.1	Improved linkages with DRR community and other stakeholders.	HWRP, HYD, TCC	Chy, CBS	RA V		Hydrological inputs to end-to-end multi-disaster warning systems - CIFDP					
								RA V	LDCs, SIDS, Gender	Regular discussions between NMSs and NHSs.					
								RA V	LDCs, SIDS, Gender	Develop national policies for early warning systems for floods inclusive of women, girls, youth, children, disable people and the most vulnerable communities.					
								RA V	LDCs, SIDS, Gender	Strengthen or develop national joint programmes between NMSs, NHSs and NDMOs on public awareness and education on floods that is inclusive of women, girls, youth, children, disable people, and vulnerable communities.					
DRA	RAP	2	2.3	2.3.1	Improved drought monitoring and management capabilities.	HWRP, HYD, WCP, CLS	Chy, CCI	RA V		Evaluate accuracy of seasonal predictions for water management purposes;					
								RA V		Improve water elements in CliDE;					
								RA V	LDCs, SIDS, Gender	Enhance or establish drought prediction and early warning services at national levels in Members of Region V.					
								RA V	LDCs, SIDS, Gender	Develop strategies or equivalents for early warning services for drought events.					
								RA V	LDCs, SIDS, Gender	Regular discussions between providers of drought prediction and early warning services and users of these services through					





					and maps of surface air temperature.			RA V		Provision of climate services to relevant agency						
DRA	RAP	3	3.1	3.1.1	Improved regional coordination mechanism for hydrology and water resources and services in Region V.	HWRP, HYS	Chy	RA V		Organize session of RA V WG/HYS.						
DRA	RAP	3	3.3	3.3.1	Prepared Guidance and training on water information systems, Neon and Delft-FEWS	HWRP, HYS	Chy	RA V		Workshop on improved presentation of hydrological data and information						
DRA	RAP	3	3.3	3.3.1	Prepared SEA HYCOS Phase I concept document	HWRP, HYD		RA V		Establish a sub-group of the RA V WG/HYS to develop SEA HYCOS concept document.						
DRA	RAP	3	3.3	3.3.1	Prepared Pacific HYCOS Phase II concept document	HWRP, HYD, HYS				Establish a sub-group of the RA V WG/HYS to develop Pacific HYCOS concept document.						
DRA	RAP	3	3.3	3.3.1	Improved quantitative precipitation estimates and forecasts	HWRP, HYS, TCC	Chy, CBS	RA V		Develop and implement joint activities with SWFDP including framing cascading mechanism within G/R/LNWP						
DRA	RAP	3	3.3	3.3.1	Guidance materials on rainfall based flood forecasts are developed.	HWRP, HYS, TCC	Chy, CBS	RA V		Develop guidance materials on rainfall-based flood forecasts.						
DRA	RAP	3	3.3	3.3.1	Accessibility to available information, tools, and techniques to aid monitoring, preparation, and issuing / dissemination of floods' information and warnings.	HWRP, HYS	Chy	RA V	LDCs, SIDS	NMSs and NHSs have access to and be able to use: (a) GIS; (b) hazard maps; © population maps; and other socio-economic data and maps that will aid the monitoring of floods and the preparation and issuing / dissemination of floods information and warning.						
								RA V	LDCs, SIDS, Gender	NMSs and NHSs have access to hydrological and meteorological information, tools and techniques that will aid the monitoring of floods and issuing of floods warnings.						
DRA	RAP	4	4.1	4.1.1	Improved regional coordination of infrastructure of NMHSs.	WWW, GCOS, INFR	CCI, CBS	RA V		Organize session of RA V WG/INFR.						
DRA	RAP	4	4.1	4.1.1	Stations metadata provided to WMO regularly.	SP, GCOS, WCP, WWW, WICOS INFR	CCI, CBS	RA V		Publicize and/or develop communication strategy or MoU or equivalents to enhance and enable NMHSs to have access and to utilize facilities and expertise in Regional Instrument Centres to calibrate meteorological instrument						
								RA V		Enhance the capacity of Members in RA V to achieve traceability.						
								RA V		Monitor and detect discrepancies between current performance and the metadata lodged with WMO.						
								RA V		Implement new WIGOS metadata standards in Members of RA V.						
DRA	RAP	4	4.1	4.1.1	Implemented WIGOS across Region V.	WWW, OBS, WIGOS, WCP, INFR	CBS	RA V	LDCs, SIDS	Develop national WIGOS implementation plans.						
								RA V	LDCs, SIDS	Organize regional workshops for managers of weather and climate observations to discuss WIGOS.						









		8	8.1												
		8	8.1												
		8	8.1												
		8	8.1												
		8	8.1												
		8	8.2												
		8	8.2												

## LIST OF PARTICIPANTS

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

Dr Andi Eka Sakya President of RA V Chairperson	Indonesia	andi.eka.sakya@bmkgo.go.id
Dr Ardhasena Sopaheluwaka Adviser to Dr Andi Eka Sakya	Indonesia	ardhasena@bmkgo.gov.id ardhasena@gmail.com
Ms Anni Arumsari Fitriany Adviser to Dr Andi Eka Sakya	Indonesia	anni.arumsari@bmkgo.go.id
Prof. Dr Edvin Aldrian Adviser to Dr Andi Eka Sakya	Indonesia	edvin.aldran@bmkgo.go.id
Ms Dian Nurratri Adviser to Dr Andi Eka Sakya	Indonesia	dianuratri@gmail.com
Mr Mulyono Prabowo Adviser to Dr Andi Eka Sakya	Indonesia	mulyono.prabowo@bmkgo.go.id
Dr Robert Vertessy Member	Australia	r.vertessy@bom.gov.au
Mr Jon Gill Adviser to Dr Robert Vertessy	Australia	j.Gill@bom.gov.au
Dr Sue Barrell Adviser to Dr Robert Vertessy	Australia	s.barrell@bom.gov.au
Ms Sue O'Rourke Adviser to Dr Robert Vertessy	Australia	s.orourke@bom.gov.au
Mr Russell Stringer Adviser to Dr Robert Vertessy	Australia	r.stringer@bom.gov.au
Ms Che Gayah Ismail Member	Malaysia	cgayah@met.gov.my
Mr Kelly Sponberg Adviser	USA	kelly.sponberg@noaa.gov

Mr Alipate Waqaicelua Member	Fiji	fms@met.gov.fj; alipatew@gmail.com alipate.waqaicelua@met.gov.fj
Mr Misaeli Funaki Adviser to Mr Alipate Waqaicelua	Fiji	misaeli.funaki@met.gov.fj

## 2. WMO Secretariat

Mr Robert O. Masters Director, Development and Regional Activities (DRA) Department		rmasters@wmo.int
Dr Chung Kyu Park Director, Regional Office for Asia and South-West Pacific (RAP) Office, DRA Department		cpark@wmo.int
Dr Wenjian Zhang Director, Observation Services (OBS) Department		wzhang@wmo.int
Mr Bruce Stewart Director, Climate and Water Services (CLWS) Department		bstewart@wmo.int
Dr Peiliang Shi Director, WMO Information System (WIS) Office, OBS Department		pshi@wmo.int
Mr David Thomas Chief, Information and Telecommunication Systems (ITS) Division, OBS Department		dthomas@wmo.int
Mr Taoyong Peng Chief, Tropical Cyclone Programme (TCP), Weather and Disaster Risk Reduction Services (WDS) Department		tpeng@wmo.int
Dr Boram Lee Scientific Officer, Marine Meteorology and Oceanography (MMO) Programme, WDS Department		blee@wmo.int
Mr Luis Filipe Nunes Scientific Officer, WMO Integrated Observing System (WIGOS) Project Office, OBS Department		ifnunes@wmo.int
Dr Jaser Rabadi Representative, WMO Office for West Asia (Bahrain), RAP Office, DRA Department		jrabadi@wmo.int
Mr Kuniyuki Shida Senior Programme Manager for Regional Coordination, DRA Department		kshida@wmo.int



Dr Yongseob Lee  
Regional Office for Asia and South-West Pacific (RAP) Office,  
DRA Department

ylee@wmo.int

Mr Henry Taiki  
Programme Officer, WMO Office for the South-West Pacific  
(Apia, Samoa), RAP, DRA Department

htaiki@wmo.int

Mr Niranjana Tamrakar  
Project Officer  
Regional Office for Asia and South-West Pacific (RAP) Office,  
DRA Department

ntamrakar@wmo.int

---