REGIONAL ASSOCIATION II (ASIA)

WORKING GROUP, IMPLEMENTATION AND COORDINATION TEAM AND TASK TEAM CHAIRS' MEETING ON IMPLEMENTATION AND DEVELOPMENT OF STRATEGIC OPERATING PLAN IN REGIONAL ASSOCIATION II (ASIA)

DOHA, QATAR, 27-28 MAY 2014

FINAL REPORT

WORLD METEOROLOGICAL ORGANIZATION

WORKING GROUP, IMPLEMENTATION AND COORDINATION TEAM AND TASK TEAM CHAIRS' MEETING ON IMPLEMENTATION AND DEVELOPMENT OF STRATEGIC OPERATING PLAN IN REGIONAL ASSOCIATION II (ASIA)[1]

(Doha, Qatar, 27-28 May, 2014)

1. Opening and organization of the meeting

The meeting started at 9:30 on Tuesday, 27 May, 2014 in Doha, Qatar at the Headquarters of Qatar Meteorological Department. Opening and welcome statements were delivered by the president of RA II and the Director of Regional Office for Asia and the South-West Pacific, WMO. The participants adopted the provisional agenda and work plan as given in Annex I.

2. Follow up on the decisions of RA II-15 on the working mechanism of the Association

The Secretariat presented the summary of decisions made by the fifteenth session of Regional Association II, which was held in Doha, Qatar in December 2012, focusing on the membership and terms of reference of the subsidiary bodies as well as volunteerism as given in Annex II.

The meeting noted: (i) theme leader of WG-CS on Socio-economic impact of Agro-meteorological information has not been selected, and the Chair of WG-CS will consider removing this theme in consultation with other members; and (ii) theme leaders of WG-HS on Improved Accuracy of Hydrologic and Sediment Observations including Space-Based Technologies, and Sediment Disasters and Mass Movements have not been selected, and the Chair of WG-HS will consider nominating experts to lead the themes.

3. Review of the activities of the RA II subsidiary bodies

Presentations were made by the Chairpersons of Working Groups (WGs), Implementation and Coordination Teams (ICTs), and Task Team (TT) on the activities since RA II-15 as given in Annex III.

4. Work plans of Working Groups and Implementation and Coordination Teams for 2014-2016

Presentations were made by the Chairpersons of WGs and ICTs on Work Plans for 2014-2016. The participants discussed the strength and weakness of current work plans and propose possible improvements through coordination.

The participants agreed that it is not feasible to carry out 126 deliverables with more than 200 activities listed in the RA II SOP 2012-2015, and the Work Plans should retain only the concrete action items including the pilot projects established in RA II-15 to be implemented especially for the monitoring and evaluation purpose. The meeting agreed on the following actions: (i) Chairpersons of WGs/ICTs will submit the revised Work Plans (2014-2015) to Mr A. Al-Mannai, member of TT-SOP, preferably in a week after the meeting; and (ii) Mr A. Al-Mannai will collect the Work Plans for the submission to the RA II MG-8, which is scheduled to be held on 18 June 2014, for approval.

[1] The presentation materials and relevant documents for the RA II WG/ICT/TT Chairs' meeting are available at the WMO web site: http://www.wmo.int/pages/prog/dra/rap/meetings/RAIIWG-ICT-TT.html

5. Review of activities related to RA II WIGOS and WIS Implementation Plans

Presentations were made by the Chairperson of WG-WIGOS/WIS regarding the current status and challenges in the implementation of WIGOS and WIS including GISC in the global context and in the Region. Participants discussed effective ways of cooperation regarding the implementation of WIGOS and WIS in the Region as given in Annex IV.

Participants also discussed an effective way of nomination for a RA II focal point/rapporteur for Radio Frequency Coordination under WIGOS in conjunction with CBS. The Chair of WG-WIGOS/WIS will prepare a draft proposal on an effective way of nomination for a RA II focal point for Radio Frequency Coordination, in consultation with the WG members for the submission to the RA II MG-8 for approval.

6. Monitoring and evaluation of RA II SOP 2012-2015

Presentation was made by the Chairperson of Task Team on RA II Strategic Planning on work plan for monitoring and evaluation to measure the performance of implementation of RA II SOP 2012-2015. The participants discussed in detail particularly strategy, methodology, and efficiency and effectiveness of the proposed plan for further improvement and agreed on the following: (i) Chairpersons of WGs/ICTs will submit, or revise if already submitted, the list of deliverables/activities accomplished or conducted since RA II-15 (2012-2014), in line with the submitted Work Plans, to Mr LS Lee, Chair of TT-SOP, preferably within one week after the meeting; (ii) Mr Lee will collect them for the submission to the RA II MG-8 (18 June, 2014) for their review; (iii) the M&E will be conducted for the fiscal period of 2012-2015 based on the Work Plans to be approved by the RA II Management Group; (iv) the methodology of M&E will be discussed in consultation with EC WG-SOP, and the Chair of TT-SOP will take the lead if a survey is conducted for M&E; (v) the mid-term progress report (2012-2014) will be presented at the sixth Regional Conference (RECO-6); and (vi) RA II Pilot Projects currently in operation will be included in the RA II SOP 2012-2015 replacing those implemented during the last intersessional period.

7. WMO Strategic Plan 2016-2019 and Regional Operating Plans

Presentations were made by the Secretariat regarding recent development of the draft WMO Strategic Plan (SP) 2016-2019 and recommendations on the development of regional Operating Plans (OPs) 2016-2019 as given in Annex V.

8. Survey on institutional arrangements for NMHSs and identification of future priorities

The participants were informed by the Secretariat on the surveys recently conducted in other Regional Associations (i.e., RA V and RA VI) aiming at identifying challenges and future priorities for contribution to the development of the WMO Strategic Plan 2016-2019 and preparation of respective Regional Operating Plans 2016-2019. After discussion on the survey to identify challenges and future priorities in RA II for the preparation of RA II SOP 2016-2019, the meeting agreed that: (i) RA II needs to conduct a survey to identify current challenges and future priorities, especially for the preparation of RA II SOP 2016-2019; and (ii) Chairperson of TT-SOP will take the lead in conducting the survey and submit a draft survey questionnaire to the RA II MG-8 for their review and approval.

9. Future priorities of RA II and RA II Operating Plan 2016-2019

The participants discussed contributions of RA II to the WMO Strategic Plan 2016-2019 regarding future regional priorities and the preparation of the RA II Operating Plan for 2016-2019 and agreed that: (i) the RA II SOP 2016-2019 should only include specific deliverables with

concrete activities for individual Regional Key Outcomes, so that the number of deliverables would be feasible to implement and monitor; (ii) Chairs of WGs/ICTs will submit the scope of deliverables/activities for the RA II SOP 2016-2019 to Dr KJ Ramesh, Chair of ICT-DRR, preferably in a week after the meeting; (iii) Dr Ramesh will collect them for the submission to the RA II MG-8 for their review; and (iv) small group includes the WG/ICT/TT-SOP chairs, who will take the leading role in the preparation of RA II SOP 2016-2019.

10. The sixth session of Regional Conference

Based on draft themes and the provisional topics of the sixth session of RA II Regional Conference (RECO-6) proposed by the Chairpersons of ICT-SD and ICT-DRR, the participants discussed and proposed two options for the theme and provisional topics in line with the WMO's future priority areas for consideration by the Management Group. The participants agreed to propose the following options regarding the theme of the RECO-6: *"Enhancements of Multi-Hazard Early Warning System for Disaster Risk Management and Aeronautical Meteorological Services to Support for Decision-Making" or "Enhancements of Multi-Hazard Early Warning System for Disaster Risk Management and Aviation Safety", and also agreed that the t*opics may include emerging issues of increasing weather-, climate- and water-related natural disasters in the Region in conjunction with upgrading of service delivery capability.

The Government of Qatar kindly offered to host the RECO-6 in Doha, tentatively in early December 2014. The president of RA II encouraged the WG/ICT/TT Chairs to participate in the RECO-6, and find a means to effectively implement the Work Plans, including the establishment of a RA II Trust Fund.

11. Other business

12. Closure of the meeting

The Meeting was closed at 4:30 PM on 28 May 2014. The list of participants is attached as Annex VI to this report.

ANNEX I

WORKING GROUP, IMPLEMENTATION AND COORDINATION TEAM AND TASK TEAM CHAIRS' MEETING ON IMPLEMENTATION AND DEVELOPMENT OF STRATEGIC OPERATING PLAN IN REGIONAL ASSOCIATION II (ASIA)
(Doha, Qatar, 27-28 May, 2014)

AGENDA

1. Opening and organization of the meeting
2. Follow up on the decisions of RA II-15 on the working mechanism of the Association
3. Review of the activities of the RA II subsidiary bodies
4. Work plans of Working Groups and Implementation and Coordination Teams for 2014-2016
5. Review of activities related to RA II WIGOS and WIS Implementation Plans
6. Monitoring and evaluation of RA II SOP 2012-2015
7. WMO Strategic Plan 2016-2019 and Regional Operating Plans
8. Survey on institutional arrangements for NMHSs and identification of future priorities
9. Future priorities of RA II and RA II Strategic Operating Plan 2016-2019
10. The sixth session of Regional Conference
11. Other business
12. Closure of the meeting

ANNEX II

MEMBERSHIP OF SUBSIDARY BODIES OF RAII

Chairpersons/Co-coordinators of WGs/ICTs and overseeing MG members

Working Group on Weather Services (WGWS) (Dr Zheng)

**Mr Boon-leung Choy	(Co-Coordinator of EG-AeM) (Hong Kong, China)
Ms Marina Petrova	(Co-Coordinator of EG-AeM) (Russian Federation)
Mr Yuki Honda	(Co-Coordinator of EG-OF) (Japan)
Ms Irina Zaytseva	(Co-Coordinator of EG-OF) (Uzbekistan)
Mr Lap-shun Lee	(Co-Coordinator of EG-PWS) (Hong Kong, China)
Dr Muhammad Hanif	(Co-Coordinator of EG-PWS) (Pakistan)
Mr Alexey Lyakhov	(Co-Coordinator of EG-PWS) (Russia)

Working Group on Climate Services (WGCS) (Dr Hatori)

**Mr Ryuji Yamada	(Co-Coordinator of EG-CS) (Japan)
Dr Ghulam Rasul	(Co-Coordinator of EG-CS) (Pakistan)
Dr N. Chattopadhyay	(Co-Coordinator of EG-AgM) (India)
Dr Alexander Kleshchenko	(Co-Coordinator of EG-AgM) (Russian Federation)

Working Group on Hydrological Services (WGHS)

*Dr Sung Kim	(Chairperson of WGHS) (Republic of Korea)
Mr Muhammad Riaz	(Vice-chairperson of WGHS) (Pakistan)

Working Group on WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS) (WG-WIGOS/WIS) (Mr Lee)

**Mr Yongqing Chen	(Co-Coordinator of EG-WIGOS) (China)
Dr Jaegwang Won	(Co-Coordinator of EG-WIGOS) (Republic of Korea)
Ms Xiang Li	(Co-Coordinator of EG-WIS) (China)
Mr Kenji Tsunoda	(Co-Coordinator of EG-WIS) (Japan)

Implementation Coordination Team on Service Delivery (ICT-SD) (Dr Mohalfi)

* Mr Jianjun Xue	(Chairperson of ICT-SD)(China)

Implementation Coordination Team on Disaster Risk Reduction (ICT-DRR) (Dr Rathore)

* Dr K.J. Ramesh	(Chairperson of ICT-DRR) (India)

* Chairperson decided by RA II-15; ** Chairperson decided by MG-7;

( ) Overseeing MG Member

Working Group on Weather Services (WGWS)

Expert Group on Aeronautical Meteorological Services Delivery (EG-AeM)

EG-AeM	Name	Country
Co-Coordinators	Mr Boon-leung Choy	Hong Kong, China
	Ms Marina Petrova	Russian Federation
Theme Leader on QMS Implementation and Maintenance	Ms Jie Shao	China
Theme Leader on Competency Assessment	Mr Manoj Kumar Bhatnagar	India
Theme Leader on Meteorological Support to Air Traffic Management and Provision of SIGMETs	Mr Jun Ryuzaki	Japan

Expert Group on Operational Forecasting (EG-OF)

EG-OF	Name	Country
Co-Coordinators	Mr Yuki Honda	Japan
	Ms Irina Zaytseva	Uzbekistan
Theme Leader on Operational Forecasting Process and Support	Ms Sunitha D. Santhamma	India
	Mr Vo Van Hoa	Viet Nam
Theme Leader on Operational Predictions from sub-seasonal to longer-time scale	Mr Suhee Park	Republic of Korea
Theme Leader on Emergency Response Activities	Mr Masami Sakamoto	Japan

Expert Group on Public Weather Services Delivery (EG-PWS)

EG-PWS	Name	Country
Co-Coordinators	Mr Lap-shun Lee	Hong Kong, China
	Dr Muhammad Hanif	Pakistan
	Mr Alexey Lyakhov	Russian Federation
Theme Leader on Socio-economic Benefits of Meteorological and Hydrological Services	Mr Jinjun Pan	China
Theme Leader on Delivery of Warning Services	Mr Chuanhai Qian	China
Theme Leader on Education and Public Outreach related to PWS	Dr Seonkyun Baek	Republic of Korea

Working Group on Climate Services (WGCS)

Expert Group on Climate Services (EG-CS)

EG-CS	Name	Country
Co-Coordinators	Mr Ryuji Yamada	Japan
	Dr Ghulam Rasul	Pakistan
Theme Leader on User Liaison and Applications of Climate Information and Products for Climate Risk Management and Adaptation to Climate Change	Dr Ali Karem Kadhum	Iraq
Theme Leader on QMS Implementation and Operation of Regional Climate Centres	Mr Peiqun Zhang	China
Theme Leader on Operational Regional and National Climate Outlook Forums	Dr A. K. Srivastava	India
Theme Leader on Climate Monitoring and Climate Watch	Ms Yuliya Plotnitskaya	Uzbekistan
Theme Leader on Climate Research for Development	Ms Yuping Yan	China

Expert Group on Agrometeorology (EG-AgM)

EG-AgM	Name	Country
Co-Coordinators	Dr N. Chattopadhyay	India
	Dr Alexander Kleshchenko	Russian Federation
Theme Leader on Agrometeorological Training Needs	Ms Feruza Rakhmanova	Uzbekistan
Theme Leader on Soil Moisture Monitoring	Ms Xuefen Zhang	China
Theme Leader on Drought Preparedness and Management Strategies	Mr Mir Hazrat	Pakistan
Theme Leader on Seasonal Climate Forecast Applications for Agriculture	Mr Liuxi Mao	China
Theme Leader in Socio-economic Impact of Agrometeorological Information	TBD	TBD

Working Group on Hydrological Services (WGHS)

WGHS	Name	Country
Chairperson WGHS	Dr Sung Kim	Republic of Korea
Vice-chairperson WGHS	Mr Muhammad Riaz	Pakistan
Theme Leader on Water Resources Assessment	Ms Ge Gao	China
	Ms Hwirin Kim	Republic of Korea
Theme Leader on Flood Forecasting	Dr Sergey Borshch	Russian Federation
Theme Leader on Hydrological Aspects of Drought	Ms Irina Dergacheva	Uzbekistan
Theme Leader on Hydrological Responses to Climate Variability and Change and Promotion of the Use of Climate Information by Water Managers	Mr Guoqing Wang	China
	Dr Thuc Tran	Viet Nam
Theme Leader on Improved Accuracy of Hydrometric and Sediment Observations including Space-based Technologies	TBD	
Theme Leader on Sediment Disasters and Mass Movements	TBD	

Working Group on WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS) (WG-WIGOS/WIS)

Expert Group on WIGOS (EG-WIGOS)

EG-WIGOS	Name	Country
Co-Coordinators	Mr Yongqing Chen	China
	Dr Jaegwang Won	Republic of Korea
Theme Leader on Implementation and Updating of R-WIP	Mr Yoshiro Tanaka	Japan
Theme Leader on Implementation of EGOS-IP	Mr Yatian Guo	China
Theme Leader in Standard and Best Practice	Dr Seongchan Park	Republic of Korea
Theme Leader on Observational Requirements and Regional Network	Mr D. K. Malik	India
	Mr Abdulqaleq Ali Ali	Iraq
Theme Leader on Data Availability and Quality of Observations	Mr Yoshihisa Kimata	Japan
Theme Leader on Surface-based Remote Sensing for Disaster Risk Reduction	Mr Feng Li	China
	Dr Oleg Pokrovsky	Russian Federation
Theme Leader on Satellite Data, Products and Training	Mr Tomoo Ohno	Japan
	Dr Dohyeong Kim	Republic of Korea

Expert Group on WIS (EG-WIS)

EG-WIS	Name	Country
Co-Coordinators	Ms Xiang Li	China
	Mr Kenji Tsunoda	Japan
Theme Leader on Data Communication Techniques and Structure	Dr Sunghoi Huh	Republic of Korea
Theme Leader on Data Representation and Metadata	Ms Jitsuko Hasegawa	Japan
Theme Leader on WIS-GTS operations, including Early Warning	Dr Shyamlal Singh	India
	Mr Aleksandr Soloveychik	Uzbekistan
Theme Leader on Climate Data Management/Data Rescue	Mr Hongzheng Zhang	China
Theme Leader on Integrated Global Data Dissemination System	Mr Kang Gao	China

Implementation Coordination Team on Service Delivery (ICT-SD)

ICT-SD		
Chairperson	Mr Jianjun Xue	China
Members of ICT-SD	Mr Qingliang Zhou	China
	Dr Thuc Tran	Viet Nam
	Mr Mohammed Saeed Alhakimi	Yemen
	Mr Manoj Kumar Bhatnagar	India
	Dr Sergey Borshch	Russian Federation

Implementation Coordination Team on Disaster Risk Reduction (ICT-DRR)

ICT-DRR		
Chairperson	Dr K.J. Ramesh	India
Members of ICT-DRR	Mr Boon-leung Choy	Hong Kong, China
	Mr Ryuji Yamada	Japan
	Dr Sung Kim	Republic of Korea
	Mr Yongqing Chen	China

* Chairpersons of Working Groups will serve as members of ICT-DRR

Annex III

PROGRESSIVE WORKING GROUP REPORT

Working Group on Weather Services (WG-WS)

Introduction

At RA II-15 meeting, noting the WMO Strategic Plan 2012-2015 (WMO-No.1069), the Strategic Operating Plan for the Enhancement of NMHSs in RA II (Asia) 2012-2015 and a number of WMO Programmes, the Working Group on Weather Services (WGWS) was established with the consideration that:

(a) RA II should continue to play an important and active role in the implementation of WMO regional activities in the delivery of aeronautical meteorological services, operational forecast services and public weather services (PWS);

(b) Civil aviation as a key enabler for economic growth and development in the Region is vigorous and requires increased efforts from all service providers; and

(c) The Sixteenth Congress designated the Aeronautical Meteorology Programme a priority area for the sixteenth financial period.

Working Group Structure

The Working Group is composed of three Expert Groups, each having a number of themes as below:

(a) Expert Group on Aeronautical Meteorological Service Delivery (EG-AeM)
- Theme 1: QMS Implementation and Maintenance
- Theme 2: Competency Assessment
- Theme 3: Meteorological Support to Air Traffic Management and Provision of SIGMETs

(b) Expert Group on Operational Forecasting (EG-OF)
- Theme 1: Operational Forecasting Process and Support
- Theme 2: Operational Predictions from sub-seasonal to longer-time scale
- Theme 3: Emergency Response Activities

(c) Expert Group on Public Weather Service Delivery (EG-PWS)
- Theme 1: Socio-economic Benefits of Meteorological and Hydrological Services
- Theme 2: Delivery of Warning Services
- Theme 3: Education and Public Outreach related to PWS

Terms of Reference

(a) To coordinate and support the work of the expert teams in Aeronautical Meteorology Programme in the Region in cooperation with the Commission for Aeronautical Meteorology (CAeM)

(b) To coordinate all activities related to the GDPFS, including the Emergency Response Activities (ERA), and PWS in the Region in cooperation with the Commission for Basic System (CBS)

Membership of the Working Group

Expert Group on Aeronautical Meteorological Services Delivery (EG-AeM)

EG-AeM	**Name & e-mail Address**	**Country**
Co-Coordinators	Mr Boon-leung Choy blchoy@hko.gov.hk	Hong Kong, China
	Ms Marina Petrova petrovamv@mail.ru	Russian Federation
Theme Leader on QMS Implementation and Maintenance	Ms Jie Shao shaojie888@vip.sina.com	China
Theme Leader on Competency Assessment	Mr Manoj Kumar Bhatnagar Bhatnagarmk1@gmail.com	India
Theme Leader on Meteorological Support to Air Traffic Management and Provision of SIGMETs	Mr Jun Ryuzaki jryuzaki@met.kishou.go.jp	Japan

Expert Group on Operational Forecasting (EG-OF)

EG-OF	**Name & e-mail Address**	**Country**
Co-Coordinators	Mr Yuki Honda honda.yuuki@met.kishou.go.jp	Japan
	Ms Irina Zaytseva zaytseva@meteo.uz	Uzbekistan
Theme Leader on Operational Forecasting Process and Support	Ms Sunitha D. Santhamma s.sunitha@imd.gov.in	India
	Mr Vo Van Hoa vovanhoa@nchmf.gov.vn	Viet Nam
Theme Leader on Operational Predictions from sub-seasonal to longer-time scale	Mr Suhee Park suhee@korea.kr	Republic of Korea
Theme Leader on Emergency Response Activities	Mr Masami Sakamoto sakamoto-a@met.kishou.go.jp	Japan

Expert Group on Public Weather Services Delivery (EG-PWS)

EG-PWS	Name & e-mail Address	Country
Co-Coordinators	Mr Lap-shun Lee lslee@hko.gov.hk	Hong Kong, China
	Dr Muhammad Hanif hanifwxc@hotmail.com	Pakistan
	Mr Alexey Lyakhov lkhv@hmn.ru	Russian Federation
Theme Leader on Socio-economic Benefits of Meteorological and Hydrological Services	Mr Jinjun Pan panjinjun@cma.gov.cn	China
Theme Leader on Delivery of Warning Services	Mr Chuanhai Qian chqian@cma.gov.cn	China
Theme Leader on Education and Public Outreach related to PWS	Dr Seonkyun Baek sun@kma.go.kr	Republic of Korea

Main Activities

(a) A work plan of WGWS for 2013-2016 with twenty two (22) tasks and twenty eight (28) activities covering more than eight Regional Key Outcomes of the RA II Strategic Operational Plan 2012-2015 was developed.

(b) At the RA II WG-ICT-TT Chairs' Meeting, it was decided that work plans of RA II pilot projects would also be included into respective Working Groups for ease of monitoring. Four out of five approved pilot projects had been included into WGWS work plan raising the number of tasks to thirty one (31) and the number of activities to thirty eight (38).

(c) While most of the activities were under planning stage, a number of initial activities had been carried out since 2013 and they are listed as below:

EG-OF:

1) (Task # OF-1): E-mail / fax tests to improve reachability for Emergency Response Activities (ERA) registered NMHSs and organizations in RA II were conducted in accordance to previous arrangements. 95% of registered member states in RA II (27 members) were reachable, which was higher than the figures (about 40 - 50%) obtained in other Regional Associations. Work is being done to explore the possibility to enlarge membership of ERA to include currently unregistered members in RA II (Task # OF-2),

Pilot Projects:

1) (Task # PP-3): CAAC, CMA and HKO had initially agreed to conduct RA II workshop(s) on AMDAR in late 2014 and/or the first half of 2015. Details of the workshop(s) are being confirmed with the coordination of WMO ET-ABO.

Working Group on Climate Services (WG-CS)

Introduction

The WMO RA II Working Group on Climate Services (WG-CS) was established considering that the Regional Association II (RA II) should continue to play an important and active role in the implementation of WMO regional activities in the field of climate services including agrometeorological services, with particular attention to matters relevant to implementation of the Global Framework for Climate Services in the Region. WG-CS will work on climate and agrometeorological issues laid out in the terms of references in close cooperation with WMO's Technical Commissions, in particular, Commissions for Climatology and Agrometeorology.

Working Group Structure

The Working Group is composed of Expert Groups for Climate Services (EG-CS) and Expert Group for Agrometeorology (EG-AgM). Both EG-CS and EG-AgM consist of two co-ordinators and five theme leaders. In addition, a number of volunteer experts who are expected to assist the tasks of each Expert Team have also been registered.

Terms of Reference

(a) To provide assistance and advice to the president of Regional Association II on all matters pertaining to the regional aspects of the relevant components of the World Climate Programme and the Agricultural Meteorology Programme and, in particular, to assist and advise the president of RA II on matters relevant to implementation of the Global Framework for Climate Services in the Region;
(b) To cooperate with the Commission for Climatology and the Commission for Agricultural Meteorology and other WMO bodies on activities related to climate services;
(c) To undertake and to coordinate activities relating to climate services as listed in the EG-CS and EG-AgM, respectively;
(d) To report, through the chair of the WGCS, to the president of RA II on an annual basis on activities relative to the above terms of reference.

Membership of Working Group

Expert Group on Climate Services (EG-CS)

EG-CS	**Name & e-mail Address**	**Country**
Co-Coordinators	Mr Ryuji Yamada	Japan
	Dr Ghulam Rasul	Pakistan
Theme Leader on User Liaison and Applications of Climate Information and Products for Climate Risk Management and Adaptation to Climate Change	Dr Ali Karem Kadhum	Iraq
Theme Leader on QMS Implementation and Operation of Regional Climate Centres	Mr Peiqun Zhang	China
Theme Leader on Operational Regional and National Climate Outlook Forums	Dr A. K. Srivastava	India
Theme Leader in Climate Monitoring and Climate Watch	Ms YuliyaPlotnitskaya	Uzbekistan
Theme Leader in Climate Research for Development	Ms Yuping Yan	China

Expert Group on Agrometeorology (EG-AgM)

EG-AgM	**Name & e-mail Address**	**Country**
Co-Coordinators	Dr N. Chattopadhyay	India
	Dr AlexanderKleshchenko	Russian Federation
Theme Leader on Agrometeorological Training Needs	Ms Feruza Rakhmanova	Uzbekistan
Theme Leader on Soil Moisture Monitoring	Ms Xuefen Zhang	China
Theme Leader on Drought Preparedness and Management Strategies	Mr Mir Hazrat	Pakistan
Theme Leader in Socio-economic Impact of Agrometeorological Information	TBD	

Development of Work Plan

A work plan for the WG-CS was developed by co-coordinators of Expert Group on Climate Services and Expert Group on Agrometeorology, with the help of theme leaders and the WMO secretariat. The work plan for the WG-CS was submitted to the WMO Secretariat in December 2013.

The work plan was developed mainly based on the deliverables outlined in the RA II Strategic Operating Plan, terms of reference of the Expert Groups. The plan consists of: (1) Tasks; (2) Key deliverables; (3) Activities; (4) Timelines and (5) Responsible Theme Leaders/Co-coordinators.

Nine tasks for EG-CS and five tasks for EG-AgM were established in the work plan and each task includes several relevant activities. Theme leaders of EG-CS and EG-AgM are expected to take a role in the said activities with the support of, and coordination with, co-coordinators.

Working Group on Hydrological Services (WG-HS)

Members

- Vice Chairperson: Mr Muhammad Riaz (Parkistan)
- Theme I: Water Resources Assessment

  Ms GAO Ge (China) / - Ms Hwirin Kim (ROK)
- Theme II: Flood Forecasting

  Dr Sergey Borshch (Russia)
- Theme III: Hydrological Aspects of Drought

  Ms Irina Dergacheva (Uzbekistan)
- Theme IV: Hydrological Responses to Climate Variability and Change and Promotion of the Use of Climate Information by Water Managers

  Mr WANG Guoqing (China) / - Dr Thuc Tran (Vietnam)

❖ Efforts to find two more Theme Leaders (for Hydrometry and Sediment) with recommendations from MG-7 have been unsuccessful.

Main Activities

i. WGHS Workshop

- With financial support from the Republic of Korea and WMO RA-II Working Group on Hydrological Services (WGHS) have planned for a Workshop on Developing Work Plans for 2013 to 2016 to be held in Seoul, Republic of Korea between 13-15 November 2013.. The workshop was postponed and will be held in September or November 2014 with participation of Theme Leaders and WMO Experts.
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- Development of Dynamic Water Resources Assessment System has been launched by ROK, and a pilot system is expected by 2016.

ii. Participation of 7th World Water Forum

- Sung Kim (as Chairperson of WGHS of WMO RA-II) attended the 2nd Consultation Meeting (27-28 February, 2014, Gyeongju, ROK) for 7th World Water Forum (12-17 April, 2015, Daegu-Gyeongbuk, ROK) to propose a regional session for Water Resources Assessment during WWF7 with collaboration of Han River Flood Control Office, Ministry of Land Transport Management.
- Regional proposals including one by WGHS will be discussed during the Asia Pacific Water Forum, June 5, 2015, Singapore; Proposals will will be finalized by July 2014.
- If the proposal is accepted by the WWF7 Organizer, the 2nd Workshop for WGHS will be organized during the WWF7 period (April 2015) in ROK.

Working Group on WIGOS/WIS (WG-WIGOS/WIS)

Background

During the fifteenth session of Regional Association II which was held in Doha, Qatar, from 13 to 19 December, 2012, the Regional Association II Working Group on WMO Integrated Global Observing System and WMO Information System (WG-WIGOS/WIS) was re-established to of facilitate the accomplishment of missions of WIGOS and WIS. Some activities have been carried out by the working group since RA II -15.

1. Completing of membership Working Group on WIGOS and WIS

In accordance with resolution 11 of RA II-15, there are an Expert Group on WIGOS (EG-WIGOS) and an Expert Group on WIS (EG-WIS) under WG-WIGOS/WIS. Each of these two expert groups consists of two Co-Coordinators and some Theme Leaders and Volunteer Experts. During the Session Mr. Yongqing Chen (China) and Dr Jaegwang Won (Republic of Korea) were selected as Co-Coordinators of EG-WIGOS and Mr Li Xiang (China) and Mr. Kenji Tsunoda (Japan) were selected as Co-Coordinators of EG-WIS.

Co-coordinators of EG-WIGOS and EG-WIS initially proposed the lists of Theme leaders (areas) of EG-WIGOS and EG-WIS in accordance with Terms of reference (TOR) of EG-WIGOS and EG-WIS, the R-WIP-II approved by XV-RA II, as requested by the WMO secretariat.

The theme areas of EG-WIGOS focus mainly on how to carry out main projects in the R-WIP-II. The list of Theme leaders (areas) of EG-WIGOS is as follows:

(a) Theme leader in Implementation and Updating of R-WIP;

(b) Theme leader in Implementation of EGOS-IP;

(c) Theme leader in Standard and Best Practice;

(e) Theme leader in Observational Requirements and Regional Network;

(f) Theme leader in Data Availability and Quality of Observations;

(g) Theme leader in Surface-based Remote Sensing for Disaster Risk Reduction;

(h) Theme leader in Satellite Data, Products and Training.

The Theme areas of EG-WIGOS focus mainly on coordinating and promoting WIS implementation, operation and services, including GTS and IGDDS, and data management in RA II. The list of Theme leaders (areas) of EG-WIS is as follows:

(a) Theme Leader on Data Communication Techniques and Structure;

(b) Theme Leader on Data Representation and Metadata;

(c) Theme Leader on WIS-GTS operations, including Early Warning;

(d) Theme Leader on Climate Data Management/Data Rescue;

(e) Theme Leader in the Integrated Global Data Dissemination System.

Theme Leaders of both EG-WIGOS and EG-WIS were nominated by members and finally decided by the management group (MG-7) in May 2013.

The Theme Leaders are expected to lead the activities in their respective theme areas in close coordination with the Members in the Region, monitoring the key performance indicators/targets concerned, and reporting progress of development and implementation to the Expert Group Co-Coordinators concerned.

After that, Volunteer Experts for EG-WIGOS and EG-WIS were also nominated by members finally approved by President of RA II in October 2013.

Therefore, the WG-WIGOS is composed of two co-coordinators, 10 theme leaders and 13 Volunteer Experts, while the WG-WIS is composed of two co-coordinators, 6 theme leaders which and 12 Volunteer Experts.

2. Drafting the Work Plan of Working Group

As requested by WMO secretariat, a work plan for the WG-WIGOS/WIS was developed by coordinators of Expert Group on WIGOS and Expert Group on WIS, with the help of theme leaders and WMO secretariat. The work plan for the WG-WIGOS/WIS has been submitted to WMO secretariat by the end of October 2013.

The work plan is developed mainly based on the deliverables outlined in the RA II Strategic Operating Plan, the terms of reference of the Expert Group, and the projects listed in the R-WIP-II, and would like to outline the main tasks which will be carried out by the Working Group before the next session and key deliverable, activity, expected accomplishing time and responsibility.

Nine tasks for EG-WIGOS were established in the work plan and each task includes several activities which will be accomplished in the expected years. Most of activities will be implemented through the RAII WIGOS projects and RA II members under the initiative of key regional players. The theme leaders of EG-WIGOS have responsibility to track and promote the execution of these activities and projects. Key deliverables for EG-WIGOS in the work plan are as follows:

(a) A new version of R-WIP-II will be developed in 2015;

(b) Portal to share progress EGOS IP implementation in RA II will be available in 2015;

(c) A portal on standards and best practices will be available in 2015;

(d) Collaborative working mechanism toward integrated surface-based remote sensing observations in the East Asia for operational monitoring and forecasting severe weather will be established;

(e) Technical support for instrument maintenance and calibration by experts from RICs will be provided;

(f) ISO/IEC 17025 certification will be obtained;

(g) Report on status on QC/QA procedures and site management in RA II will be available.

(h) Reports on status on meteorological instruments, calibration and training in Regional Association II will be available;

(i) Capacity in use of satellite data/products and facilitation of training datasets and tool boxes will be improved;

(j) The systematic Near Real Time monitoring of sand and dust storm will be carried out in SDS-WAS Asia Node;

(k) RBSN and RBCN will be updated.

Seven tasks for EG-WIS were established in the work plan and each task includes several activities which will be accomplished in the expected years. The theme leaders of EG-WIS have responsibility to carry out or promote these activities. Key deliverables for EG-WIS in the work plan are as follows:

(a) RA-II WIS-IP (2013: first version, 2014-2016: review and update);

(b) Status and Plans of RMTN in RA II (2014-2016);

(c) Amendments of Volume II of the manual on the GTS in RA-II (2016);

(d) Status Report of Data Representation and Metadata in RA II (2014-2016);

(e) Status Report of the implementation of WIS service and WIS monitoring in RA II (2014-2016);

(f) Status Report of the Climate Data Management/Data Rescue in RA II (2014-2016);

(g) Status Report on IGDDS in RA II (2014-2016).

Each theme leader in the expert group, supported by volunteer experts if available, will bear responsibility for one or several tasks in the plan which is relevant to his/her theme area and will submit report to co-coordinators of the expert group as required.

3. Drafting the RA II Regional WIS Implementation Plan

The fifteenth session of RA II reviewed the draft RA II Regional WIS Implementation Plan, and agreed that fully implementing WIS in the Region was an essential step toward the efficient implementation of WIGOS, GFCS and other priority areas.

The fifteenth session of RA II agreed that the virtual WIS Implementation Project Office should continue to refine the plan, and encouraged WIS centers, in particular GISCs to provide resource toward completing the implementation plan.

EG-WIS co-coordinators drafted a work plan on developing RA-II WIS Implementation Plan in April, 2013, and a Task Team for reorganizing and finalizing the RA-II WIS-IP (the coordinator of EG-WIS) was established in May, 2013. Members came from GISCs and GISC candidates, which included Beijing, Jeddah, New Delhi, Seoul, Tehran, Tokyo and DCPC/NC Bangkok, Doha and Karachi.

Based on the previous progress and outcome of developing of RAII-WIS-IP during 2011-2012, the Task Team reorganize and compile the draft of RAII-WIS-IP in September, 2013.

The draft RAII-WIS-IP was completed and distributed to the WIS focal points of RA II members and the WMO secretariat for comments in September,2013. The draft was reviewed by the Chairperson of WG-WIGOS/WIS of RA-II October, 2013.

The final version of RA-II WIS-IP was submitted to the President of RA-II for approval November, 2013 and was approved by the President of RA-II in December, 2013.

4. Monitoring the progress on implementation of WIGOS and WIS

The theme leaders of EG-WIGOS and EG-WIS are responsible for the monitoring of progress on implementation of WIGOS and WIS in their respective areas. The detailed progress is provided in Annex IV of the final report.

ANNEX IV

PRGRESS ON IMPLEMENTATION OF WIGOS AND WIS IN RA II

CHEN Yongqing
Chairperson of WG-WIGOS/WIS

1. Background

Cg-XVI decided to implement WIGOS and approved the Resolution 50 (Cg-XVI) – Implementation of the WMO Integrated Global Observing Systems, by which the regional associations were requested: (1) to develop their regional WIGOS implementation plans; (2) to coordinate WIGOS implementation activities with the WMO Information System in their operating plans and work programmes; and (3) to promote capacity-building and outreach activities to assist Members in the implementation of WIGOS.

Therefore, the development of a Regional WIGOS Implementation Plan for the Regional Association II (R-WIP-II) was initiated at the meeting of the Working Group on WMO Integrated Observing System and WMO Information System (WG-IOS/WIS) held in November/December， 2011 in Seoul, Republic of Korea. In the meeting, three Key services priorities in RA II that need improved observations were outlined, which are Disaster Risk Reduction supported by Nowcasting, Climate Services (for GFCS) and Aviation Meteorology Services. Four Tasks were also suggested to be established to enhance the key services listed above. The RA II Management Group (Doha, Qatar, February/March 2012) endorsed the proposal by the WG-IOS/WIS for the establishment of the Task Team on R-WIP (TT/R-WIP). A Task Team meeting was held in Jakarta, Indonesia in September， 2012 during the CBS-15 session. Task Team members, Mr Chen Yongqing(China), Dr.L.S. Lee (Hong Kong, China), Dr Jae-Gwang Won (Republic of Korea), Mr Naohisa Koide (Japan), and Dr Songkran Agsorn (Thailand) , and Dr Atkinson Roger, Mr Kuniyuki Shida from WMO Secretariat attended the meeting. Dr L R Meena (India) attended the meeting as an observer. The meeting discussed the main projects which were suggested to be established to cover most of the areas of implementation of WIGOS in RA II, and the mechanism of the WIGOS working group. Task Team further developed and finalized the R-WIP-II which was prepared to be submitted to RA II-15 session for approval.

The Regional WIGOS Implementation Plan for the Region RA II (R-WIP-II) was submitted to the RA II-15 session which was held in Qatar from Dec.13 to 18, 2012, and was adopted as the Resolution 4.4/1 (RA II-15). RA II-15 session strengthened that the implementation of R-WIP-II be supported by all the Members of the Region, and be guided, supervised and monitored by the Management Group of RA II, with periodic reports from appropriate subsidiary bodies in charge of WIGOS.R-WIP-II will be further revised to accommodate new projects which would be submitted by Members and authorized the president to approve the revised TT/R-WIP during the intersessional period in consultation with the Management Group.

The fifteenth session of RA II reviewed the draft RA II Regional WIS Implementation Plan, and agreed that fully implementing WIS in the Region was an essential step toward the efficient implementation of WIGOS, GFCS and other priority areas. The fifteenth session of RA II agreed that the virtual WIS Implementation Project Office should continue to refine the plan, and encouraged WIS centers, in particular GISCs to provide resource toward completing the implementation plan.

EG-WIS co-coordinators drafted a work plan on developing RA-II WIS Implementation Plan in April, 2013, and a Task Team for reorganizing and finalizing the RA-II WIS-IP (the coordinator of EG-WIS) was established in May, 2013. Members came from GISCs and GISC candidates, which included Beijing, Jeddah, New Delhi, Seoul, Tehran, Tokyo and DCPC/NC Bangkok, Doha and Karachi. Based on the previous progress and outcome of developing of RAII-WIS-IP during 2011-2012, the Task Team reorganize and compile the draft of RAII-WIS-IP in September,2013.The

draft RAII-WIS-IP was completed and distributed to the WIS focal points of RA II members and the WMO secretariat for comments in September, 2013.The draft was reviewed by the Chairperson of WG-WIGOS/WIS of RA-II October, 2013.The final version of RA-II WIS-IP was submitted to the President of RA-II for approval November, 2013 and was approved by the President of RA-II in December, 2013.

2. Brief introduction of R-WIP-II

R-WIP-II has used the standard template provided by WIGOS Project Office.

R-WIP-II is laid out in seven chapters that identify and describe the various activity areas to be addressed within this Region, which is corresponding to the following ten areas described in IGOS Framework Implementation Plan v.1.0,

(a) Management of WIGOS implementation;

(b) Collaboration with WMO and co-sponsored observing systems;

(c) Design, planning and optimized evolution;

(d) Integrated Observing System operation and maintenance;

(e) Integrated Quality Management;

(f) Standardization, system interoperability and data compatibility;

(g) The WIGOS Operational Information Resource;

(h) Data and metadata management, delivery and archival;

(i) Capacity development;

(j) Communication and outreach.

The key implementation activities that are required for the Regional WIGOS implementation within the timeframe from 2012 to 2015 are included in Appendix I, which identifies deliverables, timelines, responsibilities, costs and risks, and whether the activity requires regional and/or national implementation.

Most of the activities in the Appendix I will be implemented through seven RAII WIGOS projects under the initiative of key regional players. EG-WIGOS has responsibility for tracking execution of these activities and projects.

List of RA II WIGOS Projects

No.	Project title	Key regional players
I	Monitor and review the Implementation of EGOS- IP in RA II	China; Hong Kong, China
II	Standard and best practise Portal, including technical documents with necessary details in English from all RA II Members	Republic of Korea
III.1	Observing systems integration for supporting disaster risk reduction - Integration of Surface-based Remote Sensing Data in the East Asia	China, Japan, Republic of Korea
III.2	Observing systems integration for supporting disaster risk reduction - Capacity Building in Radar Techniques in the Southeast Asia	ASEAN (Thailand, Malaysia)

IV	Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations	Japan
V	Developing a Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) in Asia Node	China, Japan, Republic of Korea
VI	Develop Support for NMHSs in Satellite Data, Products and Training	Japan, Republic of Korea

RA II will be responsible for the implementation of WIGOS in the Region through its EG-WIGOS with the support from the Regional Office for Asia and the South-West Pacific and the WMO Office for West Asia.

(a) RA II, through its Management Group, will monitor, review, guide and support the overall implementation of WIGOS in the Region, and update the Implementation Plan if and when necessary;

(b) RA II, through the Coordinator of EG-WIGOS, will report to the ICG-WIGOS and the WIGOS Project Office on the progress in implementation of WIGOS in the Region;

(c) The president of RA II will report to the sessions of RA II on WIGOS implementation.

3. Brief introduction of R2-WIS-IP

The RA II WIS Implementation Plan was developed on the basis of WMO regulatory material, in particular the WMO Technical Regulation, Volume I, Section A3 (WMO No. 49), the Manual on the WIS (WMO No. 1060) and the Guide to the WIS (WMO No.1061) to ensure a harmonized and synchronous implementation by all regional members as well as inter-regional project.

In particular, the R2-WIS-IP includes:

- Functional Architecture;
- Status of WIS in RA II;
- Technical compliance Specification of the GISC, DCPC and NC;
- Governance Procedures for implement of WIS centres;
- Execution and timelines.

The purpose of the R2-WIS-IP is to provide:

a) RA II members with overall technical guidance, assistance and support for the implementation of the WIS, which would coordinate the implementation of WIS including further improvement of GTS and optimize and achieve maximum compliance. In view of the foregoing, the RA II WIS Implementation Plan is aimed at assisting RA II Members to implement WIS functionality in their identified centres and become effective WIS users in a timely and harmonized manner. Therefore, it concentrates on the access to WIS by NMHSs as National Centres (NC). The requirements and procedures for other types of centres, like Global Information System Centres (GISC) or Data Production or Collection Centres (DCPC), are described in detail in the Manual on WIS (WMO No. 1060) and WIS Demonstration Guidelines, and therefore only briefly mentioned in this paper. However, in implementing and supporting WIS in RA II and monitoring its performance, GISCs will have to take on certain responsibilities described below. Information about the implementation of GISCs and DCPCs by RA II Members and international organizations is included in the Plan monitoring process in order to provide “one stop shop” with regard to the overall WIS implementation in RA II.

b) Strategic approaches to effective and efficient capacity building highlight some key issues on technical implementation and designation requirement for WIS centres. The Plan also provides practical guidance and a step-by-step approach towards the WIS implementation by Members in their National Centres. A primary task for the NMHSs is ensuring compliance with the WIS requirements established by the WMO regulatory material WMO Technical Regulations, Volume I (WNO No. 49) and its Annex VII, Manual on WIS (WMO No. 1060). In order to facilitate the implementation process, the GISCs should establish close contacts with the NCs in their areas of responsibility and act as "help desks" when assistance is needed. In particular, GISCs should plan for providing assistance to build the capacity of the NCs to handle the required discovery metadata.

4. Progress on implementation of R-WIP-II

The implementation of R-WIP-II will mainly rely on seven RAII WIGOS projects listed in the R-WIP-II. Six of seven project contact persons provided progress information to the co-coordinator of EG-WIGOS. No response has been received from both two contact persons of project III.2 by now, though several e-mails have been sent to them by the coordinator. The progress for each project is listed as bellow.

4.1 Project No. I- Monitor and review the Implementation of EGOS- IP in RA II

Accomplishments

The responsibility for the project was assigned to CMA Meteorological Observation Centre (MOC) by CMA. A small expert team was established by MOC. Then, a work plan was drafted, the project framework was designed, and the budget plan for the project was also developed by the expert team and has been submitted to CMA for approval.

Next steps

Responding to aim of the project, a portal is plan to be developed by the expert team to share the progress of EGOS-IP Implementation of RA II Members, and gaps will be Identified and prioritize actions will be listed in EGOS-IP through reviewing the progress of EGOS-IP in RA II as next steps.

4.2 Project No. II- Standard and Best Practice Portal, including Technical Documents with Necessary Details in English from all RA II Members

Accomplishments

KMA's domestic project for the standardization of meteorological observation has been ended its 1st phase. More than 3,500 domestic sites from 27 agencies were linked as one system. 70% of the data from more than 3,500 sites are collected for the utilization in real time by 2013.

Next steps

A Portal will be developed to share the experience about standards and best practices for enhanced observational data/products utilization. KMA's standardization project will be the first sample of experience with more than 80% data collection rate. A form will be developed to collect the standard and best practices from other members within RA II.

4.3 Project No. III.1 - Observing systems integration for supporting disaster risk reduction - Integration of Surface-based Remote Sensing Data in the East Asia

Accomplishments

Real-time exchange of radar CAPPI products and automated weather station data between Japan and Korea

The Japan Meteorological Agency (JMA) and the Korea Meteorological Administration (KMA) mutually agree to exchange radar CAPPI products and automated weather station (AWS) data in near real-time basis to use for operational purpose. In near real-time, KMA obtains radar 2km-height pseudo CAPPI products of JMA's weather radar stations as well as hourly data of JMA's surface observation network, called the Automated Meteorological Data Acquisition System (AMeDAS). JMA also obtains radar CAPPI products of KMA's weather radar stations as well as most data of KMA's AWSs in near real-time.

JMA is developing a quality control system to remove noise from radar CAPPI products. JMA plans to generate a two-dimensional grid product of analyzed precipitation using quality-controlled radar CAPPI data and in-situ precipitation data of AWSs in 2014 and investigate its impact on NWP in near future.

Non-real-time exchange of raw data of Doppler radar between Japan and Korea

JMA and KMA also agree to exchange raw data of their Doppler radars in off-line basis to investigate the benefit of operational use of these data in individual NWP system.

In March 2013, JMA obtained a set of raw data for 5 days of July 2012 on the case of heavy rainfall over Kyushu Island from KMA. It was revealed that a quality control was necessary to use such raw data in a meso-scale NWP system.

Dissemination of ground-based stations of the Global Navigation Satellite Systems on WIS/GTS

Data of ground-based stations of the Global Navigation Satellite Systems (GNSSs) are disseminated on WIS/GTS in real time so that these data are available for operational use. Table 1 shows a list of such ground-based GNSS stations in China, Korea and Japan. At the Joint Meeting of the 12th Asia Pacific Satellite Data Exchange Meeting and 24th North America / Europe Data Exchange Meeting (22-25 October 2012, Met Office, Exeter, U.K.), CMA, JMA and KMA were requested to provide data of more ground-based GNSS stations on GTS. It is, therefore, expected to increase the data amount in the future.

In Korea, there are several agencies that are operating several GNSS stations for their own purpose, and they have recently agreed on sharing the data for mutual benefits. More than 160 stations would be available and could be utilized by KMA in the future. In order to exchange those data internationally, KMA will continue the domestic discussion.

Table 1 List of Ground-based GNSS Stations whose data are disseminated on WIS/GTS

Country	Station Name	Longitude (East)	Latitude (North)
China	Wuhan(WUHN-MET)	114.36	30.53
	Lhasa(LHAZ-MET)	91.10	29.66
Japan	Usuda(USUD-GOP)	138.36	36.13
Korea	Daejeon(DAEJ-MET)	127.37	36.40

Since the technical method to assimilate zenith tropospheric delay data or total precipitable water vapor data of ground-based GNSS stations is established, the data on WIS/GTS can be used for operational purpose.

Next steps

Progress of the JMA-KMA projects will be monitored, and the benefit and difficulties of regional exchange of surface-based remote sensing observations will be identified. More members are also encouraged to exchange surface-based remote sensing observations. In this regard, each contact person will seek possibility to establish a pilot project to realize such data exchange as a trial in coming two years.

In the last year of this RA II WIGOS Project, i.e. 2016, a feasible and optimal draft design of integrated surface-based remote sensing observations will be developed based on lessons learnt from these projects.

4.4 Project No. III.2 -Observing systems integration for supporting disaster risk reduction - Capacity Building in Radar Techniques in the Southeast Asia

Information is not available now..

4.5 Project No. IV - RA II WIGOS Project to Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations

Accomplishments

WMO/JMA Survey on meteorological instruments, calibration and training in RA II was implemented, and a consolidated report, which describes status on calibration instruments for surface-based observations in RA II was completed and made available on the WMO Regional Instrument Centre (RIC) Tsukuba website.

The results of the RSMC quality monitoring have been shared among members concerned.

Experts from RIC Tsukuba visited the Bangladesh Meteorological Department (BMD) and provided practical on-the-job training on meteorological instrument aiming at establishing the operational calibration system using meteorological standards (barometer and thermometer) donated in the framework of JICA technical cooperation project.

Next steps

A survey on quality management of meteorological observation by NMHS in RA II will be carried out.

A workshop focusing on sharing and transferring skills of observation quality management is also on the schedul.

4.6 Project No. V – Developing a Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) in Asia Node

Accomplishments

The SDS-WAS

The dust forecast model has been continuously operated throughout the year on a daily basis. The model consists of a numerical weather prediction model incorporating on-line parameterizations of all the major phases of the atmospheric dust cycle. It generates forecasts of the following minimum set of variables:

- Dust load (kg·m-2)
- Dust concentration at the surface (μg·m-3)
- Dust optical depth at 550 nm (-)
- 3-hour accumulated dry and wet deposition (kg·m-2)

Forecasts cover the period from the starting forecast time (00:00 and/or 12:00 UTC) up to a forecast time of at least 72 hours, with an output frequency of at least 3 hours. The horizontal resolution is 0.5x0.5 degrees.

A portal for dust forecast products developed

A web portal to display forecast products as well as additional information was developed and operational. The web site is *http://eng.weather.gov.cn/dust/*.

Next steps

Dust forecast model products verification will be carried out in the near future.
WMO EC-65 (2013) approved the Commission for Basic Systems (CBS) recommendations made at its fifteenth session in 2012 that mandatory functions and criteria for the designation of an RSMC with activity specialization in Atmospheric Sand and Dust storm Forecasts (RSMC-ASDF)

are to be incorporated in the *Manual on the Global Data-processing and Forecasting System (GDPFS)* (WMO-No. 485). EC-65 also approved the recommendation to formally designate the SDS-WAS regional node in Barcelona, Spain, as the RSMC-ADSF for the region consisting of. Northern Africa (north of Equator), the Middle East and Europe. The sixteenth session of Commission for Atmospheric Science (CAS-16) welcomed the initiative to designate another SDS-WAS regional node in Beijing, China, as the RSMC-ADSF for the region consisting of Asia and the Central Pacific. CMA will apply for WMO Regional Specialized Meteorological Centers with Activity Specialization on atmospheric Sand Dust Forecasts.

4.7 Project No. VI - RA II WIGOS Project to Develop Support for NMHSs in Satellite Data, Products and Training

Accomplishments

Issuance of newsletters to RA II Members.

Quarterly newsletters have been issued to share recent satellite-related information on topics such as imagery data, products and training. The newsletters listed below, which were issued to RA II Members in November, December and March, contained brief reports on relevant relevant meetings, products progress report, news on successful launch of KOMPSAT-5 satellite and information on preparations for the Himawari-8/9 satellite series of JMA and Geo-KOMPSAT-2A of KMA.

- Vol. 4/No. 1, April 2013
- Vol. 4/No. 2, June 2013
- Vol. 4/No. 3, November 2013
- Vol. 4/No. 4, December 2013
- Vol. 5/No. 1, March 2014

All the past issues can be seen in the following WMO webpage:

https://www.wmo.int/pages/prog/sat/ra2pilotproject-intro_en.php

4th Asia/Oceania Meteorological Satellite Users' Conference

The fourth Asia-Oceania Meteorological Satellite Users' Conference (AOMSUC) was held in Melbourne, Australia from 9-11 October 2013. The conference was hosted and sponsored by the Australian Bureau of Meteorology (AuBOM) and was co-sponsored by the China Meteorological Administration (CMA), the Japan Meteorological Agency (JMA), the Korean Meteorological Administration (KMA), and the World Meteorological Organization (WMO). The conference was preceded by a two day training event at the AuBOM training facilities and brought together participants from Region II and V.

Next steps

The new generation geostationary meteorological satellites such as Himawari-8, FY-4A, GEO-KOMPSAT-2A are planning to be operated from next year, 2015. Therefore, supportive activities for preparation of satellite data users to the new generation of geostationary meteorological satellites will be carried out. The Project will support for preparation of the NMHSs in RA II especially developing countries including LDCs to the new satellites. It will involve user training, guidance to upgrade processing software and hardware, information and tools.

Issuance of quarterly newsletters will also continue. CMA will host the fifth Asia/Oceania Meteorological Satellite Users' Conference (AOMSUC) in Shanghai in October of 2014. More details about the conference have not decided yet and will be provided in due course.If a training event is planned at the time of the meeting like AOMSUC-3 and AOMSUC-4, the RA II WIGOS Project to develop support for NMHSs in satellite data, products and training will cooperate in it with CMA. Meanwhile, the third meeting of the Coordinating Group of the RA II WIGOS Project will be held in 2015 on the occasion of the sixth AOMSUC in Japan. A training event using new satellite data will be also planned by JMA on the occasion of the Conference.

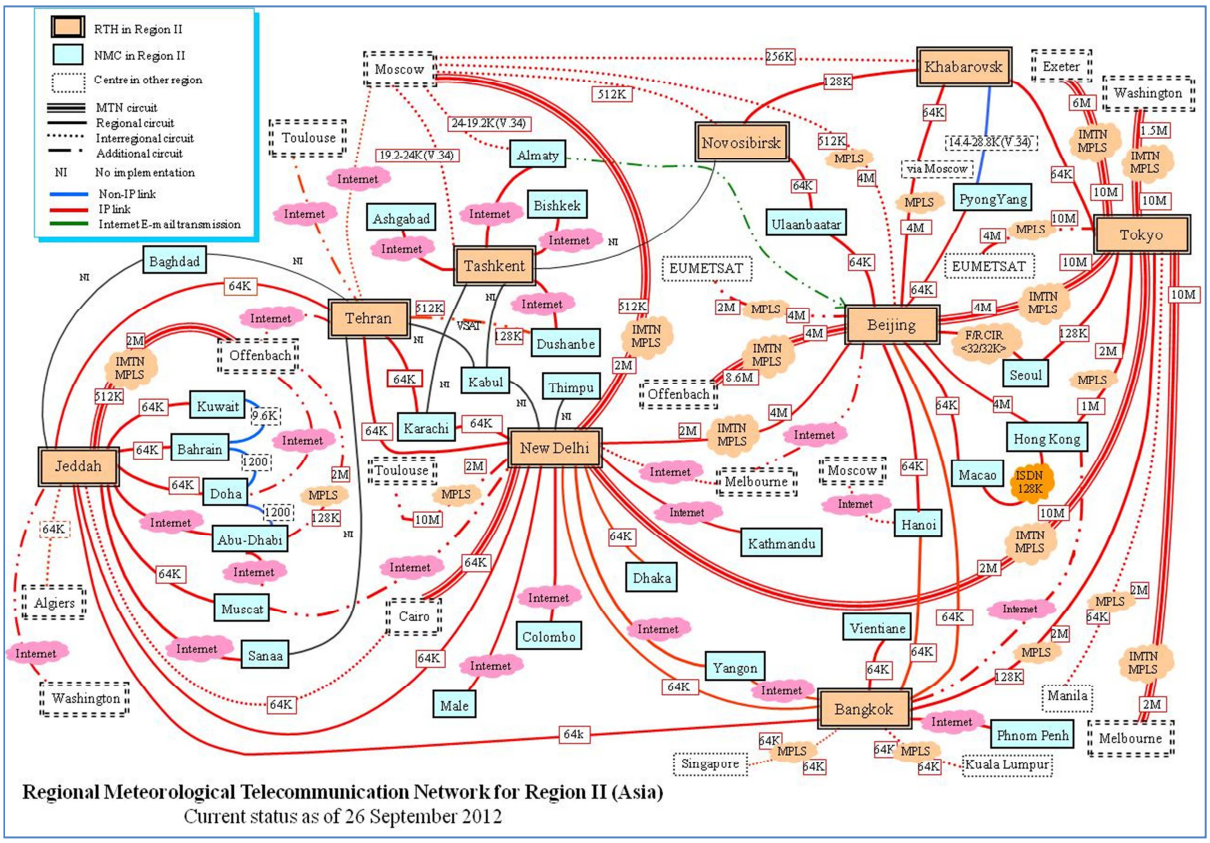
5. Progress on implementation of R2-WIS-IP

5.1 Current status of RA II telecommunication

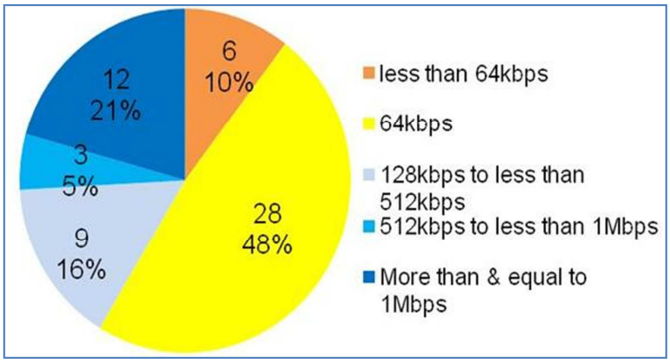
The Regional Meteorological Telecommunication Network (RMTN) is the communications and data management component that operates through the collection and distribution of the information critical to NMHSs operations. RMTN is also accompanied by very developed data management practices. These facilitate the orderly and efficient overall management of meteorological data and products of the World Weather Watch programme.

In the operation of WIS, the communication links enable the routine collection and dissemination of time-critical and operation-critical data and products. These, and the timely delivery of all other data and products, are the lifeblood of WMO activities. Communications links of WIS will be a core network connecting GISCs, (the GTS Main Telecommunication Network (MTN)) plus a number of communication networks connecting the various GISCs to DCPCs and NCs within each GISC's area of responsibility. This Area Meteorological Data Networks (AMDCN) will include technologies such as the GTS, Internet and satellite broadcast systems.

The number of circuits at each speed as of Sep 2012 is given below.



It shows more than 90% circuits are running at speed ≥ 64 kbps. For effective implementation of WIS, it was recommended in the Meeting of WMO RA II Working Group on WMO Integrated Observing System and WMO Information System (WIGOS/WIS), Seoul, Republic of Korea, 30 November - 7 December 2011 that the circuits may be upgraded to 512 kbps because new sets of data like satellite and NWP products have significant contribution for operation critical activities and 512 kbps would help timely delivery of various sets of data to end users in minimal time.



However, at present only 26% of total circuits operate at speed ≥ 512 kbps. Therefore there is a need to push NMHSs for upgrade of circuits.

Moreover, certain RMTN circuits like Karachi - Tashkent and Kabul -Tashkent are not logical networks and there is no chance of their revival in coming time. It would be appropriate to remind concerned NMHSs to either revive the linkages, implement Internet links or opt for their deletion from the network list. Pictorial representation of RMTN for RA II is appended above.

5.2 WIS centres in RA II

The procedures for the designation of the GISC, DCPC and NC of WIS centres are provided in the Manual on WIS (WMO No. 1060), Part II. After successful completion of the designation procedure, the centre is included in Appendix B to the Manual, Approved WMO Information System Centres. The current status of the designation of centres by Members is available on: http://www.wmo.int/pages/prog/www/WIS/centres/index_en.php.

5.2.1 GISCs

At present, there are the seven GISCs (Beijing, Tokyo, Seoul) in RA-II which are endorsed and are operational. The other three GISCs in RA II have been successfully audited by CBS are New Delhi, Tehran and Jeddah. GISC Moscow also services RA II. All are expected to become fully operational in near future.

Member	Centre type	GTS Function	Principal GISC	Const. Body	Endorsement CBS	Congress/EC
China	GISC	RTH	Beijing	CBS	Endorsed by CBS	2011/6/1
India	GISC	RTH	New Delhi	CBS	Endorsed by CBS	2011/6/1
Iran, Islamic Republic of	GISC	RTH	Tehran	CBS	Endorsed by CBS	2011/6/1
Japan	GISC	RTH	Tokyo	CBS	Endorsed by CBS	2011/6/1
Republic of Korea	GISC	NMC	Seoul	CBS	Endorsed by CBS	2011/6/1
Saudi Arabia	GISC	RTH	Jeddah	CBS	Endorsed by CBS	2011/6/1
Russian Federation	GISC	WMC	Moscow	CBS	Endorsed by CBS	2011/6/1

A list of links to the GISCs in RA II as follows:

- GISC Beijing : http://wisportal.cma.gov.cn/wis/
- GISC Tokyo : http://www.wis-jma.go.jp/
- GISC Seoul : http://gisc.kma.go.kr/
- GISC New Delhi : http://wis.imd.gov.in
- GISC Tehran : http://gisc.irimo.ir/
- GISC Jeddah : http://84.235.53.3:8080/MessirWIS
- GISC Moscow : http://portal.gisc-msk.wis.mecom.ru/

5.2.2 DCPCs

The table below provides information on the DCPCs that have been designated by the RA II Members with their planned functions.

Member	Centre type	GTS Function	Principal GISC	WIMMS	Const. Body	Endorsement CBS	Congress/ EC
China	DCPC	RTH	Beijing		CBS	Endorsed by CBS	2011/6/1
China	DCPC	RSMC-Geographical (NMC)	Beijing		CBS	Endorsed by CBS	2011/6/1
China	DCPC	RSMC-Activity-ATM (NMC)	Beijing		CBS	Endorsed by CBS	2011/6/1
China	DCPC	RCC (Beijing NCC, - RA II)	Beijing		CCl	Endorsed by CBS	2011/6/1
China	DCPC	NSMC	Beijing		CBS	Endorsed by CBS	2011/6/1
Hong Kong, China	DCPC	WWIS	Beijing	Beijing	CBS	Endorsed by CBS	2011/6/1
India	DCPC	RTH	New Delhi	Tokyo	CBS	Under review by ET-GDDP	2011/6/1
India	DCPC	RSMC-Activity-TC	New Delhi	Tokyo	CBS	Under review by ET-GDDP	2011/6/1
Iran, Islamic Republic of	DCPC	RTH	Tehran		CBS	Under review by ET-GDDP	2011/6/1
Japan	DCPC	WDC-GHG	Tokyo		CAS	Endorsed by CBS	2011/6/1
Japan	DCPC	Satellite Centre	Tokyo		CBS	Endorsed by CBS	2011/6/1
Japan	DCPC	RTH	Tokyo		CBS	Endorsed by CBS	2011/6/1
Japan	DCPC	RSMC-Geographical	Tokyo		CBS	Endorsed by CBS	2011/6/1
Japan	DCPC	RSMC-Activity-TC	Tokyo		CBS	Endorsed by CBS	2011/6/1
Japan	DCPC	RSMC-Activity-ATM	Tokyo		CBS	Endorsed by CBS	2011/6/1
Japan	DCPC	RCC (Tokyo NCC, RA II)	Tokyo		CCl	Endorsed by CBS	2011/6/1
Japan	DCPC	GPC/LRF	Tokyo		CBS	Endorsed by CBS	2011/6/1
Qatar	DCPC	Marine Meteorological Centre (MMC)	Jeddah	Tokyo	JCOMM	Under review by ET-GDDP	
Republic of Korea	DCPC	WAMIS	Seoul		CAgM	Endorsed by CBS	2011/6/1
Republic of Korea	DCPC	NMSC	Seoul		CBS	Endorsed by CBS	2011/6/1
Republic of Korea	DCPC	GPC / LC-LRFMME	Seoul		CBS	Endorsed by CBS	2011/6/1

Russian Federation	DCPC	RTH/RSMC-Geographical (Novosibirsk)	Moscow		CBS	Not submitted to ET-GDDP	2011/6/1
Russian Federation	DCPC	RTH/RSMC-Geographical (Khabarovsk)	Moscow		CBS	Not submitted to ET-GDDP	2011/6/1
Saudi Arabia	DCPC	RTH	Jeddah		CBS	Under review by ET-GDDP	2011/6/1
Saudi Arabia	DCPC	RSMC-Geographical (Jeddah)	Jeddah		CBS	Not submitted to ET-GDDP	
Saudi Arabia	DCPC	RDMEC (Drought)	Jeddah		CHy	Not submitted to ET-GDDP	
Thailand	DCPC	RTH	Tokyo		CBS	Not submitted to ET-GDDP	
Uzbekistan	DCPC	RTH	Seoul		CBS	Not submitted to ET-GDDP	

5.2.3 NCs

The table below presents the current status of the designation of NCs in RA II with their principal GISC, WIMMS and Focal Point, which is based on the Resolution 5 of the Fifteenth session of Regional Association II (ASIA), Qatar Doha, December 2012.

Member	NC	GTS Function	Principal GISC	WIMMS	Focal Point
Afghanistan	Kabul	NMC	Tehran		Mr Mohammad Nasim Muradi Afghan Meteorological Authority Khwaga Rawash P.O. Box 425 KABUL the Interim Administration of Afghanistan Tel: 0093 (0) 700180705 Email: raket_nasim@yahoo.com
Bahrain	Manama	NMC	Jeddah	Beijing	Mr Nader Ahmed Abdulla Bahrain Meteorological Service P.O. Box 586 BAHRAIN Bahrain Tel: +973 17321163 Fax: +973 17320630 Email: nader@caa.gov.bh
Bangladesh	Dhaka	NMC	New Delhi	Tokyo	Mr Abdul Matin Bangladesh Meteorological Department Meteorological Complex Abhawa Bhaban Agargaon 1207 DHAKA Bangladesh Tel: +880-2-8116634 Fax: +880-2-9103908 Email: info@bmd.gov.bd ; amatin2004@yahoo.com

Bhutan	Thimphu	NMC	New Delhi		Mr Chimi Wangda Council for Renewable Natural Resources Research, Ministry of Economic Affairs, Thimphu Bhutan Tel: 02 323703 Fax: 02 324 999 Email: chimwangs10@gmail.com
Cambodia	Phnom Penh	NMC	Tokyo	Tokyo	Ms Peou Phalla Department of Meteorology 364, Preah Monivong Blvd, Chamkarmon PHNOM PENH Cambodia Tel: +855-16-616-927 Fax: +855-23-213-490 Email: phallapeou1@gmail.com
China	Beijing	NMC	Beijing		Ms Xiang Li China Meteorological Administration 46 Zhongguancun Nandajie BEIJING 100081 China Tel: +86 10 6840 6275 Fax: +86 10 6218 6241 Email: lixiang@cma.gov.cn
Democratic People's Republic of Korea	Pyŏngyang	NMC	TBD		State Hydrometeorological Administration
Hong Kong, China	Hong Kong	NMC	Beijing	Beijing	Mr Lee Lap Shun Hong Kong Observatory 134A Nathan Road KOWLOON Hong Kong, China Tel: +852 2926 8416 Fax: +852 2311 9448 Email: lslee@hko.gov.hk
India	New Delhi	NMC	New Delhi	Tokyo	Dr L. R. Meena India Meteorological Department Mausam Bhavan Lodi Road NEW DELHI 110003 India Tel: 011 -2461 6051 Fax: 011- 2469 9216 Mobile: 91 - 98105 56531 Email: lr.meena@imd.gov.in; lrmeena@gmail.com
Iran, Islamic Republic of	Tehran	NMC	Tehran	Tokyo	Ms Farah Mohammadi Islamic Republic of Iran Meteorological Organization P.O. Box 13185-461 TEHRAN the Islamic Republic of Iran Tel: +989123842058 Fax: +982166070077 Mobile: +989123842058 Email: farahmohamadi@yahoo.com

Iraq	Baghdad	NMC	Tehran		Mr Sallam S. Nadhim Iraqi Meteorological Organization Almansoor P.O. Box 6078 BAGHDAD Iraq Tel: +964 7702766948 Email: sallam_omery@yahoo.com
Japan	Tokyo	NMC	Tokyo		Mr Kenji Tsunoda Japan Meteorological Agency Otemachi 1-3-4, Chiyoda-ku TOKYO 100-8122 Japan Tel: +81-3 3212 8341 Fax: +81-3 3211 8404 Email: tsunoda@met.kishou.go.jp
Kazakhstan	Almaty	NMC	Moscow		B. S RAPIKOV Kazhydromet ul. Orynbor 11/1 010000 Astana Kazakhstan Tel: +8-7172-798399 Email: rapikov_b@kazhydromet.kz; rapikov@gmail.com
Kuwait	Kuwait City	NMC	Jeddah	Tokyo	Mr Fahad Alnajadah Department of Meteorology P.O. Box 17 SAFAT 13001 Kuwait Tel: +965 66808266 Fax: +965 24727326 Email: f.alnajadah@met.gov.kw
Kyrgyzstan	Bishkek	NMC	Moscow		Dr Tatiana KOZHEVNIKOVA (Ms) Main Hydrometeorological Administration 1, Karasuiskaya Street GSP 720017 BISHKEK Kyrgyz Republic Tel: +(996 312) 314 605 Fax: +(996 312) 314 663 Email: usi@meteo.ktnet.kg
Lao People's Democratic Republic	Vientiane	NMC	Tokyo	Tokyo	Mr Singthong Pathoummady Department of Meteorology and Hydrology P.O. Box 811 VIENTIANE Lao People's Democratic Republic Tel: (+856) 21 21 5010 Fax: +856 21 223446 Mobile: (+856) 20 538 9651 Email: singthong_dmh@etllao.com; p.singthong@yahoo.com

Macao, China	Macau	WSO	Beijing		Mr Ian Vai Kei, Brian Meteorological and Geophysical Bureau Rampa do Observatório Taipa Grande Caixa postal No.93 MACAU Macao, China Tel: +853 88986260 Fax: +853 28850557 Email: brianian@smg.gov.mo
Maldives	Malé	NMC	New Delhi	Tokyo	Mr Ali Shareef Department of Meteorology Orchid Building Orchid Magu MALE 20-05 Maldives Tel: +960 332 6200 Fax: +960 3320021 Mobile: +960 7771828 Email: admin@meteorology.gov.mv
Mongolia	Ulaanbaatar	NMC	Beijing		Ms Davaasuren Tungalag National Agency for Meteorology, Hydrology and Environment Monitoring Khudaldaany Gudamj-5 ULAANBAATAR 46 Mongolia Tel: +976-11-328 035 Fax: +976 11 329968 Email: tungalag@icc.mn/ tungalag@yahoo.com
Myanmar	Yangon	NMC	Tokyo		Dr Hrin Nei Thiam Department of Meteorology and Hydrology Mayangon P.O. 11061 YANGON Myanmar Tel: 00 95 67 411031 Fax: 00 95 67 411449 Email: dg.dmh@mptmail.net.mm
Nepal	Kathmandu	NMC	Beijing		Mr Kamal Prakash Budhathori Department of Hydrology and Meteorology G.P.O. Box 406 Babar Mahal KATHMANDU Nepal Tel: +977 1 4255920 Fax: +977 1 4262348/ +977 1 4254890 Email: kp_budhathoki@yahoo.com
Oman	Muscat	NMC	Jeddah	Tokyo	Mr Ahmed H. Al Harthy Department of Meteorology P.O. Box 1, Code: 111 & P.O. Box 204, Code: 113 Muscat Oman Tel: +968-24-519360 Fax: +968-24-518360 Email: a.alharthy@met.gov.om

Pakistan	Karachi	NMC	Beijing	Beijing	Mr Azmat Hayat Khan Pakistan Meteorological Department Sector: H-8/2 P.O. Box 1214 ISLAMABAD Pakistan Tel: +92-51-9250598 Fax: +92-51-9250368 Email: dirndmc@gmail.com; pakmet_islamabad@yahoo.com; director@pmd.gov.pk
Qatar	Doha	NMC	Jeddah	Tokyo	Mr R. Monikumar Qatar Meteorology Department PostBoxNo.3000, Doha,Qatar Tel: 0097466812409 moni.kumar@caa.gov.qa monikumar.r@gmail.com
Qatar	Doha	Aviation Centre	Jeddah	Tokyo	Mr R. Monikumar Qatar Meteorology Department PostBoxNo.3000, Doha,Qatar Tel: 0097466812409 moni.kumar@caa.gov.qa monikumar.r@gmail.com
Republic of Korea	Seoul	NMC	Seoul		Mr Sunghoi Huh Korea Meteorological Administration 460-18, Shindaebang-dong Dongjak-gu SEOUL 156-720 Republic of Korea Tel: +82 2 2181 0416 Fax: +82 2 2181 0449 Mobile: +82-10-4559-7256 Email: shhuh@korea.kr
Russian Federation	Novosibirsk	WSO (Novosibirsk)	Moscow		Mr Alexander Karpenko Russian Federal Service for Hydrometeorology and Environmental Monitoring (Novosibirsk) Novosibirsk,Sovetskayastr,30,Russia Tel:+73832224388 Fax:+73832222555 karp@meteo-nso.ru aspd@meteo-nso.ru
Russian Federation	Khabarovsk	WSO (Khabarovsk)	Moscow		Mr Anatoly Nagorsky Russian Federal Service for Hydrometeorology and Environmental Monitoring (Khabarovsk) Khabarovsk,Leninstr,18Russia Tel:+74212233064 Fax:+74212214248 aspd@hbrv.mecom.ru
Saudi Arabia	Jeddah	NMC	Jeddah		Dr Saad Almajnooni Presidency of Meteorology and Environment P.O. Box 1358 JEDDAH 21431 Saudi Arabia Tel: +966 546467695 Fax: +966 26572931 Email: saad_J2001@hotmail.com

Sri Lanka	Colombo	NMC	New Delhi		Mr S. R. Jayasekara Department of Meteorology 383,BauddhalokaMawatha,Colombo07 Tel:+94112691443 Fax:+94112698311 siriranjith@gmail.com
Tajikistan	Dushanbe	NMC	Moscow		Mr Suhrob Olimov Main Administration of Hydrometeorology and Monitoring of the Environment DUSHANBE 734025 Tajikistan Tel: +99244625848 Mobile: +992918297570 Email: olimovsa@gmail.com
Thailand	Bangkok	NMC	Tokyo		Dr Wanchalearm Petsuwan Thai Meteorological Department 4353 Sukhumvit, Bangna 10260 BANGKOK Thailand Tel: +662 399-4596 Fax: +662 398-9861 Email: wpetsuwan@hotmail.com; gtsbkk@metnet.tmd.go.th
Turkmenistan	Ashgabat	NMC	TBD		Mr Hallyyev Batyr Jumamuradovich Administration of Hydrometeorology 28, Azadi Avenue ASHGABAT 744000 Turkmenistan Tel: +993 12 93 81 58 Fax: +993 12 93 56 86 Email: meteo@online.tm
United Arab Emirates	Abu Dhabi	NMC	Jeddah		Mr Jassim Almarzouqi National Center of Meteorology and Seismology P.O. Box 4815 ABU DHABI United Arab Emirates Tel: +971 2222 7771 Fax: +971 26661575 Email: jalmarzouqi@ncms.ae
Uzbekistan	Tashkent	NMC	Seoul		Mr Bakhtier Makhmudov Uzhydromet 72, 1st Bodomzor yuli str. TASHKENT 100052 Uzbekistan Tel: +998 711 508 635, 237 35 11 Fax: +998 712332025 Email: uzhymet@meteo.uz, mtb@meteo.uz

Viet Nam	Hanoi	NMC	Tokyo		Mr Nguyen Nam Thanh Hydrometeorological Service No. 4, Dang Thai Than Str. Hoan Kiem HANOI the Socialist Republic of Viet Nam Tel: +844 3 824 4120, +844 3 824 4187 Fax: +844 3 826 0779, +844 3 825 7740 Email: hoahtqt@gmail.com, daikhanh@kttv.gov.vn
Yemen	Sana'a	NMC	Jeddah		Mr Tareg S. Alhamady Yemen Meteorological Service Haddah Post Office P.O. Box 7145 SANA'A Republic of Yemen Tel: + 967 1 419774 ext 215 Fax: +967 1 419771 Email: fore@yms.gov.ye

6. Challenges in Implementation of WIGOS and WIS

6.1 Challenges in Implementation of WIGOS

In the R-WIP-II, the risk areas have also been identified, including lack of resources (funds, expertise), lack of understanding of benefits that WIGOS can bring to the Region, sub-regions and Members, lack of cooperation and collaboration with key partners and stakeholders, and Low commitment of Members. Each one of these factors will be a big challenge of the WIGOS implementation in Regions and Members.

The first actual challenge for implementation of WIGOS is how to promote the implementation of projects listed in R-WIP-II. The implementation of WIGOS in RA II will rely on the implementation of projects in R-WIP-II. The projects in R-WIP-II will be implemented by main players listed in the projects. Some members who bear the responsibility of projects take actions actively, and some do not. It is a big challenge for the WG-WIGOS/WIS to think out a way to promote the implementation of the projects listed in R-WIP-II.

The second actual challenge for implementation of WIGOS is how to develop a commonly used technical solution to solve observation issues for different all members. For an example, for the case of project No. III.1 (Observing systems integration for supporting disaster risk reduction - Integration of Surface-based Remote Sensing Data in the East Asia), the quality of exchanged observation data is not controlled and, therefore, users are requested to develop their own quality control system to use such observation data. Since data characteristics are specific to Radar, it is very difficult to develop a quality control system with limited information on individual Radar.

The third actual challenge for implementation of WIGOS is the member's meteorological data policy. WMO is try to make meteorological data exchanged without restrictions and it is also one of important target for WIGOS. Actually, some members have set restrictions to some specific kind of data in their data policies for the national security or other purposes.. It is quite challenging to identify possible barriers related to data policy and solve them to realize regional exchange of observation data among countries. To solve this problem, the best way would be to prove the benefit of exchanging observation data.

6.2 Challenges in Implementation of WIS

In the R2-WIS-IP, the risk areas have also been identified, including lack of staff resources for operational WIS centre, lack of DAR Metadata knowledge, and Insufficient bandwidth of communication links. To overcome the risk,

(1) GISC and DCPC staff should be educated enough about metadata, DAR and WIS related software. NC's staff could manage WIS related activities. RA II GISCs and GISC candidates should enhance their staff training as well as the staff of their area of responsibility. They should ensure the availability of adequate communication systems and give the necessary consultation and cooperation with all Members, to improve their functions, including the establishment of routine RA II WIS long/short-term training programs capable of giving effective communications links.

(2) RA II should take proper measures to face DAR metadata knowledge risks on the basis of WMO requirements and plan to solve this problem through training at three different levels:

At Level 1: Each GISC should take responsibility of training its staff and staff of area of responsibility on regular basis.

At Level 2: RA II should arrange DAR metadata training courses for the region staff.

At Level 3: WMO should have a leading role in tackling this risk by customizing training courses that addresses all WIS knowledge, especially DAR metadata issue.

Each WIS centre (GISC, DCPC, NC) should establish its own training plan and encourage its staff members to actively participate in different WIS related courses.

(3) All GISCs in RA II should be invited to analyze their telecommunication links with their area of responsibility (AMDCN) in term of data volume exchange (currently and in the future) and compare it with the available bandwidth, making technical and financial plans to smooth the migration from current GTS status to WIS permanent

APPENDIX I

RA II WIGOS IMPLEMENTATION ACTIVITIES

Depending on the implementation scale, planned activities are specified as follows:

R = Regional activity; SR = Sub-regional activity and N = National activity.

No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K CHF			Potential Risks
					Total	ARB	Shortfall	
1. Management of WIGOS Implementation in RA II								
1.1 R	Develop and update R-WIP-II	Regional WIGOS Implementation Plan for RA II (R-WIP-II)	Develop in 2012 and update if necessary	Drafted by TT-R-WIP-II, to be adopted by RA II-15 (Dec. 2012) and updated by RA II EG-WIGOS/MG				Low (on-going)
1.2 R	Report progress of the **RA II R-WIP-II Projects** [2] to RA II MG	Progress reports	2013-2015 every year	Coordinators of Projects				Low
1.3 R N	Encourage RA II Members to appoint National Focal Points and submit national reports on progress of EGOS-IP	A list of RA II EGOS-IP National Focal Points	2013-2015 every year	RA II Members (Project No. I)				Mod
2. Collaboration with WMO and co-sponsored observing systems								
2.1 SR	Examine data policy and exchange of surface-based remote sensing datasets/ products for NWP use on an offline basis	Exchange of datasets	2013-2014	East Asia (China, Japan, Republic of Korea) (Project No. III.1)				High
2.2 SR	Examine data policies and exchange observational sand and dust data	Exchange of datasets	2013	SDS-WAS Asian Node WG (China, Japan, Republic of Korea) (Project No. V)				High

No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K CHF			Potential Risks
					Total	ARB	Shortfall	
3. Design, planning and optimized evolution of WIGOS and its regional, sub-regional and national observing components								
3.1 R	Review the progress of EGOS-IP in RA II based on EGOS national reports submitted by RA II Members	Prioritized actions listed in the EGOS-IP	2015	China, Hong Kong, China (Project No. I)				Mod
3.2 SR	Design feasible and optimal draft design of integration of surface-based remote sensing observations based on OSE; use the results to update the RRR user requirements database and to fine tune the EGOS-IP and observing system plans.	Draft design of integration of surface-based remote sensing observation based on OSE	2015	East Asia (Project No. III.1)				High
3.3 SR	Assess enhanced capacity in monitoring and forecasting of sand and dust storms by exchanged datasets; use the results to update the RRR user requirements database and to fine tune the EGOS-IP and observing system plans.	Identified benefits from exchange of sand and dust data on a near real-time basis	2015	SDS-WAS Asian Node WG (Project No. V)				High
3.4 SR	Develop strategic plan on development of the Southeast Asia radar network.	Draft strategic plan on development of the Southeast Asia radar network	2015	Southeast Asia (ASEAN—SCMG: Thailand, Malaysia) (Project No. III.2)				Mod
3.5 R	Identify the requirements of NMHSs of developing countries, regarding satellite imagery, data and products, use the results to update the RRR user requirements database and to fine tune the EGOS-IP	Reports on requirements of NMHSs of developing countries, regarding satellite imagery, data and products		Japan, Republic of Korea, other satellite operators (Project No. VI)				Mod
4. Integrated Observing System Operation and Maintenance								
4.1 R	Collect and share standard and best practices documents from RA II Members	Shared best practices on integration of observational systems	2013-2015	Republic of Korea (Project No. II)				Low
4.2	Develop and share national reports toward operational rainfall estimation/forecasting	Identified technical issues and lessons	2015	Southeast Asia (ASEAN—SCMG:				Mod

No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K CHF			Potential Risks
					Total	ARB	Shortfall	
SR	based on radar data.	learned on operation of radar systems among ASEAN countries		Thailand, Malaysia) (Project No. III.2)				
5. Integrated Quality Management								
5.1 R	Survey and share the status on calibration instruments for surface-based observations in RA II	Reports on status on calibration instruments for surface-based observations in RA II	2012-13	China, India, Japan (Project No. IV)				Low (on-going)
5.2 R	Monitor data quality by utilizing NWP QC monitoring reports on surface observations	Improved data quality of surface observations	2012-15	Japan (Project No. IV)				Low (on-going)
5.3 R	Organize intercomparison between regional standards of RICs	Traceability between RICs	2013-15	China, Japan (Project No. IV)				High
5.4 R	Obtain ISO/IEC 17025	Enhanced RIC's capacity	2013-15	China, Japan (Project No. IV)				Mod
5.5 R	Enhance support by RICs, and encourage Members to work with RICs to ensure traceability to SI	Improved data quality of surface observations	2013-15	China, Japan (Project No. IV)				Mod
6. Standardization, System Interoperability and Data Compatibility								
6.1 R	Survey and share the status on QC/QA procedures and site management for the network of RBCN and RBSN stations	Reports on status on QC/QA procedures and site management in RA II	2013-15	Japan (Project No. IV)				Mod
6.2 N	Encourage the collection of metadata on observing stations	Collection of metadata on observing stations	2013-15	RA II Members				High
7. The WIGOS Operational Information Resource								
7.1 R	Develop a portal to share EGOS national reports	Portal to share EGOS national reports	2013-15	China (Project No. I)				Low

No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K CHF			Potential Risks
					Total	ARB	Shortfall	
7.2 R	Develop a standards and best practices Portal	Standards and best practices Portal	2013-15	Republic of Korea (Project No. II)				Low
7.3 R	Develop QA/QC Portal	QA/QC Portal	2013-15	Japan (Project No. IV)				Mod
8. Data discovery, delivery and archival								
8.1 R	Encourage RA II Members to be designated as NCs and DCPCs	RA II Members designated as NCs and DCPCs	2012-15	RA II EG on WIGOS				Mod
8.2 R	Encourage RA II Members to share data via WIS, including from organizations other than NMHSs	New sources of data are available through WIS	2012-15	RA II EG on WIGOS				Mod
9. Capacity development[3]								
9.1 R	Technical Training on QA/QC procedures	Improved QA/QC at RBCN and RBSN stations	2013-15	China; India; Japan; Republic of Korea; Hong Kong, China; Kuwait; Russian Fedederation (Project No. IV)				High
9.2 R	Hold training workshops on maintenance and calibration of meteorological instruments	Improved capacity in maintenance and calibration of meteorological instruments	2013	Japan (Project No. IV)				Low (being planned)
9.3	Develop training materials on maintenance and calibration of meteorological instruments	Training materials on maintenance and	2013-15	Japan				Low

[3] Congress stressed that an effective capacity-building strategy is an essential component of the WIGOS implementation. Specialized education, training activities and improvement of necessary observing infrastructure should be reflected in the regional, sub-regional and national WIGOS implementation plans, especially for NMHSs of LDCs, LLDCs and SIDS. Hence, capacity building is not to be limited to scientific and technological concerns, but also to strategic and management consideration including human resources development, resource mobilization and communications and outreach activities.

No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K CHF			Potential Risks
					Total	ARB	Shortfall	
R		calibration of meteorological instruments		(Project No. IV)				(being planned)
9.4 R	Coordinate training activities on utilization of satellite data/products	Improved capacity in utilization of satellite data/products	2012-15	Japan, Republic of Korea, other satellite operators (Project No. VI)				Low (on-going)
9.5 R	Establishing filed intercomparison campaign for observation techniques	Guidance to operate and maintain observation instruments	2013-15	Republic of Korea (Project No. II)				Low
10. Communication and outreach								
10.1 R	Interlink RA II WIGOS portals and related Websites	Better access to RA II WIGOS-related information and products	2013-15	China; Hong Kong, China; India; Japan; Republic of Korea				low
10.2 R	Develop RIC Websites	Improved access to information on RICs	2012-15	China, Japan (Project No. IV)				Low (on-going)
10.3 R	Publish newsletter regularly	Improved access to information on satellite data/products	2012-15	Japan, Republic of Korea, other satellite operators (Project No. VI)				Low (on-going)

APPENDIX II

RA II WIGOS IMPLEMENTATION PROJECTS

Project No. I

Project Title	**RA II WIGOS Project to Monitor and Review the Implementation of EGOS-IP in RA II**
Type	Regional Implementation Project (RA II)
Status	Draft Design
Overview	A vision for the Global Observing Systems in 2025 which provides high-level goals to guide the evolution of the global observing systems during the coming decades has been approved by EC-LXI in 2009. Accordingly, CBS-15 adopted a recommendation for the Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP) to complement and respond to this Vision. The Implementation Plan outlined the key activities to be implemented during the period 2012 to 2025 aiming at maintaining and developing all WMO component observing systems. Thus, a project can be established to monitor the progress of RA II Members on the implementation of EGOS-IP, analyze gaps in the regional observing network, and therefore, prioritize actions listed in EGOS-IP. The concerned information should be shared by RA II Members and all users by establishing a portal. This project will: ● Encourage RA II Members to appoint National Focal Points and submit EGOS National Reports annually, ● Identify gaps and prioritize actions listed in EGOS-IP through reviewing the progress of EGOS-IP in RA II, ● Develop a Portal to share the progress of EGOS-IP Implementation of RA II Members.
Aim(s)	● To identify gaps and prioritize actions listed in the EGOS-IP through reviewing the progress of the Evolution of Global Observing Systems (EGOS), ● The progress and experiences are shared by RA II members when implementing the EGOS-IP.
Benefits	The Portal will provide Members and users with a platform for sharing updated progress of EGOS-IP implementation in RA II
Key Regional Players	China and Hong Kong, China
Capacity development requirements	● Technical assistance by CBS, ● Workshop(s) on gaps analysis and actions prioritizing listed in EGOS-IP.
Partners/Participants	All RA II Members
Funding Source(s)	This project will rely on existing budget allocations at the national level. Additional funding will be needed to facilitate some elements such as the cost for developing the portal software.
Overall Costs	(TBD)
Timescale	2013–2016
Expected Key Deliverables/Key responsible body	● A list of RA II EGOS National Focal Points, ● Prioritized actions listed in the EGOS-IP, ● Portal to share progress EGOS IP implementation in RA II.
Main risk(s)	Lack of resources (funds/expertise), lack of cooperation and missing or mistaken information from Members

Website	Not available
Summary	This project will develop a Portal that will provide updated progress on EGOS-IP in RA II, identify gaps and prioritize actions listed in EGOS-IP identify regional prioritized actions to be taken.
Date of the update	21 November 2012
Contact Person 1	Ms GUO Jianxia Meteorological Observation Center, China Meteorological Administration (CMA) China Tel: +86 10 68407934 Fax: +86 10 68400936 E-mail: gjxaoc@cma.gov.cn
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Project No. II

Title	**RA II WIGOS Project for Standard and Best Practice Portal, including Technical Documents with Necessary Details in English from all RA II Members**
Type	Regional Implementation Project (RA II)
Status	Draft Design
Overview	This project will develop a Standard and Best Practice Portal including mechanism and procedures needed for a regular updating process.
Aim(s)	● To develop a Standard and Best Practice Portal, ● To establish regional standard and best practices documentation (regional practices database) for enhanced observational data/products utilization, including data/metadata management, ● To specify mechanisms, procedures for regular monitoring and updating of the portal.
Benefits	The standard and best practices portal will enhance and improve quality and utilization of data/products.
Key Regional Player	Republic of Korea
Capacity development requirements	Technical assistance by CBS and CIMO
Partners/Participants	RA II Members
Relationship with existing project(s)	KMA WIGOS demonstration project
Funding Source(s)	This project will rely on existing budget allocations at the national level
Overall Costs	(TBD)
Timescale	2013–2016
Expected Key Deliverables / Key responsible body	Portal on standards and best practices with mechanisms and procedures for regular monitoring and keeping the portal up-to-dated.
Main risk(s)	Lack of resources (funds/expertise), lack of cooperation and missing or mistaken information from Members.
Website	Not available
Summary	This subproject will establish a RA II Portal of standards and best practices for enhanced observational data/products utilization.
Date of the update	21 November 2012
Contact Person 1	Dr WON Jaegwang Korea Meteorological Administration (KMA) Republic of Korea Tel.: +82-2-2181-0694 Fax: +82-2-2181-0709 E-mail: wonjg@kma.go.kr, ecotus37@korea.kr
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Project No. III.1

Project Title	**RA II WIGOS Project for Observing Systems Integration for Supporting Disaster Risk Reduction**
Subproject Title	**Integration of Surface-based Remote Sensing Data in the East Asia**
Type	Regional Implementation Project (RA II)
Status	Draft Design
Overview	In order to enhance observing capabilities in severe weather monitoring and forecasting, specifically in East Asia, surface-based remote sensing datasets/ products, such as radar and GPS data, should be integrated for their better utilization. This project, as a first step, aims at developing a feasible and optimal draft design of integrated surface-based remote sensing observations toward future operational assimilation in meso-scale NWP system at the sub-regional level, as well as real-time quality-assured radar composite maps. The project will be Observing System Experiments (OSE) driven and proceed as follows: 1. Offline Exchange of surface-based remote sensing datasets/products including radar echo intensity, Doppler velocity, AWS data, and, if available, GPS precipitable water vapour, together with supplementary information (e.g. data format, details on observations, and data quality) among participating organs. 2. Examination of impacts of assimilation of exchanged remote sensing observation on its NWP performance. Also, sub-regional radar composite maps meeting their own operational requirements will be developed. Results and identified technical issues (e.g. data format, data policies, telecommunication for real-time data exchange, and quality of data) will be shared with and worked out cooperatively by the participating organs. Thus, requirements of data exchange for operational phase will be specified. 3. A feasible and optimal draft design of integration of surface-based remote sensing observations will be developed based on the results of the project. To proceed with this project, existing frameworks such as CMA-JMA-KMA NWP meeting will be expanded to include this project into its agenda.
Aim(s)	The aim of this project is to develop a feasible and optimal draft design of integrated surface-based remote sensing observations toward operational assimilation of those data in meso-scale NWP model of the participating organs at the sub-regional level, as well as real-time quality-assured radar composite maps.
Benefits	Members in East Asia will benefit from this project through enhancement of their capabilities in observations for better early monitoring/warning/nowcasting/very short-range forecasting. All the other RA II Members, particularly ones in Southeast Asia which might plan a similar project in the future, will benefit from shared outcomes of this project, namely: (1) solutions to identified issues for integration of surface-based remote sensing observations at sub-regional level; as well as (2) results of impact analysis on capacities in severe weather monitoring and forecasting.
Key Regional Player	China, Japan and Republic of Korea
Capacity development requirements	Workshop(s) on better utilization (decision making & assimilation)
Partners/Participants	CMA, JMA, KMA
Relationship with existing project(s)	1. WMO Workshop on the Impact of Various Observing Systems on Numerical Weather Prediction. 2. CMA-JMA-KMA joint workshop on NWP (The 1st CMA-JMA-KMA joint

	workshop on NWP was held in September 2011). 3. WMO/CIMO Radar Quality Control and Quantitative Precipitation Estimation Intercomparison (RQQI).
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 might be needed to regularly hold technical meetings among CMA, JMA, and KMA to proceed with this project.
Overall Costs	(TBD)
Timescale	2013 – 2016
Expected Key Deliverables / Key responsible body	1. Establishment of collaborative working mechanism toward integrated surface-based remote sensing observations in the East Asia for operational monitoring and forecasting severe weather. 2. Solutions to identify issues to be solved for integration of surface-based remote sensing observations at sub-regional level and their solutions. 3. Impacts on capacities of NMHSs in severe weather monitoring and forecasting through utilization of surface-based remote sensing observations.
Main risk(s)	1. Limited exchange of observational data, for instance, due to data policies of providers. 2. Lack of sharing relevant technical documentation on exchanged data.
Website	Not to be established
Summary	This project will develop a feasible and optimal draft design of integrated surface-based remote sensing observations toward the sub-regional utilization in East Asia.
Date of the update	21 November 2012
Contact Person 1	Mr Yuki HONDA Office of International Affairs Japan Meteorological Agency (JMA) Japan Tel.: +81-3-3211-4966 Fax: +81-3-3211-2032 E-mail: iao-jma@met.kishou.go.jp,
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Project No. III.2

Project Title	**RA II WIGOS Project for Observing Systems Integration for Supporting Disaster Risk Reduction**
Subproject Title	**Capacity Building in Radar Techniques in the Southeast Asia**
Type	Cross-regional Implementation Project (RAs II and V)
Status	Draft Design
Overview	Developing countries in 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. 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. 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: 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: (a) overview of the current radar systems, (b) organization (department, division, staff, and budget), (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. The reports will be submitted to the 35th SCMG meeting (2013). 2) The other ASEAN member countries will also develop their national reports in the same format as that of Thailand and Malaysia, 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. 3) During the period of the project, 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. *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. *SCMG set up a new agenda item for discussion on the progress of this project.
Aim(s)	This project aims to develop effective early warning systems building on radar data in Southeast Asia.
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 identified in national reports and the regional strategic plan.
Key Regional Player	ASEAN-SCMG: Thailand, Malaysia
Partners/ Participants	All the ASEAN Member countries (Cambodia, Brunei Darussalam, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam)
Relationship with existing project(s)	- Radar composite map in Southeast Asia, one of the on-going projects under the Meteorological Working Group of the WMO/ESCAP Typhoon Committee, - Severe Weather Forecasting Demonstration Project (SWFDP) for Southeast Asia, - ASEAN Sub-Committee on Meteorology and Geophysics(SCMG).
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.
Overall Costs	(TBD)
Timescale	2013–2016
Expected Key Deliverables / Key responsible body	- National reports in the Southeast Asia toward operational rainfall estimation/forecasting based on radar data, - Regional strategic plan on development of the radar network.
Main risk(s)	1) Failure of development of national reports by participating organs. 2) Lack of available experts. 3) Lack of funds available.
Website	Not to be established
Date of the update	21 November 2012
Contact Person 1	Dr.Somchai Baimoung Deputy Director-General/Acting Director-General Thai Meteorological Department Thailand Tel.: +66 81 989 9025 Email: somchaib@tmd.go.th
Contact Person 2	Mr A. Kamiluddin Hj Ibrahim Director, Radar Meteorology Division Malaysian Meteorological Department Malaysia Tel.: +603 7967 8154 Fax: +603 7955 0964 E-mail: kamiluddin@met.gov.my

Project No. IV

Project Title	**RA II WIGOS Project to Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations**
Type	Regional Implementation Project (RA II)
Status	Draft Design
Overview	The Japan Meteorological Agency (JMA)/World Meteorological Organization (WMO) Workshop on Quality Management in Surface, Climate and Upper-air Observations, held at Tokyo in July 2010 as part of activities of the Pilot Project to Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations (hereafter, Pilot Project), found out that primary factors adversely affecting data quality in RA II are calibration and maintenance of instruments mainly due to lack of traceability of measurements to international standards and calibration facilities. This project will build on outcomes of the workshop. It consists of the following two activities: (i) improvements of data quality of RBCN/RBSN stations; and (ii) enhancement of capabilities of RIC-Tsukuba and RIC-Beijing. All the outcomes of this project will be shared at a Portal to be established by the Coordinator. 1. Improvements of data quality at RBCN/RBSN stations (a) Monitoring Data Quality The Coordinator checks data quality of RA II stations and identifies and requests RA II Members to identify technical issues, based on the following results: • Questionnaire on the Surface, Climate, and Upper-air Observations and Quality Management in Regional Association II (Asia) (conducted in July 2010), • Questionnaire on meteorological instruments, calibration and training in Regional Association II (Asia) (conducted in January 2012), • 6-monthly monitoring reports by the Lead Centre for monitoring the quality of land surface observations in Region II. (b) Survey on status on QA/QC procedures and site managements for the network of RBCN/RBSN stations, and report the results. Based on requests from the Coordinator, the following Members will consider the possibility of technical support if funds are available, and share the summary of the technical missions with RA II Members: - CMA, HKO, JMA, and KMA for Southeast Asia, - IMD for South Asia, - Roshydromet for Central Asia, - Kuwait for Middle East. 2. Enhancement of RIC's Services RICs plan to implement the following action items for further enhancement of their services in capacity building and calibration during the project: (a) Organization of a training workshop to improve understanding of calibration and maintenance of meteorological instruments according to needs of RA II Members to be identified by the "Questionnaire on Meteorological Instruments, Calibration and Training in Regional Association II (Asia)", (b) Development of training materials on calibration and maintenance of instruments (to be prepared for publication as an Instruments and Methods of Observation Programme (IMOP) technical document),

	(c) Obtaining the International Standard ISO/IEC 17025 – General requirements for the competence of testing and calibration laboratories – certification for air pressure, temperature, and humidity, (d) Development of RIC's Websites, (e) Intercomparison between RIC-Tsukuba and RIC-Beijing, (f) Reports on status on calibration instruments for surface-based observations in RA II (to be prepared for publication as an Instruments and Methods of Observation Programme (IMOP) technical document).
Aim(s)	This project aims at improvement of data quality at RBCN/RBSN stations and enhancement of services of RA II RICs.
Benefits	RA II Members, especially those with technical issues on data quality of observations, will potentially benefit from this project.
Role/Involvement of WMO Regional Centres in RA II	Regional Instrument Centres (RICs) Lead Centre for monitoring the quality of land surface observations
Key Regional Player	JMA (Coordinator), and Members of Coordination Group Technical Mission: - CMA, HKO, JMA, and KMA for Southeast Asia, - IMD for South Asia, - Roshydromet for Central Asia, - Kuwait for Middle East.
Capacity development requirements	1. Workshop on maintenance, field inspection, etc. (basic level), 2. Workshop on traceability, measurement uncertainty, etc. (advanced level).
Partners/Participants	RA II Members
Funding Source(s)	This project will rely on existing budget allocations at the national level. Additional funding will be needed to dispatch experts to NMHSs in developing countries and/or invite their observational staff to RICs for trainings and calibrations of national standards.
Overall Costs	(TBD)
Timescale	2013–2016
Expected Key Deliverables / Key responsible body	1. Provision of technical support for instrument maintenance and calibration by experts from RICs. 2. Holding a RIC's training workshop for RA II Members. 3. Development of training materials (to be prepared for publication as an IMOP technical document). 4. Obtaining ISO/IEC 17025 certification. 5. Portal Website to share outcomes of this project. 6. Report on status on QC/QA procedures and site management in RA II. 7. Reports on status on meteorological instruments, calibration and training in Regional Association II.
Main risk(s)	• Lack of funding for technical missions by RICs, • Insufficient communication between the Coordinator, RICs, and RA II Members on their status on maintenance and calibration of instruments to specify needs of technical supports, • Lack of responses from RA II Members.

Website	RIC's Website/Portal on QC/QA
Summary	Improvement of data quality of RA II Members through enhancement of RIC's services and capacity
Date of the update	21 November 2012
Contact Person 1	Mr Yoshihisa KIMATA Senior Coordinator for Observation Networks Administration Division, Observations Department Japan Meteorological Agency (JMA) Japan Tel.: +81 3 3211 6018 Fax: +81 3 3211 7084 Email: kimata@met.kishou.go.jp
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Project No. V

Project Title	**RA II WIGOS Project to Develop a Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) in Asia Node**
Type	Regional Implementation Project (RA II)
Status	Draft Design
Overview	SDS-WAS was established in 2007 to achieve comprehensive, coordinated and sustained observations and modelling capabilities of sand and dust storms in order to improve the monitoring of sand and dust storms to increase the understanding of the dust processes and to enhance dust prediction capabilities for mitigation of risks in many affected area (aviation, health impacts, etc.). The WMO SDS-WAS Region for Asia third meeting of Regional Steering Group (RSG) was held at Tsukuba, Japan in March 2012. At the meeting, it was confirmed that observation data exchange schemes should be implemented promptly in order to enhance systematic near-real-time (NRT) monitoring of sand and dust events in each country, and the following near-term implementation plan was agreed within the SDS-WAS Asia Node activity: • Each country will confirm their data policy on observation data delivery, to reach an agreement on the provision of observation data to be shared within the Node in NRT, • Regional Centre (RC: China) will provide a portal website with a function for sharing the observation data and announce it to the Node members, • At the beginning, experimental observation data sharing will be conducted in off-line basis (not NRT) for the sand/dust storms (SDS) seasons, • For the data exchange, the ad-hoc working group will propose appropriate data format and parameters, • In SDS season in the spring (from February to June) 2013, the NRT (with a goal of approximately 1-day delay) data exchange will be conducted regularly, • NRT data will be used for intercomparison of sand and dust storm forecast model to improve forecast accuracy as well as for monitoring of sand and dust storms.
Aim(s)	This project aims at mitigation of risks in many affected areas in the Asia Node countries through enhancement of systematic NRT monitoring of sand and dust storm.
Benefits	The systematic NRT monitoring of sand and dust storm will provide the Asia Node countries with useful information for sand and dust storm risk mitigation.
Role/Involvement of WMO Regional Centres in RA II	Regional Specialized Meteorological Centre with activity specialization on Atmospheric Sand and Dust Forecast (RSMC-ASDF) (TBD)
Key Regional Player	China, Japan, Republic of Korea
Partners/Participants	Countries in SDS-WAS Asia Node (China, Japan, Kazakhstan, Republic of Korea and Mongolia)
Funding Source(s)	This project will rely on existing budget allocations at the national level.
Overall Costs	(TBD)
Timescale	2013–2015

Expected Key Deliverables / Key responsible body	The systematic NRT monitoring of sand and dust storm in SDS-WAS Asia Node
Main risk(s)	Lack of resources (funds/expertise)
Website	SDS-WAS Asia Node portal
Summary	Improvement of sand and dust storms monitoring in the SDS-WAS Asia Node
Date of the update	12 November 2012
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Contact Person 1	Mr Hiroshi Koide Senior Coordinator for Global Atmosphere Watch Atmospheric Environment Division Global Environment and Marine Department Japan Meteorological Agency (JMA) Japan Tel.: +81-3-3287-3439 Fax: +81-3-3211-4640 E-mail: hkoide@met.kishou.go.jp
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Project No. VI

Project Title	**RA II WIGOS Project to Develop Support for NMHSs in Satellite Data, Products and Training**
Type	Regional Implementation Project (RA II)
Status	Draft Design
Overview	At its fourteenth session (December 2008), Regional Association II adopted a resolution to establish a pilot project for the development of support for National Meteorological and Hydrological Services (NMHSs) in the areas of satellite data, products and training. The Coordinating Group of the Pilot Project is composed of Japan (Co-coordinator); Republic of Korea (Co-coordinator); Bahrain; China; Hong Kong, China; India; Kyrgyzstan; Maldives; Oman; Pakistan; Russian Federation; Uzbekistan; Viet Nam and EUMETSAT (observer). The object of this project is to encourage NMHSs in RA II to make a kind of self-help effort to improve the flow of satellite-derived information by: ● Identifying the requirements of NMHSs of developing countries, regarding satellite imagery, data and products, use the results to update the RRR user requirements database and to fine tune the EGOS-IP, ● Facilitating the timely provision of satellite-related information by satellite operators themselves to users via the project web page, newsletters, etc., and ● Aligning with VLab activities to optimize assistance to NMHSs in RA II and coordinating training activities on use of satellite data/products).
Aim(s)	● To encourage NMHSs in RA II to make a kind of self-help effort to improve the flow of satellite-derived information, ● To improve the knowledge and techniques to use satellite data and products.
Benefits	NMHSs in RA II have benefited from this project to find means to access satellite data, products and training they want, and to improve the usage of satellite-derived information. This is expected to improve NMHSs' activities from nowcasting to climate and environment monitoring.
Key Regional Player	Japan, Republic of Korea and other satellite operators in RA II
Capacity development requirements	● Assistance (or support) of WMO VLab activities and other regional training activities, ● Assistance of satellite operators, ● Liaison with EGOS-IP.
Partners/Participants	Members of the Coordination Group members: Japan (Co-coordinator); Republic of Korea (Co-coordinator); Bahrain; China; Hong Kong, China; India; Kyrgyzstan; Maldives; Oman; Pakistan; Russian Federation; Uzbekistan; Viet Nam, RA V (observer) and EUMETSAT (observer) All other RA II Members can be nominated as the Group members.
Relationship with existing project(s)	(TBD)
Funding Source(s)	Regular activities of this project rely on existing budget allocations at the national level. Additional funding will be needed to hold the Coordination Group meetings and training events regularly.
Overall Costs	(TBD)
Timescale	2012–2016
Expected Key	● Reports on requirements of NMHSs regarding satellite imagery, data and

Deliverables / Key responsible body	products, ● Improvement on access to information on satellite data/products, ● Improvement on capacity in use of satellite data/products and facilitation of training datasets and toolboxes.
Main risk(s)	Lack of resources (funds/expertise) and lack of cooperation from Members
Website	The portal site of the project is operated on the WMO web server. http://www.wmo.int/pages/prog/sat/ra2pilotproject-intro_en.php
Summary	The project will encourage NMHSs in RA II to make a kind of self-help effort to improve the flow of satellite-érelated information.
Date of the update	12 November 2012
Contact Person 1	Mr Hironobu Yokota Senior Coordinator for Meteorological Satellite Systems Satellite Program Division, Observations Department Japan Meteorological Agency (JMA) Japan Tel: +81-3201-8677 Fax: +81-3217-1036 E-mail:hyokota@met.kishou.go.jp
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WMO STRATEGIC PLAN 2016-2019 AND REGIONAL OPERATING PLANS

World Meteorological Organization
Working together in weather, climate and water

WMO OMM

WMO Strategic Plan 2016-2019 and Regional Operating Plans

CK Park
D/RAP, WMO

WMO www.wmo.int

Global Societal Needs

Global Societal Needs, fundamental for each and every Member, are **key drivers** of the WMO Strategic Plan:

- **Improved protection of life and property** (mitigate impacts of hazardous weather, climate, water and other environmental events, and increased safety of transport on land, at sea and in the air);
- **Poverty eradication, sustained livelihoods, food security, sustainable access to water and energy, and economic growth** (make available weather, climate, water and related environmental services to support Post-2015 sustainable development agenda, climate risk management, climate risk management, green economy, DRR, food security, improved health and social well-being of citizens, water management, and tapping renewable energy resources such as hydro-, solar- and wind-power); and
- **Sustainable use of natural resources and improved environmental quality** (design available weather, climate, water and related environmental services to manage atmospheric, terrestrial, water and other resources and all time scales).

External challenges

- **Extreme weather and climate events**, increasing vulnerabilities, risks and the severity of these events due to climate change; escalating demands for improved monitoring, better forecasts and advanced warnings to inform decision-making, mitigate and adapt;
- **Globalization and regionalization of civil aviation**, stricter weather services requirements will have significant implications on NMHSs (demands, performance and resourcing);
- **Expansion of maritime transportation** into sparsely monitored Polar Regions, **as well as sea-level rise** come with elevated risks in terms of increased variability of weather, climate and sea-ice conditions, storm surges and coastal inundation;
- **Increasing urbanization and population** increase both the vulnerability and exposure of people to natural hazards;
- …

Internal challenges

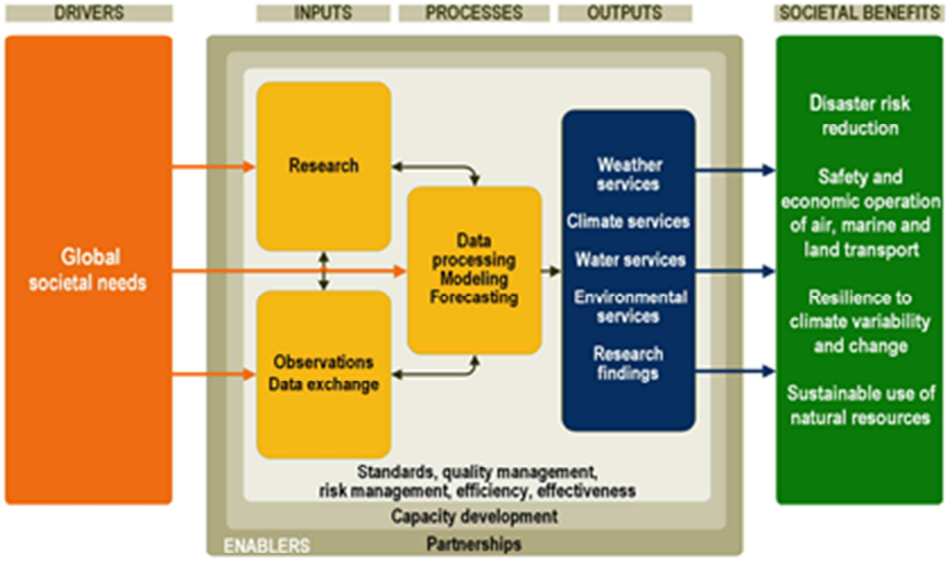
- **Availability of modern infrastructure** and adequate well trained and **competent human resources** to gather, process, archive and facilitate the rapid exchange of data and products;
- **Capacity to maintain high standards** of observations and data;
- **Participation and access to research** that leads to improved monitoring, predictions and understanding of the changes in weather, climate, water and the atmospheric chemistry at all spatial and temporal scales;
- **Capability to prepare and deliver high quality early warnings and forecasts** of weather, climate and water related hazards; and
- Understanding and integrating the **needs of various user communities** including emergency management authorities into its forecasts and warning programs.

WMO Strategic Thrusts

To achieve significant targeted improvements of services needed to address the escalating GSNs, the WMO is focusing of five Strategic Thrusts:

- Improving service quality and service delivery
- Advancing scientific research, its application, and the development and implementation of technology
- Strengthening capacity development
- Building and enhancing partnerships and cooperation
- Strengthening good WMO governance

WMO Strategic Plan at a glance



Strategic Priorities 2016-2019

- **Disaster Risk Reduction** (contribution to new DRR Framework, MHEWSs for areas with increased vulnerability, strengthening institutional partnerships)
- **Service Delivery** (public weather services and services for weather sensitive economic sectors, civil aviation, maritime transportation in polar areas, SIDS - storm surges and coastal inundation, floods and droughts forecasts),
- **Global Framework for Climate Services** (WMO's leadership in developing essential climate services for GFCS priority areas, growing partnerships)
- **WMO Integrated Global Observing System** (full implementation of WIGOS Plan for robust, standardized, accurate and quality assured observations of the Earth System. Keep WIS current WIGOS developments)
- **Capacity Development** (target on above priorities in developing countries, LDCs and SIDS; support NMHSs in demonstrating their value to governments; compliance with WMO technical regulations)

Research priorities: high-impact weather, S2S forecasting, polar predictions and urban meteorology.

Next WMO Strategic Plan (2016-2019)

✓Follows the structure of the current Pan;

✓Planning driven by needs & priorities set by the Members;

✓Focus on where WMO can provide solutions and improve capacity of NMHSs;

✓Key strategic priorities guide the investments.

EC-64: endorsed the outline, timelines, content guidance;

EC-65: EC WG-SOP to develop the draft SP; Members review (Dec 2013)

EC-66: Review Operating Plan and Budget proposal based on the SP (2014); Recommendations to Cg-17 (2015)

Basis for our work and positioning WMO in the global context

Structure of OP 2016-2019

- The WMO Operating Plan is results-based and presents programme activities and projects to achieve the vision of the Organization.
- It has the following sections:
  - WMO Programme activities planned and funded for implementation;
  - Technical Commissions Operating Plans and
  - Regional Associations Operating Plans.

Decisions of Cg-16, EC-64, EC-65 on SOP 2016-2019

- Cg-16 (para. 8.5.1-8.5.5):
  - The GSNs, STs and ERs in WMO SP 2012–2015 should form the basis for the WMO SP 2016–2019;
  - Requested RAs to:
    - Provide **Regional Needs and Priorities** that should be taken into consideration in developing the WMO Strategic Plan 2016–2019;
    - Coordinate , as necessary, national contributions to regional aspects of the Plan; and
    - Develop their own **Operating Plans** in support of the implementation of the next WMO Strategic Plan.
- EC-64(para 4.8.13-4.8.15) approved the structure, process and timelines for the preparation of the WMO Strategic and Operating Plans 2016-2019
- EC-65(Para 4.8.1.1-4.8.1.5) requested the EC Working Group on Strategic and Operational Planning (WG SOP) to review the draft taking into account the recommendations of the Council and gave guidance from preparing OP.
- **Current draft** is available at: http://www.wmo.int/pages/about/DraftSP.html and **PRAs and PTCs have been requested to provide input for OP.**

Decisions of Cg-16, EC-64 and EC-65 cont'd

- Timelines as approved by EC-64:
  - Input to EC-66 (2014)
    - (a) EC considers the revised draft SP and OP and makes appropriate recommendations to Cg-17 **(June 2014)**
    - (b) The Secretary-General submits to EC-66 the draft RBB proposal 2016–2019, that is based on the WMO SP and OP 2016–2019, for consideration **(June 2014)**
  - Input to Cg-17 (2015)
    - (a) The revised SP and OP are finalized for presentation to Cg-17 **(October 2014)**
    - (b) The revised RBB proposal 2016–2019 is finalized for presentation to Cg-17 **(October 2014)**

Inputs to WMO SOP 2016-2019

- **From RA II MG-7;**

  The Group decided to organize a small group within MG to discuss, in consultation with Members and the Chairpersons of WGs and ICTs, **the inputs to WMO SOP 2016-2019**. The Group agreed that the small group will be lead by the vice president of RA II.

Request to the Association

The Regional Associations are invited to:

- Provide **regional prospective on priorities**;
- Set a process to facilitate further **inputs to integrated WMO SOP** on a continuous basis (MG);
- Put in place a process to ensure that **regional operating plan** is ready for the beginning of next financial period (2016-2019);
- Participate in **Monitoring and Evaluation**.

ANNEX VI

LIST OF PARTICIPANTS

1. Members of RA II

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