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| **World Meteorological Organization** |  | **ICG-WIGOS-4/Doc.8.2** | | |
| **INTER-COMMISSION COORDINATION GROUP ON WIGOS (ICG-WIGOS-4)** |  | Submitted by: | | Secretariat |
| Date: | | 13.II.2015 |
| ***FOURTH SESSION***  GENEVA, SWITZERLAND  17-20 February 2015 | Original Language: | English | |
| Agenda Item: | 8.2 | |

# WIGOS IMPLEMENTATION IN REGIONS

# Status of the Regional WIGOS Implementation Plan in RA II

(Submitted by RA II representative)

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| **Summary and purpose of document**  This document provides information on the development of the Regional WIGOS Implementation Plan in the RA II, the road-map of the WIGOS implementation and the progress achieved, including challenges of the WIGOS implementation in the RA II from both regional and national perspectives. |

**Action proposed**

The session is requested to consider the provided information

**References:**

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#### Progress Report on implementation of regional implementation plan of wigos in Regional Association II

1. **Background**

In 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 bear the responsibility of facilitate the accomplishing of missions of WIGOS and WIS. 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. The EG-WIGOS is composed of two co-coordinators, 10 theme leaders and 13 Volunteer Experts.

A Regional WIGOS Implementation Plan for the Region RA II (R-WIP-II) was also approved by the RA II-15 session. 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

Most of the activities listed in the R-WIGOS-II will be implemented through seven RA-II 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**

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| **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 |

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.

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.

1. **progress on implementation of WIGOS**

The implementation of R-WIP-II will mainly rely on seven RAII WIGOS projects listed in the R-WIP-II. Seven project contact persons provided progress information to the co-coordinator of EG-WIGOS. The progress for each project is listed as bellow.

**2.1 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 and a technical scheme were drafted, and a project framework was designed. 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 progress on implementation of EGOS-IP by RA II Members, meanwhile, gaps will be Identified and prioritize actions will be listed in EGOS-IP through reviewing progress on implementation of EGOS-IP in RA II as next steps.

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

**Accomplishments**

KMA is responsible for this project. KMA’s domestic project for the standardization of meteorological observation has been ended its 1st phase in 2013. More than 3,516 domestic sites from 27 agencies, including local governments and government-owned cooperation, were linked into one system. 70% of the data from more than 3,516 sites are collected for the utilization in real time by 2013, including KMA’s 570 sties. By the end of 2014, 80% of the data could be collected and checked as ‘normal’, and utilized by the member agencies. (In September 2014, 2,489 sites of 80.4%). Based on the government policy of ROK, all the data collected would be open to the public and could be utilized by the industries related with meteorological, hydrological services and disaster reduction, etc.

**Next steps**

In 2015, a web page (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, and a form will be also developed to collect the standard and best practices from other members within RA II. Through this portal, it is expected that RAII members would share their experiences or activities more regarding data exchange, sensor inter-comparison or inter-calibration in domestic or international scope.

**2.3 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 succeeded in generating experimentally a two-dimensional grid product of analysed precipitation over the region of the Republic of Korea using the radar CAPPI data and in-situ precipitation data of AWSs. JMA is now developing a quality control system to remove noise from radar CAPPI products. JMA plans to improve the analysed precipitation by introducing the quality control system 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 136 stations would be available, 73 of them are collected by KMA including 21 stations under KMA’s responsibility. The number of GNSS stations is expected to be increased continuously. Currently, the quality control system for the NWP model assimilation is under development by KMA. The discussion regarding the international data exchange is going on, and the system for formatting and broadcasting via WIS will be prepared by 2016.

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 vapour 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.

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

Thai meteorological Department (TMD) cooperated with JMA under Japan-ASEAN Integrated Fund (JAIF) in Capacity building in Radar Techniques – Radar network, precipitation radar estimates and radar maintenance for ASEAN members in 2014, with experts seconded from JMA, supported by JAIF and WMO. Regional Training Workshop on Weather Radar Basis and Routine Maintenance and Real-Time Radar Rainfall Estimation and Forecasting was held in Bangkok, on 24 February to 7 March 2014, with 20 participants from 7 ASEAN countries (Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand and Viet Nam), one expert from JMA, one expert from Japan Radio, and one expert from WMO were involved. The workshop was highly successful.

In 2013, 2014, TMD’s personnel were sent to JMA to discuss and learn on both radar network and precipitation techniques. Currently, radar network technique used by JMA were transferred to TMD’s personnel and made the radar composite network for Thailand feasible, pending the overhaul of the radar operation synchronization of TMD. Further transfers of precipitation quantitative estimation is underway with the close cooperation with JMA.

Unfortunately, during ASEAN SCMG’s meeting in Vientiane, LAO PDR in September 2014, the meeting was informed on Malaysia’s withdrawal from the joint project of ASEAN Radar Composite between Thailand and Malaysia. Thus, it seems very difficult to continue the transboundary radar composite network planned in the R-WIP-II.

**2.5 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**

Based on the mailing list established for the members of coordinating group of RA II Pilot Project to Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations (approved by 14th session of RA II, Tashkent, December 2008), information has been exchanged through the mailing list which was periodically updated.

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. At the same time, the report was submitted to the WMO secretariat for its review and consideration to publish it as WMO IOM report.

The results of the RSMC quality monitoring (analysis of differences between the surface observations and the corresponding first-guess fields of 6-hour forecasts of JMA’s global model)) have been shared among members concerned.

To achieve one of the expected key results (provision of technical support for instrument maintenance and calibration by experts from RICs), 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**

Theme Leader has developed a draft of the investigation survey on quality management of meteorological observation by NMHS in RA II. The survey will be circulated among RA II Members after review and update process by the coordinating group members.

Based on the survey results, Theme Leader will consider holding a workshop focusing on sharing and transferring skills of observation quality management.

In addition, Theme Leader will consider possibilities to contribute to the improvement of availability and quality management of NMHS in RA II.

**2.6 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/>.

CBS-Ext .(2014) noted that the Regional Association II (RA II) strongly encouraged China to realize its plans related to sand and dust storm-related services and recommended a demonstration of operational forecasting capabilities, to serve Members of the eastern part of RA II in dust monitoring and forecasting.

**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. The Extraordinary Session of Commission of Basic System (CBS) 2014 acknowledged the efforts by SDS-WAS Regional Node in Asia in the development of the Asian SDS-WAS portal, data exchange and data policy, and model intercomparison, and therefore requested China, in collaboration with the relevant SDS-WAS Regional Node in Asia, to prepare an assessment document to demonstrate its capabilities in operational sand and dust storm forecasting. The Commission also requested OPAG-DPFS, in collaboration with the SDS-WAS Steering Committee, to coordinate the assessment of the capabilities against the designation criteria stated in the *Manual on the GDPFS* (WMO-No. 485), prior to its formal recommendation for designation. The Commission agreed that the President of CBS would seek approval for designation by EC based on the positive result of the assessment. CMA will prepare an assessment document and continue to apply for WMO Regional Specialized Meteorological Centers with Activity Specialization on atmospheric Sand Dust Forecasts.

**2.7 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 almost at a quarterly interval, contained brief reports on relevant meetings, products progress report, news on successful launch of new satellites 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
* Vol. 5/No. 2, August 2014
* Vol. 5/No. 3, October 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.

5th Asia/Oceania Meteorological Satellite Users’ Conference and VLab training event

The fifth AOMSUC was held in Shanghai, China from 19-21 November 2014. The conference was hosted and sponsored by CMA and was co-sponsored by JMA, KMA, AuBOM and WMO. The conference was preceded by a two day training event at CMA 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.

JMA will host the sixth AOMSUC in Japan in the fourth quarter of 2015. More details about the conference have not decided yet and will be provided in due course. A two day training event is also planned at the time of the meeting. It will be planned to focus the utilization of new satellite data. The RA II WIGOS Project to develop support for NMHSs in satellite data, products and training will cooperate in it with JMA.

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.

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 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.

**Annex**

**RA II WIGOS IMPLEMENTATION PROJECTS**

**Project No. I**

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| **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](mailto:E-mailgjxaoc@cma.gov.cn) |
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**Project No. II**

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| **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 Practise Portal including mechanism and procedures needed for a regular updating process. |
| **Aim(s)** | * To develop a Standard and Best Practise 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](mailto:wonjg@kma.go.kr), [ecotus37@korea.kr](mailto:ecotus37@korea.kr) |
| **Contact Person 2** | Dr PARK Seongchan  Korea Meteorological Administration (KMA)  Republic of Korea  Tel. +82-2-2181-0696  Fax: +82-2-2181-0709  E-mail: [scpark@korea.com](mailto:scpark@korea.com) |

**Project No. III.1**

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| --- | --- |
| **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 |
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**Project No. III.2**

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| **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).   1. 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. 2. 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 |
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**Project No. IV**

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| **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.  1. 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:   1. 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)”, 2. 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), 3. Obtaining the International Standard ISO/IEC 17025 – General requirements for the competence of testing and calibration laboratories – certification for air pressure, temperature, and humidity, 4. Development of RIC’s Websites, 5. Intercomparison between RIC-Tsukuba and RIC-Beijing, 6. 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 |
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**Project No. V**

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| **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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**Project No. VI**

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| **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 Deliverables / Key responsible body** | * Reports on requirements of NMHSs regarding satellite imagery, data and 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 |
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