JMA/WMO Workshop on Quality Management in Surface, Climate and Upper-air Observations in RA II (Asia)
(Tokyo, Japan, 27-30 July 2010)

I. Workshop Summary

1. The JMA/WMO Workshop on Quality Management in Surface, Climate and Upper-air Observations was held at the JMA Headquarters in Tokyo, Japan, from 27 July to 30 July 2010. Twenty-two experts from 18 NMHSs and WMO participated in the Workshop.

2. The Pilot Project to Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations is coordinated by JMA and the 15 Members nominated their experts to become members of the Pilot Project Coordination Group.

3. With a view of improving the quality management support for NMHSs of RA II in surface, climate and upper-air observations and the availability of accurate and compatible data on a sustainable manner, the workshop reviewed:

   (a) user requirements from major application areas essential to NMHSs activities, such as climate services, disaster prevention information and numerical weather prediction,
   (b) presentations made by lecturers, country report presentations, survey results on quality management in observations in RA II, and
   (c) presentations made by JMA specialists during the visit to Meteorological Instruments Center (MIC), Regional Instrument Centre (RIC), Aerological Observatory and Meteorological Research Institute (MRI) in Tsukuba and other JMA facilities.

4. The workshop identified a number of issues regarding the implementation and operation of surface, climate and upper-air observations, from the analysis of the Questionnaire on the Surface, Climate and Upper-air Observations and Quality Management in RA II and developed a set of recommendations for the Members, the Pilot Project Coordination Group and for the WMO Secretariat to consider.

II. Recommendations

1. The participants recalled that the observation is the base for all the meteorological services, and that high quality observations are required for all WMO priority areas, namely Global Framework for Climate Services, Disaster Risk Reduction, WIGOS/WIS, Capacity Building and Aviation Meteorology. A special importance is also seen particularly for the disaster mitigation services, climate monitoring and numerical prediction. RA II Members are recommended to understand such requirements for the quality of the observations and their applications, and use this rationale in their efforts to secure the resources to be allocated for the observations and their quality management.

2. The participants found it very useful to exchange practices of the observations and their quality management in different NMHSs, and encouraged the Pilot Project Coordination Group to further promote the information sharing. The Coordinator of the Pilot Project and the Coordination Group are invited to make all the presentation materials and reports in the workshop available on a dedicated workshop website and/or Newsletter, finalize the assessment of the questionnaire and suggestions from this Workshop, and make them also available to Members.

3. Many participants reported that the human capacity building is a priority issue in the observations and their management, and therefore the Pilot Project Coordination Group is recommended to explore the possibility of regional training opportunities for calibration (quality

management, observations), including training seminars, training materials and e-learning sites. WMO is invited to assist the Pilot Project Coordinating Group in identifying the resources required for such training opportunities.

4. It was noted that, among various factors, the most important ones adversely affecting on data quality in RA II are calibration and maintenance of the instruments. Services of Regional Instrument Centres (RICs) should be fully utilized by RA II Members to address this issue. It is recommended that the Pilot Project, in collaboration with CIMO, identifies deficiencies and ways to improve provision of RICs' services to Members.

5. Members should establish, as far as possible, calibration laboratories within each NMHS.

6. Members should acquire at least one working standard which is traceable to international standard for each observation type with technical assistance and/or financial assistance from RICs and WMO respectively, if necessary.

7. Members without calibration laboratories, to acquire travel standards for basic variables that would be calibrated in one of the RICs and be then used for field adjustments and checking. RICs are requested to examine the effect of use of traveling standards.

8. RICs to provide regular calibration services to Members in calibrating their working and/or traveling standards, and provide information through their websites.

9. Regional Meteorological Training Centres (RMTCs) to organize training courses for Members on observational equipment, maintenance, calibration and QA/QC. WMO Secretariat should assist in the provision of training and capacity building in areas not covered by RMTCs. Also a suitable strategy is required to overcome shortage of trainers.

10. Regarding the relocation of stations due to environmental changes/deterioration of station environment that has negative consequences in station data homogeneity records not acceptable for climate applications, there is a need to guarantee the sustainability of the station site through a long-term commitment from appropriate authority before installation of a new station at the site.

11. All changes in environmental conditions and relocation of station should be recorded in the metadata database in appropriate details. It is recommended that relocation and the environmental conditions of observing stations are standardized by CIMO, e.g. by siting classification.

12. The Pilot Project Coordination Group should develop a common set of metadata from observing stations. The metadata database should be updated at least once every year or whenever there are any changes in the environment of the site.

13. An operational QA/QC system to be implemented by Members with a minimum configuration as described in WMO manuals and guides.

14. Regular review of the QA/QC system with a view to enhance its effectiveness to be conducted with assistance from RICs or those Members with well developed QA/QC systems.

15. JMA to make available reports of the Quality monitoring to RA II Members through dedicated website or a newsletter, and request remedial measures to be taken by Members with suspected data quality.

16. All Members are requested to share QA/QC procedures and results.

17. RA II Members to regularly retrieve information on the WMO Quantity monitoring available at the WMO Secretariat website and inform the Secretariat on measures taken to improve the availability of their data to WMO communication system (GTS/WIS).

18. The workshop agreed that further improvement of data quality management should be done through implementation of the Pilot Project to enhance the availability and quality management support for NMHSs in surface, climate and upper-air observations and recommended that RA II Members provide their support to the Pilot Project Coordination Group.

19. The Workshop recommended that the Pilot Project Coordination Group develops an Implementation Plan for consideration by Members and organizes implementation/coordination meetings during the project implementation to verify successful deliberations.

20. Recognizing that user requirements for NMHSs including climate information services, disaster prevention products and numerical weather prediction are not fulfilled, continuous improvement of data availability and data quality control for certainty, timeliness, historical dataset, precise metadata and maintenance of the observation networks are needed.

21. WMO regulatory materials comprise a complex system of technical regulation, manuals, guides and other technical documentation that is difficult to understand, individual standard practices and procedures are not readily accessible and difficult to trace. It is, therefore, recommended that WMO considers development of a unique standardization system that will navigate interested user to retrieve requested practices and procedures through a friendly search tool, such as those provided by relational databases.

22. English version of WMO regulatory materials is often difficult to comprehend by non-English speaking experts. Therefore, it was recommended that WMO identifies extrabudgetary resources and financial or translation resources support from Members to allow for translation to other required languages and make those available alongside with English version.

23. It was recommended that Members of RA II identify gaps (including evaluation of a potential role of remote sensing observations) in WMO regulatory materials, from the point of view of the Region, and inform the Pilot Project Coordination Group that will compile a response to the President of RA II and the WMO Secretariat.

24. It was agreed that it may not be always possible for RA II Members to implement fully WMO standards due to reasons, such as the cost involved and environmental limitations. This may become an issue also in the context of WIGOS in building interfaces with WMO co-sponsored or non-WMO observing systems where WMO/WIGOS standards may not be implemented by our partners. Therefore, the participants of the Workshop agreed that differences should be documented and proposed that RA II Members consider implementation of the Siting classification for surface observing stations on land following its approval by CIMO-XV and a development of a simple implementation tool. A task team of the RA II Pilot Project should be established to oversee possible implementation of this classification in RA II.

25. It was agreed that the compatibility of data within the Region may be limited due to lack of calibration facilities in some NMHSs and a lack of traceability of measurements to international standards. This is especially true for the Climate variability and Climate change studies and applications. It was recommended that the RA II Pilot Project establishes a Task Team to develop proposals on how to assist Members to establish traceability. This may include possible establishment of respective regional structures, dedicated training, capacity building events, resource mobilization, and other modalities.

26. Up-to-date methodologies and procedures for data quality control for use in RA II should be developed. In cases where possible, this may relate to assimilation/interpolation techniques.

27. In the design and redesign of surface and upper air networks, results of spatial data control technique should also be taken into account.

28. The existing data quality control system "Persona MISS", developed in RosHydroMet (Main Geophysical Observatory) and operationally used in Russian Federation, Kazakhstan, Uzbekistan, Mongolia and Vietnam NHMS(s) for many years, could be available for use by Members of RA II if requested. This requires basic computer facilities. Similarly, systems developed by other NMHSs, such as CMA, JMA, KMA and HKO may also be available.

29. The participants recognized that the maintenance of the observation equipment, including the spare parts, is still a large issue in the availability and the quality of the observation in the Region, and recommended the Members to apply for the assistance, when necessary and appropriate, for the maintenance from WMO, particularly through the Voluntary Cooperation Programme (VCP). Information should be provided through dedicated websites or the Pilot Project Newsletter.

30. Members may give priority for training of personnel because skilled manpower is essential for reliable data and reliable services of NMHSs' to user community and WMO sponsored programs.