RA II Decisions and Recommendations

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WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

RA II

- RA II Session February 2017
  - Established Working Group Structure and Pilot Projects
- RA II Management Group May 2017
  - Appointed members to the Working Groups

RA II Session

- AGENDA ITEM 5: IMPROVED EFFICIENCY AND EFFECTIVENESS
- AGENDA ITEM 5.2: INTERNAL MATTERS OF THE ASSOCIATION

Terms of Reference (1/2)

a) To provide assistance and advice to the president of the Association on all questions pertaining to the regional aspects of the Hydrology and Water Resources Programme;

(b) To engage in and monitor the implementation of water-related activities documented in the RA II Strategic Operating Plan;

(c) To cooperate with the Commission for Hydrology and other WMO bodies on activities and projects related to hydrology and water resources;

(d) To cooperate with the Commission for Hydrology and other WMO bodies on activities and projects related to hydrology and water resources;

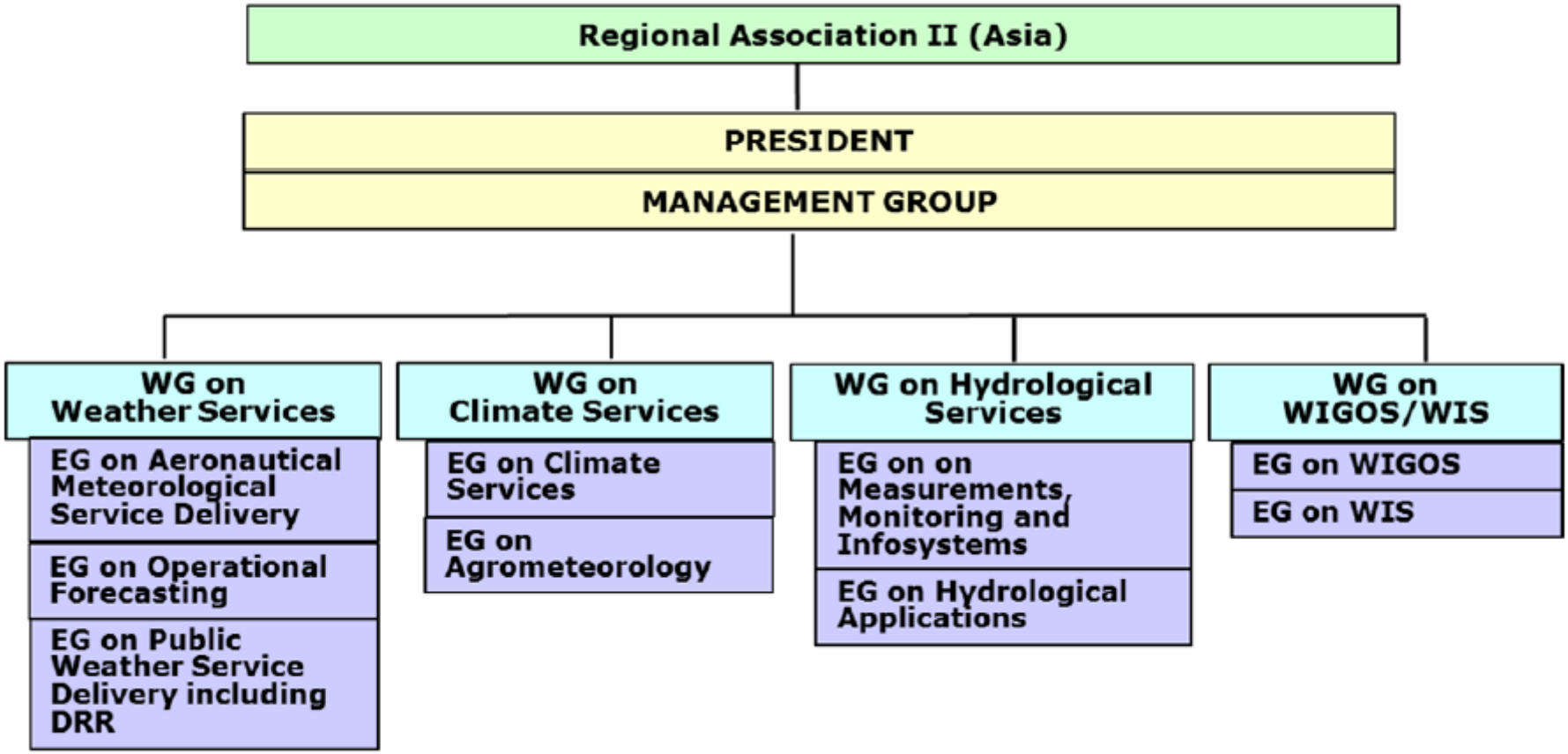
Terms of Reference (2/2)

(e) To seek cooperation with other regional bodies and organizations on issues related to the Hydrology and Water Resources Programme;

(f) To actively contribute to the Global Framework for Climate Services through dedicated components in the identified theme areas of work during the next intersessional period 2016–2019;

(g) To undertake activities related to the transfer of technology through the Hydrological Operational Multipurpose System and capacity-building in a cross-cutting manner;

(h) To develop and actively use an on-line RA II Virtual Hydrology Forum designed to facilitate broad engagement of experts throughout the Region in its activities and to help advance collaboration on its activities;


Regional Association II (Asia)
PRESIDENT
MANAGEMENT GROUP
WG on Weather Services
EG on Aeronautical Meteorological Service Delivery
EG on Operational Forecasting
EG on Public Weather Service Delivery including DRR
WG on Climate Services
EG on Climate Services
EG on Agrometeorology
WG on Hydrological Services
EG on on Measurements, Monitoring and Infosystems
EG on Hydrological Applications
WG on WIGOS/WIS
EG on WIGOS
EG on WIS

Working Group to have two expert groups

Expert Group on Measurements, Monitoring and Infosystems (EG-MMI) with the following terms of reference:

- (i) Develop and provide guidance on the use of appropriate instrumentation and methods of observation in diverse conditions, including undertaking activities that lead to improvements in the quality and accuracy of hydrometric measurements;
- (ii) Collect, develop and promote material on best practices for assessing rainfall/ flood induced mass movement (landslide/debris flow) hazards and forecast methodologies;
- (iii)Review national and regional capacity building programmes and related training activities for provision of hydrological services making recommendations on their enhancement;

Expert Group on Hydrological Applications (EG-HA) Terms of Reference

- (i) Improve water resources assessment techniques making use of climate variability and change information enabling water resources system managers to take actions to adapt to changing climate;
- (ii) Develop material for the provision of best practices for advancing national and regional use of hydrological forecasting for disaster risk management for hydrological extremes, including floods, droughts and sediment-related disasters;
- (iii) Develop material and provide guidance on modelling of cryosphere components within hydrological modelling with an emphasis on their contributions to streamflow discharge and ground water;

EG-HA (continued)

- (iv) Improve national and regional hydrological forecasting and warning capabilities by making use of the WMO Flood Forecasting Initiative as a platform, including implementation of the Flash Flood Guidance System with global implementation project for issuance of riverine flood, flash flood and urban flash flood warnings;
- (v) Improve national and regional drought forecasting and prediction capabilities for disaster risk management;

Working Group on Hydrological Services (WGHS)
Chairperson: Dr Sung Kim, Republic of Korea
Expert Group on Measurements, Monitoring and Infosystems (EG-MMI)

EG-MMI	Name	Member
Coordinator	Dr Sung Kim skim@kict.re.kr	Republic of Korea
Leader in hydrometric measurements	Dr Youngsin Roh	Republic of Korea
Leader in mass movements (sediment disasters and debris flows)	To Be Determined	TBD
Leader in provision of hydrological services	Mr Xin Zhao	China

Expert Group on Hydrological Applications (EG-HA)

EG-HA	Name	Member
Coordinator	Mr Muhammad Riaz riaz1962@hotmail.com	Pakistan
Leader in water resources assessment reflecting climate change and variability	Dr Hrwirin Kim	Republic of Korea
Leader in water-related disaster risk management	Dr Htay Htay Than	Myanmar
Leader in cryosphere modelling	Dr Sergei Borshch	Russian Federation
Leader in flood forecasting	Mr Sangay Tenzin	Bhutan
Leader in hydrological drought forecasting and prediction	Mr Pema Wangdi	Bhutan

Pilot Project: Cryosphere Monitoring to understand Trends of Glaciohydrology of High Asia

- Participating Countries: Pakistan, China, Afghanistan and Nepal
- Duration: 3 years
- Purpose: develop clear understanding of the cryospheric dynamics backed by scientific evidence to incorporate in flood forecasting models

Pilot Project (continued)

- Objectives:
  - Monitoring thermal and hydrological regimes to understand the melting process in diverse characteristic glaciated basins
  - Studying the mass balance, shift in snowline, effect of debris cover, thinning of glaciers as well as ablation and accumulation zonal dynamics
  - Horizontal and Vertical Profiling of solid and liquid precipitation as well as temperature
  - Deposition of black carbon and impact on melting process
  - Assessing seasonal availability of water and improvement of flood forecasting models

Pilot Project (continued)

- Methodology
  - Eight bench-mark glaciers will be selected; 2 from each country in same basin but with different characteristics
  - Installation of AWS, precipitation gauges, stakefarms and discharge gauges
  - Physical measurements will be carried out but remote sensing data can be used wherever possible
- Outcome
  - Snow/glacier melt contribution will be incorporated in hydrological models to improve the flood forecasting system and assess seasonal water availability

Operating Plan for 2016-2019 (1)

DELIVERABLE	ACTIVITY
Improvement in hydrological warnings capability through enhanced and effective cooperation with other NMHSs	(a) Prepare recommendations on the use of NWP outputs in flood forecasts (b) Document approaches to ascertain the deterministic error of each ensemble element of NWP products (c) Use WMO Flood Forecasting Initiative as platform
Improvement in adaptation capacity of water resources systems in a changing climate	(a) Assess changes in climate extremes - Data and method of climate extreme study: data inventory, climate index - Trend of some climate extremes: temperature, rainfall and others (b) Translate climate and climate change information into actions in water resources development and management

Operating Plan for 2016-2019 (2)

DELIVERABLE	ACTIVITY
Improvement in capacity for water-related disaster management (hydrological extremes)	(a) Organize a workshop on the provision of input and support to disaster management (b) Attend seminars on sediment disasters in order to communicate and cooperate among member countries
Improvement in hydrometric measurements with quality and accuracy	Provide guidance on the use of appropriate instrumentation and methods of observation in diverse conditions

Operating Plan for 2016-2019 (3)

DELIVERABLE	ACTIVITY
Issuance of flood, flash and urban flood warnings and constantly improving upon them	(a) Document experiences in the use of the Central Asia Region Flash Flood Guidance System (FFGS) in participating countries by reviewing its use (b) Facilitate FFGS understanding by operational hydrologists in the Region (c) Develop recommendations on the use of hydrological forecasts in flood management
Issuance of landslide/ debris flow warnings and constantly improving upon them	Collect and disseminate guidance materials and manuals on the assessment of rainfall/flood induced mass movement hazards and potential forecast methodologies

Operating Plan for 2016-2019 (4)

DELIVERABLE	ACTIVITY
Development of national and regional capacity-building programmes and related training activities for hydrological services	Synthesize report from individual reports from participating countries in RA II on national and regional capacity development activities in hydrology and make recommendations on their enhancement

Consideration of Input to CHy-15 and 16th Session of RA II

Major Accomplishments	Sess-ion	Decision
Dynamic Water Resources Assessment Tool (DWAT)	CHy, RA II	CHy: urges CHy to assess the Tool testing its ability and to provide guidance on its further development for global utility RA II: requests RA II Members to assess the Tool, testing its ability and to provide guidance to the RA II WGHS Chairperson on its further development for the benefit of Members
Guidelines for Verification of Hydrological Forecasts	CHy, RA II	CHy: urges CHy to review and assess the global utility of the Guidelines as a potential contribution to the WMO Flood Forecasting Initiative RA II: requests RA II Members to review and apply the verification procedures, reporting their results and views on the procedures to the RA II WGHS Chairperson
Software tool for index velocity method	CHy, RA II	CHy: urges CHy to assess the utility and applicability of the software tool and methods therein for measuring discharge under backwater and tidal influence RA II: requests RA II Members to test the Software Tool, reporting their results and views on the procedures to the RA II WGHS Chairperson

Previous Period (2013-2016) Activities

- 2013
  - Planning Activities
- 2014
  - 1st Meeting at Seoul (finalize work plans)
- 2015
  - 2nd MT at Gyeongju (report activities and adjust work plans)
  - 7th World Water Forum Session (Hydrological Services in Asia under Rapidly Changing Climate Conditions
- 2016
  - 3rd MT at Seoul (review activities and report)
  - Final Report: http://www.wmo.int/pages/prog/hwrp/RA2/documents/RA-II_WGH_2014_FINAL_REPORT.pdf.

Thank you for your attention!