



**WORLD METEOROLOGICAL ORGANIZATION**

**WMO Regional Seminar on  
Strategic Capacity Development of National Meteorological and  
Hydrological Services (NMHSs) in RA II (Asia)**

*Opportunities and Challenges in the 21<sup>st</sup> Century*

**Tashkent, Uzbekistan, 3-4 December 2008**

**Final Report**

## **1. OPENING SESSION**

**1.1** At the kind invitation of the Government of Uzbekistan, the WMO Regional Seminar on Strategic Capacity Development of National Meteorological and Hydrological Services (NMHSs) in RA II, was held at the International Business Centre in Tashkent, Uzbekistan from 3 to 4 December, 2008 with the theme of “Opportunities and Challenges in the 21<sup>st</sup> Century”.

**1.2** The Seminar was attended by 45 Directors or senior officials of NMHSs of 23 Members in Region II and one representative from an international organization. The list of participants is given in Annex I.

**1.3** Mr A. Majeed H. Isa, president of Regional Association II (Asia) welcomed the participants and wished them success in their deliberations. On behalf of RA II, Mr Isa expressed his sincere gratitude to the Government of Uzbekistan and thanked the Uzbekistan Hydrometeorological Centre (Uzhydromet) for the efforts of the excellent arrangements made to organize this Seminar. Mr Isa stressed the importance of this Seminar in building capacity and enhancing NMHSs in the Region at the time of the growing challenges caused by the increased number and frequency of the natural hazards in the Region. Further, he urged Members of RA II to take into account the WMO and Regional Strategic Plans in developing and carrying out their national programmes in meteorology and hydrology.

**1.4** On behalf of the Government of Uzbekistan, Dr Sergey Myagkov, Deputy Director of Uzhydromet welcomed the participants and wished them a fruitful and enjoyable stay in Tashkent. Since many economic sectors in RA II are sensitive to weather, climate and water and thus dependant on services provided by NMHSs, Dr Myagkov stressed the role of this Seminar in developing capacities of the NMHSs in the Region to help them improve their capabilities and meet growing users' requirements.

**1.5** The representative of WMO Secretary-General, Mr Robert Masters, Director of the Development and Regional Activities Department, expressed his appreciation to the Government of Uzbekistan and thanked Uzhydromet for the hospitality and the excellent arrangements made to host this Seminar. He noted the large number of Members attending the Seminar which indicated the interest of Members in RA II in the various topics to be discussed. Mr Masters echoed the desire of the Region for the employment of innovative technology and its drive for the adoption of strategic capacity development aiming at improving services and meeting the growing natural and socio-economic challenges facing NMHSs in the Region.

**1.6** Dr Tokiyoshi Toya, Regional Director for Asia and the South-West Pacific, welcomed the participants and extended his gratitude to the Government of Uzbekistan, Professor Chub and staff members of Uzhydromet for the excellent arrangements made for this Seminar. Dr Toya provided a general introduction of the Seminar and presented a briefing on the organizational arrangements related to the Seminar. He urged participants to utilize this Seminar as a forum to exchange views and experiences on emerging issues such as strategic planning for developing capacity, challenges and opportunities in RA II, disaster risk reduction and socio-economic issues, with emphasis on the close linkage to the expected conclusions and decisions by the fourteenth session of RA II (XIV-RA II) which would be held immediately after the Seminar.

## **2. TOPICS OF THE SEMINAR**

**2.1** Presentations and case studies were delivered by participants representing Members, WMO Secretariat, and the representative of an international organization. The presentations focused on the following four topics (Programme of the Seminar is given in Annex II):

- Topic 1: National Strategic Plans and Challenges of NMHSs in RA II (including Regional Strategic Plan and Quality Management System);
- Topic 2: Emerging Technologies in Meteorology;
- Topic 3: Disaster Risk Reduction;
- Topic 4: Socio-economic Benefits of Weather, Climate and Water Services.

**2.2** Summaries of the various presentations under each topic are given in the following paragraphs. All presentations, as submitted by authors, are posted in full on WMO web site: [http://www.wmo.int/pages/prog/rp/RAII\\_Seminar\\_2008\\_Programme.html](http://www.wmo.int/pages/prog/rp/RAII_Seminar_2008_Programme.html).

## **3. NATIONAL STRATEGIC PLANS AND CHALLENGES OF NMHSs IN RA II (INCLUDING REGIONAL STRATEGIC PLAN AND QUALITY MANAGEMENT SYSTEM) (Topic 1)**

**3.1** Dr Tokiyoshi Toya (WMO) and Dr Boon-Ying Lee (Hong Kong, China) delivered a keynote presentation on the Strategic Plan for the Enhancement of National Meteorological and Hydrological Services (NMHSs) in Regional Association II (Asia). Dr Toya outlined the WMO Strategic Plan 2008-2011 and presented the process of the development for the RA II Strategic Plan (2009-2011) for NMHSs, and invited Members in the Region to carefully review the proposed draft Strategic Plan and its Action Plan and discuss on its improvement for adoption during the XIV-RA II session. Dr Lee introduced the key results of the regional surveys on meteorological and hydrological services and highlighted major deficiencies in hydrometeorological services identified by these surveys. He further highlighted the main Regional Expected Results and proposed Deliverables of the RA II Strategic Plan. Dr Lee proposed some possible future pilot projects in the Region in the areas of surface observations; operation of meteorological and environmental satellites; and medium-range forecast, and raised the issue of the lack of institutional infrastructures in RA II similar to those in other Regions. He encouraged Members to adopt the Regional Strategic Plan at the XIV-RA II session. He further encouraged them to develop national development plans in meteorology, climate, hydrology and related disciplines in their respective services, which are guided by the Regional Strategic Plan.

**3.2** Dr Jeanna Balonishnikova (Russian Federation) delivered a presentation on the priorities in the field of hydrology and water management in the Commonwealth of Independent States (CIS) countries of the Central Asian Region. She described the complications in the availability of water supplies and the associated disparity in access to water resources between countries in the Aral Sea Basin. Dr Balonishnikova underscored the adverse impact of climate change in aggravating ecological and hydrological challenges to countries in Central Asia. Retreat of glaciers, desertification, hydrological droughts, soil erosion, and water resources depletion are examples of these challenges to the Region.

**3.3** Dr Ali Kadhum (Iraq) on behalf of Dr Dawood Mahmood, Permanent Representative of Iraq with WMO, introduced various challenges of the Iraqi Meteorological Organization (IMO) in rebuilding and rehabilitation of IMO. He described the scale of destruction inflicted on the various facilities of the IMO during the armed conflict in Iraq. As efforts are being made by Iraq to rebuild its meteorological service, Dr Kadhum called on RA II to provide IMO

with technical support to rehabilitate infrastructure, help recover climate data and build human capacity in various fields of meteorology.

**3.4** Mr Khalid Yaseen (Bahrain) made a presentation on the implementation of Quality Management System (QMS) in Bahrain Meteorological Service. He described the various activities and processes which lead to the successful implementation of ISO 9001 Quality Management System in Bahrain Meteorological Service. Mr Yaseen emphasized that commitment of senior management and full support of the staff, in addition to adequate training, are basic conditions for the successful implementation of a quality management system.

**3.5** Mr Vladimir Tsirkunov (World Bank) delivered a presentation on the use of cost-benefit analysis in strengthening NMHSs. He emphasized that the lack of economic analysis of meteorological and hydrological services is one of the obstacles in securing adequate government support. He listed the various techniques used to evaluate economic benefits provided by NMHSs and stressed that economic assessment should be the main focus of NMHSs modernization package. Mr Tsirkunov concluded that the lack of established techniques of economic assessment understandable to NMHS staff, the lack of in-house economic expertise, the lack of baseline economic data, particularly data on losses from weather events and poor interaction with clients/beneficiaries are some of the factors limiting many NMHSs from using economic analysis for the services they provide to their communities.

**3.6** Dr Jae-Cheol Nam (Republic of Korea) introduced the progress on the development of the International Advisers (INTAD) Network for improving NMHSs in RA II. He described the terms of reference of INTAD Network and its cooperative partners. He further described the strategy of the Network and explained its role in providing support to Permanent Representatives of NMHSs. Dr Nam identified some recent key issues related to NMHSs: adaptation to climate change, prevention and mitigation of natural disasters, socio-economic benefits, contribution to public welfare, sustainable development, UN Millennium Development Goals (MDGs) and renewable energies.

## **4. EMERGING TECHNOLOGIES IN METEOROLOGY (Topic 2)**

**4.1** Ms Joo-Young Cho (Republic of Korea) presented the challenges to develop a new paradigm for forecasting services: Digital (Village) Forecast System. Ms Cho affirmed that the Korea Meteorological Administration (KMA) has developed the new web-based Digital Forecast System to meet public demands on detailed, diverse, quantitative, and applicable weather forecasts. She concluded that public demand for a change in the format and content of weather forecasts was driven by the following factors: rapid advances in Information Technology, growing concerns for well-being, emerging needs for detailed forecast from public and private sector, and low satisfaction of these products.

**4.2** Mr Chi-Ming Shun (Hong Kong, China) delivered a presentation on opportunities and challenges of NMHSs in aviation weather service provision in the 21st century. He highlighted the current global environment facing Members in the provision of aeronautical meteorological (AeM) services, and the growing difficulties encountered by some developing countries in RA II in the provision of basic AeM services. Mr Shun emphasized the importance of obtaining ISO certification for AeM services by 2010, and stressed the value of adherence to qualifications and training requirements of AeM personnel as outlined in WMO Publication No. 258, "Guidelines for the education and training of personnel in meteorology and operational hydrology". He further urged NMHSs to seek ways to enhance

the cost-effectiveness of its services and called for more awareness, versatility to changes and reaching out to the users.

**4.3** Mr Antonio Viseu (Macao, China) made a presentation on the use of emerging technologies in meteorology. He elaborated on how opportunities arise from the emerging technologies in every aspect of science and engineering employed by NMHSs to help develop capacity building and enhance their image in their respective societies.

**4.4** Dr Chen Zhenlin (China) introduced the meteorological services provided in support of the Beijing 2008 Olympic games. He described the huge task of technical and human resource mobilization efforts and activities carried out by the China Meteorological Administration (CMA) in providing meteorological services at various stages of the Games including the relay of the Olympic Torch across Mt Everest, the opening and closing ceremonies and during the various sport competitions. Dr Chen listed some of the preparatory processes initiated by CMA which included carrying out assessment of meteorological services provided to previous Olympic events, setting up of a steering group and task force teams, preparing a manual on Olympics weather services in Chinese, English and French and conducting a series of testing, exercises and rehearsals. Dr Chen iterated that for NMHS to meet the challenge of such an event, careful organization and thoughtful preparations are indispensable.

**4.5** Dr Boon-Ying Lee (Hong Kong, China) introduced recent experience in the provision of weather service using GIS in Hong Kong, China. He described the following three transformation processes in meteorological services in the Hong Kong Observatory: from data display to analysis/decision-making; from internal application to service delivery; and from generalized to location-specific services. Dr Lee concluded that the use of GIS would become more popular, with increasing demand from sophisticated users for additional weather information for decision-making.

**4.6** Ms Kum-Lan Kim (Republic of Korea) provided an overview of the Korean Communication, Ocean and Meteorological Satellite (COMS). She described the current status of COMS programme including its mission, ground segments, meteorological observation schedule, data dissemination plan and meteorological data processing system. Ms Kim outlined the role of KMA in supporting possible users of COMS in Asia-Pacific region by organizing International Training Courses on COMS Meteorological Data Utilization. She further noted that the Republic of Korea has been fortunate to be a contributor to the space-based Global Observing System, and it is highly expected that the COMS data to be utilized for weather services and climate change monitoring for worldwide users.

## **5. DISASTER RISK REDUCTION (Topic 3)**

**5.1** Dr Boon-Ying Lee (Hong Kong, China) delivered a presentation concerning protecting people against natural disasters. He noted that because NMHSs now have easier access to knowledge and technologies, improved weather forecasts and early warning bulletins have contributed to the decrease in the loss of lives in societies exposed to weather-related disasters. Dr Lee emphasized that a good warning system facilitates collective and effective response from society; such a system should be easy to understand, simple to operate and meet the expectations of society. Dr Lee iterated that sophisticated users need more personalized or location-specific weather services.

**5.2** Mr Naoyuki Hasegawa (Japan), in his presentation on mitigation of weather-related disasters, identified the requirements for strengthening the disaster prevention/mitigation process as follows: more accurate prediction; more collaboration with other organizations; and response to emerging requirements. Mr Hasegawa stressed the importance of meeting

users' needs and establishing partnerships with national and international organizations and stakeholders to improve mitigation of weather-related disasters.

**5.3** Dr Mohammad Rahimi (Islamic Republic of Iran) informed on modelling frost risk in apple tree. He described a numerical study for predicting the budding time of apple trees using a chilling and forcing model. Dr Rahimi concluded that using existing climatological data to calibrate the bud burst prediction model and respective meteorological information for validation, hazard of frost damage on apple budding could be estimated.

**5.4** Dr Keshav Sharma (Nepal) introduced the progress on upgrading hydrological services in Nepal for the management of water-induced disasters. He described the topography, climate and weather-related hazards in Nepal. Dr Sharma emphasized the importance of building capacity of NMHSs and improving regional cooperation, especially in sharing data and exchanging early warnings, to reduce weather-related risks in the region.

**5.5** Mr G.H.P. Dharmaratna (Sri Lanka) described the natural and man-induced hazards affecting Sri Lanka and noted that in the aftermath of the 2004 Tsunami, which claimed the lives of 40,000 people and destroyed more than 100,000 homes, Sri Lanka implemented a Disaster Management Act to provide a legal framework for disaster risk management. Mr Dharmaratna further noted that an initiative for disaster risk management was also put forward by the Government of Sri Lanka.

**5.6** Mr Anvar Homidov (Tajikistan) presented the impact of global climate change on natural disasters related to water. He noted that repeated peaks of temperature anomaly are observed in Central Asia approximately every 11, 5-6, 1.5-2.5 years corresponding to solar activity, El Niño, and the quasi two-year cycles, respectively. Mr Homidov further noted that increased hydrology- and meteorology-related risks are observed in the Region.

**5.7** Mr Tran Van Sap (Viet Nam) introduced the recent development of the Hydrometeorological Service of Viet Nam for disaster risk reduction. He stated that Viet Nam is prone to various types of weather-related disasters ranging from destructive floods to severe drought and gave a few examples. Mr Tran Van Sap elaborated on his Government's recent master plan for improving national environmental and natural resources observation networks aiming at developing the infrastructure of the Hydrometeorological Service in the country.

## **6. SOCIO-ECONOMIC BENEFITS OF WEATHER, CLIMATE AND WATER SERVICES (Topic 4)**

**6.1** Dr Eldev-Ochir Erdebat (Mongolia) presented the activities of Mongolia in marking the International Polar Year by launching the International Water Expedition on Lake Khovsgol-River Selenga-Lake Baikal. Dr Erdebat stressed the importance of regional partnerships and cooperation in carrying out this expedition.

**6.2** Dr Ajit Tyagi (India) delivered a presentation on capacity building in NMHSs with special reference to agrometeorological services and disaster management. He described the activities of the India Meteorological Department (IMD), particularly, in the field of providing agrometeorological forecasts and services to end-users by using various means of dissemination. Dr Tyagi also described a multimodal forecast system for agriculture used by IMD for preparing forecast for farmers.

**6.3** Dr Qamar-uz-Zaman Chaudry (Pakistan) introduced the Pakistan case study on socio-economic benefits of weather, water and climate services. He presented a few examples on the role of the Pakistan Meteorological Department (PMD) in saving lives and

reducing economic losses by issuing timely and accurate forecasts of severe weather conditions. Dr Chaudry stressed the importance of fast response, preparedness and meeting the users' specific needs and requirements for weather forecasts and early warning for an effective impact on users and decision makers.

## **7. GENERAL DISCUSSION ON THE OUTCOMES OF THE SEMINAR**

**7.1** As revealed by the WMO regional surveys on meteorological and hydrological services, the Seminar agreed that in general, RA II has demonstrated impressive achievements over the past four years but still major deficiencies and disparities existed across the Region.

**7.2** It was agreed that strategic planning is a vital tool for the development of NHMSs in RA II. The Seminar concluded that national strategic and action plans, guided by the Regional Strategic and Action Plans, should be developed by respective NMHSs to help meet growing challenges facing these services.

**7.3** It was noted that few regional coordination institutions for hydrometeorology (similar to that in RA IV) existed in RA II. This is a compelling motive for Members to work through the Regional Association and its associated working groups. Furthermore, the Seminar felt that RA II should consider strengthening regional and subregional coordination mechanisms.

**7.4** Examples presented by various participants demonstrated that weather-related disasters still pose major threats to lives and properties in RA II. The Seminar agreed that NMHSs need to follow a proactive approach, such as community-based risk management approach, to reduce the risk of such disasters in their respective communities. It concluded that regional cooperation in DRR, for example exchange of good practices, good performance, etc., is urgently needed.

**7.5** It was concluded that economic assessment should be employed by NMHSs in seeking national and international financial support required for modernization. Since most NMHSs in RA II are not in a position to hire economists to perform economic assessment, the Seminar noted that assistance is needed to carry out such an endeavour.

**7.6** The Seminar realized that NMHSs are challenged with growing competition by service providers of meteorological data, due to the increasing access to such data by these providers through the Internet, and to the increasing level of sophistication and expectation of end-users. The Seminar concluded that NMHSs need to improve the quality of their products, including its delivery, reach out for users and meet their requirements and expectations in order to meet this challenge.

**7.7** Quality of meteorological products and services was a focus of many debates and discussions at the Seminar. The Seminar realized that future key challenges to NMHSs include the need for more accurate and timely products, better cooperation with stakeholders and fast response to emerging requirements of users. NMHSs also need to promote their services especially through the right approach to the media.

**7.8** The Seminar requested the WMO Secretariat to assist in developing a template for quality management certification of NMHSs and urged Members already accredited to help in this process.

**7.9** Members emerging from conflicts such as Afghanistan and Iraq and LDCs in the Region are struggling to rebuild and rehabilitate their NMHSs. The Seminar recognized the need to rebuild these NMHSs and urged Members in the Region to provide support.

**7.10** The Seminar invited the RA II Advisory Working Group to work on the priority setting in the Region. Although the social assessment is also a useful indicator, the Seminar considered that it would be more difficult than the economic assessment.

**7.11** The Seminar acknowledged the role of INTAD Network in RA II (INTAD-2) in supporting PRs of NMHSs in the implementation of urgent issues, and encouraged Members to use INTAD-2 to build capacity and coordinate regional hydrometeorological activities.

**7.12** The Seminar agreed that a feasibility study to develop a web page for regional pilot projects, regional strategy and cooperation would be very useful for the Region. It invited the more developed Members in RA II to conduct such a study.

**7.13** The Seminar concluded that the regional framework for the application of satellite data and product development would be useful. The meeting invited Members with expertise in this area to provide support in preparing such a framework.

**7.14** The Seminar encouraged NMHSs in RA II to support the World Climate Conference-3 (WCC-3) process, and urged them to promote WCC-3 to their respective governments.

**7.15** The Seminar concluded that the application of GIS is useful in promoting meteorological products and services, and urged NMHSs in RA II to consider employing such a tool in the provision of their services.

**7.16** The Seminar encouraged NMHSs to prepare climate change projections based on IPCC assessment for their respective national sustainable development programmes.

## **8. CLOSURE OF THE SEMINAR**

**8.1** The Seminar reviewed and adopted the Report.

**8.2** The president of RA II, representatives of WMO and participants expressed their thanks and appreciation to the Government of Uzbekistan and Professor Chub and his staff for the warm hospitality and excellent arrangements made.

**8.3** The Seminar closed at 14:50 hours on 4 December 2008.

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WORLD METEOROLOGICAL ORGANIZATION

WMO Regional Seminar on Strategic Capacity Development of National Meteorological and Hydrological Services (NMHSs) in Regional Association II (Asia)

(Tashkent, Uzbekistan, 3-4 December 2008)

List of Participants

**Members**

**Afghanistan**

Abdul Q. Qadir

**Bahrain**

Majeed H. Isa  
Adel Tarrar Daham  
Khalid Hussain Yaseen  
Nader Ahmed Abdulla

**Bhutan**

Tashi Samdup

**China**

Chen Zhenlin

**Democratic People's Republic of Korea**

Kim Yong Ho  
Won Kyon Sop

**Hong Kong, China**

Boon-Ying Lee  
Chi-ming Shun

**India**

Ajit Tyagi

**Iran, Islamic Republic of**

Mohammad Rahimi

**Iraq**

Ali Karem Kadhum

**Japan**

Naoyuki Hasegawa  
Tatsuya Kimura

**Kyrgyzstan**

M. Bakanov

**Macao, China**

Tong Tin Ngai  
António Viseu

**Mongolia**

Erdenebat Eldev-Ochir

**Nepal**

Keshav Sharma

**Pakistan**

Qamar Chaudhry

**Qatar**

Abdulla Mohamed Al-Mannai  
Khalid Mohamed Al-Midfa  
Ahmad Abdulla Mohamed

**Republic of Korea**

Joo-Young Cho  
Jae-Cheol Nam  
Kum-Lan Kim  
Se-Won Kim

**Russian Federation**

Jeanna Balonishnikova

**Sri Lanka**

Gardi H.P. Dharmaratna

**Tajikistan**

Anvar Homidov

**Thailand**

Huntrakul Somsri

**Uzbekistan**

Victor Chub

Sergey Myagkov

Gayrat Umarov

Zokhidjon Nazirov

Irino Zaytseva

Ikram Nigmatov

Abduaziz Abdukarimov

Mikhail Torsky

Bakhtiyor Kadyrov

Khasan Imamdjanov

**Viet Nam**

Tran Van Sap

**International Organization****World Bank**

Vladimir Tsirkunov

**WMO Secretariat**

Robert Masters

Tokiyoshi Toya

Kuniyuki Shida

Jaser Rabadi

Byoung-Choel Choi

Natalia Berghi

**Local Secretariat**

Malika Nazarova

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**WMO Regional Seminar on Strategic Capacity Development of National Meteorological and Hydrological Services (NMHSs) in Regional Association II (Asia)**

(Tashkent, Uzbekistan, 3-4 December 2008)

**Programme**

***Wednesday, 3 December 2008***

*Morning*

- 09:00 – 09:30 Registration at the International Business Centre (IBC) of Tashkent
- 09:30 – 09:45 Opening Remarks  
*Mr A. Majeed H. ISA (President), Mr Sergey MYAGKOV (Uzhydromet) and Mr Robert MASTERS (WMO)*
- 09:45 – 10:00 Introduction to the Regional Seminar and Working Arrangements  
*Dr Tokiyoshi TOYA (WMO)*
- Group Photo
- 10:00 – 10:30 Coffee Break
- Topic 1: National Strategic Plans and Challenges of NMHSs in RA II (including Regional Strategic Plan and Quality Management System)**
- Chair: Dr Ajit TYAGI (India)***  
***Rapporteur: Mr Naoyuki HASEGAWA (Japan)***
- 10:30 – 11:10 RA II Strategic Plan for Enhancement of National Meteorological and Hydrological Services (NMHSs) in Regional Association II (Asia)  
*Dr Tokiyoshi TOYA (WMO) & Dr Boon-ying LEE (Hong Kong, China)*
- 11:10 – 11:25 Iraq Meteorological Service - The Challenge of Rebuilding  
*Dr Ali Kareem KHADUM (Iraq)*
- 11:25 – 11:40 Implementation of Quality Management System in Bahrain Meteorological Service  
*Mr Khalid Hussain YASEEN (Bahrain)*
- 11:40 – 12:00 Use of Cost-benefit Analysis in Strengthening NMHSs  
*Mr Vladimir TSIRKUNOV (World Bank)*

12:00 – 12:20 International Advisers (INTAD) Network for improving NMHSs in RA II  
*Dr Jae-Cheol NAM (Republic of Korea)*

12:20 – 12:30 Discussion on Topic 1

Afternoon

**Topic 2: Emerging Technologies in Meteorology**

**Chair: Mr G.H.P. DHARMARATNA (Sri Lanka)**

**Rapporteur: Dr Jae-Cheol NAM (Republic of Korea)**

**14:30 – 14:50** Challenges to develop a New Paradigm for Forecasting Services:  
Digital (Village) Forecast System  
*Ms Joo-Young CHO (Republic of Korea)*

**14:50 – 15:10** Opportunities and Challenges of NMHSs in Aviation Weather Service  
Provision in the 21st Century  
*Mr Chi-ming SHUN (Hong Kong, China)*

**15:10 – 15:30** Use of Emerging Technologies in Meteorology  
*Mr Antonio VISEU (Macao, China)*

**15:30 – 15:50** Meteorological Services for the Beijing 2008 Olympic Games  
*Dr CHEN Zhenlin (China)*

**15:50 – 16:10** *Coffee Break*

**16:10 – 16:30** Recent Experience in the Provision of Weather Service using GIS in  
Hong Kong, China  
*Dr Boon-ying LEE (Hong Kong, China)*

**16:30 – 16:50** Korean Meteorological Satellite (COMS): New Opportunity for  
Disaster Risk Reduction  
*Ms Kum-Lan KIM (Republic of Korea)*

**16:50 – 17:10** Discussion on Topic 2

**Thursday, 4 December 2008**

**Topic 1: (Continued)**

**09:00 – 09:20** Priorities in the Field of Hydrology and Water Management in the CIS  
Countries of the Central Asian Region  
*Dr Jeanna BALONISHNIKOVA (Russian Federation)*

**Topic 3: Disaster Risk Reduction**

**Chair: Mr A. Majeed H. ISA (Bahrain)**

**Rapporteur: Dr CHEN Zhenlin (China)**

- 09:20 – 09:40 Protecting People against Natural Disasters  
*Dr Boon-ying LEE (Hong Kong, China)*
- 09:40 – 10:00 Mitigation of Weather-related Disasters  
*Mr Naoyuki HASEGAWA (Japan)*
- 10:00 – 10:20 Modelling Frost Risk in Apple Tree, Iran  
*Dr Mohammad RAHIMI (Islamic Republic of Iran)*
- 10:20 – 10:40 Upgrading Hydrological Services in Nepal for the Management of Water Induced Disasters  
*Dr Keshav SHARMA (Nepal)*
- 10:40 – 11:00 Disaster Risk Reduction  
*Mr G.H.P. DHARMARATNA (Sri Lanka)*
- 11:00 – 11:20 Disaster Risk Reduction  
*Mr Anvar HOMIDOV (Tajikistan)*
- 11:20 – 11:40 Recent Development of the Hydrometeorological Service of Viet Nam for Disaster Risk Reduction  
*Mr TRAN VAN SAP (Viet Nam)*

**Topic 4: Socio-economic Benefits of Weather, Climate and Water Services**

**Chair: Mr A. Majeed H. ISA (Bahrain)**

**Rapporteur: Dr Mohammad RAHIMI (Islamic Republic of Iran)**

- 11:40 – 12:00 International Water Expedition on Lake Khovsgol-River Selenga-Lake Baikal  
*by Dr Eldev-Ochir ERDENEBAT (Mongolia)*
- 12:00 – 12:20 Capacity Building in NMHSs with Special Reference to Agrometeorological Services and Disaster Management  
*Dr Ajit TYAGI (India)*
- 12:20 – 12:40 Socio-economic Benefits of Weather, Water and Climate Services: Pakistan Case Study  
*Dr Qamar-uz-Zaman CHAUDHRY (Pakistan)*
- 12:40 – 13:30 *Coffee Break and Lunch*
- 13:30 – 14:40 **General Discussion on the Outcomes of the Seminar**
- Chair: Mr A. Majeed H. ISA (president)**
- Rapporteur: Dr Jaser Rabadi (WMO)**