

Midterm report of Climate Change Working Group

Toshiharu Kojiri

Members,

T. Kojiri, Japan, (Chair), C.W. Dawson, UK (Downscaling), T. Ouarda, Canada (Probability), P.L. Patel, India (Fluvial mechanism), A. Paquier, Franc (Flood events), G.S. De Costa, New Zealand (Coastal disaster), Y.A. Mylopoulis, Greece (Transboundary), S-I. Lee, Korea (Environment), N. Kumar, India (System), T. Hori, Japan Economical aspects) (concurrent secretary)

Missions

- 1) Summary of a State of ART on Climate Change Research
- 2) Research direction from Hydraulics viewpoints

I invited eleven researchers for this working group to perform these designated missions. However, two candidates from Marine and Ice Melting Sections gave up to work with us because of their interests and business. The topics on global warming and climate change are not collaboration issues among members in IAHR. They want to keep their traditional research aspects still now.

As our first step, I hold International Symposium on Hydrology, Hydraulics and Water Resources Aspects on Global Water Issues for 30th Anniversary of Water Resources Research Center, in November 20, 2008 inviting Dr. Dawson, Dr. Mynett, Dr. Wieprecht, Dr. Simonovic, Dr. Mujumdar and Dr. Giesen.

Then, as our second step, I hold International Workshop on Impacts of Global Warming from Hydrological and Hydraulics Issues –Research Collaborations between DPRI, Kyoto University and IAHR- in March 16, 2010 inviting Dr. Ranzi, Dr. Patel, Dr. Lee, Dr. Paquier, Dr. DeCosta and Dr. Kumar.

Through those two meeting, we have understood our missions and future actions. The following tentative schedule was accepted with participating members.

Deadline of submission of first draft: July 5, 2010 (Water2010)

Editing, circulation and modification; September 27, 2010 during UNESCO-workshop

Editing and distribution as tentative report; June 26, 2011 at 34th IAHR Congress

In 34th IAHR Congress, Dr. Ranzi and I will held Special Session/Workshop on "Climate Change Impact on the Hydrological cycle and hydraulic engineering". We could present some results of the WG Climate Change and on the current IAHR Project CCHE, an

initiative of the SCGWI, published on the IAHR Web site.

Following my poor idea, collaboration members are preparing those required missions; Climate change and global warming affect numerous components in a river basin and thus must be examined from interdisciplinary viewpoints, including hydrological, hydraulic and water resources perspectives. We focus on the following aspects that affect evaluation of water resources issues; these aspects link human, economic and ecological activities and interdisciplinary examination;

-Meteorological and hydrological aspects;

- i) Downscaling of GCM outputs
- ii) Water circulation based on present and future conditions

-Hydraulics aspects

- i) Probability of flood and drought
- ii) Landslide and debris flow
- iii) Estimation of flood processes regarding both of inundation and inland waters
- iv) Change in river channels and ecosystems
- v) Change in water amenity
- vi) Change in typhoon occurrence and storm surges
- vii) Ice melting impacts in glacier or tundra

-Water resources aspects

- i) Feasibility and risk management of drought and water supply
- ii) Estimation of crop, vegetation, plantation and ecosystem changes
- iv) Global water dynamics with trade, economics and natural sources
- v) New water use processes for agriculture, industry and human life

