Breakout session : Issues and Needs

Snow and Glacier

(Snow and Glacier Hydrology Group)
G. Rasul (Pakistan)
K. Chopel (Bhutan)
M. Arora (India)
G. Davaa (Mongolia)
K.K. Shrestha (Nepal)

Issue 1
Issues related climate system-water cycle-water use

- Changing weather pattern
- In the past, snowfall maxima occurred in Dec/Jan, but now shifted to Feb.
- Less frequent snow but in heavy spells.
- Melting of snow starts earlier, April in stead of May.
- Snow residency period becomes less causing less period for snow metamorphosis, so that no firn was created, showing threats to maintain the glacier mass balance (dynamics).
- Snow line is shifted up, causing shifting of biodiversity.
- Glacier melt is common phenomena. GLOF issue shows great risk , threat to the economy of the nation.

Issue 2: Issues related to Water Nexus

- Eco friendly low flow in rivers just downstream the dam.
- Oppertunity for hydropower potential is increasing
- Glacier melt water may be conserved to overcome agricultural/hydrological drought – Mongolia
- Accelerated glacier melt will result scarcity of water in future in Mongolia as glaciers are thin.
- Monsoon peak and glacier melt peak water matches resulting flooding situation downstream.
- Change in cropping pattern due to regime shift.
- High sediment load due to increased glacier retreat, coupled with heavy rain, reducing the storage capacity of reservoirs.
- Increasing population coupled with climate change deteriorates the water quality.
- Due to changing climate, bacterial contamination of water
- Increased human activities (trekking tourism) contributes a lot to the pollution in glacier environment.
- Due to global warming, snow line is shifting upwards causing shifting/changing of bio-diversity (flora and faunna) and ecosystem (food chain).

Issue 3: Needs for functions and /or tools of WCI

- Develop an exclusive physically based snow and glacier melt model for Asian mountain regions
- Capacity building (Human resources and improved snow/glacier monitoring network of AWSs)
- Data sharing (In situ, reanalysis and satellite dataset)
- Common platform to exchange ideas, knowledge and experience on cryospheric issues
- Support to enhancing preparedness and understanding for GLOF and support to implementation of risk reduction measures
- Adaptation strategies should be divised keeping the view of national and regional needs.

Issue 4:Needs for collaboration framework

- A well composed national team including interdisciplinary and inter-sectoral professionals (meteorologist, climatologist, glaciologist, hydrologist)
- Community involvement should be prioritized.
- Collaboration with international glacier monitoring and research agencies to replicate good practices.
- Interagency cooperation at national and regional level.