5th GEOSS Asia Pacific Symposium and the associated 9th Meeting of the GEOSS Asian Water Cycle Initiative (AWCI) International Coordination Group (ICG)

Mongolia input to the AWCI Phase 2 Implementation Plan

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Issues and Needs

Pressures in the centre of cyclone tend to increase and in the centre of anticyclone tend to decrease by 0.26 hPa/10 years in last 100 years, Bayasgalan and Natsagdorj, 2006).

That indicates, generally, climate is changing, coldness weakens, however, it becomes snowy and hotter and dry conditions prevail in summer.

More intensive decrease in precipitation has been observed in central region of Mongolia, where more intensive increase in temperature has also been observed.

Precipitation type tends to change from large scale to more convective. Accordingly, number of flash flood events increases and causes significant flood damage in urban areas coupled with desertification, urbanization and climate change adverse effects.

Availability and necessity

Available capability/resources: *monitoring network hydrological, meteorological stations and agro-meteorological and satellite receiving stations, Doppler radar, lidars, computer system and trained personnel capacity in climate, weather, hydrology and water resources, expertise and linkages with national, regional and international organizations.*

Lack of capability*: network extension in terms of space (at high altitude) and time (automated continuous measurement), application of distributed hydrological model for flood and drought forecasting and climate change prediction and for adaptation to CC at river basin scale and flood and drought early warning systems.*

Lack real integration and coordination in holistic sense of Integrated water resources management at national, basin scales.

Critical and specific issues

Depletion of ground water: Climate and land cover changes consequently, it is observed clear depletion of groundwater in Mongolia. That leads to loss of hydraulic connection between surface and ground waters. As consequences during the low flow period cutting surface runoff, exhausting groundwater reservoirs in bigger settlement area etc. causing seasonal shortage of water use.

Hydropower: Impacts of hydropower stations to downstream natural water regime, water availability and safety and efficient operation of the power stations are recommended.

Trans-boundary and international coordination: trans-boundary water resources management plans are implemented in agreement with two neighboring countries.

SBA affects water and environment

There are ongoing projects:

"Ecosystem based adaptation approach to maintaining water security in critical river catchments in Mongolia" funded by Adaptation fund. (2 river basins in the Altay glacier Mts. and 1 river basin in semiarid steppe region have selected as project implementation sites.)

"Strengthening integrated water resources management in Mongolia" funded (to develop National IWRM strategy and plans and IWRM plans for selected and economically important river basins).

National Target Programme on Climate change to address seasonal variability at national level in the future has been endorsed.

Glaciers, rivers and lake catalogues are being developed in Mongolia.

Needs for functions and tools of WCI to address the identified issues

- ***Extension of Satellite data receiving stations and tools for data processing***
- ***Extension of Doppler radar network***
- ***Hydrological network extension with in-situ telemetric and automated stations at high altitude for water cycle monitoring***
- **Global data access (Numerical Weather Prediction, Reanalysis, Climate Projection) and model application**
- **Distributed hydrological model and water and energy budget monitoring, forecasting and prediction**
- **Early Warning systems for f*lood and drought***
- ***Decision support system tools for IWRM***
- **Platform for sharing data and knowledge and exchanging ideas and experiences (National GEO commitment)**

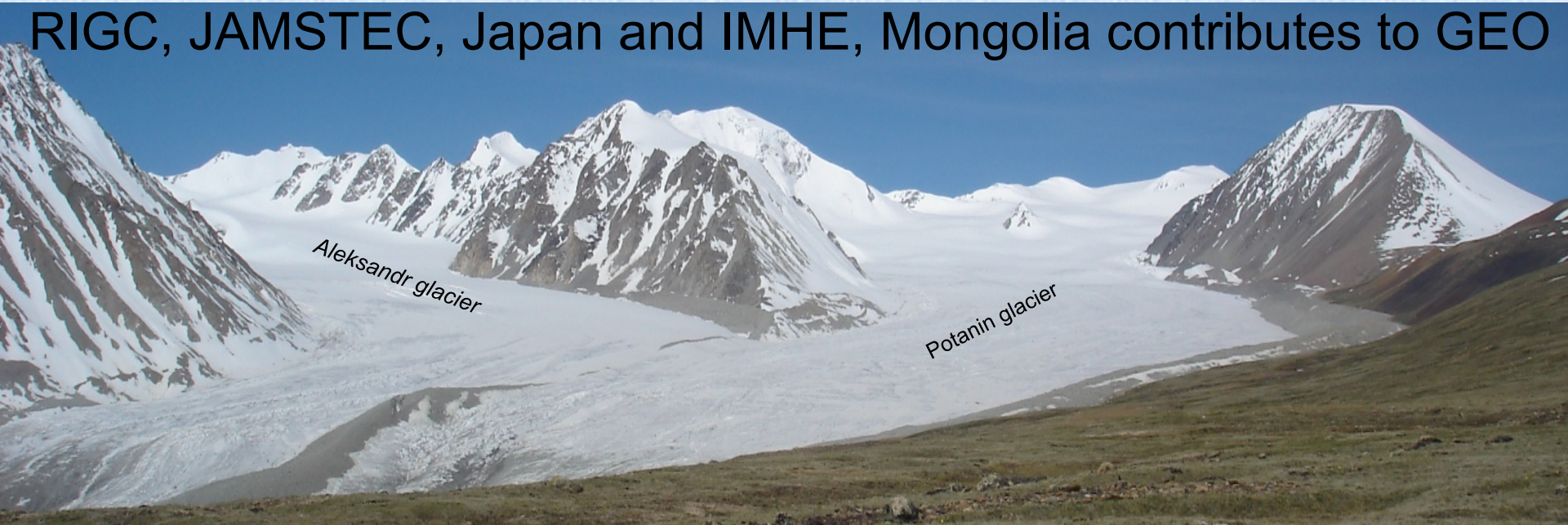
Capacity building: Training and technical, technological improvements

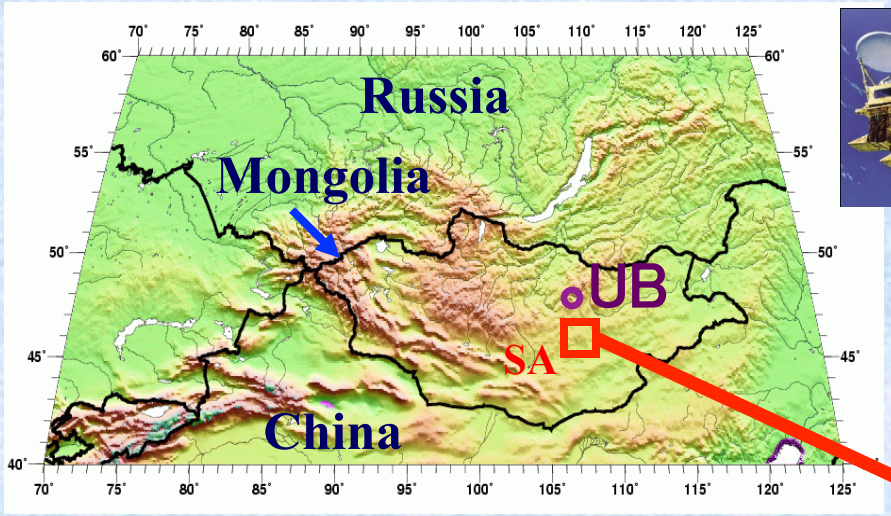
Implementation proposal

1. *Mongol AMSR/AMSR-E/ ALOS validation experiment (MAVEX),Lead Prof. I. Kaihotsu, University of Hiroshima and Prof. T. Koike, University of Tokyo, Japan (GCOM-W2 (SHIZUKU) and ALOS-2 as an option)*

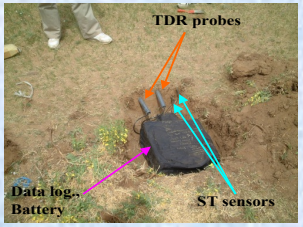
2. *Water and energy budgets and modeling in Selbe, Tuul centre of Mongolia(the river basin is included in the catalog of rivers in South East Asia, UNESCO-IHP) and Ulaan-Am river basins (in the Altay Mts.) (to support IWRM in these basins and to focus on extension of existing water cycle observation network, climate change assessment including downscaling, modeling, demonstration.*

RIGC, JAMSTEC, Japan and IMHE, Mongolia contributes to GEO





AWS in BTS



ASSH

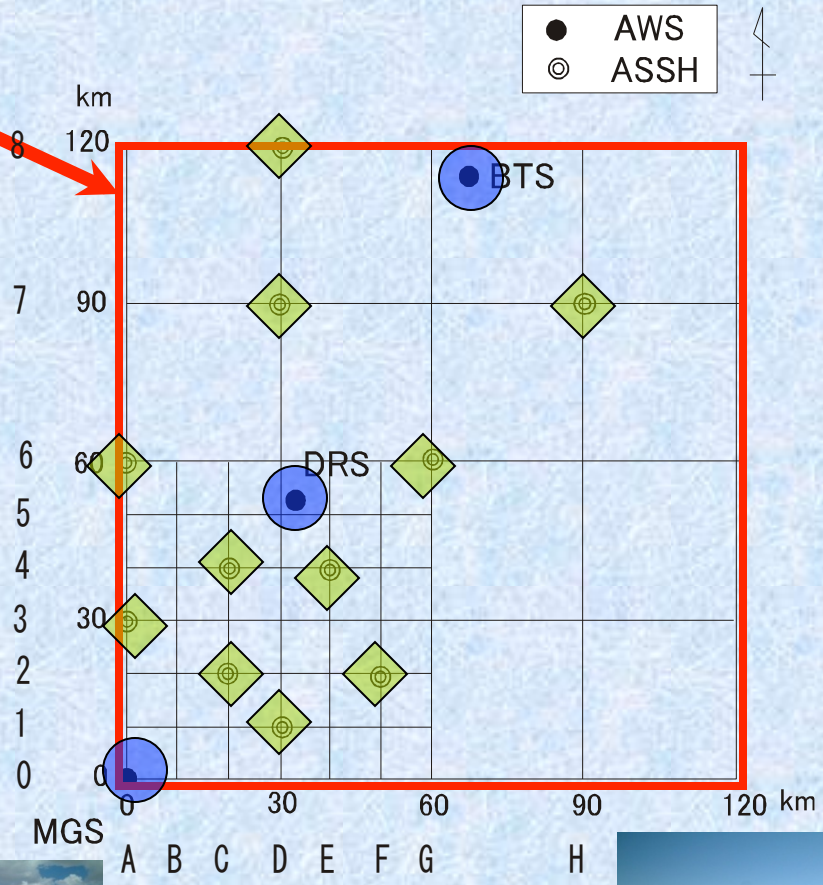
MAVEX: Mongol AMSR/AMSR-E/ALOS Validation Experiment

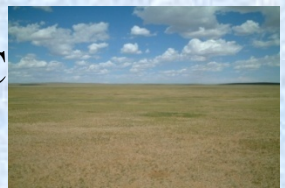
(PI: Prof. Ichirow Kaihotsu, University of Hiroshima, Japan)

Purpose: in situ monitoring for validation of soil moisture measurement algorithms of satellites

Working stations in the MAVEX study area as of Dec., 2011 (● :AWS（Automatic Weather Station), ◆: ASSH Automatic Station for Soil Hydrology) , SA : Study area of AMPEX/ MAVEX, UB: Ulaanbaatar)

A few stations of MAVEX are also for C AWCI.





Specific request to GEOSS and to international community (data/ tools accessibility)

Early warning systems for drought and flood

Use of GEOSS products (MOLTS, Satellite (GPM, soil moisture (MAVEX), lake and glacier (ALOS), lake, natural disaster monitoring, Numerical Weather Prediction, Reanalysis, Climate Projection)

Global and regional research results on water and energy budget monitoring, modeling and prediction

Capacity development needs:

Distributed hydrological modeling
Remote sensing and application
Downscaling technique in river basin scale

Training for not only researchers but also practitioners (e.g. UNU, UN-CECAR and etc).


Thank You