

AWCI Drought Working Group (ADWG) Activity in 2010

Ichiro Kaihotsu (Hiroshima U.) and Rasul Ghulam (PMD)

1. Purposes
2. Results of activities in 2010
3. Near future plans and meeting

Purposes

P1: To build a drought monitoring and researching network of member Asian countries

P2: To share and improve the drought monitoring data/
Capability in various Asian countries

P3: To make a stronger collaboration with the AWCI demonstration projects

P4: To help developing the early warning system of drought hazard in member countries

Present situation

P1: making efforts to build Data bank

P2: providing the routine soil moisture data
(filling the data gaps)

P3: planning to move forward with practical approach

P4: making efforts to show the system

What were/are we doing in 2010?

- ∨ Building up drought monitoring/ research network and the data bank of member Asian countries for AWCI
- ∨ Providing and sharing the soil moisture and other meteorological data of the ground-based and satellite monitoring
- ∨ Making a validation of AMSR-E soil moisture measurement algorithm using the in situ soil moisture data of Data bank
- ∨ Analyzing the obtained soil moisture and other data from a view point of drought study in climate change
- ∨ Reviewing demonstration projects related to climate change and water quality to step in their adaptation activities
- ∨ Numerical model studies
- ∨ Studying the definitions of drought and supporting the in situ drought monitoring

Monitoring and research network

Drought monitoring network

Ongoing monitoring sites (in strong cooperation with CEOP)

CEOP sites: Mongolia, China, Vietnam, Indonesia, Bangladesh, Pakistan, Tsukuba (Japan), and Thailand

Future potential sites (Need more investigation and discussion):

Setouchi (Japan), West-Thailand, Central-Bangladesh

Drought research network

Trying to make a plan for building up “Network of Asia Drought Research”.

Related researchers and/or organizations

We are making efforts to build up it.

Data bank

Soil Moisture (SM) and Soil Temperature (ST) data

Mongolia: CEOP reference sites (SM and ST at the 4 depths of many stations more than four) in Mongolia since 2001, NAMHEM SM data (every 5 cm depth from the surface to the 1m depth) of many stations more than 30.

China: Shanxi Province, 108 stations, Meteo and ST data 6hour, SM per 10 days, 3 lays (2006-2007)

Pakistan: Soil moisture data available for 4 stations (ten day SM data at the 9 depths in 2002- 2006)

Bangladesh: 9 soil moisture stations (weekly SM data at the 5 depths in 2007)

Regularly providing the in situ monitoring data of soil moisture will be started in this early winter.)

Vietnam: Binh Thuan Province: (100° 34'13"N - 110° 37'30"N, 107° 02'30" E - 108° 05'23" E) 3 Surface Stations (Phan Thiet: 110° 56' - 108° 006', Phú Quý: 100° 36' - 108° 056', La Gi: 100° 40' - 107° 046'); P, T, R, RH, 4 times/day ; 1 Soil Temp station (Phan Thiet), 4 times/day ; no soil moisture

Meteorological data

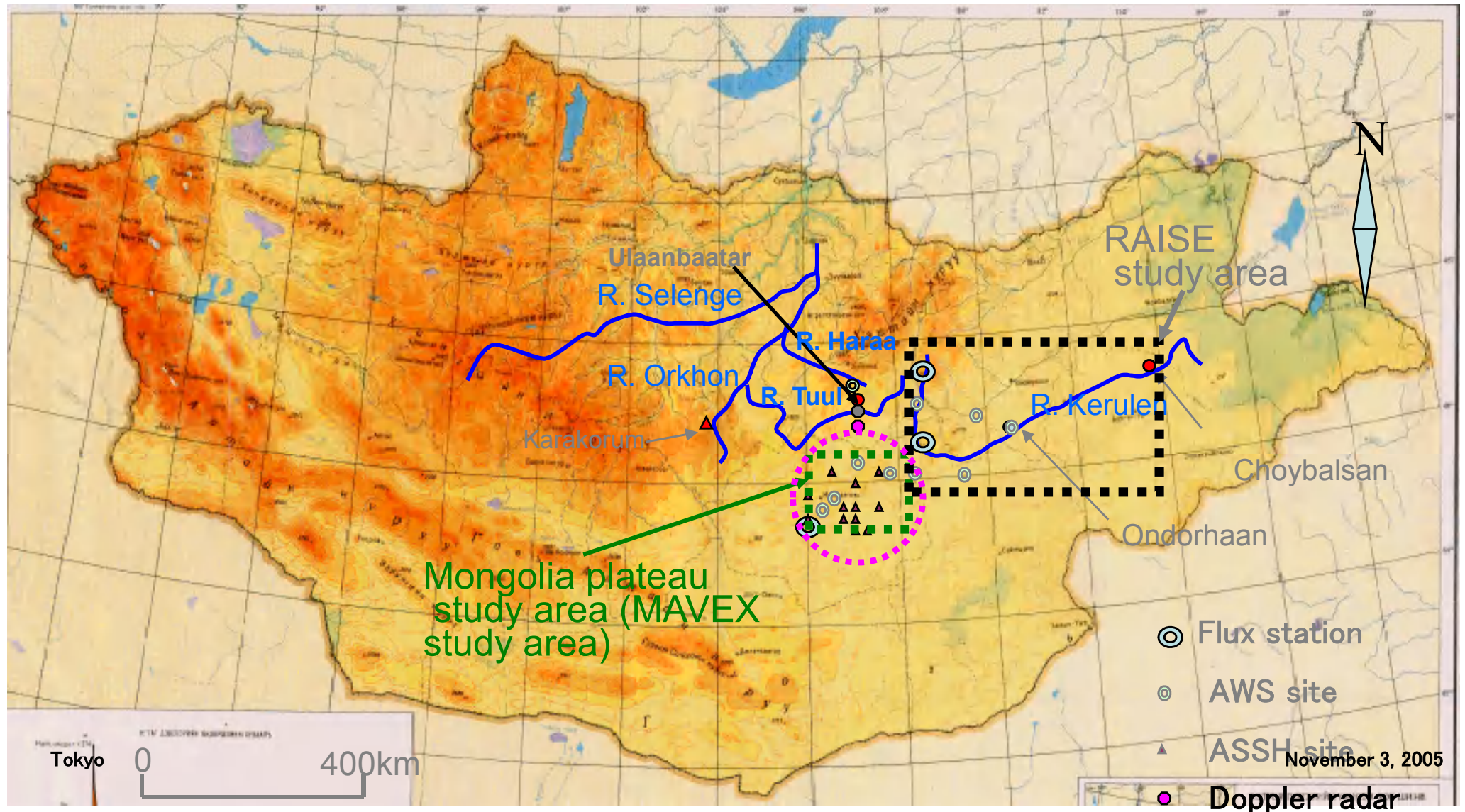
CEOP reference site data

Satellite data

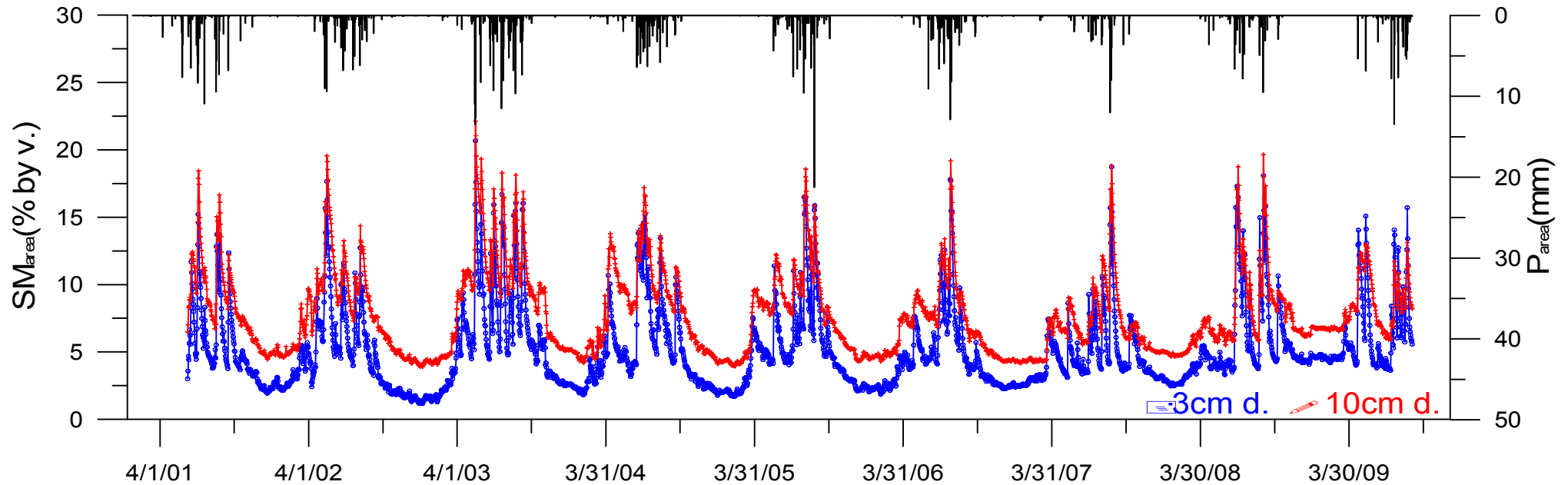
AMSR-E SM, MODIS data/CEOP reference site data

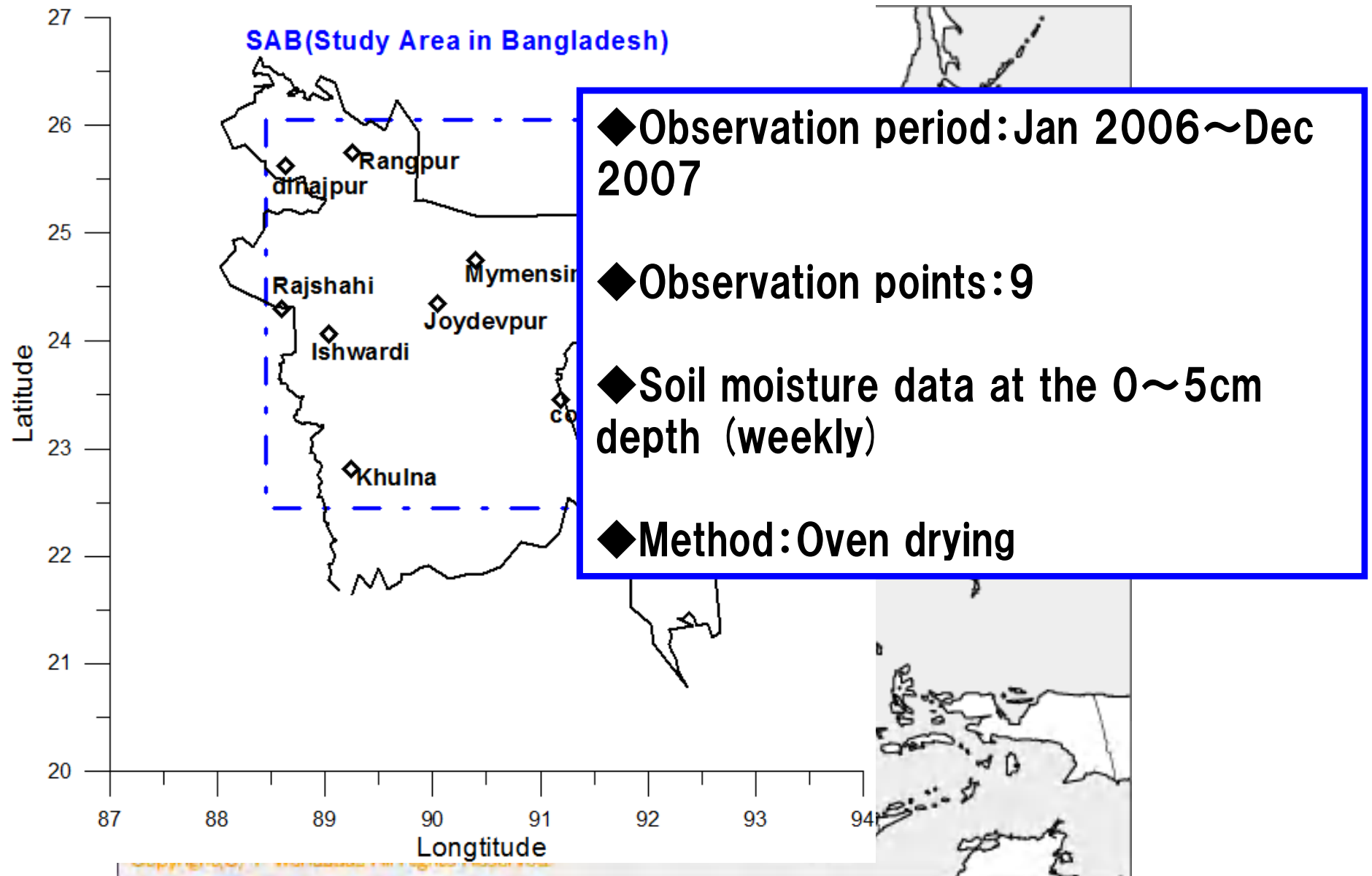
You can get and use these data for research/operation on request except the CEOP data.

Specific study area and stations of ongoing main projects [MAVEX (Mongol AMSR/AMSR-E/ALOS Validation Experiment) project and RAISE (The Rangelands Atmospheric-Hydrosphere - Biosphere Interaction Study Experiment in Northeastern Asia project)] for drought study in Mongolia

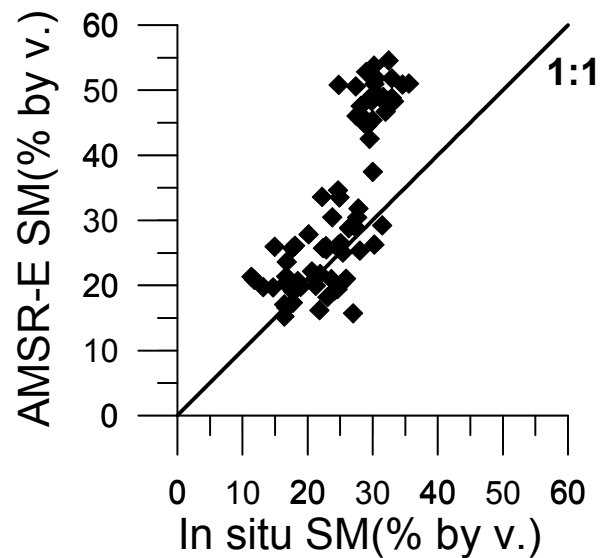
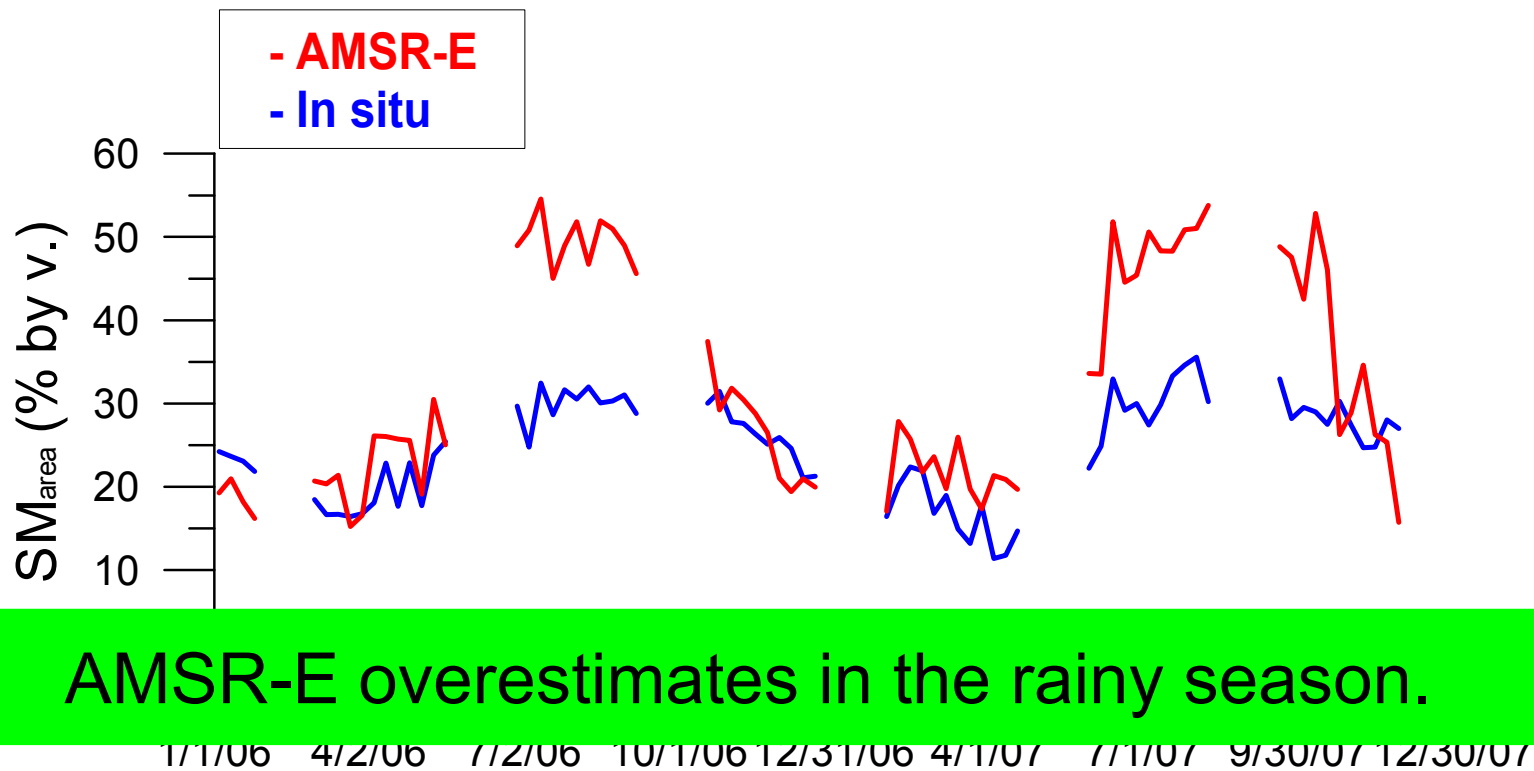


Monitoring results of soil moisture in the study area of some CEOP reference sites in the Mongolian plateau

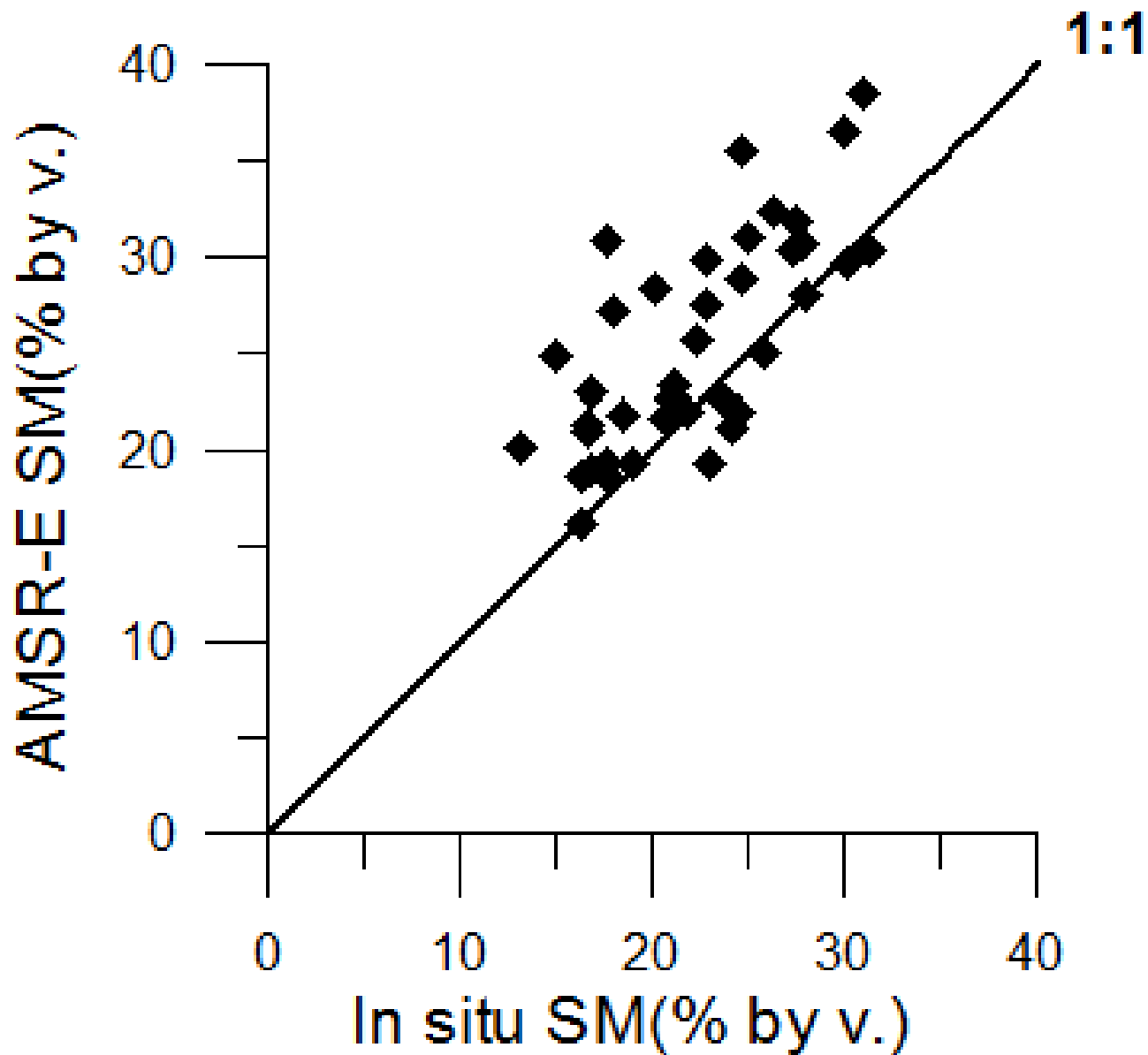




Target area in Bangladesh



Validation results in Target area A (AVE:9.345)



Relationship between in situ SM and AMSR-E SM
excluding the data in the rainy season (AVE:4.06%)

Demonstration projects

Demonstration projects in Pakistan

Started and are going well.

- Installed two AWS and 4 rain gauges in the Indus river basin
- Snow monitoring



Demonstration projects in Mongolia

- Water balance studies in Selbe river basin
- NDVI analysis in the whole of Mongolia
- Soil moisture estimation by AMSR-E and MIRAS (SMOS) in the Mongolian plateau

Near future plans and meeting schedule

- ❑ Continuing to collect the data of soil moisture, meteorological elements and numerical model products
- ❑ Promoting demonstration projects
- ❑ Developing the early warning system for climate change adaptation
(We are making efforts to present a prototype of experience model by next March and to show some results of the application within FY 2011.)
- ❑ Discussion on the investigation of the potential sites and then the installation plan of a new monitoring station of drought in Thailand and Bangladesh
- ❑ Discussion on the methods for climate change assessment/ adaptation studies (drought disaster evaluation, water resources management, numerical model prediction, etc.) and cooperation with the Water Quality WG
- ❑ Meeting/WS in early 2011
 - Jan. 20-21: Scientific supporting team meeting/APN CAPaBLE project meeting (As “Asia Drought WS 2011”) in Hiroshima
 - March: the 8th IGC of AWCI?

2009 APN CAPaBLE Project Proposal for FY 2010-2011

This proposal supports for AWCI Drought WG capacity building and follows up the ongoing APN CAPaBLE project chairing by Dr. Ailikun and supports .

Project title

Drought monitoring system development by integrating in-situ data, satellite data and numerical model output

Principle Investigator

Ichiro Kaihotsu

Main use for APN funding

- Workshops
- Building up “Drought monitoring/research network”
- Training courses
- Data sharing, Numerical model products
- Report (Publications)