International Workshop
on

CAPACITY BUILDING IN ASIA

"EARTH OBSERVATIONS IN THE SERVICE OF WATER MANAGEMENT"

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Working Group Report on Drought

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INTRODUCTION

Drought is a "Creeping" hazard because droughts develop slowly and have a prolonged existence. Drought produces complex web of impacts, which spans many sectors of the economy, especially agriculture, energy production, transportation, tourism and recreation, forest and wildland fires, urban water supply, environment, and human health .Today drought has been recognized as one of the major natural disasters in Asian region due to its prolonged severity. Global climate change and decades of unsustainable water practices are the primary triggering factors of drought in Asia. To cope with the current drought situation in Asia there is an urgent need to create greater public awareness of sustainable use of water, use of drought resistance crops and development of an robust drought monitoring and forecasting system in future considering regional climate variability and other local factors. Furthermore, it has been observed drought mitigation efforts by Asian countries needs to be strengthened to serve better the people affected by drought.

The drought working group comprises twenty two participants from thirteen countries. The working group mainly focused on three objectives (i) To address drought specific questions suggested by the workshop conveners (i) To understand the capacity building need in drought monitoring and assessment in Asia, 3) recommendation i.e. what to be done in the next step.

DISCUSSION QUESTIONS

The group discussed three aspects during the Working Group session.

1. The current situations of drought monitoring and researching by using satellite products in Asian countries.
2. The gaps amongst data producer, data user and policy-decision maker, on the using of satellite products into drought monitoring and studying
3. Capacity Buildings in Asia

RESULTS OF DISCUSSION

1. Today, the satellite based information on precipitation, soil moisture, and evapotranspiration is mainly being used on experimental basis for drought assessment in Asia. Here, integration of in-situ measurements (automatic) is needed for validation and calibration of remote sensing derived parameters.

2. However, in some regions the NDVI based vegetation monitoring and deriving the impacts of precipitation is used as methods for advisory for the local decision makers.

3. The meteorological department/agencies in the respective countries are responsible for the announcement of drought conditions in given regions. Drought information is released weekly in some countries.

4. Even in irrigated areas sometimes drought occurs because of improper irrigation scheduling. Optimized irrigation scheduling requires proper understanding of crop water requirement based on the type of crop and stage of growth using remote sensing and meteorological data. Furthermore, remote sensing provides operational methods for crop identification and area delineation.

5. To understand the variability of the terrain in different countries, in-situ measurements (automatic) integrated with spatial data is also necessary.

PREPARATION FOR DROUGHT MITIGATION

a) The main goal of drought mitigation is planning for conservation of soil and water. Watershed planning is a globally accepted method for drought mitigation.

b) Watershed developmental planning, monitoring and evaluation of program implementation need to be taken up concurrently.

c) Space based remote sensing is useful, for mapping the existing natural resources like soil, ground water potential, slope, land capability and land use, which are essential for watershed planning and implementation.

d) Space based imaging and in-situ measurements needs to be integrated.

e) Remote sensing and SATCOM methods are useful, and are being used operationally in different countries.

f) DEMS generated by space based remote sensing are very useful for soil and water conservation which is primary goal of watershed management programs specifically in drought prone areas.

g) The experiences gained to be documented and circulated amongst member countries.

h) Urgent need for capacity building by organizing interactive workshops, undertaking pilot projects in member countries involving both space and user organizations.

DROUGHT ASSESSMENT AND CAPACITY BUILDING

The drought monitoring capability status in Asian region is summarized below as per discussion held in the working group.

PARAMETERS	DATA SOURCE	CAPACITY BUILDING STATUS
NDVI	Optical RS data	Sharing of experiences with member countries
Moisture stress index(MSI)	Optical RS data (NIR, SWIR)	Sharing of experiences with member countries
Soil moisture index(SMI)	Optical RS data	Sharing of experiences with member countries
Soil moisture estimation	microwave	a topic for research and development.
Snow cover estimation	Optical RS data	Sharing of experiences with member countries
relative evapotranspiration	Optical RS and meteorological data	Experts need to be invited for training and identifying pilot projects for validations in respective regions.

RECOMMENDATIONS ON CAPACITY BUILDING

1. The state of art tools and techniques are not available operationally in most of the developing countries for inferring drought conditions. Need for sharing the successful experiences.

2. Needs to document experiences and methods in using RS data in inferring agricultural drought, training on these aspects either by interactions, e-learning etc.

3. Successful programs in the region on drought management needs to be documented and circulated, highlighting the gaps and need for improving the tools and methods .These gap areas are to be taken up as collaborative research projects as part of capacity building

RECOMMENDATIONS: CAPACITY BUILDING AT DIFFERENT LEVELS

a) Awareness program for the policy-decision makers.
b) Interactive workshops amongst user organizations and space agencies.
c) Identify priority areas and take up pilot projects in respective regions.
d) Technology promotions in the respective regions on new developments.

THE ASIAN DROUGHT INITIATIVE UNDER THE GEO FRAMEWORK

To address the recommendation on capacity building on identified issues of drought monitoring, we are proposing the following initiative to GEO and strongly advocate for their support. This activity will start initially through the formation of a project proposal on capacity building on drought assessment for Asian countries. The basic structure of the proposal will be firstly to organize a workshop to give training on existing droght monitoring techniques using gis and remote sensing to paricicipants from national and local agencies from respective Asian countries. This will be followed by mini project on drought monitoring in the respective countries. The ultimate goal of this effort is to improve drought monitoring and management in Asian countries

ACTIVITIES AND TIME FRAME:

Step 1: To form a task team by the end of October 2006 and draft the first concept note of the proposal (2 pages) and submit it to GEO Plenary (29 – 30 Nov 2006). Initial proposal to GEO: Why it is needed; what we want to do and needs; brief timeline

Step 2: The initiative to be recognized by GEO as a GEO program. Immediately after the recognition the GEO will inform the countries about the opportunity of the capacity building workshop, January 2007. The workshop is tentatively proposed be held by June 2007.

Step 3: The task team will look after the proposal development for mini project by respective countries and submit to GEO for approval and mobilization of funds by 2007.

Step 4: The initiative approved, funds allocated and implementation of activities started by early 2008.