GEO-DRI Drought Monitoring Workshop, May 10-11, 2010, Winnipeg, Manitoba

Drought in Southeast Asia

Climate change, drought, agriculture and economics

- was caused by an early end to the monsoon season coupled with lower than average rainfalls since September, assessed by MRC. This declines rainfall to dry season even drier than normal and water is inadequate to crops
- Water levels in the Mekong River has obviously lowered in the decades and are getting lower
- has an impact on agriculture, food security, access to clean water, energy production, river transport, tourism and recreation, forest and wild fires, human health and economic development of people facing poverty
- Rice farmers are urged to plant crops that require less water and to refrain from planting a second rice crop
- Subsistence farmers have to seek new off-farm job and change their way of life
- Crops (rice, coffee, sugar etc) were damaged and stressed as well as sharply lowered the supply of water for drinking and irrigation

Impacts of drought in SEA

- Indochina (Thailand, Vietnam, Myanmar, Cambodia and Laos), Malay Peninsulas and some of the islands of Indonesia has seriously affected from drought in 2004 and so. Crops are shriving and drinking water becomes scarce.
- Thailand lost the crops of 809,000 ha (about USD193.2 million)
- Vietnam has lost USD60 million in crops and 1.3 million people did not have access to clean water
- Cambodia has affected with food shortages, while China has a lack of drinkable water
- Rationing, reducing planted area, shifting to drought-resistant crops, adjusting planting dates, digging wells, releasing stored water from reservoirs, and cloud-seeding are managed by Governments.

Why drought is ignorance in SEA…

- Drought has unique features unlike other natural disasters, it starts unnoticed and develops slowly. It has a prolonged existence as called “creeping” though it can cause complex web of impacts
- It is a reason that drought disaster is often underestimated because of its slow rate of onset and less visual impact on human unlike flood, earthquake, landslide etc,
- Its impacts are cumulative and not immediately observable by eye or ground data. By the time the results are evident, it is too late.
- Meteorological (rainfall), agricultural (biological) and hydrological (water resource) drought are hardly to distinct between these because of its relevance inevitably

Why drought should be concerned…

- Population growth at 1.3 world rank
- Agriculture constitute the largest sector in the economy of the region accounting for 40 percent of GDP
- Agriculture highly depends upon rainfall which occurs during the wet season.
- Therefore, soil moisture estimation has been studied in many SEA countries to plan for agricultural production

Opportunities and constraints of remote sensing technology to monitor drought in SEA

- Traditional methods of drought monitoring are limited in the region. The most difficulty is relevance of conducting near real-time ground data (e.g. soil moisture condition, rainfall)
- Time consuming and too expensive for ground data collection
- RS allows long-term time series studies and storage of the information which may prove invaluable in future situations
- RS can provide large amounts of data quickly and inexpensively by means of collection. Also allows to integrate vast amounts of information from a wide variety of sources to make applicable in emergency situations

Some examples

- Thailand – drought by NDVI, SPI and biomass
- Philippines – drought management and monitoring by rice production (SPI, PDSI, Product departure, SMI)
- Cambodia – agricultural plan (SMI)
- Mongolia – drought monitoring (SPI, SMI, PDSI) and national agricultural planning (SMI and trend of rainfall)

Capacity building on space technology to drought monitoring and assessment

- Education, training and research in the field of RS/GIS are needed to integrate for drought monitoring study
- Technical assistance and consulting services is a needed for advanced drought monitoring and assessment study and even move further to establish early warning system for drought
- SEA have been recognized that there is a limited knowledge and understanding of drought disasters and impacts
- Ground data and tool for validation of drought monitoring using RS/GIS are unavailable and inaccurate like soil moisture content, precipitation

THANK YOU!

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