



USAID
FROM THE AMERICAN PEOPLE



Regional Drought Information System



Rishiraj Dutta, Senaka Basnayake, Susantha Jayasinghe, Asian Disaster Preparedness Center (ADPC); Chusit Apirumanekul, Stockholm Environment Institute (SEI); Peter Cutter, Spatial Informatics Group (SIG); John Bolten, NASA Goddard Space Flight Center

Why this project?

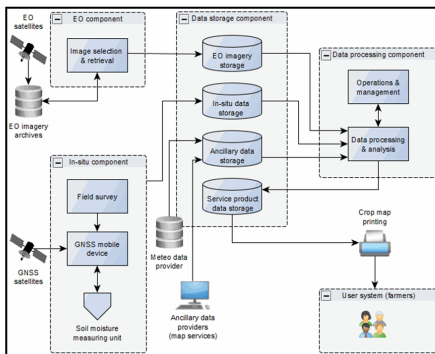
- Droughts in the Lower Mekong Region negatively impact ecosystem services, food and water security and biodiversity. These impacts are exacerbated by climate change, further highlighting the need for improved governance and decision making in virtually all sectors.

Objectives

- Develop an integrated information system to be used by local decision makers for drought monitoring, analysis and forecasting for planning and responding to droughts.
- Provide policy-makers and growers with drought indices and forecast drought indices to facilitate better decision making at the single growing season resolution.
- Provide ecological and financial forecasting information to inform seasonal cropping decisions. Subsequent functionality may include additional information relevant to decisions at sub-seasonal or multi-year temporal scales.

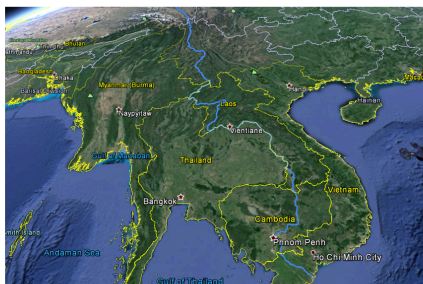
Approach/Project Activities

- Evaluation of drought indices** using a comparative evaluation method to identify the most suitable approach for drought monitoring. Examples include: Standard Precipitation Index (SPI), Standard Precipitation Evaporation Index (SPEI), Palmer Drought Severity Index (PDSI), and Vegetation Health Index (VHI).
- Forecast drought with seasonal weather forecasting products** and a multi-model ensemble technique for climate prediction / projection on seasonal to inter-annual time scales.
- Customize and calibrate drought products at a regional scale** to allow stakeholders to plan their activities in the event of a drought and allow decision makers to make and review the effectiveness of their decisions.
- Operationalize the system** and make the products available through a web-based platform.



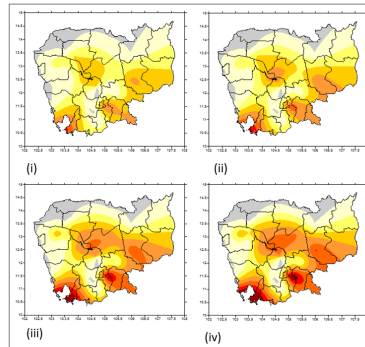
Focus Area

- Lower Mekong Region including Cambodia, Lao PDR, Myanmar, Thailand and Vietnam (with adjustments the tool can easily be used elsewhere.)

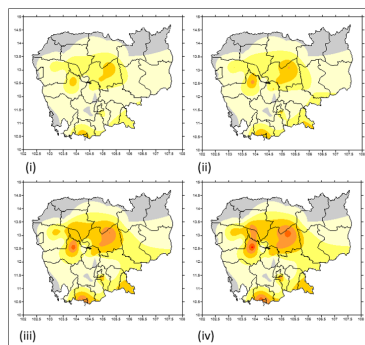


Sample Results

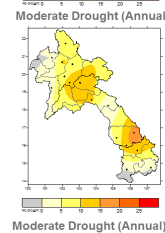
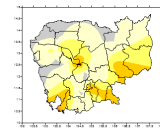
Return Period of Droughts in Cambodia



Moderate Drought Annual Return Periods: (i) 5Y (ii) 10Y (iii) 50Y (iv) 100Y (Source: ADPC)



Severe Drought Annual Return Periods: (i) 5Y (ii) 10Y (iii) 50Y (iv) 100Y (Source: ADPC)



Observed Drought Susceptibility (Probability of Drought Occurrence) for Cambodia and Lao PDR (Source: ADPC)



Drought in the Mekong impacting farmers

Project End Users

- Agriculture and Irrigation Departments of Lower Mekong Countries;
- Meteorology and Hydrology Departments;
- Water Resources Department;
- Mekong River Commission;
- National Mekong Committees;
- Farmers
- Government agencies responsible for agricultural policy, compensation programs, etc.;
- Private companies dependent on seasonal crop outputs (such as CP, BetaGro, etc.)
- Private companies dependent on water resources (such as Coke, TipCo, Aruna, etc.)

Outcomes/Anticipated Impacts

- Improve the operational, technological and institutional capabilities to prepare for and respond to droughts in the Lower Mekong Region;
- Assist local governments and the agricultural sector with seasonal drought forecasting;
- Assist local governments and the agricultural sector implement short and long-term mitigation measures during and in advance of droughts;
- Assist local governments and the agricultural sector with drought preparedness, projection/monitoring systems, mitigation strategies and planning;
- Characterize droughts by identifying accurate, reliable, and timely estimates of severity and impacts of droughts;
- Assess the economic, social and environmental impacts of drought on vulnerable people and water-related resource systems;
- Develop critical regional and local thresholds, reflecting increasing levels of risk and vulnerability to drought, as agreed by stakeholders. These thresholds could be used for drought monitoring, forecasting and projection.

Earth Observations & Other Inputs

- Vegetation Health Index (VHI)
- Normalized Difference Vegetation Index (NDVI)
- Standard Precipitation Index (SPI)
- Standard Precipitation Evaporation Index (SPEI)
- Palmer Drought Severity Index (PDSI)

