

Drought Monitoring and Early Warning System for the Hindu Kush Himalaya

South Asia is one of the world's major water scarce regions. The Intergovernmental Panel on Climate Change's Fifth Assessment Report (IPCC AR5) identifies drought as a major climate risk in South Asia. Drought can directly affect food availability through impacts on agricultural production. Changes in water quality and quantity also affect access to and utilization of food. Access to good quality drought monitoring and early warning information is critical to in-season crop management and the production of timely agro advisory services.

The International Centre for Integrated Mountain Development (ICIMOD) under its SERVIR Hindu Kush Himalaya (SERVIR-HKH) and Climate Services for Resilient Development (CSRD) initiatives is collaborating with meteorological and agricultural institutions in the Hindu Kush Himalaya (HKH) to establish an agricultural drought monitoring and early warning system.

The overall objective of this endeavour is to improve the capacity of national agro-meteorological and agricultural agencies in developing data products related to drought monitoring and enhancing the capacities of respective agencies in terms of the interpretation and dissemination of climate services in country-specific contexts.



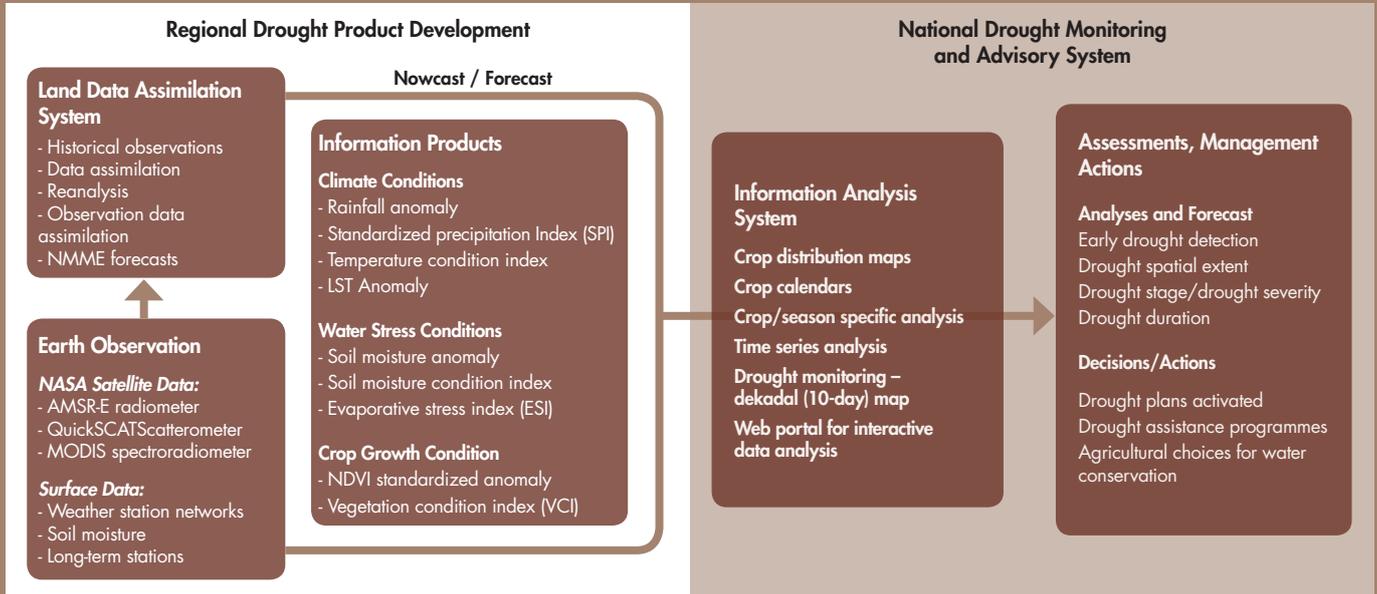
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Key Components of the System

The system will incorporate climatic and land surface models and assimilate suitable earth observation datasets to produce drought monitoring and warning information for the HKH with a focus on Afghanistan, Bangladesh, and Nepal.

The system will assist local governments and the agricultural sector with drought monitoring and forecasting for the

implementation of short- and long-term mitigation measures during and before droughts. It will provide drought monitoring and seasonal forecast conditions at ten-day intervals with a spatial resolution of five kilometres. An associated database on crop distribution and local cropping calendars will help decision makers and end-users in the agriculture sector better understand and interpret, and effectively use the system.



A Land Data Assimilation System (LDAS) is a computational tool that merges observations with numerical models to produce optimal estimates of land surface states and fluxes to support water resources applications. Remotely-sensed land satellite observations are assimilated into land surface models to improve the depiction of water/energy cycles.

The specific objectives are:

- To develop regional agricultural drought monitoring and forecasting data products for South Asia
- To enhance national drought monitoring systems by incorporating high spatial and temporal resolution satellite data products and contextualizing drought indices with local cropping patterns and crop calendars
- To strengthen technical capacities of regional and national agencies for the generation and dissemination of drought monitoring and warning information

ICIMOD has conducted a number of consultation workshops in Afghanistan, Bangladesh, and Nepal with

meteorological and agricultural institutions and line departments in government agencies to demonstrate a prototype of the system and receive feedback from users. The feedback is being incorporated in the development of the system.

Users: Products generated through the proposed service will be utilized by national meteorological agencies and institutions involved in the agricultural sectors of Afghanistan, Bangladesh, and Nepal.

Intermediaries: Department of Agriculture and associated agencies in the aforementioned countries

Beneficiaries: Farmers

Team

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About SERVIR

SERVIR is a joint development initiative of the United States Agency for International Development (USAID) and the National Aeronautics and Space Administration (NASA). SERVIR-HKH is implemented by ICIMOD in its regional member countries, prioritizing activities in Afghanistan, Bangladesh, Myanmar, Nepal, and Pakistan. SERVIR-HKH works closely with the SERVIR Applied Science team comprising of scientists based at John Hopkins University, NASA Jet Propulsion Laboratory (JPL), NASA Marshall Space Flight Center, and Brigham Young University.

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