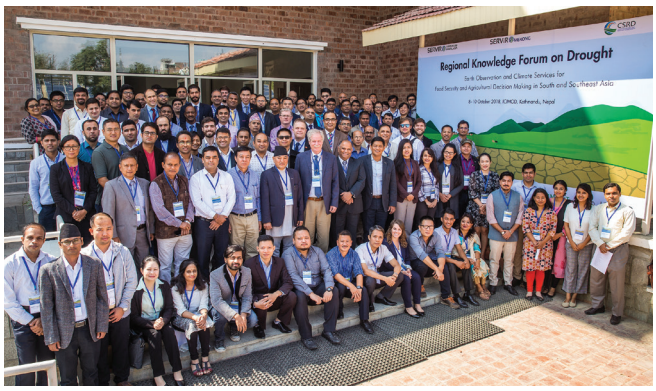
Regional Drought Monitoring and Outlook System in South Asia

Rationale

South Asia is one of the most water-scarce regions in the world. Droughts have been identified as a major climate-induced risk in the region since they directly affect food security through impacts on agricultural production. Access to good quality drought monitoring and early warning information is critical for in-season crop management and food security-related planning and decision making.

To address this issue, International Centre for Integrated Mountain Development (ICIMOD) has been collaborating with meteorological and agricultural institutions in the Hindu Kush Himalaya (HKH) to establish agricultural drought monitoring and outlook systems. This collaboration aims to improve their capacity in developing data products related to crop monitoring and enhancing the knowledge of scientists on the interpretation of agro-climatic data in their respective countries.



ICIMOD is developing an integrated information platform linking weather and climate data with agricultural practices in the region. The platform provides data analysis support to professionals responsible for developing agro-met advisories for government agencies and farmers. The web-based service on the Regional Drought Monitoring and Outlook System for South Asia developed at ICIMOD under the SERVIR Hindu Kush Himalaya (SERVIR-HKH) Initiative provides information on the in-season drought situation and outlook.

The Regional Drought Monitoring and Outlook System for South Asia intends to

1. Support local decision makers in drought monitoring, analysis, and forecasting
2. Provide seasonal crop condition scenarios within growing seasons to policy makers for support in food security-related decision-making processes
3. Improve the technological and operational capabilities of line government agencies to prepare for and respond to droughts in South Asia

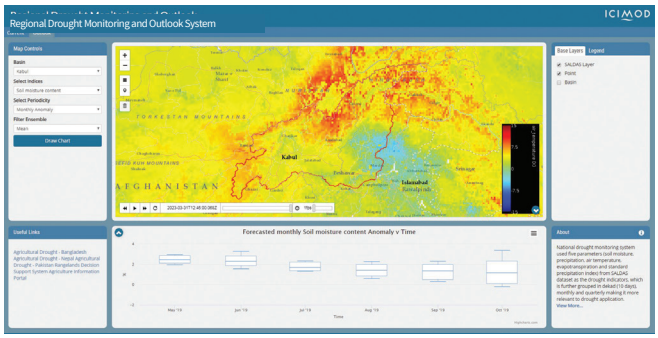
Design

The system makes use of the South Asia Land Data Assimilation System (SALDAS) developed in collaboration with Johns Hopkins University and has been calibrated over the HKH domain. SALDAS, based on the NASA Land Information System, leverages the capabilities of a land information system and merges observations with numerical models to produce optimal estimates of land surface states and fluxes, thereby supporting water resources applications. SALDAS is now operational at ICIMOD in both monitoring and forecast modes. Tethys, an open-source suite of web geographic information system applications developed at Brigham Young University, allows visualization of the drought indices.

Applications

The Regional Drought Monitoring and Outlook System for South Asia allows the characterization of droughts through accurate, reliable, and timely estimates of their severity and impacts. It can assist agriculture sector professionals in understanding existing agro-climatic conditions by observing indicators and crop calendars. The system's seasonal forecast information can help in identifying forthcoming droughts and planning short- and long-term mitigation measures. The system can also be utilized to assess environmental and economic impacts on the vulnerable population in the region.

The integrated information system provides multiple indices – evapotranspiration, precipitation rate, standardized precipitation index, soil moisture, and temperature – for droughts and seasonal weather outlooks at the national and regional levels. These can inform short- to medium-term agri-advisories. Users can already explore historical time-series data on the five indices over 18 years aggregated in decadal, monthly, and quarterly sets. The system will soon roll out three- to six-month forecast abilities. It is customized to provide information at the regional and national levels, with the latter also providing baselines on crop type maps and farming practices calendars valid at the district level.



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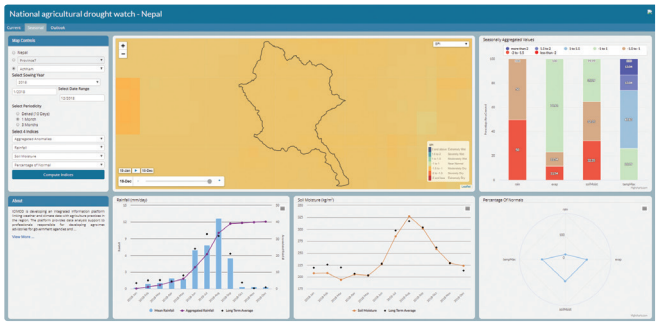

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SERVIR connects space to village by helping developing countries use satellite data to address challenges in food security, water resources, weather and climate, land use, and natural disasters. A partnership of National Aeronautics and Space Administration (NASA), United States Agency for International Development (USAID), and leading technical organizations, SERVIR develops innovative solutions to improve livelihoods and foster self-reliance in Asia, Africa, and the Americas.

The International Centre for Integrated Mountain Development (ICIMOD) implements the SERVIR Hindu Kush Himalaya (SERVIR-HKH) Initiative – one of five regional hubs of the SERVIR network – in its regional member countries, prioritizing activities in Afghanistan, Bangladesh, Myanmar, Nepal, and Pakistan.

For further information

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