

South Asia drought monitoring system

A collaborative program to build greater resilience to drought, and mitigate its impacts on societies and economies

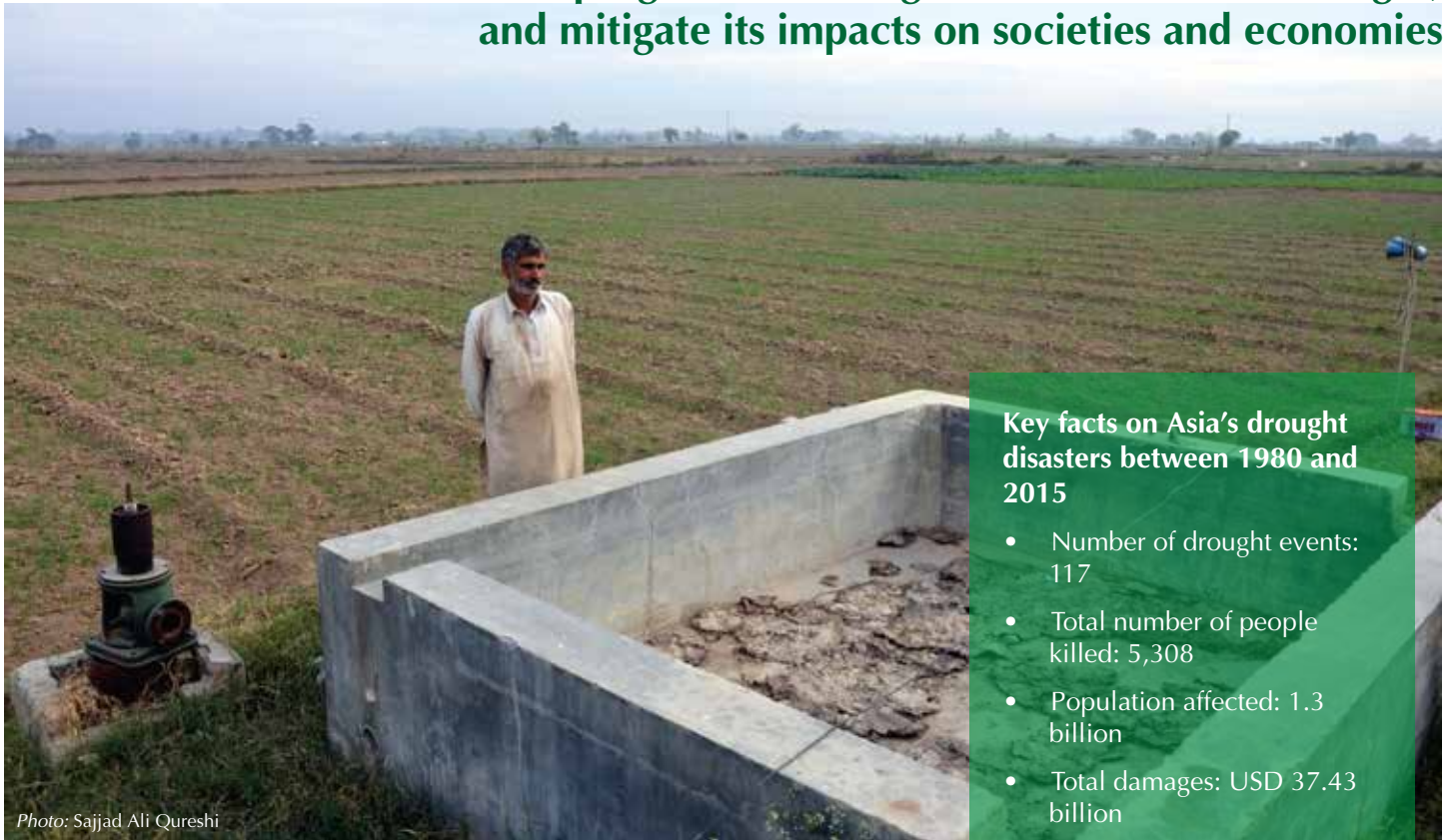


Photo: Sajjad Ali Qureshi

Key facts on Asia's drought disasters between 1980 and 2015

- Number of drought events: 117
- Total number of people killed: 5,308
- Population affected: 1.3 billion
- Total damages: USD 37.43 billion
- Major drought events: 1987, 1999, 2000, 2002, 2009, 2014

Source: EM-DAT 2015.

Background

Drought is one of the major constraints affecting the food security and livelihoods of more than two billion people that reside in the dry areas, which constitute 41% of the world's land surface. In South Asia, drought occurs frequently in arid and semi-arid regions. From early 2000 onwards, severe droughts affected vast areas of South Asia, including western India, and southern and central Pakistan. The South Asian regions have been among the perennially drought-prone regions of the world. India, Pakistan and Sri Lanka have reported droughts at least once in every 3 years in the past five decades, while Bangladesh and Nepal also suffer from frequent droughts.

In recent years, the increased pressure on natural resources, soil degradation, decrease in water resources and projected future climate change scenarios have become important areas of concern. Proper quantification of drought impacts and monitoring of areas prone to such events are needed for formulating management plans. Therefore, it is critical to better understand drought climatology, and to establish a comprehensive and integrated drought information system that incorporates climate, soil and water supply factors.

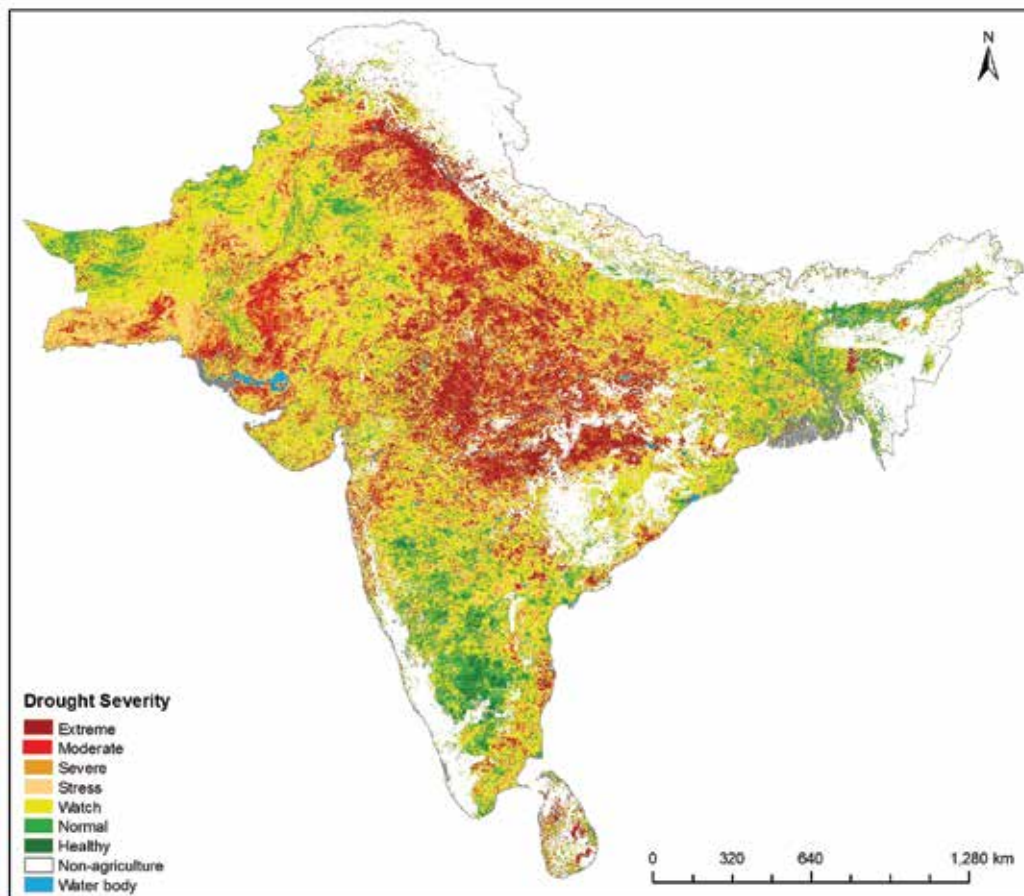
In view of the above, the International

Water Management Institute (IWMI) proposed an innovative approach to developing an operational drought monitoring system for South Asia, using remote sensing data from multiple sources. The main monitoring tool will be the Integrated Drought Severity Index (IDSI) covering South Asia on a weekly basis, which reflects the effects of droughts as observed through (i) satellite-derived vegetation data, and (ii) the level of dryness expressed by traditional, climate-based drought indices. Additional biophysical/environmental characteristics, such as eco-region, elevation, land use and land cover (LULC) type, and soil type, are also considered because they can influence climate-vegetation interactions.

The South Asia drought monitoring system is being developed and implemented by IWMI, and is supported by the World Meteorological Organization (WMO), Global Water Partnership (GWP), and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

What we do

We help to build national and regional drought risk management plans, through monitoring and characterization of droughts using remote sensing observations, to support countries in the South Asian region, including Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. We provide customized tools and models to support national partners in operationalizing the drought monitoring system, which will help to improve the understanding and importance of drought risks, and assist in the management of such events at sub-national level. Attention is given to raising awareness at decision-making level through the regional training workshops attended by the ministries of Agriculture, Disaster Management, and Water Resources, and financing agencies, research centers and other stakeholders.



Integrated Drought Severity Index (IDSI) map derived using satellite datasets for South Asia during the summer crop season of 2009.

Expected outputs (at sub-national, national and regional levels)

- Development of a regional drought monitoring system, and tools to provide near real-time, current drought characteristics, impacts and management plans.
- Increased awareness of the economic and social value added of drought risk management.
- Enhanced technical and managerial capacity at national level to cope with droughts.
- Build national capacity by providing regional training programs/workshops on drought risk management.
- Supporting the enhancement of the drought contingency plan to mitigate the impact of climate risks.

Reference

EM-DAT. 2015. The OFDA/CRED international disaster database. Brussels, Belgium: Centre for Research on the Epidemiology of Disasters (CRED), Université catholique de Louvain. Available at <http://www.emdat.be> (accessed on September 28, 2015).

Partners

The multi-disciplinary program builds on a strong partnership with specialized organizations, research centers, governments and departments involved in agriculture, meteorology, disaster management and water resources concerned with drought issues. The collaborating partners include Birla Institute of Technology (BIT), India; Robert B. Daugherty Water for Food Institute, University of Nebraska, USA; Symbiosis Institute of Geoinformatics (SIG), India; and the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER).

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