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# Bundelkhand droughts becoming more frequent

*New drought monitoring system shows extent of water scarcity*

*Investment in water infrastructure is urgently needed, say experts*

**(NEW DELHI. 17 December 2015)** The severe drought in Bundelkhand is likely to become a more regular occurrence according to scientists at the International Water Management Institute (IWMI). Records show that the area, straddling the states of Uttar Pradesh and Madhya Pradesh near Jhansi, experienced seven droughts in the last decade. This compares with a drought every decade or so in the 1900s.

The current water scarcity, the most severe this century, has parched an area the size of Mizoram State. Reviewing satellite imagery from earlier in the year, the research team has established that the likelihood of drought was emerging as early as June this year, when abnormally low rainfall patterns became evident. Space based technologies, often referred to as *remote sensing*, should be more widely used in drought prediction, say the IWMI experts, as they can identify potential problems well before the extent of the conditions on the ground are evident.

“Looking at the aerial images you get a sense of the enormity of what is going on,” said Amarnath Giriraj who leads IWMI’s drought mapping project. “You can clearly see that paddy fields are bone dry and that much farmland is left fallow due to lack of water. But we hope that in future we can use remote sensing to pick up drought trends before there are serious water shortages on the ground so that relief efforts can be more timely.”

The satellite images were generated as part of IWMI’s ongoing South Asia Drought Monitoring System (SADMS) project, developed in partnership with the World Meteorological Organization, the Global Water Partnership and with support from the CGIAR Research Program on Climate Change and Food Security. Converted into easy to read maps, the images have been sent to Budelkhand.in, a website that brings together social activists, community groups and local policy makers in the region. This is the first time that the SADMS has been used.

“The maps have been invaluable,” said Ashish Sagar, a leading social activist in Bundelkhand region. “We have been sharing them with farmers and the local authorities so that we can better plan a response.”

Globally, 2015 has witnessed an El Niño event. This is leading to abnormal weather conditions across much of Asia of which this drought is but one example. Some areas of Bundelkhand, for instance, received no monsoon rain at all this year. El Niño is a regular climatic event that occurs when a band of warm ocean water develops in the middle of the Pacific Ocean. This leads to high air pressure in the western Pacific and low air pressure in the eastern Pacific. As a result, drier conditions in parts of Asia can be expected.

Coupled with this, global climate change is also affecting long term weather patterns. This will make extreme events like droughts more frequent, the IWMI team believe that this pattern is already emerging in Bundelkhand.

IWMI is has adopted an innovative approach to developing an operational drought monitoring system for South Asia using remote sensing data from multiple sources. The *Integrated Drought Severity Index* uses condition of vegetation, rainfall, temperature and soil moisture to determine severe drought areas. This gives a far more accurate indication of impending drought than conventional methods. Using such an approach to assist in responding to and planning for droughts will help improve the overall capacity of communities to be more resilient and cope with these events.

“Our study highlights the need to consider further investments in water management and infrastructure in the Bundelkhand region,” says Giriraj. “This could mean more centralized storage, such as dams and reservoirs, but also local initiatives like village ponds and farm wells, and improvement of the institutional arrangements. We also need to improve groundwater recharge in the region and make sure that aquifers are used sustainably.”

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The **International Water Management Institute (IWMI)** is a non-profit, scientific research organization focusing on the sustainable use of water and land resources in developing countries. IWMI is a member of the CGIAR Consortium. CGIAR is a global partnership that unites organizations engaged in research for a food-secure future. It leads the CGIAR Research Program on Water, Land and Ecosystems which examines how we can intensify agriculture while still protecting the environment and lifting millions of farm families out of poverty. www.iwmi.org

The **CGIAR Research Program on Water, Land and Ecosystems (WLE)** combines the resources of 11 CGIAR Centers, the Food and Agriculture Organization of the United Nations (FAO) and numerous national, regional and international partners to provide an integrated approach to natural resource management research. WLE promotes a new approach to sustainable intensification in which a healthy functioning ecosystem is seen as a perquisite to agricultural development, resilience of food systems and well-being. This program is led by the International Water Management Institute (IWMI), a member of the CGIAR Consortium and is supported by CGIAR, a global research partnership for a food-secure future. wle.cgiar.org

**The South Asia Drought Monitoring System** is being developed as a collaboration between the World Meteorological Organization, Global Water Partnership and the International Water Management Institute (IWMI), with support from the CGIAR Research Program on Climate Change and Food Security (CCAFS). A first Assessment Report has been released and the website is expected to go live in 2016.