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Posted on Thu, Aug. 13, 2009

Huge loss of groundwater in India affects millions

A study based on U.S. data faults irrigation, with similar fears for Pakistan, Bangladesh.

By Tim Sullivan
Associated Press

NEW DELHI - Excessive irrigation and the unrelenting thirst of tens of millions of people are causing groundwater levels in northern India to drop dramatically, a problem that could lead to severe water shortages, according to a study released yesterday.

The study - based on a satellite system involving NASA - comes as India's struggles with water have become a major political issue.

The problem reaches across the country's vast class divide, touching everyone from residents of elite neighborhoods where the taps regularly go dry to poor farmers in desperate need of irrigation to grow their crops.

An earlier recent study, also involving NASA, looked at a wider area, including parts of Pakistan and Bangladesh, and warned that "this is probably the largest rate of groundwater loss in any comparable-sized region on Earth."

The most recent survey, led by Matthew Rodell of NASA's Goddard Space Flight Center in Maryland, indicated that groundwater across a swath of India from New Delhi into heavily farmed agricultural belts dropped at a rate of 1.6 inches per year between August 2002 and October 2008.

That decrease in groundwater is more than double the capacity of India's largest reservoir.

The study noted that the drop in groundwater came in years where there was no shortage of rainfall to cause a natural decline.

The region, though, has seen an enormous increase in water use since the 1960s. Part of that is because of the growing population, though even more resulted from the so-called Green Revolution, which dramatically increased India's agricultural production - in part by exponentially expanding the use of groundwater for irrigation.

"Severe groundwater depletion is occurring as a result of human consumption," the researchers concluded in the study, released online in the journal Nature.

The study was based largely on data provided by GRACE - the Gravity Recovery and Climate Experiment - a satellite system launched in 2002 by NASA and the German Aerospace Center.

GRACE allows scientists to estimate changes in groundwater storage by measuring tiny variations in Earth's gravitational pull.

The earlier study, also based on GRACE data, used results from a 1,200-mile swath across eastern Pakistan, northern India, and into Bangladesh to conclude that 1.9 million cubic feet of groundwater is lost per year.

That study, in Geophysical Research Letters, was led by geophysicists Virendra Tiwari of the National Geophysical Research Institute in Hyderabad, India; John Wahr of the University of Colorado, Boulder; and Sean Swenson of the National Center for Atmospheric Research in Boulder.

Giving free electricity to farmers - who use that electricity to pump more groundwater - has become a common promise by campaigning politicians. That, though, simply makes the problem worse.

"The question is, what do we do about the problem?" said K. Sreelakshmi, a natural-resource economist at New Delhi's Energy and Resources Institute who was not connected to the study. "How do we recharge" India's dropping water table?



ANUPAM NATH / Associated Press

A farmer watches water being pumped from underground into a reservoir near Gauhati, in northern India. Two studies are raising alarm over falling groundwater levels in the region.

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