

WATER: Climate change may reduce future use of groundwater *(Monday, March 12, 2012)*

Lacey Johnson, E&E reporter

Climate change has drawn a lot of attention to water issues such as sea-level rise, flooding and drought. But scientists say there's another piece of the puzzle we've failed to notice, and it's right beneath our feet.

At least 43 percent of all water used for drinking and irrigation comes from underground aquifers, which can take thousands of years to refill. When rainfall is scarce, the surface water in reservoirs, lakes and rivers dries up, and people are forced to rely heavily on local groundwater. With drought predicted to increase as the climate warms, many experts are beginning to worry about the long-term sustainability of the world's aquifers.

"We don't see groundwater, so we don't know the resource is dwindling," said Jason Gurdak, an assistant professor of geosciences at San Francisco State University who has been working with a team of scientists on a book called "Climate Change Effects on Groundwater Resources."

"We're already pumping groundwater at such a high rate that the water tables are declining rapidly," he said. "A lot of what we're doing right now is diminishing the resource for the future."

And the aquifers running dry isn't the only problem. When water levels drop, they can trigger a slew of unintended consequences, said Gurdak.

In parts of drought-stricken Texas, groundwater has fallen up to 150 feet since the 1950s, which makes it more expensive to pump to the surface. This has forced many farmers to abandon their water-intensive crops, such as corn and rice ([ClimateWire](#), Feb. 27). "The whole idea of food security is, you need water to grow the crops," said Gurdak.

Saltwater seepage

Aquifers in coastal areas are especially vulnerable to saltwater contamination. As ocean levels rise and groundwater levels drop, the odds of sea water flowing into aquifers goes up. Even healthy aquifers can be contaminated by storm surges from hurricanes, which push salt water onto land where it seeps into the ground.

In Southern California; Baton Rouge, La.; and northern Florida, municipalities have already detected salt in their groundwater, rendering it useless for drinking or farming. Gurdak says

purifying the water is a costly procedure that much of the developing world won't be able to afford.

The low-lying Netherlands, Israel and parts of the Mediterranean and Middle East are all threatened by saltwater intrusion. Tiny island aquifers, though, easily face the greatest risk. Gurdak said he "can definitely see where people would have to leave islands and go to other islands because the water resources have declined."

Aquifers can also be contaminated with surface pollutants. The groundwater in the North China Plain -- which has already fallen considerably due to rapid development and drought -- has tested positive for chemical fertilizer, which is widely used in the region to grow corn and wheat. Without proper water filtration, people living on top of contaminated aquifers could easily get sick or go thirsty.

"One of the concerns is in many parts of the world, people have private wells," explained Gurdak. "People in rural areas are probably more susceptible to these water quality issues."

This week, Gurdak will travel to the 6th World Water Forum in Marseille, France, to launch his book, which was created through a global groundwater initiative led by UNESCO. He will also join with fellow scientists to make a case for the importance of groundwater conservation.

Some of his policy suggestions include building aquifer recharge ponds, conducting more groundwater research, encouraging water conservation, and planting rain gardens and green roofs to absorb runoff that would otherwise flow into sewers.

"In some places we just need basic sciences, so we're quantifying and making the right decisions," he said. "You can't really create a new aquifer."

Want to read more stories like this?

[Click here](#) to start a free trial to E&E -- the best way to track policy and markets.

ABOUT CLIMATEWIRE

ClimateWire is written and produced by the staff of E&E Publishing, LLC. It is designed to provide comprehensive, daily coverage of all aspects of climate change issues. From international agreements on carbon emissions to alternative energy technologies to state and federal GHG programs, ClimateWire plugs readers into the information they need to stay abreast of this sprawling, complex issue.



E&E Publishing, LLC
122 C St., Ste. 722, NW, Wash., D.C. 20001.
Phone: 202-628-6500. Fax: 202-737-5299.
www.eenews.net

All content is copyrighted and may not be reproduced or retransmitted without the express consent of E&E Publishing, LLC. [Click here](#) to view our privacy policy.