

Is Abrupt Climate Change Coming?

Synthesis and Assessment Product 3.4: Abrupt Climate Change

U.S. Climate Change Science Program

Abrupt climate change in the 21st century could pose risks to society's ability to adapt. But is it likely? "Abrupt" changes can occur over decades or even fewer years, persist for decades more, and cause substantial disruptions to human and natural systems. The U.S. Geological Survey led a team of climate scientists from the federal government and universities in assessing the published science literature on the potential for abrupt climate change. Among their conclusions:

- Climate model simulations and observations suggest that rapid and sustained September Arctic sea ice loss (when the yearly minimum occurs) is likely in the 21st century.

- The southwestern United States may be beginning an abrupt period of increased drought.
- The northward flow of warm water in the upper layers of the Atlantic Ocean, which has an important impact on the global climate system, is very likely to decrease by approximately 25-30 percent. However, it is very unlikely that this circulation will collapse or that the weakening will occur abruptly during the 21st century and beyond.
- Predictions of an abrupt change in sea level are highly uncertain due to shortcomings in existing climate models.
- An abrupt release of methane to the atmosphere from deposits in the earth is unlikely. However, the rate of methane emissions is very likely to increase.

The 460-page report is available at www.climatechange.gov/Library/sap/sap3-4/final-report.

Are Markets California's Water Solution?

Go with the Flow: Why Water Markets Can Solve California's Water Crisis

Pacific Research Institute

California should lift bans and restrictions to help alleviate the water distribution problem, according to this report by Pacific Research Institute (not to be confused with the Pacific Institute of the same region). The problem is not insufficient water supply but uneven distribution and convoluted management.

The report analyzes California's water resources and offers policy solutions such as more accurate water pricing to encourage conservation, facilitation of water transfers by removing bureaucratic red tape, and legislation to enable the creation of fully functional statewide or regional water markets. It argues that investing in policies that encourage conservation would be more cost-effective than constructing new facilities.

The 32-page report is available at liberty.pacificresearch.org/docLib/20081208_Go_With_The_Flow.pdf.

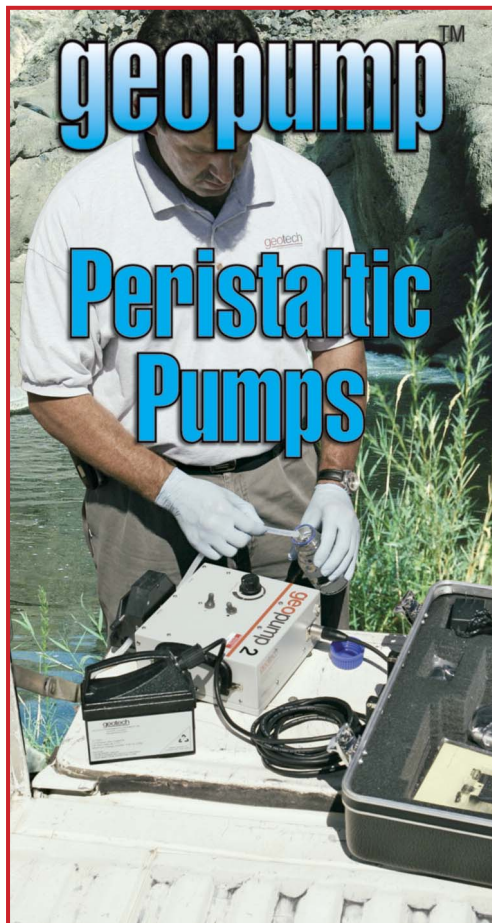
Latest World's Water Released

The World's Water 2008-2009

Peter Gleick

For the past decade, Peter Gleick, president of the Pacific Institute, has coauthored and edited the biennial series *The World's Water*, examining global issues on the use and misuse of freshwater resources. This sixth volume addresses topics from "peak water" to climate change impacts, including a chart on "The Water Content of Things"—from a cup of coffee to a kilo of copper (see HydroFacts, page 13).

The World's Water 2008-2009 also includes an update on China's Three Gorges Dam and the problems it faces as it nears completion after a decade of controversy. Additional topics include business reporting on water, water management in a changing climate,



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progress toward the Millennium Development Goals, urban water use efficiencies, the Salton Sea, and the Tampa Desalination Plant. Also included are 20 data tables on global water situations and the newly updated Water Conflict Chronology.

For more information and to access selected text and data tables, visit www.worldwater.org. To order the book (\$35 paperback), visit www.islandpress.org/bookstore/details.php?prod_id=1287.

Introduction to Western Water

Watersheds, Groundwater, and Drinking Water: A Practical Guide

University of California Division of Agriculture and Natural Resources

This introduction to water topics relevant to California and the West is aimed at the layperson and interested professional new to the water arena. The book covers the basic concepts of hydrogeology, wells, watersheds, water quality, contaminant transport,

and legal control of water resources, as well as practical matters of water quality sampling, watershed/source area delineation, vulnerability analysis, and source water protection.

The 250-page book is available for \$40 at books.google.com/books.

MWD Customers Track Water Reserves

Water Reserve Levels

Metropolitan Water District of Southern California

To encourage its nearly 18 million consumers to conserve water and become more aware of their region's water supply conditions, Metropolitan Water District of Southern California (MWD) added an online gauge to its website to track water reserve levels in the region's surface water and groundwater storage accounts. The gauge looks like an automotive fuel

gauge with measurements from full (4.5 million acre-feet) to empty.

Visit www.bewaterwise.com.

A Global View of Arid Lands

The Future of Drylands

Cathy Lee and Thomas Schaaf, eds.

UNESCO declared 2006 the "International Year of Deserts and Desertification." This substantial volume arose from an international conference on drylands research held in Tunisia that year. Speeches made by high-level experts at the meeting are included, along with eight sections covering science, policy, education, economics, and aspects of drylands. A participant list reinforces the global nature of the meeting. At a hefty 856 pages with a price to match, this is a significant tome on the state of drylands research worldwide.

Visit publishing.unesco.org (softcover, 95€) or springer.com (hardcover, \$309).

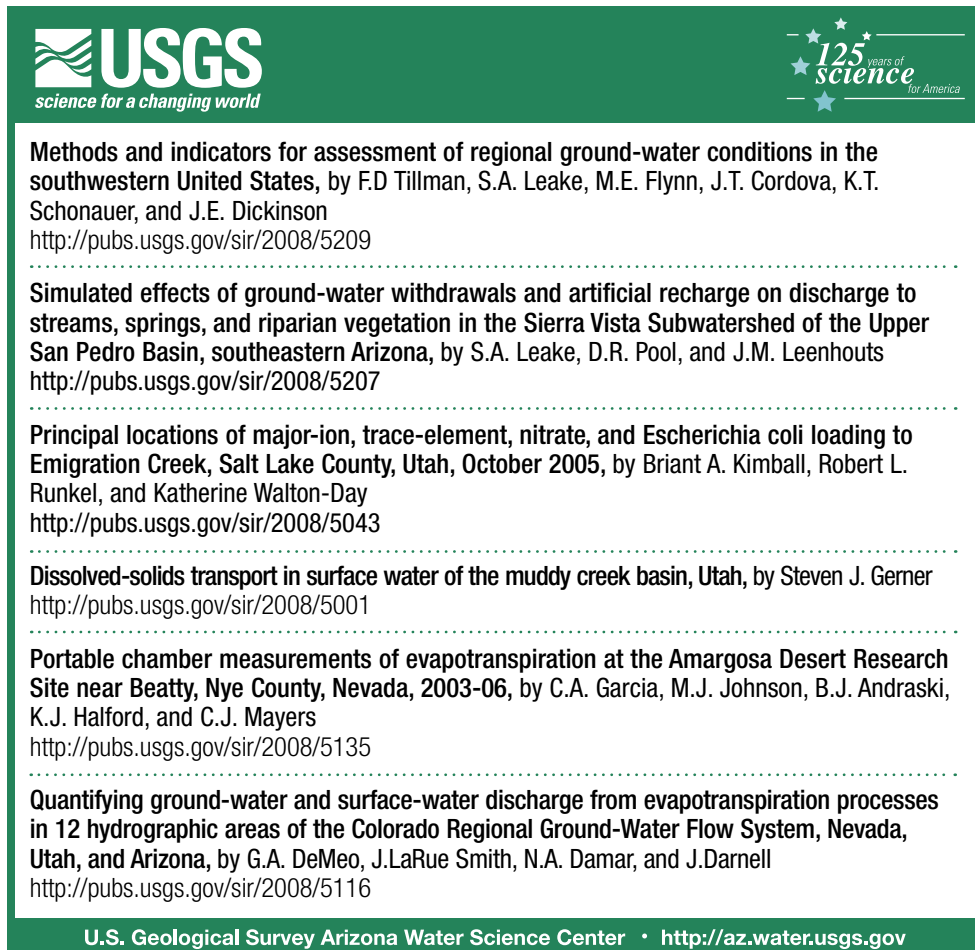


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Methods and indicators for assessment of regional ground-water conditions in the southwestern United States, by F.D. Tillman, S.A. Leake, M.E. Flynn, J.T. Cordova, K.T. Schonauer, and J.E. Dickinson
<http://pubs.usgs.gov/sir/2008/5209>

Simulated effects of ground-water withdrawals and artificial recharge on discharge to streams, springs, and riparian vegetation in the Sierra Vista Subwatershed of the Upper San Pedro Basin, southeastern Arizona, by S.A. Leake, D.R. Pool, and J.M. Leenhouts
<http://pubs.usgs.gov/sir/2008/5207>

Principal locations of major-ion, trace-element, nitrate, and Escherichia coli loading to Emigration Creek, Salt Lake County, Utah, October 2005, by Briant A. Kimball, Robert L. Runkel, and Katherine Walton-Day
<http://pubs.usgs.gov/sir/2008/5043>

Dissolved-solids transport in surface water of the muddy creek basin, Utah, by Steven J. Gerner
<http://pubs.usgs.gov/sir/2008/5001>

Portable chamber measurements of evapotranspiration at the Amargosa Desert Research Site near Beatty, Nye County, Nevada, 2003-06, by C.A. Garcia, M.J. Johnson, B.J. Andraski, K.J. Halford, and C.J. Mayers
<http://pubs.usgs.gov/sir/2008/5135>

Quantifying ground-water and surface-water discharge from evapotranspiration processes in 12 hydrographic areas of the Colorado Regional Ground-Water Flow System, Nevada, Utah, and Arizona, by G.A. DeMeo, J. LaRue Smith, N.A. Damar, and J. Darnell
<http://pubs.usgs.gov/sir/2008/5116>

U.S. Geological Survey Arizona Water Science Center • <http://az.water.usgs.gov>