

Water Budgets as Tools

Water Budgets: Foundations for Effective Water-Resources and Environmental Management

U.S. Geological Survey

This new USGS circular illustrates the importance of water budgets as an essential tool in addressing concerns about water availability in the 21st century. Aimed at natural resource professionals, decision-makers, and citizens, the 90-page publication describes how water budgets can provide a foundation for effective water-resource and environmental planning and management. Abundant graphics and sidebars help explain the concepts, although they are necessarily simplified from what one would need to actually go out and gather the data to perform a water budget calculation.

The first part of the report describes water storage and movement in and between the atmosphere, on land surface, and in the subsurface. Next, the value of water budgets is illustrated through examples representing various geographic areas and water-resources issues. Examples from the Southwest are taken from the Colorado River Basin, High Plains Aquifer, and the San Pedro River Basin and other Arizona aquifers. Uncertainties that exist in water budgets are discussed to provide an appreciation of the complex task of evaluating how much water may be available for human and environmental needs.

The publication is available at pubs.usgs.gov/circ/2007/1308/.

What Are Zoonoses? Check the Thesaurus

Thesaurus of Terms Used in Microbial Risk Assessment

U.S. Environmental Protection Agency

Federal and international agencies, private sector organizations, and academics use terms and definitions differently in their microbial risk assessments. This publication is designed to help cut through some of the confusion by compiling risk

assessment terms found in frameworks, methodologies, and assessments. It describes how various entities use specific microbial risk assessment terms in their activities and aims to help those responsible for such assessments conduct and communicate about them more effectively.

Although many of the terms in the thesaurus are not ones most hydrologists are likely to use regularly, the resource would be useful to those who cross into microbiology—or even organic and inorganic water contamination—and need to communicate risk information. The thesaurus provides multiple definitions of commonly used terms and credits the source of each, so you can tailor your terminology to your audience. “Toxicity,” for example, has five different definitions by five different agencies. “Uncertainty” has eight different definitions (talk about uncertainty!). “Zoonoses” has six definitions—look them up yourself.

The thesaurus is available at www.epa.gov/waterscience/criteria/humanhealth/microbial/thesaurus/.

Biofuels Production Impact on Water

Water Implications of Biofuels Production in the United States

National Research Council

This report, produced by the National Research Council’s Committee on Water Implications of Biofuels Production in the United States, evaluates how biofuels production may impact water resources, and vice versa. The report addresses five general topics:

- How much water and land might be required to grow different kinds of biomass in different regions?
- What are the possible or likely water quality effects associated with increases in production of different kinds of biomass?
- What promising agricultural practices and technologies might help reduce water use or minimize water pollution associated with biomass production?

- What are the water requirements of existing and proposed production plants, and what water quality problems are associated with them?
- What policy, regulatory, and legal changes might help address some of these water-use and water-quality issues?

Among its conclusions, the report states that in the next five to 10 years, significant regional and local impacts to water resources are likely, and erosion could become more of a problem as increasingly more marginal lands are farmed. The increased application of nitrogen will result in more of it appearing in waterways. Advancements in water and soil conservation technologies could help reduce some of these problems. Although the amount of water used for biofuels production is modest compared to that used to grow crops, the concentrated use of water at production sites could have severe local impacts.

The 86-page report is available for \$16.20 at www.nap.edu/catalog.php?record_id=12039.

Hope for the CO River Delta?

Ecosystem Changes and Water Policy Choices: Four Scenarios for the Lower Colorado River Basin to 2050

Sonoran Institute

This new study evaluates the future of the Lower Colorado River Basin and its delta region. The 85-page report provides recommendations for changes in U.S. and Mexican water management policies and strategies in order to set the stage for restoration of the delta, which straddles the border. It urges the direct participation of Mexico in proposed water banking and trading mechanisms now being considered in the United States.

The report also includes a “fast forward” look at the Lower Colorado River Basin through 2050. Four fictional—but not implausible—scenarios are presented as a tool to challenge and provoke policy action associated with the Colorado River.

Download the report at www.sonoran.org.

Short-Term Actions Enhance Long-Term Management

Water 2010: A "Near Sighted" Program of Water Resource Management Improvements for the Western United States

The National Water Research Institute

While many long-term water resource management strategies are underway with goals for 2020, 2030, and beyond, this 28-page white paper addresses the need for short-term, less costly actions that can be implemented to improve current water supplies and ensure adequate resources for the future, including:

- creating system interconnections and mutual-aid agreements
- meeting realistic conservation targets
- promoting uses of recycled water
- storing more water underground
- establishing water banks in every state and in every interstate river basin
- improving water rights
- adopting and maintaining assured water supply requirements
- building information and organizational infrastructure for more effective management

These actions are intended to enhance—not impede—the success of longer-term projects and programs.

The white paper is available at www.nwri-usa.org/e-publications.

Arizona Water Guide

The Layperson's Guide to Arizona Water
The Water Education Foundation and the Arizona Water Resources Research Center

Aimed at a wide audience ranging from new residents to interested citizens and policy makers, this 28-page guide covers information about state water issues. It describes the state's physical setting, a history of Arizona's water resource development, and the legal framework of water management. A glossary and list of additional references is included.

The guide is available for free download at ag.arizona.edu/AZWATER/ or hard copies can be purchased for \$10 each from www.watereducation.org.



An online interactive map service for displaying ground-water conditions in Arizona, by F.D. Tillman, S.A. Leake, M.E. Flynn, J.T. Cordova, and K.T. Schonauer
<http://pubs.usgs.gov/of/2007/1436>

Dissolved solids in basin-fill aquifers and streams in the southwestern United States, by D.W. Anning, N.J. Bauch, S.J. Gerner, M.E. Flynn, S.N. Hamlin, S.J. Moore, D.H. Schaefer, S.K. Anderholm, and L.E. Spangler
<http://pubs.usgs.gov/sir/2006/5315>

Hydrogeology of the Coconino Plateau and adjacent areas, Coconino and Yavapai Counties, Arizona, by D.J. Bills, M.E. Flynn, and S.A. Monroe.
<http://pubs.usgs.gov/sir/2005/5222>

Land subsidence and aquifer-system compaction in the Tucson Active Management Area, south-central Arizona, 1987-2005, by R.L. Carruth, D.R. Pool, and C.E. Anderson.
<http://pubs.usgs.gov/sir/2007/5190>

Effects of agriculture and urbanization on quality of shallow ground water in the arid to semiarid western United States, 1993-2004, by A.P. Paul, R.L. Seiler, T.G. Rowe, and M.R. Rosen
<http://pubs.usgs.gov/sir/2007/5179>

Ground-water quality and potential effects of individual sewage disposal system effluent on ground-water quality in Park County, Colorado, 2001-2004, by L.D. Miller and R.F. Ortiz.
<http://pubs.usgs.gov/sir/2007/5220>

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