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# Methods and Tools for Drought Analysis and Management

Cody L. Knutson

University of Nebraska - Lincoln, cknutson1@unl.edu

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# BOOK REVIEWS

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## Methods and Tools for Drought Analysis and Management



*Giuseppe Rossi, Teodora Vega, and Brunella Bonaccorso, Editors*  
*Springer; 2007; xvi + 418 pp.; ISBN 978-1-4020-5923-0; \$199.*

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Drought is an ambiguous concept. It is often difficult to tell when you are in a drought because of its slow, protracted nature and lack of news-grabbing impacts—such as water inundating communities or buildings burning—associated with other natural disasters. It is equally difficult to track the effect of drought on people, their livelihoods, and the environment because of the ubiquitous role that water plays in our world. As a result, we often wait until we are in the midst of a water crisis to seek

ad hoc solutions, which can be costly, inefficient, and highly politicized.

To overcome the limitations of this crisis management approach, a risk management paradigm is being embraced by drought planners (along with planners dealing with other natural hazards). This paradigm focuses on implementing proactive strategies to reduce the likelihood of harm before a disaster occurs, instead of relying solely on reactive emergency actions during a crisis. In the case of drought, this includes developing drought monitoring and forecasting systems, implementing mitigation

strategies to create more resilient systems, and creating preparedness plans that outline coordinated actions to be taken during a drought event.

Because of the ambiguous and complex nature of drought, the risk management paradigm is coming a bit later to the drought arena than to other hazards, and its application can be a complicated task. However, this book will help hydrometeorologists and water planners apply this paradigm to drought by providing specific examples of how risk management tools and methodologies can be used to quantitatively analyze drought and risk management options.

*Methods and Tools for Drought Analysis and Management* presents the results of research carried out by experts in the Mediterranean countries of Greece, Italy, Portugal, and Spain within the fields of hydrometeorological monitoring and water supply systems analysis and management. The purpose of the research was to investigate and propose common methodologies for assessing drought and potential management options in the region. The research was part of the SEDEMED

(Sécheresse et Désertification dans le Bassin Méditerranéen, or Drought and Desertification in the Mediterranean Basin) and SEDEMED II projects funded by the European Commission from 2003 to 2006.

The book comprises five sections written by researchers involved in the SEDEMED and SEDEMED II projects: (1) drought monitoring and forecasting methods, with a special emphasis on the Standardized Precipitation Index; (2) the use of agrometeorological indices and remote sensing in drought assessment; (3) water quantity and quality monitoring and management, including simulation and optimization modeling for evaluating alternative management scenarios under drought conditions; (4) groundwater monitoring and management under drought conditions, including saltwater intrusion; and (5) assessing drought impacts and mitigation measures in agricultural and urban areas.

In addition to including topics a person would expect to see in a typical drought-related work, each section also provides unique information that has been neglected elsewhere in the literature, which adds to

the appeal of the book. For example, other sources discuss use of the Standardized Precipitation Index, but this book discusses its use at different scales and its potential for forecasting drought conditions. Similarly, when presenting the agrometeorological indices, the authors discuss not only the indices' calculations and applications but also how the information could be incorporated into decision-support Web sites for use by decision makers.

Furthermore, the water management section provides two chapters related to water quality and drought, and another section is devoted entirely to groundwater. Both of these topics are often neglected in the drought literature. Finally, in the last section, the authors discuss how to assess drought risk. Instead of merely providing the typical list of potential risk reduction measures that could be implemented, the authors also propose how to quantitatively assess drought risk and risk management options, which more closely resembles analyses conducted for other natural hazards.

Although the book provides a wealth of examples of how drought risk and manage-

ment options can be evaluated, many of the proposed strategies will require a good deal of data collection and processing. The equipment, skills, and time necessary to accomplish these tasks may limit their widespread applicability in some cases. Therefore, it seems that the primary target audience for this book would be researchers and technicians working in heavily monitored and managed agricultural and urban systems. Likewise, the price of this book (\$199) may be limiting for some potential users who would benefit from its contents.

Overall, even though the studies and examples have been tailored to the northern Mediterranean region, this is a good book for planners and technicians interested in applying new techniques to assess drought and potential management strategies. The book, which is not for the statistically or methodologically faint-of-heart, provides important insight into taking drought risk assessment and management to the next quantitative step.

—CODY KNUTSON, National Drought Mitigation Center, School of Natural Resources, University of Nebraska at Lincoln; E-mail: cknutson1@unl.edu