
Toward Global Drought Early Warning Capability: Expanding International Cooperation for the Development of a Framework for Monitoring and Forecasting

Will Pozzi
Institute of Photogrammetry and Remote Sensing (IPF), Vienna University of Technology, Vienna, Austria

Justin Sheffield
Department of Civil and Environmental Engineering, Princeton University, Princeton, New Jersey

Robert Stefanksi
Agricultural Meteorological Division, Climate and Water Department, World Meteorological Organization, Geneva, Switzerland

Douglas Cripe
Group on Earth Observations Secretariat, Geneva, Switzerland

Roger Pulwarty
National Integrated Drought Information System, Boulder, Colorado

Jürgen V. Vogt
European Commission, Joint Research Centre, Ispra, Italy

Richard R. Heim Jr. and Michael J. Brewer
NOAA National Climatic Data Center, Asheville, North Carolina

Mark Svoboda
Monitoring Program Area Leader, National Drought Mitigation Center, Lincoln, Nebraska

Rogier Westerhoff
Deltares, Delft, Netherlands

Albert L. J. M. van Dijk
Commonwealth Scientific and Industrial Research Organisation and Australian National University, Canberra, Australia

Benjamin Lloyd-Hughes
Walker Institute, University of Reading, United Kingdom

Florian Pappenberger
Predictability and Diagnostics Section, European Centre for Medium-Range Weather Forecasts, Reading, United Kingdom

Micha Werner
UNESCO-IHE and Deltares, Delft, Netherlands

Emanuel Dutra and Fredrik Wetterhall
Predictability and Diagnostics Section, European Centre for Medium-Range Weather Forecasts, Reading, United Kingdom
Drought is a global problem that has far-reaching impacts, especially on vulnerable populations in developing regions. This paper highlights the need for a Global Drought Early Warning System (GDEWS), the elements that constitute its underlying framework (GDEWF), and the recent progress made toward its development. Many countries lack drought monitoring systems, as well as the capacity to respond via appropriate political, institutional, and technological frameworks, and these have inhibited the development of integrated drought management plans or early warning systems. The GDEWS will provide a source of drought tools and products via the GDEWF for countries and regions to develop tailored drought early warning systems for their own users. A key goal of a GDEWS is to maximize the lead time for early warning, allowing drought managers and disaster coordinators more time to put mitigation measures in place to reduce the vulnerability to drought. To address this, the GDEWF will take both a top-down approach to provide global real-time drought monitoring and seasonal forecasting, and a bottom-up approach that builds upon existing national and regional systems to provide continental-to-global coverage. A number of challenges must be overcome, however, before a GDEWS can become a reality, including the lack of in situ measurement networks and modest seasonal forecast skill in many regions, and the lack of infrastructure to translate data into usable information. A set of international partners, through a series of recent workshops and evolving collaborations, has made progress toward meeting these challenges and developing a global system.