

## Water Forum II: **Texas Drought and Beyond**

The Texas Drought of 2011 is the most severe one-year drought on record since 1895. Despite the wetter than averaged rainfall this past spring, which helped the trees and grasses, the reservoir water levels in central Texas are still tens of feet below monthly averages. As of October 2, 2012, more than 80% of Texas is still under abnormally dry conditions, and the extreme and exceptional drought conditions have extended to cover a larger area of the lower 48 States from Nevada to Illinois and from north Texas to North Dakota. Latest global climate models project that southwest United States will get warmer and drier. Interannual and decadal oceanic surface temperature anomalies are known to cause recurring droughts in the southern United States. While decadal and centennial forecasts are useful, drought preparedness and water resources planning also require hydroclimatic forecasts to be made accurately on monthly to yearly timescales.

In February 2012, CIESS organized a successful water forum on Texas drought (<http://www.jsg.utexas.edu/ciess/events>), which attracted more than 130 participants representing state agencies and academia in Texas. The drought technology steering committee (DTSC) was formed as a result of the forum, and regular meetings and webinars have been held since. Collaborators between UT and Texas A&M researchers have prepared a prototype high-resolution seasonal water-balance forecast. In this forum on 22–23 October, 2012, we will review this progress, share our new understanding of drought science, and discuss how we should prepare for future drought events. Although our focus is placed on the Texas drought of 2011, we will also discuss drought in other periods and elsewhere.

Thank you for joining us for the second water forum.

Zong-Liang Yang, Director, CIESS

David Maidment, Associate Director, CIESS

Jessica Smith, Program Coordinator

## Agenda

**Monday, 22 October** Legislative Assembly Room (2.302), Student Activity Center

### **8:00–8:10 AM: Introduction and Opening Addresses (Chair: Zong-Liang Yang)**

**Dean Sharon Mosher**, Jackson School of Geosciences, *Opening Remarks*

**Dean Gregory Fenves**, Cockrell School of Engineering, *Opening Remarks*

### **8:10–10:00 AM Session 1: Impact and Mitigation (Chair: David Maidment)**

Invited Talk 1 (20 minutes): **Brenner Brown**, Texas Water Development Board, “*The Texas Drought of 2011 - Lessons Learned and Lingering Impacts*”

Invited Talk 2 (20 minutes): **Alexander Hinz**, Texas Commission on Environmental Quality, Drought Preparedness Council's Emergency Drinking Water Task Force, “*Drought and Public Water Systems*”

Invited Talk 3 (20 minutes): **David Anderson**, Texas A&M University, “*On the Economic Impact of Drought and Mitigation in Agriculture*”

Invited Talk 4 (20 minutes): **Bridget Scanlon**, University of Texas at Austin, Bureau of Economic Geology, “*Increasing Resilience of Power Generation to Water Shortages during Drought*” (with Robert Reedy, Ian Duncan, Alex Sun, Michael Young and William F. Mullican)

Invited Talk 5 (20 minutes): **James Murphy**, Guadalupe-Blanco River Authority, “*Seawater Desalination as a Tool for Drought Management and Economic Growth*”.

### **10:00–10:30 AM: Break**

### **10:30–12:30 PM Session 2: Monitoring and Observations (Chair: Brenner Brown)**

Invited Talk 1 (20 minutes): **David Maidment**, University of Texas at Austin, CIESS, “*Drought Technology for Texas*”

Invited Talk 2 (20 minutes): **Byron Tapley**, University of Texas at Austin, Center for Space Research, “*Total Water Storage Variations as Observed by GRACE*”

Invited Talk 3 (20 minutes): **Gordon Wells**, University of Texas at Austin, Center for Space Research, “*Satellite Monitoring of Changing Vegetation Conditions in 2011 and 2012*” (with Teresa Howard, Solar Smith and Larry Teng)

Invited Talk 4 (20 minutes): **Norm Jones**, Brigham Young University Environmental Modeling Research Laboratory, “*Texas Groundwater Level Mapping on the Cloud*” (with Gil Strassberg, Scott Christiansen, and Michael Burns)

Invited Talk 5 (20 minutes): **Todd Caldwell**, University of Texas at Austin, Bureau of Economic Geology, “*Ground-based Measurements of Soil Water Storage in Texas*” (with Bridget Scanlon, Di Long and Michael Young)

Invited Talk 6 (20 minutes): **Richard Casteel**, University of Texas at Austin, Department of Geological Sciences, “*Reconstructing Past Droughts in Texas*” (with Jay Banner)

### **12:30–1:30 PM: Lunch North Ballroom, SAC 2.412**

**1:30–3:30 PM Session 3: Modeling and Predictions (Chairs: Michael Ek and Kingtse Mo)**

Invited Talk 1 (30 minutes): **Michael Ek**, NOAA/NWS/NCEP, Environmental Modeling Center, “*Application of NCEP Land Data Assimilation Systems for Global and Regional Drought Analysis, Monitoring and Prediction*” (with Youlong Xia, Jesse Meng, Jiarui Dong)

Invited Talk 2 (20 minutes): **Zong-Liang Yang**, University of Texas at Austin, CIESS, “*Developing a High-resolution Texas Water and Climate Prediction Model*”

Invited Talk 3 (30 minutes): **Binayak Mohanty**, Texas A&M University, Biological and Agricultural Engineering, “*Improving Multi-Scale Root Zone Soil Water Process Representation in Land Surface Models*”

Invited Talk 4 (20 minutes): **Hua Su**, University of Texas at Austin, Department of Geological Sciences, “*Soil Moisture–Precipitation Feedback in the April 2011 Drought in the Southern Great Plains*”

Invited Talk 5 (20 minutes): **Bing Pu**, University of Texas at Austin, Department of Geological Sciences, “*Vegetation Feedbacks that May Reduce Summer Precipitation over the Northern Central U.S.*”

**3:30–4:00 PM: Break**

**4:00–5:00 PM Demo and Discussions (Chair: David Maidment; Rapporteur: Kingtse Mo)**

**4:00–4:20 PM Demo: Tingting Zhao**, University of Illinois at Urbana-Champaign, Department of Civil and Environmental Engineering, “*Real-Time Water Decision Support System*” (with Barbara S. Minsker and Jong Sung Lee)

**4:20–5:00 PM Discussions**

**5:30–7:00 PM: Reception, Poster Viewing and Continuing Discussions in the Holland Family Student Center, Jackson School of Geosciences**

**Tuesday, 23 October** Legislative Assembly Room (2.302), Student Activity Center

**8:00–10:00 AM Session 4: Causes and Mechanisms (Chair: John Nielsen-Gammon)**

Invited Talk 1 (30 minutes): **John Nielsen-Gammon**, Texas A&M University, “*Anatomy of an Extreme Event*” (with Martin Hoerling, Arun Kumar, Randall Dole, Jon Eischeid, Judith Perlwitz, Xiao-Wei Quan, Tao Zhang, Philip Pegion, and Mingyue Chen)

Invited Talk 2 (30 minutes): **Kingtse Mo**, NOAA/NWS/NCEP, Climate Prediction Center, “*The Onset and Demise of the 2011 Drought over the Southern Plains*”

Invited Talk 3 (20 minutes): **Jiangfeng Wei**, University of Texas at Austin, CIESS, “*Texas Drought 2011: A View from the Water Cycle*”

Invited Talk 4 (20 minutes): **Aiguo Dai**, The University at Albany–SUNY and National Center for Atmospheric Research, “*An Imminent Transition to Drier Conditions in the Contiguous U.S.?*”

Invited Talk 5 (20 minutes): **Rong Fu**, University of Texas at Austin, Department of Geological Sciences, “*Understanding Extreme Texas Droughts in the Recent Past and Future*” (with Nelun Fernando)

**10:00–10:30 AM: Break**

**10:30–12:30 PM Posters Viewing and Discussions (Chair: Zong-Liang Yang)**

Legislative Assembly Room (2.302), Student Activity Center

**12:30–1:30 PM: Lunch** Legislative Assembly Room (2.302), Student Activity Center

**1:30–3:30 PM Session 5: Integrating Science and Policy (Chair: Andrew Sansom)**

Invited Talk 1 (20 minutes): **Andrew Sansom**, Texas State University, Meadows Center for Water and the Environment, “*We Can’t Build Our Way Out Of This*”

Invited Talk 2 (20 minutes): **Robert Dickinson**, University of Texas at Austin, Department of Geological Sciences, “*Recent NRC/BASC Reports – Their Relevance for Management of Water Resources*”

Invited Talk 3 (20 minutes): **Thomas Mason**, Graves Dougherty Hearon & Moody, “*Inconvenient Truths about the Texas Water Plan.*”

Invited Talk 4 (20 minutes): **Kathy Alexander**, Texas Commission on Environmental Quality, “*Update on TCEQ Drought Activities*”

Invited Talk 5 (20 minutes): **Steven Raabe**, San Antonio River Authority, “*Instream Flows in the San Antonio River Basin - From Science to Environmental Flow Standards*”

**3:30–4:00 PM: Break**

**4:00–5:00 PM: Discussions (Chair: Andrew Sansom; Rapporteur: Michael Ek)**

**5:00 PM Meeting Adjourns**