Remote sensing of drought: Improving drought monitoring in California

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http://drought.eng.uci.edu/

Global Integrated Drought Monitoring and Prediction System (GIDMaPS)

http://www.nature.com/articles/sdata20141
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Multi-sensor (multi-index) composite drought monitoring using remote sensing observations
Integration of AIRS Data into GIDMaPS

- **Precipitation (MERRA)**
- **Soil Moisture (MERRA)**
- **Relative Humidity (AIRS Data)**

Maps showing 3-month SPI, SSI, and SRHI August 2010.
Integration of AIRS Data into GIDMaPS

2012 US Drought  Latitude 40 Longitude -100

2012 US Drought  Latitude 39 Longitude -90

Farahmand et al. 2015; http://www.nature.com/srep/2015/150225/srep08553/full/srep08553.html
Mean lead time based on satellite relative humidity data relative to precipitation (months)

Farahmand et al. 2015; [http://www.nature.com/srep/2015/150225/srep08553/full/srep08553.html](http://www.nature.com/srep/2015/150225/srep08553/full/srep08553.html)
Integrating SMAP Soil Moisture into GIDMaPS

(a) Diagram showing satellite imaging with processes like evaporation and precipitation. Stacked layers including 1st Soil Layer, 2nd Soil Layer, and Groundwater Layer.

(b) Map of the world indicating various regions with different colors.

(c) Grid and network representations.
Integrating SMAP Soil Moisture into GIDMaPS

Satellite Soil Moisture Observation

Soil Moisture Simulation

DJF  MAM  JJA  SON
Global Integrated Drought Monitoring and Prediction System (GIDMaPS)

Map
Layers

Data Set:
MERRA

Year:
2012

Month:
August

Index:
- SPI
- SPI
- SSI
- MSDI

Meteorological Drought

Agricultural Drought

Agro-Meteorological Drought

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GIDMaPS: Global Integrated Drought Monitoring and Prediction System

Multivariate Standardized Drought Index (MSDI)
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We acknowledge support from: 

CA Dept. Water Resources, 
NASA, NOAA, NSF, JPL