

# NASA Science and Applications in support of Climate Change and Water Resources

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**Climate Change and Water Working Group | August 25, 2015**

NASA's NCA Activities: <http://weather.msfc.nasa.gov/nca/index.html>

NASA Applied Sciences Water Resources: <https://c3.nasa.gov/water/>

NASA Terrestrial Hydrology: <http://nasa-news.org/>

# Earth Science Missions and Instruments



Allimetry-FO (Formulation in FY16; Sentinel-6/Jason-CS)

Earth Science Instruments on ISS:  
RapidScat, CATS,  
LIS, SAGE III (on ISS), TSIS-1, OCO-3,  
ECOSTRESS, GEDI,  
CLARREO-PF



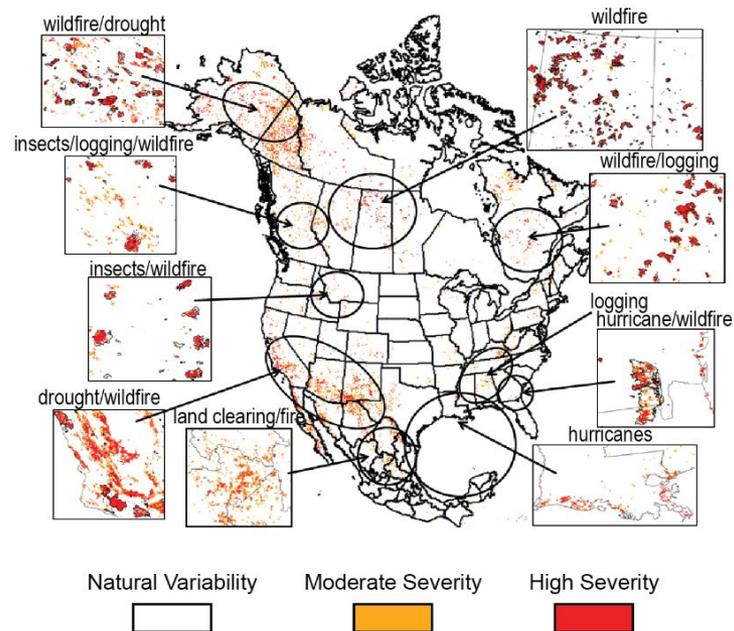
**★ Contributing to Water Cycle Studies**

# NASA and the National Climate Assessment

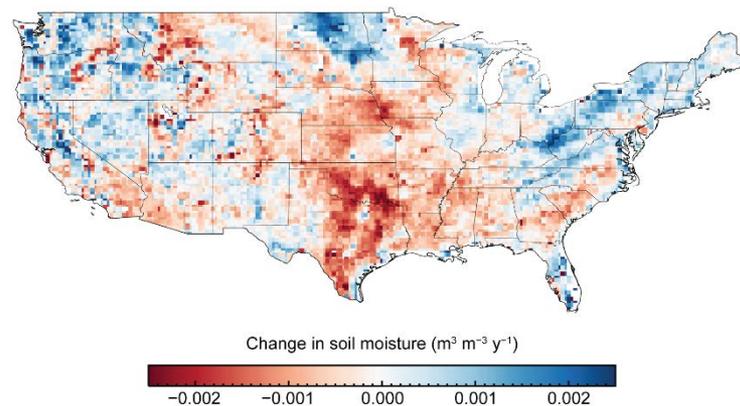


- NASA is a key USGCRP member
- NASA science and applications were crucial to the Third NCA
- Sustained assessment is critical to future NCAs
- How does NASA participate?
  - Interagency support
  - Ensure science and applications are available to use
  - Understand community needs
  - Get the message out
  - Invest in research

## Forest Ecosystem Disturbances



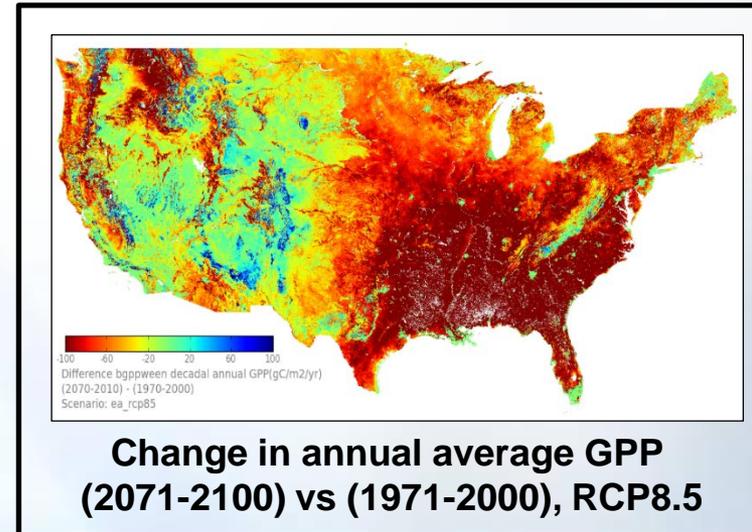
## Annual Surface Soil Moisture Trends



# Investment in Assessment-Relevant Science



- **Why?** Ensure that NASA data, models, and researchers are available to the NCA so that assessments can draw upon NASA capabilities.
- **Objectives:**
  - Produce assessment-relevant tools and research products
  - Expand the community of assessment-capable scientists who could participate in future assessment activities.
- **Research and Applications Funding:**
  - NASA Centers Call (2011-2014)
    - Enabling tools projects (2011-2017)  
(Forrest will cover later today)
  - ROSES Indicators solicitation (2013-2014)
  - ROSES solicitation (under review):  
Climate Indicators and Data Products for Future NCAs
  - Project information: <http://weather.msfc.nasa.gov/nca/research>



# NASA Water Resource Applied Sciences

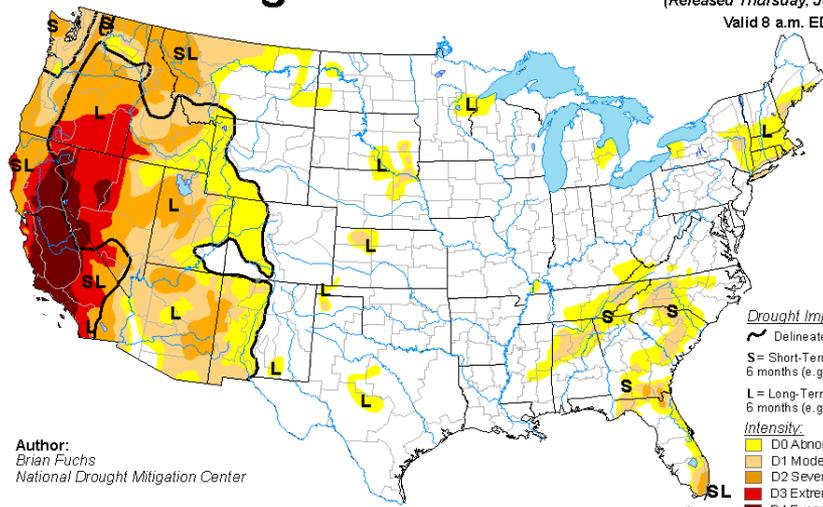


## The NASA Water Resources Program Element:

Addresses concerns and decision processes related to water availability, water forecast, and water quality. The goal is to apply NASA satellite data to improve the Decision Support Tools (DSTs) of user groups that manage water resources. Implementation requires close and enduring partnerships with Federal agencies, academia, private firms, and international organizations.

## U.S. Drought Monitor

June 30, 2015  
(Released Thursday, Jul. 2, 2015)  
Valid 8 a.m. EDT

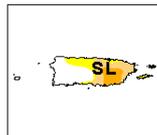
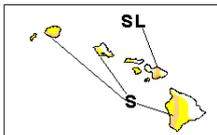


**Drought Impact Types:**  
~ Delineates dominant impacts  
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)  
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

**Intensity:**  
D0 Atnormally Dry  
D1 Moderate Drought  
D2 Severe Drought  
D3 Extreme Drought  
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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<http://droughtmonitor.unl.edu/>

## Water Resources Projects:

Projects are tactical implementations led by Principal Investigators, driven by water management challenges, and ultimately sustained by water resource information stakeholders.

## Programmatic Activities:

National and international activities to improve skills, share data and applications, and broaden the range of users who apply satellite data and Earth science in water resource decisions.