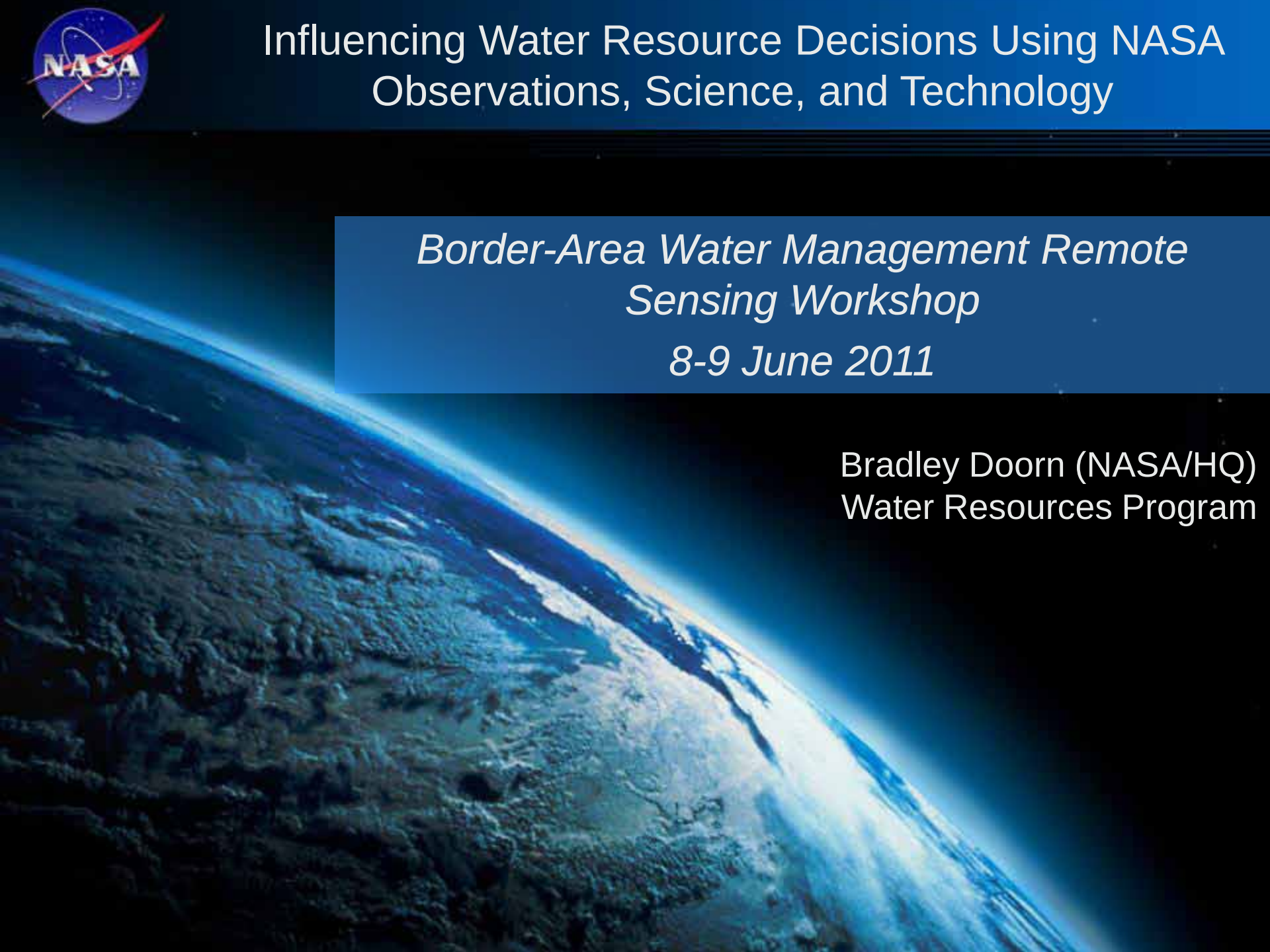
Influencing Water Resource Decisions Using NASA Observations, Science, and Technology



Border-Area Water Management Remote Sensing Workshop

8-9 June 2011

Bradley Doorn (NASA/HQ)
Water Resources Program

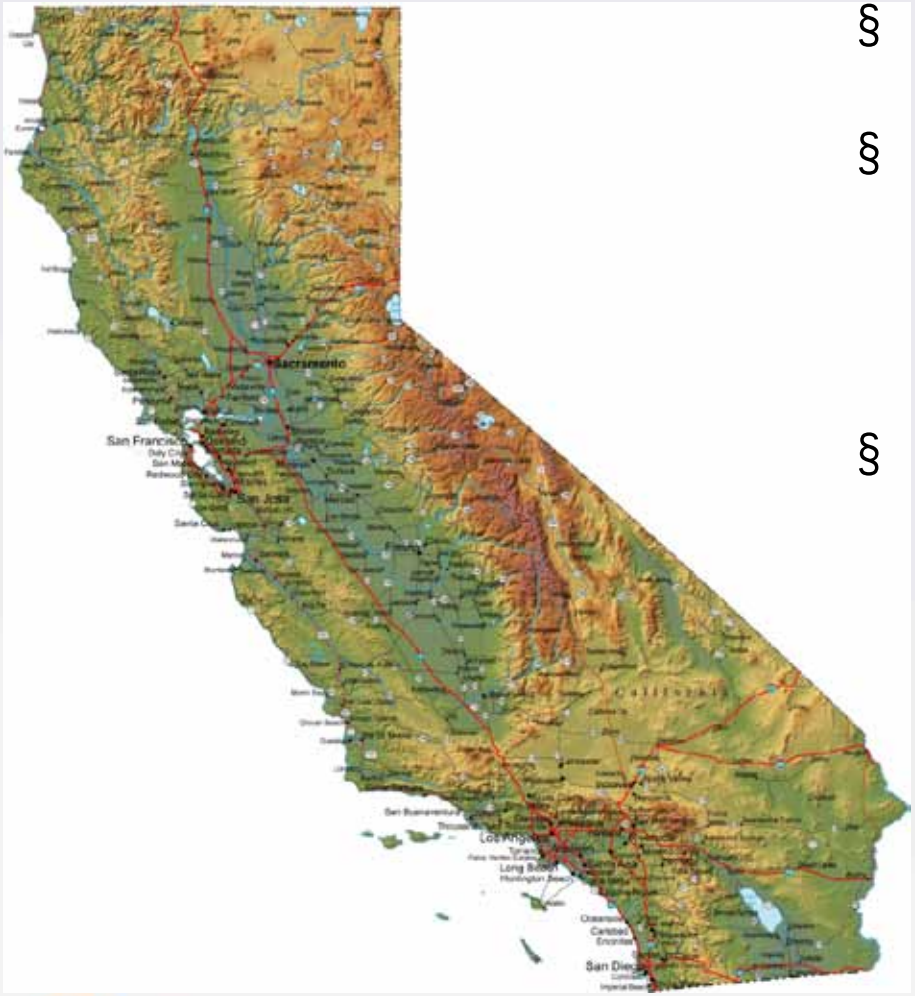
Workshop Goals

- Provide water managers on both sides of the border with an overview of remote sensing data and tools that could be applied to bi-national water management issues,

- Build on experience gained from NASA's recent research project (funded by the American Recovery and Reinvestment Act of 2009) – *and other NASA projects* - to demonstrate potential use of existing remote sensing data sets for water resources applications in the California-Mexico border region.

Common threads in border water management are the need to better prepare for droughts and the need for improved data collection and monitoring to support decision-making. Remote sensing's ability to integrate information over large geographic areas and to interpolate between scarce ground-based observations make it uniquely suited for border-area applications.

Water Supply and Management in California, Scalable to Regional and National Applications



- Joint project between three NASA Centers (ARC, JPL, MSFC)
- Collaboration with CA Dept. Water Resources (DWR), CA Cooperative Snow Survey, CO River Board, local water districts, USDA, agricultural producers
- Project components:
  - Optimization of agricultural water use through irrigation forecasting (ARC, MSFC)
  - Snow Water Equivalent mapping (JPL, MSFC)
  - Regional Climate Model Diagnostic Toolkit (JPL)
  - Flood/surface water monitoring (JPL, DFO)
  - Groundwater monitoring (JPL)

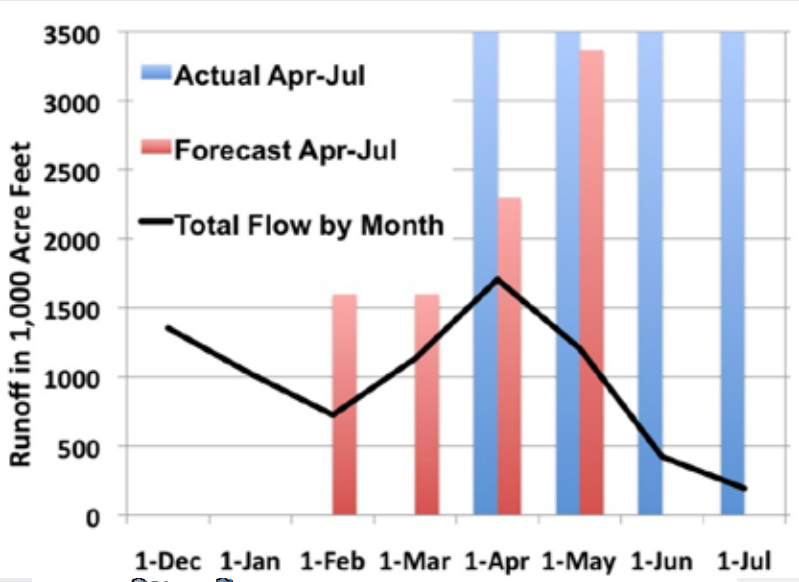
MODIS Snow Products Improve Water Resource Management

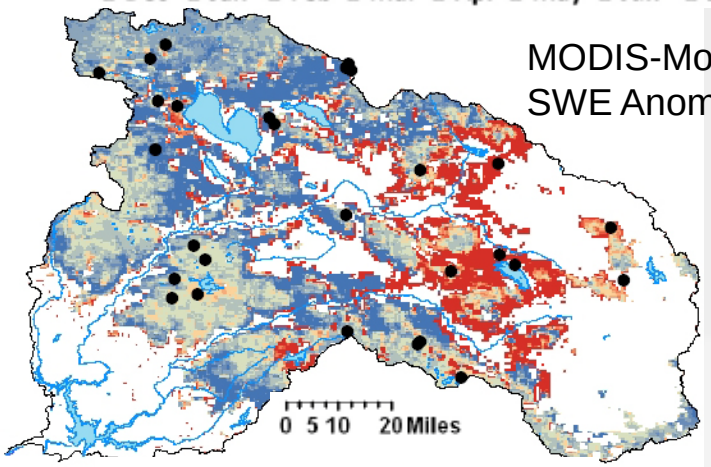
Noah Molotch, JPL CAL TECH / University of Colorado

Using MODIS observations of snow cover depletion and a snowmelt model, a 10-year reanalysis of daily Sierra Nevada snow water equivalent (SWE) at 500-m resolution has been generated. Using these data we show that SWE evaluated at points (black dots on map) misrepresented watershed SWE anomalies resulting in water supply forecast errors exceeding 1 Million Acre Feet (difference between blue and red bars).

These data are being used in partnership with the California Department of Water Resources to identify, and reduce water supply forecast errors, resulting in more efficient water resource management, and decreased vulnerability to climate variability and change.

Feather River, CA: Observed VS Forecasted Water Supply 2006



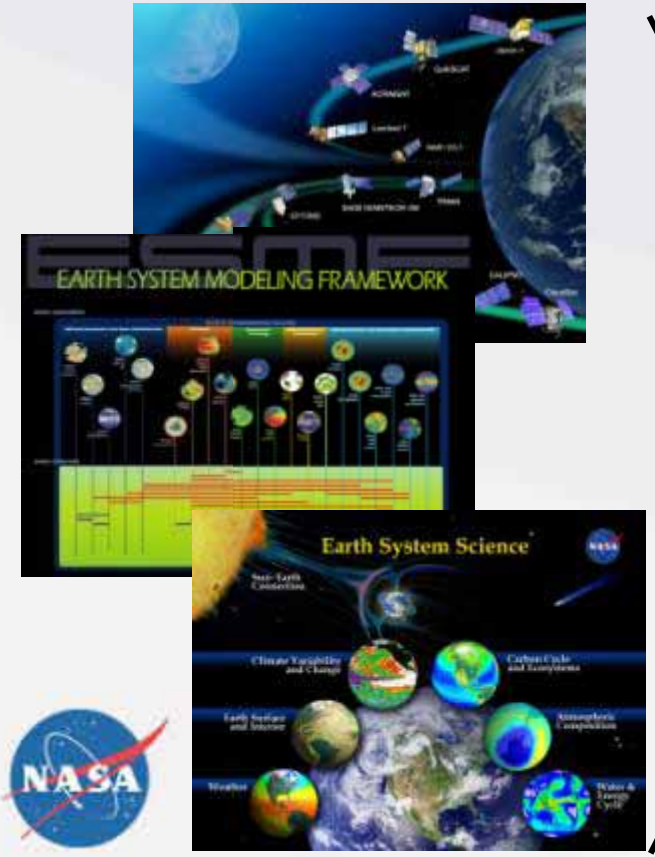


NASA Applied Sciences Program

A Pathway Between Earth Science & Society

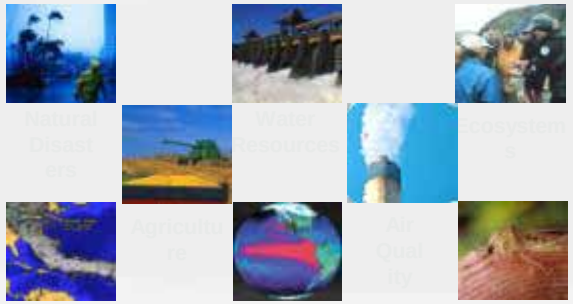
Results of NASA Earth Science Research

Uses by Partners and Stakeholder Communities



NASA Applied Sciences Program

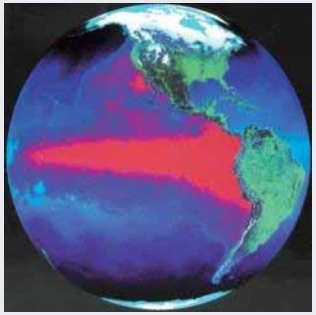
GEOSS Societal Benefit Areas



Applied Sciences Program

USGEO Societal Benefit Areas

Agriculture



Climate

Disasters

Ecosystems

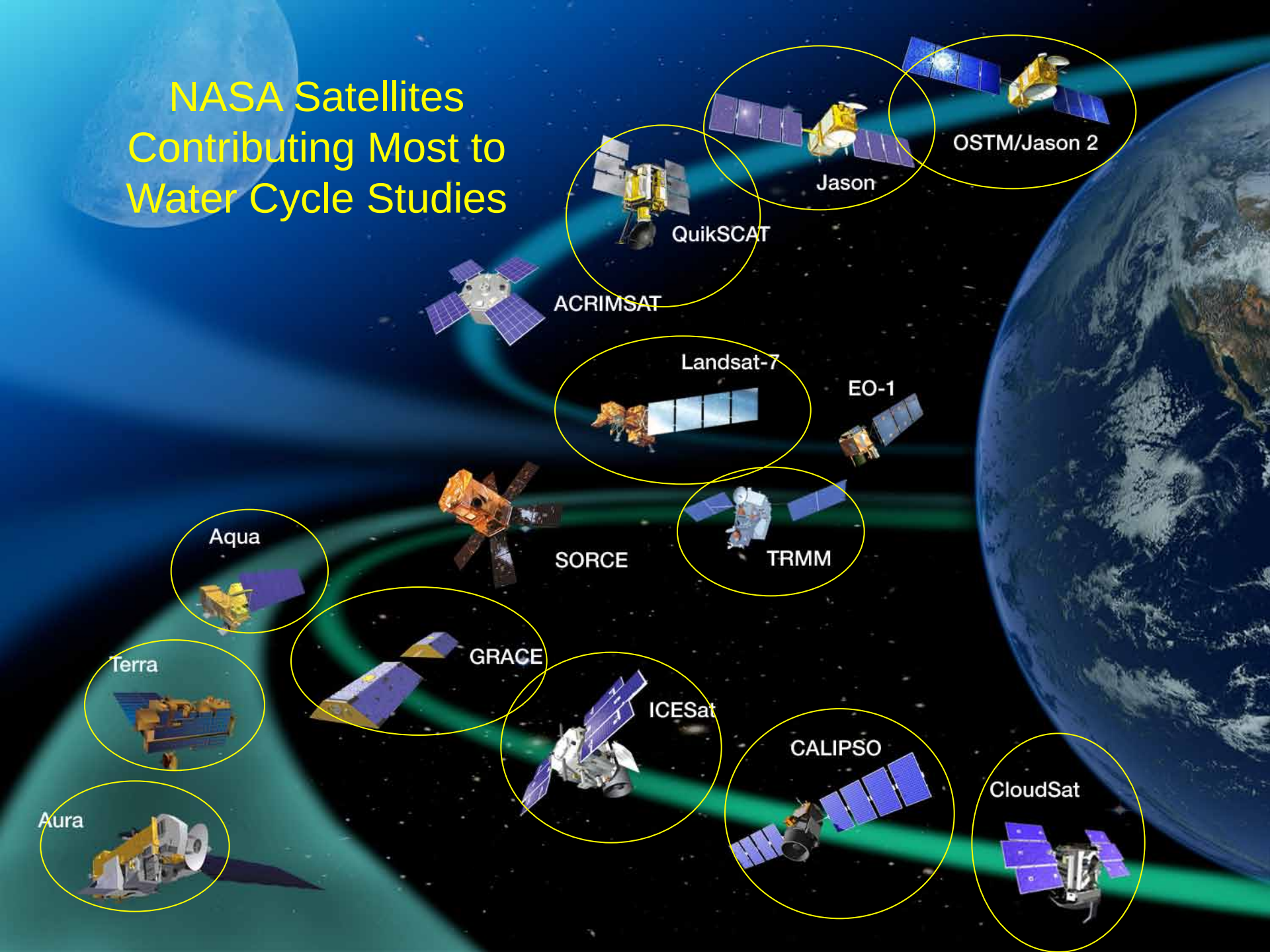
Energy

Health
(incl. Air Quality)

Oceans

Water
Resources

Weather


NASA Satellites Contributing Most to Water Cycle Studies
Jason
OSTM/Jason 2
QuikSCAT
ACRIMSAT
Landsat-7
EO-1
SORCE
TRMM
Aqua
GRACE
Terra
ICESat
CALIPSO
CloudSat
Aura

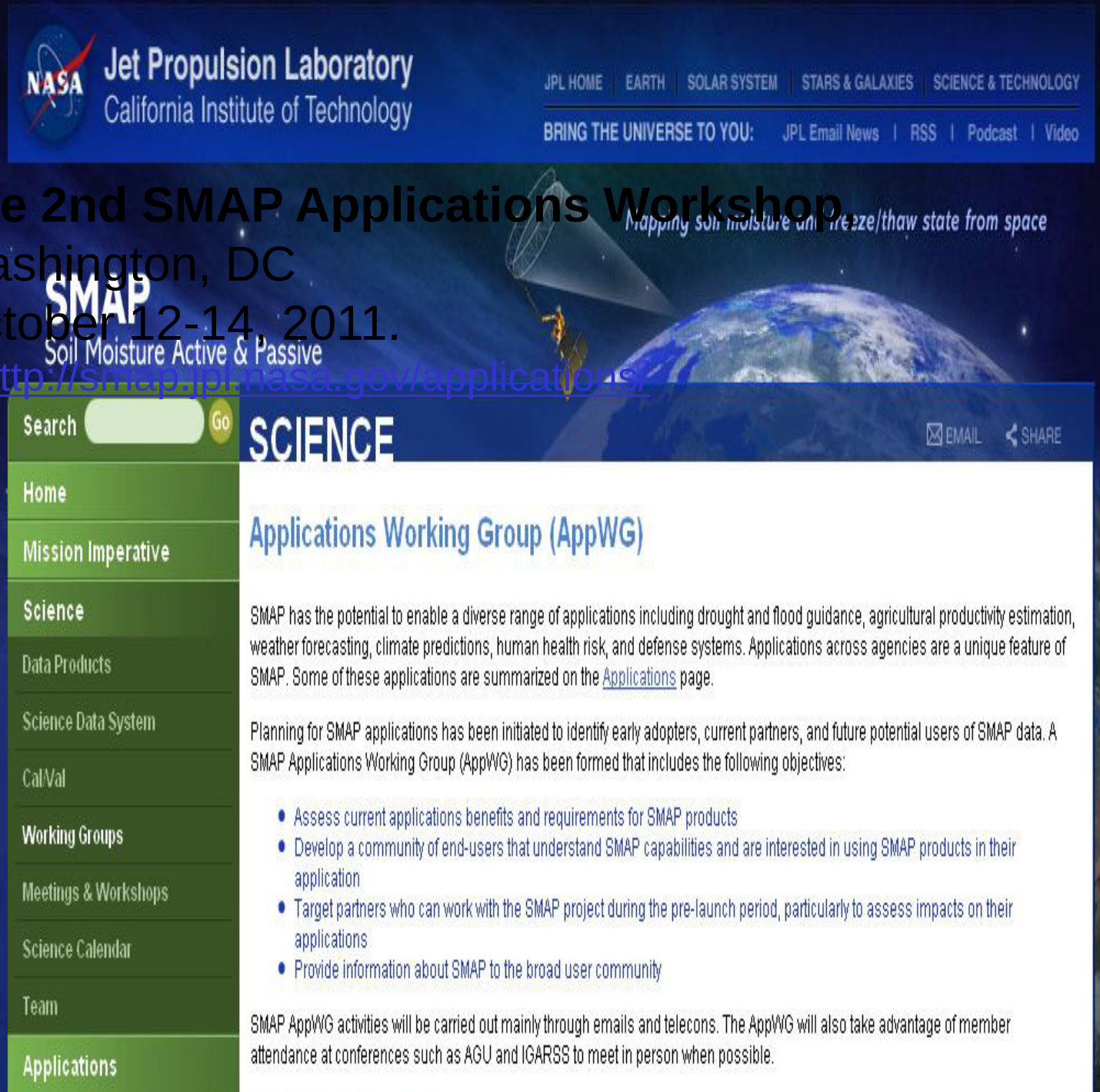
Decadal Survey Missions Next Generation

The 2nd SMAP Applications Workshop.

Washington, DC

October 12-14, 2011.

- http://smap.jpl.nasa.gov/applications/



Earth Science Applications: Water Resources
Solicitation: NNH11ZDA001N-WATER

This solicitation is specifically focused on the ability of organizations (public and private) to leverage NASA capabilities in order to advance their skill to monitor, identify, assess, predict, and respond to water resource deficits. Furthermore, this solicitation will seek the development of sustainable solutions that incorporate solid business/organization models that strive to incorporate performance metrics, fiscal realism of sustained operations, and the vision to meet the drought challenges of both today and in the future.

This solicitation will initially support one-year Feasibility studies of potential applications. NASA will then down-select and continue support of a subset of innovative, impactful applications in subsequent three-year Decisions efforts. The Decisions efforts develop the application with and transition to entities responsible for sustained operational support.

NOIs Due: **Jul 01, 2011**
Close: **Sep 30, 2011**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Welcome
The Applied Sciences Program promotes and funds activities to discover and demonstrate innovative uses and practical benefits of NASA Earth science data, scientific knowledge, and technology. The Program's portfolio of projects deliver results in applying NASA Earth science to support improvements in aviation safety, malaria early warning, agricultural productivity, water management, earthquake response, and many other important topics.
Earth Science Serves Society
The Applied Sciences Program partners with public and private organizations on ways to apply data from NASA's environmental satellites and scientific findings in their decision-making activities and services, helping to improve the quality of life and strengthen the economy.
Applied Sciences Program Areas
Applications Areas:
The Program focuses on economic, health, natural resources, and other themes to support both applied research and targeted, decision-support projects in 8 areas of national priority
Capacity Building:
The Program sponsors specific activities to improve skills and capabilities in the US and developing countries on how to access and apply environmental satellite data, including DEVELOP, SERVIR, and the Gulf of Mexico Initiative.
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+ Multimedia Browser Plug-ins
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