

NASA Applied Remote Sensing Training: Building Capacity to Integrate NASA Earth Science into Water Resources Management Applications

Ana I. Prados^{1,2} and Amita V. Mehta^{1,2}

¹University of Maryland Baltimore County/JCET; ²NASA Goddard Space Flight Center, Greenbelt, MD;

The NASA Applied Remote Sensing Training Program conducts professional trainings in the application of Earth Science data for air quality, water resources and disaster management. The goal of the program is to build the skills to integrate NASA Earth Science into agencies' decision-making activities. The program works directly with agencies and policy makers to develop hands-on and online courses that teach end-users how to access, visualize and **apply** NASA Earth Science Data in their professional area.

Potential NASA-World Bank Common Interest

A NASA-World Bank training program in developing countries that could build the technical skills to integrate remote sensing into decision-making for water resources management. The project could train end-users on access and utilization of NASA resources, particularly in developing countries with sparse ground based environmental monitoring.

Key Challenges: Identifying decision-support activities in developing countries that meet mutually established criteria for project success.

Possible Next Steps

Step 1: NASA provides one or multiday basic hands-on training at the World Bank, Washington D.C., introducing the main products relevant to the water cycle. Funded by NASA.

Step 2: World Bank to explore in-country opportunities for collaboration.

Contact: Ana Prados, Project Lead: Ana.I.Prados@nasa.gov
Nancy Searby, NASA HQ Lead: nancy.d.searby@nasa.gov

NASA Workshop Development Approach

- **Get to know the audience:** area of application or interest and level of technical expertise
- **Work closely with host institution**
- **Adapt or develop training modules and Case Studies** to suit participants needs
- **Conduct 1-5 Day trainings:** presentations, followed by hands-on activities and Case Studies

Program Partners

Federal, state and local water management and regulatory agencies, agricultural sector, climatologists offices, World Bank

Coming up in 2012- 2013: Water Resources/Climate Management Activities Supported

- Flooding/Drought monitoring
- Severe weather and precipitation events
- Watershed management
- Climate impacts on water resources
- Snow/ice monitoring
- New modules for evapotranspiration (ET), ground water, soil moisture, and runoff
- **NEW:** Online Training Courses

Improving Decision Support: NASA Remote Sensing Workshops

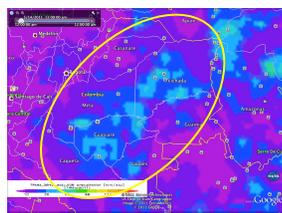


NASA instructor Amita Mehta and course attendees at the Colombian Naval Academy in Cartagena, Colombia. There were 20 participants at the 2-day NASA hands-on training. The training was held during the GEO Hydrological and Space network of information for Latin American and the Caribbean (CIEHLYC) workshop.

NASA Training in Cartagena, Colombia. Course attendees:

- Colombian National Meteorological Service.
- Colombian Naval School and Center of Oceanographic and Hydrological Research.
- Jamaican Ministry of Housing, Water and Environment.
- Belize National Meteorological Service.
- Center for Arid and Semi-Arid Zones for Latin America and the Caribbean.
- Universities in Brazil and Colombia.

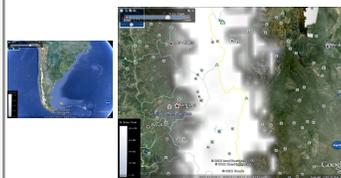
Training Case Studies: Flooding and snow variability in Latin America



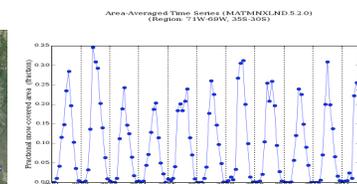
Workshop Outcome: Improved ability to monitor precipitation and assess the impacts of flooding in Colombia, particularly in regions where in-situ monitor data and flooding forecasts are currently absent. Attendees also learned to relate year-to-year rainfall variations to El Niño/La Niña cycles

Heavy rainfall in central Colombia that resulted in flooding in the Guviare region

Workshop Outcome: Attendees learned how to access snow cover imagery over the Andes and how to use NASA analysis tools for assessing seasonal to interannual variability in rain rate and snow cover



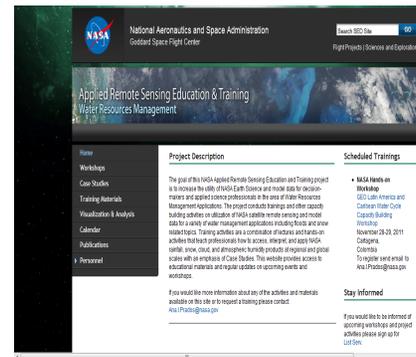
MODIS image showing Snow Cover over the Andes



Monthly Fractional Snow Cover Area over the northern Andes from NASA's Modern Era Retrospective-analysis for Research and Applications (MERRA)

NASA Training Modules and Other Information

<http://water.gsfc.nasa.gov>



Publicly available Workshop Modules in English and ---Spanish

Regular updates on upcoming workshops

NEW: more NASA Data product tables coming in 2012.

For updates and notification of upcoming workshops sign up project listserve:

<https://lists.nasa.gov/mailman/listinfo/nasa-water-training>

Project Outcomes

NASA applied remote sensing training activities have reached many decision-makers world wide and are helping to increase the value of NASA data for environmental applications. All training activities to date have been highly rated and we continue to seek new ways to better quantify the benefit of this program to end-users' decision-making activities. The program is preparing to further expand training activities in the areas of water resources management in 2012 and 2013.

Current and future training Application areas

- Air Quality: since 2008 <http://airquality.gsfc.nasa.gov>
- Water Resources and Disaster Management (flooding): since 2011 <http://water.gsfc.nasa.gov>
- Additional Disaster Management Areas: 2013-2014
- Ecological Forecasting: 2013-2014