

# NASA Applied Sciences Capacity Building Program Elements



**SERVIR:** Building international capacity with hubs in East Africa, Hindu Kush-Himalaya, Mesoamerica, Southeast Asia



**Applied Remote SEnsing Training, ARSET:** Online and hands on basic/advanced training to build skills



**DEVELOP:** Dual workforce/local government capacity building using collaborative feasibility projects, internships



National Aeronautics and  
Space Administration



# ARSET

Applied Remote Sensing Training

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

 @NASAARSET

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## ARSET Overview

### Biodiversity/Ecological Forecasting Meeting

### May 5, 2016

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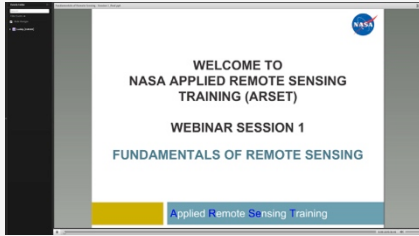
Cindy Schmidt

BAERI/NASA Ames Research Center

# Applied Remote Sensing Training Program (ARSET)

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

Training activities for environmental professionals to increase usage of NASA observational and modeling data for decision-making support.



## Online Webinars

- 1 hr a week, 4-6 weeks
- Live & recorded
- Include demos on data access



## In-person Workshops

- Held in a computer lab for 2 - 4 days
- Focus on data access
- Locally relevant case studies



## Train the Trainers

- Courses & training manuals for those interested in doing their own remote sensing trainings

# ARSET Team

## Program Office

Ana Prados, Program Manager  
Brock Blevins, Training Coordinator  
Elizabeth Hook, Technical Writer/Editor  
David Barbato, Spanish Translator  
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Marines Martins, Project Support

## Disasters

Amita Mehta, Disaster Management Lead

## Land & Wildfires

Cindy Schmidt, Land & Wildfire Lead  
Amber Jean McCullum, Instructor

## Coastal/Oceans

Sherry Palacios, Lead

## Health & Air Quality

Pawan Gupta, Air Quality Lead

## Water Resources

Tim Stough, Water Resources Lead



# ARSET Trainings

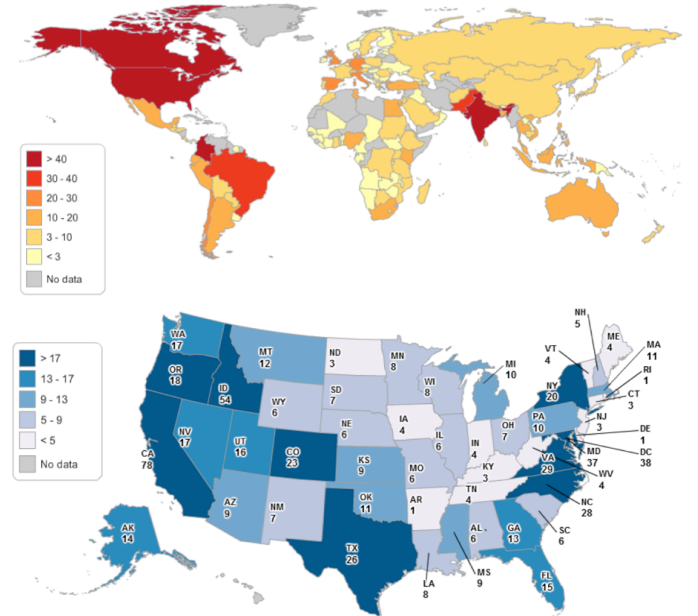
## Impact & Accomplishments

- 66 Trainings Completed
- 4,000+ participants worldwide from:
  - 1,400+ organizations
  - 130+ countries
- More participants trained in 2015 than all previous years combined

*“I think the largest benefit to me will be just learning the basics and gaining an understanding of what products and applications are available and how I potentially use these products to help with my responsibilities as a land manager.”*

-Participant of a 2015 Wildfire Workshop

Number of Participating Organizations by Country & U.S. States (2008-2015)



# ARSET Trainings

A gradual learning approach

## Basic Trainings

- Webinars & Workshops
- Assumes no prior RS knowledge

*Examples: Fundamentals of Remote Sensing; Introduction to Remote Sensing*

## Advanced Trainings

- Webinars & Workshops
- Requires basic training
- Focuses on specific applications

*Example: Advanced Remote Sensing Applications for Land Management*

# End-User Needs and Metrics

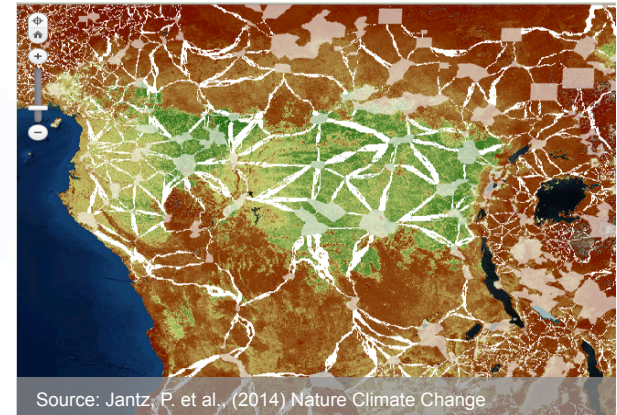
## Current Tools

- ARSET Training Course Application Forms
- Informal feedback during webinar Q&A period
- Survey 1: completion of each training
- Surveys 2: 6 months post training; measures impact and changes in NASA data use
- Ad hoc interviews to collect “success stories”

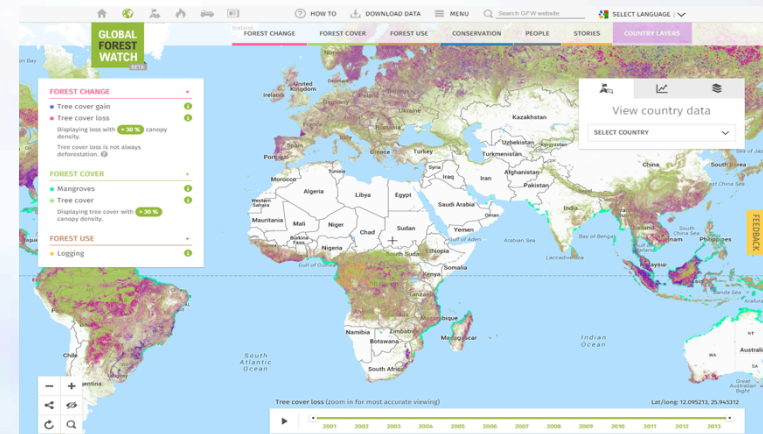
# Webinar: Introduction to Remote Sensing for Conservation Management: May 5 – June 2, 2015



- **Objectives:** Provide an overview of relevant NASA Earth science data products, tools, and access portals for conservation and biodiversity issues for enhanced decision-making and assessment methods.
- **Overview Statistics:** 293 participants, 270 organizations, 61 countries, 27 states
- **Guest Speakers:**
  - Walter Jetz (Yale University)
  - Jeff Cavner (University of Kansas)
  - Karyn Tabor (Conservation International)
- **US Federal and State Agencies:** US Fish and Wildlife Service, National Park Service, US Navy, US Geological Survey, Alaska Division of Forestry
- **International and National Organizations:** African Wildlife Foundation, Conservation International, Kenya Forest Service, World Wildlife Fund, Defenders of Wildlife, Smithsonian Institute, The World Bank, Royal Society for the Protection of Birds



Source: Jantz, P. et al., (2014) Nature Climate Change

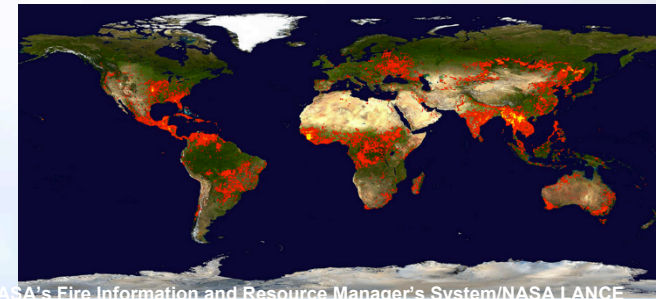
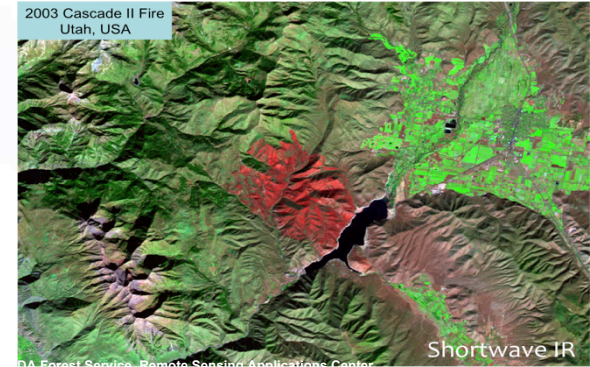


Source: Global Forest Watch

# Webinar: Introduction to Remote Sensing for Wildfire Applications: March 31 - April 28, 2015



- **Objectives:** Provide an overview of relevant NASA Earth science data products, tools, and access portals for wildfire applications for enhanced decision-making and assessment methods.
- **278 participants, 183 organizations, 42 countries, 32 states**
- **US Federal and State Agencies:** USDA Forest Service, National Park Service, National Weather Service, Bureau of Land Management, US Geological Survey, US EPA, CAL FIRE, Idaho Army National Guard
- **International and National Organizations:** Alaska Fire Science Consortium, Ministry of Environment and Natural Resources, El Salvador (MARN), Risk Management Solutions Inc., Western States Air Resources (WESTAR) Council, United Nations, Nature's Foster, ESRI, African Wildlife Foundation, Conservation International





# In-Person Training: Remote Sensing for Wildfire Applications: October 6 - 8, 2015, Idaho State University



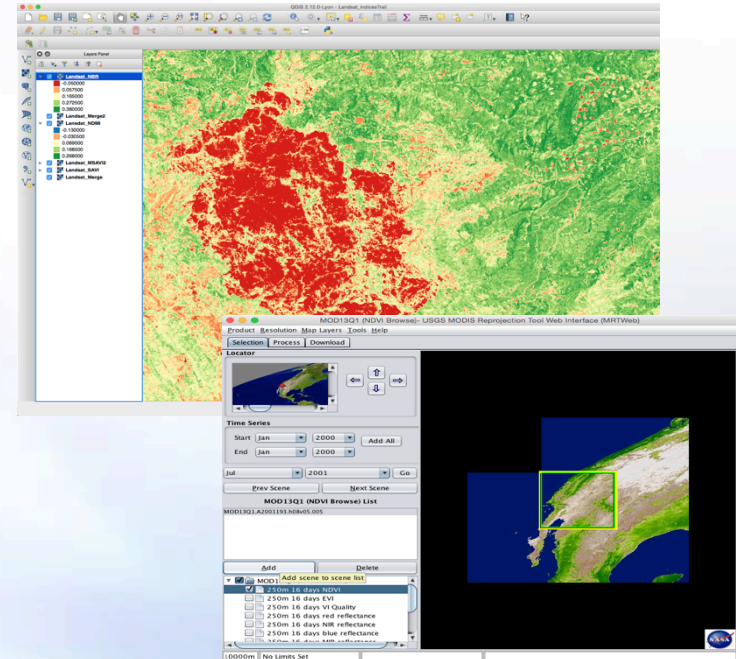
- **Objectives:** Provide training on the use of Earth Observation data and tools for wildfire applications such as analyzing pre- and post-burn land surface conditions, near real time data acquisition for incident management, and creating burn extent and severity maps.
- **Overview Statistics:** 41 participants, 16 organizations, 7 states
- **Select Agencies in Attendance:** Bureau of Land Management, U.S. Forest Service, Department of Energy, the National Park Service, Idaho Department of Lands, Idaho Fish and Game, Eastern Nevada Landscape Coalition, Southern Nevada Water Authority, Desert Research Institute, Regional Air Association, Idaho National Lab



# Advanced Webinar: Creating and Using Normalized Difference Vegetation Index (NDVI) from Satellite Imagery: Feb 10- March 2, 2016



- **Objective:** Learn how to create NDVI imagery, time series, and anomaly maps using NASA data including: 1) a basic understanding of NDVI, 2) acquiring Landsat and MODIS imagery, 3) creating NDVI images from Landsat, 4) using MODIS NDVI images to derive time series and NDVI anomaly maps
- **Overview Statistics:** 121 participants, 84 organizations, 36 countries, 17 states
- **US Federal and State Agencies:** National Park Service, Bureau of Land Management, Wyoming Game and Fish Department, California Air Resources Board
- **International and National Organizations:** Wildlife Conservation Society, Fauna and Flora International, Conservation International, Government of Alberta, Kenya Wildlife Service





# What's Next??

## Webinars and Workshops 2016

- Advanced Webinar on using NASA Remote Sensing for Flood Monitoring and Management (March 16 – April 6)
- Introduction Webinar: Carbon Monitoring (Spring 2016)
- Introduction Webinar: Public Health (Spring 2016)
- Introduction Webinar: Disasters Management (Summer 2016)
- Introduction Webinar: Coastal and Ocean Applications (Summer 2016)
- Introduction Webinar: Air Quality (Summer 2016)
- Introduction Webinar: Near-Real Time Monitoring (Summer 2016)
- Workshop: Air Quality (South Korea, August 28-29)
- Workshop: Conservation Campus for World Parks Congress (September 2016)
- Workshop: Water Quality (Great Lakes Region, Fall 2016)

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# ARSET Take Home Message

How can we help you?

- The global biodiversity/conservation community is interested in what you do!!
- We can help you reach out to a broader community
- I am always soliciting ideas for future trainings (webinars or workshops) or content for currently planned trainings
- All webinars are recorded and freely available on our website:  
*<http://arset.gsfc.nasa.gov>*