National Aeronautics and
Space Administration

ARSET

Applied Remote Sensing Training

http://arset.gsfc.nasa.gov

@NASAARSET

Wildfire Webinar and Workshop 2015

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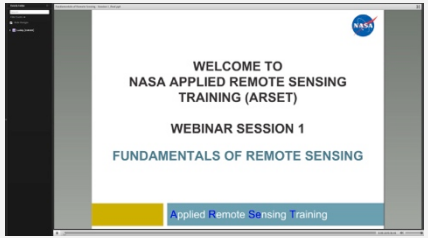
BAERI/NASA Ames Research Center

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

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Water Resources

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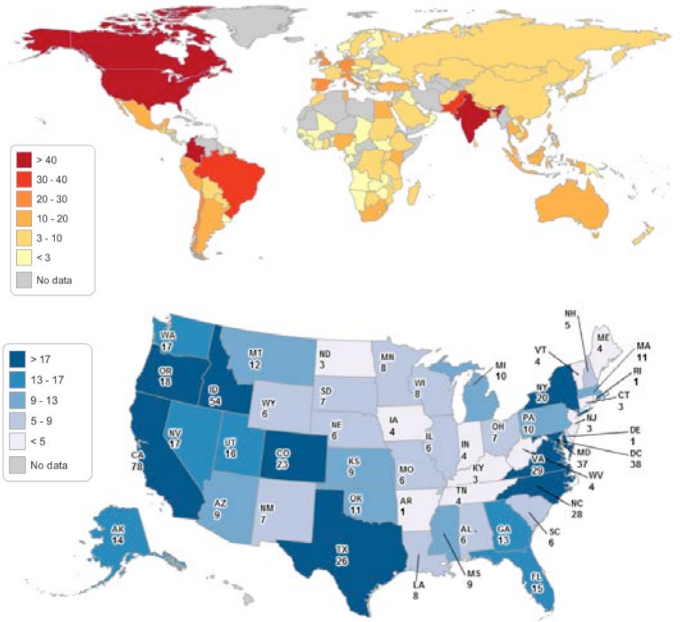
ARSET Trainings

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

Growth 2009 – 2015

	2009	2010	2011	2012	2013	2014	2015
Participants*	235	100	166	361	538	1,014	2,496
Organizations*	15	38	50	134	256	533	769
Countries*	12	5	17	28	57	90	113
U.S. States*	1	13	9	38	37	46	51
Number of Webinars*	N/A	N/A	1	5	6	7	7
Number of Workshops*	9	7	7	5	4	4	4

*All are unique

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

ARSET Training Levels

Webinars & Workshops

Training Type	Prerequisite	Duration
Fundamentals of Remote Sensing	None	1 hour, pre-recorded, on-demand
Webinar (Introductory)	Fundamentals of RS	3–5 weeks, 1 hr per week
Webinar (Advanced)	Introductory-level webinar	Varies
Workshop (Introductory)	Introductory or Advanced webinar	2-3 days
Workshop (Advanced)	Introductory or Advanced Webinar, or Introductory Workshop	1-5 days
Train the Trainers	Basic or Advanced	1-2 days

End-User Needs

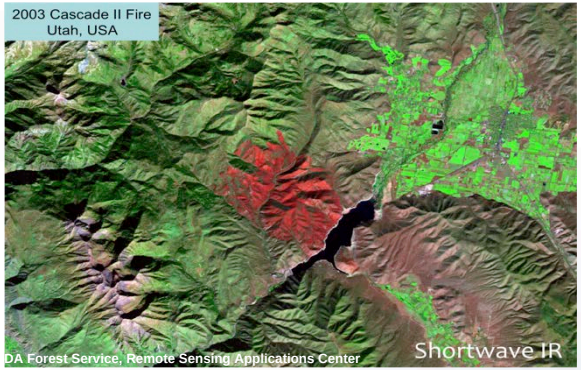
Current Tools

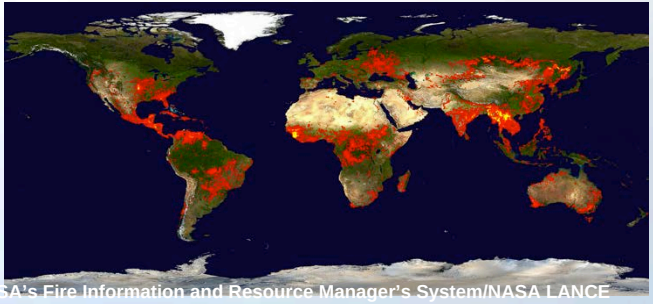
- ARSET Training Course Application Forms
- Interviews with key informants
- Informal feedback during webinar Q&A period
- Survey 1: completion of each training
- Surveys 2: 6 months post training; measures impact and changes in NASA data use
- Ad hoc interviews to collect “success stories”
- Air Quality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

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

First ARSET webinar focused on wildfire applications

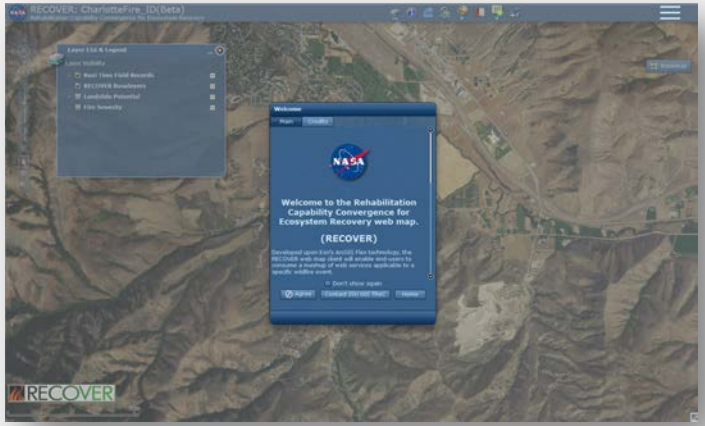




Wildfire Webinar

Agenda

- **Week 1: Overview of satellite remote sensing**
- **Week 2: Platforms and sensors for wildfire applications**
- **Week3: Products for pre- and post-wildfire**
  - Tony Guay (RSAC): Post-fire mapping support (NBRs, BAER)
  - Keith Weber (ISU): RECOVER DSS
- **Week 4: New techniques and technologies**
  - Dale Hamilton (Northwest Nazarene University) – UAS
  - Amita Mehta (ARSET, NASA Goddard) - SMAP
- **Week 5: Terrain data applications**
  - Lindsey Harriman (LPDAAC) – Terrain data for wildfire applications



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

- **Objectives:** Provide an in-depth hands-on 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.

- **Tools:** RECOVER, the MODIS and VIIRS active fire mapper, the Level 1 and Atmospheric Archive and Distribution System (LAADS web), Worldview, the Fire Information for Resource Management System (FIRMS), and the USGS Earth Explorer.

- **Overview Statistics:** 41 participants, 16 organizations, 7 states

- **Select Agencies in Attendance:** U.S. Department of Interior, the Bureau of Land Management, the U.S. Forest Service, the Department of Energy, the National Park Service, the Idaho Department of Lands, Idaho Fish and Game, the Black Sheep Volunteer Fire Department, the Eastern Nevada Landscape Coalition, the Southern Nevada Water Authority, the Desert Research Institute, the Regional Air Association, the Idaho National Lab

Wildfire Workshop

Lectures and Hands-on Activities

- Satellite remote sensing overview (Cindy, Keith, Amber)
- Pre-fire assessment
- Integrating geo-spatial data (Keith)
- Fire management and planning (Wilfrid)
- Post-fire planning (Brad Quayle)
- RECOVER (Keith)
- Long-term monitoring (Amber)
- New techniques and technologies (Dale Hamilton, Maggie Wooten)

Wildfire Workshop

Additional Activities

- **Breakout groups**
  - What part of their year is focused on fire activities?
  - How is satellite imagery used in their workflow?
  - What are the current bottlenecks for using satellite imagery?
  - Future missions wish list
  - DEVELOP
  - Future research needs

- **Field Trip to local fire site**
- **Evening Poster session**
- **Dinner to recruit for Decadal Survey input**

Wildfire Webinar and Workshop

Outcomes and Follow-up

- The global community is interested in what you do!!
- The workshop group was very interested in how to characterize shrub/grass cover
- High spatial, spectral, temporal
- Challenges: time, resources
- We are in the process of interviewing people to find out usefulness of workshop
- Take the show on the road!! (Alaska Fire Science Consortium)
- Train the trainer

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)

Will be asking for help