NASA’s Applied Remote Sensing Training (ARSET) Program

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NASA Goddard Space Flight Center
GESTAR/USRA/JCET/UMBC
National and international activities to engage and train users applying NASA Earth Science satellites and modeling data in their decision making activities.

**Applied Remote SEnsing Training, ARSET (GSFC)**
On-line and hands on basic/advanced trainings tailored to end-uses organizations

**DEVELOP (LaRC national office)**
Dual student/local government capacity building using collaborative projects

**SERVIR Coordination Office (MSFC)**
Building international capacity with hubs in
- East Africa
- Hindu Kush - Himalaya
- Mesoamerica

**Gulf of Mexico Initiative, GOMI (SSC)**
Building Gulf region’s capacity for local environmental management
GOAL: To Increase utilization of NASA observational and model data for decision-support through training activities for environmental professionals.

Application Areas: air quality, water resources, disasters, and land management.

Online courses: Live and recorded, 4-6 weeks in length.

In person training courses: In a computer lab, 2-5 days.

Train the Trainers: Courses and training manuals for organizations interested in conducting their own remote sensing training, beginning in 2015.

Accomplishments (2008 – 2014)

• 46 trainings completed
• 1900+ participants worldwide
• 600+ Organizations
Gradual Learning Approach

**Basic Training**
- Webinars
- Hands-on
Assumes no prior knowledge of RS

**Advanced Training**
- Hands-on
  - Webinar course generally required
  - Focused on a specific application/problem/Data: for example dust or smoke monitoring in a specific country or region

**Online Training**

**In-Person Training**
Applied Remote Sensing Training Program (ARSET)

**Health (Air Quality)**
- 2008 – present
- 33 Trainings
- 1064 end-users
- Analysis of dust, fires and urban air pollution.
- Long range transport of pollutants
- Satellite and regional air quality model inter-comparisons.
- Support for air quality exceptional event analysis

**Water Resources and Flood Monitoring**
- April 2011 – present
- 11 Trainings
- 679 end-users
- Flood/Drought monitoring
- Severe weather and precipitation
- Watershed management
- Climate impacts on water resources
- Snow/ice monitoring
- Evapotranspiration (ET), ground water, soil moisture, and runoff.

**Land Use/Change and Ecology**
- 205 End-users
- 2 Trainings
- Since May 2014
- GIS applications
- Land use/change
- Vegetation indices
- Fire products

**Train the Trainers (Starting in 2015)**
- Courses and guidance on how to design and develop, YOUR OWN online and/or computer based remote sensing training
- How to develop effective presentations and exercises.

1900+ end-users reached
600+ organizations

Number of participating organizations per country: Air Quality, Water Resources, Flood Monitoring.
98 participants, 66 organizations, 14 countries: Government, private sector, non-profit organizations, major research and academic institutions:
- Central Pollution Control Board
- Institute of Tropical Meteorology
- ICIMOD and Universities

Survey results: increase in knowledge regarding NASA data and its application to air quality was stated by nearly all participants.

Future Training Partners: ICIMOD, IITM, NPL are interested in working with ARSET to develop in-person trainings for air quality managers and scientists.
In-person Training: Air Quality Training at EPA RTP
September 29- October 1, 2014

• **Objective:** Build basic skills on image/data access and interpretation. Initiate conversations for additional webinar courses for EPA regions.

• **Training Partner:** EPA RSIG team presented their tool

• **30 Participants** from 3 EPA Offices:
  • Office of Air Quality Planning & Standards
  • Office of Research and Development
  • Office of Environmental Information

• **Products and Tools**
  ○ Satellite Aerosols: AEROSTAT, HDFLook, IDEA, GIOVANNI, LAADSWEB, WORLDVIEW, RSIG
  ○ Satellite Trace Gas: OMI SO2, NO2, AIRS and MOPITT CO, WHIPS

• **End-of-Training Survey Results**:
  ○ All participants indicated the workshop either met or exceeded their expectations (62% and 38% respectively)
  ○ 41% would like to participate in advanced webinars in the future.
What is covered in a typical ARSET Air Quality Training?
Respondents’ Opinions about ARSET Air Quality Trainings: Hands-on Courses

• More than 95% Respondents agreed or strongly agreed
  – The ARSET training *increased my knowledge* of remote sensing data products.

• More than 82% of respondents agreed or strongly agreed:
  – The ARSET training *increased my ability to access* remote sensing data products.

• More than 54% of respondents agreed or strongly agreed:
  – The ARSET training *improved my ability to make decisions* regarding air quality.
Upcoming Air Quality Trainings - 2015

• Hands-on Training for EPA region 4 (South eastern states)

• Online Training on Exceptional Event Analysis for EPA

• Hands-on Training for Himalayan Region in collaboration with SERVIR and ICIMOD.

• Basic Online Training
Training Modules in English and Spanish

Updates on upcoming workshops

Data Product Tables

Links to popular NASA web tools for decision support
How to Get involved

▪ **Learn about courses coming up:** visit the ARSET webpage http://arset.gsfc.nasa.gov or by sign up to the ARSET listserv at https://lists.nasa.gov/mailman/listinfo/arset

▪ **Participate in a Course:** Register through the ARSET website. If you miss a course, recorded webinars (for the online courses) can be accessed through the website.

▪ **To apply for an in-person course:** go to http://arset.gsfc.nasa.gov/training or contact Ana.I.Prados@nasa.gov or pawan.gupta@nasa.gov

▪ **ARSET is always looking for the new data products and tools ready for end users.**