DEVELOP National Program

PARTNERING WITH DEVELOP: PROGRAM & PROJECTS OVERVIEW
What is DEVELOP?

DEVELOP bridges the gap between NASA Earth Science and society, building capacity in both its participants and end-user organizations to better prepare them to handle the environmental challenges that face society.

DEVELOP is a dual-capacity building program: Partners & Participants

DEVELOP is an incubator and accelerator for NASA Earth science applications
What is DEVELOP?

RAPID Benefits – Ten Week Turn Around – Start to Finish

Applicable and Reliable Tools, Models, and Information

Potential Cost and Time Efficient

Impressive Spatial and Temporal Remote Sensing Products

Develop the Scientist’s and Leaders of Tomorrow
Dual-Capacity Building

Participants
Young Professionals, Students & Transitioning Professionals

Scientific/Professional Development:
• Experience using NASA Earth observations
• GIS and remote sensing
• Working in a group environment
• Management and leadership skills

Personal Development:
• Presentation and communication skills
• Personality typing and working with diverse groups (How NASA Builds Teams)

Professional Networking:
• NASA scientists and managers
• Partner organizations
• Peers – teams, center, and national

End-User Organizations
Local, State, Regional, Federal, Academic, International, and NGOs

• Introduction to new methods to augment current practices: cost-saving & time-saving
• Enhanced decision support through use of NASA Earth observations
• Increased exposure to NASA Earth Science technologies and capabilities
• Introduction to NASA’s Applied Sciences Program and its contributions to society
• Opportunities for networking with the NASA community
DEVELOP Node Locations

**NASA Centers**
- Ames Research Center – Moffett Field, CA
- Goddard Space Flight Center – Greenbelt, MD
- Jet Propulsion Laboratory – Pasadena, CA
- Langley Research Center – Hampton, VA
- Marshall Space Flight Center – Huntsville, AL

**Regional Locations**
- BLM at Idaho State University – Pocatello, ID
- Mobile County Health Department – Mobile, AL
- NOAA National Centers for Environmental Information – Asheville, NC
- Maricopa County Department of Public Health and Arizona State University – Tempe Arizona
- University of Georgia – Athens, GA
- USGS at Colorado State University – Fort Collins, CO
- Wise County Clerk of Court’s Office – Wise, VA
Project Characteristics

- Highlight the **applications** and **capabilities** of NASA Earth observations
- Address **community concerns** relating to decision-making for real-world environmental issues
- Partner with organizations who can **benefit** from using NASA Earth observations to **enhance decision making** by **providing decision support tools**
- Align with at least one of the nine NASA Applied Sciences Program’s **National Application** Areas
- Research is conducted by teams with **diverse backgrounds** under the scientific guidance of Science Advisors and mentors from NASA and partner organizations

**Rapid Feasibility & Implementation: 10 Weeks**

**350+ Participants Conducting 80+ Projects Per Year**
Benefits of DEVELOP

- **Partnership Development**: engage with potential future partners
  - DEVELOP conducted 83 projects partnering with 190 unique groups in FY16
  - State and local-level partnerships are focus but program works with groups at all levels of decision making

- **Rapid Response**: proven model for conducting quick, 10-week projects – initiation to handoff

- **ROSES Bookend**: application feasibility or expansion of previous project
  - Feasibility – wildfire risk mapping with TX Forest Service
  - Expansion – levee seeps with Army Corps of Engineers
Previous Project Examples

Appalachian Trail
Health and Air Quality

San Francisco Bay
Area Health and Air Quality

Coastal US Health and Air Quality

Maricopa County
Health and Air Quality
Community Concern: Increasing levels of ground level ozone can pose significant health risks to plants and humans. Tropospheric ozone over national parks can cause more damage to plant life than all other atmospheric pollutants combined.

Impact: This project proved the usefulness of satellite derived tropospheric ozone from Aura’s OMI & MLS sensors in areas with sparse ground stations throughout national parks.

Partners: National Parks along the Appalachian Trail.
Community Concern: Methane is a potent greenhouse gas that, according to the EPA, can absorb almost 25 times as much energy as carbon dioxide. Current “Bottom-up” methane estimation approaches can underestimate emissions by nearly 50%.

Impact: This project provided a synoptic view of historical methane concentrations and highlighted seasonal fluctuations in emissions around the Bay area.

Partners: Bay Area Air Quality Management District
**Coastal US Health & Air Quality**

**Community Concern:** Current particulate matter concentration and air quality measurements are based on uneven ground station distributions. The incorporation of remotely sensed aerosol optical depth (AOD) can help fill in spatial gaps.

**Partners:** EPA AirNow Program & Centers for Disease Control and Prevention

**Impact:** 15 year AOD & PM$_{2.5}$ climatologies and foundational statistical analyses of the relationship between AOD and PM$_{2.5}$ measurements.
Community Concern: Maricopa and Pinal counties in Arizona tend to suffer from poor air quality and air pollution. This semi-arid region under a subtropical high pressure band and surrounded by mountains receives little air circulation to remove particulate matter and other aerosols.

Partners: Maricopa County Department of Public Health & Air Quality Department

Impact: The team provided a mixed model to relate Aerosol Optical Depth (MODIS) to ground station PM$_{10}$ concentrations, which will be utilized by the partners to monitor county air quality.
Concern & Impact: Exposure to air pollution has consistently been associated with respiratory and cardiovascular morbidity and mortality. A sparse and unevenly distributed air monitoring network leaves exposure to air particulates unknown for much of the county, especially in rural communities.

Partners: Maricopa County Department of Public Health & Air Quality Department
How to Get Involved

• Propose a project idea
• Volunteer to advise a project
What Makes for a Successful DEVELOP Project Idea?

- Achievable with NASA Earth observing resources over 1-3 10-week terms
- Addresses an actionable community concern
- Robust communication with end-user
- Specific study region rather than a broad study area
- Expectations are clear

**Deadline for Spring 2017 Proposals:**

*Late October*

Proposal template is available upon request
General Term Timelines

**Spring**

Project Ideas & Proposals Due: **Late Sept. – Oct.**
Spring term: Late January – Early April

**Summer**

Project Ideas & Proposals Due: **Early January**
Spring term: Early June – Mid August

**Fall**

Project Ideas & Proposals Due: **Late April**
Spring term: Mid September – Mid November

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**Who to Contact**

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THANK YOU!

QUESTIONS?

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