

# DEVELOP VIRGINIA

NASA's Applied Sciences'  
Capacity Building  
**DEVELOP**  
National Program



## What is DEVELOP?

DEVELOP addresses environmental and public policy issues through interdisciplinary research projects that apply the lens of NASA Earth observations to community concerns around the globe. Bridging the gap between NASA Earth science and society, DEVELOP builds capacity in both participants and partner organizations to better prepare them to address the challenges that face our society and future generations.

Teams of DEVELOP participants partner with decision makers to conduct rapid feasibility projects that highlight relevant applications of Earth observing missions, cultivate advanced skills, and increase understanding of NASA Earth science data and technology.

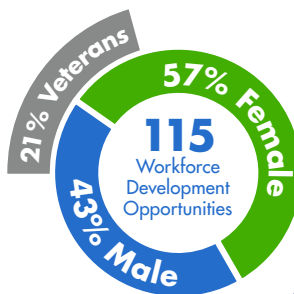
DEVELOP conducts feasibility projects that utilize NASA satellite and airborne observations for customized applications that demonstrate the utility of remote-sensing data for decision makers.

## STATE IMPACT

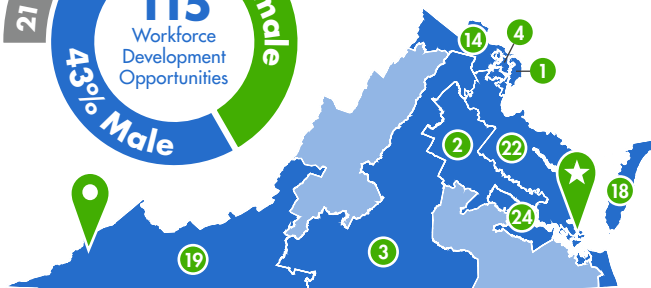
DEVELOP is headquartered at NASA Langley Research Center, operating a network of 12 locations throughout the US – two are located in Virginia, in Hampton and Wise.

In 2016, DEVELOP provided workforce development opportunities to 115 individuals in Virginia, impacting 9 of 11 congressional districts. 21% were active duty military or veterans, and 57% were female.

In celebration of the 2016 National Park Service Centennial, DEVELOP's Virginia locations conducted 10 projects in support of national parks across 23 states, including Virginia's Shenandoah National Park, Harper's Ferry National Historical Park, and the Appalachian National Scenic Trail.



## 2016 PARTICIPANT IMPACT BY DISTRICT

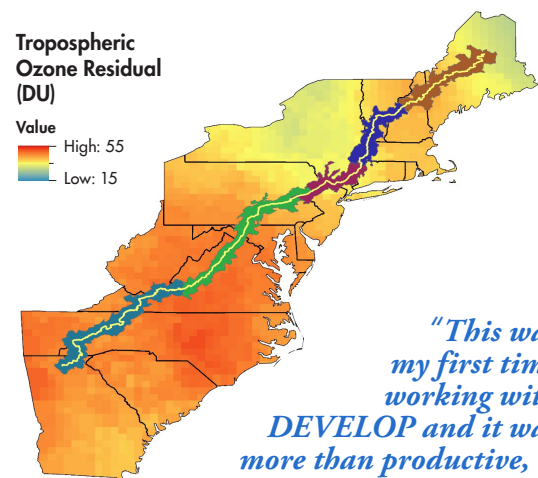


# DEVELOP

## SCIENCE SERVING SOCIETY

## What are NASA Earth Observations?

Space is one of the best vantage points from which to study Earth. NASA satellites and airborne missions are continually collecting information about Earth's ocean, atmosphere, and land surfaces. This Earth observation imagery can be applied to environmental issues and provide decision makers with new information to enhance their response.



*"This was my first time working with DEVELOP and it was more than productive, it was rewarding. What impressed me the most was the team's ability to explore other research questions I had while simultaneously concentrating on the task at hand. It was truly a rewarding experience."*

**Jalyn Cummings, Program Manager,  
Shenandoah National Park**

## Recent Project Example

### Appalachian Trail Health & Air Quality

National parks greater than 6,000 acres are protected under the Clean Air Act. Monitoring and regulation of air polluting emissions is required to prevent and remedy any existing visibility impairment caused by anthropogenic air pollution. The Appalachian Trail (AT), a 2180+ mile footpath managed by the National Park Service and other agencies, extends through regions that may contain problematic levels of tropospheric ozone. Ozone in the stratosphere serves as a boundary that absorbs harmful ultraviolet radiation from the sun, while ozone in the troposphere is hazardous to both human and plant health. Anthropogenic activities, such as fossil fuel combustion, can result in high amounts of tropospheric ozone, nitrogen oxides, and sulfur oxides, which are all pollutants that can aggravate respiratory conditions like asthma. This project used NASA Earth observations to monitor the atmospheric concentrations of tropospheric ozone along the AT, from Georgia to Maine. This project used Aura's Ozone Monitoring Instrument (OMI) and Microwave Limb Sounder (MLS) to examine tropospheric ozone, nitrogen dioxide, and sulfur dioxide. The analysis and mapping of these atmospheric chemicals provided a comparison to the National Park Service's ground-level air quality stations, while expanding the possible spatial range of air quality measurements.

## Project Process



## How to Engage

DEVELOP collaborates with a wide variety of organizations (state and local governments, NGOs, federal agencies, international organizations, etc.) to conduct rapid feasibility projects focused on applying NASA Earth observations to environmental decision-making processes. DEVELOP is built on strong projects that stem from robust partnerships. The program seeks engaged partners who value scientific collaboration, and most importantly, regular communication during the short 10-week term.

Any organization interested in partnering with DEVELOP can contact the National Program Office and discuss potential project ideas by completing a project request form and submitting it through email. The form can be found online at <https://develop.larc.nasa.gov/projects.php>

[www.nasa.gov](http://www.nasa.gov)  
NP-2016-04-776-LaRC



**More About DEVELOP - [DEVELOP.larc.nasa.gov](https://develop.larc.nasa.gov)**