Long-Term Engagement in Authentic Research with NASA (LEARN)

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2012-2013 LEARN Teachers

- **Ali Omar**: Scientist, NASA LaRC
  - Topics of interest: Aerosols, PM2.5, CALIPSO, AERONET

- **Melissa Yang**: Scientist, NASA LaRC
  - Topics of interest: CO2, ASCENDS, SEAC4RS, DISCOVER-AQ

- **Margaret Pippin**: Project PI, Lead Scientist, NASA LaRC
  - Topics of interest: Ozone, water vapor, NOx, PM2.5, meteorology, air quality (EPA/DEQ), CAPABLE, GLOBE instruments, hand-held air quality instruments, MyNASAData, TEMPO

LEARN Team

The NASA LEARN Project is an innovative program that provides educators with on-site research and training with NASA Scientists in the summer and guided research projects that continue on throughout the school year. These educators conduct their own research with help from a team of NASA Scientists and share and integrate these projects into the classroom. Now going into its second year of operation, the LEARN Project is currently working with twelve K-12 teachers from across the country, double the amount of the first year!

LEARN Workshop 2013

The LEARN workshop this summer was from July 8th through July 19th. There were six new teachers to the program who spent the first three days in Global Learning and Observation to Benefit the Environment (GLOBE) Training. The GLOBE Program is a worldwide educational outreach program that allows students in grades K-12 to make real atmospheric measurements to be collected and archived on a website for use across the world. Every teacher involved with the LEARN Program is trained in the GLOBE Protocols and becomes certified in the program.

There were six returning teachers from last year who spent the first week of the workshop polishing their posters from their first year's research. At the end of the first week, a poster session was held in building 1250 for all NASA Scientists to come and check out the work that the teachers have done. The second week of the program, the teachers spent time learning about accessing data, the Igor plotting program, and began developing research topics for this year. They also were able to visit sites on Langley's campus, visit the Virginia Living Museum, as well as help out with a weather balloon launch!

First Year Teachers

- **Diane Spence**: J.W. Sexton High School, Lansing, MI
  - Cloud Height Change

- **Jackie Calder**: Henrico High School, Richmond, VA
  - Ozone in the Shenandoah National Park

- **Sue McIninch**: New Kent High School, New Kent, VA
  - CO2 sinks over changing vegetation in the US

- **Susan Dougherty**: Stamford High School, Stamford, CT
  - The Correlation of Autism Birth Rates and Surface Ozone in the United States

- **Gay Reilly**: Cooper Elementary, Smithfield, VA
  - Protocol development for quantification of ozone induced stippling of plants

- **Chris Marentette**: Groves High School, Beverly Hills, MI
  - Air Quality in Michigan

Second Year Teachers

- **Alicia Dobyns**: York High School, Yorktown, VA
  - 2011 Lateral West Fire of Virginia

- **Jodie Harnden**: Sunridge Middle School, Pendleton, OR
  - Particulate matter and Air Quality in Oregon

- **Samantha Adams**: Pan American International High School, Bronx, NY
  - Asthma and PM 2.5 in New York City

- **Tim Kubiak**: John Yeates Middle School, Suffolk, VA
  - Formulating a Carbon Dioxide Budget: An Interdisciplinary Approach

- **Roy Landers**: Sophia Academy, Atlanta, GA
  - CO2, Ocean Acidification and Health of Coral Reefs

- **Ellen Babcock**: WT Woodson High School, Fairfax, VA
  - Physics and Instrumentation of atmospheric aerosol measurements in Greater DC Area

2013 Research Projects

- **2013-2014 LEARN Teachers**

- **NASA Partners with Virginia Living Museum**

- **LEARN Resources**

  Teachers involved with the program learn how to utilize different resources of collecting atmospheric and air quality data. They are trained to use certain websites like MY NASA DATA, Air Now Tech, and Department of Environmental Quality (DEQ) (see Figure 1). Teachers are also trained to use Excel and Igor to manipulate and plot their data.

  ![](LEARNResources.png)

Acknowledgements

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