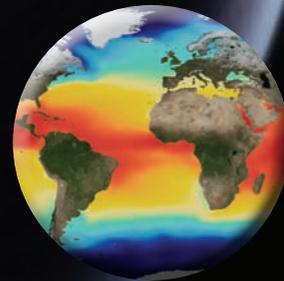
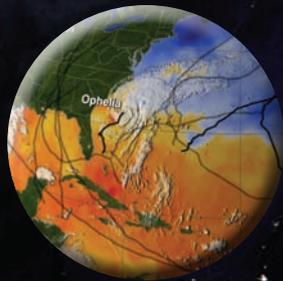




earth & human activity

Resources for Framing Phenomena-Based Student Investigations

Educator Toolkit



Earth and Human Activity

Resources for Framing Phenomena-Based Student Investigations



Educator Toolkit

Compiled by the NASA Earth Science Education Collaborative

For almost 60 years, NASA has observed Earth from satellites, aircraft, and the ground. These long-term global observations have contributed valuable data on our land surface, water, biosphere, and atmosphere. NASA data advances our understanding of Earth as a complex, dynamic system—and provides unique insights into how human activities affect, and are affected by, the environment.

NASA Earth science research, observations, visualization tools, and education resources are available for learners of all ages to connect learning to real world science, across topics— including:

- Earth systems
- Global climate change
- Climate and weather
- Natural hazards

This kit features NASA resources for grades K–12. These resources can support investigations that build student understanding of key Earth science concepts by incorporating NASA data and content into their investigations. The kit includes:

- **Samplers for elementary, middle, and high school** that identify lessons, activities, and other resources that can build towards selected core concepts and practices in the Next Generation Science Standards.
- **Quick Start Table** to find NASA data for student investigations.
- **Key Features** of online sources for data, images, and analysis tools.

Look for this graphic.

These links will take you to the resources shown and more on NASAWavelength.org — a reviewed collection of NASA Earth and space science resources for educators.



This project is based upon work supported by NASA under award No. NNX16AE28A. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Aeronautics and Space Administration.

NP-2017-05-2395-HQ

FRAMEWORK for Using NASA Earth Science to Design Student-Centered Investigations

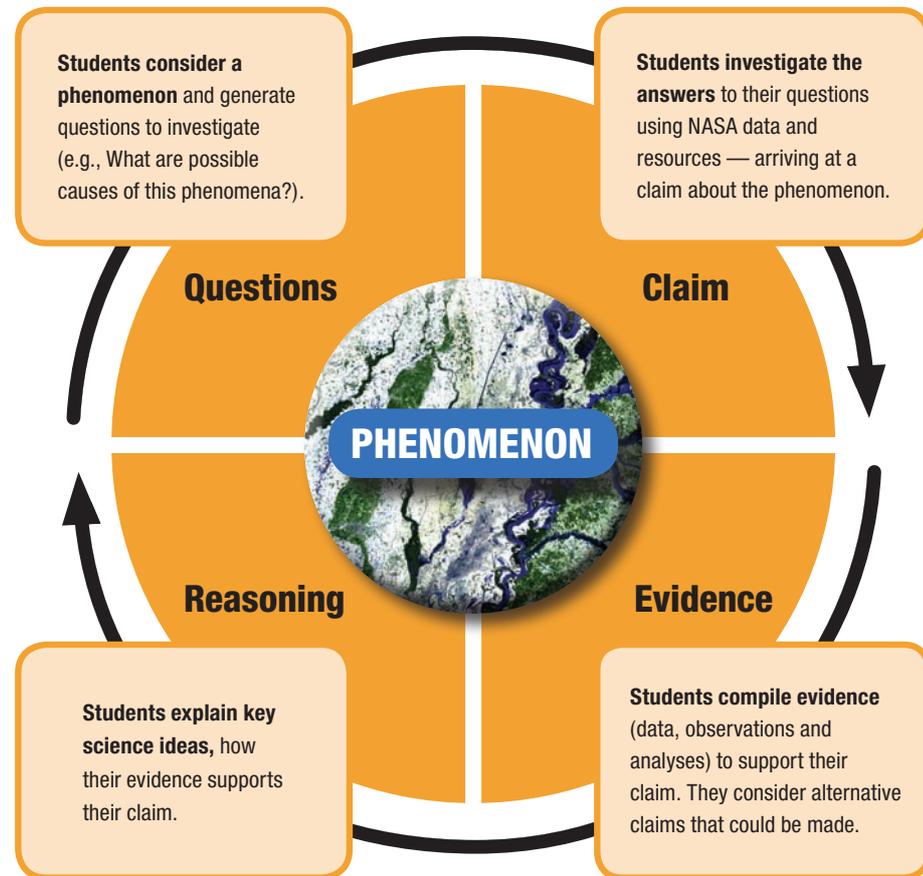


Image Credits (front). *Large image:* Black Marble 2017, NASA Earth Observatory image by Joshua Stevens, using Suomi NPP VIIRS data from Miguel Román, NASA GSFC. *Small images, left to right:* Elephant Cumulus Clouds, photo taken by Dr. Bruce Wielicki, NASA/LaRC; Hurricane Ophelia, NASA Scientific Visualization Studio; Lake Mead, NASA Earth Observatory image by Joshua Stevens, using Landsat data from the U.S. Geological Survey; Sea Surface Temperature, NASA Scientific Visualization Studio, with The Blue Marble Next Generation data courtesy Reto Stockli (NASA/GSFC) and NASA's Earth Observatory.

Acknowledgments. This toolkit was compiled by the NASA Earth Science Education Collaborative (NESEC), a partnership between the Institute for Global Environmental Strategies (IGES) and NASA Earth science divisions at three NASA Centers: Goddard Space Flight Center, Jet Propulsion Laboratory, and Langley Research Center. It includes several resources that were developed across a range of NASA-sponsored and related projects. Design by Susie Duckworth Graphic Design.