



THE GLOBE PROGRAM



THE GLOBE PROGRAM and NGSS

A Tour Through Elementary, Middle and High School Grades

Since 1995, The Global Learning and Observation to Benefit the Environment (GLOBE) program has provided K-12 students opportunities to carry out inquiry-based science learning. GLOBE is currently working with educators and GLOBE Partners in the United States to develop and finalize documents that outline pathways for teachers to implement the Next Generation Science Standards (NGSS) Framework. The GLOBE Teacher's Guide and website (www.globe.gov) provide access to protocols, learning activities, data sheets, field guides and associated data, for five scientific investigation areas: atmosphere, Earth as a system, hydrology, land cover/biology and soil.

“Learning about science and engineering involves integration of the knowledge of scientific explanations (i.e., content knowledge) and the practices needed to engage in scientific inquiry and engineering design. Thus the framework seeks to illustrate how knowledge and practice must be intertwined in designing learning experiences in K–12 science education.”

(2011). A Framework for K-12 Science Education. http://www.nap.edu/catalog.php?record_id=13165

What Educators Are Saying

“GLOBE students conduct investigations of their own local area as they build their understanding of core ideas and crosscutting concepts. For the past 18 years the GLOBE Program has been an exemplary application of learning science by doing science. It is exciting to see the values of GLOBE expressed in the Next Generation Science Standards.”

–Marcy Seavey, GLOBE Partner, Iowa Academy of Science

“The Next Generation Science Standards (NGSS) provide a new way of looking at science education. They emphasize the practices of science, the crosscutting concepts of science and the content knowledge of science. GLOBE provides an excellent example of the NGSS in action.”

–David Bydłowski, GLOBE Partner– Wayne County Mathematics and Science Center at Wayne RESA, Michigan



Managed by:  UCAR | COMMUNITY PROGRAMS

The GLOBE Program and GLOBE Program logos are property of NASA.

A Tour Through Elementary, Middle and High School Grades



Grades K-4 teachers can incorporate Elementary GLOBE science-based storybooks and complimentary classroom learning activities and protocols into their curriculum to address NGSS.

Example Standards:

- Observe, record and share representations of local weather conditions to describe changes over time and identify patterns (K. Weather and Climate: K-ESS2-a)
- Weather is the combination of sunlight, wind, snow or rain and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time (K. Weather and Climate: Disciplinary Core Idea (DCI) ESS2.D)
- Weather is the minute-by-minute to day-by-day variation of the atmosphere's condition on a local scale (3. Weather, Climate, and Impacts (WCI) ESS2.D)

Sample Activities:

- Elementary GLOBE storybook "Do You Know That Clouds Have Names?" and supporting activities such as, "Observing, Describing, and Identifying Clouds" and "Cloud Watch" provide K-4 students opportunities to use observation to identify patterns in types of clouds and describe what the weather was like.
- From Weather to Climate: Students examine air temperature starting from the individual measurements (taken during the course of one day) and compare them to averages of many measurements over daily, monthly, or annual scales.



Grades 5-8 teachers can incorporate GLOBE investigation areas and associated learning activities and protocols into their curriculum to address NGSS.

Example Standards:

- Use models of Earth's atmosphere and surface to support the explanation of the greenhouse effect (MS. Weather and Climate Systems: MS-ESS2-n)
- Understand Weather and Climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns (MS. Weather and Climate: Disciplinary Core Idea (DCI) ESS2.D).

Sample Activity:

- The Earth System Poster Learning Activities guide students to understand that weather and climate are influenced by interactions that vary with latitude, altitude, and local and regional geography.



Grades 9-12 teachers can incorporate GLOBE investigation areas and associated learning activities and protocols into their curriculum to address NGSS.

Example Standards:

- Understand that global climate models incorporate scientists' best knowledge of physical and chemical processes and of the interactions of relevant systems. They are tested by their ability to fit past climate variations (HS. Weather and Climate: Disciplinary Core Idea (DCI) ESS2.D).
- Develop, revise, and use quantitative models to support the explanation of the amount of carbon that cycles among the hydrosphere, atmosphere, geosphere, and biosphere (HS. Weather and Climate: HS-ESS2-k).

Sample Activity:

- "Getting to Know Global Carbon" provides high school students an introduction to the carbon cycle by making and comparing diagrams while exploring physical and chemical processes and interactions.