

Please take the pre-survey. Thanks!

Pre-Data Presentation Survey

This will take less than a
minute!



Why use authentic data in the classroom?

Data are becoming increasingly important in science and society, and thus data literacy is a vital asset to students as they prepare for careers in and outside science, technology, engineering, and mathematics and go on to lead productive lives.



Kjelvik MK, Schultheis EH. Getting Messy with Authentic Data: Exploring the Potential of Using Data from Scientific Research to Support Student Data Literacy. *CBE Life Sci Educ.* 2019 Jun;18(2):es2. doi: 10.1187/cbe.18-02-0023. PMID: 31074698; PMCID: PMC6755219.

My NASA DATA

Offers:



<https://mynasadata.larc.nasa.gov/>

1. Earth System Phenomena
2. Data Visualization Tools
3. Mini-lessons
4. Lesson Plans and Activities
5. STEM Career Connections
6. GLOBE Connections

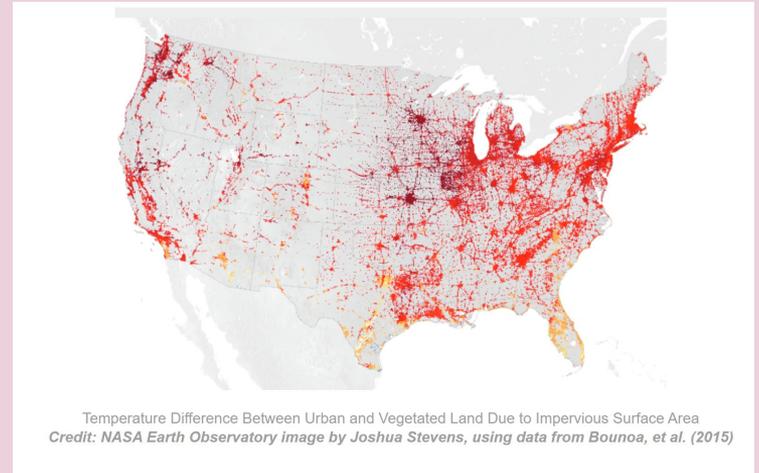


Earth System Spheres

My NASA Data separates the Earth Systems into spheres. Teachers are able to target their NGSS standards to support their lessons or use ready made mini-lessons, story maps, labs or entire units. Lessons support Earth Science, Biology, Environmental Science and Climate change. Lessons range from lower elementary to high school. Levels can be changed as it fits your curriculum.

SPHERES

1. **Atmosphere** <https://mydasdata.larc.nasa.gov/basic-page/about-atmosphere-background-information>
 - Urban Heat Islands
2. **Biosphere** <https://mydasdata.larc.nasa.gov/basic-page/about-biosphere>
 - Plankton Distributions
3. **Geosphere** <https://mydasdata.larc.nasa.gov/basic-page/about-geosphere>
 - Volcanic Eruptions
4. **Hydrosphere** <https://mydasdata.larc.nasa.gov/basic-page/about-hydrosphere>
 - El Nino and Southern Oscillation
5. **Cryosphere** <https://mydasdata.larc.nasa.gov/basic-page/about-cryosphere>
 - Sea land and Ice Melt



Earth System Data Explorer - Visualize Data Tool - What data set do you want to use and compare?



365 400 435

Description: Carbon dioxide (CO2) is one of the primary heat-trapping (greenhouse) gases in the Atmosphere, which is released through human activities such as deforestation and burning fossil fuels, as well as natural processes such as respiration and volcanic eruptions. Its concentration has increased more than 30 percent since the beginning of the Industrial Era. These data have a grid spacing of 1 degree longitude and 1 degree latitude. The units of these data are parts per million by volume, which is a ratio of the volume of this gas to a much larger volume of air. A concentration of 1 ppmv is equal to mixing a volume of carbon dioxide equal to about 7 standard cans of soda (2.5 liters or 84 fluid ounces) into a volume of air that would fit into an Olympic-sized swimming pool (2.5 million liters or 660,400 gallons).

Source: AIRS/AQUA

Dataset Selection

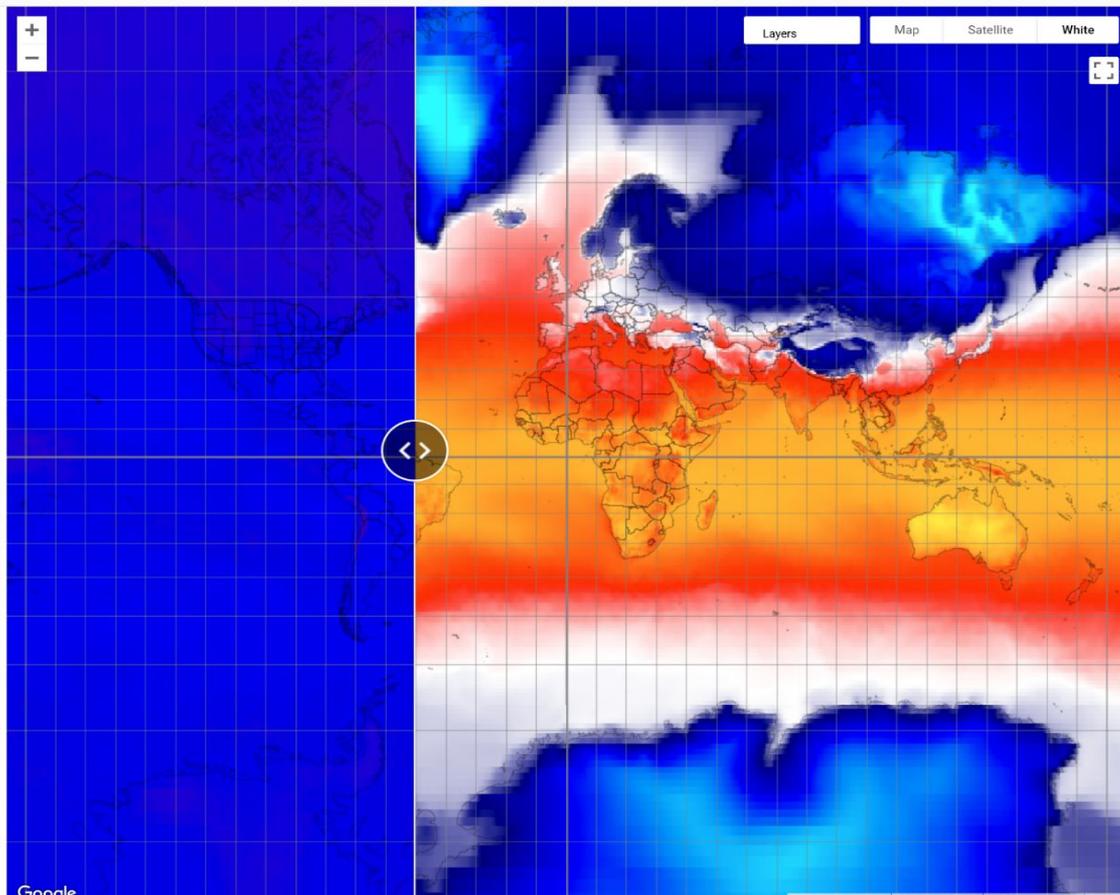
1. Select a Sphere of the Earth System
2. Select a Category
3. Select a Dataset
4. Select the Date

Tutorial

[Link to video tutorial](#)

Dataset Citations

[Link to dataset citations](#)



Layers Map Satellite White

Google

Monthly Surface Air Temperature

Date: Jan 2024

Units: Degrees Celsius



-40 20 40

Description: This quantity describes the monthly average temperature of air close to the surface. This temperature is typically measured at 2 meters above the surface. The surface air temperature is different than the skin temperature, which is the temperature of the topmost layer of the land, ocean, or ice surface. During the daytime, especially over some types of land surfaces exposed to direct sun, the surface air temperature is less than the skin temperature. These data have a grid spacing of 0.625 degrees longitude and 0.5 degrees latitude.

Source: MERRA-2

Dataset Selection

1. Select a Sphere of the Earth System
2. Select a Category
3. Select a Dataset
4. Select the Date

5. Exit Compare Two

Earth as a System, Visualize Data Tool, Templates and Resources

6. Earth as a System

<https://mydasdata.larc.nasa.gov/basic-page/about-earth-system-background-information>

- Climate change and Earth and Human Activity

7. Earth System Data Explorer - Visualize Data Tool

<https://mydasdata.larc.nasa.gov/basic-page/earth-system-data-explorer>

- Data explorer and story maps

9. Resources <https://mydasdata.larc.nasa.gov/data-literacy-cubes-graphs-maps-and-data-tables>

- Templates, all information



MISSIONS

[ALL MISSIONS >](#)

Exploring the Universe

Spacecraft developed at JPL have flown to every planet in the solar system and the Sun, and beyond.



Stars and Galaxies

Current missions: 6
Past missions: 8

Earth

Current missions: 22
Past missions: 35

[EXPLORE >](#)

Earth's Moon

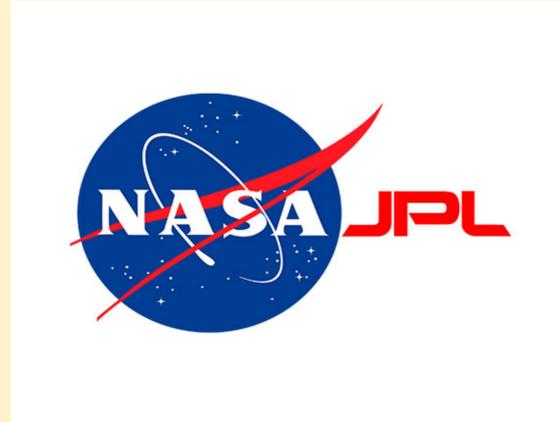
Current missions: 4
Past missions: 19

JPL NASA Jet Propulsion Laboratories

<https://www.jpl.nasa.gov/>

NASA Jet Propulsion Laboratory is a great source to explore

phenomena. JPL covers solar systems, stars, galaxies, earth, robotics, climate change, exoplanets, missions, latest news, NASA Eyes etc. You can listen to podcasts, find images, and videos.



Eyes on Earth

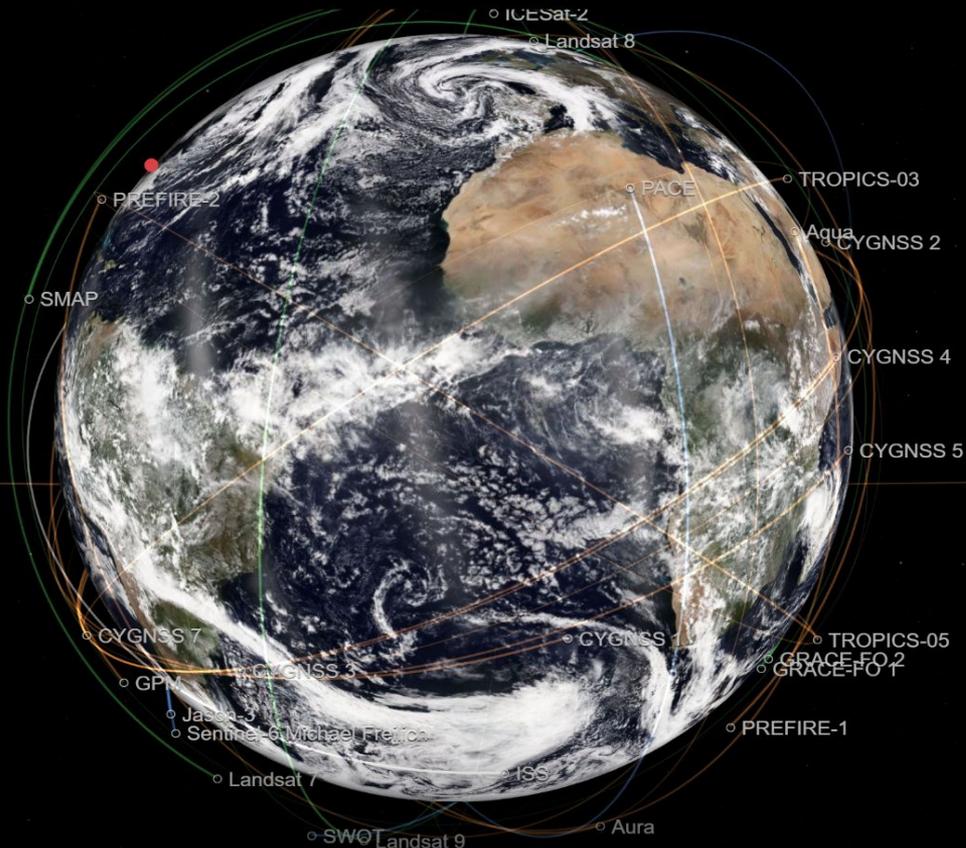


GLOBAL CLIMATE CHANGE
Vital Signs of the Planet

Eyes on the Earth

HOME VITAL SIGNS MISSIONS EVENTS ABOUT MAIN MENU

LATEST EVENT: Powerful Storm System Hits the Central and Eastern U.S. >



VITAL SIGNS

Visible Earth

NOAA-21 / VIIRS Daily Mosaics

Data observed on

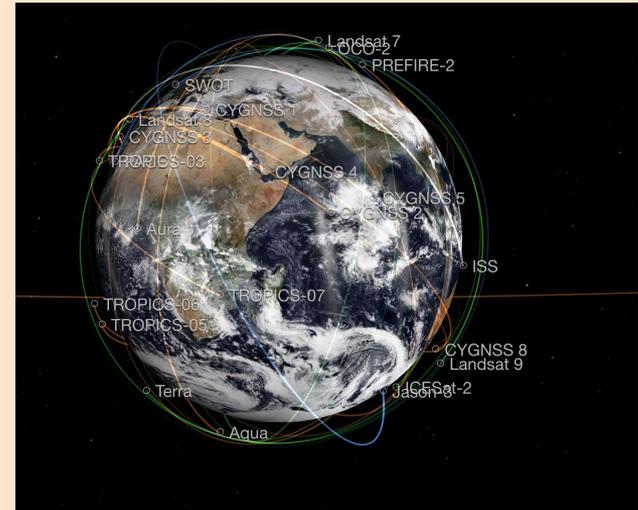
March 9, 2025

Create Timelapse

EYES on EARTH - Vital Sign and Missions

<https://eyes.nasa.gov/apps/earth/#/>

This is an amazing tool in which students can access real or close to real time data of Earth's vital signs, satellites missions, their orbits, appearance, purpose and history. Students can see images of the day from space such as the California wildfire or the snowy Mid-Atlantic states.



NASA Climate Change Website

Explore 



News & Events 

Multimedia 

NASA+ LIVE

[Climate Change](#)  [Facts](#)  [Vital Signs](#)  [Mitigation and Adaptation](#)  [Stories](#)  [Eyes on the Earth](#) [More](#) 

Climate Change

From the unique vantage point in space, NASA collects critical long-term observations of our changing planet.

NASA Climate Change Website

<https://science.nasa.gov/climate-change/>

NASA's Climate change website is able to provide long terms observations and data. This explains what is climate change and the evidence that supports it.

Interactive tools and resources such as the Climate Time Machine, Global Ice Viewer, multimedia libraries, evidence, articles, climate data facts, vital signs, migration and adaptation, and Ask NASA Climate articles.

GLOBE Observer APP/ Program

<https://observer.globe.gov/>

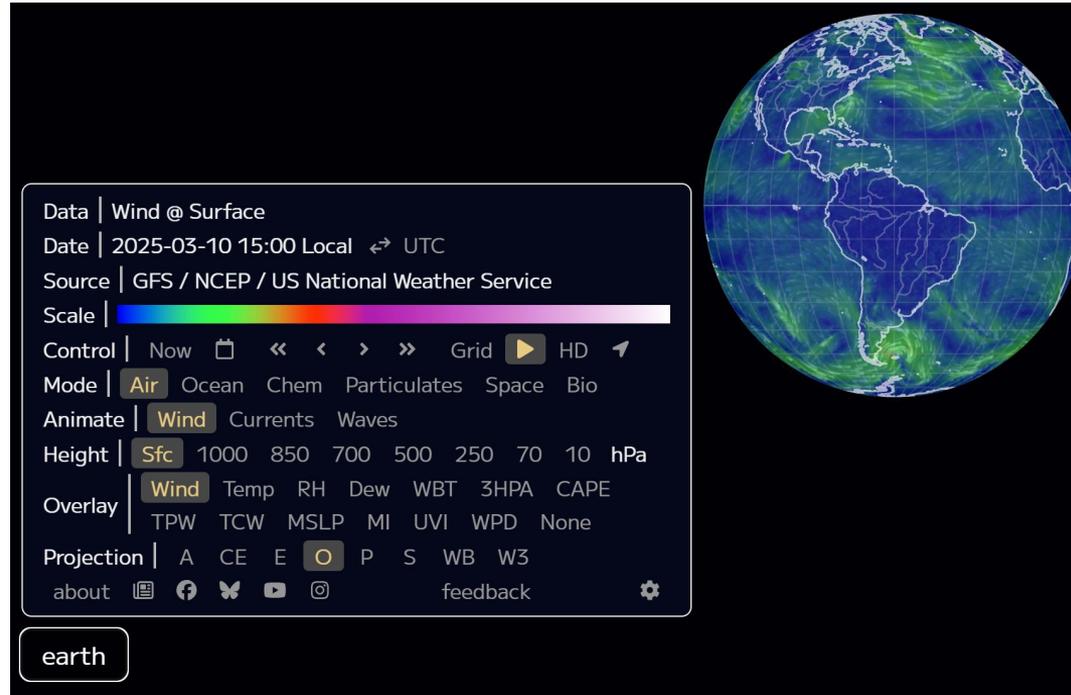
This is a citizen science application. I have used this with my Going Green Club to observe clouds, trees and the solar eclipse.

- Participating GLOBE countries to take observations and contribute to the Global Learning and Observations to Benefit the Environment (GLOBE) community
- GLOBE allows data to be collected and to track changes in the environment in support of Earth system science research, and interpret NASA and other satellite data
- An [open data set](#) available to scientists, and supporting students of all ages in doing real scientific research through the [GLOBE Program](#)
- You can also become a GLOBE trained teacher.



Earth Null School - Eric's Suggestion

<https://earth.nullschool.net/about.html>



Post -Survey : Thank you for your time!

This is about 3 - 5 minutes.

I appreciate your time and
feedback



GLOBE Trained Teachers - Conducting Real Science

<https://www.globe.gov/web/teachers>

Educators

There are tens of thousands of GLOBE-trained educators who implement GLOBE in their classrooms and informal learning spaces using GLOBE's inquiry-based science projects. GLOBE provides educators with professional development opportunities as well as continuing support from the GLOBE Implementation Office, scientists, and GLOBE partners.

Students

GLOBE students have reported **millions** of measurements in the investigation areas of Atmosphere/Climate, Hydrology, Soil, Land Cover/Biology and Phenology. Following an inquiry-based research approach, GLOBE students pose questions and make initial observations about the environment; design investigations and take environmental measurements at or near their schools using GLOBE measurement protocols and appropriate, calibrated measurement equipment; report their observations to the GLOBE database via the Internet; use tools on the GLOBE website to create maps and graphs from their own data, and those of GLOBE schools around the world; analyze their data and other data sets; and as all scientists do at the end of their research, present and publish the results of their analyses.

GLOBE improves student understanding by involving students in conducting real science - taking measurements, analyzing data, and participating in research collaborations with other students, as well as with scientists engaged in cutting-edge Earth Systems Science research.

Resources and Citations for images

<https://www.globe.gov/>

<https://www.earthdata.nasa.gov/news/feature-articles/reading-writing-remote-sensing-nasa-earth-observing-data-go-school>

<https://www.nasa.gov/>

<https://www.space.com/41886-why-nasa-needs-new-logo.html>

<https://pmc.ncbi.nlm.nih.gov/articles/PMC6755219/>

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