

My NASA Data - GLOBE Connections

GLOBE Atmosphere Protocols & Related ESDE Datasets

My NASA Data features resources for GLOBE protocols that provide connections to NASA datasets in the Earth System Data Explorer, as well as background information for the protocol, student data sheets, and related learning activities. For more information on GLOBE or Atmosphere protocols see the resources at the bottom of the page. It is important to note that a particular protocol may support more than one phenomenon and may support phenomena from different spheres. To see how individual protocols relate to a particular phenomenon, you can visit the GLOBE Connection for that phenomenon (i.e., [Urban Heat Island](#), [Hurricane Dynamics](#), [Changing Air Temperatures](#), etc.).

Related Earth System Data Explorer datasets:

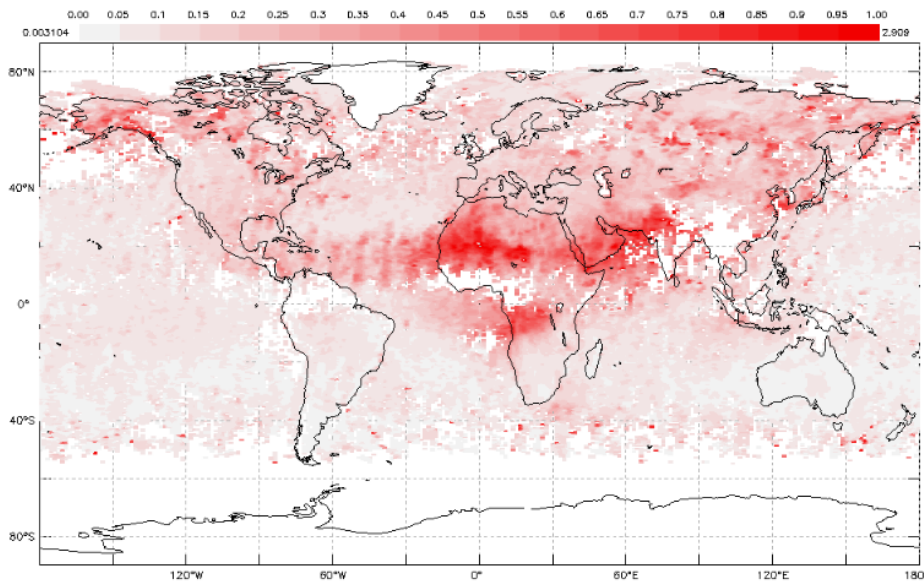
The datasets in My NASA Data's [Earth System Data Explorer](#) which supplement exploration of each protocol are also indicated. These supplemental datasets may measure the same variable or related variables, and they may have a different temporal scale. Specific research questions may also have additional supporting datasets which can be explored. All data available through My NASA Data can be found on the [Data Collections: Earth System Data Explorer](#) page.

Explore the MND GLOBE Connections Datasets spreadsheet to review the range of Atmospheric datasets in the Earth System Data Explorer by visiting the [MND GLOBE Connections Datasets sheet](#).

Atmosphere	
GLOBE Protocol	Earth System Data Explorer Dataset
Aerosols	Daily High Cloud Coverage
	Daily Low Cloud Coverage
	Daily Middle Cloud Coverage
	Daily Total Cloud Coverage
	Monthly Aerosol Optical Depth
	Monthly Low Cloud Coverage
	Monthly Total Cloud Coverage
Air Temperature	Daily Surface Air Temperature
	Monthly Surface Air Temperature
	Monthly Surface Air Temperature Anomaly
Barometric Pressure	Daily High Cloud Coverage
	Daily Low Cloud Coverage
	Daily Surface Air Temperature
	Daily Middle Cloud Coverage
	Daily Total Cloud Coverage
	Monthly Low Cloud Coverage
	Monthly Total Cloud Coverage
	Monthly Surface Air Temperature
	Monthly Surface Air Temperature Anomaly

The GLOBE Atmosphere protocols related to phenomena or datasets supported by My NASA Data **(MND)** are outlined below. Under each protocol, there is a list of related Earth System Data Explorer datasets.

Aerosols

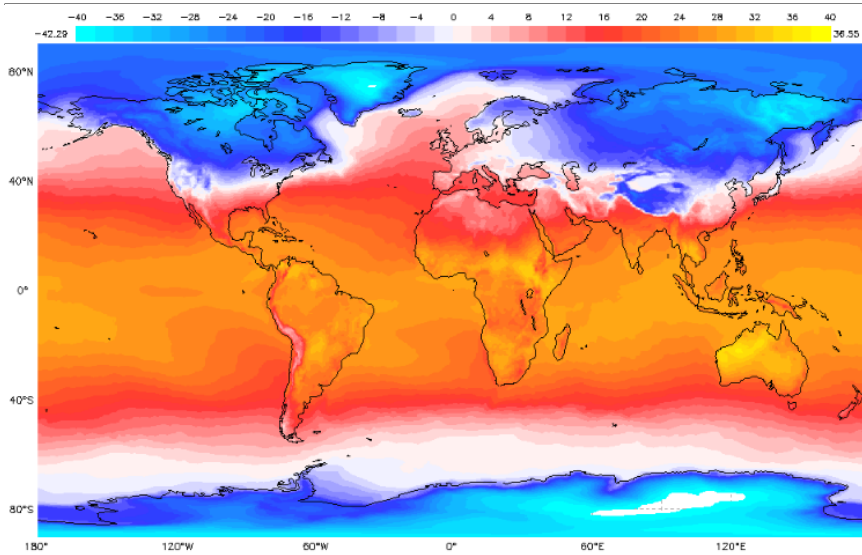


Earth System Data Explorer -

Monthly Aerosol Optical Thickness - July 2019

- **Monthly Aerosol Optical Depth** - Students can compare daily measurements with monthly aerosol optical depth averages. They can examine historical data and seasonal trends.
- GLOBE cloud observations are required with GLOBE aerosol observations. These cloud datasets can be used for comparison with student cloud observations and background research.
 - **Daily High Cloud Coverage**
 - **Daily Low Cloud Coverage**
 - **Daily Middle Cloud Coverage**
 - **Daily Total Cloud Coverage**
 - **Monthly Low Cloud Coverage**
 - **Monthly Total Cloud Coverage**

Air Temperature



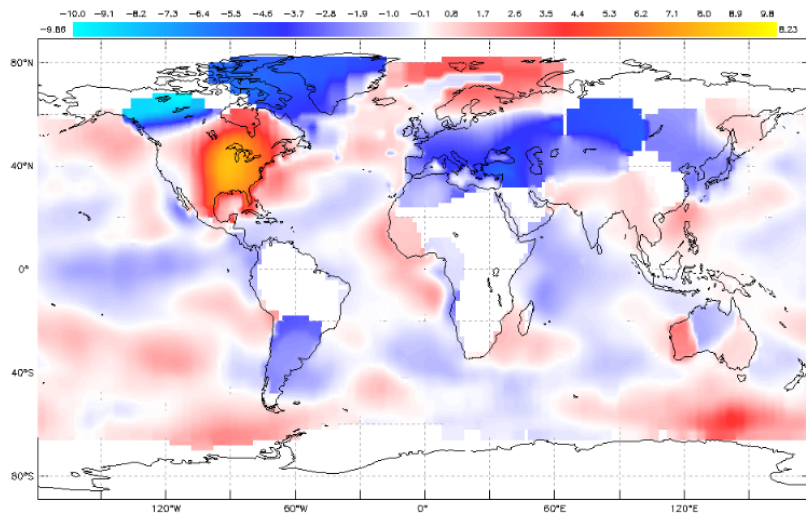
Earth System Data Explorer -

Monthly Surface Air Temperature - February 2019

These temperature datasets allow students to explore daily and monthly temperature averages, as well as monthly air temperature anomalies to help put their own data in context.

- **Daily Surface Air Temperature**
- **Monthly Surface Air Temperature**
- **Monthly Surface Air Temperature Anomaly**

Barometric Pressure



Earth System Data Explorer -

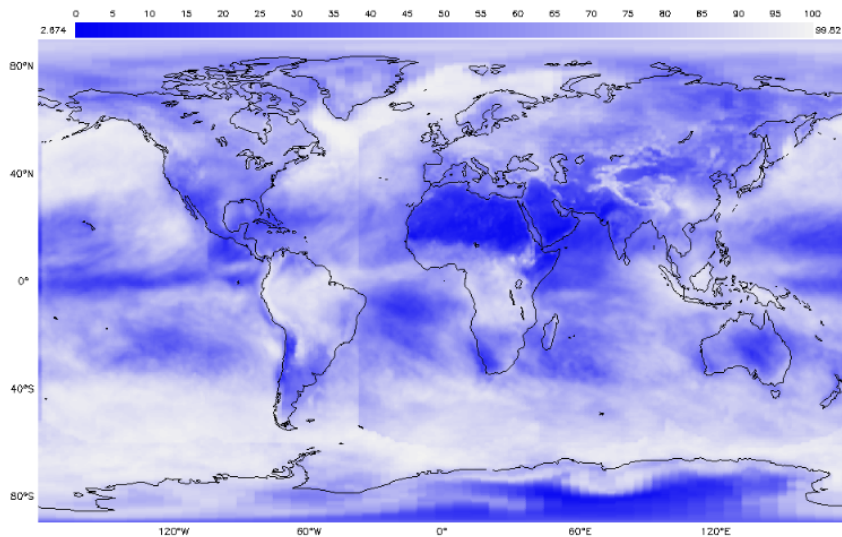
Monthly Surface Air Temperature Anomaly - June 2019

The Earth System Data Explorer does not have barometric pressure data. However, the temperature and cloud coverage data can provide context for barometric pressure data. Temperature and pressure are inversely related. Pressure is related to warm and cold fronts which are also associated with clouds.

- **Daily Surface Air Temperature**
- **Monthly Surface Air Temperature**
- **Monthly Surface Air Temperature Anomaly**

- Daily High Cloud Coverage
- Daily Low Cloud Coverage
- Daily Middle Cloud Coverage
- Daily Total Cloud Coverage
- Monthly Low Cloud Coverage
- Monthly Total Cloud Coverage

Clouds



Earth System Data Explorer - Monthly

Total Cloud Cover - January 2019

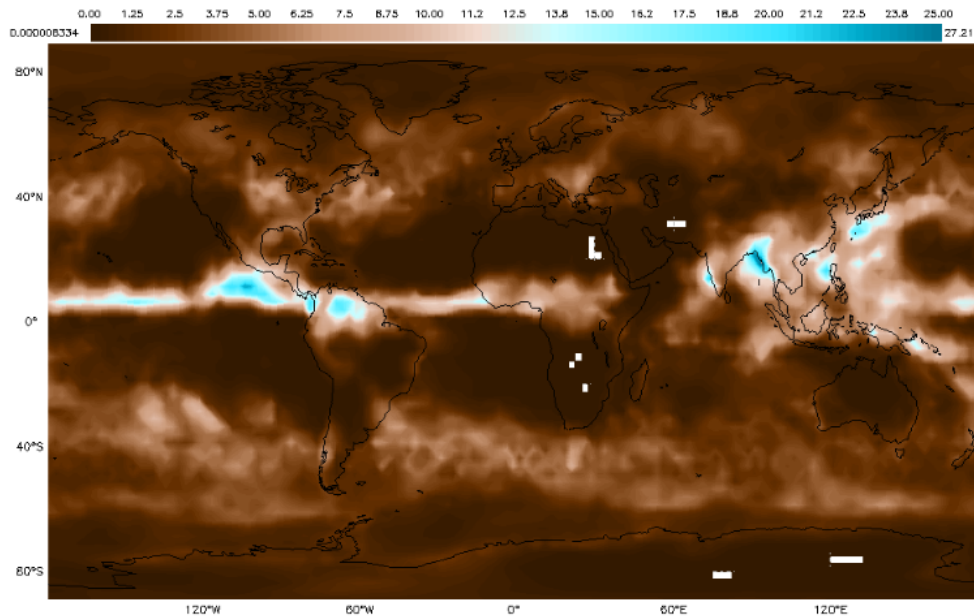
My NASA Data has activities that help students with cloud observations skills. These include:

- [Interactive Weather Observations](#)
- [Modeling Cloud Cover](#)
- [Sky Color and Visibility](#)
- [Cloud Sort Activity](#)

The Earth System Data Explorer includes cloud coverage datasets. In addition, there are data about cloud opacity (how much sunlight clouds absorb) and phase (clouds contain liquid, ice, or mixture of both types). There are also datasets which students can use to compare the net flow of energy towards Earth with and without clouds to see the impact of clouds on the energy budget. Finally, there are precipitation data which can be compared with cloud cover.

- Daily High Cloud Coverage
- Daily Low Cloud Coverage
- Daily Middle Cloud Coverage
- Daily Total Cloud Coverage
- Monthly Low Cloud Coverage
- Monthly Total Cloud Coverage
- Monthly Flow of Energy into Surface by Shortwave Radiation
- Monthly Water Vapor in the Atmosphere
- Daily Precipitation Amount
- Monthly Average Precipitation Rate

Precipitation



Earth System Data Explorer -

Monthly Precipitation - June 2018

Precipitation data are complemented by cloud data and water vapor data.

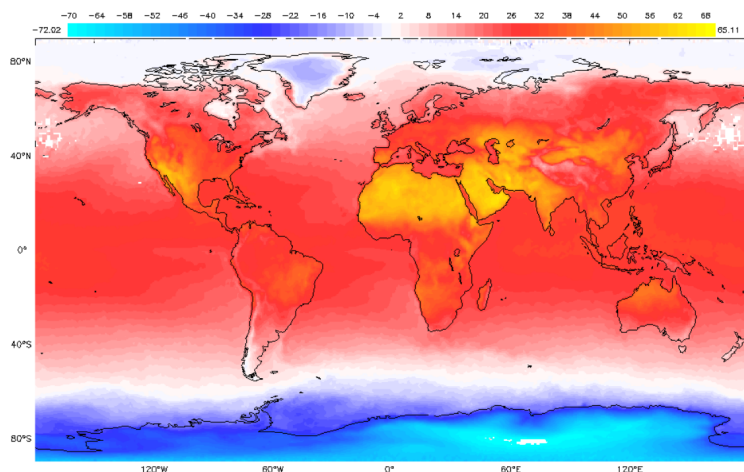
- **Daily High Cloud Coverage**
- **Daily Low Cloud Coverage**
- **Daily Middle Cloud Coverage**
- **Daily Total Cloud Coverage**
- **Monthly Low Cloud Coverage**
- **Monthly Total Cloud Coverage**
- **Monthly Water Vapor in the Atmosphere**
- **Daily Precipitation Amount**
- **Monthly Average Precipitation Rate**

Relative Humidity

The Earth System Data Explorer includes daily and monthly mean relative humidity data. Other datasets that can be used to complement investigations using relative humidity include atmospheric water vapor and cloud coverage data.

- **Daily High Cloud Coverage**
- **Daily Low Cloud Coverage**
- **Daily Middle Cloud Coverage**
- **Daily Total Cloud Coverage**
- **Monthly Low Cloud Coverage**
- **Monthly Total Cloud Coverage**
- **Monthly Water Vapor in the Atmosphere**
- **Daily Precipitation Amount**
- **Monthly Average Precipitation Rate**

Surface Temperature



Earth System Data Explorer -

Monthly Daytime Skin Temperature - June 2019

Skin temperature is surface temperature. Monthly daytime and nighttime skin temperature can be compared to student measurements.

- **Monthly Daytime Surface (Skin) Temperature**
- **Monthly Nighttime Surface (Skin) Temperature**
- **Monthly Surface (Skin) Temperature**

GLOBE Atmosphere Protocol Information

[GLOBE Atmosphere protocols](#) can be found on the GLOBE website. Each GLOBE protocol page will have information for the protocol, data sheets, and related learning activities. [Online e-Training is available.](#)

GLOBE Protocol Bundles

Protocol bundles are designed to use related protocols from different spheres to investigate different topics. The following protocol bundles include at least one atmosphere protocol. The [GLOBE protocol bundles](#) can be found on the GLOBE website.

Visit the following links to explore the Earth System Data Explorer datasets that may be used to support students who are exploring their communities using the GLOBE protocol bundles.

- [Air Quality Protocol Bundle](#)
- [ENSO Protocol Bundle](#)
- [Mosquito Protocol Bundle](#)
- [Ocean Protocol Bundle](#)
- [Rivers and Lakes Protocol Bundle](#)
- [Soil Protocol Bundle](#)
- [Urban Protocol Bundle](#)
- [Water Cycle Protocol Bundle](#)
- [Water Quality Protocol Bundle](#)
- [Weather Protocol Bundle](#)

