National Aeronautics and Space Administration

GLOBE

Meet the Missions

10 November 2026



NASA Earth Crowdsourcing Team

GLOBE Supporting Research

- GLOBE has always collected data in support of Earth system science
- NASA is asking the GLOBE community to contribute data to support active Earth missions
- GLOBE Research Campaigns are designed with scientists supporting NASA missions to enable new science.
- Missions include PACE, NISAR, EMIT, and ECOSTRESS with additional missions being explored.
- GLOBE Observer Connect is transitioning into a webinar series designed to introduce GLOBE volunteers to NASA scientists and missions.



PACE Cloud Challenge

The PACE Clouds Challenge is a collaboration between atmospheric scientist **Dr. Andy Sayer** and the GLOBE Clouds team.

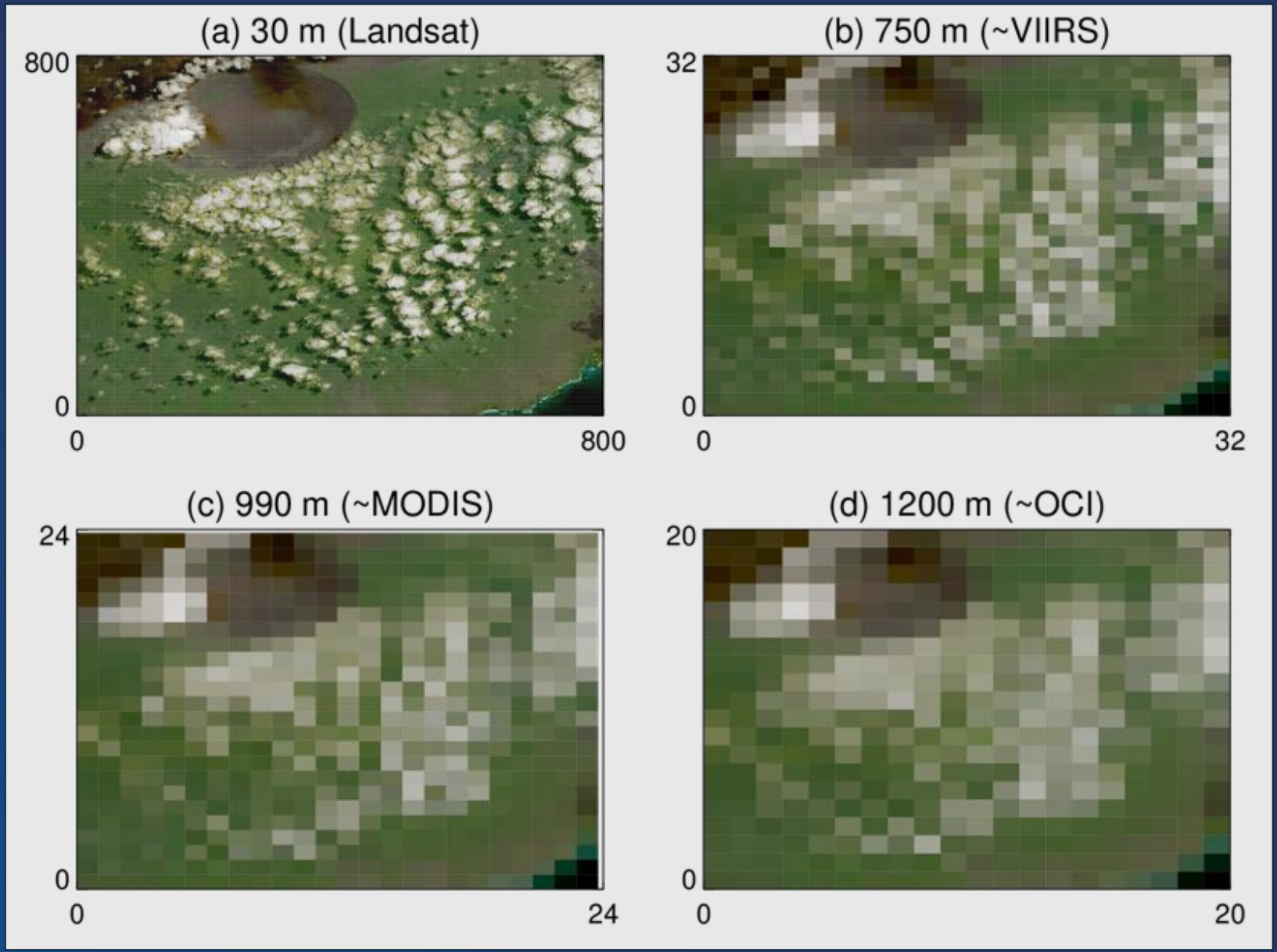
We are analyzing the photos to estimate percent cloud cover, a measurement that PACE also takes. PACE sees a large area. Your detailed view from the ground is helping scientists better understand the wider view from space.

Intensive Observation Period Dates:
PACE Clouds Challenge (15 Sept–1 Nov)
PACE Clouds Challenge: Antarctica (1 Nov–1 Jan 2027)
2027 CAP-NASA PACE Precision Mission (Mar–Jun 2027)



Spatial Comparison of Satellite Instruments

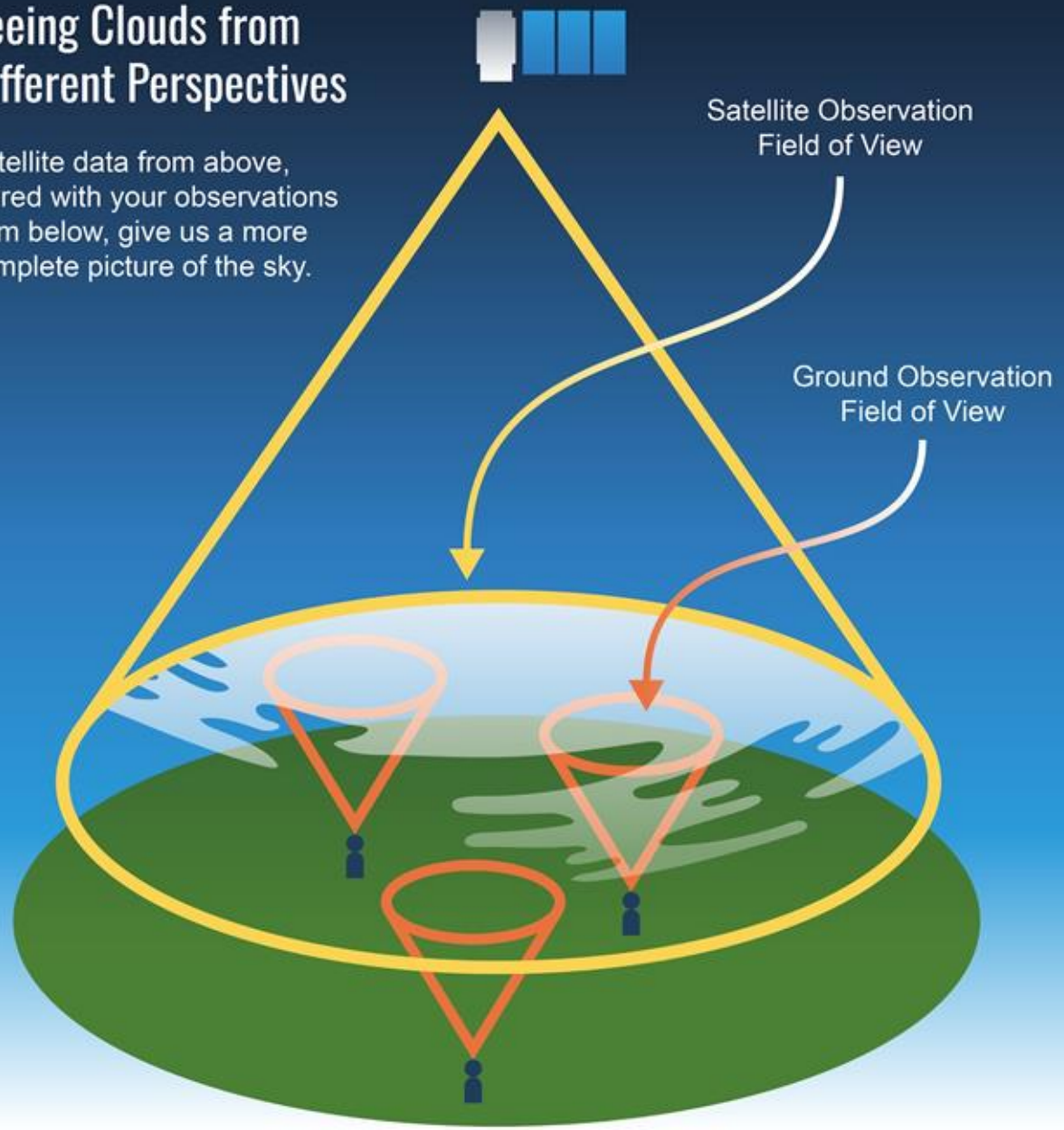
"*We want to be able to identify whether or not each pixel in a satellite image is a cloud or not, because if it's cloudy we want to determine the properties of that cloud, and if it's not cloudy we want to determine the properties of the atmosphere and surface underneath the cloud. So cloud detection is normally the first step in a satellite data processing stream. However, it is difficult to know objectively how well the cloud detection techniques work, especially near cloud edges and in situations where clouds are broken (given our pixels are about 1.2 km across). So the ground observers will help us to assess that.*"—Dr. Andy Sayer (University of Maryland Baltimore County), NASA PACE Satellite



Dr. A. Sayer - UMBC/GSFC PACE Scientist

Seeing Clouds from Different Perspectives

Satellite data from above, paired with your observations from below, give us a more complete picture of the sky.



Thank you for Participating in the PACE Clouds Challenge

During the challenge period: 15 Sept - 1 Nov

We received about 113,000 photos from over 10,600 observations
over 6,000 Up Photos within PACE target overpass



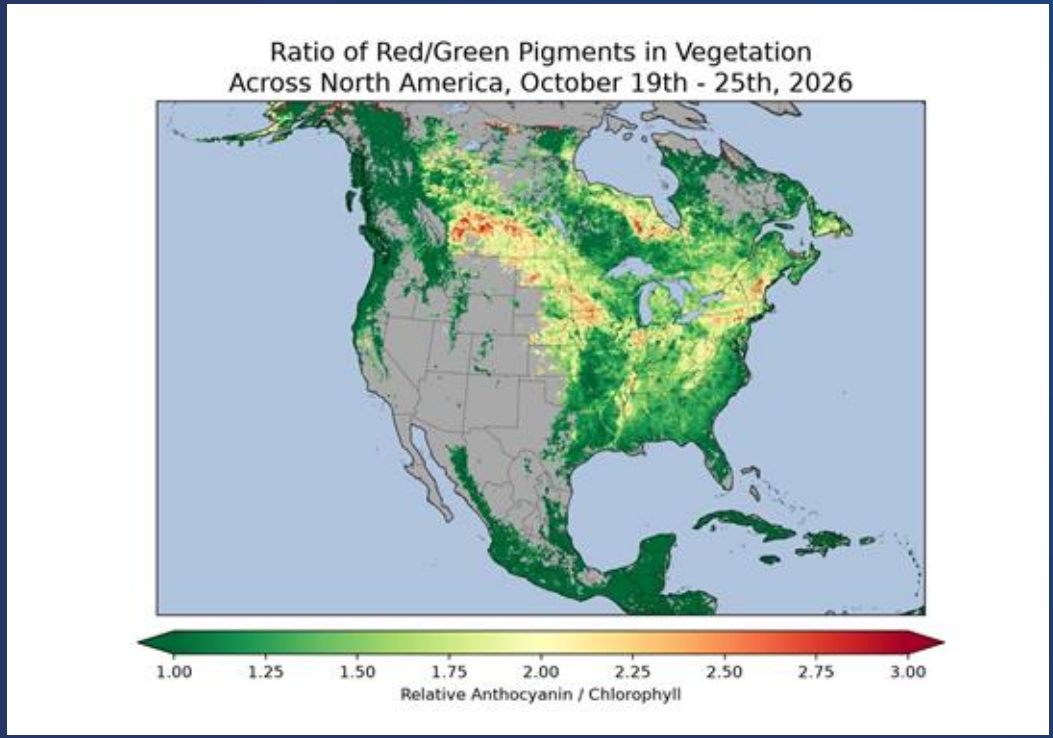
Example of Computer Vision Augmentation

PACE Phenology
North American Phenology Campaign

GLOBE for Research: Vegetation

Collect Observations of Leaf Color

Use the GLOBE Observer app to photograph fall color. Scientists are using PACE data to create the first global maps of leaf color change. Your photos help verify how well the new product is working.







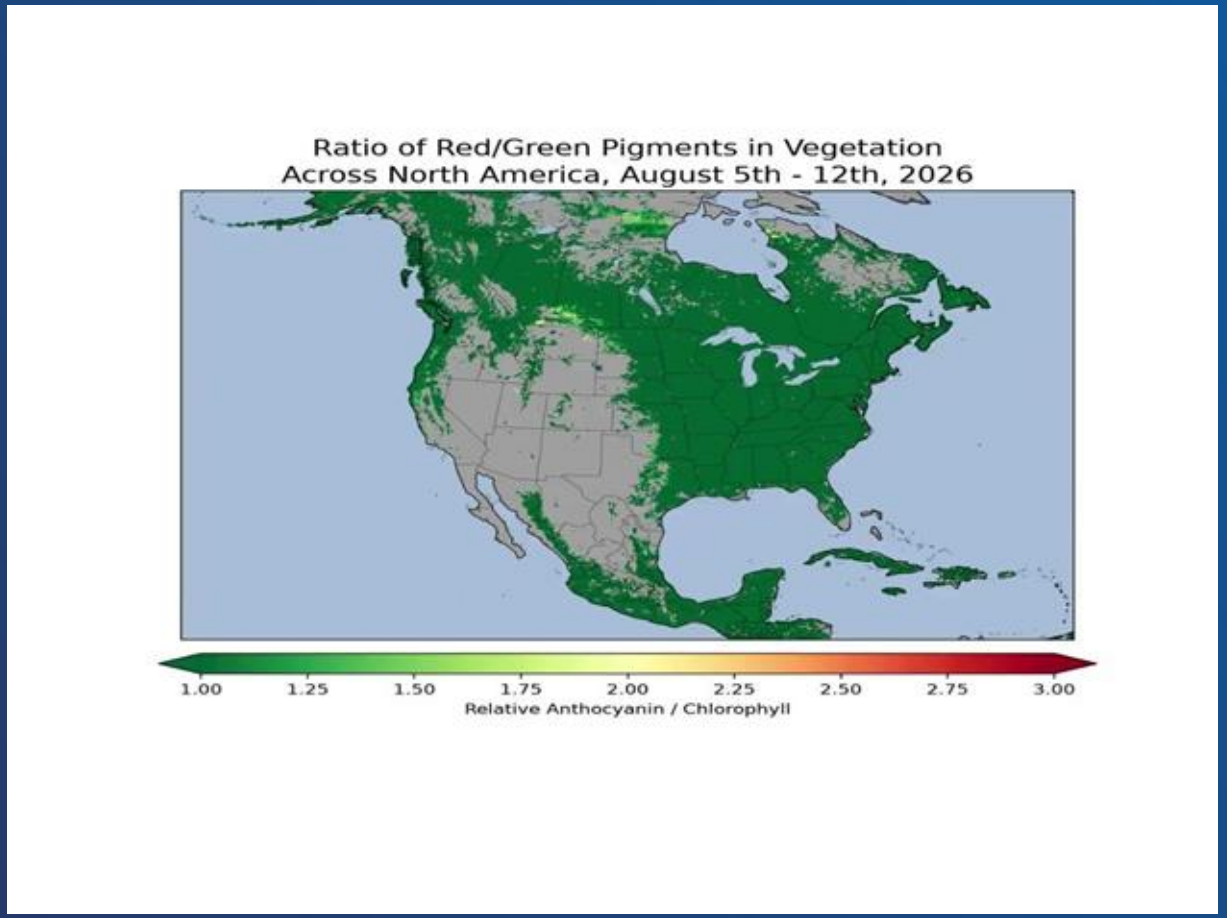
PACE Phenology
North American Phenology Campaign

GLOBE for Research: Vegetation

Current Observations

- 771 land cover observations at 492 sites
- 2,059 green-down leaf observations at 55 sites





GLOBE Snow Campaign 2026

GLOBE for Research: Snow

Observe snow wetness and color

Take a land cover observation using the GLOBE Observer app showing snow on the ground. Tell us how dry or wet the snow is by trying to make a snowball that holds together. Then report the snow color.

Snow changes color when dust, plant material, or other particles settle on the surface.

NISAR, a new satellite, and EMIT, an instrument on the International Space Station, are new ways to study snow.



10/22/2026
"Snowball No"

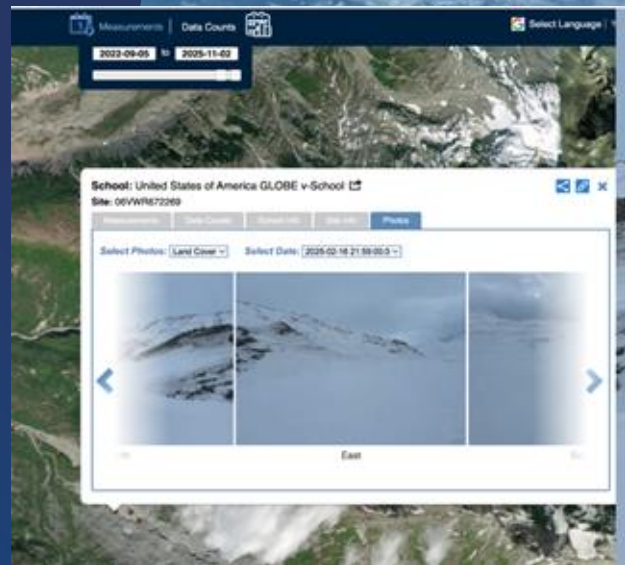


10/26/2026
"Snowball Yes"
Very wet. Water squeezed out.



11/01/2026
"Snowball No"
Faceted Crystals, Sugar Snow

Snow color





2/16/2025
Canwell Glacier, Alaska

Exposed rock, Brown snow

GLOBE Agriculture Campaign

GLOBE for Research: Farms

Observe farm fields

Use the GLOBE Observer app to photograph agricultural fields. Note the field condition. Does it have growing crops or bare soil? How tall is the crop?

If you have permission from the landowner, you can take additional measurements of the crops.

NISAR, SWOT, and EMIT are all NASA satellites providing new ways to study crops.



Examples of field conditions

Crop Growing



Bare Soil - Tilled



Bare Soil - Untilled



Crop Residue



Fallow (plants that aren't a crop)



Open Water (flooded field, ex: rice paddy)



GLOBE HEAT28 **Campaign**

GLOBE for Research: Temperature

Measure air and surface temperature

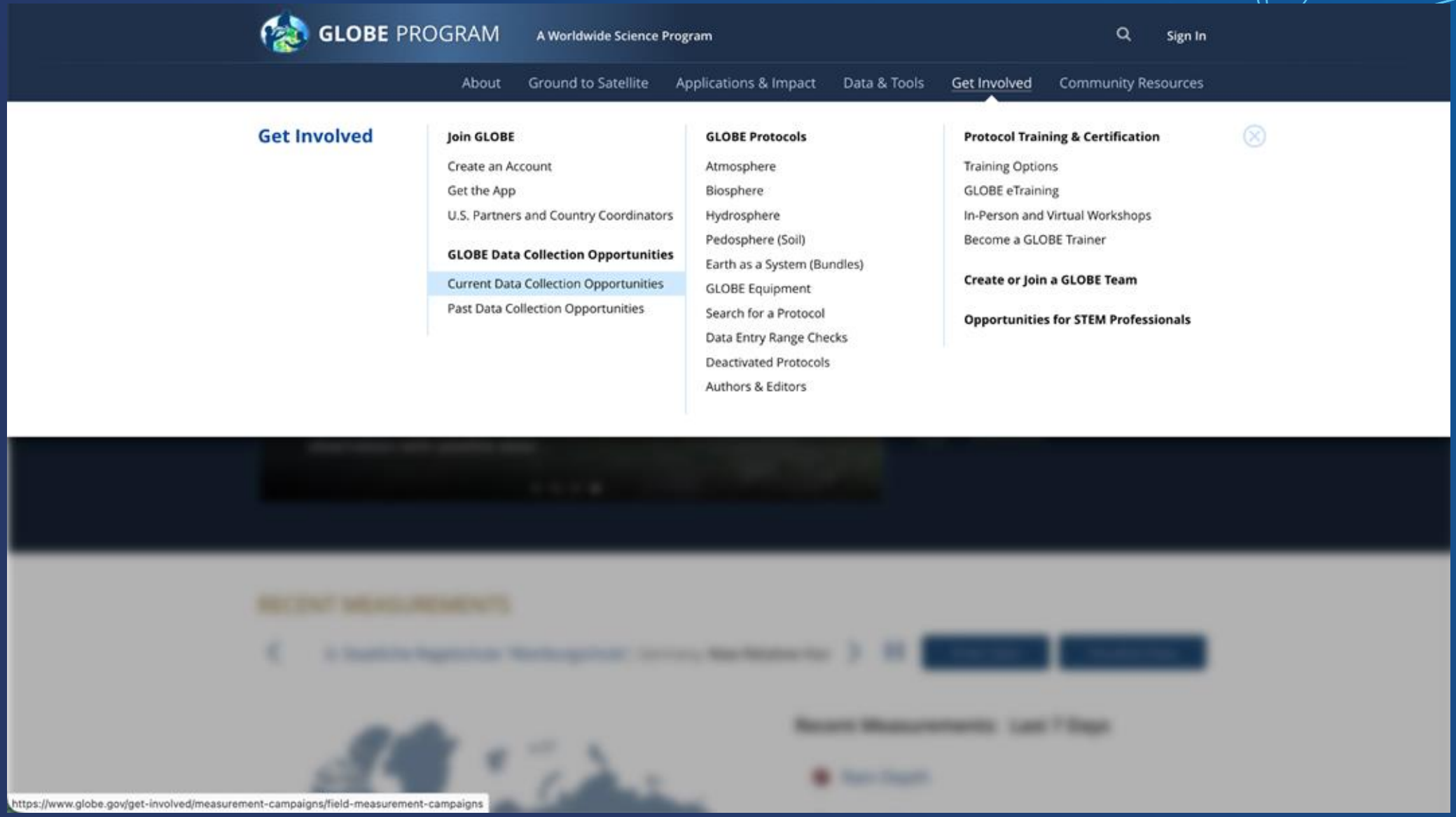
The HEAT28 campaign is an initiative to combine ground, airborne, and satellite data about temperature and other environmental variables into a virtual model (“digital twin”.). GLOBE will contribute by measuring air and surface temperature while airborne flights or other instruments are overhead. For example, ECOSTRESS flies on the International Space Station and measures surface temperature. Ground observations of temperature will help refine ECOSTRESS measurements.

The campaign is planned for Los Angeles to contribute to planning for the 2028 Summer Olympics. Other regions are welcome to contribute data.



NASA’s ECOSTRESS Maps L.A.’s Street Temperatures. (NASA/JPL-Caltech)

GLOBE Research Campaigns
Learn more on the GLOBE website



Current Data Collection Opportunities

- GLOBE Field Cover Research Campaign
- PACE Clouds Challenge
- PACE Clouds Challenge: Antarctica
- Leaf Change Tracking for the PACE Mission
- Trees Around the GLOBE
- Past Data Collection Opportunities



Collect data for NASA missions! Join others around the world collecting ground-based observations for science.

Current Data Collection Opportunities



GLOBE Agriculture Campaign: Field Cover Intensive Observation Period

Starting soon! – March 2027
Locations: Focus on S. America, India, and California (U.S.) but open to all GLOBE Countries Growing Crops

Scientists supporting NASA's NISAR, SWOT, and EMIT missions are requesting your help collecting ground observations of agricultural fields to improve satellite observations. GLOBE volunteers in regions in which the growing season is starting can contribute now through March by submitting land cover observations. Observations are especially needed in South America, India, and California.



PACE Clouds Challenge

15 September – 1 November 2026 (Still accepting data!)
Location: Global

NASA scientists working on the PACE satellite mission are asking for your help to collect Clouds observations when the PACE satellite is passing over your location. PACE Atmosphere lead, Dr. Andy Sayer, is interested in comparing your ground-based observations of clouds to PACE data to get a sense of how well PACE measures cloud edges and total cloud cover. Dr. Sayer is specifically looking for GLOBE Clouds observations taken within a 5-minute window of PACE passing overhead during the PACE Clouds Challenge, which will run from 15 September to 1 November 2026.

GLOBE Research Campaigns
Learn more

- Follow GLOBE on Facebook, Instagram, or X
- Check the GLOBE Observer app for campaigns near you.
- Check the GLOBE Newsletter for regular updates

