



GLOBE North American Fall Phenology Campaign: Measuring Green-Down





The Phenology Campaign

- Fall: August to December
- Spring: February to June
- Join a network of citizen scientists from pre-K to adults tracking spring and fall seasonal change

What is GLOBE?

- GLOBE provides the public worldwide with opportunities to participate in Earth science data collection and the scientific process.
- GLOBE is sponsored by NASA.
- By the numbers:
 - Over 290 million measurements
 - Over one million citizen scientists
 - 127 countries

www.globe.gov





What is Green-Down?

- Green-down marks the end of the growing season for many plants.
- Leaf color change is caused by the breakdown of chlorophyll. The color will vary by species.
- Plant green-down is also called senescence. It is initiated when environmental conditions change:
 - Fewer hours of sunlight and lower temperatures in temperate regions.
 - Drier and warmer temperatures in desert areas.

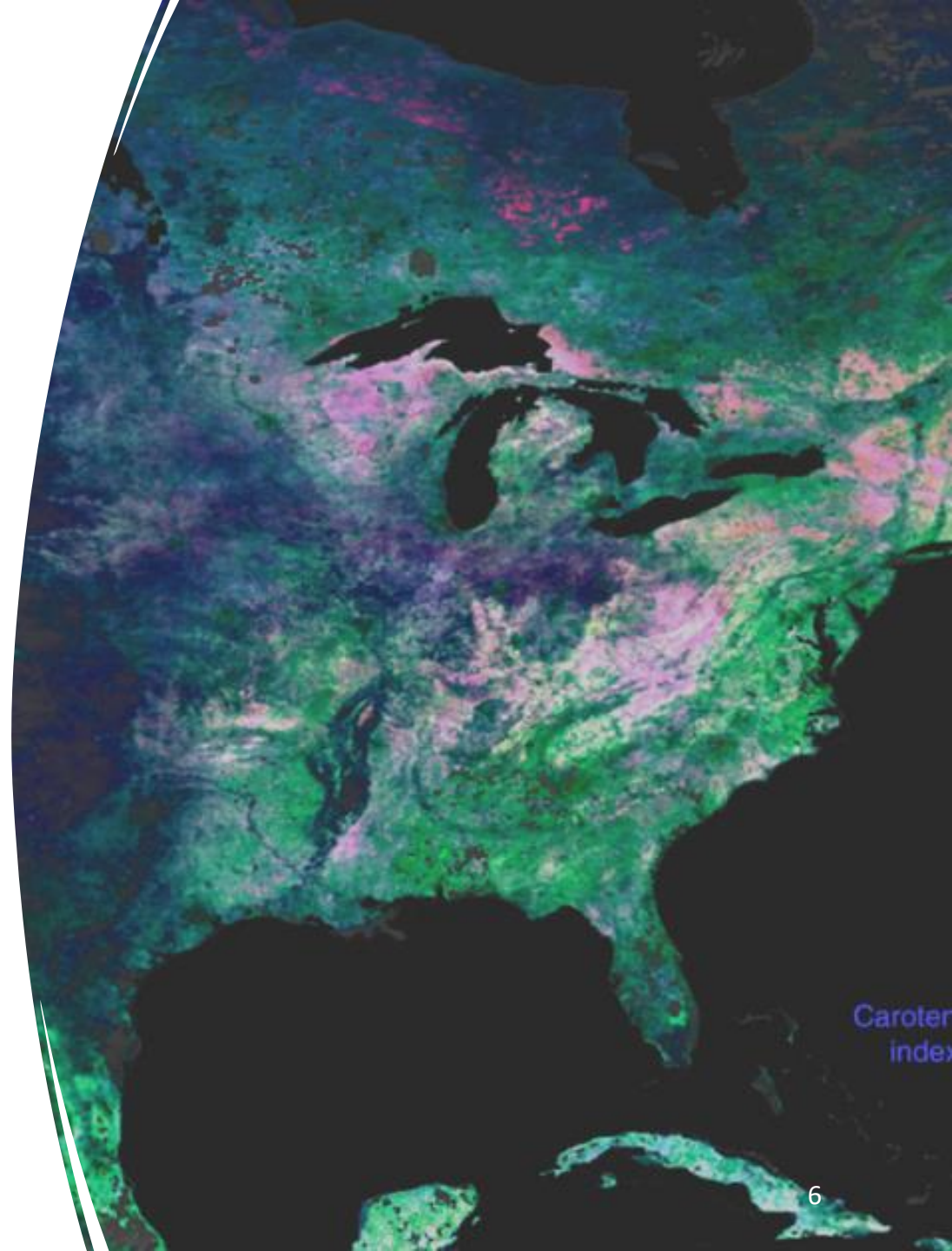
This year there are two ways to participate!

1. Monitor leaves on an individual tree using GLOBE's Green-Down protocol.
2. Take landscape photos for NASA's [PACE satellite mission](#) using the Land Cover tool in the GLOBE Observer app.



Leaf Color Change with PACE

- The PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) satellite launched in 2024 and is giving us a new view of leaf color change.
- NASA scientists working on the PACE satellite mission are asking for your help collecting ground-based observations!



Carotenoid
index

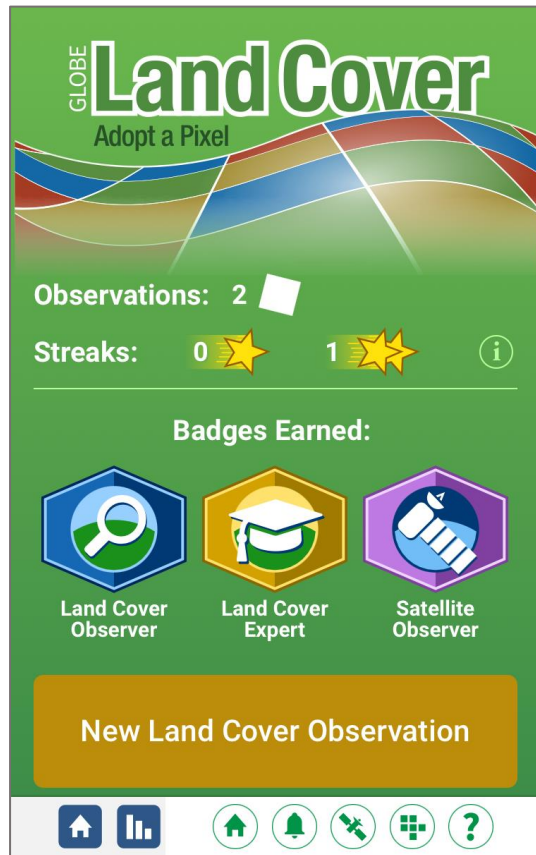


Get Started: Landscape Photos!

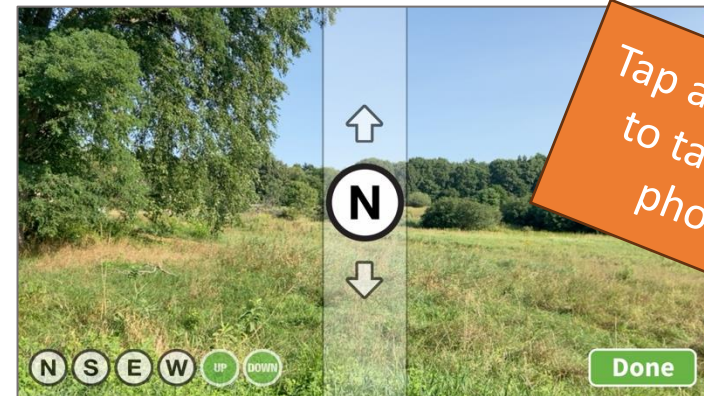
- Download [the GLOBE Observer app](#)
- Choose a location where you can see the forest landscape
- One-time photos or repeat measurements!

Take your landscape photos

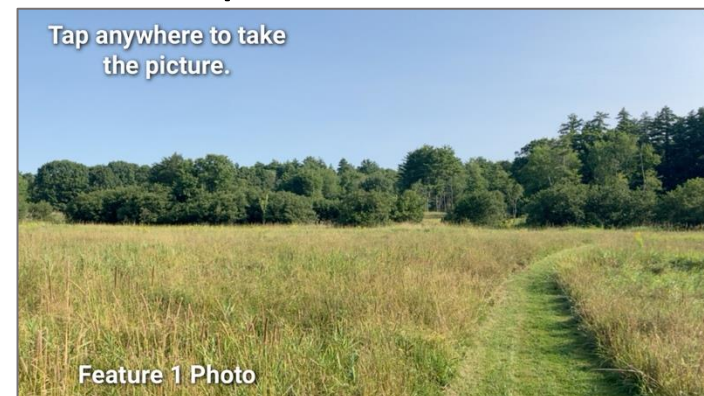
1. Log in and open the Land Cover Tool.



2. Take photos in each cardinal direction and up and down.

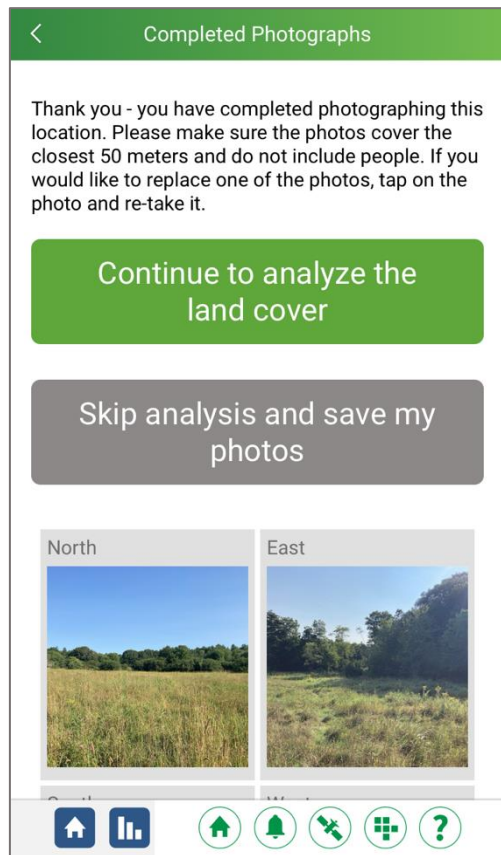


3. Take a "Feature Photo" of the landscape with the most color.

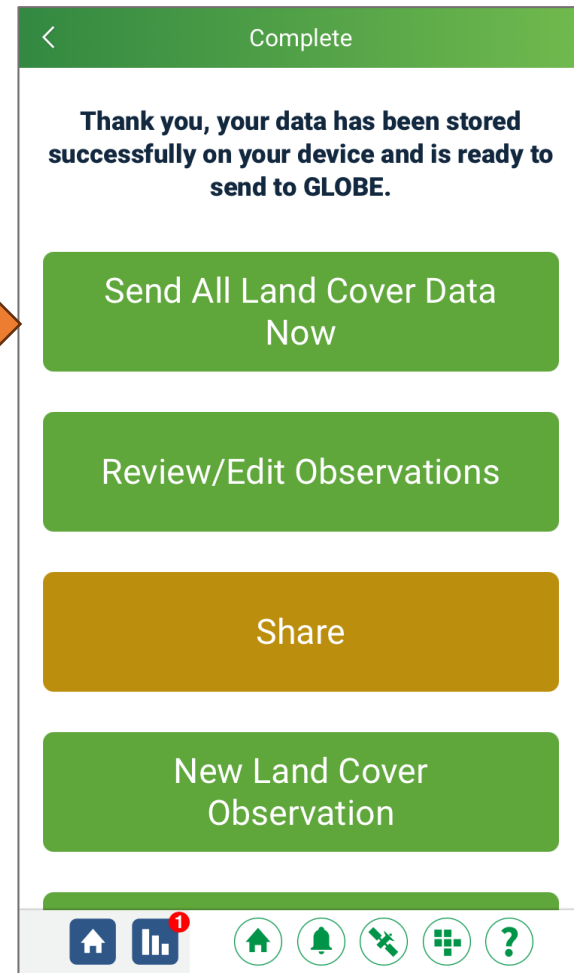
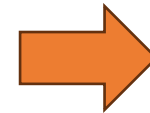


Take your landscape photos cont.

4. Optionally analyze land cover, OR just click “save my photos”



5. Submit your data!



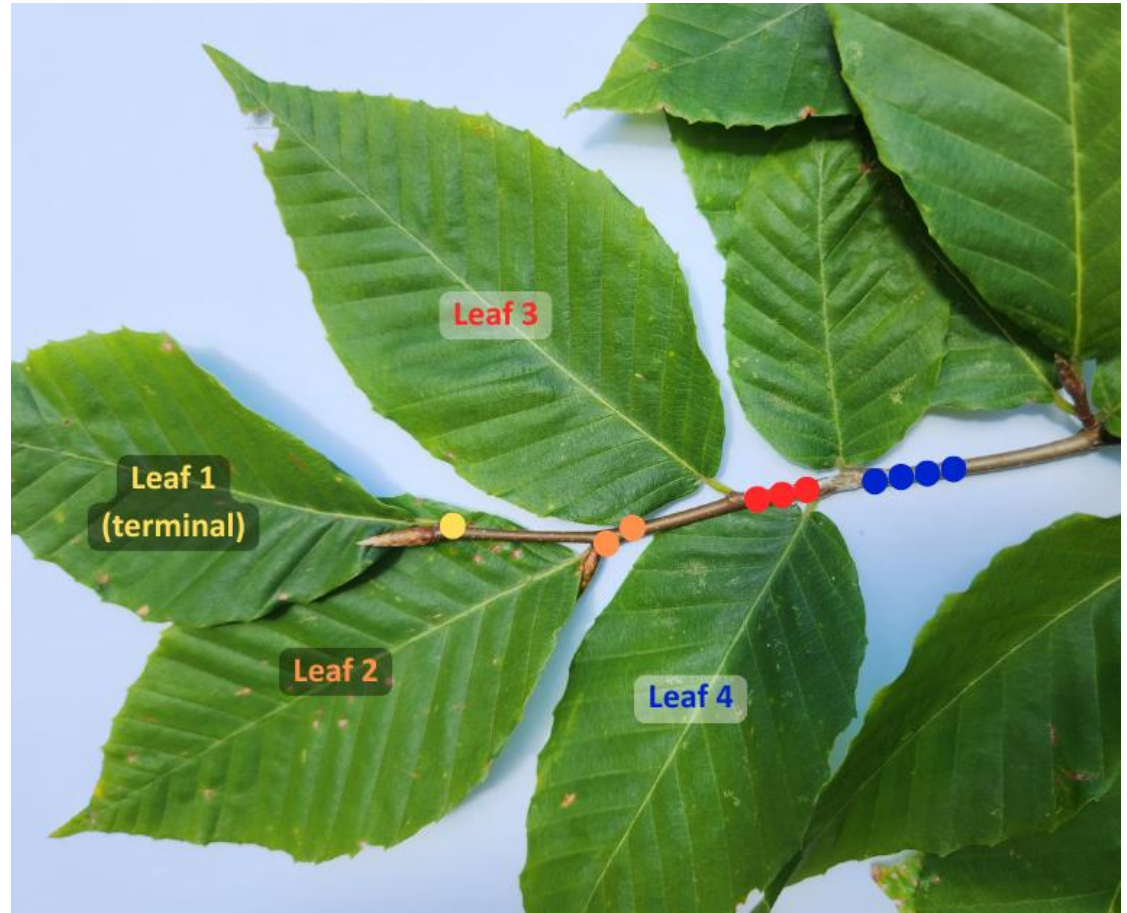
Get Started: Monitor Leaves!

- Define your site and pick your tree:
 - If possible, choose a site away from buildings that is not fertilized
 - Find an accessible tree where you or your participants/learners can reach the leaves
 - Mark the branch with flagging tape or a ribbon
 - Identify your tree!



Tag your leaves

1. Locate the leaf at the end of the branch.
2. Label it by marking one dot on the branch next to the leaf stem with a permanent felt tip marker.
3. Locate the three leaves on this branch closest to this terminal leaf.
4. Label these leaves by marking two, three, or four dots next to their stems on the branch.



Measure Green-Down

Visit your tree twice a week (or more!). At each visit:

1. Use the GLOBE Plant Color Guide to estimate the dominant color of each leaf.
2. Record the color code on your data sheet or directly into the GLOBE Observer app.
3. Upload your data through the GLOBE Observer App or online GLOBE Data Entry.

➤ Tutorials available!



A decorative image on the left side of the slide showing several autumn leaves in shades of yellow, orange, and red, with a white curved line separating them from the text area.

Resources online

- Protocol how-to videos
- Materials and kits for community-based organizations
- Implementation guides for formal educators
- Career-oriented scientist Q&A videos
- Links to resources that support the content

Request a Green-Down Kit

- Phenology rulers
- Data Sheet
- Field Guide
- Informal educator/facilitator information packet
- Formal educator implementation sequences





Stay Informed

Campaign webpage



Sign up for emails



Thank you for coming!

Another opportunity with PACE + GLOBE:

Learn more about the [GLOBE Clouds Challenge](#)
September 15 – October 15, 2026.

Your observations will provide additional
insight and verification to scientists developing
cloud products with PACE data.

Learn more about PACE at an [upcoming GO
Connect webinar](#) on August 27 at 12 pm ET.

[Cloud Challenge training webinar](#) on
September 9 at 3pm ET.

