

Quick Facts

for Informal Educators



Why measure tree height?

Tracking how trees are changing over time can help us estimate the number of trees that make up an area. Tree height is the most widely used indicator of an ecosystem's ability to grow trees. Observing tree height allows NASA scientists to understand the gain or loss of biomass which can inform calculations of the carbon that trees and forests either take in from or release into the atmosphere.

What do trees have to do with Earth's carbon budget?

Trees cool and moisten our air and fill it with oxygen and can help balance our carbon budget. Forests are considered one of the world's largest banks for all of the carbon emitted into the atmosphere through natural processes and human activities. They cover about 30 percent of Earth's land surface, while accounting for 50 percent of plant productivity. As much as 45 percent of the carbon stored on land is tied up in forests. Trees undergo photosynthesis. Photosynthesis is a complicated process where carbon dioxide and water are converted to glucose (a simple sugar) and oxygen.

Why are we also measuring tree circumference?

Tree circumference measurements can be used to estimate the volume, biomass, and carbon storage of trees.

What is ICESat-2?

In addition to measuring the height of Earth's ice sheet, sea ice, and glaciers, the NASA Ice, Cloud, and land Elevation Satellite-2 (ICESat-2) will also survey heights of the world's forests, lakes, urban areas, cloud cover and more, adding a third dimension of Earth from space.

<https://icesat-2.gsfc.nasa.gov/>

What can I use to compare the tree height data I collected to the data from ICESat-2?

Once the data for ICESat-2 is released to the public, the data will become part of a great NASA visualization tool called NASA EOSDIS WorldView. NASA EOSDIS WorldView allows you to visually explore the past and the present of our dynamic planet from the satellite's perspective. Select from

an array of stories to learn more about Worldview, the satellite imagery we provide and events occurring around the world. Please stay tuned for any announcements for when the ICESat-2 data is available for comparison.

<https://worldview.earthdata.nasa.gov/>

What is the purpose of comparing my GLOBE Tree Height data with the data from NASA missions?

NASA GLOBE Observer Tree height data can serve as a source of data comparison for the ICESat-2 satellite. ICESat-2 utilizes an onboard laser altimeter system to measure the height of our planet, one photon at a time. The technology of ICESat-2 can measure the height of trees all around our planet. NASA GLOBE observers can share their data with NASA scientists and can be part of vital missions that make NASA science even better.

How can scientists and researchers use my tree height and tree circumference observations?

Tracking how trees are changing over time can help estimate the amount of trees that make up an area's biomass – the total mass of organisms in a given area or volume

Taking these observations can serve as a step to help scientists and researchers understand how trees help us balance Earth's carbon budget.

How many tree heights should I measure?

Record the height of trees in as many places as you would like. Also, you can measure the same tree many times, in order to see potential changes to tree heights over time.

What defines the top of a tree and the base of a tree?

Top of a tree: also known as the canopy or crown of a tree, it is the uppermost part of the tree.

Base of a tree: the lowest part of the tree trunk that is still above ground

Why do I need to report on surface conditions?

Surface conditions are an important part of trees observations. Knowing the local environmental conditions will allow for a much more robust dataset that can be used in defining the local ecosystem. By reporting surface conditions, you are also providing additional data to assist during analysis and satellite validation.

