

PROGRAM
3

All About Trees

Learning goal: Learn how to use tape measures and clinometers to measure tree circumference, height and canopy cover, and collect and share data with scientists using GLOBE Observer app. Understand how these measurements reflect tree health, and how the presence and health of trees contributes to human and ecosystem health.

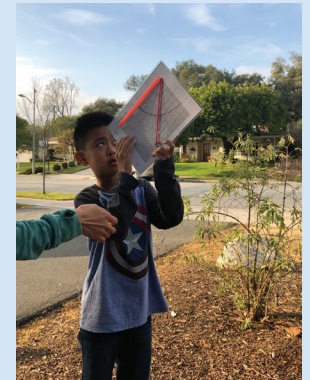
Audience level: Families and children age 7+

Length of program: 90 min.

Supplies needed: (equipment, books, apps)

- Smart device with data plan (for outdoor activity)
- Mobile Hotspot/MiFi (optional)
- 50-yard tape measures (1 per group) or a roll of yarn or string
- Ruler or yardstick
- Digital clinometers (optional; 1 per group)
- Clipboard (2 per group; one for Build a Clinometer activity, one for the Tree Height Comparison Activity Guide)
- Pencils
- [Tree Height Comparison Activity Guide](#) (one set per group)
- 1 to 2 trees in the proximity of the library and safe enough for participants to measure and observe

- ACTIVITY: Build a Clinometer activity materials:
 - Cardstock for clinometer template printout (thicker the better; one per participant)
 - Clinometer template and instructions - choose one:
 - [Clinometer Template #1](#) (one per participant)
 - [Clinometer Template #2](#) (easier for younger participants; one per participant)
 - Straw
 - String
 - Tape
 - Scissors
 - Pen or pencil
 - Hard surface (clipboard, book, or cardboard)
 - Weight (beads, paper clip, or metal washer)



- ACTIVITY: Leaf Printing
 - Construction Paper
 - Paint
 - Leaves

Booklist:

- Used in program:
 - Watts, Tom. *Pacific Coast Tree Finder*. Nature Study Guild, 1973.
- Displayed:
 - Arnosky, Jim. *Crinkleroot's guide to knowing the trees*. Simon & Schuster Books for Young Readers, 1992.
 - Kay, Paul Jr. *If trees could talk*. Vantage Press, 2010.
 - Lipkis, Andy. *The simple act of planting a tree*. J.P. Tarcher, 1990.
 - Lyon, George Ella. *ABCedar: an alphabet of trees*. Orchard Books, 1989.
 - Seifert, Patti. *Exploring tree habitats*. Mondo, 1994.
 - Webb, Barbara. *Los árboles : pulmones de la Tierra*. Rourke Educational Media, 2014.

Apps:

- NASA [GLOBE Observer](#) Trees module

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- Include in the publicity assets that sunscreen and appropriate clothing is required for the outdoor observation activity.
- Download, play and familiarize yourself with the features in the [NASA GLOBE Observer Trees Module](#).
 - Watch [Introduction to GLOBE Observer: Trees](#) video
 - Review [GLOBE Tree Height Comparison Activity Guide](#).
- Review Trees Powerpoint slides ([Deck 1](#) | [Deck 2](#)) for talking points.

Let the program begin...

1. Divide participants into groups of 2-4 and go over program agenda.
2. Go over safety rules and ethics guidelines and collect liability waiver and/or photo release form.
3. Have the participants stand and imagine being trees. Describe tree parts bottom to top and the benefits they contribute to the ecosystem (roots holding soil and drawing up minerals, bark absorbing toxins, leaves producing oxygen, water vapor and shade, and absorbing carbon dioxide).
4. Discuss [GLOBE's Trees Around the World campaign](#) and Trees app, and compare taking tree measurements with a doctor's visit (taking tree heights/weights to measure growth and health).
5. Highlight the importance of having Neighborhood Scientists collect and share tree data with the researchers to compare and validate the data collected using satellites.

6. Start ACTIVITY: Build a Clinometer with step by step demonstration.
7. Go over the steps to set up a GLOBE Observer account and use it to collect and share data.
 - For participants who do not wish to create a personal account, ask them to sign in using the library's GLOBE Observer account.
8. Start ACTIVITY: Outdoor Observation
 - Bringing tools and [GLOBE Tree Height Comparison Activity Guide](#), take groups to park or the tree site. Demonstrate how to use the tape measures and clinometers, then assist groups taking data as needed (15-20 minutes).
 - Gather the groups when time is up, allow 5 minutes to compare observations and debrief.
9. For younger participants, return to the program room and start ACTIVITY: Leaf printing craft with leaves from local trees.
10. For teens and adult participants, remain outdoors for 15 minutes and start ACTIVITY: Tree identification activity using the book, "Pacific Coast Tree Finder". Return to the program room after the activity. Allow 5 minutes to compare observations and debrief.

