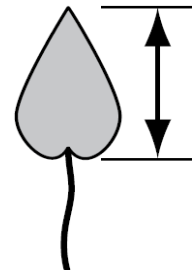# Activity 3 – First Leaves

1) **Keep observing the branch you selected**
   - Once you see a bud opening (= you can see the tip of green leaf), record "budburst" to your data sheet
   - All 4 buds may not open at the same time

2) **Measure the length of a leaf that grows from the bud**
   - measure and record the length at least twice a week
   - use simple ruler to measure the length in mm
   - measure the leaf without the stem
   - continue measuring the leaf until it stops growing

Tree and Shrub Green-Up					
Date (day & month)	Leaf 1 (dormant, swelling, budburst, leaf length (mm))	Leaf 2 (dormant, swelling, budburst, leaf length (mm))	Leaf 3 (dormant, swelling, budburst, leaf length (mm))	Leaf 4 (dormant, swelling, budburst, leaf length (mm))	Data entry ✓

3) **Take pictures regularly**
   - Share the photos at the Discussion forum.

4) **Optional: Record temperature and precipitation**
   If you have an Atmosphere site nearby, keep recording temperature and precipitation data along with observing the leaves and see if there is any link.

And do not forget to continue taking pictures of the tree using GrowApp!

The activity should be completed up to May 20th.

ℹ️ **To earn a Collaboration badge, share a picture of your tree with leaves.**

🖥️ **Continue sharing pictures and results within your school team using online tools such as Padlet or Wakelet.**

Carbon Activity 3 – Carbon in my Tree

You students will:

- Learn that trees of different age bind different amount of carbon.
- Calculate, how much carbon is stored in your tree.

Basic information

Growing trees build in carbon into their biomass. CO_2 is bound from the air by photosynthesis and released back by breathing. Carbon is also released by decay (fallen leaves, old wood).
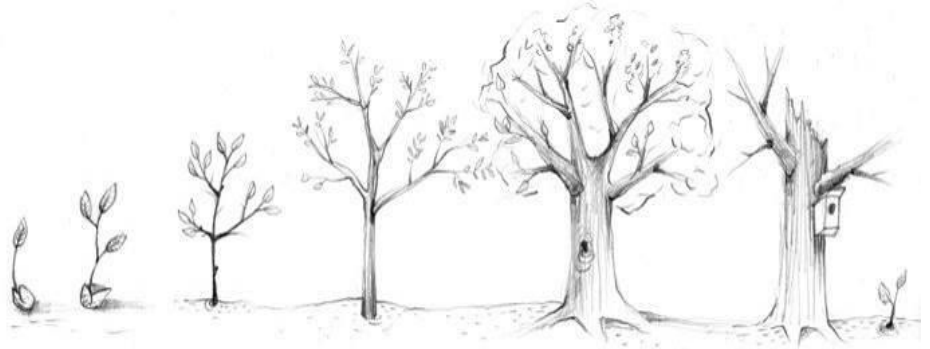
The CO_2 balance (carbon intake vs. release) changes over tree life cycle.

Young fast-growing tree is a natural carbon storage, consuming more CO_2 than releasing. **Adult mature tree** still grows, but the total wood volume and the carbon stored in the wood increases very slowly. While mature trees still need carbon dioxide for growth, much of their biomass is lost every year: branches and trunks of aging trees break and fall. As an **adult tree ages, the CO_2 balance comes close to zero.** When a tree dies, it does not intake carbon anymore. As the wood decays, carbon is gradually released to the soil and into the air.

Carbon cycle of a tree is visualized in an animation by NASA:
https://svs.gsfc.nasa.gov/vis/a010000/a010000/a010006/index.html.

Carbon in my Tree Activity

- Find out how old your tree is. Students can ask at school at the town hall, search a village chronicle or even ask their grandma😊 If you can't find out, you can use a Tree age calculator.
- Measure a circumference of your tree and calculate, how much carbon is stored in it. Download instructions and calculation table here.

Optional

- On the way to your tree or close to your school, search for: 1) young tree, 2) mature tree, 3) very old tree, 4) dead tree
- Take a photo or draw a picture of these trees. Discuss and write, how much carbon the trees store and bind. Share the result on the campaign discussion forum.

Add your findings and pictures to the online Activity book. Share the result on the campaign discussion forum.

Green-up

Tree and Shrub Green-Up Data Sheet

School Name: _____ Study Site: _____

Observer Names:_____

Plant Scientific Name: Genus_____ Species: _____

Plant Common Name: _____

Green-Up Cycle:_____ Year:_____

Tree and Shrub Green-Up					
Date (day & month)	**Leaf 1** (dormant, swelling, budburst, leaf length (mm))	**Leaf 2** (dormant, swelling, budburst, leaf length (mm))	**Leaf 3** (dormant, swelling, budburst, leaf length (mm))	**Leaf 4** (dormant, swelling, budburst, leaf length (mm))	**Data entry** ✓

Check the last column in the green-up table to keep track of data submitted.

Comments *(date each comment):* _____

_____

_____