

Carbon cycle: Possible field investigations

Field investigations are somewhat limited given the scale of the carbon cycle. Students can make use of opportunities to make observations and engage in discussions (see student activities) to consider aspects of the carbon cycle and consider the impacts of change.

As far as field data collection is concerned, probably the best option is to consider investigating tree biomass and carbon content. This is easily done in the Imlil valley and requires very little equipment.

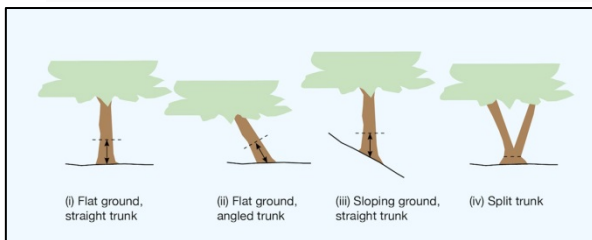
Investigating tree biomass/carbon content

Students can conduct a relatively simple and straightforward investigation into tree biomass and carbon content. This can readily be calculated for walnut trees which are abundant in the Imlil valley including the grounds of the Kasbah du Toubkal. Comparisons can be made with other tree species in the valley such as apples, cherries or newly planted pine trees. Comparisons could also be made with tree species in the UK. Mann-Whitney can be used to compare results for two species/locations to see if there is a significant difference in carbon storage.

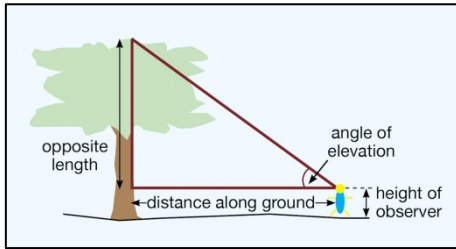
The following extract is from the Field Studies Council which has some excellent resources

(<https://www.geography-fieldwork.org/a-level/water-carbon/carbon-cycle>)

- (a) Circumference of tree. Use a tape measure to measure the circumference of the tree at 1.5m from the base.



- (b) Height of tree. You need a tape measure and clinometer for this method. Start next to the tree trunk and walk away until you can see the top of the tree. Use a clinometer to measure the angle of elevation from your eye to the top of the tree. Use a tape measure to record the distance along the ground from the tree trunk to where you took the clinometer reading. Also record your own height. Make sure that all distance measurements are recorded in metres.



Record distance along the ground and angle of elevation in the field

You can calculate the height of the tree as follows:

Tree height = distance along ground \times tan (angle of elevation) + height of observer

As a quick rule of thumb, remember that $\tan 45^\circ = 1$. If you can walk far enough away from the tree that the angle of elevation from your eye to the top of the tree is 45° , the height of the tree will be equal to the distance along the ground from the tree trunk to where you took the clinometer reading plus your own height.

(To calculate volume, biomass and carbon content see <https://www.geography-fieldwork.org/a-level/water-carbon/carbon-cycle/data-analysis/>)