THE GLOBE PROGRAM

Student Climate Research Campaign

Climate and Land Cover
Intensive Observing Period

Teacher Participation Guide

Purpose

To involve students in short-term and long-term scientific studies focused on climate and land cover near their school and in comparisons with schools across the globe as a contribution to scientific research and modeling efforts of scientists.

Overview

The Climate and Land Cover (CLC) Intensive Observing Period (IOP) is a research effort between GLOBE schools and climate scientists to improve land cover classifications for climate models. Using GLOBE land cover protocols, students take photographs and classify representative land cover areas near their schools and upload these data to the GLOBE database. These data can be used by students to compare land cover around the world and will be used by scientists to improve land cover classifications for climate models.

Key Science Questions

The following are key land cover/land use science questions that scientists are interested in answering. These big picture questions should be considered during participation in the Climate and Land Cover IOP and when conducting related research investigations of your own:

- In what locations is land cover and land use changing? What is the extent, over what time scale, how do the changes vary from year to year, and what are their causes?
- What are the impacts of climate variability and change on land cover / land use and what is the potential feedback of these changes on climate?
- What are the consequences of changing land use activities for ecosystems and how do they respond to and affect global environmental change?
- What are the consequences of land cover and land use change for human societies and the sustainability of ecosystems?
- How does land cover relate to the global carbon cycle?

Intensive Observing Periods (IOPs)

Although photographs can be taken and uploaded at any time throughout the year, land cover scientists have identified key times that are representative of the peak seasonal conditions for vegetation. This peak time will vary across latitude and continents depending on factors such as climate variability, proximity to water, elevation, topography,

and other conditions like drought or impacts due to extreme events. To enable schools to participate during periods with the most representative seasonal vegetation where maximum participation can occur, the following focused intensive observing periods (IOPs) for Climate and Land Cover have been designated, beginning October 2012:

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Climate and Land Cover											

What is needed

In order to participate in the Climate and Land Cover IOP, you will need the following materials:

- GPS
- Compass
- MUC Field Guide or MUC System Table and MUC Glossary of Terms
- Camera
- 50 m tape measure
- Local vegetation field guides
- Pencil or pen
- Land Cover Sample Site Data Sheet
- Student Field Guide for GPS Protocol and GPS Data Sheet
- Clipboard
- Markers for permanent sites

Time needed to participate

- Identify and establish a new land cover site and report data: *1 – 2 class periods*
- Conduct repeat observation of an established land cover site and report data: *30 minutes*

What to do and how to do it

Collect land cover data and site photographs

1. Identify and establish a representative Land Cover Study Site, if your school has not previously established a study site. Refer to the Sample Site Selection and Set-up guide for information regarding identification and establishment of a land cover site that is representative of local land cover.
2. Follow the Land Cover Sample Site Protocol directions for collecting land cover data and record data on the Land Cover Investigation: Sample Site Data Sheet. High quality, labeled, site photographs of uniform and representative sites are particularly important for the CLC project!
3. Use the Modified UNESCO Classification MUC Field Guide to classify the land cover at your site.

Report data to the GLOBE database

1. Log into the GLOBE website and go to the Data Entry tab in your public profile page.
2. Find your land cover site in the list of your previously-defined sites, or define a new site using the "Define, Edit, or Update a Site" link at the bottom of your data entry page.
3. To enter your MUC classification and other (optional) Land Cover Sample Site data, click the procedure "Land Cover/Biology Measurements" for your land cover site.
4. To upload your land cover photos, click "Upload photos" below your land cover site name. Be sure to upload four photos: one photo for each cardinal direction (north, south, east, and west).

View land cover data and site photographs

Land cover photographs entered before July 2012 can be viewed in the new GLOBE visualization system (the database and visualization system are still being updated and so you cannot yet view your most recent photos). Once you enter the visualization system, go to "Data Layers" in the upper left part of the map, hit the "Add +" option and choose Land Cover Photos from the Protocol drop down menu. Then click on a school with land cover photos from the map, and you can select which dates from a drop down menu within the school's land cover photos view window.