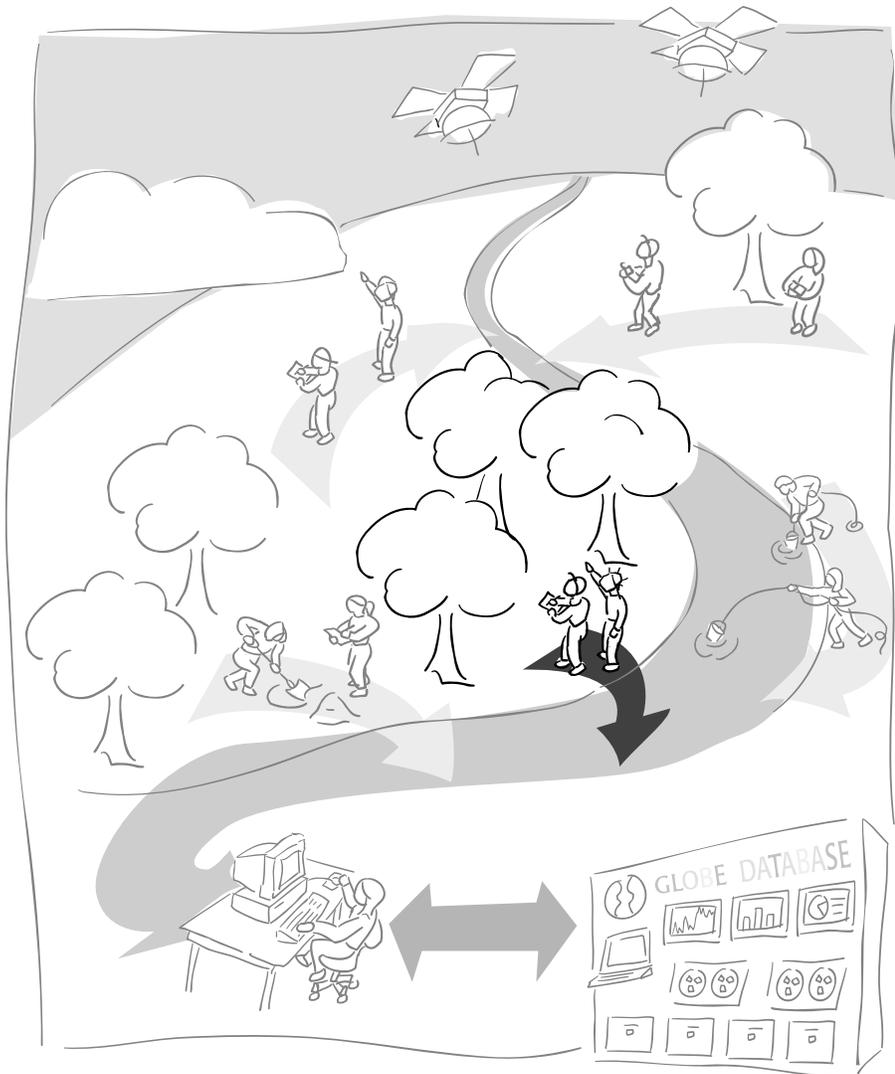


Land Cover/Biology Investigation



A GLOBE® Learning Investigation



Land Cover/Biology Investigation at a Glance



Protocols

Land Cover Sample Site Protocol

Data collected once for each site: GPS location, photographs, land cover classification.

Biometry Protocol

Data collected once to determine land cover class of Land Cover Sample Sites or more often to study changes in biomass over time: canopy cover and ground cover, tree, shrub and/or graminoid height, tree circumference, graminoid biomass, dominant and co-dominant vegetation.

Manual Land Cover Mapping Protocol and Computer-aided Land Cover Mapping Protocol

Perform once to create a land cover type map of your GLOBE Study Site and then update as desired.

Land Cover Change Detection Protocol

Perform once to create a map that illustrates changes that have occurred over time (period of a few years) in your GLOBE Study Site.

Suggested Sequence of Activities

Note: Certain Learning Activities are desirable prior to implementing Protocols.

Read the *Introduction*, especially *Measurement Logistics* and *Suggested Methodology*.

Perform *Getting to Know Your Satellite Imagery and GLOBE Study Site Learning Activity*.

Make a densiometer and clinometer (see *Investigation Instruments*).

Review how to pace and use a compass, densiometer, clinometer and tape measure (see *Investigation Instruments*).

Practice the *GPS Protocol* (see *GPS Chapter*) and the *Biometry Protocol*.

Choose appropriate Land Cover Sample Sites within your Study Site (review *Sample Site Selection and Set-up*).

Perform the *Site Seeing Learning Activity* - introduces systems concepts.

Perform the *Leaf Classification Learning Activity* - introduces the concepts of classification.

Practice using the MUC System to classify land cover.

Perform *Land Cover Sample Site Protocol* at each Sample Site.

Perform the *Odyssey of the Eyes Learning Activity* - introduces remote sensing.

Perform either *Manual Mapping: A Tutorial for the Beverly, MA Image* (from the *Appendix*) if you will be doing a manual map or the *Unsupervised Clustering Tutorial* (from the MultiSpec CD) if you will be doing a computer-aided map.

Perform either *Manual* or *Computer-aided Land Cover Mapping Protocol* using your GLOBE Study Site satellite image.

Perform the *Bird Beak Accuracy Assessment Learning Activity* - introduces accuracy assessment.

Perform the *Accuracy Assessment Tutorial* from the *Appendix* to analyze the accuracy of your land cover type map.

Perform the *Land Cover Change Detection Protocol*.

Perform the *Discovery Area Learning Activity* - uses the satellite images and maps students create.

Using GLOBE Data to Analyze Land Cover Learning Activity - relates land cover data to other GLOBE investigation measurements.

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Protocols

Sample Site Selection and Set-Up
Investigation Instruments
Land Cover Sample Site Protocol
Biometry Protocol
Manual Land Cover Mapping Protocol
Computer-aided Land Cover Mapping Protocol*
Land Cover Change Detection Protocol*
Fire Fuel Ecology Protocol*

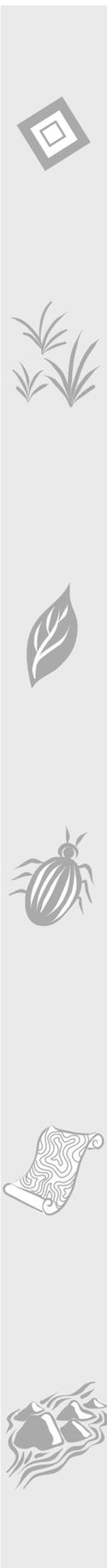
Learning Activities*

Getting to Know Your Satellite Imagery and GLOBE Study Site*
Site Seeing*
Leaf Classification*
Odyssey of the Eyes*
Bird Beak Accuracy Assessment*
Discovery Area*
Using GLOBE Data to Analyze Land Cover*

Appendix

Clinometer Sheet	Appendix 2
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* See the full e-guide version of the *Teacher's Guide* available on the GLOBE Web site and CD-ROM.



Accuracy Assessment Tutorial Appendix 15

Land Cover Sample Site Data Sheet Appendix 25

Tree Canopy and Ground Cover Data Sheets Appendix 26

Shrub Canopy and Ground Cover Data Sheet Appendix 28

Graminoid, Tree, and Shrub Height Data Sheet Appendix 30

Alternative Clinometer Techniques Data Sheets Appendix 31

Tree Circumference Data Sheet Appendix 37

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Accuracy Assessment Work Sheet Appendix 39

MUC System Glossary Appendix 40

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