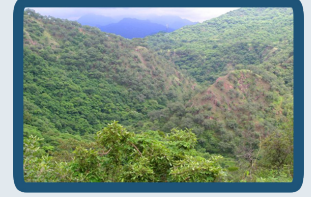


# GLOBE Carbon Cycle: Investigating the Carbon Cycle in Terrestrial Ecosystems

**Principal Investigator:** Dr. Scott Ollinger  
**Co-Investigators:** Dr. Mary Martin, Dr. Jana Albrechtova,  
Dr. Annette Schloss  
**Performing Institution:** University of New Hampshire



© 2006 UCAR

**Description:** Do you know that carbon is the most abundant element in living things and accounts for approximately 50% of the total mass of plants and animals? Carbon is also present in the Earth's land, atmosphere and oceans and, over time, is cycled in the environment between all of these components.

The carbon cycle has a large impact on Earth, both globally and locally. At the global scale, the carbon cycle influences Earth's climate by regulating the amount of carbon dioxide – a principal greenhouse gas – in the atmosphere. Land-based ecosystems store as much carbon as the atmosphere, so plants and soils play an important role in regulating climate. The carbon cycle is also a key factor keeping ecological systems in balance, since it is involved in basic ecological processes such as plant growth and accumulation, and the death and decay of plant material.

The North American Carbon Program (NACP) was established to better understand all aspects of the carbon cycle under present conditions and into the foreseeable future. NACP activities designed to achieve these goals involve a combination of hands-on field measurements, remote sensing, and ecological modeling, to estimate where carbon is stored and how it is exchanged between the Earth's surface and the atmosphere, on scales from local to global.

GLOBE Carbon Cycle is designed to link research conducted under NACP with the GLOBE community. An international team of scientists and educational outreach specialists will bring current carbon cycle research directly into GLOBE K-12 classrooms in a way that increases environmental awareness, builds strong analytical skills and meets the needs of society on an issue of increasing importance.

**Science Content Focus:** Carbon Cycle, phenology, terrestrial ecosystems, land cover, plant physiology, soils.

**Intended Audience:** K-12 students and their teachers with activities developed for different grade levels.

**Geographic Scope:** Initial efforts will focus on schools in New England and the Czech Republic. Global school involvement will be welcomed after activities have been reviewed locally.

**Type of Project:** Student data collection, analysis, and modeling. Hands-on activities will be developed for younger students (K-4). Students in grades 5 – 12 will be encouraged to use specified existing and new GLOBE protocols in research projects that will include research design, data collection, analysis, and display. More advanced activities will be developed for the older students.

**Web Link to Existing NACP Information:** [www.nacarbon.org/nacp/](http://www.nacarbon.org/nacp/)

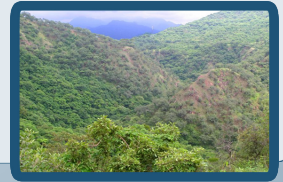
**How to Get Involved:** [www.globe.gov/fsl/html/templ.cgi?carboncycle](http://www.globe.gov/fsl/html/templ.cgi?carboncycle)

**Carbon Cycle Project Leader:** Dr. Scott Ollinger, [scott.ollinger@unh.edu](mailto:scott.ollinger@unh.edu)

**GLOBE Project Leader:** Mr. Gary Randolph, [randolph@globe.gov](mailto:randolph@globe.gov)



# GLOBE Carbon Cycle: Investigating the Carbon Cycle in Terrestrial Ecosystems



© 2006 UCAR

## Meet the Team



**Principal Investigator: Dr. Scott Ollinger** is the principal investigator for the GLOBE Carbon Cycle project. He's an Assistant Professor at the University of New Hampshire with research interests in forest ecology, carbon and nutrient cycling and effects of climate change and air pollution on ecosystems. At UNH, he teaches courses in Forest Ecosystem Ecology and Biogeochemistry. Scott has always been interested in ecology and is excited about introducing the carbon cycle to GLOBE.



**Co-Investigator: Dr. Mary Martin** has a Ph.D. in Natural Resources and is a specialist in botany and remote sensing. Her work includes use of hyperspectral remote sensing as a means of mapping forest growth and species composition. She uses these techniques to study the carbon cycle and, recently, has also been working on methods of detecting forest health and insect infestation.



**Co-Investigator: Dr. Jana Albrechtova** is an Associate Professor of plant anatomy and physiology at Charles University in Prague. Her research interests include forest ecology, ecophysiology of mountain Norway spruce, monitoring forest health, linking foliage and soil chemistry, stress studies in mycorrhizal fungi. Jana has been actively involved with the GLOBE program in the Czech Republic and is happy to be teaming up with the GLOBE Carbon Cycle project.



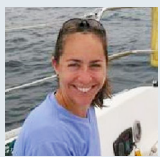
**Co-Investigator: Dr. Annette Schloss** is a Research Scientist at the University of New Hampshire. Her research specialties include earth science education and outreach through web-based resources and aquatic ecosystems, including remote sensing of freshwater resources. She has a PhD in Zoology from the University of New Hampshire.



**Senior Personnel: Ms. Rita Frueder** has a background in mathematics and education and taught math and science before coming to UNH. At UNH, Rita worked on a NASA project involving the Gamma Ray Observatory before changing to research with the Forest Ecosystems Research Group. Recently, she has served as an education and outreach specialist with NASA's Earth Science Information Partners (ESIP) and is currently the Chair of the Education Committee of ESIP.



**Senior Personnel: Ms. Sarah Silverberg** has a BS in Natural Resources from the University of Vermont and an MS degree from the University of New Hampshire. Sarah has studied in Norway and has been a research fellow with NASA's Goddard Space Flight Center in Greenbelt, Maryland. Her Master's research involved carbon cycling in forests of the northeastern U.S. She loves teaching and working with students and is excited about sharing her carbon cycle experience with GLOBE.



**Evaluator: Dr. Lara Gengarelly**, has a Ph.D. in Plant Biology and is a specialist in plant ecology and botany. She also has extensive background in science education. She currently teaches science teaching methods courses in the Department of Education at the University of New Hampshire. Lara combines an interest in ecology and science education and is excited about evaluating the GLOBE Carbon Cycle project.



**GLOBE Project Leader: Mr. Gary Randolph**, involved in GLOBE since 1994, has 20 years experience in teaching and developing environmental education activities with 10 years experience in workshop facilitation and coordination. He contributed to the development of the GLOBE Teacher's Guide and created the Understanding GLOBE Student Data activities to inspire the collection, reporting and using of GLOBE data in student research. He has a background in wildlife biology and environmental education.