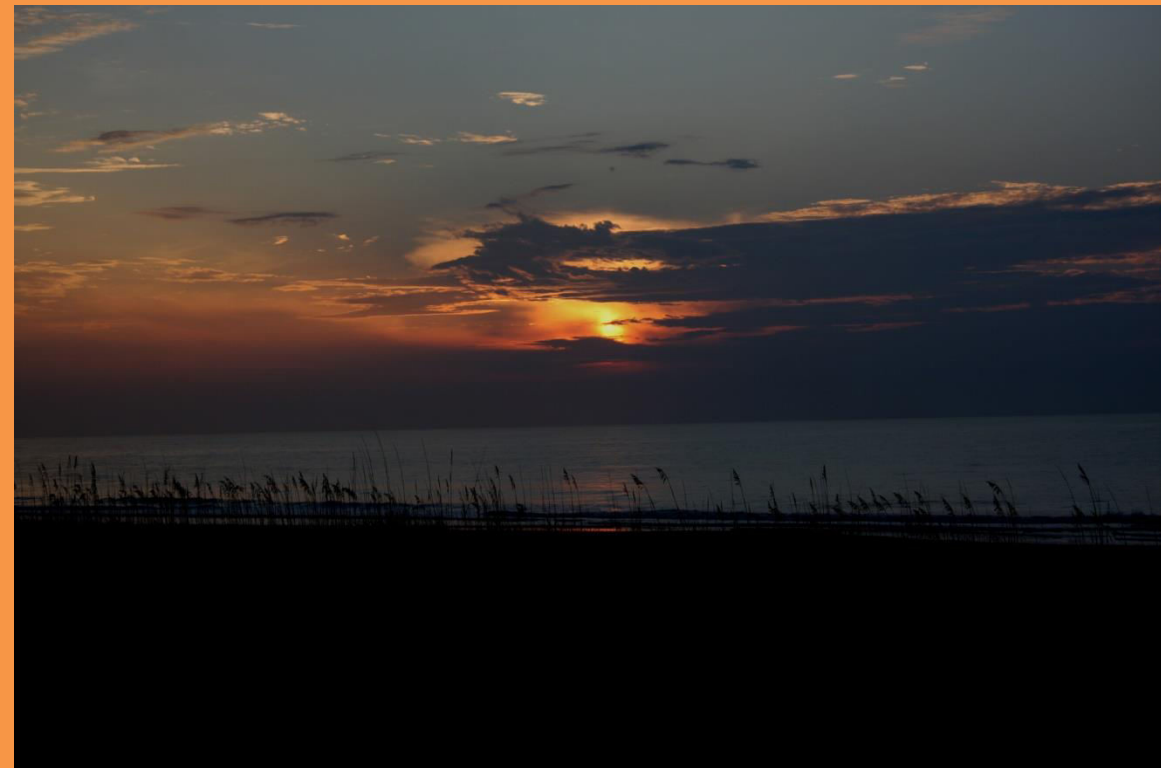




Use of citizen scientists in sea level rise research

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Introduction

Students and general public typically receive knowledge and information about sea level rise from textbooks or mass media sources. Few have real-life experiences or understandings of potential impacts of this process. On-going studies in Winyah Bay South Carolina provide project-based learning opportunities for citizen scientists to gain insights and practical experiences about the impacts of sea level rise on coastal ecosystems. These low-lying wetland ecosystems are representative of coastal wetlands along the Southeastern US coast, from Texas to North Carolina, which are currently converting from freshwater forested wetland to salt marsh. These forest-marsh transitions significantly alter vegetation composition and biogeochemical processes, resulting in deteriorating soil and water quality and reduction of the capacity for carbon sequestration within these coastal ecosystems. In collaboration with the EarthWatch Institute, citizen scientists have been recruited to participate in summer research at Clemson University's Baruch Institute of Coastal Ecology & Forest Science. These participants work together to take field measurements including forest productivity and greenhouse gas emissions, as well as nutrient concentrations in soil and water under the guidance of the wetland and soil scientists at the Institute. The ultimate goals of the research and education program are to yield quantified evidence to illustrate the stress occurring in these coastal ecosystems and to connect students and the general public in on-going cutting-edge research activities and engaging them in discussions of the impacts of sea level rise.

Study Sites

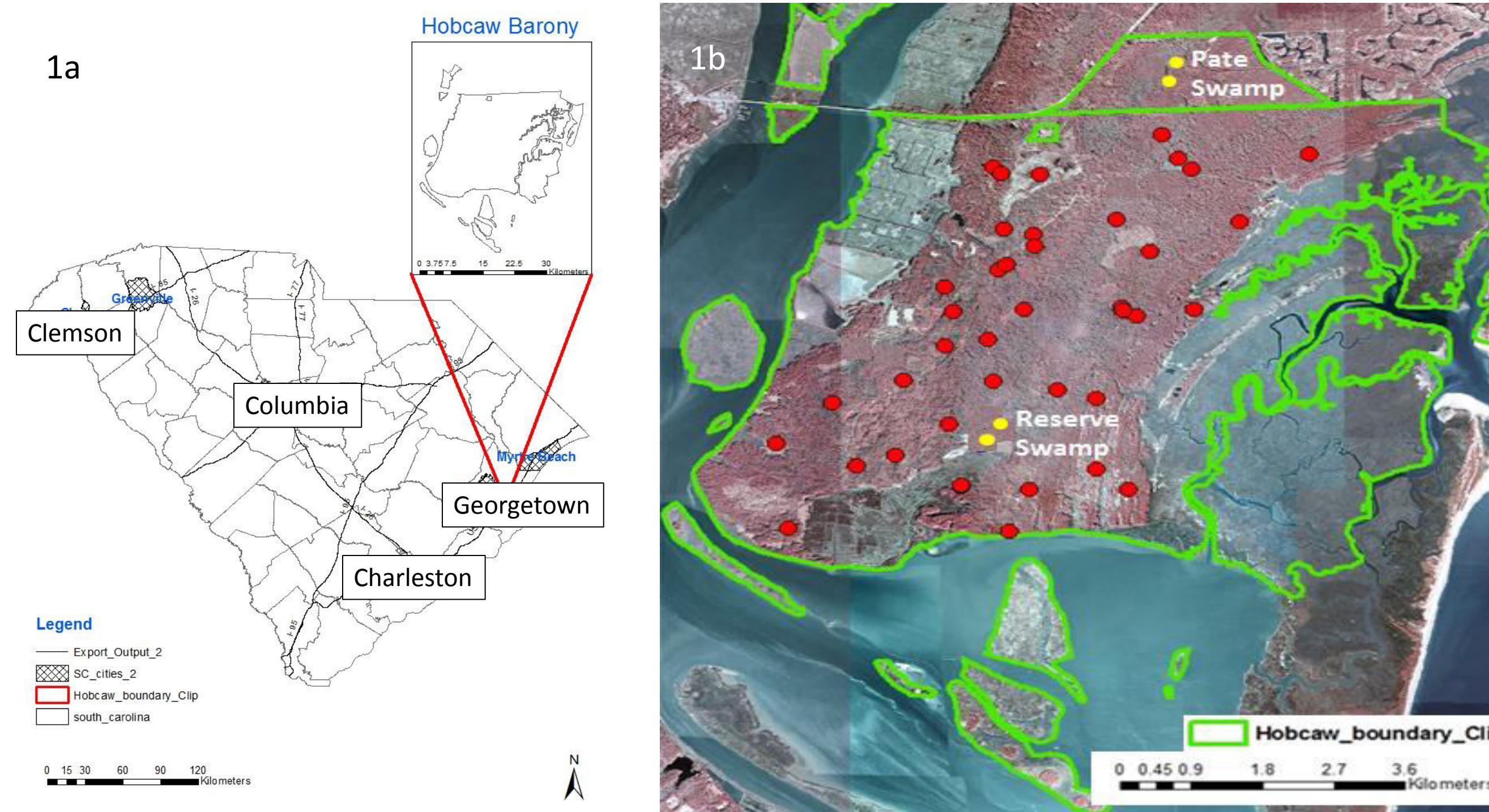


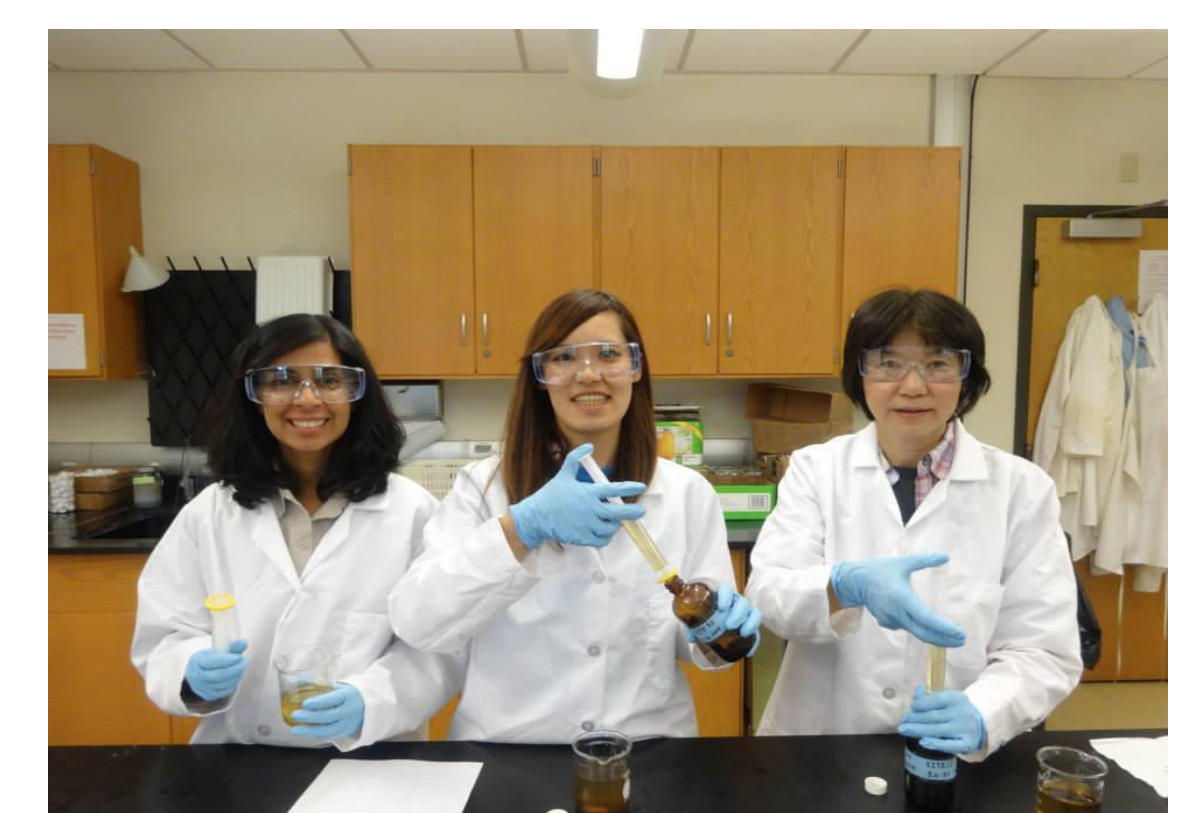
Figure 1. (a) Map shows the location of Hobcaw Barony in Winyah Bay, South Carolina. (b) Satellite photo illustrate the landscape of Hobcaw Barony. Yellow dots are the locations of Greenhouse Gas sampling sites and red dots are the locations of water sampling sites.



Figure 2. Photos show the vegetation and landscape of (a) Healthy forested wetland (b) salt-impacted degraded wetland (c) salt marsh

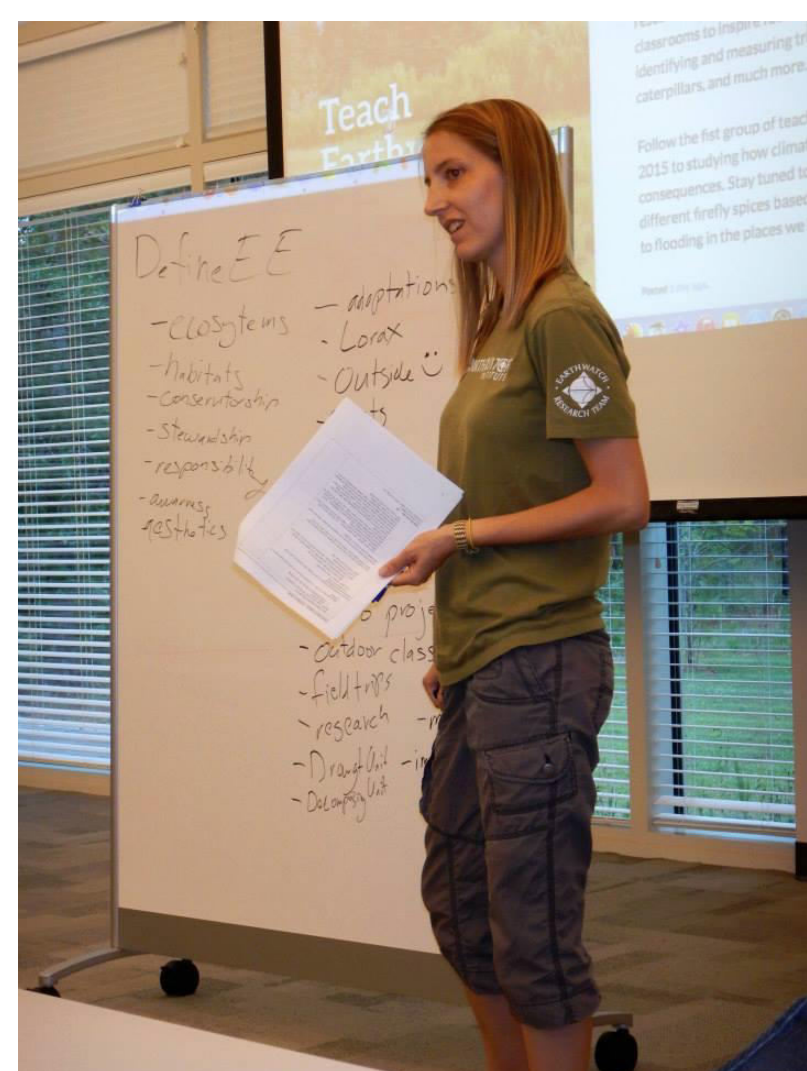
Citizen Scientists

Participants	Duration
1) High School Teachers	1-2 weeks
2) High School Students	
3) School Teachers From Overseas	



Field & Lab Activities

Orientation



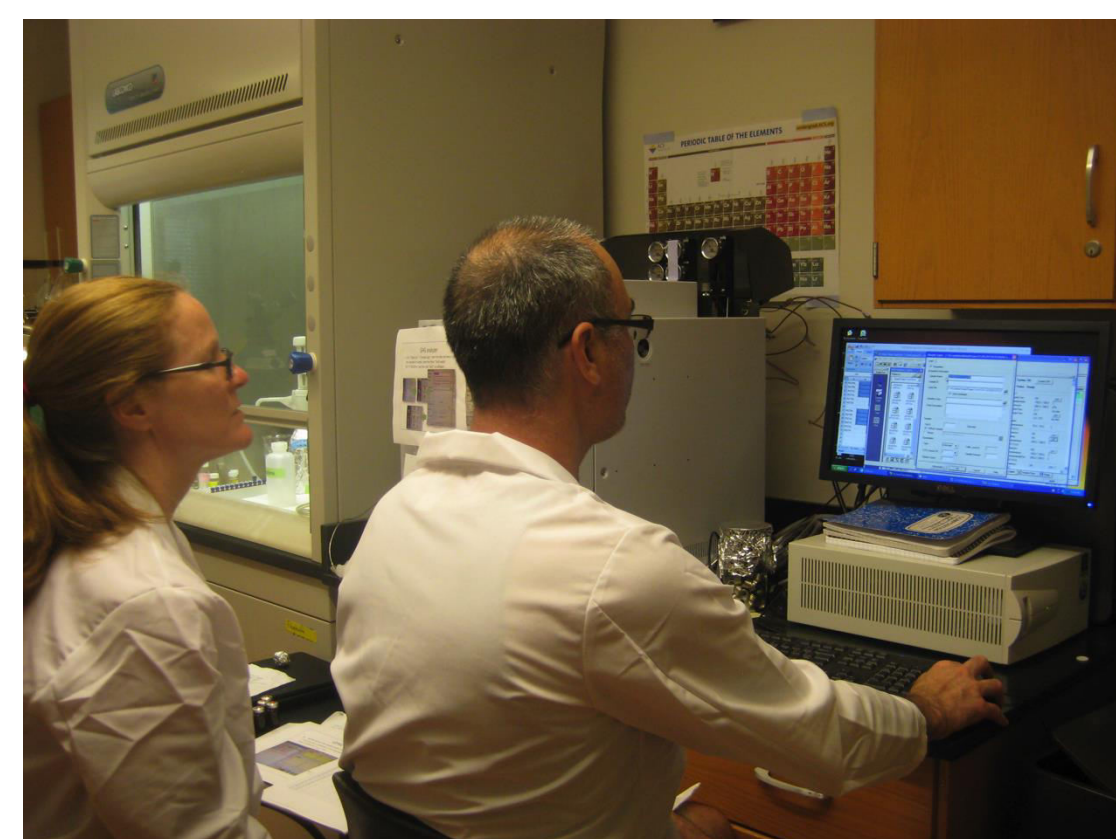
Field Gear Testing and Training



Field Sampling



Lab Analysis



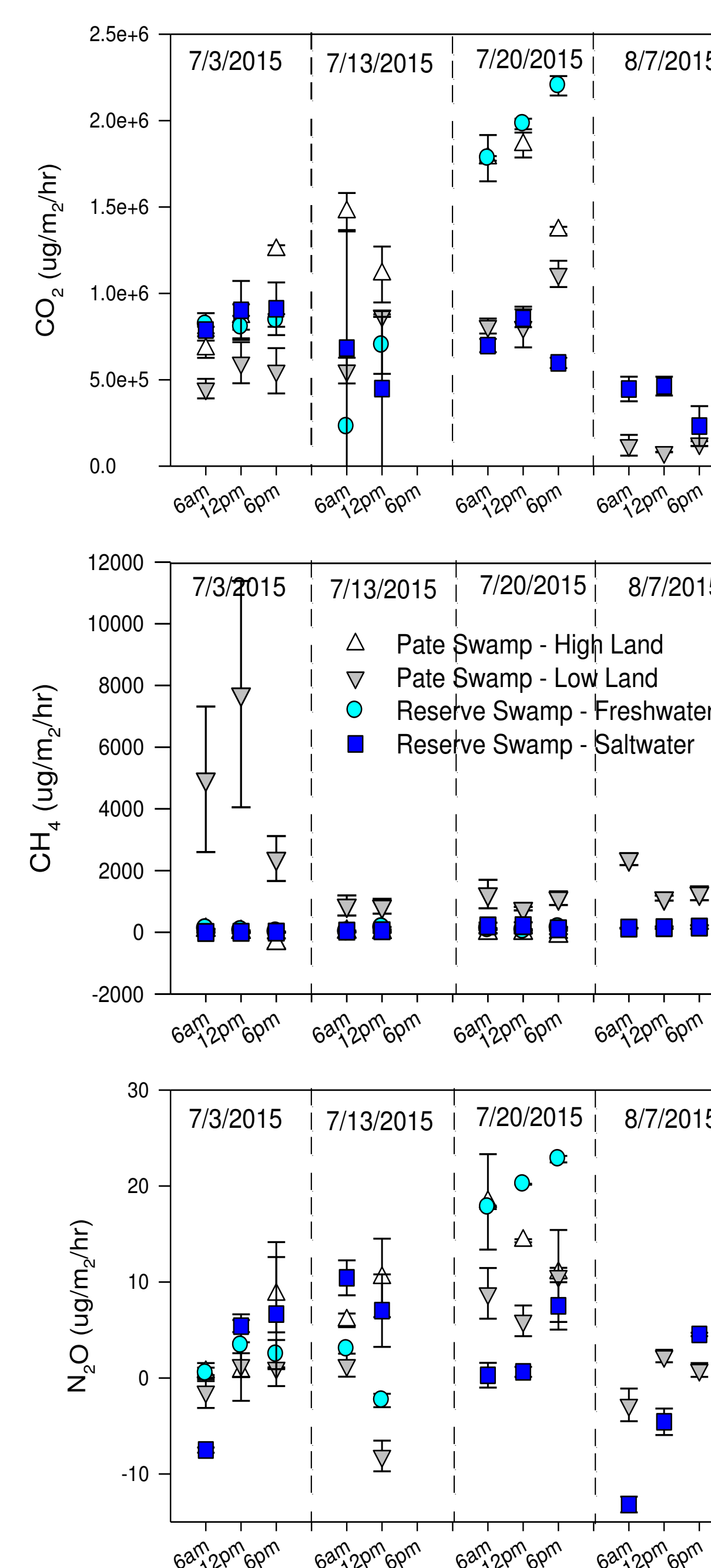
Exploring Nature



Results & Summary

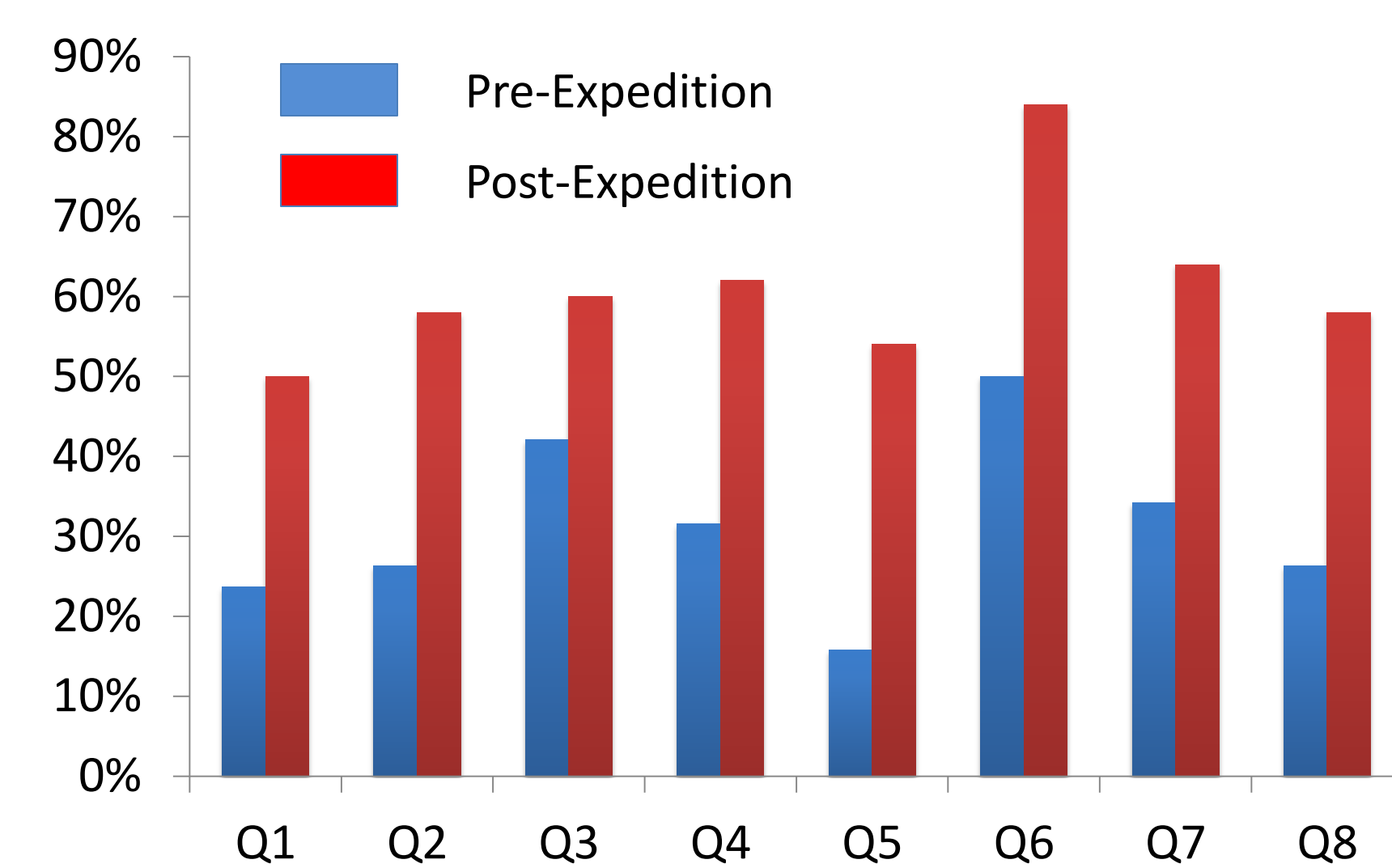
Research Enhancement

The use of citizen scientists on this project was critical. Having the ability to measure greenhouse gases at four sites simultaneously allowed us to model daily fluctuations in different environments of interest.



Teaching Enhancement

Pre- and post expedition surveys suggest that the teachers became more comfortable with teaching science after the week spent at the Baruch institute. The ability to teach educators cutting edge climate science that will then be disseminated to their students allows us to reach a much broader audience than through just scientific publication.



- Q1 – Making connections between my curriculum / work and local environmental issues
- Q2 – Making connections between my curriculum / work and global environmental issues
- Q3 – Teaching the scientific method
- Q4 – Approaching research questions
- Q5 – Guiding my students in developing research questions
- Q6 – Encouraging critical thinking in my classroom
- Q8 – Doing experimental and background research in my classroom curriculum
- Q9 - Incorporating real research results into my class curriculum

Acknowledgement

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