

*Natalie T. Boelman*  
**Application for Climate Center Funding**  
**RFP Due Date: April 30, 2007**

**Project Summary**

***Project Title:*** Using bioacoustics to assess relationships among canopy structure, temperature and avian community characteristics in Hawaii

***Project Background:*** In a recent study, we demonstrated that airborne remote sensing (hyperspectral and LiDAR) and bioacoustics offer a landscape level approach for identifying and monitoring the key interactions of species, both within and across trophic levels, that maintain the form and function of ecosystems. The success of our study (accepted at *Ecological Applications*) suggests that these novel measurement techniques could be used for long-term monitoring of not only the vegetation, but also the fauna (i.e. birds, frogs, crickets), of rapidly changing and/or remote ecosystems. The current project will build upon our previous study by providing a better understanding the role of both canopy structure (i.e. the vertical distribution of branches and leaves; canopy height; trunk diameter) and temperature in determining bird and cricket community characteristics in Hawaii Volcanoes National Park (HAVO).

**Summary of Funding Request:**

I am requesting funding that will:

- (1) cover the transportation costs of sending a Columbia undergraduate (DEES) Earth Intern, Elizabeth Tupper, to conduct fieldwork, under the close supervision of my collaborators, on the Big Island of Hawai'i. I have already been approved for funding from the Earth Intern Program that will cover Elizabeth's stipend. However, this 10-week program does not offer funding for transportation. In light of this, I am requesting funding to cover the cost of: return airfare between NY, NY and Hilo, HI, and, a car rental and fuel costs for the student to get to field sites. Lodging will be provided by the Carnegie Institution of Washington, in the city of Hilo.
- (2) in essence, extend the summer stipend that Elizabeth will be receiving

from the Earth Intern Program (includes only June and July, \$4000 total), to include the month of August. Because of the field sampling schedule, which has been in place for some time now, she will need to be HI through August.

***Student Responsibilities:*** Elizabeth will spend the first week of the Summer Internship at Lamont. During this time, I will train her in bioacoustic data collection, storage/backup, processing and quality assessment. Subsequently, she will spend approximately six to seven weeks collecting digital recordings of birds (bioacoustic data) at a suite of field sites located near HAVO. During this time, she will also be expected to store/backup and process the recordings as per training she will undergo at Lamont, prior to heading to Hawaii. This field work will be conducted under the immediate supervision of my Hawaii-based project collaborators from the Carnegie Institution's Department of Global Ecology (Dr. Gregory Asner & Dr. Roberta Martin) and the University of Hawaii's Department of Biology (Prof. Patrick Hart).

**Itemized Budget:**

Return Airfare (NY, NY – Hilo, HI) (Continental Airlines)	\$950.00
Vehicle Rental (Enterprise)	\$1,500.00
Vehicle Fuel(based on 1 tank/week for 8 weeks)	\$300.00
One Month Stipend Extension (to include August)	\$2,000.00
<b><i>Total</i></b>	<b><i>\$4,750.00</i></b>