



## Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

SANREM CRSP  
Office of International Research, Education, and Development  
Virginia Tech (0378)  
840 University City Blvd., Suite 5&7  
Blacksburg, Virginia 24061

Phone: (540) 231-1230  
Fax: (540) 231-1402  
sanrem@vt.edu  
[www.oired.vt.edu/sanremcrsp](http://www.oired.vt.edu/sanremcrsp)

### **Trip Report: Ecuador and Peru** June 24-July 1, 2006

Mary Leigh Wolfe, Julia Pryde  
Biological Systems Engineering, Virginia Tech

**Purpose of Trip:** The specific purposes of this site visit were to:

- (i) enhance collaboration with partners in Ecuador and Peru;
- (ii) identify data needs and data availability for watershed modeling activities; and
- (iii) identify partner activities and responsibilities for data collection and analysis.

(This site visit was conducted in conjunction with the site visit conducted by the rest of the SANREM team led by Jeffrey Alwang. A separate trip report was submitted by Jeffrey Alwang, George Norton, Brian Benham, Sarah Hamilton, and Darrell Bosch.)

**Description of Activities:** We met with two of our primary partners for the watershed modeling activities: ECOCIENCIA in Quito, Ecuador and Centro Internacional de la Papa (CIP) in Lima, Peru. As a result of the site visit, we and our partners agreed on the following:

- i. ECOCIENCIA will identify available stream flow, water quality, and precipitation data.
- ii. ECOCIENCIA will investigate the possibility of installing some flow monitoring stations in the watershed.
- iii. CIP will provide digital elevation model (DEM) data layers for the Ecuador watershed.
- iv. ECOCIENCIA will be the repository for data obtained and developed for the project area.

**List of Contacts:**

Name	Affiliation	Contact Information
Rossana Manosalvas	ECOCIENCIA	Francisco Salazar E14-34 y Av. La Coruna P.O. Box 17-12-257 Quito, Ecuado <a href="mailto:direccion@ecociencia.org">direccion@ecociencia.org</a>
Adriana Cardenas	ECOCIENCIA	coordinacion_sig@ecociencia.org
Roberto Quiroz	CIP	Avenida La Molina 1895 La Molina Lima, Peru r.quiroz@cgiar.org

## **Annex: detailed description of activities**

June 24: Arrive Quito, 9 p.m.

June 25: Free day in Quito

June 26: Breakfast meeting with full SANREM team (led by Jeffrey Alwang).

Wolfe, Pryde, Benham, and Flowers met with Rossana Manosalvas, Executive Director, and Adriana Cardenas, of ECOCIENCIA (Fundacion Ecuatoriana de Estudios Ecologicas). Manosalvas described the ECOCIENCIA organization and their programs related to biodiversity. Of particular interest to the watershed management focus of this project was ECOCIENCIA's work in environmental education and training. The training program included trainees, identified by parishes, who participated in a year-long program that included both distance learning and face-to-face sessions. In addition to topics such as air and water, governance, citizen rights and participation were major focus. A goal is to build active, local citizen committees recognized by counties. Benham and Wolfe described the watershed planning process in the U.S. The team will continue to explore approaches for implementation of a watershed-level process in the project area.

Wolfe and Pryde flew from Quito to Lima, Peru.

June 27-28: Wolfe and Pryde met with researchers and graduate students at the Centro Internacional de la Papa (CIP). The lead collaborator from CIP is Dr. Roberto Quiroz. Quiroz and colleagues provided information about CIP's crop and livestock modeling group and various model development and application activities that could benefit our work in Ecuador. Several models were demonstrated, e.g., potato model, dairy production model, beef model, and confined swine model. The models are available via the CIP website. An additional modeling effort includes the application of the SWAT model to simulate the impact on erosion of converting from potato production to pasture on steep areas. SWAT is one of the models that we will use in this project.

One effort of particular interest is development of procedures to generate daily rainfall data as a function of the NDVI (vegetation index), which is derived from satellite data and can be analyzed to determine vegetation response to rainfall. CIP researchers have applied the procedures in Peru with success and are willing to collaborate to apply the procedures in Ecuador. Rainfall is an essential input for watershed modeling and rainfall data are scarce in the study areas, so the new procedures are encouraging. The CIP researchers are now applying their procedures to temperature.

CIP also has a very active GIS/Remote Sensing group. Jorge Delacruz presented information on various spatial data layers that CIP has developed for different modeling applications and other analyses. He showed how to use various sources of elevation and land cover data and discussed classification of LandSat images.

CIP is very interested in graduate students being trained through the SANREM project. Javier Osorio Leytoy, currently a research scientist at CIP and originally from Bolivia, was identified as a strong applicant for the PhD program in Biological Systems Engineering at Virginia Tech. Osorio will apply to start the PhD program in January 2007. A second potential student was identified for the M.S. program, Guido Yactayo. While funding is available through SANREM for Osorio, other sources of funding will be sought for Yactayo.

Returned to Quito, Ecuador

June 29: Traveled from Quito to Guaranda and then joined the rest of the SANREM team in Chillanes, a meztizo community with extremely degraded soils at around 1800 m. Travel through the watershed provided first hand observation of the landscape and cropping systems.

A team meeting was held on the evening of June 29 in order to specify the exact areas of work, plan for the subsequent year of the project, and plan the next day's workshop in the Consejo Provincial of Guaranda. The team identified a number of research themes, decided to focus in the areas of Upper Guanujo and Chillanes, and identified responsibilities and partners for continuing research activities. The sites were identified based on geographic and agro-ecological differences, community interest, and extreme environmental degradation. For Chillanes, an office-apartment would be sought to reduce travel times and facilitate interactions with the community members.

June 30: Wolfe, Benham, and Pryde met with Adrian Cardenas of ECOCIENCIA to finalize plans for developing digital data layers for the project watersheds.

Team held a closing workshop at the Consejo Provincial in Guaranda. More than 40 people attended, including representatives of local and provincial government, of federal ministries (agriculture, environment, water resources, indigenous affairs), of projects and NGOs working in the region, and from several Universities. Local media, including print, radio and television covered the event. Promising connections were made with the Fondo Ecuatoriano Popularum Progressio (a reforestation and watershed management investment fund), Plan International, and other NGOs.

Wolfe and Pryde departed for U.S.

July 1: Arrived in U.S.