INTERNATIONAL GEOLOGICAL NATURAL HAZARDS MS PROGRAM IN COOPERATION WITH THE US PEACE CORPS

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3 year MS program, unique, geosciences degree with Peace Corps association--builds strong international social aspects that seem to address student professional needs.
Geological Natural Hazards: Volcanoes, Earthquakes, Landslides, Geohydrology
The goal is to improve the effectiveness of geological hazards mitigation in appropriate Peace Corps countries. The scope includes earthquakes, volcanic hazards, slope stabilities, landslides, debris flows, droughts and floods. It also includes indirect linkages such as the impact of these events on infra-structural elements like community development, environmental education, ecotourism, transportation, health, sanitation and water quality.
First Year
2 semesters
21 credits on campus
PC assignment
12 wks PC training in assigned country

Years 2-3
Volunteer service in assigned country

After Year 3
Return to campus for report or MS thesis defense
Builds on our own long term experience in working with Latin American Scientists on Hazards Mitigation
GPS and GIS, and mapping are pretty central tools.
Scale of the program: 4-6 new students/yr, 19 students currently, eventually ~30 max.

First year: 6 students with limited advertising of the program

Each year ~50 serious inquiries, 20 applicants, 10 accepted and 5 enroll

PIRE OISE NSF Funding
Remote Sensing for Hazard Mitigation and Resource Protection in Pacific Latin America

5 year funding from NSF OISE
4 faculty, 2 post docs, 4-6 PhD students, 4 MS students, 19 Peace Corps students (they play a key role)
Focus on Central American hazards and geohydrology
Partners in Latin America
Synergism with EHaz
Peace Corps is a social organization, and isn’t everyone’s cup of tea
The first students…. Fall 2004 on campus
Summer 2005 to the field..
Adam Blankenbicker, Univ Rhode Island; Guatemala

Jemile
Erdem
Lewis & Clark
Guatemala

Joanne Scott
Old Dominion

Ingrid
Fedde
Colo Sch
Mines
Mexico

Karine Knutsen
UCSB; Panama

Hans
Lechner
Humboldt State
El Salvador

Year 2 Student group--On campus 2005-6
On Campus--Ready to go:
Hydrogeology sites: Jeremy Jensen Benin Randy Fish Tanzania
Rob Hegemann, Nicaragua

Lara Kapelancyk Nicaragua—Ometepe Island-- Concepcion Volcano

Students in PC field sites:
Adam Blankenbicker, Kyle Brill Guatemala-- Santiaguito
Jemile Erdem Guatemala--Fuego Volcano
Jesse Silverman, Guatemala- Tectitán GPS/Landslide Tectonics
Hans Lechner El Salvador--GPS Volcano, caldera, tectonics
York Lewis El Salvador--La Palma, Landslide
Karinne Knutsen Panama--La Yeguada Volcano
Julie Herrick Panama--Baru Volcano debris avalanche
Jarod Maggio Phillipines--Mayon Volcano Lahars
Julie’s MS project will be a field study of the Volcán Baru debris avalanche, done with help from Panamanian geophysics experts, USGS scientists and Lee Siebert, world authority on this phenomenon.
GPS array for monthly precise monitoring, Santa Ana, El Salvador

Hans Lechner in ass’n with SNET & Chuck DeMets

Santa Ana

Coatepeque Caldera
The social focus of the Peace Corps is the key to our program’s success—it means we listen a lot.
New Class: Intercultural Hazards Communication

...provide a vehicle for community-level linkages between technical government agencies and people at risk
Social Geology

Oral Histories

Community Hazards/Risk Mapping

Percepcion and Vulnerability studies

Building local awareness/observations

2 years in the field, in a social context
A developing discipline:

**Social Geology:**

Volcanic risk perceptions in Pacific Latin America—Kate Graves, Social Sciences MS, 2007

Community Participatory Hazards Mapping in El Salvador—Luke Bowman, RPCV Crisis Corps

Foundation: 2 years in the field, in a social context
Seismic/acoustic studies at Fuego; January 2008

A plot of velocity waveform, spectrogram and slowness measured with the antenna for an explosion that shows up on both seismic and infrasound stations well. The data are dominated by frequencies between about 1 and 3 Hz. The apparent slowness, which was measured in 2 second sliding windows, shows an increase from very low (high apparent velocity) due to the P wave to very high (low apparent velocity) at the air wave arrival. The air-wave arrival shows up in the waveform plot at the top as well. The rest of the event is dominated by surface waves and ground-coupled air waves. In the slowness plot, the solid circles are good values, the open circles are poorly constrained.
PC students become a base for field activities....
Vuelo de Helicoptero

Santiaguito, Guatemala 11 de Enero 2008
Vuelo de Helicóptero
Santiaguito, Guatemala  11 de Enero 2008
Santiaguito, Guatemala  11 de Enero 2008
Santiaguito, Guatemala  11 de Enero 2008
Vista desde Santa María

La boca del anillo

Santiaguito, Guatemala  12 de Enero 2008
Santiaguito, Guatemala 12 de Enero 2008
Santiaguito, Guatemala 12 de Enero 2008
Santiaguito, Guatemala  12 de Enero 2008
Santiaguito, Guatemala  12 de Enero 2008
Santiaguito, Guatemala  12 de Enero  2008
Santiaguito, Guatemala  12 de Enero 2008
Santiaguito, Guatemala  12 de Enero 2008
Santiaguito, Guatemala  12 de Enero 2008
Santiaguito, Guatemala  12 de Enero 2008
Santiaguito, Guatemala  12 de Enero 2008
Skills gained by students in this program:

- ability to write and communicate orally
- ability to work in diverse teams
- ability to build coalitions and consensus
- ability to look at complex problems from broad and diverse perspectives
- ability to devise long range strategies and solutions to multidimensional problems
- ability to assemble, assimilate and analyze large data sets
- ability to budget and manage projects
- ability to work in other countries and cultures
Collaborators visit students in field

- John Stix, McGill Univ
- Jeff Johnson, New Mexico Tech
- Nick Varley, Universidad de Colima
- Jonathan Lees, North Carolina
- Jim Walker, N Illinois Univ
- Guillermo Alvarado, Univ Costa Rica
- Chris Newhall, USGS
- Andy Harris, Univ Hawaii
- Alan Whittington, Univ Missouri
Our Peace Corps program is the social foundation for a large research group.
Questions?

Jemile  Kate  Adam