

Lehigh University Office of International Affairs
Faculty Grants for International Connections
Frank J. Pazzaglia, Professor
Earth and Environmental Sciences

Summary: I propose travel to four locations in central and southern Italy in May and September, 2016 to build new and rekindle long-standing research and educational connections with several Universities and research centers. The overall research goal is to secure a large, interdisciplinary, and international research effort in active tectonics that builds upon the NSF-funded RETREAT project completed in 2008. A corollary educational goal is to leverage existing, novel educational opportunities at Lehigh University and Italian institutions to promote graduate student exchanges and joint undergraduate or graduate international field experiences. The educational missions aligns with a collaboration that had been assembled in 2009 for a NSF-Partnership for International Research and Education (PIRE) proposal that was submitted, but not funded. The four institutions that I intend to visit, and their point contacts are: (1) Universita' degli Studi, Catania, Prof. Stefano Catalano, (2) Universita' degli Studi, Napoli, Prof. Alessandra Ascione, (3) Universita' degli Studi, Perugia, Intgeomod, e il Parco Geologico Valnerina, Ricercatore Fausto Pazzaglia and Gabriele Lena, (4) Osservatorio Geologico Coldigioco (OGC), Dr. Alessandro Montanari.

Context and Foundation: The study of active tectonic processes along the complicated and fragmented plate boundary defined by the Apennine Mountains in Italy has been a key research focus of my program since joining Lehigh University in 1999. I was able to complete a year-long sabbatical in AY 2004-05 in Italy where I built a broad network of collaborators and co-lead a large, interdisciplinary and international team on the NSF-funded RETREAT project that studied the growth of the northern Apennines, earthquakes, and the associated societal impacts of living in a geologically active region. My interactions during this time had been very profitable in terms of intellectual exchange and helping grow Lehigh's global portfolio, including hosting no less than 15 Italian graduate students and faculty who visited Lehigh for extended research stays, 5 of them in 2008 alone. Similarly, three Lehigh EES graduates students were able to complete their research in Italy. However, largely coincident with my chairmanship of the EES Dept between 2007 and 2013, I allowed much of the progress and momentum on this productive research and educational collaboration to slow. With this request, I am seeking to reverse that and reestablish existing ties while I also build new relationships that target new research and educational opportunities.

Goals: The major goals of my visits are (1) to lay the foundation for an NSF-funded project in the active tectonics and seismic hazards of a segmented plate boundary in central and southern Italy targeting programs that promote international collaborations in research and education, such as but not limited to PIRE and (2) to seek out new opportunities for international experiences that could include Lehigh-led education in Italy and/or a formal exchange program for graduates and undergraduates between Lehigh and Italian Universities.

Italy, of course, is a developed nation with a modern infrastructure and well established university system that is a popular destination for American students seeking study abroad opportunities; however, the vast majority of that global learning occurs in the arts and humanities, well aligned with Italy's enormous cultural heritage. Lying almost in the background is an incredible STEM learning opportunity as the Italian peninsula is being pushed, pulled, stretched, and fragmented by tectonic forces that are among the most complex and diverse for any plate boundary in the world. The result is a tectonically active landscape, where earthquakes and volcanic eruptions are frequent and commonly deadly. The NSF RETREAT project addressed these geologic research

interests from 2003-2008 for the northern Apennines, essentially centered on the city of Bologna. Further south, particularly south of Rome, the geologic setting become more complicated, the infrastructure becomes less-well developed, the seismic hazards increase, and the geologic understanding generally is less mature. In Sicily, for example, a single earthquake in 1693, the most powerful in Italian recorded history, leveled the largest city of Catania, killing an estimated 60,000. Similarly at Messina, Sicily in 1908, an earthquake and tsunami destroyed most of northeastern Sicily and southern Calabria, killing up to 200,000.

With this travel, I intend to not only lay the foundation for future collaborative research and student exchanges, but also begin the process of collecting data and engaging in scholarship, particularly with my colleagues in Catania and Naples. We have already co-authored a manuscript (to be submitted, February, 2016) on data generated by the visit to Lehigh of (then) Ph.D. student Francesco Pavano in the spring semester, 2013.

Expected outcomes: This travel is structured to align with the goals of the FGIC program. Rekindling existing connections and establishing new ones are designed to help improve the productivity of my research program and its aligned graduate education. It helps broaden Lehigh's portfolio of international connections in Italy with its emphasis on STEM projects and education and is directly associated with ongoing scholarship and grantsmanship. Specifically, I expect to build the required coordination among Italian Universities and research centers to lead a NSF PIRE-type proposal and investigate the educational exchange possibilities with the OGC and Parco Nazionale Valneria, the latter involving a novel collaboration with the University of Perugia, the Intgeomod research center, and a national park.

Facilities and Nature of interactions: The nature of the interactions will vary among the four locations to be visited. In Sicily, I will be conducting field work and geologic sample collection, as well as furthering our scholarship and grantsmanship. (see <http://www.unict.it/en/biological-geological-and-environmental-sciences> and <http://www.lehigh.edu/~fjp3/research.html#%282%29%20Active%20tectonics%20of%20Sicily>). At the OGC (<http://coldigioco.org/>) and Perugia / ParcoValnerina (<http://www.intgeomod.com/en/>) I will be touring facilities, discussing curricular programs, and securing availability for student exchanges. In Naples I will be presenting an invited talk at the Societa' Geologica Italiana (<http://www.sginapoli2016.it/>), in addition to engaging in grantsmanship.

Expected follow-up: The interactions with my colleagues will continue on a regular basis. I anticipate that it will rise the level of activity and productivity in grantsmanship, scholarship, and student exchange that it had prior to my chairmanship. I will actively seek to host a visiting scholar on an annual basis. In addition to the expected reports and presentations, I anticipate following-up with OIA regarding details of student exchanges and/or development of a Lehigh-led program.

Budget and proposed dates of the trip(s):

Trip	Locations	Airfare	Rental Car @\$500/wk	Per diem @\$100/day	Total
22 May-02 June 2016	Catania, Rome, Perugia, OGC	\$1600	\$1000	\$1200	\$3800
05 Sept-11 Sept 2016	Naples	\$1100	-	\$700	\$1800
TOTAL REQUEST					\$5600

Note: I have access to discretionary and RIF funds that can match, at least in part, any unfunded balance of this request.

Perugia, 13/01/2016

Frank J. Pazzaglia
Professor of Geology
Department of Earth and Environmental Sciences
Lehigh University
1 West Packer Avenue
Bethlehem, PA 18015-3001
USA

We are pleased to invite you to visit our research and teaching facilities at the Parco Geologico Valnerina and Int.GeoMod. Srl in May, 2016. We hope that the visit will be successful in helping you build a foundation for future research and curricular activities with Lehigh University. Specifically, we are interested in exploring the role of our institution as a partner in integrated geological research, similar to and as a follow-up to the NSF-funded RETREAT project of a decade ago. Similarly, I know that you have a long history with teaching field courses and we would like to explore the possibility of being part of any Lehigh-led study abroad experiences that would be hosted out of our facility, especially if they were to contain a field component.

Int.Geo.mod. Srl
The Chairman of the Board
PhD Gabriele Lena

INT.GEO.MOD. Srl
Via Francesco Innamorati, 7/a
06123 PERUGIA - Italy
Partita IVA 03105990547



Centro Studi Geologici
Via del Colle 1 - 06040 Poggiodomo (PG)



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
DIPARTIMENTO di SCIENZE della TERRA,
dell'AMBIENTE e delle RISORSE
(DiSTAR)

Naples, 19 January 2016

Prof. Frank J. Pazzaglia
Dept. of Earth and Environmental Sciences
Lehigh University
Bethlehem, PA 18015-3001

Dear Prof. Pazzaglia,

I'm pleased to invite you to the 88th Congress of the Società Geologica Italiana (Geological Society of Italy) entitled "Geosciences on a changing planet: learning from the past, exploring the future", scheduled from 7 to 9 September 2016 in Naples (Italy, <http://www.sginapoli2016.it>). This Congress will be organized by the Department of Earth Sciences, Environment and Georesources of the University of Naples "Federico II".

As convener of the Session on "Topography: from the surface to the mantle", which will examine research and development both locally and internationally, I'm honored to invite you to participate in this Session as Keynote Speaker. We believe that your contribution to this field is outstanding and a session on this topic will be of great interest. The Chancellor of the University of Naples Prof. Gaetano Manfredi and the President of the Società Geologica Italiana Prof. Elisabetta Erba will inaugurate the Congress.

Representing my program at the University of Naples, I wish that on your participation in the Congress I would have the opportunity of exploring formal research and educational collaborations with Lehigh University. In fact I'm deeply interested in working with you and Lehigh University on research and education projects of mutual interest.

We look forward to a positive confirmation
Sincerely,

Dr. Alessandra Ascione
Associate Professor of Geomorphology
Dipartimento di Scienze della Terra, dell'Ambiente e delle Risorse
University of Naples "Federico II"
Largo S. Marcellino 10
80138 Naples (Italy)
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January 8, 2016

Prof. Frank J. Pazzaglia
Dept. of Earth and Environmental Sci.
1 West Packer Ave.
Bethlehem, PA 18015-3001 - USA

Dear Prof. Pazzaglia,

We are pleased to invite you to visit the teaching and research facilities at the Osservatorio Geologico Coldigioco (OGC) in late May, 2016. We know that you are familiar with our facility and are eager to re-connect, with the goal being to develop new collaborations for research, scholarship, and education. Specific to research, OGC would like to be a participant in moving a post-RETREAT, NSF-funded project forward. Specific to education, we are interested in exploring the possibility of building a new Lehigh-led study abroad program that would be housed in part at OGC. I look forward to a visit where we can meet face to face to discuss these goals.

Sincerely,

Alessandro Montanari
Director of O.G.C.



DIPARTIMENTO DI SCIENZE BIOLOGICHE
GEOLOGICHE ED AMBIENTALI
(SEZIONE DI SCIENZE DELLA TERRA)
(EX DIPARTIMENTO DI SCIENZE GEOLOGICHE)
PALAZZO DELLE SCIENZE – CORSO ITALIA, 55
TEL. (095) 7195714 – FAX (095) 7195728
95129 CATANIA (ITALIA)
Prof. Stefano Catalano

Catania, 12.01.2016

Prof. Frank J. Pazzaglia
Department of Earth and
Environmental Sciences
Lehigh University
Bethlehem, PA USA

Subject: Invitation to Catania University

Dear Professor Pazzaglia

We are pleased to invite you to visit our research and teaching facilities at the University of Catania in May, 2015. We hope that the visit will be successful in helping you build a foundation for future research and curricular activities with Lehigh University"

Sincerely,

Prof. Stefano Catalano