Geosciences at Princeton University
Graduate Studies
Guyot Hall hosts the greatest number of educational gargoyles on campus—more than sixty-five. Above, appears the carvings of a Smilodon, the department’s mascot, and a dinosaur head that is reminiscent of a medieval dragon. They appear above the entrance doors to the wing. The biology wing (east end) is populated by living species gargoyles while the geology wing (west end) is decorated with carvings of extinct animals.

Built in the Tudor Gothic style of architecture, Guyot Hall was named for Princeton’s first professor of geology and geography, Arnold Guyot, faculty 1854-1884. Opening its doors in 1909, the building’s laboratories and collections of various branches of the natural sciences represented a major expansion of Princeton University’s teaching and research space in the development of graduate education.

Pictured left are the north, front-facing doors of Guyot Hall, which serve as the main entrance to the department’s Great Hall.

Cover – Graduate student, Kyle Samperton, measures magmatic fabrics in the synmagmatically deformed floor of the Alpine Bergell Intrusion along the Swiss-Italian border, August 2011. Photo by C.B. Keller.

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*A faculty member in both the Geosciences department and the AOS program.

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*Faculty member in both the Geosciences department and the AOS program.
Graduate Studies at The Department of Geosciences and The Program in Atmospheric & Oceanic Sciences (AOS)
Princeton University

The Geosciences Department, together with its affiliated interdepartmental programs and institutes, serves as the central focus for the earth, atmospheric, oceanographic, and environmental sciences at Princeton. It is a medium-sized department with currently 52 graduate students, 18 postdocs, and 19 faculty members.

The Geosciences Department, which is concerned mainly with the physical aspects of weather and climate, offers Ph.D. programs in a range of disciplines including seismology, Earth history, mineral physics, geobiology, tectonics, and environmental geochemistry. The Program in Atmospheric and Oceanic Sciences (AOS), which is currently has several associated faculty at the Geophysical Fluid Dynamics Laboratory (www.gfdl.noaa.gov). In addition, half a dozen graduate students from other departments (biology, chemistry, engineering) work in Guyot Hall with a Geosciences advisor.

Admission
A strong background in the sciences is a prerequisite for admission to the Geosciences and AOS Ph.D. programs. Promotion of study is designed for every student individually. We admit students who have majored in such diverse fields as chemistry, physics, mathematics, geology, biology, computer science, and engineering.

Because of the variety of backgrounds, we do not require a subject GRE test. The required General GRE scores form only one of the criteria that guide us in the admissions process.

Foreign students must show proficiency in the English language. The GRE and TOEFL/IELTS examinations are a first indication of English proficiency. We offer a telephone interview with foreign applicants before deciding on admission.

The application process for the GEO/AOS Program is fully electronic. To apply, you must go to the Princeton University, Graduate School website and use their electronic application. Before starting your electronic application, please review the helpful tips and refer to the website for specific application requirements. See also: www.princeton.edu/gradschool

Financial Aid
In general, graduate students are supported (tuition plus stipend) for at least five years by First Year Fellowships provided by the University, project grants awarded to individual faculty members from outside agencies, and through an Assistantship in Instruction. A few Departmental or University Fellowships are also available. Students who are U.S. citizens are urged to apply for National Science Foundation, Department of Defense, NASA, or Hertz fellowships. Various funds are also available to support summer studies, fieldwork, and other research away from campus. The average time to obtain a Ph.D. in the Geosciences is five years, and in AOS four years.

Housing
The University provides a wide variety of housing within walking or biking distance from campus for both married and unmarried graduate students, and there is a shuttle service from graduate student housing to both the main and Forrestal campuses. The booklet Housing and Cost of Living for Graduate Studies is sent to all newly admitted students and provides tips and refer to the Princeton University, Graduate School website and use their electronic application.

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**Geosciences Faculty**

Laser spectrometers are used in the Mineral Physics Laboratory to characterize mineral properties and probe samples compressed to very high pressures.

Colonial buildings and homes. The University has athletic facilities for many sports, including golf, tennis, basketball, sailing, soccer, swimming, and squash. The campus and nearby countryside have numerous parks and trails for hikers and cyclists. The renowned McCarter Theater presents concerts, dance programs, and professional theater. There are many opportunities on campus and in town to view first-run as well as classic and foreign films.

They are abundant employment opportunities for spouses at Princeton University as well as at neighboring colleges, research institutions, and commercial enterprises such as Rutgers University, Rider University, Education Testing Service, Gallup Poll, Johnson & Johnson, Merrill Lynch, David Sarnoff Research Center, McGraw-Hill Publishing, Siemens, and Bristol Myers-Squibb.

For more information, consult: www.princeton.edu/geosciences www.princeton.edu/aos www.princeton.edu

Geosciences Graduate Studies Work Committee
George Philander Director of Graduate Studies
Stephan Fueglistaler Graduate Studies Advisor
Blair Schoene Graduate Studies Advisor
Jeroen Tromp Graduate Studies Advisor

Michael L. Bender
Professor
Ph.D., 1970, Columbia University
e-mail: bender@princeton.edu
website: www.princeton.edu/geosciences/people/bender
Current Research Interests:
- Studies of palaeoclimatology, ocean geochemistry and biogeochemistry, and plant physiology, including the development of innovative methods and instruments. Research topics include ice core studies of the last interglacial and beyond, seagoing studies of Southern Ocean biogeochemistry, studies of photosynthesis and respiration in phytoplankton and plants, and studies of fossil records of ocean chemistry and atmospheric CO2 in deep time.

Current Students:
- Kuan Huang (huangk@princeton.edu)
- Audrey Yau (ayau@princeton.edu)
- Anne O’Leary (aoleary@princeton.edu)

Recent Graduates:
- Ph.D., 2008
  - Gabrielle Dreyfus (“Dating an 800,000 Year Antarctic Ice Core Record Using the Isotopic Composition of Trapped Air,” 2008), U. S. Department of Energy
  - Makoto Suwa (“Chronologies for Ice Cores Constrained by their Gas Records and their Implications for Climate History for the Past 400,000 Years,” 2007), Japanese Foreign Service.

Recent Students:
- Thomas S. Duffy
  - Ph.D., 1992, California Institute of Technology
e-mail: cluffy@princeton.edu
website: geoweb.princeton.edu/research/Mineral-Phy/index.html
Current Research Interests:
- Understanding the large-scale physical and chemical behavior of the Earth and other planets through experimental study of geologic materials under extreme conditions of pressure and temperature.

Current Students:
- Gregory Finkelstein (gjfinkel@princeton.edu)
- Camellia Stan (cstan@princeton.edu)
- Jue Wang (juewang@princeton.edu)

Recent Graduates:
- Ph.D., 2008
  - Zhu Mao (“Single-crystal Elasticity of Hydrous Mantle Minerals,” 2009), now at the University of Texas, Austin, TX.
  - Sergio Speziale (“Elastic Properties of Earth Materials,” 2003), now at GeoForschungsZentrum, Potsdam, Germany.

M.A.
- Claire Runge, 2006
- Sutacha Hongresawat, 2003
- Lisha Xie, 2009

Stephan A. Fueglistaler
Assistant Professor
Ph.D., 2002, ETH Zurich, Switzerland
e-mail: stf@princeton.edu
website: www.princeton.edu/aos/people/faculty/fueglistaler
Current Research Interests:
- Interactions of dynamo-chemistry, chemistry and radiation in the upper troposphere and lower stratosphere. Global distributions of atmospheric humidity and clouds.

Current Students:
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- Claire Radley (cradley@princeton.edu)
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Ph.D., 1978, Stanford University
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David M. Medvigy
Assistant Professor
Ph.D., 2006, Harvard University
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website: www.princeton.edu/geosciences/people/malof

François M. M. Morel
Associate Professor of Geosciences
Ph.D., 1991, California Institute of Technology
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Recent Graduates:
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Nyssa Crompton (crompton@princeton.edu)
Emily Jayne (ejayne@princeton.edu)
Bjorn von der Heyden (bvon@princeton.edu)

Recent Graduates:
Ph.D.
Alessandra Leri ("Halogen Dynamics in Environmental Systems: An X-Ray Spectroscopic Study," 2007), now an Assistant Professor at Marymount Manhattan College, New York, NY.

Recent Students:
Brian Gertsch
Ph.D., 2007, Harvard University
"Biotic and Abiotic Processes: A Case Study of the Late Cenomanian Oceanic Anoxic Event 2 and the Cretaceous/Tertiary Boundary," 2010), currently a Postdoctoral Researcher at Massachusetts Institute of Technology (MIT), MA.

Mark Davidson
Ph.D., 2011, Duke University
"The Nutritional and Energetic Consequences of Life in the Deep Biosphere of South Africa," 2008), now at Geosyntec Consultants, Pasadena, CA.
Bianca Silver ("The Nutritional and Energetic Consequences of Life in the Deep Biosphere of South Africa," 2008), now at Arcadis-US, Newtown, PA.

M.A.
Shannon Tronick, now a Missions Operation Engineer at Jet Propulsion Laboratory in Los Angeles, CA.
Recent Graduates: Ph.D.
- Andrew Wittenberg (“ENSO Response to Altered Climates,” 2002) now at GFDL, Princeton, NJ.

Current Research Interests: Global Carbon Cycle, Ocean Biogeochemical Dynamics, Ocean Circulation, Paleoclimatology.

Current Students:
- Kelly Kearney (kkearney@princeton.edu)
- Joe Majkut (jmajkut@princeton.edu)
- Hannah Zanowski (zanowski@princeton.edu)

Recent Graduates: Ph.D.
- Daniele Bianchi (“Processes Controlling the Distribution of Biogeochemical Tracers in the Ocean,” 2011), McGill University, Montreal, QC.
- Anirad Gnanadesikan
- Irina Marinov (“Controls on the Air-Sea Balance of Carbon Dioxide,” 2005) now at Woods Hole Oceanographic Institution (WHOI), Woods Hole, MA.
- Curtis Deutsch (“Biogeochemical Constraints on the Modern and Glacial Oceanic Nitrogen Cycle,” 2003), now at UCLA, Los Angeles, CA.
- David Baker (“Sources and Sinks of Atmospheric CO2 Estimated from Batch Least-Squares Inversions of CO2 Concentration Measurements,” 2001), now at National Center for Atmospheric Research (NCAR), Boulder, CO.

Recent Graduates: Ph.D.
- Christopher Little, (“Glaciological control of ice shelf basal melting, and implications for the coupled response,” 2010).

Current Students:
- Jessica Hawthorne (jchawtho@princeton.edu)
- Pathikrit Bhattacharya (pathikrit@princeton.edu)
- Enning Wang (enningw@princeton.edu)

Current Research Interests: Tectonic and geochemical evolution of the lithosphere, using techniques in geochemistry, geochronology, structural geology and petrology, Mesuring the timescales of events through Earth history through the integration of high-precision geochemistry, field geology, and geochemistry, calibrating the geologic timescale and U-Pb geochronology technique development.

Current Students:
- Joe Hussong (jhusson@princeton.edu)
- Brenhink Keller (ckbeller@princeton.edu)
- Kyle Samperton (ksamperton@princeton.edu)

Samuel G. Philander
Knox Taylor Professor of Geosciences
Ph.D., 1970, Harvard University

Current Research Interests: Oceanic Circulation, Ocean-Atmospheric Interactions; Climate Fluctuations, Paleoclimates.

Recent Graduates: Ph.D.
- George J. Magee Professor of Geoscience and Geological Engineering
- Director, Program in Atmospheric and Oceanic Sciences
- Ph.D., 1978, Columbia University

Current Students:
- Daniel M. Sigman
- Curtis Deutsch
- Bryan Mignone
- Anirad Gnanadesikan
- Irina Marinov

Current Research Interests: The use of stable isotopes to study the nitrogen cycle, today and in the past; the interaction of biogeochemical differences in oceanic circulation and climate, focusing on recent glacial cycles and the controls of atmospheric atmospheric carbon dioxide; construction of geochronological models for Earth history studies; chemical oceanography; sediment geochemistry.

Current Students:
- Dario Marconi (dmarconi@princeton.edu)
- Karen Ellis (kkeim@princeton.edu)
- Kristen Karsh (Kristen.Karsh@csiro.au)
- Mathis Hain (mhan@princeton.edu)
- Sarah Fawcett (sfawcett@princeton.edu)
- Xingchen Wang (xingchen@princeton.edu)

Recent Graduates:
- Peter DiFiore (“Nitrate Isotope Dynamics in the Southern Ocean,” 2009), now Associate Head of Portfolio Research and Analytics, Cartesian Capital Group, LLC, New York, NY.
- Abby Ren (“Development and Paleoceanographic Application of Planktonic Foraminifera-bound Nitrogen Isotopes,” 2010), now NOAA Global Change Postdoctoral Fellow at Lamont-Doherty Earth Observatory, Palisades, NY.

Blair Schoene
Assistant Professor
Ph.D., 2006, Massachusetts Institute of Technology

e-mail: bcschoene@princeton.edu

website: www.princeton.edu/geosciences/people/schoene

Current Research Interests: Tectonic and geochemical evolution of the lithosphere, using
Bess B. Ward  
Professor  
Ph.D., 1982, University of Washington  
e-mail: bbw@princeton.edu  
website: www.princeton.edu/ntrogen

Current Research Interests: Nitrogen cycling in marine systems: Nitrification, denitrification and anammox in oxygen minimum zones (OMZs); phytoplankton nitrogen assimilation in the surface ocean. Investigations of functional diversity of marine microbes using molecular and stable isotope approaches to link microbes to N transformation processes. Current projects include cruises to the Eastern Tropical North and South Pacific to investigate denitrification and anammox in the OMZs, and cruises in the subtropical and subarctic North Atlantic to investigate nitrate utilization by eukaryotic phytoplankton.

Current students:  
Sarah Fawcett (sfawcett@princeton.edu)  
Andrew Babin (babbin@princeton.edu)  
Xuefeng (Nick) Peng (xpeng@princeton.edu)  
Qiaox (Jimmy) Ji (jqj@princeton.edu)

Recent Graduates:  
Silvia Neveu (“Nitrogen Cycle Processes in Low-Oxygen Marine Environments,” 2010), Boston University, Boston, MA.  
Gregory O’Mullane (“Diversity and Composition of Ammonia Oxidizing Bacterial Assemblages in Anoxic Marine Environments,” 2005), Queens College, City University of New York, NY.

Frederik J. Simons  
Assistant Professor  
Ph.D., 2002, Massachusetts Institute of Technology (MIT)  
e-mail: fjsimons@princeton.edu  
website: www.frederik.net

Current Research Interests: Geophysics; structure and evolution of continents; seismic waveform analysis and tomography; topography and gravity anomalies; development of oceanic instrumentation; earthquake early warning studies; theoretical spectral analysis; theoretical geodesy; satellite measurements and inverse problems.

Current Students:  
Yanhuay Yuan (yanhuayy@princeton.edu)

Recent Graduates:  
M.A.  
Dong V. Wang, 2010, now at University of North Carolina, Chapel Hill, NC.

Jeroen Tromp  
Blair Professor of Geology  
Professor of Applied & Computational Mathematics  
Director of the Princeton Institute for Computational Science & Engineering (PICSciE)  
Ph.D., 1992, Princeton University  
e-mail: jtromp@princeton.edu  
website: www.princeton.edu/geosciences/tromp

Current Research Interests: Theoretical and computational seismology. Development and implementation of numerical methods for forward and “adjoint” simulations of wave propagation in acoustic, elastic, and poroelastic media over a broad range of spatial and temporal scales. The current focus is on Earth imaging and “adjoint tomography” in exploration, regional and global seismology.

Current Students:  
Yang Luo (yangl@princeton.edu)  
Ryan Modrak (modrak@princeton.edu)  
Hejun Zhu (hejunzhu@princeton.edu)

Michael L. Bender  
Professor, (also see page 4)  
Ph.D., 1970, Columbia University  
AOS website: www.princeton.edu/aos/people/faculty/michael_bender

Current Research Interests: Biogeochemistry and Paleoclimate.

Thomas L. Delworth  
Lecturer  
Ph.D., 1994, University of Wisconsin  
e-mail: tom.delworth@noaa.gov  
AOS website: www.princeton.edu/aos/people/faculty/delworth/index.xml

Current Research Interests: Decadal to Centennial Climate Variability and Change

Leo Donner  
Lecturer  
Ph.D., 1983, University of Chicago  
e-mail: Leo.J.Donner@noaa.gov  
AOS website: www.princeton.edu/aos/people/faculty/donner

Current Research Interests: Cloud and Convective Processes in the Atmospheric General Circulation

Stephan A. Fueglistaler*  
Assistant Professor, (also see page 4)  
Ph.D., 2002, Institute for Atmospheric and Climate Science, ETH Zurich  
AOS website: www.princeton.edu/aos/people/faculty/fueglistaler

Current Research Interests: Cloud and Convective Processes in the Atmospheric General Circulation

Stephen T. Garner  
Lecturer  
Ph.D. 1986, Massachusetts Institute of Technology (MIT)  
e-mail: Steve.Garner@noaa.gov  
AOS website: www.princeton.edu/aos/people/faculty/garner/  
Current Research Interests: Tropospheric Dynamics at the “Meso-scale” where Planetary Rotation has Only a Weak Control Over the Flow

Robert W. Hallberg  
Lecturer  
Ph.D., 1995, University of Washington  
e-mail: Robert.Hallberg@noaa.gov  
AOS website: www.princeton.edu/aos/people/faculty/hallberg/  
Current Research Interests: Ocean Dynamics and Numerical Ocean Model Development

Isaac M. Held  
Lecturer with Rank of Professor,  
Ph.D. 1976, Princeton University  
e-mail: Isaac.Held@noaa.gov  
AOS website: www.princeton.edu/aos/people/faculty/isaac_held/  
Current Research Interests: Large-scale Atmospheric Dynamics and Climate Modeling

Larry W. Horowitz  
Lecturer  
Ph.D., 1997, Harvard University  
e-mail: Larry.Horowitz@noaa.gov  
AOS website: www.princeton.edu/aos/people/faculty/larry_horowitz/  
Current Research Interests: Atmospheric Chemistry

Denise L. Mauzerall  
Professor,  
Department of Civil and Environmental Engineering  
Ph.D., 1996, Harvard University  
e-mail: mauzerall@princeton.edu  
website: www.princeton.edu/~mauzeral/  
Current Research Interests: Air Quality Impacts on Health, Energy, and Climate Change

Ngar-Cheung (Gabriel) Lau  
Lecturer with Rank of Professor  
Ph.D., 1978, University of Washington  
e-mail: Gabriellau@noaa.gov  
AOS website: www.princeton.edu/aos/people/faculty/ngar-cheung_lau/  
Current Research Interests: Atmospheric General Circulation; Large-Scale Air-Sea Interactions  
*Faculty member in both the Geosciences department and the AOS program.
Faculty Emeriti and Senior Scientists

The Department of Geosciences

William E. Bonini
George J. Magee Professor of Geophysics and Geological Engineering, Emeritus
Ph.D., 1957, University of Wisconsin
Kenneth S. Deffeyes
Professor of Geosciences, Emeritus
Ph.D., 1959, Princeton University
Lincoln Hollister
Professor of Geosciences, Emeritus
Ph.D., 1966, California Institute of Technology
W. Jason Morgan
Knox Taylor Professor of Geology, Emeritus
Professor of Geophysics, Emeritus
Ph.D., 1964, Princeton University
Guust Nolet
Professor of Geosciences, Emeritus
Ph.D., 1976, University of Utrecht

Atmospheric & Oceanic Sciences Program

George Mellor
Professor of Mechanics, Mechanical and Aerospace Dynamics, Emeritus
Senior Oceanographer
Sc.D., 1957, Massachusetts Institute of Technology (MIT)

Kirk Bryan
Senior Meteorologist, Atmospheric and Oceanic Sciences
Ph.D., 1957, Massachusetts Institute of Technology (MIT)

Robert A. Phinney
Professor of Geosciences, Emeritus
Ph.D., 1961, California Institute of Technology

John Suppe
Blair Professor of Geology, Professor of Geosciences, Emeritus
Ph.D., 1969, Yale University

Sonya A. Legg
Lecturer
Ph.D., 1992, Imperial College, University of London
e-mail: Sonya.Legg@noaa.gov
AOS website: www.princeton.edu/aos/people/faculty/sonya_legg/
Current Research Interests: Ocean Turbulence and Mixing

David M. Medvigy*
Assistant Professor, (also see page 5)
Ph.D., 2006, Harvard University
AOS website: www.princeton.edu/aos/people/faculty/medvigy/index.xml
Current Research Interests: Climate and the Terrestrial Biosphere

Michael Oppenheimer*
Albert G. Milbank Professor of Geosciences and International Affairs, Woodrow Wilson School, (also see page 7)
Ph.D., 1970, University of Chicago
website: www.princeton.edu/step/people/faculty/michael-oppenheimer/
Current Research Interests: Climate and Environmental Policy

Isidoro Orlanski
Lecturer with Rank of Professor, (also see page 7)
Ph.D., 1970, University of Chicago
website: www.princeton.edu/step/people/faculty/isidoro_orlanski/
Current Research Interests: Cyclones and Fronts

Stephen W. Pacala
Professor, Department of Ecology and Evolutionary Biology
Director, Princeton Environmental Institute
Ph.D. 1982, Stanford University
e-mail: pacala@princeton.edu
EEB website: www.princeton.edu/eeb/people/display_person.xml?netid=pacala&display=Faculty
Current Research Interests: Plant Ecology and Biology, Biosphere, Atmosphere, and Hydrosphere Interactions

V. Ramaswamy
Lecturer with Rank of Professor
Ph.D., 1982, SUNY-Albany
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Ph.D., 1957, University of Wisconsin
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Lincoln Hollister
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Ph.D., 1966, California Institute of Technology
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Professor of Geophysics, Emeritus
Ph.D., 1964, Princeton University

*Faculty member in both the Geosciences department and the AOS program.
This was possible because of the intellectual freedom you are given at Princeton. The thing I remember most about Princeton was the diverse group of people I had the opportunity to work with and meet. I grew up in the West and had never really traveled except in the USA. At Princeton I met people from all corners of the world. Additionally, people did very diverse research, everything from global change to seismic wave propagation. It was a great place to meet people who were very different from myself. Also, Princeton was one of the nicest places I have ever lived. The seasons were great and the easy access to New York and Philadelphia was a big plus.

My graduate experiences at Princeton changed my life for the better. The faculty at Princeton are outstanding, the research opportunities are excellent, and the Princeton area is a nice place to live. I made friends at Princeton that I expect I will be in contact with for the rest of my life. It was a great experience.

Sergio Speziale '03
Research Fellow
GFZ German Research Centre for Geosciences

Working towards a Ph.D. in Princeton is an incredible experience for many reasons. Being a Princeton alumnus opens great opportunities to find prestigious positions, but above all, being there as a graduate student is an extraordinary life experience. Princeton University offers... practically everything! Princeton is a prestigious University with a tradition of excellence in many disciplines. The campus hosts a diverse community made of students and professors from everywhere in the world, and it is a lovely green place to enjoy outdoor life.

The Ph.D. program offered by the Department of Geosciences is strongly research oriented, so that since the very first moment students can be engaged in cutting-edge research. The community in the Department is so diverse covering many areas of Earth Sciences and the interaction with people involved in completely different projects is very stimulating. In addition, the large network of collaborations of all the research groups grants almost continuously the presence of visiting scientists whose seminars complement an already rich program of weekly talks.

The enormous advantage of being in a high-profile research university as Princeton is that you can always satisfy your curiosity in a variety of fields just looking in the many departments on-campus. Attending advanced seminars in other research areas is sometimes the way to give new direction to a Ph.D. project, and a perspective to a whole scientific career.

Now I am a research fellow at the Geo-Research Center (GFZ) in Potsdam, Germany, where I study the physical properties of minerals of the deep interior of the Earth and I have built a new laboratory for the determination of the elastic properties of materials under very high pressures. In supervising my students’ work, I constantly take advantage of the great lessons that I learned in my years at Guyot Hall. The person and the scientist I am are the result of the combination of all the experiences of my life. In many senses I owe a great deal to my experience in Princeton. The years I spent there were among the best of my life.

Meredith Galanter-Hastings ’04
Assistant Professor Brown University

A number of factors influenced my decision of [on] where to go to graduate school: is the university located in a place where I think I would enjoy living? How well does the existing program fit my research interests? How happy are the other graduate students? How long does it typically take to graduate? What are recent graduates of the program doing now? Princeton scored positively in terms of all of these questions, at the time and in retrospect.

Princeton is a beautiful place to live. I really enjoyed living in a small town with the benefit of an easy train ride to major metropolitan cities like New York and Philadelphia. On a daily basis, I loved the walk-ability between my apartment, town, and the school, being in a small town afforded many opportunities for time with friends, cooking, jogging, seminars, and of course working late in the lab!

In deciding to join the Geosciences program at Princeton I was certainly influenced by the prestige of the University and the faculty. I could trust that whatever direction my career took (e.g., academia, government, or private industry) I would benefit from the education I received at Princeton. I continue to benefit from the rigor and depth of my education in the Department of Geosciences and the ability to participate in world-class research in the Department and with scientists in the Atmospheric and Oceanic Sciences Program at the Geophysical Fluid Dynamics Laboratory. I also took advantage of fantastic opportunities in the Princeton Environmental Institute (PEI) and the PEI Science Technology and Environmental Policy program, and enjoyed exposure to prestigious visitors from all over the world. It is significant, too, that throughout my time at Princeton I felt inspired to pursue unique research directions and was supported in doing so.

After graduating, I was awarded a postdoctoral fellowship from the Joint Institute for Study of the Atmosphere and Ocean that supported my research in the Department of Atmospheric Sciences at the University of Washington. From there, I joined the faculty at Brown University in Providence, RI.

Top left - Scanning electron microscope (SEM) picture of the unicellular microbe Thaumarchaeota. The organism is a marine diatom, which is a group of microalgae responsible for a large fraction of primary production and carbon export in the world’s oceans. The picture shows the structure of this outermost cell wall (the frustule), made almost entirely of silica. Image courtesy of the Trace Metal Group.

Right - SEM image of the head of the nematode, Halicephalobus mephisto, the first multicellular organism to be found in the deep biosphere, 1.5 km beneath the surface in South Africa. H. mephisto is 0.5 mm long, tolerates high temperature and low O2 reproduces asexually and is parasitic on many surface bacteria. Its genome is currently being assembled and annotated. Image courtesy of the Geomicrobiology Research Group.

Testimonials

Chris Andronico ’99
Associate Professor Cornell University

Being a Princeton alumnus was key in getting a job. There are a lot of good geologists out there, but having a degree from Princeton definitely got my applications looked at more critically than I think they would have if I had entered a different school. Since graduating from Princeton, I was an Assistant Professor teaching structural geology at the University of New Mexico, MIT, and Princeton for graduate school. I was from Albuquerque, so MIT and Princeton were the better choices for me, and Princeton seemed like a much friendlier place than Cambridge after visiting both places. I also had a 2-year-old child at the time and Princeton was a much better place to have children. Finally, my future advisor did a good job of encouraging me with a great field-based research project.

Princeton was a great learning experience for me. I had done research before coming to Princeton, but working on my Ph.D. I think I really learned how to formulate good questions and follow through to the end. The research community in Princeton really pushes you to be the best without being unfriendly. I felt I was best at and learned how to push others to achieve their best.

Meredith Galanter-Hastings ’04
Assistant Professor Brown University

A number of factors influenced my decision of [on] where to go to graduate school: is the university located in a place where I think I would enjoy living? How well does the existing program fit my research interests? How happy are the other graduate students? How long does it typically take to graduate? What are recent graduates of the program doing now? Princeton scored positively in terms of all of these questions, at the time and in retrospect.

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Senior research scientist, lecturer, ETH Zurich, Switzerland

Arriving at Princeton from Germany was a rather humbling experience at first, not being use to this intensely academic vibe resonating within the entire community (campus and village). Realizing that everyone is in the same boat steering somewhat similarly (and at first randomly), it is a fabulous place to grow on many levels during doctoral studies.

One of the most important assets of good scientific work is the ability to step into, out and back of the daily “cocoon”. My impression of Princeton was that it matters most to think through ideas thoroughly, and the Princeton graduate school warrants sufficient time to establish this endeavor. The support in gaining mental, critical independence is probably the most valuable gift bestowed upon me at Princeton. The small size of the Department as well as University automatically fosters interaction, if only verbal, with different disciplines and the...
need for a language to be understood by non-experts. I remember the general atmosphere as one of curiosity, intellectual generosity, and mutual respect. I was rather humbled when I was then introduced - he presented a colleague to him - and his President, and President Tilghman had recognized this random graduate student wandering about campus for years after one brief encounter. Princeton holds the concept of the University higher than any other place I've seen: Curious minds gathered from across the globe, progression in thought without mandating a profession (there are virtually no professional schools on campus), and synergy of research and teaching. Learning how philosophers peer-review research papers, discussing brain drain with your country's minister of foreign affairs, the energy crisis, and whether Sachs, the religion of climate skepticism with climate scientists, or just the casual lunch during which your respected supervisor panics about your experiences I wouldn't have wanted to have missed either. I also believe there aren't many other places to find yourself on a podium introducing your first seminar paper to an audience including The Beautiful Mind and other Nobel scholars. Unforgettable extracurricular include playing the Princeton United Soccer Club with a roster composed of 17 countries from 5 continents spanning the entire world. I have my personal best national petrology field trip in New Mexico. I had a great time playing softball with the Coprolites, making Jell-O rock grinding and scanning each sample at a resolution of 30.8 µm. From these images they constructed three-dimensional digital models of the fossils. Despite any inevitable hiccups or regrets that are an inherent and necessary part of grad-school life, I have only fond memories of Princeton and would not wish to trade this experience. As the years go by, this research, collaboration with your doctoral supervisor may slowly become less central to your current work, but the foundations of becoming a well-rounded, independent scientist and respectful human only grow with time. I blame Princeton to a large degree for the latter.

The Trezona Formation fossils pre-date the oldest known calcified fossils by ~90 million years. The Earth History Group have traced cross-sections of individual fossils with serially grinding and scanning each sample at a resolution of 30.8 µm. From these images they constructed three-dimensional digital models of the fossils. Despite any inevitable hiccups or regrets that are an inherent and necessary part of grad-school life, I have only fond memories of Princeton and would not wish to trade this experience. As the years go by, this research, collaboration with your doctoral supervisor may slowly become less central to your current work, but the foundations of becoming a well-rounded, independent scientist and respectful human only grow with time. I blame Princeton to a large degree for the latter.

Sussannah Dorfman *12 Postdoc Research Associate, Ecole Polytechnique Federale de Lausanne, Switzerland When I asked my undergraduate advisor where to go to do a Ph.D. in mineral physics, their first resposta were both “Princeton, with Tom Duffy.” So it was an easy decision, and an excellent one for my scientific training. From the first-year research project on, students in GEO are expected to take full ownership of our research. The other students in the mineral physics group taught me the lab techniques, and Tom Duffy advised me in everything from proposal writing to data analysis to professional presentation of the results. I recall one paper that required a stratigraphy-thesis, and I was embarrassed/amazed at how much I’d learned since then.

There is of course life outside of research. The GEO undergraduates are few but lots of fun to teach, and I have great memories of our petrology field trip in New Mexico. I had a great time playing softball with the Coprolites, making Jell-O rock grinding and scanning each sample at a resolution of 30.8 µm. From these images they constructed three-dimensional digital models of the fossils. Despite any inevitable hiccups or regrets that are an inherent and necessary part of grad-school life, I have only fond memories of Princeton and would not wish to trade this experience. As the years go by, this research, collaboration with your doctoral supervisor may slowly become less central to your current work, but the foundations of becoming a well-rounded, independent scientist and respectful human only grow with time. I blame Princeton to a large degree for the latter.

Faculty:

Susan Dorfman

Postdoc Research Associate, Ecole Polytechnique Federale de Lausanne, Switzerland

When I asked my undergraduate advisor where to go to do a Ph.D. in mineral physics, their first responses were both “Princeton, with Tom Duffy.” So it was an easy decision, and an excellent one for my scientific training. From
Special thanks to former students whose reminiscences about their Geosciences studies appear throughout this brochure.

Many thanks to Suzan van der Lee *96, Chris Andronicos ’99, Sergio Speziale ’03, Meredith Galanter-Hastings *04, and Gregory O’Mullan *05.

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