

Graduate Degrees in the Department of Earth & Environment

Geoscientific and environmental issues that face the world today require tomorrow's scientists and leaders to be well-equipped to make science-based decisions. Combining earth and atmospheric sciences with environmental research creates synergies in the fields of water and water policy, stratigraphy and petroleum reserves and spills, environmental changes caused by humans, climate change and climate policy, natural resource management, and with the use of remote sensing and geographic information systems. The **Ph.D. in Earth Systems Science (ESS)** with majors in either **Geosciences** or **Natural Resource Science and Management** reflects these synergies.

Research in the **Geosciences (Geosciences Ph.D. subplan, and the M.S. in Geosciences)** includes atmospheric sciences, geochemistry, geographic information systems, hydrology, environmental science, igneous petrology, micropaleontology, stratigraphy, structural geology, and tectonics. Many research projects are based in South Florida and the Everglades, the Caribbean and Latin America, as well as other international sites. Nineteen faculty in the department serve as geosciences Advisors, and many affiliated researchers serve on students' committees.

Environmental Research (Natural Resource Science and Management Ph.D. subplan, and the M.S. in Environmental Studies) addresses land and aquatic science, conservation biology, natural resource management, environmental economics and policy and agroecology. Projects are based in the Everglades, local botanical institutions, and international sites. Fifteen departmental faculty and many affiliated faculty serve as student Advisors.

Financial support for faculty and student research typically comes from NSF, NASA, IODP, USGS, DOE, Everglades National Park, USDA, South Florida Water Management District, Everglades Foundation, and the American Chemical Society. Teaching assistantships are available for PhD students on a competitive basis.



Graduate students are supported by assistantships for research (RAs) or teaching (TAs, PhD program only) that provide a stipend and waiver of tuition. Details at: <http://earthenvironment.fiu.edu/programs/graduate/>. Application deadlines are **February 1** to begin in the Fall term and **August 1** to begin in the Spring term.

Graduate Program Directors:

Prof. Rosemary Hickey-Vargas – GPD for Ph.D. in Earth Systems Science (Geosciences or Natural Resource Science & Management subplan), M.S. in Geosciences, and M.S. in Environmental Studies. hickey@fiu.edu.

Prof. Krish Jayachandran – GPD for Professional Science Master's in Environmental Policy and Management. jayachan@fiu.edu.

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We offer graduate students:

- research in the geosciences, natural resource management, and environmental policy
- advising, mentoring and teaching by internationally recognized faculty
- facilities for geoscientific and environmental investigation
- field and lab opportunities for research and coursework



**Graduate research
opportunities in geology,
atmospheric sciences, and
environmental science & policy**

<http://earthenvironment.fiu.edu/>

Faculty, Students and Research

FIU is situated near the Everglades, Atlantic Ocean, Gulf of Mexico, the Caribbean and Latin America – diverse settings for geological, meteorological and environmental research. Twenty-eight faculty serve as Advisors to about 90 grad students in the Earth Systems Science Ph.D., Geosciences M.S., and M.S. Environmental Studies programs. The department and associated university research centers support outstanding research facilities used in graduate research and training in the laboratory and field.
<http://earthenvironment.fiu.edu/research/>



Graduate Degree Programs

- Ph.D in Earth Systems Science with Subplans in:
 - Geosciences
 - Natural Resource Science & Management
- M.S in Geosciences
- M.S. in Environmental Studies
- Prof. Science Master's in Environmental Policy & Mgmt.

Research in the Geosciences

• Atmospheric Sciences

Researchers focus on hurricane dynamics, hurricane impacts, hurricane boundary layer turbulence structures, atmospheric convection, atmospheric boundary layer and clouds, and cloud-climate feedbacks. Primary faculty: Burgman, Jiang, Willoughby, Zhu.

• Hydrogeophysics/Remote Sensing

Geophysical investigative techniques using gravity, magnetism, seismic reflection and refraction, earthquake seismology, thermal properties and satellite imagery. Primary faculty: Melesse, Wdowinski, Whitman, Zhang.

• Hydrogeology/Geochemistry

Field and modeling approaches to groundwater flow and solute fluxes in the subsurface and near-subsurface environments, in coastal and inland settings. Primary faculty: Anderson, Melesse, Miralles, Price, Sukop, Whitman.

• Igneous Petrology/Geochemistry

Research problems in petrology/geochemistry of igneous and metamorphic rocks with reference to their origin and processes, and of sedimentary rocks with reference to surface processes. Primary faculty: Anderson, Haggerty, Hickey-Vargas, Macfarlane, Srimal.

• Micropaleontology/Stratigraphy

Micropaleontology and sedimentary petrology applied to paleobiology (evolution, paleobiogeography), paleoenvironments, paleoceanography, sequence stratigraphy, cyclic stratigraphy, biostratigraphy, and microfacies analysis. Primary faculty: Collins, Maurrasse.

• Structural Geology/ Tectonics

Analysis of geologic deformation based upon the principles of mechanics and utilizing research data from laboratory and field investigations of folding, fabrics, fracture, and faulting. Primary faculty: Draper, Wdowinski, Whitman.



Research in Environmental Science & Policy

• Land and Aquatic System Science

Management of environmental problems and sustainable use of land and aquatic resources; understanding and quantification of fundamental physical, chemical, and biological processes operating on land, and in water and soil. Primary faculty: Jayachandran, Leatherman, Melesse, Miralles, Rand, Rehage, Ross, Scinto, Zhang.

• Natural Resource Management

Research on interactions between natural systems and human systems. Problems in natural resource conservation, ecosystem restoration, agroecology, ecotoxicology, forestry, wildlife, fisheries, and coastal and marine resources. Primary faculty: Bhat, Bray, Heinen, Jayachandran, Liu, Melesse, Rand, Rehage.

• Environmental Economics and Policy

Analysis of policy effectiveness in managing environmental pollution, sustainable development, energy resources, climate change, food and agriculture, community forests, and conservation programs. Research methods in ecosystem service valuation, economic modeling, and ethnographic and other behavioral analyses. Primary faculty: Bhat, Bray, Heinen, Mozumder.