

**John Delaney, Ph.D.**  
Professor



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**Research Interests:** Causes and consequences of mass and energy flux through the global ridge crest system; hydrothermal, magmatic and tectonic processes which form and modify young oceanic crust; and interplay among physical, chemical and biological processes at spreading centers.



**Paul Johnson, Ph.D.**  
Professor

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**Research Interests:** Formation and evolution of oceanic crust. Interactions between hydrothermal fluid and oceanic crustal rocks. Use of geophysical tools including magnetics, gravity and heat flow to study crustal fluid circulation.

**Deborah Kelley, Ph.D.**  
Professor



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**Research Interests:** Links between geological and microbiological processes at submarine hot springs, evolution and growth of black smokers, exchange processes and flux of volatiles from the mantle to the hydrosphere, isotopic and chemical composition of fluids in magma hydrothermal systems, and mapping and sampling of seafloor hydrothermal systems and ophiolites.

**Russ McDuff, Ph.D.**  
Professor and Director



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**Research Interests:** Chemical exchange processes between the ocean and oceanic crust, including dynamics of hydrothermal plumes, physical and chemical interactions involved in sulfide deposition, and use of chemical tracers in delineating the hydrogeology of the oceanic crust; aqueous geochemistry; ocean paleochemistry; and scientific computing and visualization.



**Chuck Nittrouer, Ph.D.**  
Professor

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**Research Interests:** The formation of sedimentary strata in continental margin environments, both modern and ancient; and the effects of physical and biological oceanic processes on sedimentary characteristics.

**Andrea Ogston, Ph.D.**  
Associate Professor



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**Research Interests:** Sediment dispersal from river to deep sea; sediment transport processes in marine environments from surf zone to continental slope; interaction between geological and physical oceanography of the coastal ocean.

**Ben Sheets, Ph.D.**  
Assistant Professor



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**Research Interests:** The relationship between geomorphology and stratigraphy, and how we can interpret the characteristics of one from the other; physical experiments, field studies on ancient sedimentary successions, as well as observational studies of geomorphology and recent stratigraphy in modern marine sedimentary systems.

**Evan Solomon, Ph.D.**  
Assistant Professor



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**Research Interests:** The role of fluids in the chemical and thermal evolution of subduction zones, ridge flanks, and passive margins; the interrelationship between fluid flow and deformation along continental margins; slope stability; gas hydrates and environmental change; methane fluxes from seeps; sub-seafloor observatories, sediment pore fluid biogeochemistry and diagenesis.



**William Wilcock, Ph.D.**  
Professor

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**Research Interests:** Dynamics of mid-ocean ridges and the interplay between seismicity and hydrothermal heat extraction; seismic imaging techniques; oceanic earthquakes; geothermal processes; baleen whale studies with seafloor seismic networks and seafloor observatories.

**Other Faculty:** Ross Heath, Professor Emeritus; Mark Holmes, Research Professor Emeritus; Dean McManus, Professor Emeritus; Bruce Nelson, Adjunct Professor, Earth and Space Sciences; Arthur Nowell, Dean, College of Ocean and Fishery Science; Ron Shreve, Research Professor, Friday Harbor Laboratories; Dick Sternberg, Professor Emeritus

The Marine Geology and Geophysics program at the University of Washington focuses on two primary areas of education and research. Mid-Ocean Ridge Processes involves the examination of the flow of energy and materials from the Earth's interior, through the ocean crust and its associated hydrothermal systems, and into the deep sea. Sediment Dynamics concerns the genesis, transport and accumulation of particulate material in the marine environment. Individual faculty members also pursue a number of research themes outside these two focus areas. Our approach to graduate student education builds on a solid academic foundation in the fundamentals of transport phenomena, fluid and continuum mechanics, geochemistry, and data analysis as a basis for understanding the geological processes within the marine environment.

### Graduate Program

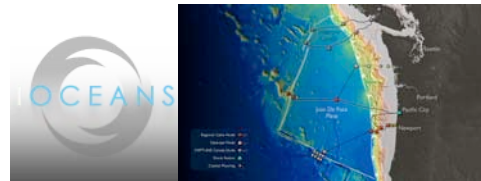
A sampling of the courses taught within Marine Geology and Geophysics includes the following:

- Ocean 540 Marine Geological Processes (3) (Nittrouer, Solomon)
- Ocean 541 Marine Sedimentary Processes (3) (Ogston)
- Ocean 544 Subseafloor Hydrogeology & Hydrogeochemistry (3) (Solomon)
- Ocean 545 Physics of the Oceanic Lithosphere (3) (Wilcock)
- Ocean 547 Geological Oceanography and Marine Stratigraphy (3) (Sheets)
- Ocean 550 Oceanic Crust from Cradle to Grave (3) (Kelley)

In addition to the coursework outlined by the student's committee, the required out-of-option credits are usually met by a course in each of the other options within the School: Physical Oceanography, Chemical Oceanography and Biological Oceanography. Elective courses within Marine Geology and Geophysics, the School of Oceanography and potentially the Depts of Earth and Space Sciences, Atmospheric Science, Applied Mathematics and Mechanical Engineering are

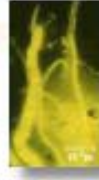
chosen in consultation with the student's advisory committee.

Our faculty are involved with several interdisciplinary programs on campus:



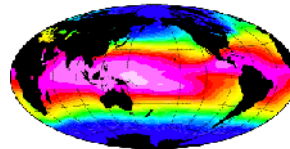
### Ocean Observatories Initiative Cabled Observatory

<http://www.interactiveoceans.washington.edu>



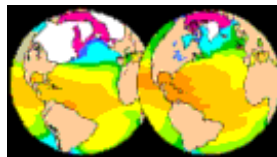
### Astrobiology Program

<http://depts.washington.edu/astrobio/>



### Program on Climate Change

<http://depts.washington.edu/uwpsc/>



### Quaternary Research Center

<http://depts.washington.edu/qrc/>



# Marine Geology and Geophysics at the University of Washington

