



VOLCANOES, BEACHES, AND EARTHQUAKES IN NEW ZEALAND (EES 3865: Field Investigations)

Guil Gualda, Earth & Environmental Sciences

SCOPE: We will study Earth and Environmental processes and systems in the field, with an emphasis on field methods. The course will be held in New Zealand, which will give us the opportunity to study a variety of topics, including volcanoes, earthquakes, sedimentary systems, surface geomorphology, natural hazards, and geothermal energy.

MOTIVATION AND GOALS: Rocks preserve the most extensive record of the evolution of the planet, from which we are able to retrace Earth's history over 4.5 billion years. Field geology plays a particularly important role in decoding this complex record, but its interpretation requires proper understanding of geologic processes and of the methods of field geology. In this course, we will learn the methods of field geology and will apply them to understand geologic processes at an active tectonic plate boundary in the North and South Islands of New Zealand, focusing on the evolution of and the processes active in this region of the Earth over the last few million years. During the course, we will study volcanic supereruptions and their deposits, associated hazards, and energy resources associated with magmatic systems in the Taupo Volcanic Zone of the North Island; mountain building and destruction processes, effects of glaciers on landforms, earthquakes and associated hazards in the South Island. Part of the fieldwork performed during the course will directly contribute to an active NSF-funded project focusing on the evolution of supereruption-forming magma bodies, which includes Gualda, Vanderbilt graduate students, and colleagues from the University of Canterbury, New Zealand

PROGRAM: The course will start in Christchurch on May 08 and finish in Auckland on May 31, 2019. We will visit both the South and North Islands of New Zealand over the length of the course, and the topical focus will change accordingly:

- **SOUTH ISLAND:** Introduction to geology; earthquake geology; mountain building
- **NORTH ISLAND:** volcanism in the Taupo Volcanic Zone; geothermal energy harvesting; field research of super eruption deposits, in connection with NSF-funded CAREER project.
- **EVALUATION:** Course evaluation will be based on participation, field exercises (outcrop descriptions, geologic cross-sections and maps), and oral presentations.

CREDITS: 3 (This course is listed as MNS in AXLE)

REQUISITES: Students with all levels of expertise in Earth and environmental sciences are encouraged to apply. Activities will be adjusted to take into account prior experience and course-work.

EXPENSES: Course fee includes tuition, lodging, transportation, most meals (depending on location), entrance fees to National and State Parks. It does not include airfare from Nashville to Christchurch or from Auckland to Nashville, transportation from and to airports, regular meals in major cities, incidental expenses.

CONTACT INFORMATION:
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APPLICATION AND FINANCIAL SUPPORT:
<https://www.vanderbilt.edu/geo/maymesters/>

MORE INFORMATION: <https://goo.gl/forms/qQZEscZQ2pMYXRz2>

