2020 field modules (modules subject to change)

- **Module 1: Volcanoes – giveth life and taketh away: Introduction to field observations through volcanology and hazards.** Volcanoes bring to light a major problem in measuring and mitigating human environmental impacts, and that is the void in our understanding of how the planet has been impacting itself. Volcanoes can be a threat to society, but they are also a major source of geothermal energy New Zealand relies upon to meet its energy demands. The North Island of New Zealand is one of the most volcanically active regions on Earth. The magnitude, frequency, and environmental impact of eruptions from 300 thousand years ago to the present can be quantified in both time and space through careful field observations. In this module we will first observe and map the products of volcanic eruptions and discuss their impacts on civilization. A special focus will be placed upon introducing field mapping, observations and recording these observations in field notebooks. Finally we will look at how New Zealand is currently exploiting geothermal energy to meet its energy demands.

- **Field Module 2: Introduction to Geologic Field Mapping in Castle Hills Basin.** The first component of field camp is an introduction to field mapping in the Castle Hill Basin, located in the eastern foothills of the Southern Alps, inland Canterbury. Students will learn basic field skills including compass work and navigation, triangulating for location, field notetaking and sketching, outcrop descriptions, introduction to geomorphological observations, and producing a small geologic map.

    -

    Mapping the Basin

- **Field Module 3: Detailed stratigraphic and structural mapping in an uplifted and deformed succession of Oligocene marine strata (Castle Hill basin).** The second module examines the stratigraphy and structural geology of Castle Hill basin, located in the eastern foothills of the Southern Alps, inland Canterbury. This part of the course will focus on advanced field mapping skills, including the compilation of a detailed stratigraphic column, mapping geological contacts and structures, geomorphic features, and preparing geological cross sections. The structural mapping concentrates on the complex folding best expressed by a middle Tertiary limestone unit, and we will be developing a structure contour map on this unit. This will develop an understanding of both the structural and geomorphic evolution of the basin, and subsequent uplift, deformation and glaciations

    -

    The rugged west coast

    Field Module 4: Gondwanaland to New Zealand: reconstructing the geologic architecture of the South Island. Field module 4 integrates different types of geologic data to interpret a geologic history of the Buller District of the West Coast region, South Island. This part of the field programme is based in Westport. This model focuses on the examination of a metamorphic core complex, its less deformed cover and contemporaneous basin deposits reflecting the Cretaceous Gondwana breakup and related extension. Additionally, we will study the tectonic controls on the formation and evolution of the Cretaceous-Tertiary basins of the region, and how this has been subsequently folded and faulted. The field programme provides further field training utilizing and developing basic field mapping skills such as the observation, recording and interpretation of folded bedding-cleavage relationships, and furthers structural relationships at varying scales.

- **Field Module 5: Independent Research Projects.** During field module 5, students will apply the skills acquired during the first four weeks of field camp to group mapping projects of previously unmapped terrain on Banks Peninsula. This is the capstone field camp experience that leads into the initiation of your semester research project during this last field module. Research projects in 2017 could involve volcanology, igneous petrology, geomorphology, paleoclimatology, digital mapping (GIS and 3-D visualisation), geo-archaeology, geologic hazards, engineering geology, and geo-education.