

Earth Sciences

Colloquium Series



Dr. Jeremy Gosselin

NRCAN Research Scientist

Stressed out: Tectonics and Seismicity of Yukon

The tectonics of Yukon are impacted by oblique collision of the Yakutat microplate with North America. This represents a regime that transitions from a predominantly strike-slip margin to the south along the BC coast (the Queen Charlotte – Fairweather Fault system) to subduction of the Yakutat and Pacific plates, forming the Alaska-Aleutian subduction zone. Crustal deformation in the region is characterized by several crustal-scale, right-lateral, strike-slip faults (including the Denali Fault), as well as rapid uplift of the St. Elias orogeny. Seismic station network coverage in Yukon has improved dramatically in recent years. This talk will review outstanding tectonic questions for the region and summarize recent work that leverages improved seismic station density. This will include regional earthquake detections, relocations, and focal mechanisms which constrain active deformation processes in southwest Yukon, including orientations of crustal stress. These results highlight enigmatic seismic quiescence along the Eastern Denali Fault, and represent valuable seismological evidence in support of the un-mapped “Connector” Fault beneath the St. Elias ice cover. These results contribute to our understanding of natural hazards in an area of cultural significance and expanding resource development.

Jeremy Gosselin is a former Vanier Scholar of the University of Ottawa, where he obtained his PhD studying the structure and dynamics of active plate margins under the supervision of Pascal Audet. Jeremy completed an NSERC post-doctoral fellowship at the University of Calgary, where he worked with Jan Dettmer to study seismicity, tectonics, and earthquake hazards in Yukon. Recently, Jeremy joined Natural Resources Canada (Geological Survey of Canada – Pacific Division) as a research scientist. He continues to work with territorial geological surveys to conduct seismological research in northern regions. Jeremy possesses a broad geophysical skillset, and has pursued research in passive Earth imaging from geotechnical (e.g., earthquake site response) to lithospheric scales. His work also spans investigations of regional seismicity, earthquake source processes, and the statistics of hydraulic fracturing-induced earthquakes. A common theme to his research is the development and application of novel techniques for quantitative uncertainty estimation of geophysical model parameters.

Date: Friday, November 8, 2024

Time: 1:30 pm

Location: BGS 0153

Coffee and donuts will be served.