

2022

WINNER

**Graduate Student Research Award of the Calgary Geo- and
Thermochronology Lab**

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Proposal Summary

Apatite (U-Th)/He applied to the denudation history of the southern Brazilian Passive margin

The South Atlantic passive margin of Brazil developed during the breakup of western Gondwana ca. 134 Ma. This margin is marked by the presence of a 2,000 km-long escarpment system stretching from lat. 20 – 30°S. Located at the southern end of this system, the Aparados da Serra Plateau (lat. 28° – 30° S) is characterized by the presence of a continental-scale escarpment that separates a high-elevation plateau (> 1.4 km in elevation) from the low-lying coastal plains. Based on topographic and geologic observations, this area potentially comprises the last topographic expression remnants of the southwestern Gondwana rifting, recorded in the volcanic flows of the Parana-Etendeka Large Igneous Province. In this project, we will apply (U-Th)/He in apatite to determine both the origin and the geomorphologic processes operating on the Aparados da Serra Plateau. This approach will allow us to constrain the exhumation history of the southeast Brazilian passive margin and further determine the post-breakup evolution of the area. By combining low-temperature thermochronology, field data, and topographic observations, we will be able to address both the timing (old vs. recent) and the denudation style (escarpment retreat vs. plateau degradation) of the Aparados da Serra Plateau, comparing it to geodynamic processes operating in South America and other passive margins around the world.