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Structural constraints to the evolution of the Transantarctic Mountains Front in Prince Albert Mountains, central Victoria Land, Antarctica.

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The Transantarctic Mountains (TAM) are the most prominent topographic expression of rift margin uplift on Earth, developed in response to the polyphase Mesozoic-Cenozoic formation of the West Antarctic Rift System (WARS). During the past few decades considerable progress has been made in indentifying the Cenozoic tectonic regimes in the region, but some fundamental questions, regarding the regional tectonic scenario through time, with impact on the possible interaction and feedbacks relationships involving tectonics, volcanism and climate in the region, remain not fully answered. What is the spatio-temporal evolution of the intraplate fault kinematics along the TAM front? What is the temporal relationship between faulting, volcanism and the uplift/exhumation history along the TAM front?

During the last Italian Antarctic Campaign, in November 2017, we collected structural data along the region of the Prince Albert Mountains, in central Victoria Land. Fault arrangement shows a predominance of dextral faults kinematics, coherent with field studies along the TAM front, both in the northern Victoria Land, in the Dry Valleys region of southern Victoria Land and offshore in the Victoria Land Basin. The main faults show cataclastic cores hosting dark veins with possible occurrence of pseudotachylite veins. Brittle deformation of tourmaline veins, probably of Paleozoic age, are also abundant testifying the role of the structural heritage in the Cenozoic brittle deformation.

Our structural survey recognized a complex array of NNE-SSW and ENE-WSW faults system, with subordinated nearly WNW-ESE striking fault and NE-SW joints. In the study region, the deformation seems diffuse and not focused along a master fault, that probably remain hidden or covered by glaciers.