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Low temperature thermochronology and topographic evolution of the South Atlantic passive continental margin in the region in eastern Argentina

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To understand the evolution of the passive continental margin in Argentina low temperature thermochronology is an appropriate method, which will lead to new conclusions in this area.
The Tandilia System, also called Sierras Septentrionales, is located south of the Río de la Plato Craton in eastern Argentina in the state of Buenos Aires. North of the hills Salado basin is located whereas the Claromecó basin is situated south of the mountain range.
In contrary to most basins along the southamerican passive continental margin the Tandilia-System and the neighbouring basins trend perpendicular to the coast line. The topography is fairly flat with altitudes of. The igneous-metamorphic basement is pre-proterozoic in age and build up of mainly granitic-tonalitic gneisses, migmatites, amphibolites, some ultramafic rocks and granitoid plutons it is overlain by a series of Neoproterozoic to early Paleozoic sediments (Cingolani, 2010), like siliciclastics, dolostones, shales and limestones (Demoulin et al., 2005).
The aim of the study is to quantify the long-term landscape evolution of the passive continental margin in eastern Argentina in terms of thermal history, exhumation and tectonic activities.
For that purpose, samples were taken from the Sierra Septentrionales and analyzed with the apatite fission-track method. Further 2-D thermokinematic modeling was conducted with the computer code HeFTy (Ketcham, 2005; Ketcham 2007; Ketcham et al., 2009).
The results indicate apatite fission track ages between 101.6 (9.4) to 228.9 (22.3) Ma, what means all measured ages are younger as their formation age. That shows all samples have been reset. Six samples accomplished enough confined tracks and were used to test geological t-T models against the AFT data set. These models give a more detailed insight on the cooling history and tectonic activities in the research area.

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