ZIRCON AND APATITE FISSION TRACK ANALYSES: NEW INSIGHT ABOUT THE EXHUMATION OF CORDILLERA DEL VIENTO, NEUQUÉN BASIN, ARGENTINA

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The Cordillera del Viento (CV) is the western sector of the inner Chos Malal fold and thrust belts (CMFTB) and exposes basement (Carboniferous and Permo-Triassic) and its cover rocks of the Neuquén basin (Late Triassic to the Neogene). Sánchez *et al.* (2020), based on thermochronology data performed in the different units of the Neuquén Basin, define that the faults of the CMFTB, shows a normal sequence of deformation toward the foreland from Late Cretaceous to Late Miocene. In this contribution we present the first zircon fission tracks (ZFT) and apatite fission tracks (AFT) analyses carried out in the basement rocks of the Neuquén basin in order to give a contribute to the understanding of the evolution of the inner thick-skinned zone of the CMFTB.

The study area is located in the southwest zone of the CV Anticline eastward of the CV Fault (Giacosa *et al.* 2014) where Andacollo Group rocks, formed by Carboniferous volcanoclastic (Arroyo del Torreón Formation; U-Pb 328-325 Ma, Suarez *et al.* 2012 and references there in) and marine rocks (Huaraco Formation; U-Pb, 304 Ma, Suarez *et al.* 2012), are intruded by the Huingancó granodiorite of Huinganco Volcanic Plutonic Complex (HVPC; U-Pb, 282.5±2 Ma, Hervé *et al.* 2013). Previous units are intruded by dacitic porphyry dykes. These three units have been sampled for a petrographic characterization in order to select the best samples for ZFT and AFT analyses, performed at the Padova, and Late Andes S. A., laboratories.

The medium grained quarzitic sub-rounded well sorted sandstones of Huaraco Formation, with traces of micas, zircon, apatite, and tourmaline as accessories minerals, were selected to separate zircons for ZFT analysis. The ZFT analysis was carry out on 27 grains and gave a central cooling age of 140.8 ±6.2 Ma (with χ^2-test of 36.05%). A granodiorite sample of Huinganco volcanic-plutonic Complex shows a granophyric texture and consists of subhedral plagioclase crystals (40%), anhedral potassic feldspar (27%), quartz (8%), amphibole (5%), micas (15%), zircon and apatite as accessories (<1%). The ZFT and AFT analyses of this sample have been performed in 27 grains and 17 grains, respectively, and gave a central cooling age of 154.9±9 Ma (ZFT) and 67.7±7.1 Ma (AFT), both showing χ^2-test higher than 5%. Dacitic porphyry samples present euhedral coarse quartz (10-20%), plagioclase (35%), alkaline feldspar (15%), amphibole (1%) and biotite (5%) phenocrystals immersed in a felsitic ground mass, with magnetite, apatite, and zircon as accessories. AFT analyses were carried out in 34 grains and gave a central cooling age of 65,3 ±6,8 Ma with the χ^2-test at 80.56%. New U-Pb age (68.46± 0.31Ma; Pons *et al.* this congress) confirms that this porphyry belongs to Naunaco Belt defined by Llambías and Aragón (2011) and later designed as Naunauco Group by Zamora Valcarce (2007).

The AFT and ZFT ages from Huaraco Formation and the granodiorite of VPHC are younger than the stratigraphic age assigned to these units, thus indicating a total reset of fission tracks. As expected given the closure temperatures (~180-300ºC for ZFT and 110-120ºC for AFT), the ZFT age is older than the AFT one.

The age obtained for the Huingancó granodiorite correlates well with the Araucanic main discordance developed between Cuyo and Mendoza Groups (Leanza 2009) of the Mesozoic sequence of the Neuquén basin and could mark initial configuration of CV anticline during the active subduction and the associated magmatic arc along the western margin of Gondwana (Vergani *et al.* 1995, Howell *et al.* 2005, Arregui *et al.* 2011, Ramos and Folguera 2005, Kay *et al.* 2006, Folguera and Ramos 2011). These results indicate that, at least in this zone of the southwestern end of the CV, the exhumation took place earlier than what estimated by Sánchez *et al.* (2020 and references therein) for the CMFTB. The ZFT ages coincide with the continental sedimentation during Kimmeridgian-Tithonian times of Tordillo Formation (Mendoza Group), as due to changes in the base level by the uplift of the CV. The AFT age for Huingancó Granodiorite correlates with the late Cretaceous-Paleogene uplift stage defined by Rojas *et al.* (2015) and Sánchez *et al.* (2020). This event is clearly recognizable by the angular unconformity between Paleogene volcanic rocks (Cayanta Formation of the Naunaco Group) and the Paleozoic basement. AFT age of dacitic porphyry is close to its U-Pb age indicating it could be a cooling age concomitant with the Paleogene exhumation stages.

This research was partially funded by Late Andes, PIP 2017-2019-CONICET, PI 40-A-697UNRN and Padova University.

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