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Mesozoic exhumation in the coastal region of NW Iberia: Preliminary constraints from apatite fission-track cooling ages

Joaquina Alvarez-Marrón (1), Luis Barbero (2), Rosana Menéndez-Duarte (3), and Susana Fernández (3)

(1) Instituto de Ciencias de la Tierra Jaume Almera, CSIC, 08028 Barcelona, Spain, (2) Departmento de Ciencias de la Tierra, Universidad de Cádiz, 11510 Puerto Real, Cádiz, Spain, (3) Instituto de Recursos Naturales (INDUROT), Universidad de Oviedo, 33600 Mieres, Asturias, Spain

Apatite fission-track (AFT) ages from the Iberian Massif, along the northern coastal region in Galicia are presented. The study aims at unravelling the exhumation history of this higher topography coastal region, the so-called Rías Altas region, next to the northern Iberian margin. The rough topography region is bound to the south by the WNW-ESE trending As Pontes dextral strike-slip fault zone. This fault was active since ca. 30 Ma (Rupelian) up to ca. 21 Ma (Aquitanian). The area comprises mainly Late Proterozoic to Paleozoic metamorphic and igneous rocks from the hinterland of the Variscan orogen. A N-S AFT ages profile from the coast to the southern block of the As Pontes fault reveal progressively younger ages toward the south with the oldest ages (242 $\pm$ 12 Ma) located near the coast and the youngest age being 124 $\pm$ 7 Ma. The AFT ages at both sides of the As Pontes fault in samples taken at the same elevation are similar within error (124 $\pm$ 7and 127 $\pm$ 7 Ma) indicating that this strike-slip fault did not cause significant differential exhumation during Oligocene-Early Miocene times. Another important feature shown by these data is that the age-elevation relationship (AER) is negative, the youngest ages being located at the highest elevation (ca. 1000 m. a. s. l). This agrees with recent published data from the easternmost part of the present study area and is an indication of Post-Early Cretaceous long residence time within the upper 2 or 3 km of the crust at temperatures lower than those of the apatite partial annealing zone (60 to 120ºC). We interpret the registered exhumation history as mostly related to rifting processes in Pre-Early Cretaceous times. Possibly recording surface processes associated to the two stage rifting episodes in the Triassic and in the Late Jurassic-Early Cretaceous that culminated with formation of the north Iberian Margin. The negative AER suggests that since Early Cretaceous times the whole area underwent topographic changes that could be related to tilting toward the north, possibly during the Cenozoic tectonic inversion in the margin. The details on the mechanisms are still lacking. The underway research should provide a precise thermal history of the whole area, which will presumably constrain the relationship between long-term surface processes on-land and the tectonic processes in the adjacent north Iberian margin.