ESEG-4: Evolución tectónica del arco de Scotia en Sudamérica y la Península Antártica

LATE TRIASSIC DETRITAL ZIRCON AGES FROM THE NUNATAK VIEDMA ON THE SOUTHERN PATAGONIAN ICEFIELD

Rodrigo Javier Suárez[1,2], Matías Ghiglione[1,2], Mauricio Calderón[3], Christian Sue[4], Joseph Martinod[5].
(1) Ciencias Geológicas, Exactas y Naturales, Universidad Nacional de Buenos Aires
(2) CONICET
(3) Carrera de Geología, Facultad de Ingeniería, Universidad Andrés Bello, Santiago, Chile
(4) Université de Bourgogne Franche-Comté, Francia
(5) Université de Savoie Mont-Blanc, Francia

The Nunatak Viedma on the Southern Patagonian Icefield has been historically considered as a volcanic center based on morphological evidence. Field explorations carried out at the summer of 1958-1959 by Eric Shipton determined its metamorphic-sedimentary nature. However, the age of these rocks is unknown as well as its possible correlation with others metamorphic complexes that constitute the basement of southern Patagonia. In order to constrain the maximum depositional age of the protoliths and to identify the provenance sources, three samples of metasedimentary rocks were taken from the southern outcrops of the Nunatak Viedma to analyze detrital zircons by LA-ICP-MS U-Pb method. The age distribution of detrital zircon grains allowed identifying groups of Paleozoic-lower Mesozoic (65%), Proterozoic (34%) and isolated Archean ages (1%). The peaks of Paleozoic-early Mesozoic detrital ages define main groups in Lower Cambrian (~520 Ma), Lower-Middle Ordovician (~480-460 Ma), Upper Devonian (~380 Ma), Permian (~290-260 Ma) and Triassic (~235-225 Ma). Besides the maximum depositional age was constrained at 220 Ma, which indicates that the deposition of the protoliths was active during the Late Triassic. The sources areas for the detrital zircons are identified in the Malvinas Island, in the Deseado Massif, the erosion of the Eastern Andes Metamorphic Complex, the buried basement of Tierra del Fuego and outcrops in the Antarctic Peninsula. The cluster of Permian-Triassic ages may be related to the erosion of the volcanic arc emplaced along the western edge of Patagonia and Antarctic Peninsula, supporting the idea that Antarctic Peninsula was located in the southwestern edge of Southern Patagonia during the Permian-Triassic times. Despite the kind of basin in which the protoliths were deposited is unclear, the pattern of detrital zircons allows us to infer a back-arc basin related to convergent settings as a possibly depositional environment, which is supported by the petrography.