



Quaternary continental back-arc evolution from southern Mendoza, Argentina

Venera Espanon (1,2,3), Allan Chivas (2), Anthony Dosseto (2,3), Masahiko Honda (4), David Phillips (5), Erin Matchan (5), and David Price (1)

(1) Institute of Earth and Environmental Sciences - Geology, Freiburg University, Freiburg, Germany (venera.espanon@geologie.uni-freiburg.de), (2) GeoQuest Research Centre, School of Earth and Environmental Sciences, University of Wollongong, Wollongong, Australia, (3) Wollongong Isotope Geochronology Laboratory, School of Earth & Environmental Sciences, University of Wollongong, NSW 2522, Australia, (4) Research School of Earth Sciences, The Australian National University, Canberra, Australia., (5) School of Earth Sciences, The University of Melbourne, Melbourne, Australia

The Quaternary evolution of the Payenia Basaltic Province (PBP) in southern Mendoza, Argentina has been investigated using a multi-dating approach in combination with pre-existing geochemical data. This basaltic province covers an area of approximately 40000 km² and is mainly characterised by backarc volcanism. In the current investigation nine new radiometric ages obtained using surface exposure, ⁴⁰Ar/³⁹Ar and thermoluminescence dating are presented. Six ages correspond to the late Pleistocene and three to the Holocene. The surface exposure ages obtained using cosmogenic ³He and ²¹Ne are in good agreement with previous publications and confidently suggest that part of this basaltic province was active at least 4000 years ago (taking a conservative approach). In addition, we combined the available geochronological and geochemical data to reconstruct the Quaternary evolution of this basaltic province. This approach was used to create maps of geospatial distribution of trace-element ratios to determine geochemical changes during the Pleistocene. Employing this method it is evident that two geochemical distinct types of magma were erupting at the same time interval within the PBP. In the north eastern part (Nevado volcanic field) of the PBP an arc-like signature is evident, while in the southern part (Río Colorado volcanic field) of the same basaltic province an Ocean Island Basalt (OIB) signature is evident. The arc-like signature in the north eastern part of the PBP, decreased during the Pleistocene in a north-west direction indicated by a reduction in Ba/La and La/Ta in the Nevado and Llanquanelo volcanic field. The Holocene volcanism is restricted to the western side of the Payún Matrú volcanic field and is dominated by OIB-like signatures such as high Ta/Hf and low Ba/La and La/Ta. This contribution presents new geochronology for the PBP and confirms that two different types of volcanism occurred simultaneously during the Pleistocene, while the Holocene volcanism is intraplate and restricted to a small area.