ESEG-1: Tectónica andina

First geochemical and geochronological characterization of Late Cretaceous magmatism in Gastre, Northern Patagonia, and its tectonic relation to other coeval volcanic rocks in the region

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This work characterizes a previously unknown outcrop of Upper Cretaceous porphyritic rocks near the area of Gastre in Northern Argentinean Patagonia. It is based on petrographic, geochronological and geochemical data of representative samples. The porphyritic rocks from Gastre were dated between ~74 and 76 Ma, when a gap or waning in activity was registered in the Northern Patagonian Batholith. The age of the porphyritic rocks from Gastre coincides with the age of the upper section of the Tres Picos Prieto Formation, a basaltic sequence located at 44° S, near the locality of José de San Martín. Farther southwest, in the Coihaique Alto region in Chile at 45° S, the volcanic rocks from the Casa de Piedra Volcanic Complex and the El Toro Formation also bear a similar Late Cretaceous age (Demant et al. 2007). The porphyritic rocks from Gastre bear a geochemical signature typical of subduction-derived magmas, which is also found in the Tres Picos Prieto basalts (especially of the upper section, Zaffarana et al. 2012) and in the volcanics from the Coihaique Alto region (Demant et al. 2007). Therefore, it is put forth that the porphyritic rocks from Gastre could represent an eastward shift in the position of the magmatic arc at 42° S, as they were erupted c. 270 km away from the axis of the magmatic arc (represented by the outcrops of the Northern Patagonian Batholith). This eastward migration of the magmatic arc was probably the result of a slab-shallowing process; slab shallowing was also argued to explain the Late Cretaceous compressive deformation observed in the Gastre area (Echaurren et al. 2017). Nevertheless, it should be noted that during the Late Cretaceous the magmatic arc regained its westward position farther south at the latitude of the Coihaique Alto region. DEMANT, A., SUÁREZ, M. & DE LA CRUZ, R. 2007. Geochronology and petrochemistry of Late Cretaceous- (?) Paleogene volcanic sequences from the eastern central Patagonian Cordillera (45°-45° 40'S). *Revista Geológica de Chile* **34**, 3–21. ECHAURREN, A., OLIVEROS, V., FOLGUERA, A., IBARRA, F., CREIXELL, C., & LUCASSEN, F. 2017. Early Andean tectonomagmatic stages in north Patagonia: insights from field and geochemical data. *Journal of the Geological Society* **174**, p. 405, doi: 10.1144/jgs2016-087 ZAFFARANA, C. B., LAGORIO, S. L. & SOMOZA, R. 2012. Paleomagnetism and geochemistry from the Upper Cretaceous Tres Picos Prieto locality (43ºS), Patagonian Plateau Basalts. *Andean Geology* **39 (1)**, 53-66.