



NEW EARLY JURASSIC U-Pb AGE IN RHYOLITIC DYKES FROM THE NORTHEASTERN SECTOR OF GASTRE (CHUBUT, ARGENTINA) AND ITS POSSIBLE RELATION TO THE MINERALIZATION OF THE LOS MANANTIALES DISTRICT

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Silvia Lagorio¹, Alicia Busteros, Diego Silva Nieto, Raúl Giacosa, Claudia Zaffarana, Marcelo Márquez,

¹Instituto de Geología y Recursos Minerales (SEGEMAR). Parque Tecnológico Miguelete, Buenos Aires - silvalagorio@gmail.com

In this presentation, both stratigraphic and geochronological results are revealed, which were obtained from cartography and regional geology studies carried out in the Gastre region. The area of study is located in the southwestern sector of the North Patagonian Massif, in the vicinity of the Los Manantiales mining district, 12 km to the southwest of the Angela mine, a polymetallic deposit that was active between 1979 and 1992, being during that period the main metal exploitation mine of Chubut.

Lava, pyroclastic rocks and andesitic breccia, as well as volcanoclastic deposits assigned to the Lonco Trapial Formation, crop out in this area. $^{40}\text{Ar}/^{39}\text{Ar}$ data from lavas of this region indicated ages of 185.4 ± 2 Ma, 185 ± 1.6 / 184 ± 5 Ma (Zaffarana and Somoza, 2012), corresponding to the Lower Jurassic. A $^{40}\text{Ar}/^{39}\text{Ar}$ age of 182.8 ± 0.8 Ma was obtained from ignimbrites at the NW area of the Navidad deposit assigned to the Garamilla Formation, considered equivalent to the Lonco Trapial Formation (Márquez, *et al.* 2016).

These rocks are intruded by numerous WNW, NW, NE, ENE-oriented dykes. The studied dykes are of rhyolitic composition and NE orientation, as well as those from Los Manantiales mining district. They have porphyritic texture, with phenocrysts (2%) of plagioclase and alkali feldspar, with slight sericitic and clay alteration respectively, and minor biotite with zircon inclusions; the groundmass is mainly composed by quartz and feldspar, mostly spherulitic as a devitrification product, with scarce carbonate alteration. These rocks are of subalkaline nature and classify as rhyolites in the TAS diagram as well as using immobile trace element ratios. Besides, they are high-K and peraluminous rhyolites.

The results of a LA-ICPM U-Pb zircon dating carried out in one of these dykes provide evidence of a weighted mean crystallization $^{206}\text{Pb}/^{238}\text{U}$ age of 177.26 ± 0.96 Ma, corresponding to the lower Jurassic. In Los Manantiales district there is a clear spatial association between mineralization and rhyolitic dykes, which might have provided heat and fluids to the hydrothermal system (Varela, 1994; Márquez, 1999). The main mineralization could have been linked to the final stage of the process, characterized by potassium alteration and conditioned by the uprising circulation of fluids through the fractures and faults that are present in the area (Lafont *et al.*, 2003).

As regards the setting age of these intrusives, Varela (1994) claims that it might be late Cretaceous-early Tertiary, while Márquez (1999) considers that it could be Jurassic in relation to the Lonco Trapial magmatism or Miocene like the volcanism of the Piré Mahuida. Similarly, Dejonghe *et al.* (2002) leave the possibility open even though they are more inclined to a Jurassic genesis. Besides, it should be noted that new LA-ICPM U-Pb zircon dating on volcanic rocks from Cañadón Asfalto Formation from Navidad district yielded ages of 170.8 ± 3.0 and 173.9 ± 1.9 Ma (Bouhier *et al.*, 2017) that are younger than those obtained by Cúneo *et al.* (2013) from tuff levels of the same Formation at Cerro Cóndor and Cerro Bayo Chico (178.76 ± 0.092 Ma and 176.15 ± 0.12 Ma, respectively).

Although no alteration zones associated with these dykes could be recognized at surface levels in the study area as occur in the epithermal polymetallic deposits of the Los Manantiales district, several elements suggest considering the possibility that these dykes might be part of the same intrusive cycle. Apart from the marked lithological similarities, what should be noted is the fact that the studied dykes are part of a NNE- oriented belt of dykes of around 20 km long, being the dykes of the Los Manantiales district located in the northeastern sector of this belt. Therefore, the Early Jurassic age obtained from the analyzed dykes allows the assumption that the genesis of the mineralization of Los Manantiales district might be of that age, related to the posthumous activity of the Lonco Trapial or more probably to the initial volcanism of Cañadón Asfalto Formation.

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