

Structural evolution of the La Paya pluton (Sierra de Cachi, NW Argentina): insights from the study of its magnetic fabric

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The La Paya granite is a pluton elongated in a northerly direction that spreads over 10 km² in the Sierra de Cachi (Eastern Cordillera of Salta, Andean belt, NW Argentina). This pluton intrudes into high-temperature and low-pressure migmatites and schists. The metamorphic evolution of the country rocks and the emplacement of the La Paya pluton took place in an extensional tectonic setting during Ordovician times (Hongn et al., 2014). Subsequently, a compressional tectonic event led to the formation of large E-verging folds with a penetrative axial planar foliation. Due to the folding event, the current metamorphic zonation is inverted and the metamorphic degree rises towards the west. The granite is concordant with the metamorphic zonation and with the country rocks foliation. Schists with biotite and andalucite (low to medium metamorphic grade) crop out in the eastern border of the pluton and schists with cordierite (high grade) in the western border.

The pluton is characterized by the coexistence of magmatic and solid-state structures. The deformation is localized in shear bands concentrated in the pluton roof. Wide sectors of the pluton core preserve medium- to coarse-grained equigranular textures of magmatic origin on which we have collected samples from 28 sites in order to perform an AMS study. Susceptibility values are very low, with k ranging between 19 and 67 x 10⁻⁶ SI. The obtained anisotropy values are in agreement with the magmatic character of the analysed samples (P_j between 1,03-1,07). The magnetic foliations are concordant with the contacts of the pluton. They show northwards trends and dips to the west that are steeper close to the eastern pluton border. Magnetic lineations are concentrated in two main maxima that define a great circle parallel to the pluton elongation.

The parallelism between the magnetic fabrics from areas with magmatic structures and the structures observed in domains with solid-state deformation points to a syn-kinematic emplacement of the pluton during the development of the roof shear zone. The cartographic data and the distribution of the magnetic lineations of the La Paya granite allows to recognize an east-vergent antiform that folds the roof shear zone and the overall laminar pluton.

Hongn, F.D., Tubía, J.M., Esteban, J.J., Aranguren, A., Vegas, N., Sergeev, S., Larionov, A. and Basei, M. (2014). *Journal of Iberian Geology* 40 (2), 225-240.

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