



Emplacement of the Variscan Millares granite, central Pyrenees: magnetic fabric analysis

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This work deals with the magnetic susceptibility and anisotropy of the Variscan Millares pluton in the Central Pyrenees. The Millares granite intrudes Cambro-Devonian metasediments of the Axial Zone of the Pyrenees. The zonation of low-field magnetic susceptibility indicates a concentric arrangement of rock-types, with more basic compositions at the external areas. From Anisotropy of the Magnetic Susceptibility measurements, the magmatic fabric of this pluton was inferred. Magnetic foliations strike NE-SW and dip gently towards the NW. Magnetic foliations are mainly perpendicular and oblique to the elongation of the pluton in map view and shows a concentric pattern at the central part, where the more acid rocks crop out, suggesting a root zone. Magnetic lineations are scattered between NW-SE and NE-SW and plunge shallowly to the N. In map view magnetic lineations are distributed in domains normal to the elongation of the pluton. The values of the degree of magnetic anisotropy P' and of the shape parameter, T , of the magnetic ellipsoids also vary according to location. The contours of P' are oriented NE-SW and bands of oblate and prolate ellipsoids alternate perpendicular to the elongation of the pluton in map view. The degree of magnetic anisotropy P' is rather low in 93% of the specimens, between 1.009 and 1.055. Such low values are currently recorded in granites having magmatic fabrics and for which the anisotropy is mainly carried by biotite. A very detailed study of magnetic fabric (more than 300 samples) in the northern boundary of the massif shows a variation of the strike of foliation from NE-SW in the granite to E-W in the country rock. Although no solid-state deformation is found in the igneous rock, the fabric change can be inter-

preted as a dextral shear zone during the granite intrusion. The attitude of the magnetic foliation and the magnetic lineation, the geometry of the pluton, and their relationship with the host-rock structure suggest an intrusion contemporary with a transpressional regime and NNE shortening, syntectonic with the late stages of the Variscan orogeny.