

PALEOMAGNETISM AND ANISOTROPY OF MAGNETIC SUSCEPTIBILITY OF THE SEDIMENTARY COVER IN THRUST UNITS COMPARED WITH TECTONIC STRAIN: THE NICE AND CASTELLANE ARCS, SE FRANCE

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In the SE France, the arcs of Castellane and Nice developed during the Cenozoic as fold-and-thrust belts in a thick sedimentary cover of Mesozoic-Cenozoic age. They represent the most external foreland thrust units of the Alps. As geological mapping and remote sensing observation show, these arcs exhibit a remarkable curvature of about 90°, with in both cases a west-verging, N-S trending branch to the west and a south-verging, E-W trending branch to the south. Below the sedimentary cover, the pre-Mesozoic basement is poorly affected by the fold-and-thrust deformation. This structural pattern is commonly explained by the compressive folding of the cover above a major décollement in Triassic layers, as a result of two major tectonic events with E-W compression first and N-S compression second. A crucial problem is: how did these arcs develop ? As previous paleomagnetic studies in this area were few results have been obtained (mainly in the Callovian-Oxfordian black shales of the N-S branch of the Castellane arc and the Permian argillite of the Barrot dome in the E-W branch of the same arc). Although suitable layers are few and remanent magnetization is usually very weak in the sedimentary cover of these arcs, we intend to carry out a more systematic paleomagnetic study (paleo-rotations and anisotropy of magnetic susceptibility AMS) associated with structural observations (especially palaeostress reconstruction based on inversion of brittle data). The paleomagnetic difficulties related to rock nature require a preliminary analysis of rock magnetization in the Eocene, Cretaceous, Jurassic argillites and shales in these areas, which is in progress. The AMS will allow comparison between paleostress orientations (reconstructed from brittle tectonic analysis) and the main structural directions (from geological mapping). The ultimate purpose of this study is to provide a consistent model of structural and kinematic development of these typical arcs.

Rock magnetism, ASM, fold-thrust belt

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