



Shear band formation and strain localization on a regional scale: evidence from anisotropic rocks below a major detachment (Betic Cordilleras, Spain)

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Regional-scale deformation taking place in a strongly anisotropic, yet homogeneous metapelitic protolith during an apparently single tectonic event was systematically investigated as a function of the distance to the main tectonic contact (i.e. the Filabres shear zone, a major detachment in the Betic Cordilleras, Spain).

The density of C3' shear bands (or extensional crenulation cleavage) reworking the earlier S2 schistosity increases exponentially towards the contact, in parallel with the decrease in the size of the shear domains. Systematic variations in angles and shape ratios are also reported.

Deformation and age patterns, however, suggest that this spectacular trend at least partly results from a progressive localization of the deformation through time. This fossilized shear strain gradient was thus produced somewhat diachronously. Such shear strain patterns nevertheless provide a mean to constrain the rheological properties for such weak lithologies and a mean to better understand crustal deformation.