



### **3-D deformation pattern analysis in thrust-related anticlines: working methodology and application to the Añisclo anticline, Southern Pyrenees.**

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In this contribution we present a methodology specifically designed to quantitatively analyse folding-related deformation patterns in thrust-related anticlines. The first step of the proposed methodology is to merge the entire dataset into a cumulative database from which the attitude with respect to the fold axial strike is investigated by data contouring in equal area Schmidt nets. In this way, longitudinal and transverse deformation structures can be identified and classified in sub-sets. For each set, the spatial variability of their attributes is investigated. Comparison of cumulative statistical and spatial analyses, supported by overprinting relationships observed in the field, allows discriminating the relative timing with respect to folding (i.e. pre-, syn- and post folding). Analysis of syn-folding subset allows identifying deformation panels, i.e. rock volumes that exhibit a homogeneous diagnostic deformation fabric. Cumulative statistics and spatial analysis are then used to structurally characterise in more detail each deformation panel. Sequential restoration of deformation panels and fold geometry allows unravelling the progressive evolution and interplay of the thrust-fold pair. Application of the proposed working strategy to the Añisclo anticline, in the Southern Pyrenees, allowed us to unravel the evolutionary pathway of this anticline.