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Deformation pattern in the thrust-related Parmelan Anticline (Bornes Massif, Subalpine Chains, Haute-Savoie, France): preliminary results

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The Parmelan Anticline is located in the frontal part of the Bornes Massif where Upper Jurassic to Cretaceous sediments of the European passive margin overlain by Tertiary foredeep turbidites are exposed. The NE-SW trending Parmelan Anticline is characterized by steeply dipping limbs separated by a large flat plateau. The limbs and the crest represent discrete structural domains separated by narrow kinked hinge zones localized on inherited pre-folding NE-SW trending extensional fault zones. In this contribution, we present a preliminary reconstruction of the kinematic evolution of this anticline by combining structural data obtained from detailed field mapping with microstructural and petrographic analyses. Relying on crosscutting relationships, a relative chronology between different calcite vein sets, bed-parallel and tectonic stylolites and conjugate systems of reverse and strike-slip faults is proposed. Their relative timing with respect to folding (i.e. pre- syn- or post-folding) is determined by comparing structural data collected in different structural domains after bedding dip removal. Upon unfolding, our data illustrate that pre-folding deformation structures related to layer-parallel shortening or even older, such as different sets of veins and tectonic stylolites, and conjugate systems of subsidiary reverse faults, are widespread. Because of their pre-folding origin, these structural elements are almost homogeneously distributed irrespectively of their position within the anticline. Accordingly, our results confirm the fundamental role played by structural inheritance, either related or unrelated to the stress field active during folding, to drive fold evolution and the associated deformation pattern.