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# From tectonics with salt to salt tectonics: the role of the Liassic rifting in the early development of the Western Tethyan passive margin

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The Digne Thrust, forming the southwestern French Alps thrust front, runs over 80km from the Pelvoux External Cristalline Massif in the North to the surrounding area of the Barrême village in the South. It is the result of the Oligocene to Pliocene compressive event of the Alpine collision. The thrust uses the Upper Triassic evaporites as the décollement level and brings a thick allochtonous unit mainly made up of Mesozoic series above the Mio-Pliocene conglomerates of the Valensole foreland basin.
Upper Triassic salt is also known to have a diapiric activity on the autochtonous area as well as on allochtonous units. Bibliographic review and several field work sessions have brought into light the role of the Liassic rifting in the onset of salt activity, but also the involvement of this salt activity in the later evolution of the sub-Alpine passive margin. In the past decades, salt structures have been identified in several locations by many authors such as the “Barre de Chine” megaflap in the Dauphinois (Graham & al. 2012), the diapirs of the Baronnies area (e.g. de Lapparent 1940), or the Etovières diapir in the Briançonnais area (e.g. de Graciansky & al. 1986), but their relative importance in term of both extensional tectonics and later on shortening is still to be discussed.
We propose here to present field data introducing new salt controlled structures from the Digne Thrust area: (1) diapirs and megaflaps such as the Astoin diapir and associated flap or the Bramefran reactive diapir both on the Authon thrust; (2) minibasins such as the La Robine unit located at the tip of the Digne Thrust (3) roll over such as the Authon – Saint-Geniez structure at the tip of the Authon thrust. Such as formerly identified salt structures, the onset of the diapiric activity is lower Liassic in age i.e. in the Sinemurian for most of them and in place Hettangian. The Callovian-Oxfordian deposition of the “Terres Noires” formation appears here a key point of the salt activity because several diapirs reached the seafloor at that time, corresponding also to the timing of the gliding structure development. Later salt activity is recorded in the sub-Alpine chains such as during mid-Cretaceous or during the Oligocene.
The aim of this presentation is to highlight a spatial and temporal organisation of all salt structures in order to identify a present layout that is directly inherited from the rifting. Actually, salt structures are lined up following NW-SE and NNE-SSW trends. Those directions are the directions of the extensive accidents created during the rifting and that are partly inherited from the Hercynian cycle. Salt structures also evolved from structure initially reactive, in response to rifting activity from the Hettangian to the Domerian, to gravity-controlled structure during passive margin evolution during the Dogger. To sum it up, the Liassic rifting determines the location of salt extrusions, which later on compartmentalise the sedimentation during the whole Alpine history and create weak areas where later compressive structures will be able to take root or go through.