



Salt tectonics in the passive margin, foreland basin and fold and thrust belt of Haute Provence

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Triassic evaporites are a fundamental element of Alpine tectonics because they form the detachment surface for most of the external Alpine thrusts. We do not see much evidence of salt at outcrop, of course, because the Alps have had too long and complicated a history for salt to remain at surface. Instead we see gypsum, 'cargneule' breccia and structural-stratigraphic relationships that give the very strong hint that salt must once have been widespread and actively diapiric.

Diapirism has been well documented in the southern sub-Alpine chains of Haute Provence and Alpes-Maritimes (e.g. Mascle et al 1988, Dardeau & De Graciansky, 1990). Here we suggest that it may be even more widespread and profound than previously thought. There is evidence of salt movement shortly after its deposition in Triassic time, then during the evolution of the Jurassic rift and passive margin. The subsequent fold belt and foreland basin in Haute Provence began in the Late Cretaceous and continued with major deformation episodes during the Oligocene and Neogene. We argue that each event was accompanied by salt movement.

It will be argued that the Late Jurassic sea floor looked like the Gulf of Mexico or the Brazilian margin of the present day, complete with minibasins like La Robine and canopies like the 'flap' of the Barre de Chine (Barles). The much younger fragmented foreland 'piggy back' basins, including the famous 'Velodrome' at Barles, must have developed as second generation minibasins on allochthonous salt as the fold and thrust belt migrated towards the foreland.

Most people would agree that experience of outcrop geology makes for better seismic interpretation. Where salt is concerned, the reverse is also commonly true. Salt is sometimes spectacularly imaged on seismic lines through the passive margins of the Gulf of Mexico and the Atlantic and we are able to see its interaction with the surrounding reflectors and trace its evolution. Experience of this enables us to see outcrops – even classic Alpine outcrops - in a new light and many otherwise inexplicable structural and stratigraphic problems become clear

Key words

Salt tectonics, Provence, structural evolution, minibasins.