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Salt Tectonics in the Sivas Basin (Turkey) - Outstanding Seismic Analogues

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Summary

The Sivas Basin in Anatolia is likely the world's finest open-air museum of salt tectonic structures. It is an elongated Oligo-Miocene basin that developed in an orogenic context. From Late Eocene to Late Miocene salt deposition, salt tectonics and salt reworking occurred in a north-verging foreland fold-and-thrust belt setting north of the Taurus. The result is an intricate system of salt ridges, minibasins, salt sheets and successive canopies.

Despite huge difference in content and evolution the Sivas basin provides outstanding outcrops of the classical geometries associated to the development of diapirs, i.e. halokinetic sequences along diapir walls, and associated stratal deformations. The Sivas Basin also presents more exotic structures such as 4-ways closed minibasins, megaflaps (thinned sedimentary sequences pinching out on top of diapirs and overturned during glaciers later development) and evaporites allochthonous sheets.

Striking geometric analogies between these outcrops and seismic images from the classic petroleum province controlled by salt tectonics will illustrate the extraordinary quality of the Sivas basin as field analogue for the Atlantic Margin and chiefly Angola and the Gulf of Mexico. Some comparisons with analog models under scanner will also be shown.



The Sivas Basin in Anatolia is likely the world's finest open-air museum of salt tectonic structures. It is an elongated Oligo-Miocene basin that developed in an orogenic context above the complex Taurus-Pontides suture. From Late Eocene to Late Miocene salt deposition, salt tectonics and salt reworking occurred in a north-verging foreland fold-and-thrust belt setting north of the Taurus. The result is an intricate system of salt ridges, minibasins, salt sheets and successive canopies. The orogenic continental setting is markedly different from the deep marine-passive margin environment of the petroleum rich salt basins such as Angola or the Gulf of Mexico.

Despite huge difference in content and evolution the Sivas basin provides outstanding outcrops of the classical geometries associated to the development of diapirs, i.e. halokinetic sequences along diapir walls, and associated stratal deformations. The Sivas Basin also presents more exotic structures such as 4-ways closed minibasins, megaflaps (thinned sedimentary sequences pinching out on top of diapirs and overturned during glaciers later development) and evaporites allochthonous sheets. Such structures are only observed in thick and highly deformed salt basins, and are rarely seen at outcrop: only in the Axel Heiberg area (Northern Territories, Canada - hardly accessible) and the Flinders Ranges (Australia).

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