

The Salt Tectonic Evolution of the North-Central Scotian Margin: Insights from 2D Regional Seismic Data and 4D Physical Experiments

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Salt deformation styles across the North-Central Scotian basin indicate variable rift basin styles and tectono-sedimentary environments with high rates of sedimentation and progradation during the Jurassic and Cretaceous. Unsatisfactory results from deepwater exploration indicate new salt tectonics concepts must be developed to better understand the Scotian margin. Thus, new concepts must investigate the interplay between paleogeography, sediment supply and rift basin geometry across the Scotian basin.

The Salt Dynamics Group used physical experiments and time-series optical strain monitoring to study the evolution and salt tectonics processes in the North-Central Scotian basin. Scaled experiment parameters were deduced from regional ION GXT NovaSPAN seismic sections to realistically simulate the first-order structures and depocenter evolution from early post-rift salt withdrawal to late post-rift formation of allochthonous salt systems.

!!! 4D strain data and experiment sections enable the structural restoration and quantitative analysis of salt structures and depocenters across the Scotian sub-basins. !!! Here I would introduce some more specific sentences about the project work on Laurentian, Abenaki, and Laurentian shelf-to-deepwater transects and integration ... to make it sound a little bit different and more specific than the other abstract ... you can hint a bit on the poster content here.

Results indicate diachronous salt extrusion beginning in the Laurentian sub-basin due to the Early Jurassic progradation of the Laurentian fan and advancing southwest into the central, then western Sable sub-basin area. The diachronous salt extrusion coupled with rift basin geometry variations across the North-Central basin strongly controlled the salt extrusion rates and sediment distribution creating a structural transition in allochthonous salt styles from the gradually migrating salt nappe system in the Laurentian sub-basin to an extensive salt tongue-canopy system in the Sable sub-basin during the Cretaceous.

This new generation of physical experiments regionally explain the evolution of salt structures and related depocentres And correlation between the subbasins in an integrative basin model. Mechanically constrained salt tectonic concepts and seismic

interpretation templates deduced from the experiments will aid further seismic interpretation of the North-Central basin. These concepts may provide new insights into reservoir distribution across the deepwater Scotian margin.