

## **Syn-depositional deformation of the late Zechstein evaporites on the Friesland Platform capturing the early life of a salt giant**

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It is often thought that the deposition of the Zechstein of NE Netherlands took place in a tectonically quiet environment and experienced complex deformation later. While early deformation structures were mostly overprinted by later salt flow, we focused on the Friesland platform, which was only weakly affected by later salt tectonics. In this study, we analyzed the present structures and deformation history with the help of 3D seismic and well data. Results show that the ZIII AC stringer contains (i) a regional network of thicker zones (TZ), and (ii) a network of zones where the stringers are absent, interpreted as ruptures formed by salt flow. These ruptures in many cases mark a clear vertical shift of the sub-horizontal stringer. Mapping of the base salt and top salt reflectors shows that the ruptures often coincide with faults at base Zechstein level, and that the thickness of the post-stringer rock salt layers is thicker where the stringers are lower, while the total salt thickness is relatively constant. We interpret these structures as evidence for movement on the faults at base salt, during Zechstein times, suggesting that late Zechstein deposition was syn-tectonic. Spatial correlation of TZ and these syn-depositional depressions also indicate syn-depositional or very early development of thickening in the ZIII-AC stringer. They are interpreted to reflect the interaction of anhydrite dewatering pathways and dissolution of salt below fracture systems in the stringer localized by the active shear zones in the salt.