Sinking of carbonate and anhydrite stringers in rock salt: insights from numerical simulations

S. Li, S. Abe, J.L. Urai, and H. van Gent

RWTH Aachen, Geologie-Endogene Dynamik, Aachen, Germany (s.li@ged.rwth-aachen.de)

A large number of salt bodies are known to contain layers of either anhydrite or carbonate, called stringers. Those layers have a higher density than the surrounding salt and are therefore expected to sink towards the bottom of the salt body over geologic times. Finite Element (FEM) simulations enable the calculation of sinking velocity of the stringers depending on the rheology of the salt.

Due to the availability of detailed seismic survey data it is known where those stringers are located today within the salt body. From stratigraphic data the age of the formation of the stringers and therefore their original position in the salt body is also known. By combining those data we can therefore constrain how much they have sunk over time.

In this work we have used the sizes and shapes of the stringers obtained from the seismic data to define the geometry of our numerical models. By varying the viscosity of the salt in the FEM simulations the dependence of the sinking velocity of the stringer can be established. Comparing the sinking velocities resulting from those simulations with the possible range of real sinking velocities we can therefore obtain some constraints for the rheology of the salt.