

11.21. Pore pressure and stresses in a shortening salt basin with sand interbeds

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ABSTRACT

We simulate how a salt wall rises, forms a salt sheet, and finally welds along its feeder in a shortening basin with a mixture of basin-center and basinwide sand interbeds to investigate pore pressure and stresses near salt. We show that an overpressure regression occurs between a basin-center and the underlying basinwide sand bed (Fig. 1). Pore pressure is not significantly different between sand beds and bounding mudrocks. The difference between the least principal stress in sand beds and bounding mudrocks is significant in tilted sand beds adjacent to the flank of the salt diapir (Fig. 2). This difference is small in upturned sand beds adjacent to the diapir weld where the least principal stress is nearly vertical and close to overburden stress in both sand and mudrocks (Fig. 2).

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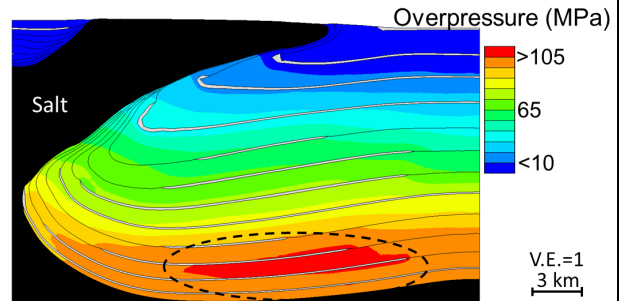


Fig. 1: An overpressure regression between basin-center and the underlying basinwide sand bed.

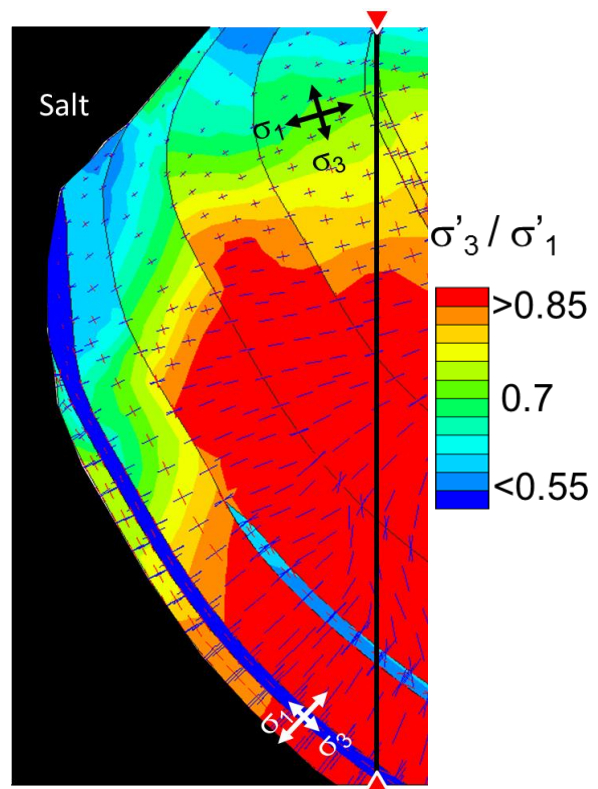


Fig. 2: Ratio of effective least to maximum principal stress (contours) and orientation of principal stresses (dashed lines).

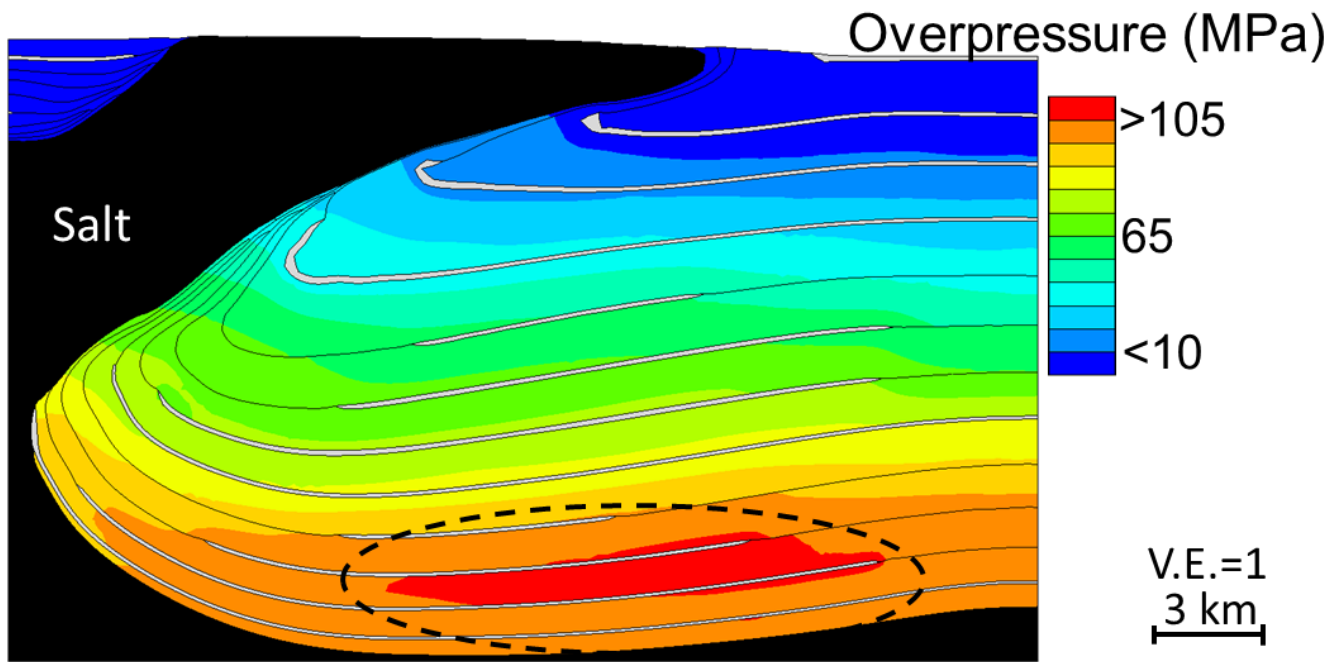


Figure 1: An overpressure regression between basin-center and the underlying basinwide sand bed.

[Back](#)

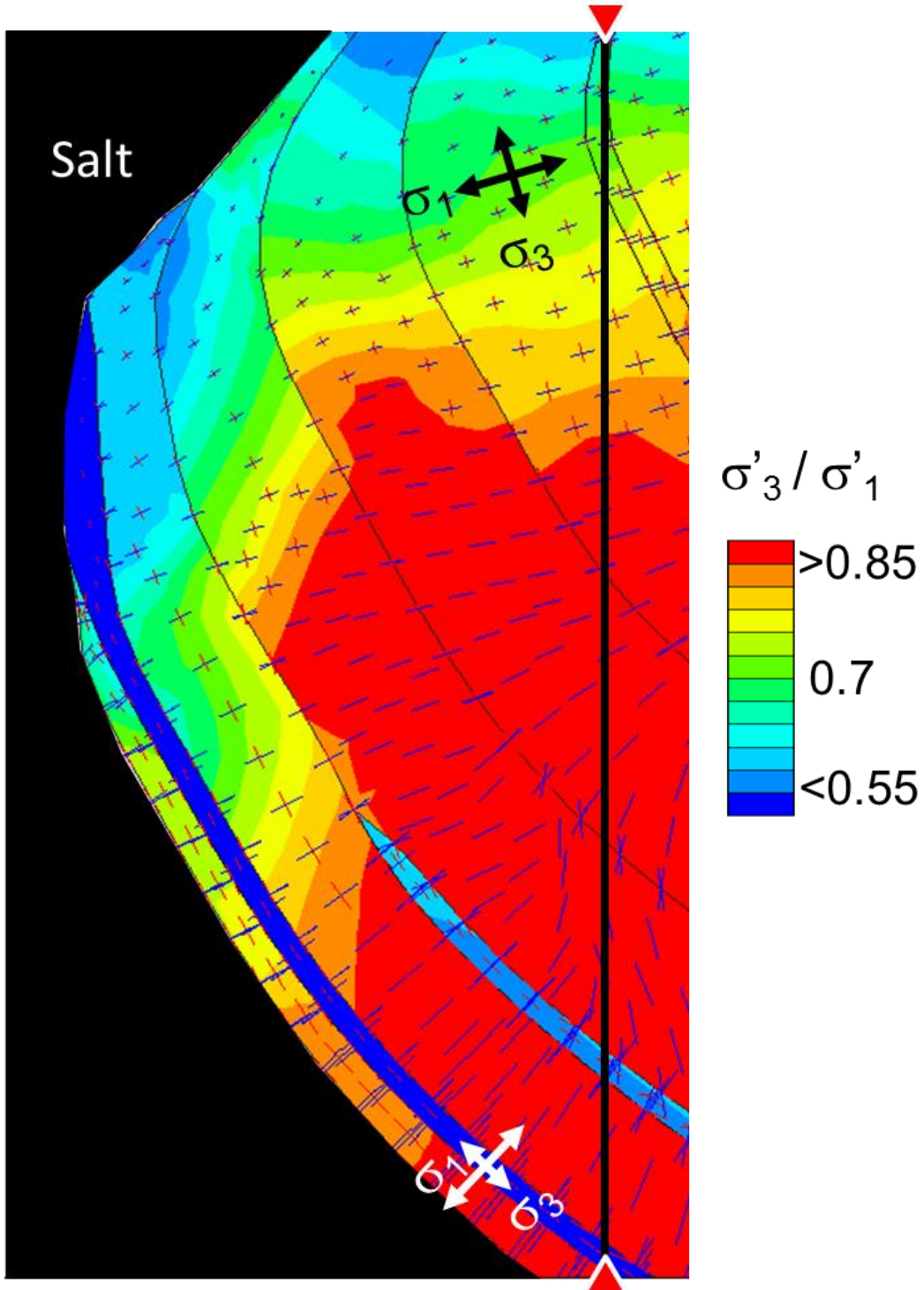


Figure 2: Ratio of effective least to maximum principal stress (contours) and orientation of principal stresses (dashed lines).

[Back](#)