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HR: 1340h
AN: **NG23A-1382** ***Poster***
TI: Application of computational software to model the geochemical and geomechanical interactions in geologic carbon sequestration sites
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AB: Long-term subsurface containment of carbon dioxide is a key objective of geological carbon dioxide storage in porous rock. In the United States, saline aquifers are the most promising vessel for geologic storage because they represent the largest capacity and greatest long-term stability forecasts. To realize the potential of geologic carbon dioxide sequestration, it is essential to understand the behavior of the carbon dioxide plume, the injection aquifer, and the reservoir seal. In hydrocarbon fields, it is known that the total stresses can change during fluid-pressure depletion. However, it is not yet understood whether fluid injection will have significant effects on total stresses in a reservoir scale sequestration. We seek to understand the relationship between the injected carbon dioxide and key reservoir formation characteristics by using geochemical computational software such as The Geochemist's Workbench, TOUGH, and NUFT/XTools. Through modeling these multiphase flow processes, we aim to understand the maximum sustainable pore-fluid pressures for injection sites by incorporating poroelastic behavior of reservoir rock into our dataset. The purpose of this simulation study is to understand the effects of CO2 injection on the geomechanical reservoir structures. Although our simulations are based on data available for the Farnham Dome, Utah sequestration site, the conclusions drawn from their analysis are equally relevant to the general saline aquifer environment.
DE: [1009] GEOCHEMISTRY / Geochemical modeling
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