**Project Summary:**

The goal of this project was to develop and validate an integrated framework for coupled monitoring and modeling data to analyze the geomechanical impacts caused by carbon dioxide (CO\textsubscript{2}) injection. Specifically, this project planned to use cost-effective microseismic monitoring and interferometric synthetic aperture radar (InSAR) surface deformation measurements at the Big Sky Carbon Sequestration Partnership’s Kevin Dome large-scale injection site to evaluate these technologies’ effectiveness. Researchers planned to analyze this data and put it into state-of-the-art coupled modeling and inverse modeling to investigate pore-pressure perturbations and coupled geochemical/geomechanical processes. The framework was expected to provide a cost-effective approach for monitoring surface deformation coupled to injection and the associated microseismic activity, thus providing a mechanism for evaluating reservoir integrity.

**Project Outcomes:**

Researchers performed a historical analysis of InSAR data in the study area that showed subsidence likely related to shallow gas production activities. Pressure perturbation results from a Kevin Dome TOUGH-2 model were coupled into a simplified elastic model to provide predictions of surface deformation after two years of injection from a single well. The model showed radial uplift at measurable levels around the well. Ultimately, this project was cancelled due to the lack of CO\textsubscript{2} injection at the targeted field site.

**Presentations, Papers, and Publications**

**Final Report:** *Geomechanical Monitoring for CO\textsubscript{2} Hub Storage: Production and Injection at Kevin Dome* (June 2017) Thomas M. Daley, Don Vasco, Jonathan Ajo-Franklin, Laura Dobeck, Lee Spangler, Michelle Leonti