The potential for merging a regional low-temperature geothermal resources assessment with the recent USGS geologic carbon dioxide storage assessment

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Progress towards a low-carbon energy future may include research on both geologic carbon dioxide (CO2) storage and low-temperature geothermal resources. The US Geological Survey (USGS) completed a basin-scale geologic CO2 storage assessment in 2013 for the onshore areas and State waters of the United States (US). The USGS last released low-temperature geothermal resources assessments in 1983 for the

ture and pressure gradients, along with reservoir porosity and hydraulic permeability.

The CO2 storage assessment relied on subsurface property data from multiple sources including proprietary oil and gas drilling databases, and State geological surve

s were outlined in a geographic information system (GIS) for the assessment. Ultimately, storage assessment units (SAUs) were identified in 36 sedimentary basins in various physiographic provinces across the United States. The SAUs ranged from 3,330 to 22,000 ft. deep, and from 20 thousand to 83 million acres in size. The 2013 assessment focused on potential CO2 storage resource in both oil and gas reservoirs, and in deep saline aquifers. The low-temperature geothermal resources assessment work focused on an inventory of conductive and convective heat supply. Conduction or heat flow dominated systems include sedimentary basins where geothermal gradients exceed 30 degrees Celsius (°C) per kilometer. Convective hydrothermal resources include flowing groundwater around 90°C. USGS research on updating geothermal assessments is ongoing, in particular for deep sedimentary basin resources in the Western US. Also included in the geothermal assessment update are areas with a concentration of smaller low-temperature systems and areas of geopressured geothermal resources in the conterminous US.

The geologic CO2 storage and low-temperature geothermal resources assessments

geologic CO2 storage assessment will provide valuable subsurface data and interpretations for ongoing low-temperature geothermal resources assessment work. A GIS study overlapping the CO2 SAUs and the geothermally prospective or warm gradient areas highlights physiographic provinces or geologic formations worthy of further investigation. Additional geothermally prospective areas may be derived from Southern Methodist University and USGS mapping work on heat flow, and on ground water and sediment temperatures at depth.