

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

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Online Tools to Evaluate Saline Aquifers for CO₂ Sequestration

Among proposed geologic CO₂ sequestration strategies, injection into saline aquifers represents a well-discussed alternative. Capacity estimates and evaluations are usually based on limited knowledge of aquifer parameters. Within saline aquifers the reservoir properties and storage capacity varies widely. As a result it is difficult to accurately determine the storage potential of saline aquifers within even an order of magnitude. To address the viability of saline aquifers as sequestration reservoirs, the complex geochemical, hydrologic, and physical conditions influencing CO₂ migration and trapping processes in the subsurface must be understood at levels ranging from the basin to the single well bore. As part of the Midcontinent Interactive Digital Carbon Atlas and Relational Database (MIDCARB) project, the information gap between a general inventory of salt-water bearing formations in the United States and the detailed regional and local geospatial knowledge of geological parameters required to evaluate CO₂ sequestration projects is being addressed.

MIDCARB is a distributed database system among five states that contains both detailed and regional geologic and reservoir properties for saline aquifers. Data and information on saline aquifers is provided from multiple independent and heterogeneous servers and databases. An Internet Map Server processes data on servers and displays results on the user's desktop. Web-database connectivity provides access to independently maintained relational databases and software. Online tools have been developed to query, display and analyze saline aquifers from well to basinal scales.

The distributed approach of the MIDCARB system provides an approach to simplify construction of a national database to cover saline aquifers.