Global Carbon Dioxide Storage Resource Assessments

Carbon Sequestration Leadership Forum - Technical Group Virtual Meeting
8 December 2021

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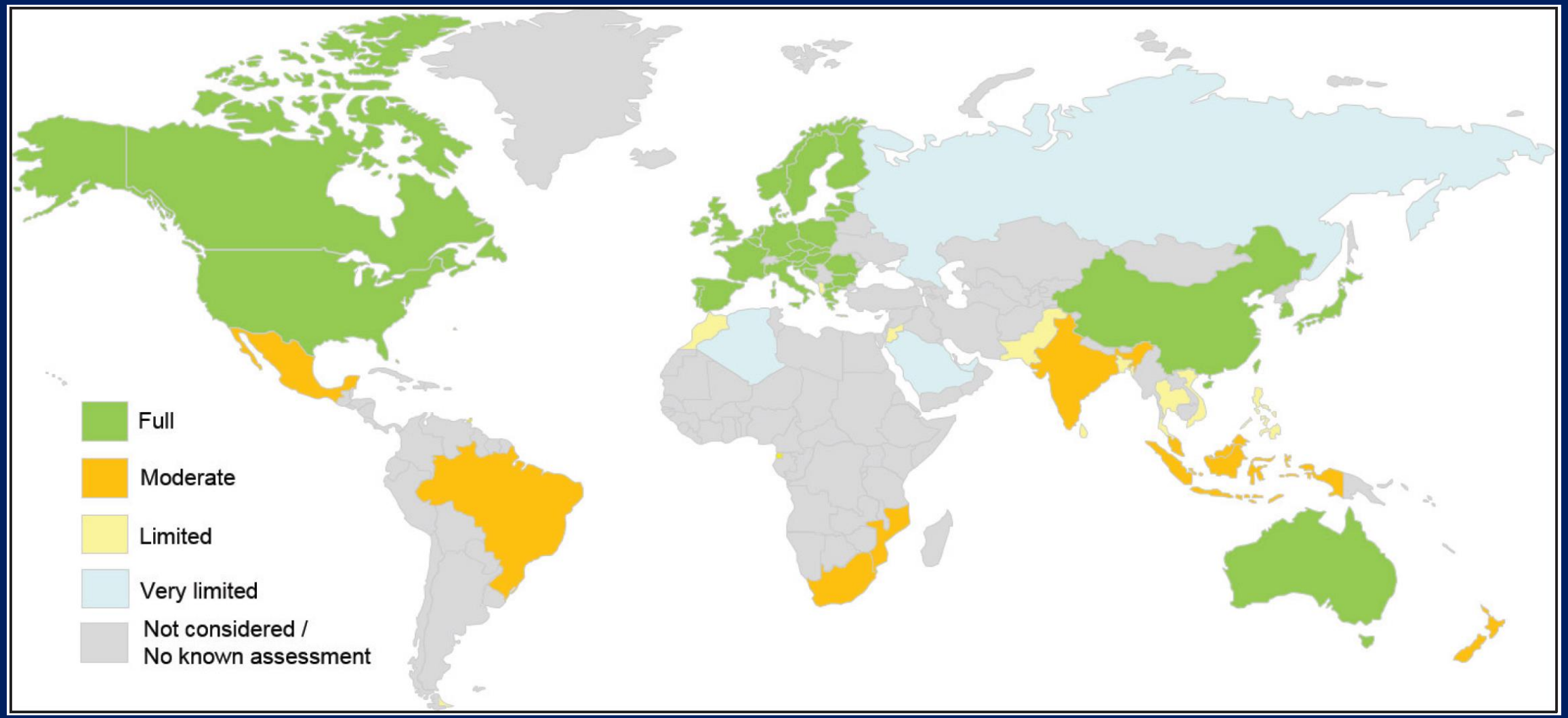
Identification of Priority Regions/Countries of Interest



Geographical coverage of the status of storage resource assessments

USGS

Consoli and Wildgust (2017, https://doi.org/10.1016/j.egypro.2017.03.1866; Global CCS Institute)

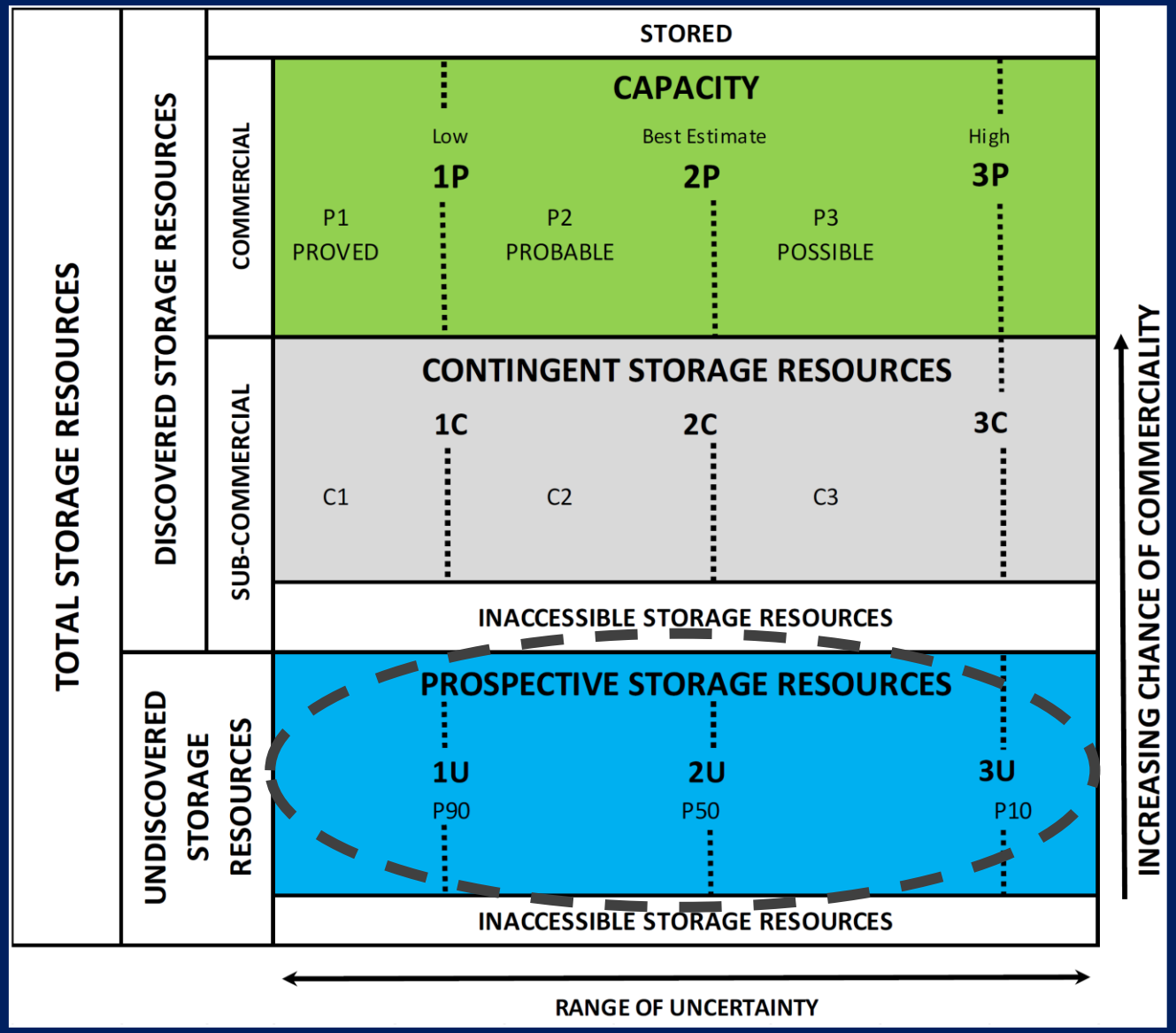
Project Goals

- Identify countries, with an emphasis on emerging economies, that are interested to work towards estimating their CO_2 storage resources to meet their climate goals;

- Work with multilateral organizations and international initiatives related to assessments of global geologic CO_2 storage resources; and

- Generate or facilitate CO_2 storage assessments internationally, with an emphasis on emerging economies.

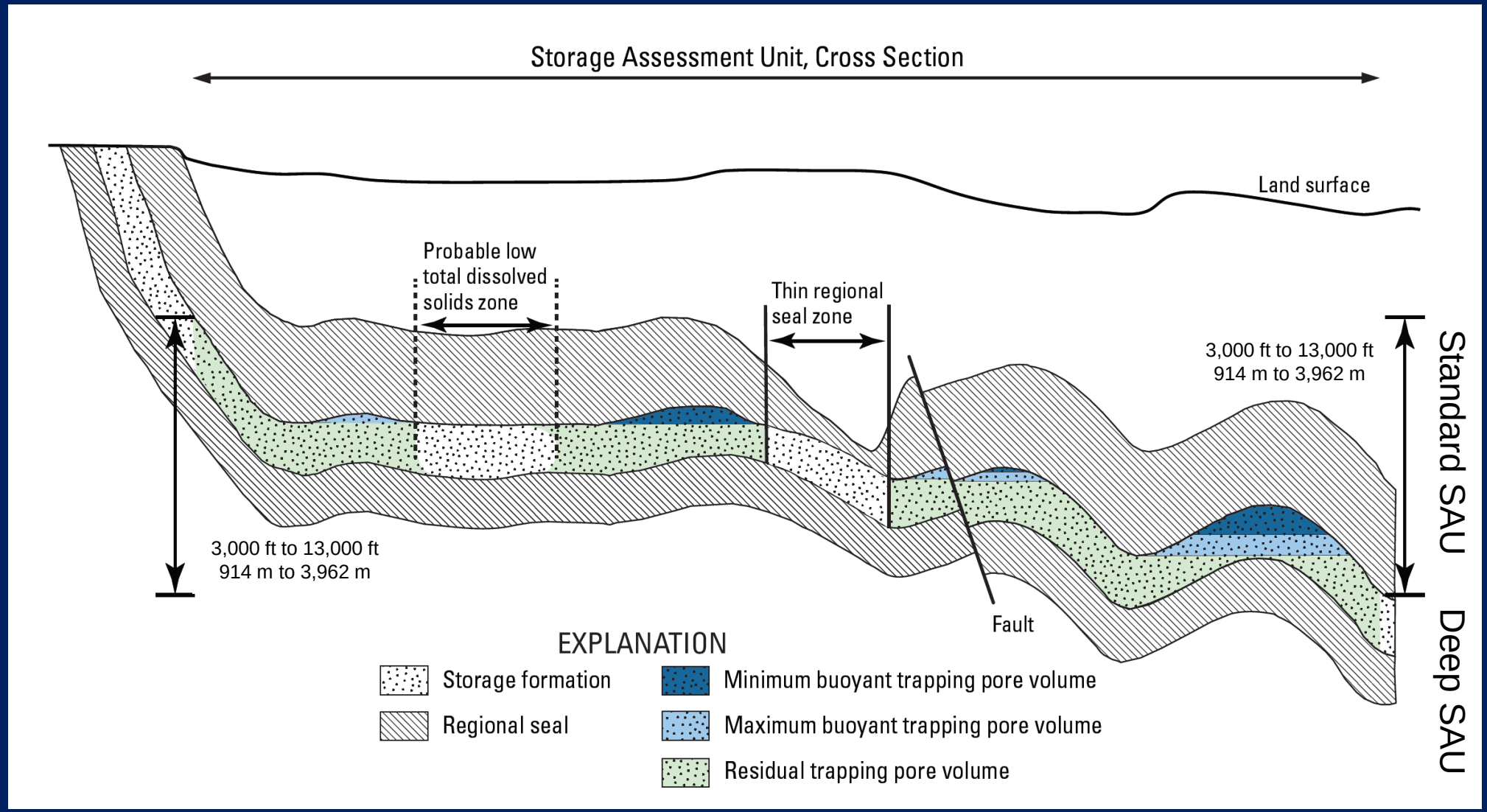
Storage Resource Management System



https://www.spe.org/en/industry/co2-storage-resources-management-system/

Society of Petroleum Engineers (2017)

USGS Geologic model for a CO_2 storage assessment unit (SAU)



Salinity of water in storage formation must be > 10,000 mg/L total dissolved solids (U.S. Environmental Protection Agency, 2010)

Brennan and others (2010)
Blondes and others (2013)

Phase 1: Prioritization and Data Collection

- Prioritize countries or regions that could benefit from CO_2 storage resource estimates and subsurface characterization.
- Determine the availability of relevant geologic data and identify data gaps in those countries or regions.
- Start to collect relevant data.

USGS Storage Assessment Unit Input Data Form

Brennan and others (2010)

Blondes and others (2013)

Characteristics of the Storage Assessment Unit

Lines 1-9 concern data for the SAU at depths of (check one): 3,000-13,000 ft _____

> 13,000 ft _____

(1) SAU depth from surface (ft): minimum: _____ most likely: _____ maximum: _____

(2) Area of the SAU (acres): minimum: _____ most likely: _____ maximum: _____

(3) Mean total SAU thickness (ft): minimum: _____ most likely: _____ maximum: _____

(4) SAU water quality (check one):

Most of the water in the SAU is saline (greater than 10,000 mg/L TDS). _____

Water in this SAU is both saline and fresh. _____

Most of the water in the SAU is fresh (less than 10,000 mg/L TDS). _____

(5) Area fraction available for storage (generally, the area where SAU pore water has more than 10,000 mg/L TDS):

minimum: _____ most likely: _____ maximum: _____

(6) Mean thickness net porous interval (ft): minimum: _____ most likely: _____ maximum: _____

(7) Mean porosity net porous interval (fraction): minimum: _____ most likely: _____ maximum: _____

Buoyant Trapping Probabilistic Calculation Inputs

(8) Buoyant trapping pore volume (MMbbl): minimum: _____ most likely: _____ maximum: _____

Residual Trapping Probabilistic Calculation Inputs

(9) Permeability of the net porous interval (mD): minimum: _____ most likely: _____ maximum: _____

Phase 2: The Assessment

- The U.S. Geological Survey will facilitate focused CO_2 storage resource assessments by:
  - Doing the assessment with assistance from local geological staff;
  - Working directly with the local geological staff to do the assessment; or
  - Advising the local geological staff as they do the assessment;
- Training and assessment capacity building is integral to the effort.

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Phase 3: Reporting

- Expected results include:
  - Publicly available reports of regional, country, or basin specific geologic CO_2 storage resources.
  - Publish accumulated non-proprietary data and derivative products of aggregated proprietary data.

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For More Information

For more information on how to join this Global Carbon Dioxide Storage Resource Assessments collaborative effort, please contact:

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References Cited

Blondes, M.S., Brennan, S.T., Merrill, M.D., Buursink, M.L., Warwick, P.D., Cahan, S.M., Cook, T.A., Corum, M.D., Craddock, W.H., DeVera, C.A., Drake, R.M., II, Drew, L.J., Freeman, P.A., Lohr, C.D., Olea, R.A., Roberts-Ashby, T.L., Slucher, E.R., and Varela, B.A., 2013, National assessment of geologic carbon dioxide storage resources—Methodology implementation: U.S. Geological Survey Open-File Report 2013–1055, 26 p., available at https://pubs.usgs.gov/of/2013/1055/.

Brennan, S.T., Burruss, R.C., Merrill, M.D., Freeman, P.A., and Ruppert, L.F., 2010, A probabilistic assessment methodology for the evaluation of geologic carbon dioxide storage: U.S. Geological Survey Open-File Report 2010–1127, 31 p., available at https://pubs.usgs.gov/of/2010/1127.

U.S. Environmental Protection Agency, 2010, Final rule for Federal requirements under the underground injection control (UIC) program for carbon dioxide (CO2) geologic sequestration (GS) wells): Washington, D.C., U.S. Environmental Protection Agency Web site, available at http://water.epa.gov/type/groundwater/uic/class6/gsregulations.cfm.

U.S. Geological Survey Geologic Carbon Dioxide Storage Resources Assessment Team, 2013a, National assessment of geologic carbon dioxide storage resources—Data: U.S. Geological Survey Data Series 774, 13 p., plus 2 appendixes and 2 large tables in separate files, https://pubs.usgs.gov/ds/774/.

U.S. Geological Survey Geologic Carbon Dioxide Storage Resources Assessment Team, 2013b, National assessment of geologic carbon dioxide storage resources—Results: U.S. Geological Survey Circular 1386, 41 p., https://pubs.usgs.gov/circ/1386/.

U.S. Geological Survey Geologic Carbon Dioxide Storage Resources Assessment Team, 2013c, National assessment of geologic carbon dioxide storage resources—Summary: U.S. Geological Survey Fact Sheet 2013–3020, 6 p., https://pubs.usgs.gov/fs/2013/3020/.