NATCARB_OilGas (v1502)

FGDC Metadata

Show Definitions

Description

Citation

Title: NATCARB_OilGas (v1502)

Originators: NATCARB Map Team, US Dept. of Energy (DOE) National Energy Technology Laboratory (NETL)

Publication date: 20150514

Edition: v1502

Data type: vector digital data

Other citation details: http://www.netl.doe.gov/technologies/carbon_seq/natcarb

Description

Abstract: The National Carbon Sequestration Database and Geographic Information System (NATCARB) Oil and Gas spatial database is a small-scale (large-area) overview of carbon dioxide (CO2) geologic storage potential in oil and/or gas fields across the USA and parts of Canada. Storage estimates are quantified by the volume of oil and gas that has, or could be, produced, assuming that it could be replaced by an equivalent volume of carbon dioxide. Only oil and/or gas reservoirs containing water with total dissolved solids (TDS) greater than 10,000 ppm merited evaluation for potential CO2 storage. Storage resources labelled as "OIL" may represent oil-only fields, or combined oil and gas fields. Storage resources labelled as "GAS" represent gas-only fields.This data layer reflects the best available knowledge regarding the location of carbon sequestration potential in the USA and Canada, both onshore and offshore.
Version Log:
v1101 - Initial release for Atlas III;
v1103 - Metadata revised;
v1104 - No changes to Oil and Gas layer;
v1204 - Initial release for Atlas IV. New data submitted by all regional partnerships;
v1302 - No changes to Oil and Gas layer. Metadata revised.
v1303 - No changes to Oil and Gas layer. Metadata revised.
v1403 - Initial release for Atlas V. New data submitted by BSCSP, MGSC, MRCSP, PCOR, SECARB and parts of SWP. Missing Medium volumes calculated as natural log mean of Low and High volumes.
v1501 - No changes to Oil and Gas layer.
v1502 - Revised data submitted by SWP.
NATCARB is administered by the US Dept. of Energy (DOE) National Energy Technology Laboratory (NETL) and contains data provided by several Regional Carbon Sequestration Partnerships (RCSP). RCSPs orginally developed the data per individual geologic storage resource, or as continuous surface models, and then converted these data into a 10 km X 10 km vector "grid". The NATCARB Team at the Kansas Geological Survey compiled the regional datasets into a single, seamless layer.

Purpose: This dataset provides a single, seamless spatial database of carbon storage potentials for oil and gas reservoirs across the USA and Canada compiled from regional datasets created by RCSPs and the KGS. Storage resource estimates are based on physically accessible CO2 storage pore volume within subsurface geologic formations, and on the assumption that the storage resources are open systems in which in situ fluids will either be displaced from the injection zone or managed accordingly. Economic and regulatory constraints are not considered. These data are intended to be used as an initial assessment of potential geologic storage and are not a substitute for site-specific assessment, testing, and geologic investigation. This spatial data layer provides carbon capture and storage (CCS) project developers a starting point for further inquiry into CCS technologies aimed at reducing CO2 emissions and is intended for use by RCSPs, project developers, and governmental entities for regional- and national-scale assessments of potential CO2 storage resources in the United States and parts of Canada.

Supplemental information: For a detailed methodology of storage resource estimates refer to Appendix B of The United States 2014 Carbon Utilization and Storage Atlas - Fifth Edition (Atlas V). For data access please contact the US DOE-NETL NATCARB Map Team - NatCarb.Maps@netl.doe.gov For questions regarding how the data were assembled, contact the KGS NATCARB Team - natcarb@kgs.ku.edu

Dataset credit: Version 1502 (second quarter release of 2015) of the NATCARB Saline spatial database was created by the NATCARB Team at the Kansas Geological Survey (KGS). The following Regional Carbon Sequestration Partnerships (RCSP) contributed data to the national dataset:

Big Sky Carbon Sequestration Partnership (BSCSP);
Midwest Geological Sequestration Consortium (MGSC);
Midwest Regional Carbon Sequestration Partnership (MRCSP);
Plains CO2 Reduction Partnership (PCOR);
Southeast Regional Carbon Sequestration Partnership (SECARB);
Southwest Regional Partnership on Carbon Sequestration (SWP);
West Coast Regional Carbon Sequestration Partnership (WESTCARB).
Several site characterization project teams also contributed data through the RCSPs to be included in the national dataset:
Black Warrior Basin - University of Alabama;
Cambro-Ordovician Strata of the Illinois and Michigan Basins - University of Illinois;
Gulf of Mexico Miocene - University of Texas;
Triassic Newark Basin of New York and New Jersey - Sandia Technologies;
Ozark Plateau Study Area - University of Kansas;
Rocky Mountain Region - University of Utah;
South Georgia Rift Basin - South Carolina Research Institution;
Two Elk Energy Park - North American Power Group;
Wilmington Graben, Offshore Los Angeles - Terralog Technologies USA;
Wyoming - University of Wyoming.

Point Of Contact

Organization: NATCARB Map Team, US Dept. of Energy (DOE) National Energy Technology Laboratory (NETL)
Phone: 304-285-2006
Phone: 304-285-1354
Email: NatCarb.Maps@netl.doe.gov
Address type: mailing and physical
Address: 3610 Collins Ferry Road M/S F04
City: Morgantown
State or Province: West Virginia
Postal code: 26507
County: US

Data Type

Data type: vector digital data
Native dataset environment: Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.2.2.3552

Status

Data status: Complete
Update frequency: Quarterly

Key Words

Theme:
Keywords: US Department of Energy, Energy, Carbon Sequestration, NATCARB, Saline
Keyword thesaurus: None
Theme:
Keywords: climatologyMeteorologyAtmosphere, environment, geoscientificInformation
Keyword thesaurus: ISO 19115 Topic Categories
Place:
Keywords: Canada, USA, North America
Keyword thesaurus: ISO 19115 Topic Category
Stratum:
Keyword thesaurus: ISO 19115 Topic Category

Data Access Constraints

Access constraints: None
Use constraints: See access and use constraints information.

Spatial Reference Information

Horizontal Coordinate System

Coordinate System Details

Map projection

Map projection name: Lambert Azimuthal Equal-area
Longitude of projection center: -100.0
Latitude of projection center: 45.0
False easting: 0.0
False northing: 0.0

Planar Coordinate Information

Planar coordinate encoding method: coordinate pair
Coordinate representation:
Abscissa resolution: 0.0001
Ordinate resolution: 0.0001
Planar distance units: meter

Geodetic model

Horizontal datum name: D WGS 1984
Ellipsoid name: WGS 1984
Semi-major axis: 6378137.0
Denominator of flattening ratio: 298.257223563

Spatial Domain

Bounding Coordinates

In Unprojected coordinates (geographic)

Boundary	*Coordinate*
West	-172.598993 (latitude)
East	-36.003643 (latitude)
North	80.133277 (longitude)
South	22.473683 (longitude)

Data Structure and Attribute Information

Overview

Direct spatial reference method: Vector

Attributes of NATCARB_OilGas_v1502

Description: Vector polygon features representing oil and gas storage resources in the USA and Canada
Source: NATCARB

Attributes

OBJECTID

Definition: Internal feature number.

Attribute values: Sequential unique whole numbers that are automatically generated.
Attribute definition source: ESRI

SHAPE

Definition: Feature geometry.

Attribute values: Coordinates defining the features.
Attribute definition source: ESRI

PARTNERSHIP

Definition: Abbreviation for RCSP.

Attribute domain values

Value	*Definition*
SWP	Southwest Regional Partnership on Carbon Sequestration
PCOR	The Plains CO2 Reduction Partnership
BSCSP	Big Sky Sequestration Partnership
MRCSP	Midwest Regional Carbon Sequestration Partnership
SECARB	Southeast Regional Carbon Sequestration Partnership
WESTCARB	West Coast Regional Carbon Sequestration Partnership
MGSC	Midwest Geological Sequestration Consortium

Attribute definition source: Atlas IV

FIELD_NAME

Definition: Name of oil/gas field

TOTAL_FIELD_AREA

Definition: Area (square meters) of entire oil/gas field

Attribute domain range

Range	*Value*
Minimum	0
Attribute units of measurement	square meters

FIELD_TYPE

Definition: Type of reservoir

Attribute domain values

Value	*Definition*
OIL	Oil only reservoir
GAS	Gas only reservoir
OIL & GAS	Oil and gas reservoir
UNDETERMINED	Field type unknown

Attribute definition source: DOE-NETL

RESERVOIR_NUM

Definition: Number of reservoirs within field.

RESERVOIR_NAME

Definition: Name of reservoir within field

STATE_SRC

Definition: State oil and gas data are sourced from.

VOL_LOW

Definition: Low (P10) estimate of carbon storage potential in metric tonnes.

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	metric tonnes

Attribute definition source: Atlas IV

VOL_MED

Definition: Medium (P50) estimate of carbon storage potential in metric tonnes.

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	metric tonnes

Attribute definition source: Atlas IV

VOL_HIGH

Definition: High (P90) estimate of carbon storage potential in metric tonnes.

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	metric tonnes

Attribute definition source: Atlas IV

DEPTH_FT

Definition: Mean depth (feet) of storage resource

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	Feet
Attribute measurement resolution	whole number

Attribute definition source: Atlas IV

THICKNESS_FT

Definition: Mean thickness (feet) of storage resource

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	Feet
Attribute measurement resolution	whole number

Attribute definition source: Atlas IV

SALINITY_TDS

Definition: Mean salinity (total dissolved solids) of storage resource

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	ppm
Attribute measurement resolution	whole number

Attribute definition source: Atlas IV

PRESSURE_PSI

Definition: Mean pressure (pounds per square inch) of storage formation

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	PSI
Attribute measurement resolution	whole number

Attribute definition source: Atlas IV

TEMPERATURE_F

Definition: Mean temperature (degrees F) of storage resource

Attribute domain range

Range	Value
Minimum	0
Attribute units of measurement	degrees F
Attribute measurement resolution	whole number

Attribute definition source: Atlas IV

POROSITY_PCT

Definition: Mean porosity (percent) of storage resource

Attribute domain range

Range	Value
Minimum	0
Maximum	100
Attribute units of measurement	percent

Attribute definition source: Atlas IV

PERMEABILITY_mD

Definition: Mean permeability (millidarcies) of storage resource

Attribute domain range

Range	Value
Minimum	0.0001
Attribute units of measurement	mD

Attribute definition source: Atlas IV

ASSESSED

Definition: Flag defining whether storage resource has been assessed for carbon storage potential

Attribute domain values

Value	Definition
0	Storage resource has not been assessed. Capacities must be <Null>.
1	Storage resource has been assessed. Capacities may be "0".

Attribute definition source: DOE-NETL/KGS

CYCLE_OF_LAST_UPDATE

OVERLAP

DUPLICATE

MED_CALCED

Definition: Flag indicating how medium volume has been determined.

Attribute domain values

Value	Definition
0	Medium volume provided by regional partnership or site characterization project
1	Medium volume calculated by KGS NATCARB Team as natural log mean of Low and High volumes

SHAPE_Length

Definition: Length of feature in internal units.

Attribute values: Positive real numbers that are automatically generated.

Attribute definition source: ESRI

SHAPE_Area

Definition: Area of feature in internal units squared.

Attribute values: Positive real numbers that are automatically generated.

Attribute definition source: ESRI

SDTS Feature Description

Spatial data transfer standard (SDTS) terms

Feature class

Type: GT-polygon composed of chains

Count: 68634

Data Quality and Accuracy Information

General

Logical consistency report: All RCSPs provided carbon storage data in accordance with common standards developed by the RCSPs and the NATCARB project teams. (See Sources for more information on methodologies). Discrepancies and overlaps occur at the boundaries of some adjacent partnerships and DOE-NETL is the final authority on the handling of these issues (see data fields OVERLAP and DUPLICATE in Entity Attributes section of this document for details).

Completeness report: This dataset reflects the best available knowledge regarding the location of potential carbon sequestration potential in the USA and Canada, both onshore and offshore. However, not all areas of the United States and Canada have been assessed (e.g., offshore New England). Not all RCSPs provided data for all attribute fields in the database (indicated by <Null>). Values of "0" represent actual measurements. Not all RCSPs provided low (VOL_LOW), medium (VOL_MED) and high (VOL_HIGH) estimates of carbon storage capacity. In cases where only medium estimates (VOL_MED) were provided, the medium capacities were copied into the VOL_LOW and VOL_HIGH attribute fields. If the RCSP provided low and high estimates of capacity but

not medium, the VOL_MED was calculated as the natural log mean of VOL_LOW and VOL_HIGH.

Attribute Accuracy

Attribute accuracy report: Questions regarding accuracy of the data (spatial and attribute) should be directed to the individual RCSPs. Except for certain cases of inter-partnership overlap, NATCARB did not make any changes to the data except for corrections to values in text fields (spelling, capitalization, etc.) when errors were noticed.

Data Source and Process Information

Data Sources

Data source information

WESTCARB

Title: WESTCARB Carbon Sequestration Potential

Originators: West Coast Regional Carbon Sequestration Partnership

California Energy Commission

Data type: vector digital data

Data location: http://www.westcarb.org/, http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp.html

Media: None

Source contribution: West Coast Regional Carbon Sequestration Partnership provided data for the Western United States and Canada (Alaska, Western Arizona, Western British Columbia, California, Hawaii, Nevada, Western Oregon and Western Washington).

BSCSP

Title: BSCSP Carbon Sequestration Potential

Originators: Big Sky Sequestration Partnership

Montana State University

Data type: vector digital data

Data location: http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp.html, http://www.bigskyco2.org/

Media: None

Source contribution: Big Sky Carbon Sequestration Partnership provided data for the Innermountain West region of the Northwestern United States (Idaho, Eastern Montana, Eastern Oregon, Western South Dakota, Eastern Washington and Wyoming).

DOE-NETL

Title: US Department of Energy (DOE) National Energy Technology Laboratory (NETL) NATCARB Team

Data location: http://www.netl.doe.gov/technologies/carbon_seq/natcarb/

Media: None

Source contribution: As the responsible authority for the National Carbon Sequestration Database and Geographic Information System (NATCARB), the US Department of Energy (DOE) National Energy Technology Laboratory (NETL) NATCARB Team provided data, methodological guidance and expertise in handling issues specific to creation of the composite NATCARB data layers.

SWP

Title: SWP Carbon Sequestration Potential

Originators: New Mexico Institute of Mining and Technology

Southwest Regional Partnership on Carbon Sequestration

Data type: vector digital data

Data location: http://www.southwestcarbonpartnership.org, http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp.html/

Media: None

Source contribution: Southwest Regional Partnership on Carbon Sequestration provided data for the

Southwestern United States (Eastern Arizona, Colorado, Kansas, New Mexico, Western Texas and Utah).

Atlas IV

Title: The United States 2012 Carbon Utilization and Storage Atlas

Publisher: US Department of Energy (DOE) National Energy Technology Laboratory (NETL)

Publication place: 3610 Collins Ferry Road, Morgantown, WV, 26507-0880, US

Publication date: 20121219

Edition: Fourth

Data location: http://www.netl.doe.gov/technologies/carbon_seq/refshelf/atlasIV/

Media: onLine

Source contribution: The United States 2014 Carbon Utilization and Storage Atlas - Fifth Edition (Atlas V) provides updated information regarding carbon dioxide storage potential in the US and Canada and includes maps, summary tables and, in Appendices A and B, detailed methodologies.

KGS

Title: Kansas Geological Survey (KGS) NATCARB

Media: None

Source contribution: As the primary entity responsible for compiling the NATCARB layers, the Kansas Geological Survey NATCARB Team worked closely with the DOE-NETL NATCARB Team to develop rules and methods for assembling the composite datasets.

PCOR

Title: PCOR Carbon Sequestration Potential

Originators: University of North Dakota, Energy andEnvironmental Research Center

The Plains CO2 Reduction Parthership

Data type: vector digital data

Data location: http://www.undeerc.org/pcor/, http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp.html

Media: None

Source contribution: The Plains CO2 Reduction Partnership provided data for the upper Midwest and Central Canada (Iowa, Minnesota, Missouri, Eastern Montana, Nebraska, North Dakota, Eastern South Dakota, Wisconsin, Eastern Wyoming, Alberta, Northeastern British Columbia, Manitoba and Saskatchewan).

MRCSP

Title: MRCSP Carbon Sequestration Potential

Originators: Midwest Regional Carbon Sequestration Partnership

Batelle Memorial Institute

Data type: vector digital data

Data location: http://www.mrcsp.org/, http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp.html

Media: None

Source contribution: Midwest Regional Carbon Sequestration Partnership provided data for the Ohio Valley and Northeastern United States (Eastern Indiana, Eastern Kentucky, Maryland, Michigan, New Jersey, New York, Ohio, Pennsylvania and West Virginia).

MGSC

Title: MGSC Carbon Sequestration Potential

Originators: Midwest Geological Sequestration Consortium

Illinois State Geological Survey

Data type: vector digital data

Data location: http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp.html, http://www.sequestration.org/

Media: None

Source contribution: Midwest Geological Sequestration Consortium provided data for Illinois, Western Indiana and Western Kentucky.

SECARB

Title: SECARB Sequestration Potential

Originators: Southeast Regional Carbon Sequestration Partnership

Southern States Energy Board

Data type: vector digital data

Data location: http://www.secarbon.org/, http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp.html

Media: None

Source contribution: Southeast Regional Carbon Sequestration Partnership provided data for the Southeastern United States (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Eastern Texas, West Virginia and Virginia).

Process Steps

Process step information

Process Step 1

Process description: The NATCARB Group at the Kansas Geological Survey assembled GIS datasets from the regional partnerships (and other sources where necessary) into a single layer using ESRI's ArcInfo (v10.2.2) software in the Summer and Fall of 2014. All partnerships provided data in 10 km by 10 km vector "cells" and simple polygon outlines of resource boundaries. Not all partnerships provided low, medium and high capacity estimates. Where only medium capacities were provided, KGS made the low and high capacity fields (VOL_LOW and VOL_HIGH, respectively) equal to the medium capacity (VOL_MED). Where only low and high estimates were provided, medium values were calculated as the natural log mean of the low and high volumes. Other alterations to the data include identifying overlapping and duplicate data submitted by adjacent partnerships and making corrections to values in text fields (spelling, capitalization, etc.) when errors were noticed.

Organization: GIS Support Section, Kansas Geological Survey

Position: NatCarb Team

Phone: 785-864-3965

Email: natcarb@kgs.ku.edu

Hours of service: 8 am - 5 pm M-F

Address type: mailing and physical

Address: 1930 Constant Ave

City: Lawrence

State or Province: KS

Postal code: 66047-3726

County: US

Process date: 20141013

Process Step 2

Process description: Metadata updated.

Organization: GIS Support Section, Kansas Geological Survey

Position: NATCARB Team

Process date: 20141015

Data Distribution Information

General

Distribution liability: See access and use constraints information.

Distribution Point of Contact

Organization: NATCARB Map Team, US Department of Energy (DOE) National Energy Technoloy Laboratory (NETL)
Phone: 304-285-2006
Phone: 304-285-1354
Email: NATCARB.Maps@NETL.DOE.GOV
Address type: mailing and physical
Address: 3610 Collins Ferry Road M/S F04
City: Morgantown
State or Province: West Virginia
Postal code: 26507
County: US

Standard Order Process

Digital form:
Format name: ESRI File Geodatabase
Format version number: 10.2.2
File decompression technique: zip
Digital transfer option:
Online option:
Computer information:
Network address:
Network resource name: http://www.netl.doe.gov/technologies/carbon_seq/natcarb/download.html

Fees: None
Ordering instructions: GIS datasets in ESRI file geodatabase format are available online. Please contact NATCARB Map Team for custom requests.

Metadata Reference

Metadata Date

Last updated: 20150514

Metadata Point of Contact

Organization: GIS Support Section, Kansas Geological Survey
Position: NATCARB Team
Phone: 785-864-3965
Email: natcarb@kgs.ku.edu
Hours of service: 8 am - 5 pm M-F
Address type: mailing and physical
Address: 1930 Constant Ave
City: Lawrence
State or Province: Kansas
Postal code: 66047-3726
County: US

Metadata Standards

Standard name: FGDC Content Standard for Digital Geospatial Metadata
Standard version: FGDC-STD-001-1998

Time convention: local time

FGDC Plus Metadata Stylesheet

Federal Geographic Data Committee