**[Identification ▼►](file:///C:\\Users\\ggunther\\AppData\\Local\\Temp\\1\\tmp63D1.tmp.htm" \l "ID0EJA)**

Citation

Citation Information

Originator United States Geological Survey (USGS)

Publication Date 2014

Title

Grid Files for the 3-D Geologic/Petroleum System Model of the Anadarko Basin Province

Edition 1 of 1

Geospatial Data Presentation Form Downloadable GIS Data

Publication Information

Publisher U.S. Geological Survey, Central Energy Resources Science Center

Online Linkage  http://pubs.usgs.gov/dds/dds-069/dds-069-ee/downloads/Ch13\_HigleyGrids/ZmapFormatGridFiles/

Online Linkage <http://energy.usgs.gov/OilGas/AssessmentsData/NationalOilGasAssessment/USBasinSummaries.aspx?provcode=5058>

Larger Work Citation

Citation Information

Originator Debra K. Higley, Nicholas J. Gianoutsos, Michael P. Pantea, and Sean M. Strickland

Publication Date 2014

Title

Precambrian to ground surface grid cell maps and 3D model of the Anadarko Basin Province

Geospatial Data Presentation Form Online Report or Chapter

Series Information

Series Name U.S. Geological Survey Digital Data Series DDS-69EE

Issue Identification DDS 69EE

Publication Information

Publication Place Denver, Colorado

Publisher U.S. Geological Survey, Central Energy Resources Team

Online Linkage  http://pubs.usgs.gov/dds/dds-069/dds-069-ee/

Description

Abstract

A 3-D geologic/petroleum system model of the Anadarko Basin Province was created from 26 stacked zmap-format grid files that represent elevation relative to sea level on Precambrian to present day surfaces. Additional zmap-format grids within this publication are (1) estimated thickness of strata eroded from about 33 to 5 millions of years before present (Ma), (2) present-day weight-percent total organic carbon (TOC) for the Woodford Shale in the basin, and (3) basement heat flow contours across the province. Data sources and references for these 2D grid files are located in the readme file. Each interval for the construction of the 3-D model was chosen on the petroleum system basis of whether it is primarily composed of reservoir, hydrocarbon source, seal, overburden, or underburden strata, as well as the quality and areal distribution of well and other data. Data from numerous databases, data sets, and publications were used to create the contour files. Interval boundaries are primarily formation tops that were derived from data retrieved from the databases and digitized published maps. Because formation names commonly change across province and national boundaries, formations that comprise the intervals were chosen based on age-equivalent strata. All files were gridded at approximately 1-kilometer spacing and saved for publication as zmap-format grid files. Zmap format will not be discussed here because the information is available using Web searches.

Purpose

Primary purposes of the Anadarko Basin Province petroleum system model were to (1) determine basin areas that are thermally mature for oil and (or) gas generation from known and potential petroleum source rocks; (2) model the timing of oil and gas generation, migration, and accumulation, (3) use modeled petroleum flow paths and timing of petroleum generation to help delineate assessment unit boundaries, and (4) publish results of the research and the grid files for use by others. The digital files listed in table 1 of the readme file were compiled as part of the National Oil and Gas Assessment Project being conducted by the Central Energy Resources Science Center of the U.S. Geological Survey, which focuses on assessing undiscovered oil and gas resources of onshore basins in the United States.

Supplemental Information

The names of zmap-format grid files below are also listed in table 1 of the readme file, in the larger work publication (see larger work). File names correspond to the gridded surface. For example, HuntonTft.DAT represents elevation in feet on the top of the Hunton Group. X and Y grid values are in meters, but elevation is in feet relative to sea level. Gridded values for HeatFlow\_mWm2.DAT are in milliwatts per square meter, and for WoodfordTOC.DAT are weight percent of total organic carbon. All grid files extend across the study area, even if the named formation has limited lateral extent. If the named formation is absent, then the grid location represents the highest elevation of underlying strata. Grid names are (1) surfaceDEMft.DAT, (2) OgallalaTft.DAT, (3) CretaceousTft.DAT, (4) PermianTft.DAT, (5) BlaineTft.DAT, (6) StoneCorralTft.DAT, (7) WellingtonTft.DAT, (8) ChaseTft.DAT, (9) CouncilGroveTft.DAT, (10) WabaunseeTft.DAT, (11) HeebnerTTft.DAT, (12) HeebnerBTft.DAT, (13) DouglasTft.DAT, (14) DesmoinesianTft.DAT, (15) CherokeeTft.DAT, (16) AtokanTft.DAT, (17) ThirteenFingerTft.DAT, (18) MorrowTft.DAT, (19) SpringerTft.DAT, (20) WoodfordTft.DAT, (21) HuntonTft.DAT, (22) SylvanTft.DAT, (23) ViolaTft.DAT, (24) SimpsonTft.DAT, (25) ArbuckleTft.DAT, (26) PrecambrianTft.DAT, (27) CreataceousErosiionThickft.DAT, (28) HeatFlow\_mWm2.DAT, and (29) WoodfordTOC.DA

Time Period of Content

Time Period Information

Single Date/Time

Calendar Date 2013

Currentness Reference

Date of publication

Status

Progress Complete

Maintenance and Update Frequency None planned

Spatial Domain

Bounding Coordinates

West Bounding Coordinate -104.225

East Bounding Coordinate -97.179

North Bounding Coordinate 39.288

South Bounding Coordinate 34.376

Keywords

Theme

Theme Keyword petroleum system modeling

Theme

Theme Keyword Thesaurus Gateway to the Earth Thesaurus

Theme Keyword Natural gas resources

Theme

Theme Keyword Thesaurus ArcIMS Metadata Server Theme Codes Thesaurus

Theme Keyword geoscientificInformation

Theme

Theme Keyword Thesaurus USGS Energy Program Themes Thesaurus

Theme Keyword Earth Science

Theme Keyword USGS

Theme Keyword Resource Assessment

Theme Keyword Geology

Theme Keyword Petroleum

Theme

Theme Keyword Thesaurus None

Theme Keyword Petroleum system model

Theme Keyword zmap grid

Theme Keyword 3-D model

Theme

Theme Keyword Thesaurus EnergyResourceActivities

Theme Keyword WEP

Place

Place Keyword Anadarko Basin

Place Keyword Las Animas uplift

Place Keyword Palo Duro Basin

Place Keyword Nebraska

Place Keyword Texas

Place Keyword New Mexico

Place Keyword Colorado

Place Keyword Oklahoma

Place Keyword Arkansas

Stratum

Stratum Keyword structure grids

Temporal

Temporal Keyword Precambrian to present

Access Constraints

None

Use Constraints

None

Point of Contact

Contact Information

Contact Organization Primary

Contact Organization U.S. Geological Survey, Central Energy Resources Team

Contact Person Debra K. Higley

Contact Position Research Geologist

Contact Address

Address Type mailing and physical address

Address U.S. Geological Survey, Box 25046, MS 939, Denver Federal Center

City Denver

State or Province Colorado

Postal Code 80225

Country UNITED STATES

Contact Voice Telephone (303) 236-5791

Contact Electronic Mail Address [Higley@usgs.gov](mailto:Higley@usgs.gov?subject=Grid%20Files%20for%20the%203-D%20Geologic/Petroleum%20System%20Model%20of%20the%20Anadarko%20Basin%20Province)

Browse Graphic

Browse Graphic File Name <http://certmapper.cr.usgs.gov/data/noga00/prov58/graphic/zmap_pub.jpg>

Browse Graphic File Type JPEG

Browse Graphic

Browse Graphic File Name [http:\\certmapper.cr.usgs.gov\data\we\graphic\OF1421.jpg](http://certmapper.cr.usgs.gov/data/we/graphic/OF1421.jpg)

Browse Graphic File Type JPEG

Security Information

Security Classification Unclassified

Cross Reference

Citation Information

Originator U.S. Geological Survey

Publication Date 2014

Title

Precambrian to ground surface grid cell maps and 3D model of the Anadarko Basin Province

Edition 1 of 1

Geospatial Data Presentation Form tabular digital data

Online Linkage <http://pubs.usgs.gov/of/2005/1421/downloads/>

[*Hide Identification ▲*](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EJA)

[**Data Quality ▼►**](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EIA)

Logical Consistency Report

How representative the grid cell values are of the actual surfaces depends largely on quality and distribution of data on formation thickness and depth, well elevation, and other data from the sources listed below. Formations and time intervals chosen for the isopach and structure surfaces were based mainly on the data distribution across the basin, perceived accuracy of the data, and on the importance of intervals within the petroleum system framework of the Anadarko Basin.

Completeness Report

Data files generated from the above sources vary in size. Data were gridded using a Briggs Biharmonic Spline algorithm with Dynamic Graphics, Inc., EarthVisionTM mapping and modeling software. Grid file spacing was 1000.0000 meters. Grid files were not smoothed or filtered; this results in a somewhat coarser appearance and users can subsequently smooth or filter the surfaces should they wish.

Lineage

Source Information

Source Citation

Citation Information

Originator See Data Quality Information for data sources

Source Contribution

Elevation, thickness, and fault data sources for the 2D grids and 3D model include formation tops from more than 220 wells across the province, edited formation tops from IHS Energy (2009a, 2009b) and the Kansas Geological Survey (2010, http://www.kgs.ku.edu/PRS/petroDB.html), and maps and data from Adler and others (1971), Andrews (1999a, 1999b, 2001), Cederstrand and Becker (1998), Fay (1964), Rascoe and Hyne (1987), Robbins and Keller (1992), and Rottmann (2000a, 2000b). Sources of ground elevations for 2D grids were well records and digital elevation model (DEM) data. Locations of formation outcrops/subcrops were derived primarily from surface geologic maps of the region and Rascoe and Hyne (1987). Formation ages and lithologies are commonly generalized; sources of information include Adler and others (1971), Denison and others (1984), Howery (1993), Ludvigson and others (2009), and the National Geologic Map Database (2011, http://ngmdb.usgs.gov/Geolex/). Specific Citations follow

IHS Energy, 2009a, IHS Energy Well database: Unpublished database available from IHS Energy, 15 Inverness Way East, Englewood, CO 80112.

IHS Energy, 2009b, GDS database: Unpublished Geological Data Services database available from IHS Energy, 15 Inverness Way East, Englewood, CO 80112.

Kansas Geological Survey, 2010, downloadable formations tops and LAS well data. http://www.kgs.ku.edu/PRS/petroDB.html Last accessed 2/2011.

National Geologic Map Database, 2011, http://ngmdb.usgs.gov/Geolex/ (last accessed 12/1/2011)

Adler, F.J., Caplan, W. M., Carlson, M. P., Goebel, E. D., Henslee H. T., Hick, I. C., Larson, T. G., McCracken, M. H., Parker, M. C., Rascoe, Jr., G., Schramm, M. W., and Wells, J. S.,1971, Future petroleum provinces of the Mid-Continent, in Cram, I.H., ed., Future petroleum provinces of the United States—their geology and potential: American Association of Petroleum Geologist Memoir 15, v. 2, p. 985-1120.

Andrews, R. D., 1999a, Map showing regional structure at the top of the Morrow Formation in the Anadarko Basin and shelf of Oklahoma: Oklahoma Geological Survey Special Publication 99-4, plate 3.

Andrews, R. D., 1999b, Morrow gas play in the Anadarko Basin and shelf of Oklahoma: Oklahoma Geological Survey Special Publication 99-4, 133 p., 7 plates.

Andrews, R. D., 2001, Map showing regional (sic) structure at the top of the Springer Group in the Ardmore Basin, and the Anadarko Basin and shelf of Oklahoma: Oklahoma Geological Survey Special Publication 2001-1, plate 5.

Cederstrand, J. R., and Becker, M. F., 1998, Digital map of base of aquifer for the High Plains aquifer in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming: U.S. Geological Survey Open-File Report OFR98-393, digital data and metadata. http://cohyst.dnr.ne.gov/metadata/m001aqbs\_99.html (last accessed March, 2011)

Fay, R. O., 1964, The Blaine and related formations of northwestern Oklahoma and southern Kansas: Oklahoma Geological Survey Bulletin 98, 238 p., 24 plates.

Rascoe, B., Jr., and Hyne, N.J., 1987, Petroleum geology of the Midcontinent: Tulsa Geological Society Special Publication 3, 162 p.

Rottmann, Kurt, 2000a, Structure map of Hunton Group in Oklahoma and Texas Panhandle: Oklahoma Geological Survey Special Publication 2000-2, plate 3.

Rottmann, Kurt, 2000b, Isopach map of Woodford Shale in Oklahoma and Texas Panhandle: Oklahoma Geological Survey Special Publication 2002-2, plate 2.

Howery, S. D., 1993, A regional look at Hunton production in the Anadarko Basin, in Johnson, K. S., ed., Hunton Group core workshop and field trip: Oklahoma Geological Survey Special Publication 93-4, p. 77-81.

Process Step

Process Description

See processing steps in larger work <include url here for larger work>.

[*Hide Data Quality ▲*](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EIA)

[**Spatial Data Organization ▼►**](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EHA)

Point and Vector Object Information

SDTS Terms Description

SDTS Point and Vector Object Type Point

[*Hide Spatial Data Organization ▲*](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EHA)

[**Spatial Reference ▼►**](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EGA)

Horizontal Coordinate System Definition

Planar

Map Projection

Map Projection Name Lambert Conformal Conic

Lambert Conformal Conic

Standard Parallel 35.000000

Standard Parallel 38.000000

Longitude of Central Meridian -99.000000

Latitude of Projection Origin 35.000000

Geodetic Model

Horizontal Datum Name WGS 1984

Ellipsoid Name WGS 1984

Semi-major Axis 6378137 Semi-minor Axis: 6356752.31424518

[*Hide Spatial Reference ▲*](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EGA)

[**Entities and Attributes ▼►**](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#/metadata/eainfo//text()[1])

Detailed Description

Attribute

Attribute Label z -value

Overview Description

*[Hide Entities and Attributes ▲](file:///C:\\Users\\ggunther\\AppData\\Local\\Temp\\1\\tmp63D1.tmp.htm" \l "/metadata/eainfo//text()[1])*

[**Distribution Information ▼►**](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EEA)

Distributor

Contact Information

Contact Organization Primary

Contact Organization USGS Information Services

Contact Address

Address Type mailing address

Address Box 25286 Denver Federal Center

City Denver

State or Province Colorado

Postal Code 80225

Country UNITED STATES

Contact Voice Telephone 1-888-ASK-USGS

Contact Facsimile Telephone 303.202.4693

Contact Electronic Mail Address [ask@usgs.gov](mailto:ask@usgs.gov?subject=Grid%20Files%20for%20the%203-D%20Geologic/Petroleum%20System%20Model%20of%20the%20Anadarko%20Basin%20Province)

Resource Description Downloadable Data

Distribution Liability

This publication was prepared by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed in this report, or represents that its use would not infringe privately owned rights. Reference therein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof.

Although all data and software included in this publication are used by U.S. Geological Survey personnel, no warranty, expressed or implied, is made by the U.S. Geological Survey as to the accuracy of the data and related materials and (or) the functioning of the software. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the U.S. Geological Survey in the use of these data, software, or related materials.

Standard Order Process

Digital Form

Digital Transfer Information

Format Name ZMAP

Format Information Content

Isopach and structural surface grid data

Digital Transfer Option

Online Option

Computer Contact Information

Network Address

Network Resource Name  http://pubs.usgs.gov/dds/dds-069/dds-069-ee/downloads/Ch13\_HigleyGrids/ZmapFormatGridFiles/

Ordering Instructions

This product can be downloaded individually using any one of the digit form, network resource name URLs above. Each of these URLs may provide access to various formats of the same product. To order the larger work such as the entire CD-ROM the dataset may have been published on, please use the contact information provided above.

[*Hide Distribution Information ▲*](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EEA)

[**Metadata Reference ▼►**](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EDA)

Metadata Date 2010-05-28

Metadata Review Date 2005-10-15

Metadata Contact

Contact Information

Contact Organization Primary

Contact Organization U.S. Geological Survey, Central Energy Resources Team

Contact Person Debra K. Higley

Contact Address

Address Type mailing and physical address

Address U.S. Geological Survey, Box 25046, MS 939, Denver Federal Center

City Denver

State or Province Colorado

Postal Code 80225

Country UNITED STATES

Contact Electronic Mail Address [datamgt@usgs.gov](mailto:datamgt@usgs.gov?subject=Grid%20Files%20for%20the%203-D%20Geologic/Petroleum%20System%20Model%20of%20the%20Anadarko%20Basin%20Province)

Contact Instructions

For inquiries regarding this document, please include the metadata contact person's name, dataset name, and publication series and number.

Metadata Standard Name FGDC Content Standards for Digital Geospatial Metadata

Metadata Standard Version FGDC-STD-001-1998

Metadata Time Convention local time

Metadata Extensions

Online Linkage <http://www.esri.com/metadata/esriprof80.html>

Profile Name ESRI Metadata Profile

[*Hide Metadata Reference ▲*](file:///C:\Users\ggunther\AppData\Local\Temp\1\tmp63D1.tmp.htm#ID0EDA)