Yellowstone National Park

Geologic Resources Inventory

GIS Data Explanation, July 21, 2020

Geologic-Geographic Information Systems (GIS) data related to Yellowstone National Park is delivered in data package Zip (.zip) files. These data are a product of the NPS Geologic Resources Inventory (GRI) program, which is funded by the Inventory and Monitoring (I&M) Division and administered by the NPS Geologic Resources Division (GRD). Of note, for Yellowstone National Park the GRI produced two separate datasets, one for geologic maps and another for surficial geologic maps. This document pertains to the geologic maps (see the yell_surficial_geology_gis_readme.pdf for introductory information pertaining to the surficial maps).

Geologic-GIS data for Yellowstone National Park consist of a compiled park map providing complete coverage of the park and surrounding area, as well as individual component maps. Data files for the compiled park map are named using the park four-letter code (YELL) as a prefix. Component maps are identified by the following prefixes: Abiathar Peak 15' Quadrangle (ABPE), Buffalo Lake 15' Quadrangle (BULA), Canyon Village 15' Quadrangle (CAVI), Portions of the Cooke City 15' Quadrangle (COCI), Frank Island 15' Quadrangle (FRIS), Grassy Lake Reservoir 15' Quadrangle (GRLA), Huckleberry Mountain 15' Quadrangle (HUMO), Madison Junction 15' Quadrangle (MAJU), Mammoth 15' Quadrangle (MAMM), Mount Hancock 15' Quadrangle (MOHA), Norris Junction 15' Quadrangle (NOJU), Old Faithful 15' Quadrangle (OLFA), Pelican Cone 15' Quadrangle (PECN), Pilot Peak 15' Quadrangle and part of the Cooke City 15' Quadrangle (PIPK), Tepee Creek 15' Quadrangle (TECR), Tower Junction 15' Quadrangle (TOJU), Two Ocean Pass 15' Quadrangle (TWOC), West Thumb 15' Quadrangle (WETH) and West Yellowstone 15' Quadrangle (WEYE).

Geologic-GIS data are provided in the following GRI-supported GIS data formats 1.) ESRI file geodatabase format, 2.) 2.2 KML/KMZ format for use with Google Earth software, 3.) Open Geospatial Consortium (OGC) geopackage format for use in QGIS (or other OGC software), and upon request in 4.) ESRI shapefile format (contact Stephanie O'Meara, see contact information below, to acquire shapefile format data).

Data package Zip files containing the different GRI-supported GIS data formats are identified with following file suffixes: 1.) ESRI file geodatabase for use in ArcGIS Pro have a file suffix of "gdb_pro.zip", 2.) ESRI file geodatabase for use in ArcGIS ArcMap have a file suffix of "gdb.zip", 3.) KML data have a file suffix of "kml.zip", 4.) OGC geopackage data have a file suffix of "gpkg.zip", and if requested 5.) shapefile data have a file suffix of "shp.zip".

The ArcGIS Pro data package ZIP file has an ESRI file geodatabase and a Pro map (.mapx) file, as well as Pro layer (.lyrx) files. The ArcGIS ArcMap data package ZIP file has an ESRI file geodatabase, and a 10.1 map document (.mxd) file, as well as 10.1 layer (.lyr) files. Pro map (.mapx) files, ArcMap map document (.mxd) files and QGIS project (.qgz) files present GRI geologic data layers and GIS tables complete with data layer and table naming, symbology and feature labeling for viewing and data analysis. The Pro layer (.lyrx) and ArcMap layer (.lyr) files are provided so data layers can be added to a new or existing Pro map (.mapx) file or ArcMap map document (.mxd) file, respectively, with their associated layer naming, symbology and labeling. All data package ZIP files also contain a FGDC-compliant metadata file (in .txt format).

In addition to a data package ZIP file, three additional files comprise a GRI digital geologic-GIS map: 1.) this file (yell_geology_gis_readme.pdf), 2.) the map's GRI ancillary map information document (.pdf) file

(yell_geology.pdf), which contains geologic unit descriptions, as well as other ancillary map information and graphics from the source maps used by the GRI in the production of this park's GRI digital geologic-GIS data, and 3.) a user-friendly FAQ PDF version of the metadata (e.g., yell_geology_metadata_faq.pdf).

For a GIS dataset, the GRI recommends extracting all map files from a data package to its own folder. This is particularly of importance for file geodatabase data packages as an associated Pro map file (.mapx) and related layer (.lyrx) files, or ArcMap map document (.mxd) and related ArcMap layers (.lyr) files, all have relative file paths set to their file geodatabase.

Detailed information concerning the source data used by the GRI is listed in the Source Citation sections(s) of the included map metadata record (e.g., yell_geology _metadata.txt). This information is also available in the FAQ version of the metadata (e.g., yell_geology_metadata_faq.pdf). Information concerning source data is also in the Source Map Information GIS table (yellmap) and repeated in the GRI ancillary map information document (.pdf) file.

The Google Earth KMZ files, yell_geology_north.kmz, yell_geology_west.kmz, yell_geology_east.kmz, yell_geology_southwest.kmz, and yell_geology_southeast.kmz, each contain a limited version of the full spatial dataset (limited features and symbology). Google Earth software is available for free at: https://www.google.com/earth/versions/. The KMZ file possesses on-line links to the GRI program and its products, as well as to this readme document (on-line version), the GRI ancillary map information (.pdf) and the FGDC-compliant FAQ metadata (in .pdf format) pertaining to this dataset. Users are encouraged to open the readme document, FAQ metadata and the ancillary map information document outside of Google Earth should accessing the on-line versions via Google Earth be an issue. Users can also download Google Chrome (free at: http://www.google.com/chrome/) to view these files should their default browser not open these files from Google Earth.

The OGC geopackage data can be accessed using QGIS software. The software is available for free at: https://www.qgis.org/en/site/. A QGIS Project (.qgz) file is included for the compiled park geologic map. For an OGC geopackage and its QGIS project (.qgz) file, these files should also be kept together in the same folder.

Users of this data are cautioned about the locational accuracy of features and should not assume that features are exactly where they portrayed in Google Earth, ArcGIS, QGIS or other software used to display the data. Refer to the positional accuracy report and use constraints within a map metadata record for additional information concerning the positional accuracy of features in a GRI dataset. Users are also encouraged to only use the Google Earth data for basic visualization, and not to use the GIS data for any type of data analysis or investigation.

For detailed information regarding GIS parameters such as data attribute field definitions, attribute field codes, value definitions, and rules that govern relationships found in the data, refer to the NPS Geology-GIS Data Model document, gri_gdb_ggdm_v2dot3.pdf (available at: https://www.nps.gov/articles/gri-geodatabase-model.htm).

GRI digital geologic-GIS data are available at the NPS Data Store Search Application: http://irma.nps.gov/App/Reference/Search. To find GRI data for a specific park or parks select the appropriate park(s), enter "GRI" as a Search Text term, and then select the Search Button.

For a complete listing of Geologic Resources Inventory products and direct links to the download site, visit the GRI products webpage: http://go.nps.gov/gri_products.

For more information about the Geologic Resources Inventory Program visit the GRI webpage: https://www.nps.gov/subjects/geology/gri.htm. At the bottom of that webpage is a "Contact Us" link if you need additional information. You may also directly contact the program coordinator:

Jason Kenworthy
Inventory Program Coordinator
National Park Service Geologic Resources Division
P.O. Box 25287
Denver, CO 80225-0287
phone: (303) 987-6923
fax: (303) 987-6792
email: Jason_Kenworthy@nps.gov

To provide feedback or to inquire about the use of GRI products, contact Jason Kenworthy (contact information listed above).

For information about using and/or obtaining GRI digital geologic-GIS data, contact:

Stephanie O'Meara
Geologist/GIS Specialist/Data Manager
Colorado State University
Cooperator to the National Park Service
1201 Oak Ridge Drive, Suite 200
Fort Collins, CO 80525
phone: (970) 491-6655
e-mail: stephanie_o'meara@partner.nps.gov