DIGITAL MAPPING TECHNIQUES 2018

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The contents of this document are provisional

See Presentations and Proceedings from the DMT Meetings (1997-2018)

http://ngmdb.usgs.gov/info/dmt/
Scripted Conversion of Legacy GIS Data to USGS Formats

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Abstract

The Arizona Geological Survey (AZGS) has converted over one hundred geologic map products from a variety of legacy formats into National Cooperative Geologic Mapping Program standard schema for geologic map publications (NCGMP09) compliant geodatabases. A mixture of manual editing and python scripts were used to convert the data. Once in NCGMP09 format, the AZGS is able to batch convert all of its geodatabases into new formats like GeMs with a single python script and ArcGIS toolbox. The latest AZGS conversion tools are available on the open-source code-sharing repository GitHub. The python conversion to NCGMP09 scripts are located here: https://github.com/ncgmp09/transfer-data-to-ncgmp09. The NCGMP09 to GeMS tool is located here: https://github.com/ncgmp09/Ncgmp09_to_GeMS. The AZGS toolbar is located here: https://github.com/ncgmp09/azgs-toolbar. These tools will continue to be supported by the AZGS as new standards and technologies in geologic mapping arise. Support from NGGDPP has been acquired to upgrade the toolbar to improve checks for geometry, symbology, and topology errors in converted maps and to validate GeMs geodatabases.

Reference

SCRIPTED CONVERSION OF LEGACY GIS DATA TO USGS FORMATS

ARIZONA GEOLOGICAL SURVEY,
TUCSON, ARIZONA
TRANSFORMATION

- Python script - Transforms old AZGS databases into NCGMP09
- Python script / Arc toolbox - NCGMP09 into GeMS
- AZGS Toolbar / Map production
PYTHON SCRIPTS

- https://github.com/ncgmp09/transfer-data-to-ncgmp09
<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>BRANDNEWDATABASE.py</td>
<td>set the workspace environment</td>
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<td>AppendCartographicLinesWithFieldMappings.py</td>
<td>set the workspace environment</td>
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<td>AppendContactsWithFieldMappings.py</td>
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<td>AppendDataSourcePolysWithFieldMappings.py</td>
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<td>AppendNotesWithFieldMappings.py</td>
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<td>AppendOrientationPointsWithFieldMappings.py</td>
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<td>AppendOverlayPolysWithFieldMappings.py</td>
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<td>AppendSamplePointsWithFieldMappings.py</td>
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<td>AppendStandardLithologyWithFieldMappings.py</td>
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<td>AppendStationPointsWithFieldMappings.py</td>
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<td>AppendSysInfoWithFieldMappings.py</td>
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<tr>
<td>ConfidenceUpdate.py</td>
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<td>DataSourcesDomainUpdate.py</td>
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<tr>
<td>FeatureCopyFromOldDatabase.py</td>
<td>set the workspace environment</td>
</tr>
<tr>
<td>README.md</td>
<td>more updates on read me</td>
</tr>
<tr>
<td>execute-mixed.py</td>
<td>set the workspace environment</td>
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</tbody>
</table>
import arcpy, shutil

from arcpy import env

# List all file geodatabases in the current workspace

workspaces = arcpy.ListWorkspaces(""", "")
for workspace in workspaces:
    name = arcpy.Describe(workspace).name
    namepart = name.split("-")
    newname = namepart[0]
    # Set local variables
    #
    featureclassin = "MapUnitPolyS"
    featureclassout = "MapUnitPolyC"
    lnFC = "C:\\Documents\\sigs\\MxEd\\\\name = "\\GeologicMap\\" - featureclassin
    outFC = "C:\\Documents\\n\mp\\mixed\\\" newname + ".gp\\GeologicMap\\" - featureclassout
    schemeType = "NO_TEST"
    subtype = ""

# Set input field variables
#
    infield1 = "MapUnitPolyS_ID"
    infield2 = "MapUnit"
    infield3 = "Label"
    infield4 = "DataSourceID"
    lnfield5 = "Symbol"

# Set output field variables
#
    outfield1 = "MapUnitPolyC_ID"
    outfield2 = "MapUnit"
    outfield3 = "Label"
    outfield4 = "DataSourceID"
    outfield5 = "Symbol"
featureclassin = "MapUnitPolys"
featureclassout = "MapUnitPolys"

inFC = "C:\Documents\azgs\mixed\" + name + "\GeologicMap\" + featureclassin
outFC = "C:\Documents\ncgmp\mixed\"+newname+".gdb\GeologicMap\" + featureclassout

schemaType = "NO_TEST"
subtype = ""
import arcpy, os
from arcpy import env

env.workspace = "C:\\Documents\\args\\mixed"
executefile = ["execute-mixed.py"]
scripts = os.listdir("C:\\Documents\\transfer-date-to-ncgmp09-master")
for script in scripts:
    if script.endswith(".py"):
        if script not in executefile:
            print script
            execfile(script, {"env.workspace": env.workspace})
# Set input field variables

Infield1 = "ContactsAndFaults_ID"
Infield2 = "Type"
Infield3 = "LTYPE"
Infield4 = "Label"
Infield5 = "DataSourceID"
Infield6 = "Notes"
Infield7 = "RuleID"
Infield8 = "Symbol"
Infield9 = "IsConcealed"
Infield10 = "ExistenceConfidence"
Infield11 = "IdentityConfidence"
Infield12 = "LocationConfidenceMeters"

# Set output field variables

oufield1 = "ContactsAndFaults_ID"
oufield2 = "Type"
oufield3 = "LTYPE"
oufield4 = "Label"
oufield5 = "DataSourceID"
oufield6 = "Notes"
oufield7 = "RuleID"
oufield8 = "Symbol"
oufield9 = "IsConcealed"
oufield10 = "ExistenceConfidence"
oufield11 = "IdentityConfidence"
oufield12 = "LocationConfidenceMeters"
GEMS SCRIPT AND ARC TOOLBOX

- https://github.com/ncgmp09/Ncgmp09_to_GeMS

Ncgmp09 to GeMS
• Place the GeMSArcTool in your documents under ArcGIS

• Click on TransferData
TransferData

- Ncmap09 database
- GeMS database

TransferData

tool to append data into GeMS database from NCGMP09 database
TransferData

Completed

Close

☑ Close this dialog when completed successfully

Msg C:\Users\lbookman\Documents\ArcGIS\Default.gdb
Msg AppendStationPointsWithFieldMappings.py
Msg C:\Users\lbookman\Documents\ArcGIS\Default.gdb
Msg ConfidenceUpdate.py
Msg C:\Users\lbookman\Documents\ArcGIS\Default.gdb
Msg DataSourceDomainUpdate.py
Msg C:\Users\lbookman\Documents\ArcGIS\Default.gdb
Msg FeatureCopyFromOldDatabase.py
Msg C:\Users\lbookman\Documents\ArcGIS\Default.gdb
Completed script Run...
Succeeded at Tue May 15 12:14:48 2018 (Elapsed Time: 4 minutes 57 seconds)
AZGS NCGMP TOOLBAR

• Only opens NCGMP09 database
• Creates and Manages Data Sources and Description Of Map Units
• Draws the map unit legend onto an ArcMap layout
• Provides symbols for common geologic features
• Updates feature identifiers and Data Source identifiers as edits are made
DEVELOPMENT

- C# .NET and ArcObjects
- Created in 2009
- Undergone updates over the years
- https://github.com/ncgmp09/azgs-toolbar
- http://repository.azgs.az.gov/uri_gin/azgs/dlio/1564
Installation

1. Find the file ngmpToolbar.esriAddIn in the /bin/Debug folder. (If using GitHub open the file and click the Raw button to download only this file.)
2. Save ngmpToolbar.esriAddIn to your computer in a location of your choosing.
3. Double-click NCGMPToolbar.esriAddIn
4. Click Install Add-In
5. In ArcMap, click Customize
6. Select Customize Mode...
7. Click Add from file...
8. Navigate to and select NcgmpToolbar.esriAddIn
9. Click Open
10. On Toolbars tab, check the box next to NCGMP Toolbar then close Customize window
OPENING AN EXISTING NCGMP09 DATABASE

• the AddIn will only open a geologic map database created with one of the create database tools in the Geologic Mapping Toolset ArcGIS Toolbox.
CREATING AND MANAGING DATA SOURCES

- The toolbar provides a simple window for creating, managing and selecting data sources for individual or groups of features.
CREATING AND MANAGING DESCRIPTION OF MAP UNITS

• The Map Unit Legend Editor, accessible from the NCGMP Menu dropdown, provides a window that allows users to define new units, edit existing ones, adjust the ordering and hierarchy of the legend, and to indicate which polygons on the map depict a particular unit. The information entered into this form is written to the NCGMP database’s DescriptionOfMapUnits table.
DRAWING THE MAP UNIT LEGEND ONTO AN ARCMAP LAYOUT

• When ArcMap is in layout mode, the toolbar allows a user to draw the contents of the DescriptionOfMapUnits table as a set of graphical elements on the layout. These graphical elements include a color patch, map unit abbreviation, map unit name, display age and map unit description.
• An editor extension automatically manages various primary key fields defined in the NCGMP09 schema. As users create new features these fields are automatically populated. Similarly, users can select an "Active Data Source" record, and that Data Source will be automatically attached to each new feature.
CONTACT ME

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