

DIGITAL MAPPING TECHNIQUES 2024

The following was presented at DMT'24
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The contents of this document are provisional

See Presentations and Proceedings
from the DMT Meetings (1997-2024)

<http://ngmdb.usgs.gov/info/dmt/>

Using python to automate AK GeMS geologic map legends

By Amy MacPherson (Alaska Division of Geological & Geophysical Surveys) and Jeff Barrette (ESRI)

The construction of geologic map legends, involving manually manipulating the individual graphics that make up a legend in an ArcGIS Pro layout, has been a time-consuming and sometimes frustrating task for the cartographers and geologists at DGGs. Fortunately, we discovered that the Alaska Geologic Mapping Schema (AKGeMS) database holds the key to automating the formatting and layout of the legend with the use of Python scripting. This presentation will provide a short history and overview of geologic mapping at the Alaska Division of Geological & Geophysical Surveys and the AKGeMS schema. We will discuss in detail the issues and hurdles surrounding the creation of the Description of Map Units portion of a geologic map legend and investigate the feature classes and tables that eventually enabled the automation of the legend creation. Lastly, the presentation will provide a short introduction to the `arcpy.mp` Python module, a description of the new Legend Builder toolbox and its functionality followed by a live demonstration.

Using Python to Automate AKGeMS Geologic Map Legends

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Quick outline

- Geologic mapping at DGGS
 - AK GeMS
 - Inefficient and frustrating cartographic workflow
 - Demo “the before”
- Esri to the rescue!
 - Demo “the now”
 - Closer look at arcpy

Geologic Mapping at DGGS



We have many groups inside of DGGS and they are all collecting data and making new maps with their own specific focus: Minerals, Energy, Hydro & Surficial, Geologic Hazards, Volcanology

But when we make a new* [geologic map](#), we all use the same standard – AK GeMS

* we also work to update pre-AKGeMS maps to this new standard!

The standard – AK GeMS

- Based on USGS GeMS
- [MP 170 - AK GeMS data dictionary: A description of the Alaska geologic mapping schema](#)
- [MP 169 v. 2 - AK GeMS Symbology: A description of the AK GeMS Style File \(alaska.gov\)](#)

Esri to the rescue!

Attended the Esri UC last summer, question in hand – is it possible to automate this?

Met Jeff and his team

Few months later we are scoping out the early stages of the script!

The “Now”

- New toolbox
- Uses the Description of Map Units (dmu) table to populate the legend
- Flexibility
 - Can adjust spacing between elements
 - Can append information like unit age and full description