The following was presented at DMT’20
(June 8 - 10, 2020 - A Virtual Event)

The contents of this document are provisional

See Presentations and Proceedings from the DMT Meetings (1997-2020)

http://ngmdb.usgs.gov/info/dmt/
Washington’s Foray into GeMS
Funding for the Project

- Funded for FY19-20 through Data Preservation—NGGDPP
- We proposed to convert our 1:100,000-scale surface geologic dataset to GeMs, and to create unit descriptions for over 1800 units, which would also be used for our existing non-GeMS dataset.
Background of the 100K Dataset

- Digital dataset was created by compiling all 100k maps within the state (done around 2000, last update 2016)

- Such a large dataset that was very different from a single publication proved to be very interesting to convert—and time consuming
Background of the 100K Dataset

- Units from individual publications were regrouped into “simplified and combined” into new grouped units—unit within dataset does not match unit on plate most of the time

<table>
<thead>
<tr>
<th>Quad</th>
<th>Dataset Unit</th>
<th>Pub Unit</th>
<th>Lithology</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt. Adams</td>
<td>Mva(cb)</td>
<td>Tcb</td>
<td>andesite flows</td>
<td>Council Bluff, volcanic rocks of</td>
</tr>
<tr>
<td>Mt. St Helens</td>
<td>Mva(cb)</td>
<td>Tcb(1)</td>
<td>andesite flows</td>
<td>Council Bluff, volcanic rocks of</td>
</tr>
<tr>
<td>Hood River</td>
<td>Mva(cb)</td>
<td>Tcb(a)</td>
<td>andesite flows</td>
<td>Council Bluff, volcanic rocks of</td>
</tr>
</tbody>
</table>
Schema Explosion

- There was a lot of splitting, shoving and transposing involved
- Example of WGS Faults vs. GeMS Faults

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>USGS ref no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>Normal fault- Identity and existence certain, location accurate</td>
<td>2.2.1</td>
</tr>
<tr>
<td>46</td>
<td>Normal fault- Identity and existence questionable, location accurate</td>
<td>2.2.2</td>
</tr>
<tr>
<td>44</td>
<td>Normal fault- Identity and existence certain, location approximate</td>
<td>2.2.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Is Concealed</th>
<th>Existence Confidence</th>
<th>Identity Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal fault</td>
<td>No</td>
<td>Certain</td>
<td>Certain</td>
</tr>
</tbody>
</table>
*Geochem and Geochron are separate datasets and only locations are maintained in mapping dataset
Schema Explosion–Feature Classes–Lines

WGS + Gline + Gdike = Geologic Lines

Gfold + Contacts and Faults = Geologic Lines

Gunitl

GeMS
Schema Explosion—Feature Classes—Polygons

WGS

Gunitp
Map Unit Polys
Gotherp
Map Unit Overlay Polys

GeMS

Data Sources
Data Source Polys
Schema Explosion–Related Tables

**WGS**
- No existing table
- Data Sources
- Glossary
- Geomaterials

**GeMS**
- No existing table
- Description of Map Units
- No existing table
- Repurposed Symbols

*Description of Map Units will exist after next update*
Extra Complications

- Original geologists no longer around to answer questions
- Many of the fields in GeMS were not used because the 100k digital dataset would never be a “printed map”
- Took some time to figure out which fields pertained to 100k mapping vs 24k mapping for this particular project

Printed Map Fields

- Hierarchy key field
- Paragraph Style
- Area Fill RGB
- Area Fill Pattern Description
Some Questions...

Glossary

- Thought behind the purpose of the glossary—what is the intent for the user
- Used the AGI Glossary of Geology
- Is it necessary to define even the simplest terms such as ‘fault’? Where is the dividing line?

- Wrote a script against the online version
- Populated with all terms in our codes document for a complete glossary
Some Questions...

Geomaterials—GeMS

Glacial Materials

- Alluvial sediment
- Till
- Ice contact and ice marginal sediment
Some Questions…

Geomaterials—WGS

- Alluvium
- Drift
- Till
- Outwash
- Glacial-marine
- Glaciolacustrine
- Advance continental glacial outwash
- Alluvial fan
- Alpine glacial drift/till/outwash
- Continental glacial and non-glacial
- Continental glacial drift/till/outwash/moraines
Future Steps

☐ Writing a script to help convert future projects

☐ We will be tackling our 250 and 500k datasets in the coming year