The following was presented at DMT’08 (May 18-21, 2008).

The contents are provisional and will be superseded by a paper in the DMT’08 Proceedings.

Over a Century of Geoscience Serving the Mountain State
Defining a Three Dimensional Geologic Map for the Appalachian Plateau

Gayle H. McColloch, Jr.
Jane S. McColloch
Price of software to support a three dimensional geologic map in 1991

If you had to ask you couldn’t afford it. I was lucky to be able to afford 2-d GIS.
A true three dimensional geologic map is more likely a collection of related files, and possibly programming. It will not be hard copy maps.
Recently prices are a lot better!

Free is best, if the software works!
Several visualizations in this presentation were produced with GRASS GIS running in Ubuntu Linux and now Windows
What should be included in a three-dimensional geologic map?
Useful base layers

- Orthorectified imagery
- Dem
- Hypsography
- Hydrography
- Infrastructure lines
- Cultural points
Geologic mapping in gently folded sedimentary rocks

• Tracing wide spread beds that define the boundaries of rock units
• Tracing locally persistent intra-formational markers
• Mapping other units of interest, where possible
Other units of interest
BETHANY TURNPIKE TUNNELS

First highway tunnels constructed west of Alleghenies. They were built in 1831 by Richard Waugh at personal expense to ease transportation to his flour mills. The tunnels, a mile apart, were removed by the State in 1957.
Base layers

- Orthorectified imagery
- Dem
- Hypsography
- Hydrography
- Infrastructure lines
- Cultural points
Elements useful for three dimensional geologic map in the Appalachian Plateau

• Grids representing elevations and possibly volumes of all important horizons occurring between the surface and sea level or bottom of known geology
• Two dimensional elements of geologic map
• Stratigraphic information to fill in gaps
• Deep sub-surface information, if available
West Virginia Geological and Economic Survey

1897-2008

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