Digital Mapping Techniques '12

Association of American State Geologists

United States Geological Survey

The following was presented at DMT'12
(May 20-23, 2012).

The contents are provisional and will be
superseded by a paper in the
DMT'12 Proceedings.

See also earlier Proceedings (1997-2011)
http://ngmdb.usgs.gov/info/dmt/

DMT 2012 Presentations in the ISGS Earth Systems Visualization Laboratory: Tricks, Tools, and Techniques for 3-D Geologic Mapping

Don Keefer, Jason Thomason
Illinois State Geological Survey
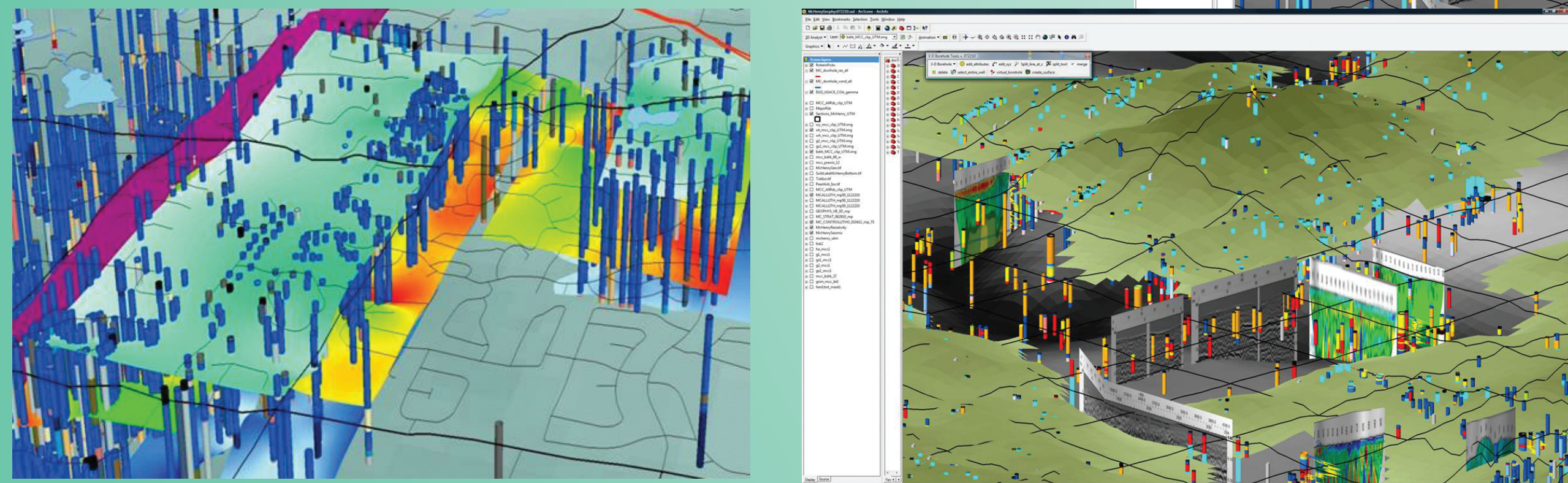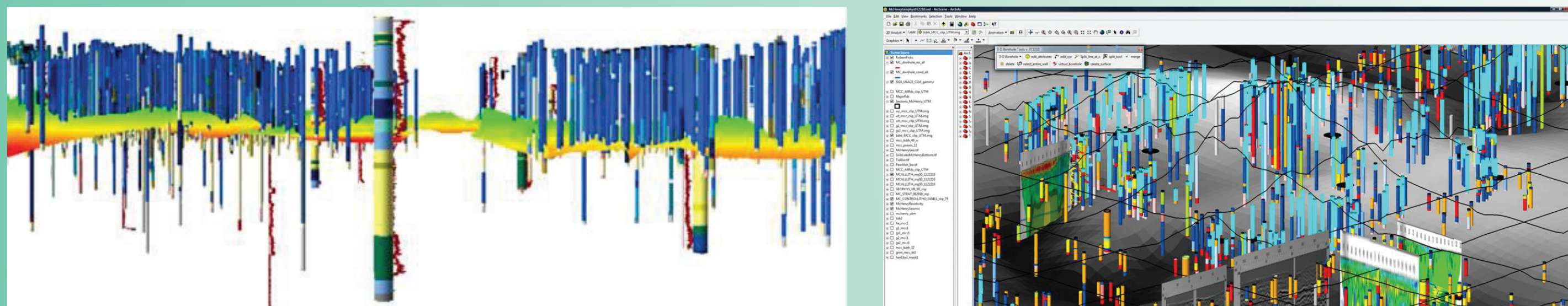
3-D Geologic Mapping with ArcGIS

With some effort, ArcGIS can be used effectively as a software tool for building 3-D geologic maps. At the ISGS, geologists and GIS specialists have worked together to evolve a custom suite of tools and a workflow that allows us to visualize, analyze and interpret a wide range of geologic data types within ArcScene, and to build sets of surfaces that represent the tops or bottoms of geologic mapping units. In this presentation and discussion, we will highlight the toolbar developed at the ISGS and discuss some alternate workflows that we're using to build county-wide 3-D geologic maps. We hope to generate a discussion in this session to discuss pros, cons, and alternatives to some of the methods we present. We will also spend a little time demonstrating some of the other software we are using to supplement our 3-D mapping workflow.
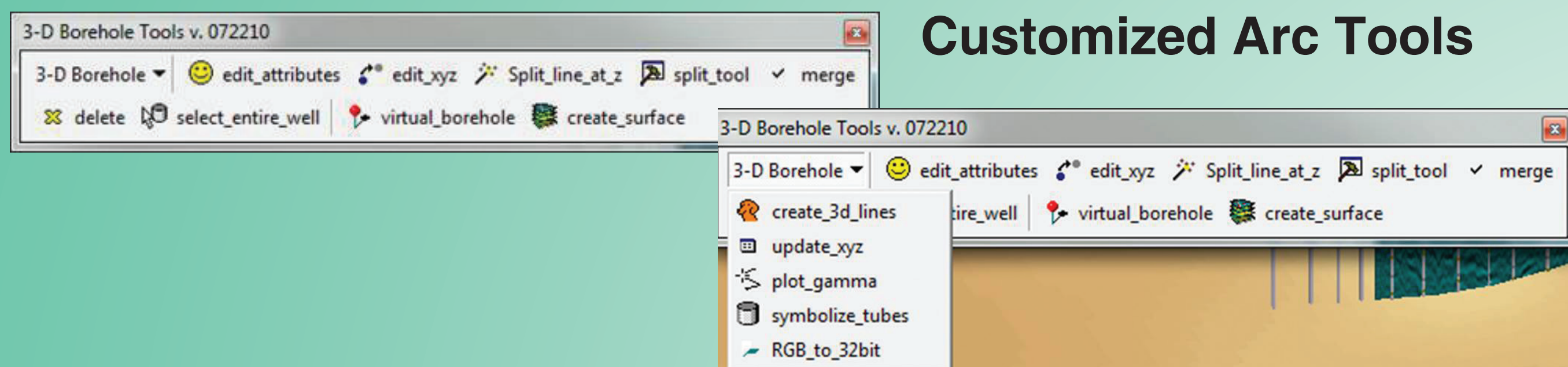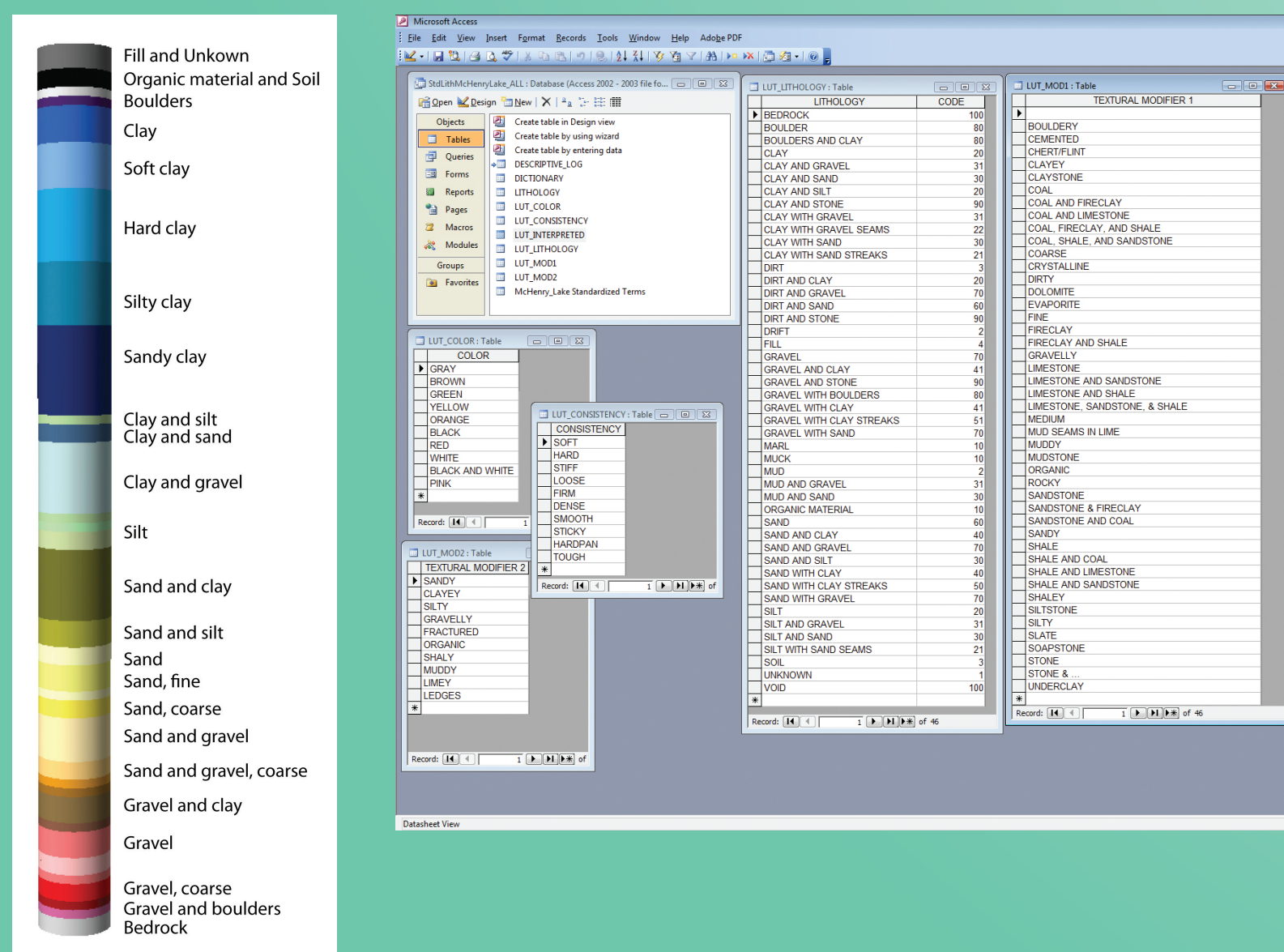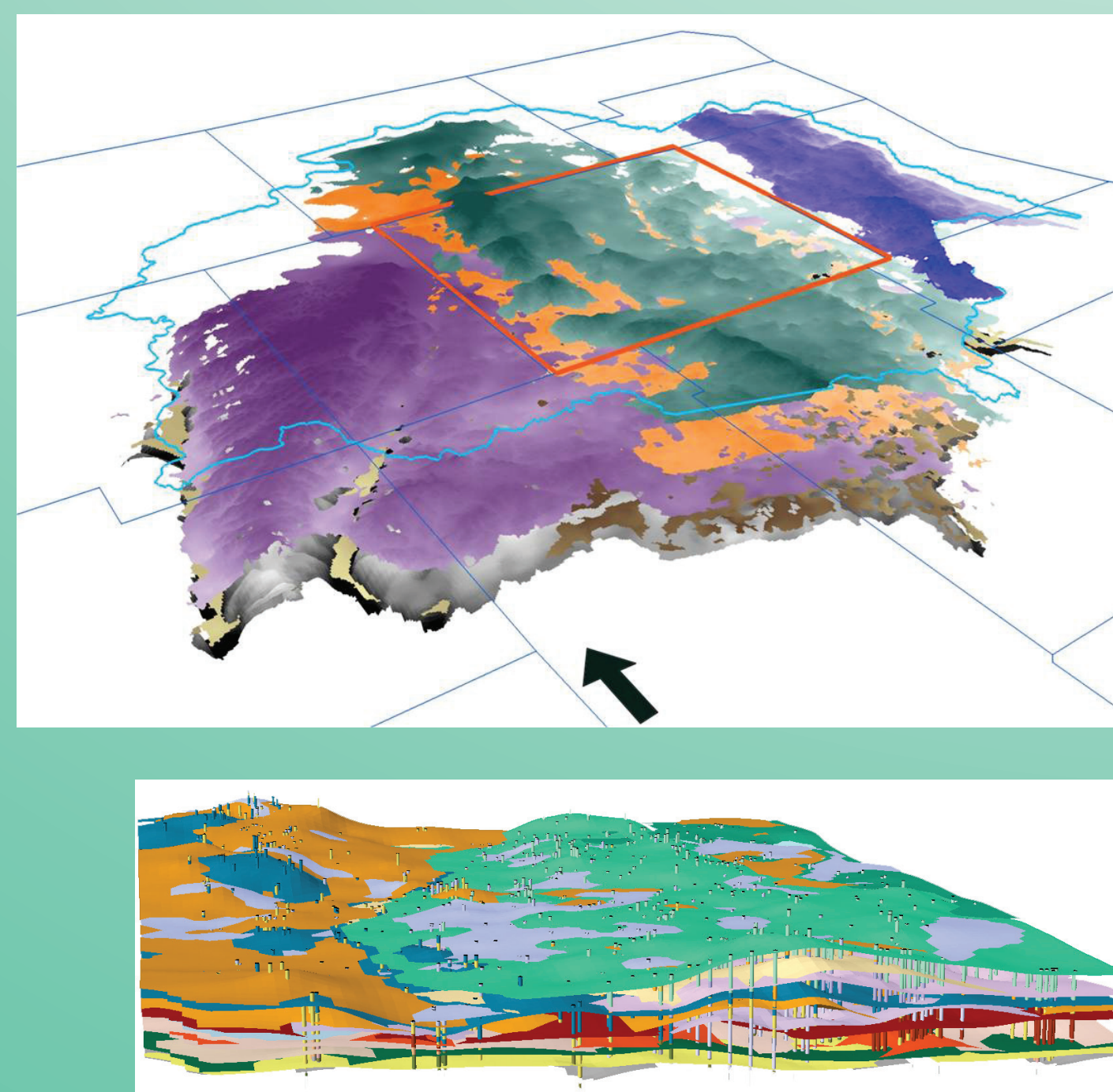
Customized Arc Tools

3D Visualization, Interpretation, and Surfacing

### Water Well Log Standardization

Final Geologic Contact Grids
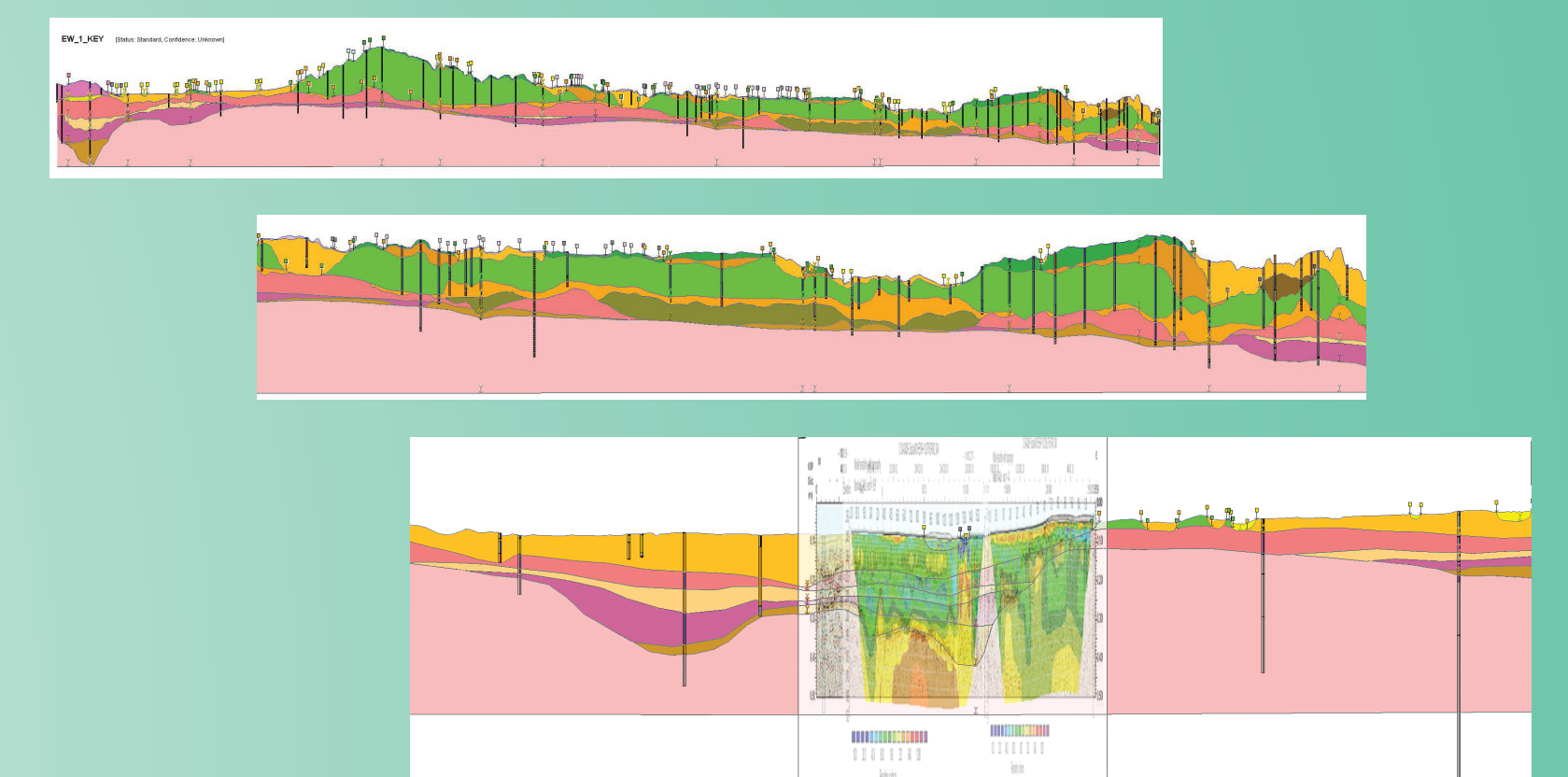

3-D Geologic Mapping with GSI3D

Recently, the British Geological Survey unveiled the new, GSI3D Research Consortium (www.gsi3d.org), which is an umbrella organization that is guiding the development and use of an exciting, new 3-D geologic mapping software product, GSI3D. The ISGS is an early member of the GSI3D Research Consortium and has begun integrating GSI3D into two major county-wide 3-D geologic mapping projects. GSI3D, as a software tool, has several strengths for developing 3-D geologic maps. In this presentation, we will highlight these strengths, discuss some of the limitations that we've found in 3-D mapping with GSI3D, and we'll discuss how we're looking at integrating GSI3D into our larger geologic mapping program. We will encourage a larger discussion about how organizations might evolve into a 3-D geologic mapping program with GSI3D, or at least how organizations might use GSI3D and it's sister product, Subsurface Viewer, to generate interactive 3-D geologic map products, even from traditional, 2-D mapping projects like STATEMAP. We will also spend a little time demonstrating some of the other software we are using to supplement our 3-D mapping workflow.
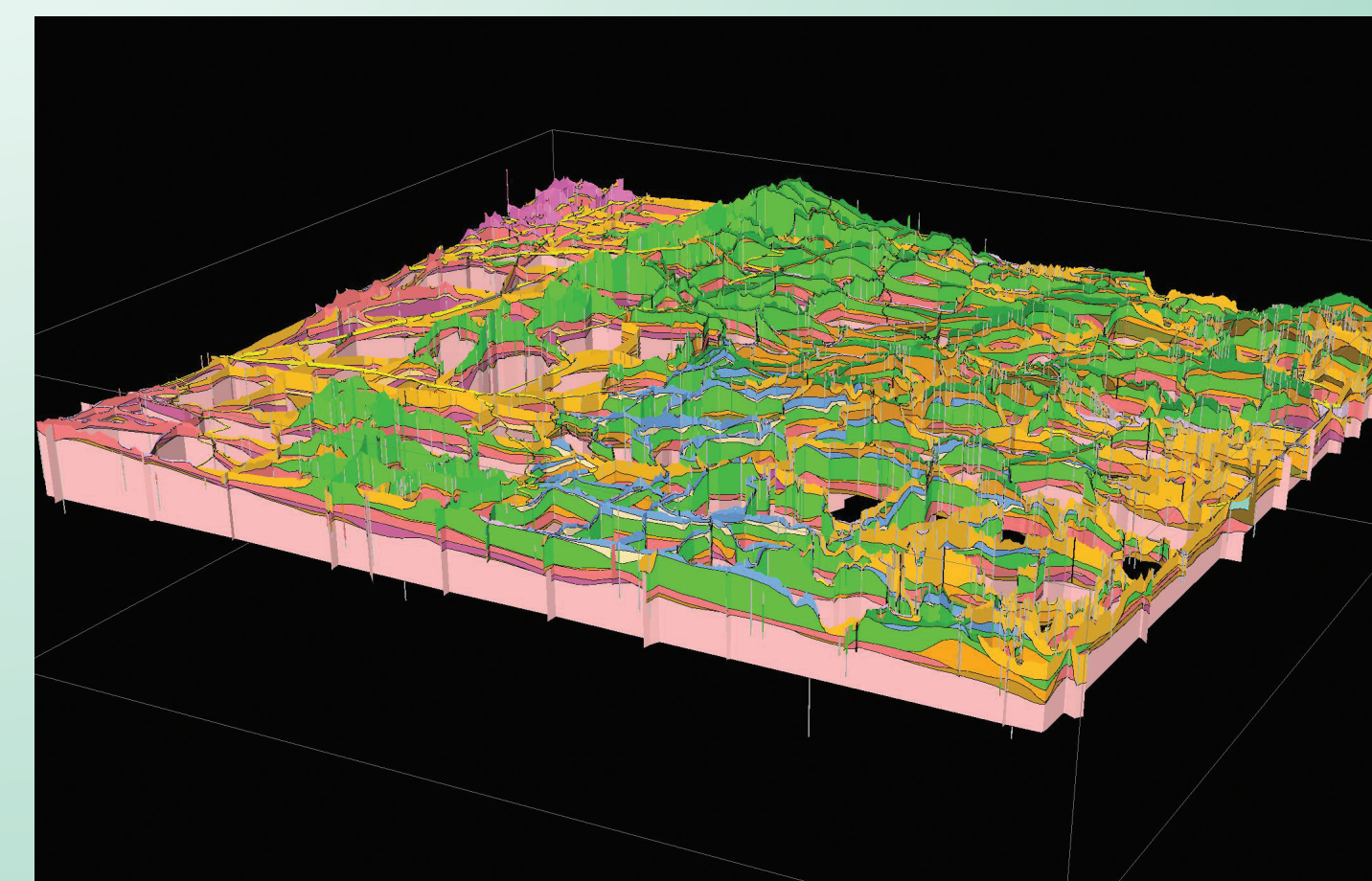
GSI3D Interface
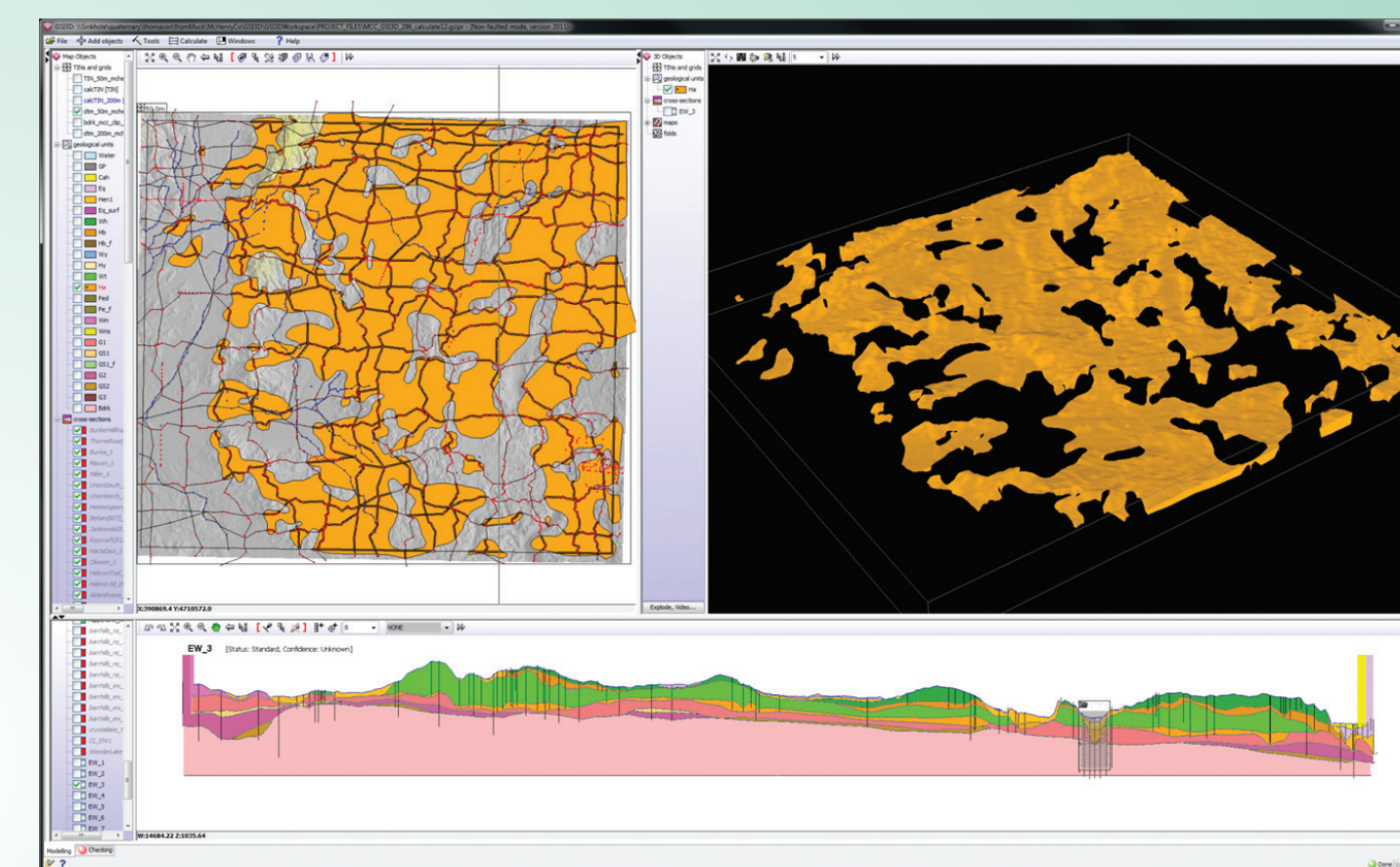
Cross Section Development

Cross Section Network

3D Model