Three-Dimensional Mapping of Surficial Materials in Ohio: Techniques and Applications

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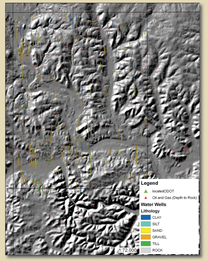
Characterization of unconsolidated materials is needed for mineral resource, hydrogeologic, and geohazards applications. The Ohio Department of Natural Resources, Division of Geological Survey is conducting reconnaissance mapping at the 1:100,000 scale and detailed 3-D modeling at the 1:24,000 scale to fill the gap in geologic knowledge between existing bedrock and soil maps.

PROJECT OBJECTIVES

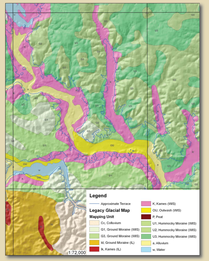
1. Provide three-dimensional information on surficial materials using "stack" mapping (Kempton, 1981) techniques.
2. Develop GIS tools to make mapping and the creation of derivative mapping products more efficient.
3. Develop high resolution 3-D models to support ground water simulations. Models can also be used to evaluate the accuracy of stack maps.

MAPPING PROCEDURE

To make the maps, we interpret a wide range of base data. This illustrative example is for the Perrysville 1:24,000 Quadrangle, an area near the glacial margin in north central Ohio.



Water well data from the ODNR Divison of Water. Many of the borings in this area extend into poorly consolidated sandstones, so much of the well data in this figure show surficial materials deeper than they actually are. Such interpretation issues are common when using public well records.


Legend
Legacy Glacial Map
Mapping Unit
Approximate Terrace
Kansan (490)
Illinoian (300)
Pre-Illinoian (1000)
Wisconsin (25)
Illinois
Wisconsin
Illinois
Wisconsin
Wisconsin
Wisconsin