

Geology of the Mahomet Aquifer, east-central Illinois

Presenter: Andrew Stumpf,
Research Geologist

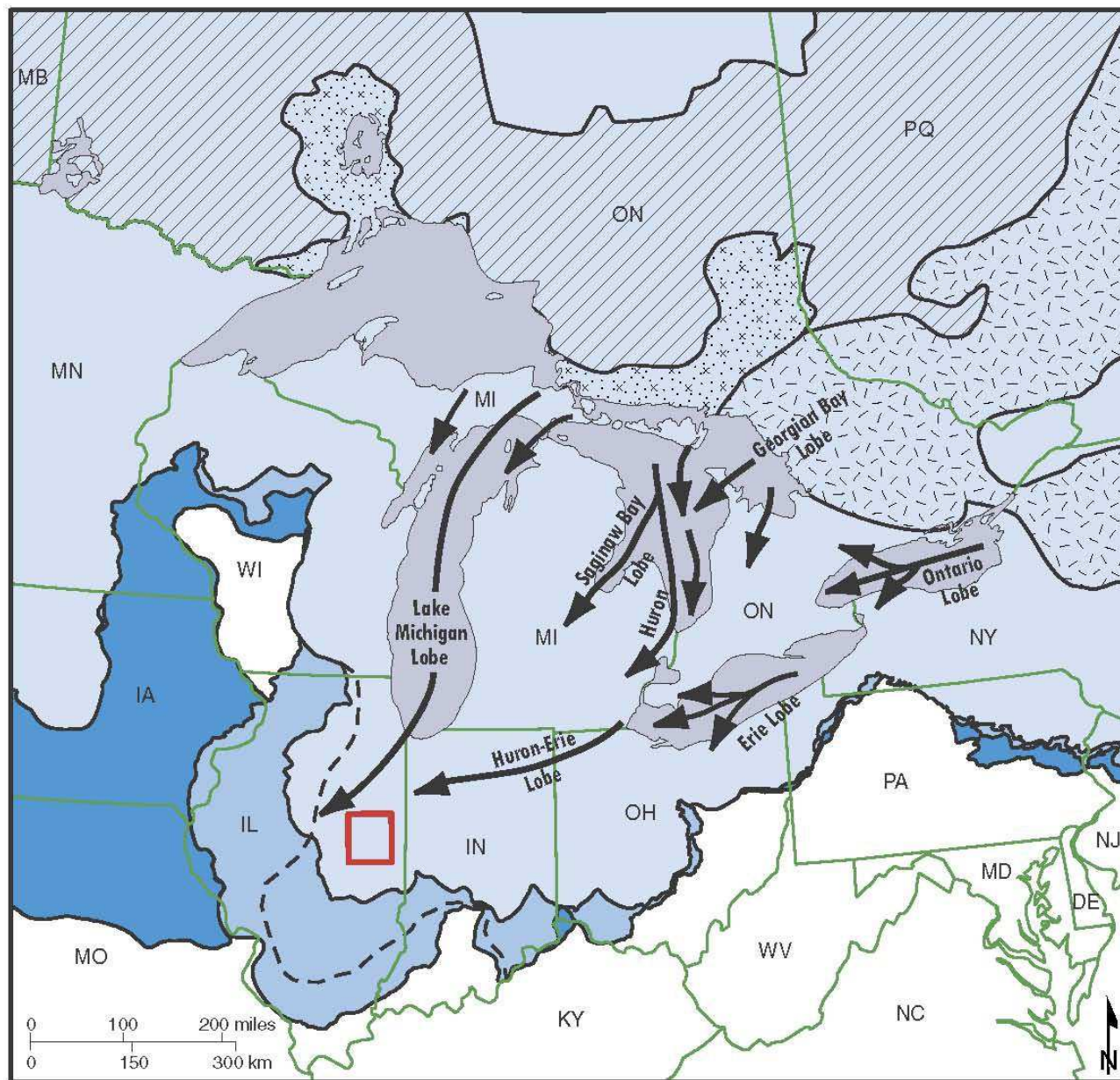


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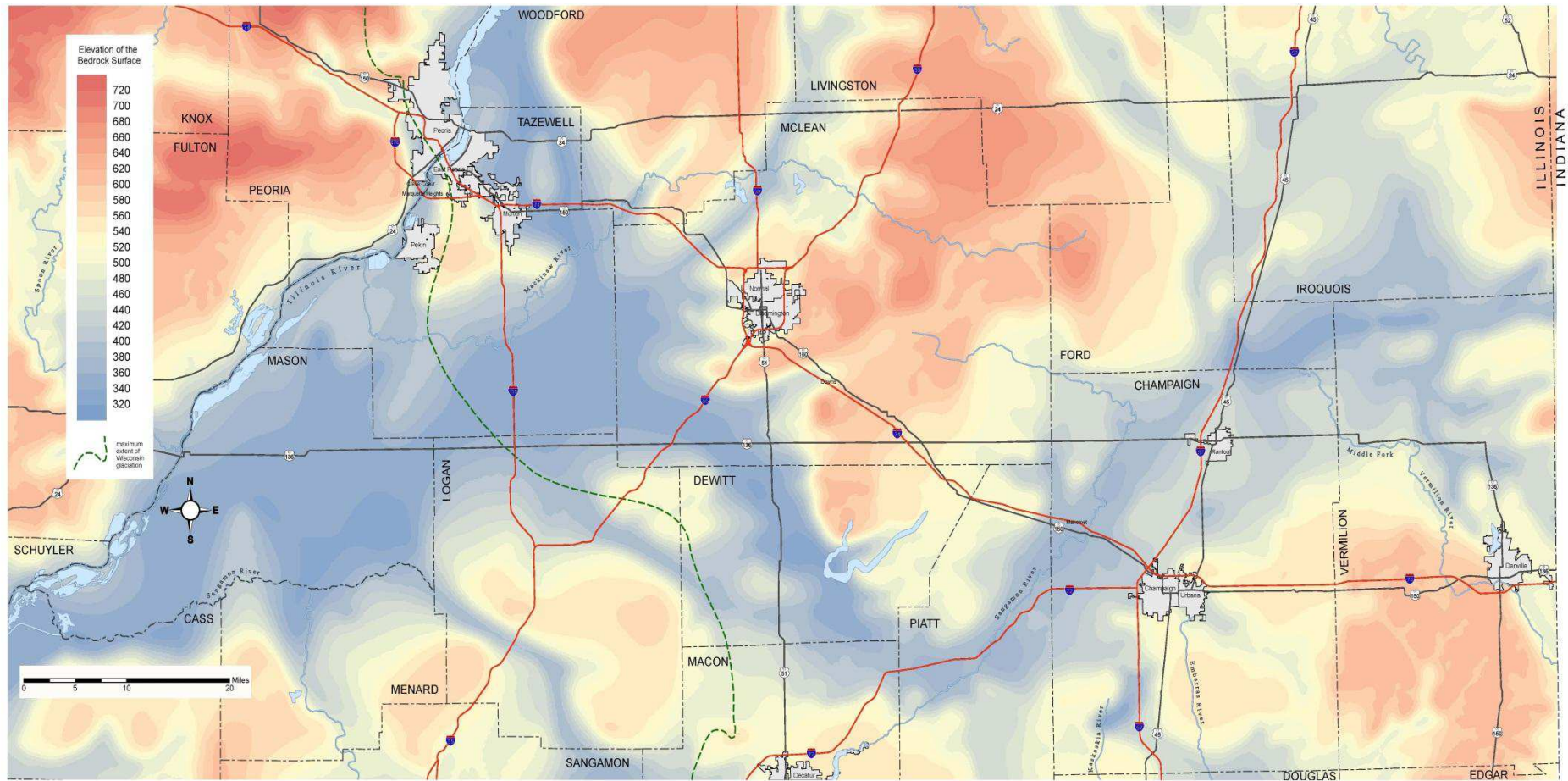
(Univ. of Waterloo): Lisa Atkinson and Martin Ross



Glacier Extent/Episode

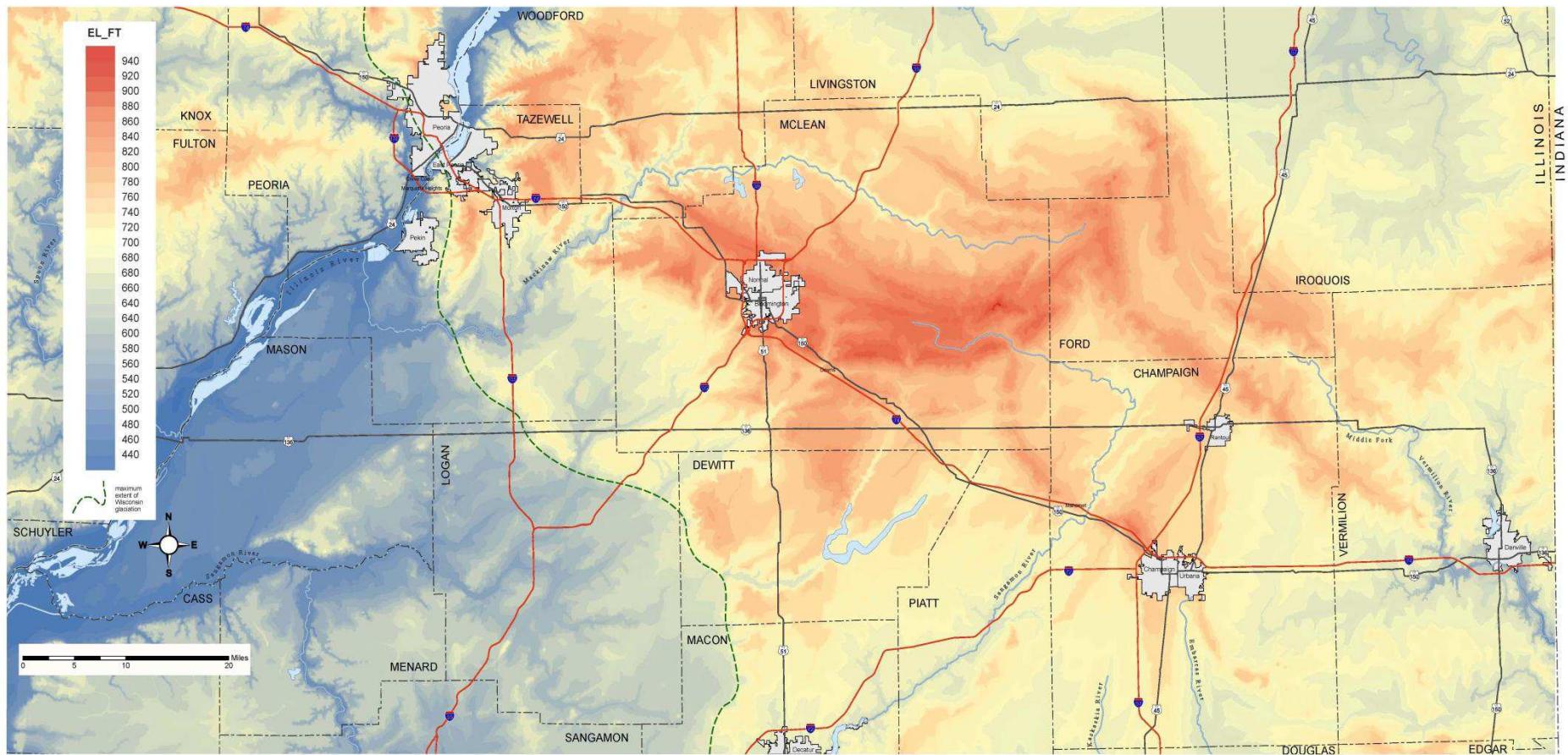
- Wisconsin (60,000 to 12,500 years ago)
- Illinois (190,000 to 130,000 years ago)
- Pre-Illinois (800,000 and older to 190,000 years ago)

Where?



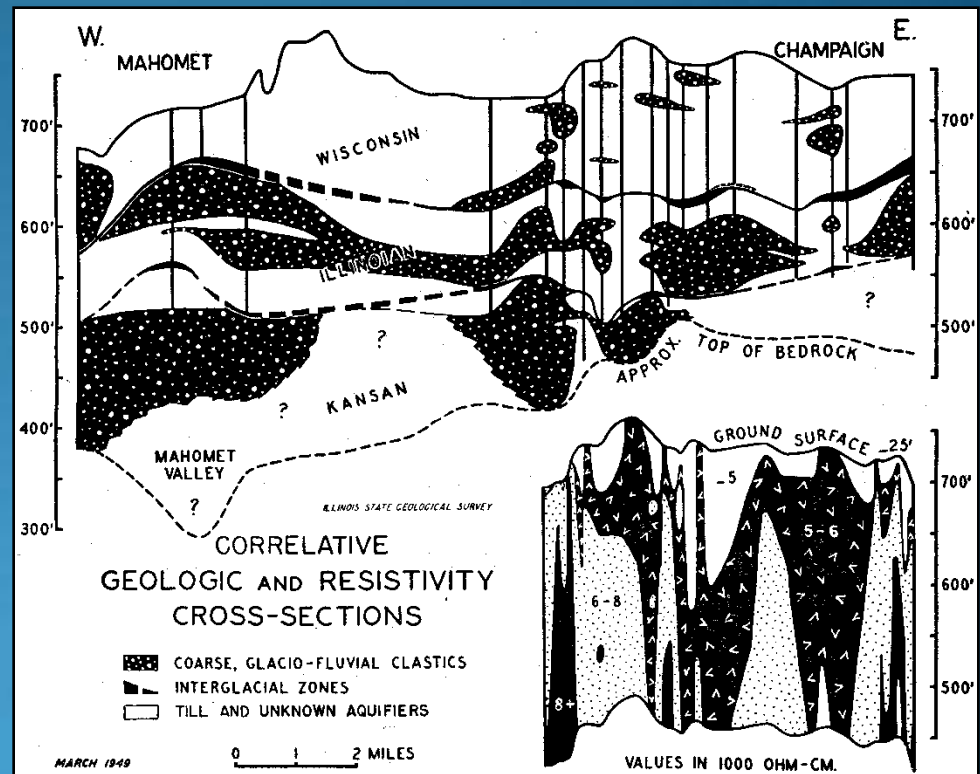
Topography of bedrock surface

Where?

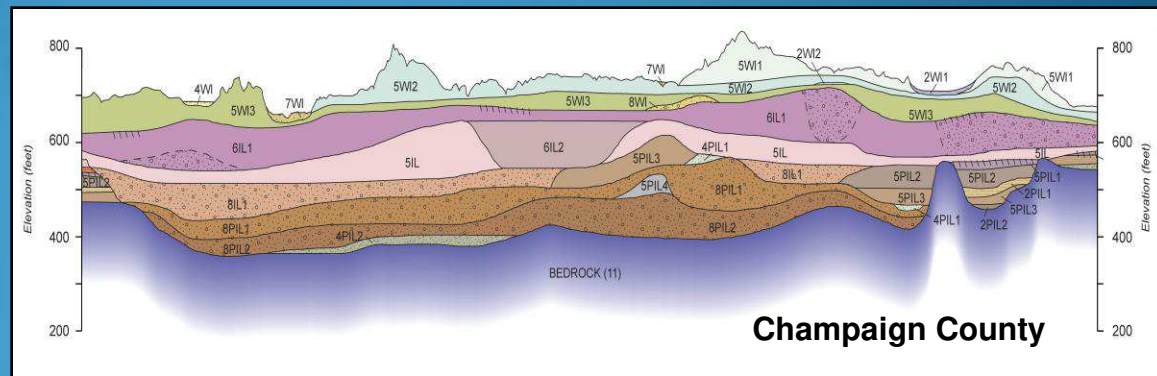
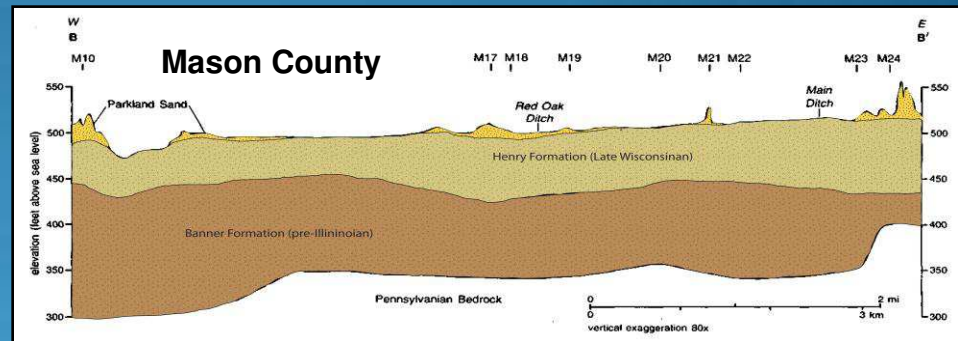
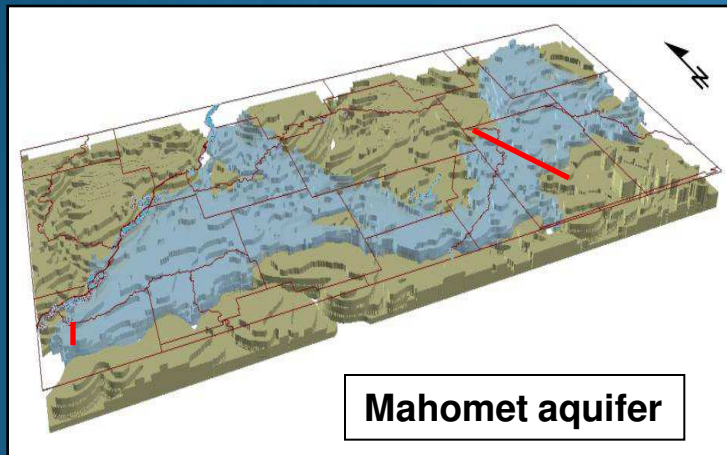


Topography of land surface

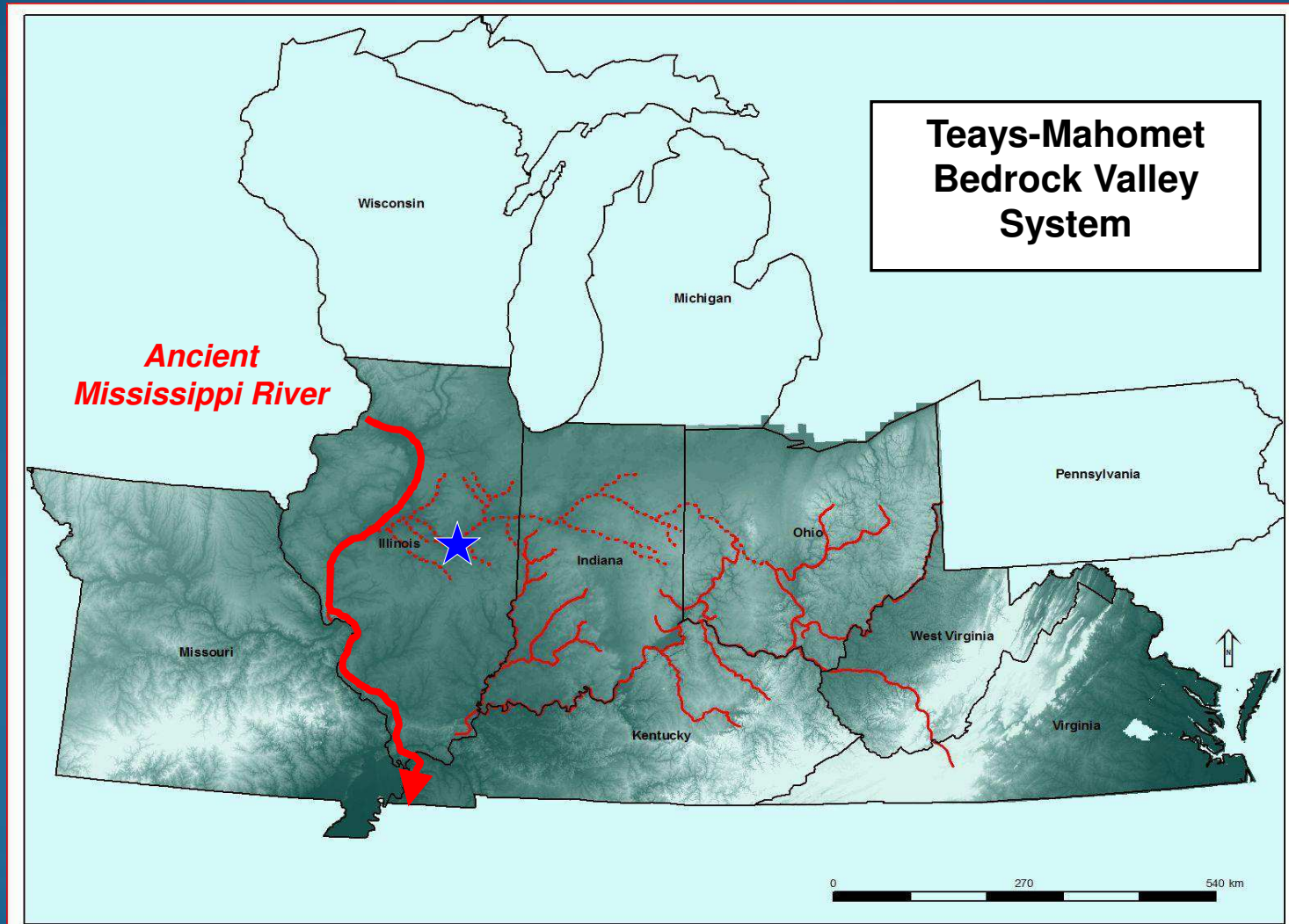
Our understanding of the Mahomet aquifer is based on numerous studies conducted by the ISGS and ISWS over the past six decades.



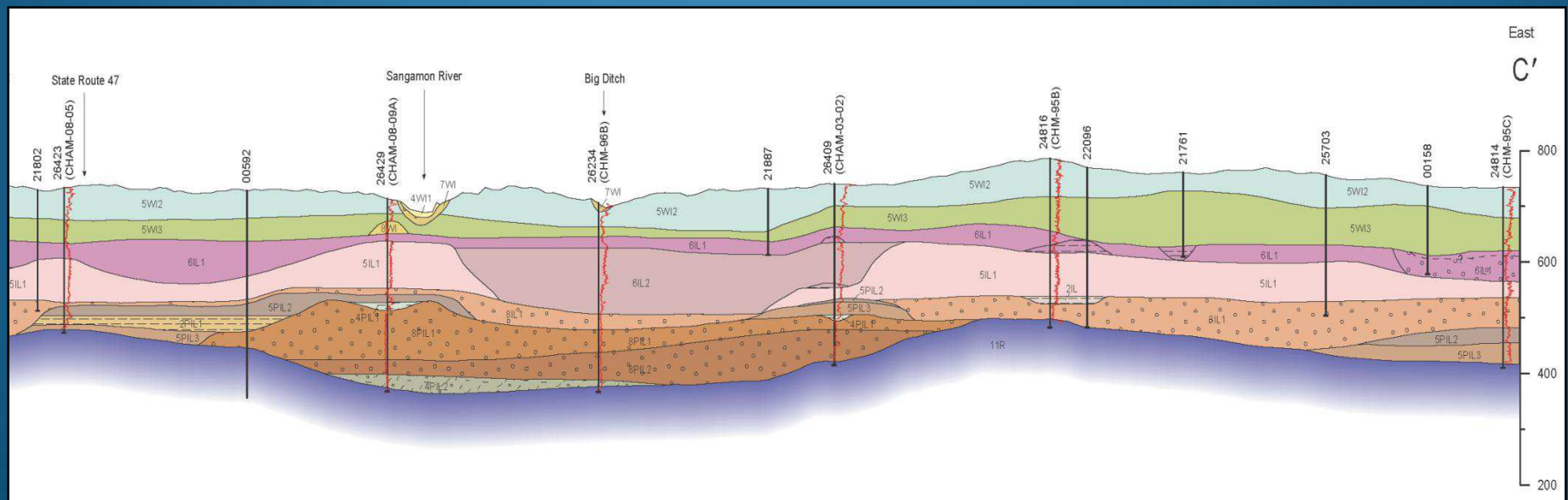
The Mahomet aquifer is composed of several distinct deposits of sand and gravel of different ages, geographic extents, thicknesses, and composition that partially infill and overlie the Mahomet Bedrock Valley (MBV). The aquifer materials infilling the MBV generally are found below 500 feet elevation (top of the valley) and range between 100–150 feet in thickness, and coarsen with depth. In some places, the uppermost deposits of coarse-grained sediment of the aquifer overlie the MBV and extend beyond the boundary of the valley.



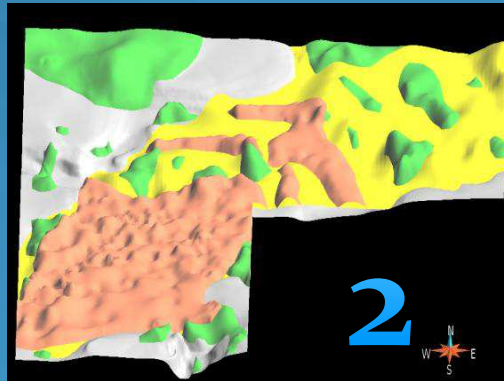
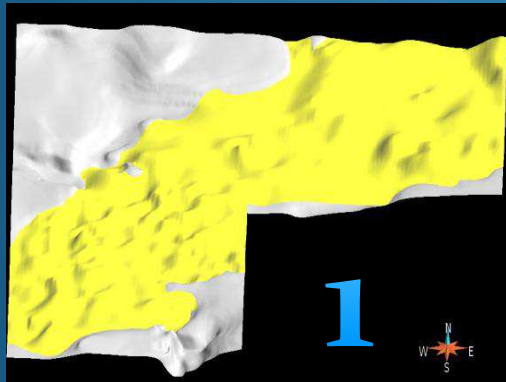
The MBV is part of a system of buried valleys that drained large areas of the mid-continent to the Ancestral Mississippi River prior to the Pleistocene glaciations.



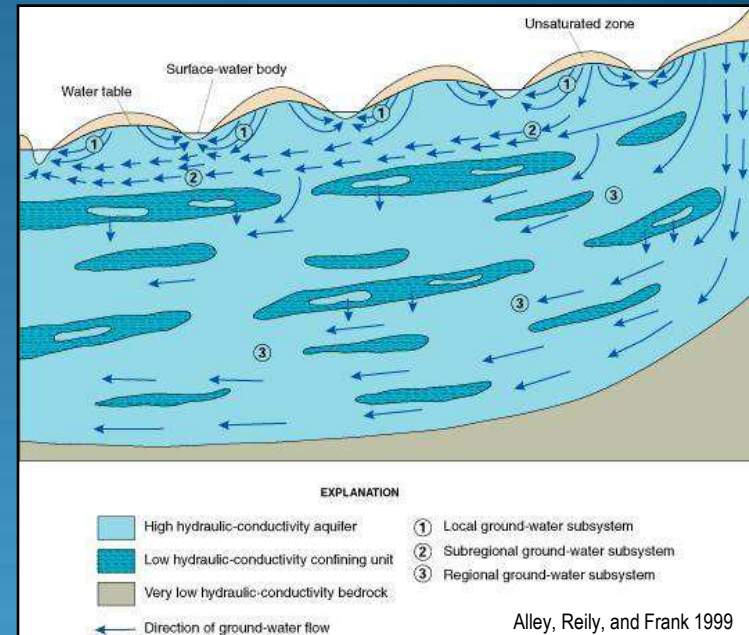
From a recently completed project in Champaign County and adjacent areas, important new information has been collected improving our understanding of the geology and hydrogeology of east-central Illinois. For example, subsurface information acquired from new boreholes drilled over the MBV indicate that locally-thick layers of till and glacial lake sediment are interlayered with the sand and gravel that is part of the Mahomet aquifer. This interlayering of fine- and coarse-grained sediment suggests the history of deposition during the Pleistocene glaciations in this region is more complicated than previously understood.



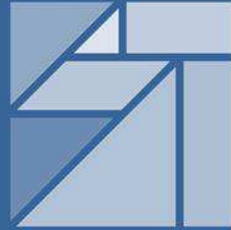
Two consequences of this insight are 1) that the volume of aquifer has changed from previous estimates and 2) the geometry of the Mahomet aquifer with interlayered aquitard materials suggests a complex groundwater flow environment.



3-D view of Mahomet Aquifer



Aquitards are commonly discontinuous on a regional scale



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