

For submission to the GSA Joint North-Central/South-Central Section meeting

General Discipline Session: Remote Sensing/Geographic Info System

POSTER

GIS-BASED GEOLOGIC MAPPING OF THE VISTA QUADRANGLE, WEST-CENTRAL MISSOURI

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The Vista 7.5' quadrangle is located in St. Clair County, 100 kilometers north of Springfield, Missouri. The Weaubleau structure is located in the northern part of this quadrangle. At the surface it is characterized by folded, fractured, and locally brecciated strata derived from Mississippian and Ordovician dolomites and limestones. This breccia is informally referred to as the "Weaubleau Breccia," and crops out irregularly in the northern part of the Vista 7.5' quadrangle. Undeformed Pennsylvanian sandstone and shale overlie the deformed strata.

The Weaubleau structure is delineated by a circular topographic feature, which is interpreted as a central uplift. It coincides with outcrops of the fine-grained resurge facies of the "Weaubleau Breccia." Beyond this feature, deformation is very mixed. East and northeast of the structure, strata are intensely folded and faulted. In contrast, gentle open folds characterize areas to the northwest. Strata to the southwest are buried below the undeformed Pennsylvanian cover, and locally, undeformed lower Ordovician dolomites are truncated below the Pennsylvanian. More detailed understanding of the structure and the heterogeneity of deformation must rely on seismic, drill-core, and petrographic studies.

Detailed geologic mapping has been conducted by combining the use of traditional mapping techniques with geographic information system (GIS)-based methods. A global positioning system (GPS) unit was used in conjunction with a mobile GIS software mapping application (ArcPad), installed on a handheld personal computer. These GIS-based techniques used digital imagery, such as National Agriculture Imagery Program (NAIP) data, a digital orthophoto mosaic of the quadrangle, a digital topographic map (DRG), as well as Light Detection and Ranging (LIDAR) data in the field to capture and display geographic information in real-time. This project will produce a detailed geologic map and an assemblage of GIS products for the Vista 7.5' quadrangle that highlight the structural deformation and distribution of rock types associated with the Weaubleau structure. This mapping effort continues to provide new details concerning the structure.