

Lidar and GIS Terrain Analyses of Subsidence related to Historic Salt Mining in Central New York

Thursday, October 23, 2025 2:00 PM (20 minutes)

While Syracuse, New York is known as the “Salt City” due to its historical success in salt mining in the area, few studies have explored the geomorphic impacts of halite mining in the region. This study builds upon a previous 2009 USGS field study work on subsidence in the Tully Valley of central New York State. Specifically, we reexamined data at the East Brine Field of the Tully Valley Mining Region in the light of LiDAR data. In this study, we collected LiDAR data which was used to create multiple bare earth raster files. These files are used to visualize how the known halite mine locations have subsided and if open fracturing is evident in the study area. The previous study did not use LiDAR to supplement field study data of fracturing and subsidence, so this study adds a geomorphometric approach to identifying open fracturing. We processed the LiDAR data with ArcGIS Pro and used surface analysis of the terrain, curvature analysis, and surface roughness rasters to supplement field data digitized from the 2009 field study. We found 74 fractures in the LiDAR data that are not evident from aerial photographs or USGS topo maps. In addition, we used QGIS Line Histogram tool to create Rose diagrams of the open fracture orientations. These findings are relevant because not only are bedrock fractures a safety concern, but they serve as a unique “natural experiment” illustrating how historical human intervention on the landscape affects the area today.

Is there a SINGLE day you are unavailable to present?

October 25, 2025

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Organized Session Details

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