

# **W1D: 3D GRAVITY SURVEY OF GLACIAL LAKE GENESEO, LIVINGSTON CO, NY**

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## **ABSTRACT**

Much of western New York's landscape has been shaped by the Pleistocene glacial advance and retreat of the Laurentide Ice Sheet, which carved the Finger Lakes within the region. The Middle and Late Wisconsin glaciations from ~35,000-12,000 years ago have since filled in some of these lakes, including Glacial Lake Geneseo (previously the region's westernmost Finger Lake), with glacial till and sediment fill from the Genesee River. Glacial Lake Geneseo was a proglacial lake dammed by the Fowlerville Moraine to the north in Avon and bounded by bedrock valley walls in Dansville to the south. The lake spanned 35 km in length, with a total area of 135 km<sup>2</sup> at its 189 meter highstand. The less consolidated glacial till and fluvial sediment filling this paleo-valley has a lower density than the surrounding shale and limestone. This density contrast creates a local gravitational anomaly, which was measured using a Lacoste and Romberg gravimeter. After removal of a strong regional gradient, the buried paleo-valley is clearly visible in the Bouguer anomaly and has a range up to 15 mGals. As expected, relative highs occur along the west and east valley walls, and the lows characterizing the center of the valley. The shape of the Bouguer anomaly interpolation suggest a more complex valley geometry than previously proposed models using sparse well log data. A valid structure contour map of depth to bedrock can be drawn using these data and will be useful for hydrologic processes in the largely agricultural community, as well as assistance in the planning of local mining efforts.