

Northeastern Section - 44th Annual Meeting (22–24 March 2009)

Paper No. 17-12

Presentation Time: 1:00 PM-5:00 PM

PALEOCLIMATIC SIGNIFICANCE OF EQUILIBRIUM LINE ALTITUDES IN THE NORTHEASTERN GREAT BASIN DURING THE ANGEL LAKE GLACIATION

BADDING, Michael E., Geological Sciences, SUNY Geneseo, 1 College Circle, Geneseo, NY 14454, meb18@geneseo.edu, LAABS, Benjamin J.C., Department of Geological Sciences, State University of New York-Geneseo, 234 ISC, 1 College Circle, Geneseo, NY 14454, and MUNROE, Jeffrey S., Geology Department, Middlebury College, Bicentennial Hall, Middlebury, VT 05753

The rich record of Pleistocene mountain glaciation in the northeastern Great Basin has been recognized for decades. However, the climate during the Angel Lake Glaciation (the last major glaciation in this area) remains poorly understood compared to surrounding regions in the western U.S. We have begun to address this issue by reconstructing ice extents and estimating paleo-glacier equilibrium-line altitudes (ELAs) in six mountain ranges of the northeastern Great Basin, based on original and preexisting mapping of latest Pleistocene glacial deposits and landforms. Mountains at or near latitude 40°N with well-preserved glacial features delimiting Angel Lake ice extents include (from west to east) the Independence, Ruby, East Humboldt, Deep Creek, Stansbury, Oquirrh and western Wasatch Mountains. Paleo-glacier ELAs are estimated for these ranges by using the toe to headwall altitude ratio (0.35) and accumulation area ratio (0.65) methods. We find that, during the maximum of the Angel Lake Glaciation, ELAs were 2400-2600 m asl in the Independence Mountains; 2400-3000 m asl in the Ruby-East Humboldt Mountains; 2800-3100 m asl in the Deep Creek Mountains; 2500-2700 in the Stansbury Mountains; 2600-2800 in the Oquirrh Mountains; and 2400-2600 m asl in the western Wasatch Mountains. Although previous reconstructions of paleo-glaciers in this region report an eastward *rise* in ELAs with increasing distance from the Pacific Ocean, we identify an eastward *decline* in ELAs from the Deep Creek Mountains to the western Wasatch Mountains. This deviation from the regional trend suggests that local moisture sources, such as pluvial Lake Bonneville, influenced glacier mass balance in parts of the Great Basin. Ongoing reconstructions of additional paleo-glaciers in the northwestern and central parts of the Great Basin will be helpful in evaluating whether other pluvial lakes affected glacier mass balance in a similar way, and will ultimately aid in setting limits on climate during the Angel Lake Glaciation.

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[General Information for this Meeting](#)

Session No. 17--Booth# 12

[Geomorphology/Quaternary Geology \(Posters\)](#)

Holiday Inn By the Bay: Casco Bay Hall

1:00 PM-5:00 PM, Sunday, 22 March 2009

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