

[Start](#) | [Author Index](#) | [View Uploaded Presentations](#) | [Meeting Information](#)

Northeastern Section - 50th Annual Meeting (23–25 March 2015)

Paper No. 4

Presentation Time: 2:35 PM

10-BERYLLIUM EVIDENCE FOR RAPID LAURENTIDE DEGLACIATION OF THE KATAHDIN AREA, WEST-CENTRAL MAINE, USA, 16 TO 15 KY

DAVIS, P. Thompson, Department of Natural & Applied Sciences, Bentley University, 175 Forest St, Waltham, MA 02452, **BIERMAN, Paul**, Department of Geology, University of Vermont, 180 Colchester Avenue, Delehanty Hall, Burlington, VT 05405 and **CORBETT, Lee B.**, Department of Geology and Rubenstein School of Environment and Natural Resources, University of Vermont, Delehanty Hall, 180 Colchester Ave, Burlington, VT 05405, pdavis@bentley.edu

Until recently, the deglacial chronology of the Laurentide Ice Sheet in New England was primarily constrained by minimum-limiting ^{14}C ages on organic material deposited in ponds and bogs after deglaciation. However, an unknown lag time between glaciation and the deposition of the first datable organic material, the uncertainty of ^{14}C reservoir corrections for marine samples, and the paucity of ^{14}C datable samples meant that in many places the chronologic framework was insufficient to test competing hypotheses for the style and timing of deglaciation. For example, did large parts of the Laurentide ice sheet stagnate and down waste in a warming climate, or did the ice sheet retreat as an active ice margin? Recent work has produced a numerical chronology for the glacial Lake Hitchcock varve record, which has been used in conjunction with other data to draw glacial retreat isochrones across western New England. Here we expand the application of cosmogenic nuclide exposure dating and recalibrate glacial retreat isochrones across eastern New England.

Katahdin, the highest peak in Maine and part of the second highest mountain range in New England, is flanked on its east side by the Basin Ponds moraine, the age of which was previously not well known. We collected 12 samples from boulders on the moraine and from bedrock and boulders on the upper part of the mountain to estimate the age at which they were exposed by deglaciation of the Laurentide Ice Sheet. Measurements of in situ produced ^{10}Be indicate that the Katahdin edifice became exposed from under ice by 14.9 ± 2.1 ky ($n = 6$), an age indistinguishable from the adjacent Basin Ponds moraine complex (16.1 ± 1.2 ky, $n = 6$). Also, a boulder in the lowlands several km south of the moraine dates to 15.1 ± 1.2 ky, and a boulder deposited at Pineo Ridge, about 140 km SE of Katahdin, dates to 16.4 ± 1.4 ky. These data show that samples spanning about 1.6 km and over 140 km in vertical and horizontal dimensions all have exposure ages that are indistinguishable within one-sigma analytic uncertainties. Together these data suggest that the Laurentide Ice Sheet surface dropped rapidly and the ice sheet margin retreated quickly across Maine about 16.0 to 15.0 ky, perhaps influenced by calving bays in the marine-based ice sheet in the St. Lawrence Lowlands to the north and the Penobscot basin to the south.

Session No. 16

[S4. Contributions of Cosmogenic-Nuclide Geochronology to Glacial Geology and Geochronology in Northeastern North America—and Vice Versa](#)

Monday, 23 March 2015: 1:30 PM-5:30 PM

Grand Ballroom North (Omni Mount Washington Resort)

Geological Society of America *Abstracts with Programs*. Vol. 47, No. 3, p.62

© Copyright 2015 The Geological Society of America (GSA), all rights reserved. Permission is hereby granted to the author(s) of this abstract to reproduce and distribute it freely, for noncommercial purposes. Permission is hereby granted to any individual scientist to download a single copy of this electronic file and reproduce up to 20 paper copies for noncommercial purposes advancing science and education, including classroom use, providing all reproductions include the complete content shown here, including the author information. All other forms of reproduction and/or transmittal are prohibited without written permission from GSA Copyright Permissions.

Back to: [S4. Contributions of Cosmogenic-Nuclide Geochronology to Glacial Geology and Geochronology in Northeastern North America—and Vice Versa](#)

[<< Previous Abstract](#) | [Next Abstract >>](#)

