

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

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

Paper No. 2

Presentation Time: 1:55 PM

INTERCALIBRATED RADIOCARBON, VARVE, AND EXPOSURE-AGE CHRONOLOGIES FOR THE LAST GLACIAL MAXIMUM AND INITIAL DEGLACIATION IN SOUTHERN NEW ENGLAND

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The chronology of Laurentide Ice Sheet advance to its terminal position in New England and adjacent regions of the U.S. and Canada is known from a variety of evidence, including radiocarbon dates on ice-proximal sediments; varve chronologies that are both anchored to the radiocarbon time scale and floating; and cosmogenic-nuclide exposure ages on moraine boulders. The prominent moraine belt in southern New England, that records the maximum southward advance of the Laurentide Ice Sheet and initial deglaciation prior to ca. 18,000 years BP, is dated nearly exclusively by cosmogenic-nuclide exposure ages. In our first attempts to develop this exposure-age chronology, inaccuracies in estimating cosmogenic-nuclide production rates resulted in apparent exposure ages for the northernmost part of the terminal moraine belt that were stratigraphically inconsistent with radiocarbon and varve chronologies. We subsequently corrected this inconsistency by directly calibrating production rates via cosmogenic-nuclide measurements on ice-marginal landforms in central and northern New England whose ages are independently constrained by the radiocarbon-calibrated North American Varve Chronology (Ridge et al., 2013). This minimizes systematic differences between varve, radiocarbon, and exposure-age chronologies and yields a single, internally consistent chronology for LGM and late-glacial ice sheet change. In this talk we will i) describe production rate calibration data from central and northern New England, ii) summarize published and unpublished exposure-age data from the terminal moraine belt in southern New England and adjacent regions, and iii) discuss the implied chronology for LGM and early deglacial ice sheet change between 25,000 - 18,000 years BP.

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

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

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