

EVIDENCE FOR RAPID LAURENTIDE THINNING IN NORTHERN NEW ENGLAND, USA, DURING THE BØLLING-ALLERØD WARM PERIOD FROM ^{10}Be EXPOSURE AGE DIPSTICKS

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Session S3 Empirically testing paleoglaciological hypotheses and models

Oral Presentation

As part of an ongoing effort to constrain the thinning history of the southeastern portion of the Laurentide Ice Sheet (LIS) during its retreat out of New England, USA, cosmogenic ^{10}Be exposure ages were calculated for glacially-deposited boulders and polished bedrock at various elevations in Franconia Notch, New Hampshire, Mt. Washington, New Hampshire, and Mt. Mansfield, Vermont, to construct ‘dipsticks’ that depict the lowering of the LIS surface around these mountains. This method operates under the assumption that the advancing LIS caused significant erosion to both bedrock and boulders, removing surficial material which contained ^{10}Be derived from previous exposure to cosmic radiation. Under this assumption, cosmogenic ^{10}Be would only begin accumulating in the newly-eroded bedrock and boulders when the ice surface retreated or lowered from their location, turning these surfaces into cosmogenic clocks whose exposure ages reflect the date of ice thinning below their elevation. Old exposure ages from the summits of all three mountains support recent conclusions that New England’s highest peaks were actually covered by non-erosive, cold based ice at the Last Glacial Maximum, inhibiting the use of this technique at higher elevations in this region. At lower elevations, exposure ages calculated on each mountain were constrained primarily between 14.5-13 thousand years ago, indicating rapid, potentially century or decadal-scale southeastern LIS thinning during the Bølling-Allerød warm period (BA). The ages provide evidence that the rapid strengthening of the Atlantic Meridional Overturning Circulation that is believed to have caused the BA induced significant mass loss from the southeastern LIS.