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№ 5890

PRELIMINARY IN-SITU PRODUCTION RATES OF COSMOGENIC $^{10}$BE AND $^{26}$AL OVER THE PAST 21.5 KY FROM THE TERMINAL MORAINE OF THE LAURENTIDE ICE SHEET, NORTH-CENTRAL NEW JERSEY.

LARSEN, Patrick L.; BIERMAN, Paul R., University of Vermont, Geology Dept., Burlington, VT 05405; CAFFEE, Marc, Lawrence Livermore National Laboratory, Livermore, CA 94550.

Preliminary in-situ production rates of cosmogenic $^{10}$Be and $^{26}$Al have been calculated over the past 21.5 ky from 13 samples collected from the terminal moraine of the Laurentide ice sheet (~41°N lat., 350m elev.) in north-central New Jersey. A total of 16 samples were collected from striated bedrock and large erratics composed of gneiss and quartzite in order to compare the effects of substrate composition and geometry on isotope abundance. Average $^{26}$Al and $^{10}$Be concentrations were 6.66±0.75*10$^5$and 1.11±0.14*10$^5$ atoms g$^{-1}$ (1σ) respectively, reflecting corrections for sample altitude, latitude, thickness, and exposure geometry. The average $^{26}$Al/$^{10}$Be ratio of our samples is 6.1±0.8.

The isotopic abundances measured in outcrops and erratics were statistically similar as were the isotopic abundances in gneiss and quartzite samples. Sea-level, high-latitude production rates were calculated, on the basis of these 13 samples, to be 31.0±3.5 and 5.2±0.6 atoms g$^{-1}$ yr$^{-1}$ (1σ of the mean) for $^{26}$Al and $^{10}$Be respectively, assuming an exposure age of 21.5 cal $^{14}$C ky, based on several independent age estimates for the recession of the Laurentide ice sheet. The uncertainty in the production rate estimates reflects the variation from sample to sample. These production rates, coupled with theoretical calculations and new radiocarbon evidence from the Sierra Nevada (Clark et al., in press, QR) suggest that the production rates of Nishiizumi et al. (1989) are probably 10-20% too high. The production rates reported are preliminary estimates based on a partial data set. Production rates based on the complete data set will be published in the near future.

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