

The recent record of lead concentrations and lead isotopic compositions in NEEM snow

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ABSTRACTS

We present a high-resolution record of Pb concentrations and Pb isotopic compositions in a series of 70 snow samples from 3.2 m-depth snowpit on northwest Greenland (77°26 N, 51°03 W). We collected the snowpit samples with 5-cm intervals during the NEEM (North Greenland Eemian Ice Drilling) deep ice core project in 2009. The snowpit covered 6 years period from the spring of 2003 to the summer of 2009, as the vertical profiles of the stable isotopes of water and deuterium-excess. Lead concentrations and lead isotopic compositions were determined by inductively coupled plasma-sector field mass spectrometry (ICP-SFMS) and thermal ionization mass spectrometry (TIMS), respectively, at Korea Polar Research Institute (KOPRI). Lead concentrations in the snowpit samples ranged from 2.8 to 101.3 pg g⁻¹ with a mean concentration of 21.9 pg g⁻¹. Isotopic ratios of ²⁰⁶Pb/²⁰⁷Pb ranged from 1.1439 to 1.1694 with a mean ratio of 1.1562 ± 0.0023 (Uncertainties, 95% confidence intervals). Lead concentrations decreased slightly, while isotopic ratios of ²⁰⁶Pb/²⁰⁷Pb increased slightly during the period.