

BACKGROUND LEVELS OF HCOO^- , CH_3SO_3^- , NO_3^- , SO_4^{2-} AND
 NH_4^+ IN ICE CORES FROM INLAND GREENLAND
(ABSTRACT)

Kazuo OSADA¹ and Chester C. LANGWAY, Jr.²

¹*Solar-Terrestrial Environment Laboratory, Nagoya University, Nagoya 464-01*

²*Ice Core Laboratory, Department of Geology, State University of New York at Buffalo*

Concentration levels of the organic acids HCOO^- and CH_3SO_3^- , inorganic acids NO_3^- and excess SO_4^{2-} and ammonium were measured in pre-1900 AD ice layers from seven geographically dispersed inland sites in Greenland. Average multiple-year background concentration levels are calculated for each ion at each site from laboratory measurements of continuous core samples representing from 4 to 10 years of snow accumulation (32 to 80 individual measurements) from various time intervals.

The HCOO^- concentration level increases from 6 ng/g in the northern most cold site to 36 ng/g in the southern most warm site; CH_3SO_3^- increases from 0.9 ng/g to 2.8 ng/g; NO_3^- decreases from 83 ng/g to 37 ng/g; excess SO_4^{2-} decreases from 43 ng/g to 19 ng/g, all with variability. The distribution of the NH_4^+ ion shows a nearly constant level at about 6 ng/g for all sites except Dye-2 where it reaches 10 ng/g. The deposition patterns for HCOO^- and NH_4^+ on the ice sheet suggest that major contributions arrive from sources originating from the southwest of Greenland.

(Received December 1, 1993)