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### VARIABILITY OF TERRESTRIAL BIOGENIC IONS OVER THE PAST 128,000 YEARS FROM A DEEP ICE CORE DRILLED AT NEEM, GREENLAND

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A 2540 m-long ice core was drilled during 2008-2010 by an international ice coring project NEEM (North Greenland Eemian Ice Drilling). Discrete samples were collected from the CFA (Continuous Flow Analysis) melt fractions during the field campaigns carried out at NEEM in 2009-2011, and were distributed to different laboratories. Ionic species were analyzed at National Institute of Polar Research (NIPR) (Japan) and Alfred Wegener Institute for Polar and Marine Research (Germany). At NIPR, minor ions as well as major ions were analyzed. Here we discuss mainly about terrestrial biogenic species whose data have been very sparse.

Oxalate and acetate show variations associated with Dansgaard–Oeschger (DO) events, as do ions originated from sea salt and dust aerosols. On the contrary, ammonium does not show such large variations, as was previously reported for other deep ice cores from Greenland. During Holocene and Eemian, ammonium, acetate and formate show coherent variations. During mid-Eemian, all of these ions show decreased concentrations during a short period. Since these terrestrial biogenic species are likely originated from North America, this would indicate a mid-Eemian cold spell in North America, as well as that in Europe.