Geophysical Research Abstracts
Vol. 15, EGU2013-11437, 2013
EGU General Assembly 2013

New Greenland MSA and Na ice core records: reliable proxies for Arctic sea ice changes?

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MSA (methanesulfonic acid, derived from marine biogenic emissions) concentrations in coastal Antarctic ice cores have been suggested to record changes in sea ice extent of the previous winter over recent decades. Using post-1979 satellite-derived sea ice and meteorological data, the reliability of MSA as sea ice proxy has indeed been demonstrated in the Indian Ocean and Bellinghausen Sea sectors, but not in the Weddell Sea one. Recently, it has also been argued that the sea ice surface, not open water, is the dominant source of sea salt (including Na) over the Antarctic continent. Sea salt ice core records may thus provide an alternative to MSA for the reconstruction of past sea ice changes. Using new MSA and Na ice core records from two Greenland sites, we here investigate the potential of those two chemical species as indicators of recent sea ice changes in the Arctic sector.