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Atlantic Multidecadal Oscillation (AMO) and Baffin Bay sea-ice variability: its manifestation in European whaling vessel losses in ice pack of Greenland waters

Antoon Kuijpers (1), Naja Mikkelsen (1), Sofia Ribeiro (1), and Inge Høst Seiding (2)

(1) Geological Survey of Denmark and Greenland, Glaciology & Climate, Copenhagen, Denmark (aku@geus.dk, nm@geus.dk, sri@geus.dk), (2) Greenland National Museum & Archives, Nuuk, Greenland (inge@arkiv.gl)

Coralline algae studies(1,2) demonstrate marked (c. 60 yrs) multi-decadal fluctuations in Labrador Sea primary productivity and sea ice variability, with lowered productivity and extended sea ice cover during cool AMO phases. These multi-decadal hydrographic changes have also been recorded in sediment cores from Disko Bay(3,4), in the past an important European whaling area. European whaling in the Davis Strait region had started around AD 1720, initially mainly by Dutch whalers, later followed by German and English as well as Scottish whalers, the latter having dominated towards ending of European whaling shortly after AD 1900. During these 2 centuries cool AMO phases peaked around AD 1775, AD 1835, and AD 1910(2). Historical archive reports from the whaling and trading station of Upernavik, north of Disko Bay, document a marked shift in duration of the Baffin Bay sea ice season of up to 40 days associated with AMO changes in the 19th and early 20th century. Prior to introduction of steam-driven, steel ships around AD 1850, whaling ships were wooden sailing vessels, and occasional ship losses not seldom. Catastrophic losses of many vessels in the ice pack off East Greenland (Dutch whaling fleet, AD 1777) and Baffin Bay (British fleet, AD 1830) may clearly reflect exceptionally severe sea ice conditions around the cool AMO peak years AD 1775 and AD 1835. Within the intervening period AD 1790-1825 early-instrumental SST data from British naval vessels have documented a typical North-Atlantic sea surface warming pattern(5) representing the AMO warm phase.

1) Chan, P. et al. 2016. Nat. Comm. doi:10.1038/ncomms15543
2) Moore, G.W.K. et al. 2017. Nat. Sci. Rep. doi:10.1038/srep40861
3) Allan, E., et al. 2017. Paleocean., Paleoclim. doi: org/10.1002/2017PA003289
4) Mikkelsen, N. et al. 2018. Geol. Surv. Denmark and Greenland Bull. 41, 67-70
5) Van der Schrier, G., Weber, S.L. 2009. Intern. J. Climat. 30 (12), doi.org/10.1002/joc.2027