Geophysical Research Abstracts
Vol. 12, EGU2010-7918-2, 2010
EGU General Assembly 2010

Preliminary composite reconstructions of late Holocene summer sea surface temperatures from the North Atlantic.

Laura Cunningham (1), Rob Wilson (1), Alan Wanamaker Jr (2), Paul Butler (2), Jon Eiriksson (3), Karen-Luise Knudsen (4), Alix Cage (1), Bill Austin (1), Dorthe Klitgaard Kristensen (5), Thomas Richter (6), Marie Alexandrine Sicre (7), Hui Jiang (8), and James Scourse (2)

(1) Department of Geography and Geosciences, University of St Andrews, St Andrews, Scotland (lkc10@st-andrews.ac.uk), (2) School of Ocean Sciences, College of Natural Sciences, University of Bangor, Bangor, Wales, (3) Science Institute, University of Iceland, Reykjavik, Iceland, (4) Department of Earth Sciences, University of Aarhus, Aarhus, Iceland, (5) Department of Earth Science, Bjerknes Centre for Climate Research, University of Bergen, Bergen, Norway, (6) Department of Marine Geology, Royal Netherlands Institute for Sea Research (NIOZ), Texel, Netherlands, (7) Laboratoire des Sciences du Climat et de l'Environnement, France, (8) Laboratory of Geographic Information Science, East China Normal University, China

We present preliminary composite multi-decadal resolution summer (May-October) sea surface temperature (SST) reconstructions for the North Atlantic region back to 1255 AD. The composite reconstructions are based on SST records from across the region, derived from a mixture of marine based proxies (diatoms, alkenones, oxygen isotopes and Mg/Ca ratios from planktonic and benthic foraminifera and shell increment widths of *Arctica islandica*). The records used within this study include 5 records from north of Iceland, 3 from Norway, one from Scotland, and one from the Rockall Trough (NW of Ireland). Data from all ten sites is available back to 1430, with data from 9 sites available back to 1255 AD. Although seven records extend back the full millennium this does not include any records from Norway, consequently the composite records presented here do not extend back this far.

Several different approaches have been tested, such as using all the available data, or only incorporating screened datasets (i.e. data sets correlated with local data after smoothing). The composite derived from the screened records had a greater amplitude of temperature change than the reconstruction which included all ten datasets, possibly because the latter contained more noise. To assess the relative suitability of each method, the results were compared to the Kaplan SST data-set, averaged over the study region. Overall, a good coherence ($r = \sim 0.8$) was found between the composite records and the Kaplan data. Comparisons with a terrestrial, multi-proxy reconstruction of arctic temperatures (Kaufmann et al. 2009) also showed similar trends but with differences in variance. Several periods of mismatch are observed between the composite records and the Kaufmann et al. reconstruction, possibly reflecting differences between either terrestrial and marine realms and/or the North Atlantic and Arctic regions at these times.