

OPEN ACCESS

Hemispheric vs. regional North Atlantic climate change during the past 1200 years: Responses to natural and man made forcings in data and models

To cite this article: Eystein Jansen *et al* 2009 *IOP Conf. Ser.: Earth Environ. Sci.* **6** 072029

View the [article online](#) for updates and enhancements.

You may also like

- [Attribution of the 2015 record high sea surface temperatures over the central equatorial Pacific and tropical Indian Ocean](#)
In-Hong Park, Seung-Ki Min, Sang-Wook Yeh et al.
- [Coalescence of residual histotripsy cavitation nuclei using low-gain regions of the therapy beam during electronic focal steering](#)
Jonathan Lundt, Timothy Hall, Akshay Rao et al.
- [Primary Bjerknes forces](#)
T G Leighton, A J Walton and M J W Pickworth



ECS
The
Electrochemical
Society
Advancing solid state &
electrochemical science & technology

DISCOVER
how sustainability
intersects with
electrochemistry & solid
state science research

P07.17**Hemispheric vs. regional North Atlantic climate change during the past 1200 years: responses to natural and man made forcings in data and models**

Eystein Jansen(1), OH Otteraa(2), R Telford(1), M Miles(1), KL Knutsen(4), M Moros(3), MA Sicre(5), G Masse(6), C Andersson Dahl(1), F Joos(7)

(1) University of Bergen, Bjerknes Centre for Climate Research, Bergen, Norway

(2) Nansen Centre and Bjerknes Centre for Climate Research, Bergen, Norway

(3) IOF, Warnemunde, Germany and Bjerknes Centre for Climate Research, Bergen Norway

(4) University of Aarhus, Aarhus, Denmark

(5) LSCE/IPSL, Gif sur Yvette, France

(6) University of Pierre et Marie Curie, Paris, France

(7) University of Bern, Bern, Switzerland

IPCC AR4 summarised recent attempts to produce temperature reconstructions for the Northern Hemisphere during the last millennium. Recent developments since the AR4 report indicates a general correspondance with the variations depicted by the IPCC. A problem with the records used to produce these reconstructions of Hemispheric mean variations is a lack of high resolution data from the ocean. We here report an independant reconstruction of North Atlantic/Nordic Seas surface temperature and sea ice variations during the last 1200 years providing records of Multidecadal and longer time scale variability of the North Atlantic, based on multi proxy data, independant of previous reconstructions. The new reconstruaction documents that North Atlantic sea surface variability closely follws the hemispheric temperature in terms of the multidecadal to century scale variablity, depicting a warmer mean states in Medieval times and a colder mean state in the period 1450AD to 1920 AD often described as “the Little ice age”, in addition to significant cold phases internally in both periods. The paleoclimatic records show clear similarities with the response from transient experiments with climate models run with natural and man made forcings over the same period. This indicates that the response to radiative forcing drives much of the long-term variability of the climate system and that the models are capable of simulating major portions of the observed oceanic changes. Cold phases in the models are linked with stronger ocean overturning, due to enhanced thermal effects on the overturning, thus indicating that simply ascribing multidecadal and century scale climate changes to variations in overturning mean flow is a too simplistic model.