EMS Annual Meeting Abstracts
Vol. 11, EMS2014-123, 2014
14th EMS / 10th ECAC

A long instrumental Greenland temperature record 1784-2013

John Cappelen and Bo Vinther
(jc@dmi.dk)

Continuous instrumental temperature records for Greenland reach back to the late 19th century at a limited number of coastal sites. Combining early observational records from locations along the south and west coasts it has been possible to extend the overall record back to the year 1784. This extended southwest (SW) Greenland series was first published up to 2005 and later up to 2013.

This longest available instrumental Greenland temperature record is around 9% incomplete in the oldest parts. There are however sufficient data (an additional 74 complete winters and 52 complete summers) to provide a valuable indication of late 18th century and 19th century seasonal trends.

A long homogeneous southwest Greenland instrumental temperature record is of considerable public and scientific interest. This longest available instrumental Greenland temperature record are of importance for the interpretation of the growing number of Greenland ice core records and for the calibrating and validating of the ice sheet models that are used to predict the response of the Greenland ice sheet to global warming.

Greenland temperatures have been on the rise since the mid 1980s. The early study extending SW Greenland temperature records back to 1784 found that despite the recent temperature rise the 1930s and 1940s were the warmest decades in SW Greenland. Including the newest observations it is evident that the first decade of the 21st century was record warm in SW Greenland, with 2010 being by far the warmest year observed. 2010 was warmer than any other year in the SW Greenland temperature record and the decade 2001-2010 was warmer than any other 10 year period.