



## **Reconstructing the palaeoclimate of Hamar, Eastern Norway, for the period 1749 - 1835, from historical documentary records**

**E.Lundstad** (1), O. Nordli (2) and M. Miles (3)

(1 & 2) Norwegian Meteorological Institute, Oslo (3) Bjerknes Centre of Climate Research, Bergen, Norway (Elin.Lundstad@met.no, fax: +4722963103, phone: +4740235939)

Documentary data are useful for constructing long, high-resolution time series from historical times to the present. These data can therefore provide valuable information on the paleoclimate, thereby complementing and supplementing instrumental measurements. Weather descriptions are available from a diary written in Hamar from 1749 to 1835, which allow deducing some features of thermal conditions and precipitation regimes. An index method is developed and used to quantify these qualitative climate-proxy observations in order to reconstruct temperatures, precipitation, wind and cloud cover annually and for winter and summer, 1749-1835. Indices are defined on the basis of the subjective evaluations of the degree of heat and cold provided by the writer. Monthly and annual standardized anomalies are computed, that enable to put in evidence the interannual variability of the thermal conditions. Anomalies in physical units are also estimated. The prominent fluctuations agree with those who observed in Oslo, although in continece remain in specific months. The precipitation regime in 1749 - 1835 is consistent with that of the 20th century but the precipitation frequency seems lower. Several severe droughts are also reported. Despite the methodological limitations the reconstruction appears reliable. The annual and seasonal resolution of the Aker series are examined thoroughly and found to contain the best result when the observations are based on combined data from direct weather observations from the farmers and phenological information.