Geophysical Research Abstracts
Vol. 14, EGU2012-9453, 2012
EGU General Assembly 2012

First indication of Vedde-Ash deposits in the Trondheimsfjord area, mid-Norway

M. Klug (1), C. Tegner (2), H.-D. Zimmermann (2), J. A. Piotrowski (2), K. Stolz (3), and J. Knies (1)

(1) Geological Survey of Norway, Leiv Eirikssons vei 39, N-7040 Trondheim, Norway, (2) Department of Geoscience, Aarhus University, Høegh-Guldbergs Gade 2, DK-8000 Aarhus C, Denmark, (3) FB 05 Geowissenschaften, University of Bremen / Marum, Klagenfurterstr., D-28359 Bremen, Germany

Ash-layers that were deposited shortly after land surface became ice-free are very useful geochronological time markers in sediment sequences, especially when other dating techniques fail or give ambiguous ages. Here we present a geochemical, sedimentological and geophysical data set from an ash-layer found in a lake sediment sequence in Trondheim area, coastal mid-Norway.
The geographical position of the lake outside the prominent Tautra and Hoklingen moraine system and its elevation above the local marine limit enabled lacustrine conditions and the onset of sedimentation shortly after local deglaciation at about 12.7 kyr BP. The sediment succession recovered is 590 cm long and can be divided into a minerogenic basal part followed by a biogenic section towards the top. Within the homogeneous, soft sediments of the minerogenic section a distinct, 1.5-cm-thick layer of coarser sediment occurs. Textures and geochemistry of single grains revealed rhyolitic and basaltic compositions demonstrating a volcanic origin. Furthermore, detailed geochemical analyses and comparison with known Late Pleistocene and early Holocene ash layers revealed a geochemical composition similar to 'Vedde-ash' particles of the Icelandic Katla volcanic system. The 'Vedde-ash' layer is known from various archives around the Nordic Seas, i.e. the British Islands, the Faeroe Islands, the west Norwegian coast and from single grains in a peat bog on the Lofoten Islands. In addition to the volcanic glass shards, high-resolution XRF scanning from split-core surfaces revealed elevated plateaus of various elements such as titanium, zirconium, strontium, manganese and sulphur below and/or above the specific ash layer that exceed the natural background of soft, minerogenic sediments. Although independent indicators are recommended these elevated plateaus suggest either a volcanic event of longer duration than previously anticipated or very high sedimentation rates within the ash fall-out period. Especially the enrichment of sulphur above the specific ash layer may indicate a pronounced aftermath and unknown environmental feedback processes to this fall-out event. The ash layer identification in Trondheimsfjord area extends the occurrence of this fall-out event to coastal mid-Norway.