Vegetation responses to Late Glacial climate shifts as reflected in a high-resolution pollen record from Blekinge, south-eastern Sweden, compared with responses of other climate proxies

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Popular Science abstract:

During the past 118000 years Earth has undergone several climatic changes. The most recent major climatic change took place almost 20000 years ago. It was the cooling event, of the Last Glacial Maximum (LGM), also known as the Ice Age. During this event almost one third of the Northern Hemisphere was covered by ice. Most likeley it was triggered by the change in the water circulation pattern of the North Atlantic area. This event is evident all over the world by the low sea levels depicted in sediments. After that glaciation period, the climate started to ameliorate and the sea level rose again. However, another cooling event, called the Younger Dryas, took place during the amelioration around 12800 years ago. It is of major importance, as it affected the vegetation and hydrological patterns. Climate plays a pivotal role in our lives and its changes provide important information for the Earth's history, so this study target is revealing the changes in the vegetation patterns in SE Sweden, focusing in the area of Blekinge. This area is thoughroughly investigated for several years, as it provides excellent source data from lake sediments. Our research is based on a very detailed pollen analysis, covering a period from the termination of the LGM until the most recent Holocene period and then compare the vegetation response to the other evidences/physical entities from previous works. Such a detailed analysis is especially crucial for critical transitions between warm and cold periods. The pollen based reconstruction shows that the gradual onset of the Younger Dryas cold period began at 12770 cal yr BP, characterized by declining dwarf shurbs. However, the main cold period of the Younger Dryas cold event, characterized mainly by increased mugworts (herbs), shrubs and conifer plants, occurred between 12540 and 11853 cal yr BP, lasting less than 700 years. The ending of Younger Dryas appears to be smoother than its beginning. The correlation to the other studies reveals a consistent response of different evidences to the main climate changes seen in the pollen record, although there are certain time lags between them. Climate change is more than urgent matter today and in words of Johan Wolfang von Goethe (1749-1832) "A person who does not know the history...wanders in the darkness of ignorance, unable to make sense of the reality around him". It is our duty to investigate our past to perhaps predict our future.

Keywords: ice age**,** climate change, SE Sweden, pollen analysis

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