



Solar activity, climate change and the expansion of the Scythians after 850 BC

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In northwest Europe at ca 850 BC a sharp climatic shift to cooler, wetter conditions occurred. The shift is reflected in the composition of peat deposits, and a relation with increased cosmic ray intensity and reduced solar activity is evident. The climatic shift is linked to cultural changes and migrations at the Bronze Age/Iron Age transition. It was also recorded in Central Europe and had strong effects in Eastern Europe, including rapid and total flooding of the Upper Volga region and a highstand of the Caspian Sea. Geological data show that the climate shift also affected southern Siberia. Scythian nomads suddenly occupied the steppe and forest-steppe zones of Eurasia from northern China to the Danube River. There is strong evidence for a climatic cause of the blooming and rapid expansion of this culture, starting during the 9th century BC. Increased precipitation changed landscapes with a semi-desert character into steppe, with enhanced biomass production, and therefore increased carrying capacity, which was of vital importance for nomadic people. The climatic change was triggered by a temporary decline of solar activity, and thus the sun probably indirectly influencing the cultural blooming and expansion of the Scythian culture. Paleoclimatological teleconnections point to a considerable role of solar UV in climate forcing and may also indicate that changing solar wind and related changes of cosmic ray intensity - as reflected by cosmogenic isotopes - were not important.