

Institut für Geophysik

Geophysikalisches Kolloquium
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Global geomagnetic field evolution from centuries to excursions

The geomagnetic field varies on a wide range of time-scales. The core field secular variation over the past decades is globally well known from continuous field observations by geomagnetic observatories and satellites. However, knowledge of the magnetic field variation on longer time scales is of broad interest, in particular to better understand the dynamo processes in Earth's core that generate the field, but also, e.g., to estimate the magnetic field shielding against galactic cosmic rays or for using geomagnetic field variations as dating information. Knowledge about magnetic field variations on time-scales of centuries to millennia comes from information that is preserved in archaeological artefacts, lavas and sediments. The information can be retrieved by laboratory experiments, and the amount of published records from different regions starts to allow for global geomagnetic field reconstructions based on reasonable data distributions. I briefly introduce the commonly used method of spherical harmonic field modelling to obtain a global view of the geomagnetic field from scattered data and the available data information for the past 100 000 years. I present findings from the growing number of Holocene (past ca. 12 kyr) magnetic field models, and introduce the first continuous model spanning the past 100 kyr. This time interval contains several so-called magnetic field excursions. These events are characterized by time intervals of unusual, even reversed field directions and low field intensity. I discuss global characteristics of these events as suggested by spherical harmonic magnetic models. I end the presentation with an outlook of work in progress to investigate potential indications of mantle influence on the geodynamo using the new global data-based models in comparison to numerical geodynamo simulations.

Das Kolloquium findet um **16 Uhr** t. als Zoom-Videokonferenz statt. Der Link dazu wird auf der Homepage und per eMail rechtzeitig mitgeteilt.
Alle an dem Thema Interessierten sind hierzu herzlich eingeladen.

Die Dozenten des Instituts für Geophysik