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地震に関連する地磁気強度変化の有無の検討
Localized changes in the geomagnetic total intensity values prior to or associated with major earthquakes

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Changes in total geomagnetic field intensity, of 2?3 nT, were reported to be observed prior to the 1995 Hyogo-ken Nanbu (Kobe) earthquake at the Amagase (AMG), located approximately 70 km from the epicenter. We examined whether the observed variations are local signals arising from the Earth's crust, or global variations that are unlikely to originate from the crust. To remove global-scale variations in total geomagnetic intensity data, we employed a regional geomagnetic field model. Using data recorded at five reference sites in Japan, we estimated global-scale variations in total geomagnetic intensity, and removed them from the observed total geomagnetic intensity at the AMG site. The reminder still showed variations during the period prior to the Kobe earthquake. In addition, these pre-seismic variations include two of the largest shifts recorded during the entire observation period at the AMG site, raising the possibility that these variations were indeed related to the earthquake (Yamazaki and Sakanaka, 2011, J. Geodyn.).

These variations cannot be interpreted as signals arising from the area close to the seismic source because of the large distance between the epicenter and the site. Therefore, our results raise the possibility that the physical state of the Earth's crust shows marked changes over a wide region in the lead-up to a seismic event. However, we cannot exclude the possibility that large noises were recorded at this time by chance. These uncertainties are inevitable given the reliance on data collected at only one site. To overcome this difficulty, we apply the similar approach to data obtained at difference sites in Japan during 1997?2010, which are recorded by the Geographical Survey Institute of Japan and the Japan Meteorological Agency. The results will be presented at the conference.

キーワード: 地磁気全磁力, 地震, 局所性
Keywords: geomagnetic total intensity value, earthquake, locality