
[JJ] Eveningポスター発表 | セッション記号 S (固体地球科学) | S-EM 固体地球電磁気学

[S-EM17]地磁気・古地磁気・岩石磁気

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本セッションでは、現在および過去の地球・惑星磁場、岩石磁気・古地磁気とそれらの応用に関する研究の発表と議論の場を提供する。本セッションは、地球・惑星磁場の観測・解析、自然試料・考古遺物による過去の地球・惑星磁場変動の復元、数値実験による地球・惑星磁場の生成・変動メカニズムの研究、岩石・鉱物・隕石などの磁気特性の測定と理論、地球表層および掘削試料の磁気的情報に基づく地球の気候変動やテクトニクスの研究、地球・惑星の磁気異常観測と地殻磁化モデル、これらを実現するために必要な測定技術・解析手法の開発などについての発表を歓迎する。

[SEM17-P02]Spatial distribution of regularity of local geomagnetic jerks and electrical conductivity at the bottom of the mantle

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Geomagnetic jerk, abrupt change of geomagnetic secular acceleration, is considered to have the shortest time-scale among the observed geomagnetic main field variations. Geomagnetic jerks are observed around 1969, 1978, and some other years, and they have been analyzed to estimate or to discuss the electrical conductivity in the mantle (e.g. Backus, 1983; Alexandrescu et al., 1999; Nagao et al., 2003; Pinheiro and Jackson, 2008). For example, Alexandrescu et al. (1999) applied wavelet analysis to the observed magnetic field components to identify geomagnetic jerks and their regularity. The observed regularity at geomagnetic stations were used to estimate the regularity of magnetic field variation at the core-mantle boundary and the electrical conductivity of the lower mantle.

Geomagnetic jerks were observed around 2003 and 2007 but the signature of them are strong only in the south Atlantic region (e.g. Chulliat et al., 2010). We showed in a previous work that the regularity of the local geomagnetic jerk around 2007 at Mbour (MBO, Senegal) is significantly higher than that of the global geomagnetic jerks, and suggested that the local geomagnetic jerk can be generated due to the combined effect of toroidal magnetic field variation at the CMB and the electrical heterogeneity at the bottom of the mantle. In this presentation, we show the spatial distribution of the regularity of local geomagnetic jerks and discuss electrical conductivity heterogeneity in the deep mantle.

Reference:

Alexandrescu, M. et al., 1999, JGR, 104, 17,735-17,745.

Backus, G., 1983, GJRastS, 74, 713-746.

Chulliat, A. et al., 2010, GRL, 37, L0730.

Nagao, H. et al., 2003, JGR, 108, 2254.

Pinheiro and Jackson, 2008, GJI, 173, 781-792.