



Correcting solar quiet variations for tidal signals

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Solar quiet (Sq) variations of geomagnetic field are originated from electric current system which is flowing at 110 km altitude in a thin ionospheric E-layer. This current system is driven by atmospheric tides in the ambient magnetic field of the Earth. These tides are generated from solar heating of the atmosphere on the sunlit side of Earth. Sq variations are periodic phenomenon and thus can be represented as a superposition of time harmonics with periods of 24, 12, 8, 6, 4.8 and 4 hours. These variations can be used for electromagnetic induction sounding to study electrical conductivity of the Earth's upper mantle down to approximately 600 km. However, Sq variations are potentially distorted by several factors. Among them are motionally-induced (tidal) magnetic signals which have periods close to 12 and 24 hours. This study is aimed at evaluating and correcting for the effect of tidal magnetic signals in observed Sq variations.