

# **ON THE ESTIMATION OF THE EQUATORIAL ELECTROJET MAGNETIC SIGNATURE AND PEAK CURRENT DENSITY FROM POLAR ORBITING SATELLITE MAGNETIC MEASUREMENTS**

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Space-based geomagnetic observations are usually made on board low altitude near polar orbiting satellites. These satellites sweep all longitude sectors and provide quasi regular and homogenous global scale dataset. Especially, for the study of the equatorial electrojet (EEJ) features including its longitude dependence, only satellite magnetic measurements are capable of providing such global coverage. However, the orbit along-track methods of extracting the EEJ signature from satellite observations do not allow an accurate estimate of its peak current density in certain longitude sectors. By comparing ground-based and satellite observations, we show that satellite orbit along-track methods fit well the latitude profiles of the EEJ magnetic effect when the satellite paths are perpendicular to the dip-equator, as in most part of the longitude sectors of Asia and Africa. Otherwise, the EEJ latitude profiles are biased, which leads to poor estimate of the EEJ features (magnetic signature, peak-current density, position of the EEJ center, etc.), as in the Atlantic Ocean and most of South American sectors, where the dip-equator is strongly tilted from the East-West direction.

Equatorial electrojet, electric current, geomagnetic field, satellite observations