

**DISTRIBUTED CURRENTS IN THE EQUATORIAL IONOSPHERE OVER SOUTH
AMERICAN AND INDIAN SUB-CONTINENTS: A COMPARISON**

by

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ABSTRACT

External contributions to the geomagnetic field variation at an equatorial station on a magnetically quiet day is known to arise from the overhead currents flowing in the E and F regions of the ionosphere, the main source being the equatorial electrojet. Radar observations from Jicamarca, Peru and Thumba, India of the average east-west drift velocity of electrons in the height range of 95-110km, that is a measure of the mean electrojet currents and measurements at Huancayo and Trivandrum, stations near Jicamarca and Thumba respectively, of the horizontal component of the geomagnetic field, that is a measure of the integrated overhead currents are used to estimate the strength of the distributed currents above the electrojet regions over the South American and Indian subcontinents respectively. A comparative study of the strength of the distributed currents thus estimated over the two subcontinents shows the following:

- (i) Strength of the distributed currents over Jicamarca is more during the forenoon hours than in the afternoon hours. The forenoon afternoon asymmetry though exists at Thumba, is less pronounced.
- (ii) The distributed currents above the equatorial F-region generally exhibit a seasonal variation at both Jicamarca and Thumba.
- (iii) Geomagnetic declination, seems to be one of the main factors responsible for the forenoon afternoon asymmetry in the relative strength of the distributed currents and its seasonal variation.