622

SOLAR WIND-MAGNETOSPHERE-IONOSPHERE COUPLING EFFECTS ON THE MEASUREMENTS OF SURFACE ELECTRICAL PARAMETERS MADE AT MAITRI, ANTARCTICA

S. Gurubaran[1], B.M Pathan[2], C.P. Anil Kumar[1], K.U. Nair[1], C. Selvaraj[1], A. Dhar[2]

[1]Indian Institute of Geomagnetism, EGRL, Tirunelveli, Tamilnadu, India, [2]Indian Institute of Geomagnetism, Navi Mumbai, Maharshtra, India

This work examines a number of surface measurements of key electrical parameters of the global electric circuit (GEC), namely, the potential gradient and air-Earth current, obtained from the Indian Antarctic station, Maitri, (70°45' S, 11°45'E, geographic; 66°S, 53°21E, geomagnetic). The objectives of this experiment are to (1) understand the response of the experimental setup to various atmospheric electrical and meteorological conditions, (2) explore the possibilities of detecting the global DC component in the atmospheric electrical parameters that are believed to be the result of global thunderstorm activity and (3) assess the role of solar wind-magnetosphere-ionosphere interactions in modulating the GEC. This work examines the third aspect, namely, the role played by the interactions of the solar wind with the geomagnetic field that result in a spatially varying electric potential across the polar cap. The variations in the electrical parameters over the time scales from minutes to hours are examined in this work and are interpreted in terms of the high latitude electrodynamical processes that operate over Maitri during disturbed geomagnetic conditions. Geomagnetic field measurements obtained from the digital fluxgate magnetometer deployed at Maitri provide complementary data sets for this study.