Geophysical Research Abstracts, Vol. 8, 00662, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00662

F2-Region Response to the Geomagnetic Storm of 21 October 1999

A. Mahrous (1) , S. Radicella (2)

(1) Helwan University, Faculty of Science, Physics Dept., Cairo, Egypt.

(2) Abdus Salam International Center for Theoretical Physics, Trieste, Italy.

ayman.mahrous@gmail.com

We used a new more general method to analyze the ionospheric data form 11 ionosond stations distributed in both northern and southern hemispheres during the magnetic storm of 21 October 1999. According to our analytical method, the foF2 data is corrected to a central location, and a time correction (TC) values was calculated for each station. It was interesting that the integrated TC data from all the stations having the same foF2 trend during the magnetic storm, which is synchronized with main phase of the sudden storm commencement (SSC). During the storm, the Dst index showed a large fall with a minimum value of –240 nT, in addition, the interplanetary Bz reversed polarity in a 19 nT south word excursion leads to detecting a prompt penetration electric field. The auroral electrojet index AE was used as indicator of high latitude convection effects on the ionospheric electric fields either through the disturbance dynamo mechanism or through prompt penetration. The global relative deviation ΔfoF2 showed a damping of about 55% during the main negative phase, on the other hand, the positive phase occurred before the negative one is in harmony with the results of previous studies.