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# LATITUDE DEPENDENT DELAY IN THE RESPONSES OF THE EQUATORIAL ELECTROJET AND SQ CURRENTS TO X-CLASS SOLAR FLARES.

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We have analyzed low latitude ionospheric current responses to two intense (X-class) solar flares that occurred on 13-May-2013 and 11-March-2015. Sudden intensifications, in response to solar flare radiation impulses, in the Sq- and Equatorial electrojet (EEJ) currents, as detected by magnetometers over equatorial and low latitude sites in South America are studied. In particular we show for the first time 5 to 8 minutes time delay is present in the peak effect in the EEJ, with respect that of Sq current outside the magnetic equator, in response to the flare radiation enhancement. The Sq current intensification peaks close to the flare X-ray peak, while the EEJ peak occurs 5 to 8 minutes later. We have used the Sheffield University Plasmasphere-Ionosphere Model at National Institute for Space Research (SUPIM-INPE) to simulate the E-region conductivity enhancement as caused by the flare enhanced solar EUV and soft X-rays flux. We propose that the flare induced enhancement in neutral wind occurring with a time delay (with respect to the flare radiations) could be responsible for a delayed zonal electric field disturbance driving the EEJ, in which the Cowling conductivity offers enhanced sensitivity to the driving zonal electric field.