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The global ionospheric circulation pattern during a Sudden Impulse and the influence of the interplanetary magnetic field on the dawn-dusk asymmetry.

Mirko Piersanti (1,4), Federica Marcucci (2), Igino Coco (3), Umberto Villante (1,4)

(1) University of L'Aquila, Department of Physical and Chemical Sciences, L'Aquila, Italy (mirko.piersanti@aquila.infn.it), (2) Istituto Nazionale di Astrofisica, Roma, Italy., (3) Istituto Nazionale di Geofisica e Vulcanologia, Roma, Italy, (4) Consorzio Area di Ricerca di Astrogeofisica, L'Aquila, Italy.

The definite identification of the characteristics of the geomagnetic response to Solar Wind (SW) pressure changes represents an interesting element of the magnetospheric dynamics that is also important in the Space Weather context. In the present analysis, we evaluate the ionospheric current flow pattern and amplitude in response to several Sudden Impulses by applying the Piersanti and Villante model [2016] and compare the results with the convection maps obtained by using SuperDARN radars data in order to evaluate a global ionospheric circulation pattern from lowest to highest latitude. We found that, in general, the global structure of twin vortex-like ionospheric flows is found to be consistent with the twin vortices of ionospheric Hall current deduced by the geomagnetic field observations. Moreover, we investigate the role of $B_{y,IMF}$ and $B_{z,IMF}$ on the dawn-dusk asymmetry of flow vortices. We speculate that the dawn-dusk asymmetry could be caused by the interaction between the pre-existing round convection cell and a pair of the transient convection vortices associated with SIs.