

RETROSPECTIVE ANALYSIS OF SPORADIC AND RECURRENT GEOMAGNETIC STORMS DOCUMENTED IN 1859–1860 BY THE RUSSIAN NETWORK OF OBSERVATORIES

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Based on an analysis of the available archived data from the Russian network of geomagnetic stations, we demonstrate that the famous Carrington event observed on the Sun in 1859 was responsible for the first and the greatest geomagnetic perturbation in the series of the recurrent geomagnetic storms, which reappeared later during several solar rotations in 1859-1860. Similar series were repeatedly observed in the subsequent years. These series are caused by the processes on the Sun and in the heliosphere related to the superposition of sporadic and corotating solar wind flows. Corresponding interplanetary magnetic fields can be retrospectively invoked from geomagnetic archives. Neither coronal holes nor active regions can separately explain observations. Active regions and coronal holes should be considered as unified complex for a proper explanation of the Bartels's M regions.

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