North-South asymmetry of the ionosphere perturbations at the degrading trend of geomagnetic activity
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Introduction
- Total Electron Content, TEC, and the F2 layer critical frequency foF2 observed with Digisondes are transformed to the ionosphere weather W-index.
- Example of global GIM-W-index map produced from global ionospheric map GIM-TEC is shown in the picture for 2000-07-15 00:00 UT.
- Cumulative ionosphere indices (positive disturbance WU index, negative disturbance WL index, and their range WE index) are introduced to characterize the ionosphere quiet or disturbed state.
- Cumulative indices can be local (combined for 1h, 3h, diurnal, etc. block of time), regional or global indicator.
- The Poster presents results of local 3h WU, WL, WE indices compared with relevant trends of solar and geomagnetic activity in addition to the sources of variability of the magnetosphere.
- Long-term trends of the ionospheric cumulative indices are compared with relevant trends of solar and geomagnetic activity for more than 70 recent years.

Asymmetry of long-term trends of the ionosphere activity at degrading Kp index

Conclusion
- The analysis of the 3h indices of positive ionospheric disturbances WU, negative WL, and their range WE = WU – WL of the critical frequency foF2 at Moscow, Slough-Chilton, Canberra, and Port Stanley stations has been carried out from 1945 to 2020.
- There is an asymmetry in the trends of the ionospheric activity in the Northern and Southern hemispheres: the decline of indices in Moscow and Slough-Chilton and the growth at Canberra and Port Stanley while the solar and geomagnetic activity decrease.
- The difference in the changes of the indices of geomagnetically and ionospheric activity suggests the independent character of those two types of geophysical fields and a presence of other sources of the ionosphere activity in addition to the sources of variability of the magnetosphere.