

NORTH-SOUTH ASYMMETRY OF SOLAR ACTIVITY ON THE GROWTH BRANCH OF CYCLE 25

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The north-south asymmetry (NSA) of solar activity has long been known. Many works have been devoted to the study of this phenomenon (for example, [Olemskoy and Kitchatinov, 2013; Nagovitsyn and Kuleshova, 2015; Kitchatinov and Khlystova, 2021]).

We analyzed the NSA phenomenon of the location of sunspot groups and flares during the growth phase of the 25th Schwabe-Wolf cycle of solar activity. During the first four years of the cycle development, sunspot activity increased quasi-synchronously in the northern and southern hemispheres; the module of the NSA coefficient decreased during this period from 0.6 to 0.2. Longitudinal distribution of sunspots in the second half of 2023 was uneven and similar in both hemispheres; groups of sunspots appeared during this period mainly in the longitudinal intervals of $30^\circ - 100^\circ$, as well as $200^\circ - 280^\circ$, at other longitudes activity was reduced, both in the Northern, and in the Southern hemispheres.

The number of flares of all classes was 45% in the Northern Hemisphere, 42% in the Southern Hemisphere, 13% were not identified. The flare index was distributed between the hemispheres in a ratio of 49.5% to 42%, 8.5% were not identified. A comparison with the 24th cycle shows that NSA in the distribution of sunspots and flares between the northern and southern hemispheres in the current (25th) cycle is significantly lower than in the previous one. A high degree of symmetry of activity can ensure a greater height of the 25th cycle compared to the 24th, as well as the single-peaked nature of the 25th cycle.

It is hypothesized that in the 25th cycle there is a higher level of dipole parity of the global magnetic field compared to the 24th cycle.

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