

FORECAST OF THE COURSE OF SOLAR ACTIVITY IN THE 21ST CENTURY

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The forecast of the course of solar activity (SA) for the next hundred years has been made. A number of patterns in the structure of secular SA cycles on long-time scale were identified that we used to construct a long-term SA forecast. A key role in long-term forecasting belongs to 210-year solar cycles that consist of two alternating asymmetric cycles of 95 and 115 years. Each of the secular cycles has two maxima and a “dip” between them. SA on the ascending branch of the secular cycle is higher than on the descending branch. The end of the 11-year solar cycle 24 and the beginning of the 11-year solar cycle 25 are occurring at the end and beginning of the secular cycles (end of 2019 and beginning of 2020). Cycles 24 and 25 at the junction of secular cycles are weak, the height of cycle 25 (ascending branch of the secular cycle) is slightly greater than the height of cycle 24 (descending branch of the secular cycle). The 210-year cycles modulate the heights (power) of the 11-year cycles; in turn, the 210-year cycles are modulated by the 2400-year solar cycle. Maximum SA is expected around 2048 and 2080 years. Gradual decrease in SA will be observed after 2080 and by 2123 \pm 20 (minimum of the 210-year cycle!). SA may reach extremely low values such as the Maunder minimum. According to our forecast, the Sun in the current century is expected to be less active than in the past century.