

PSTEP: Towards Predicting Next Solar Cycle

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The 11-year solar cycles and the longer-term variations of the solar activity may affect the Earth's climate. Predicting the next solar cycle is crucial for the forecast of the "solar-terrestrial environment". Therefore, as a part of the PSTEP (Project for Solar-Terrestrial Environment Prediction), we are developing a five-years prediction scheme by combining the Surface Flux Transport (SFT) model and the most accurate measurements of solar magnetic fields. We estimate the meridional flow, differential rotation, and turbulent diffusivity from recent modern observations (Hinode and Solar Dynamics Observatory). These parameters are used in the SFT models to predict the polar magnetic fields strength at the solar minimum. We also plan to apply our prediction scheme to long-term variations of solar activity and investigate the possibility of grand minimums such as the Maunder Minimum in the future. In this presentation, we will explain the outline of our strategy to predict the next solar cycle. We also report the present status and the future perspective of our project and we introduce our initial result for cycle 25 prediction.

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