

Understanding space weather and space climate from Antarctica

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Interesting new age is coming in terms of space weather and space climate. Next solar maximum of so-called 11 year sunspot cycle is expected to be around 2025, while the solar activity has been decreasing for the last three sunspot cycles. Magnetic moment of the Earth has also been decreasing for last 150 years. The links between space and atmosphere, especially via energetic particles, will largely change, and empirical relationships will be less reliable. Developing observation networks over Antarctica would be necessary, but it is not enough to predict the possible variations of unprecedented solar-terrestrial environment for coming years. I would like to introduce that a physics-based simulation of the magnetosphere and ionosphere system is ready to help predicting the possible extreme situations of grand minimum and geomagnetic reversals. Of course, long-term monitoring data will also be essential to evaluate the predictions.