

The study of the strongest solar event on the minimum range of the solar cycle 24.

The strongest solar flares of solar cycle 24 of interested was on September 6, 2017, and it was the number 8 strongest solar flare since 1996. This extreme solar flare in 2017 occurred at the minimum of solar cycle 24. The active region are located in the western hemisphere and produced the violent explosion class X9.3 and X2.2 on September 6 , X1.3 on September 7, and X8.2 on September 10, 2017. The injection duration of the solar energetic particles of the solar event was 17 minutes. We collect data of selected solar event from the Advanced Composition Explorer, which they were simulated for the motion of particles by using the transport equation and solved by the numerical technique. We obtained the injection time of the solar energetic particle propagation by compared fitting between the simulation results and the spacecraft data. We found the time for releasing of high energy particles from the Sun to the Earth was in the range of 39-743 minutes. The coronal mass ejection was detected at the peak time of this solar flare, that affected in increasing the injection time. We can see the effect of this solar flare on the Earth with the value of Kp index was 4, which it didn't affect the Earth. The value of Kp index has increased to 8 on 7 and 8 September, 2017 due to another solar event occurred from same sunspot region and the effect of CMEs, where aurora was appeared in United States, France, Kazakhstan, and Australia.

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