

Space Weather – Solar Cycle #25

What is Space Weather?

Space weather includes solar storms that are triggered by solar flares.

Solar flares contain large bursts of radiation that cause a storm of plasma, solar wind and magnetic fields that are discharged from the sun's corona that may hit the earth's atmosphere.

How will Space Weather affect precise GNSS positioning?

Geomagnetic storms, and solar flares that cause large ionospheric irregularities can result in significant GNSS deterioration. The effects of the ionosphere causing interference delays on GNSS signals are the largest source of standalone GNSS errors. GNSS users typically experience "noisy" results coupled with longer fix initialisation times, and in some instances, no fixed (centimetre) solution at all.

What can be done to mitigate the effects of Space Weather!

For Space Weather, like any adverse weather event, it is best to stay informed.

A solar storm triggered by a large solar flare may take several days to hit the earth's atmosphere and the most extreme ionospheric conditions may last between a few hours and several days. The current solar maximum #25 due in 2025 is now expected to in October 2024.

If the solar storm is particularly severe AllDayRTK will issue an Advisory.

In some circumstances GNSS solutions during these events will be rendered unreliable and alternative position/navigation solutions should be used. Users will advise to check your work after the event.

Useful Links

Space Weather Services, Bureau of Meteorology

<https://www.sws.bom.gov.au/>

NOAA Space Weather Prediction Centre

<https://www.swpc.noaa.gov/>



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