

## NOAA Radio Blackouts Scale

The NOAA Solar Radiation Storm Scale indicates the severity of radiation storms. It is denoted by a R followed by a number from 1 to 5, with 1 being a minor event, and 5 being an extreme event.

The scale uses the GOES X-ray peak brightness by flare class as it's physical measure, the scale levels are shown below:

Category	Possible Effects
<b>R1</b> Minor X-Ray = M1	HF Radio: Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. Navigation: Low-frequency navigation signals degraded for brief intervals.
<b>R2</b> Moderate X-Ray = M5	HF Radio: Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. Navigation: Degradation of low-frequency navigation signals for tens of minutes.
<b>R3</b> Strong X-Ray = X1	HF Radio: Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. Navigation: Low-frequency navigation signals degraded for about an hour.
<b>R4</b> Severe X-Ray = X10	HF Radio: HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. Navigation: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.
<b>R5</b> Extreme X-Ray = X20	HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.