

# X- CLASS SOLAR FLARE

Posted at: 02/04/2024

## **Context:**

Earth was recently hit by an X-class solar flare that was strong enough to ionize part of the planet's atmosphere.

## **Background:**

This intense solar outburst was detected by satellites from the National Oceanic and Atmospheric Administration (NOAA), specifically their Space Weather Prediction Center.

## **About X- CLASS SOLAR FLARE:**

1. The Solar flares are massive eruptions of charged particles on the sun. They emit intense bursts of electromagnetic radiation.
2. These flares come in various intensities, with smaller A-class and C-class flares denoting relatively minor events. In contrast, the stronger M-class flares can amplify the auroras visible on Earth.
3. The X-class flares are the most powerful type of solar flares.
4. Effects X-class Solar Flares on Earth

## **Geomagnetic Storms:**

1. X-class flares release an immense amount of energy, including charged particles and electromagnetic radiation.
2. When these particles reach Earth, they interact with our planet's magnetosphere, causing geomagnetic storms.
3. During a severe geomagnetic storm, the magnetosphere weakens temporarily, allowing solar radiation to penetrate deeper into the atmosphere.

## **Satellite Disruption:**

1. Long-lasting radiation storms from X-class flares can harm satellites orbiting Earth.
2. Satellites may experience malfunctions or even permanent damage due to increased radiation exposure.
3. Airline passengers flying near the poles during such events may receive small radiation doses.

## **Global Transmission Problems and Blackouts:**

1. X-class flares have the potential to create global transmission problems.
2. Intense bursts of radiation can interfere with communication systems, including radio signals and satellite communication.

3. In extreme cases, widespread blackouts could occur if critical infrastructure is affected.

**Solar Maximum and Solar Cycle:**

1. The occurrence of X-class flares is a clear sign that the sun is nearing its solar maximum.
2. Solar maximum is part of the sun's roughly 11-year cycle of activity.
3. During this phase, X-class flares become more common, posing challenges for Earth's technology and space operations.

Dr. Shivakumar's



**AKKA IAS ACADEMY**  
[www.akkaias.com](http://www.akkaias.com)