Sunspot Creates a Stir; Auroras Likely

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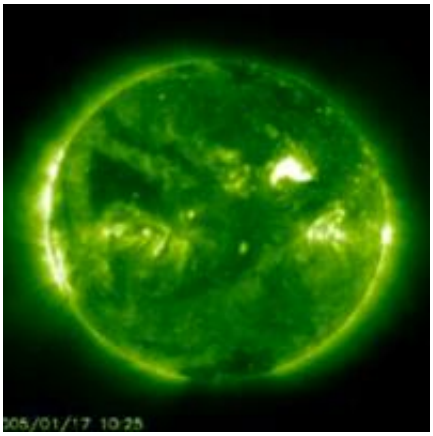

Beyond the winter chill that many of us have to contend with, there's also stormy space weather in the forecast for the week.
A fast-growing sunspot group designated AR 10720 has been causing a stir as it sent a series of coronal mass ejections, or CMEs, hurtling through space at breakneck speed. The large blast on Monday was classified as X-3, with "X" being the most powerful designation, followed by the degree of severity. Scientists expect the charged radiation from that event to reach Earth Tuesday night or Wednesday.

Image: This view of the Sun from the Solar and Heliospheric Observatory shows a lot of the active regions. For more, check the web site. Credit: NASA/ESA

That same sunspot region launched the fastest CME ever observed toward Earth, traveling at 2,890 km per second (1,796 miles per second). It was slowed down en route, arriving about 38 hours later. At its original speed it would have reached us in 18 hours and would have set another record for arrival. Auroras from that blast were observed in Alaska, Minnesota and as far south as Maryland.

The CME's ionized particles could interfere with power grids and satellite operations depending on the orientation of its magnetic field. If the field points south, the CME particles will interact with Earth's magnetosphere and likely disrupt electrical processes; if it points north, the magnetosphere should mostly shield the Earth from disruptions. Scientists will be unable to determine the orientation until the CME reaches the Advanced Composition Explorer (ACE) satellite in Earth orbit. This won't happen until only 15 minutes before the CME reaches Earth.

Dramatic solar activity is getting increasingly rare as we enter into the quiet period of the Sun's eleven-year cycle of activity. The years 2000-2001 marked the highest point of activity, but that doesn't preclude the occasional surprise like last week's CMEs and aurora. Even more significant were the intense solar storms that raged about a year ago.

Source: NASA (by Rachel A. Weintraub)