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Science news and information about the Sun-Earth environment.

SPACE WEATHER Current Conditions



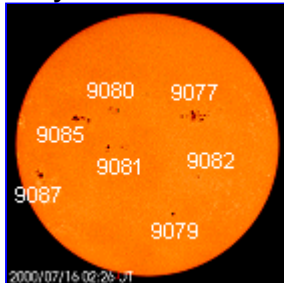
Solar Wind

velocity: **838.6** km/s
density: **0.5** protons/cm³
[More about these data](#)
Updated: Today at 1426 UT

Sunspot Number: 229

[More about sunspots.](#)
Updated: 15 Jul 2000

Daily Sun: 16 Jul 2000



Sunspot group 9077, which exhibits a complex [beta-gamma-delta](#) magnetic field, remains the greatest threat for powerful solar eruptions. The rapidly developing active region 9085 has a moderately complex [beta-gamma](#) magnetic field.

Coronal Holes:



There are no important coronal holes visible in this Yohkoh soft x-ray image of the Sun. The most striking feature is the x-ray glow from hot gas above the flare-producing active region 9077.
[More about coronal holes.](#)

SPACE WEATHER NOAA Forecasts



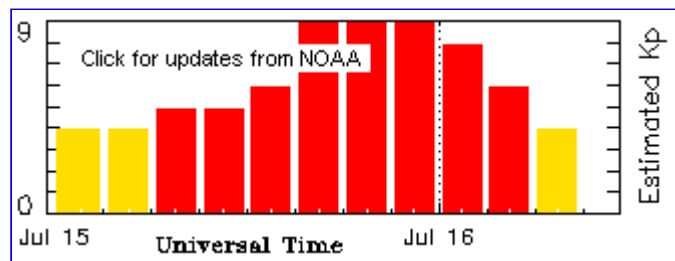
Solar Flares: Probabilities for a medium-sized ([M-class](#)) or a major ([X-class](#)) solar flare during the next 24/48 hours are tabulated below.
Updated at 2000 Jul 15 2200 UT



Today in Space -- 16 Jul 2000

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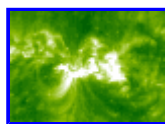
GEOSTORM SUBSIDING: A powerful interplanetary shock wave struck our planet's magnetosphere on Saturday and triggered a severe G5 category geomagnetic storm. The storm is now subsiding. During the event, which began around 0600 UT (02:00 am EDT) on July 15th and persisted for 24 hours, the solar wind velocity reached nearly 1000 km/s. Bright aurora were spotted as far south as 40 degrees latitude in Europe and the United States.



Above: The Planetary Kp Index, a measure of geomagnetic unrest, has soared to a value of 9 yesterday, indicating that an extreme storm was in progress. [Data](#) courtesy: NOAA/SEC. [\[more information about the Kp index\]](#)

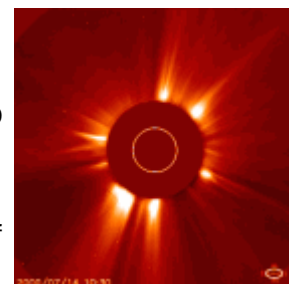
According to NOAA space weather prediction scales, G5 storms can cause the following effects: aurora seen as low as the equator, HF (high frequency) radio propagation impossible in many areas for one to two days, satellite navigation degraded for days, low-frequency radio navigation out for hours. [\[more information\]](#)

Space Radiation Storm: read this Science@NASA headline to learn more about the July 14th eruptions that triggered the geomagnetic storm. [\[more\]](#)



Left: This SOHO animation of a powerful X5-class solar flare was recorded on July 14th by the spacecraft's Extreme-ultraviolet Imaging Telescope at 195 angstroms. [A larger version of this movie](#) nicely shows the flare, followed by a torrent of energetic particles that arrived about 15 minutes later, creating snow on the images as the particles bombarded the camera's electronic detectors.

Right: The many speckles in this ESA/NASA SOHO coronagraph image are caused by energetic particles from the solar flare striking the camera's CCD detector. The expanding halo around the Sun is a fast-moving (1800 km/s) coronal mass ejection that left the Sun on July 14th and arrived in the vicinity of Earth today.



FLARE	24 hr	48 hr
CLASS M	80 %	80 %
CLASS X	35 %	35 %

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Geomagnetic Storms:

Probabilities for significant disturbances in Earth's magnetic field are given for three activity levels: [active](#), [minor storm](#), [severe storm](#).

Updated at 2000 Jul 15 2200 UT

Mid-latitudes

	24 hr	48 hr
ACTIVE	10 %	20 %
MINOR	20 %	25 %
SEVERE	70 %	50 %

High latitudes

	24 hr	48 hr
ACTIVE	10 %	15 %
MINOR	10 %	20 %
SEVERE	80 %	60 %

June 22, 2000: [Coming Soon: Better Space Storm Warnings](#) - Scientists have developed a model for predicting when coronal mass ejections will hit Earth's magnetosphere.

June 13, 2000: [From the Drawing Board to the Stars](#) -- In this scientific human interest story, Dr. Jim Burch discusses his experience as Principal Investigator for NASA's newest space weather satellite.

June 7, 2000: [Solar Storm Warning](#) -- a coronal mass ejection detected on June 6, 2000, heads for Earth.

June 5, 2000: [First Light for a Space Weather Satellite](#) -- see electrifying pictures from a unique weather satellite dedicated to space storms.

May 17, 2000: [Dance of the Planets](#) -- Scientists at the Goddard Space Flight Center used data from the ESA/NASA [SOHO](#) wide field coronagraph to produce [an mpeg animation](#) of the planets aligning with the Sun from April 27 through May 15. It's a must-see!

May 16, 2000: [A Christmas Star for SOHO](#) -- On May 17, 2000, the bright planets Venus and Jupiter passed less than 42 arcseconds apart. The spectacle, similar to the "Christmas Star" conjunction of 2 BC, was visible in coronagraph images from the Solar and Heliospheric Observatory.

May 9, 2000: [Solar Ups and Downs](#) -- It was a rare sight so near Solar Max -- the Sun was nearly featureless on May 7, 2000.

[MORE SPACE WEATHER HEADLINES](#)



Essential Web Links

[NOAA Space Environment Center](#) -- The official U.S. government bureau for real-time monitoring of solar and geophysical events, research in solar-terrestrial physics, and forecasting solar and geophysical disturbances.

[SunspotCycle.com](#) -- Sunspots and the Solar Cycle, from Science@NASA.

[Solar and Heliospheric Observatory](#) -- Realtime and archival images of the Sun from SOHO.

[The X-ray Sun](#) -- recent images from the Soft X-ray Telescope on board the [Yohkoh solar observatory](#).

[Real-time Solar Wind Data](#) -- from NASA's ACE spacecraft.

[More Real-time Solar Wind Data](#) -- from the Solar and Heliospheric Observatory Proton Monitor.

[What's the Aurora Doing Today?](#) -- real-time images of aurora from NASA's Polar spacecraft, hosted at the Marshall Space Flight Center

[White Light Solar Images](#) -- pictures and magnetograms from the Big Bear Solar Observatory.

[Current Solar Images](#) --a gallery of up-to-date solar pictures from the National Solar Data Analysis Center at the Goddard Space Flight Center.

[Aurora Forecast](#) --from the University of Alaska's [Geophysical Institute](#)

[USGS Magnetic Observatories](#) -- near real-time geomagnetic data from the US Geological Survey.

[Thursday's Classroom](#) -- Weekly lesson plans and activities about breaking science news.

[Daily Sunspot Summaries](#) -- from the NOAA Space Environment Center.

[Daily Solar Flare and Sunspot Data](#) -- from the NOAA Space Environment Center.

[Quarterly Solar Flare and Sunspot Data: January - March 2000](#) -- from the NOAA Space Environment Center.

[Quarterly Solar Flare and Sunspot Data: April - June 2000](#) -- from the NOAA Space Environment Center.

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