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News and information about the Sun-Earth environment

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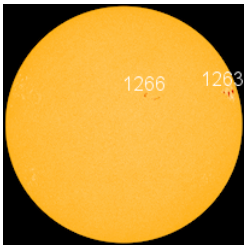
Current Conditions

Solar wind
speed: **558.1** km/sec
density: **0.8** protons/cm^3
explanation | more data
Updated: Today at 1604 UT

X-ray Solar Flares
6-hr max: **C2** 1555 UT Aug09
24-hr: **X7** 0805 UT Aug09
explanation | more data
Updated: Today at: 1600 UT

Daily Sun: 09 Aug 11



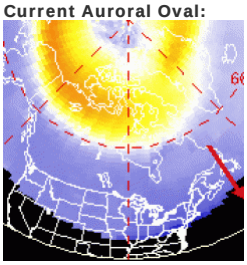
Sunspot 1263 is crackling with M-class solar flares. Credit: SDO/HMI

Sunspot number: 80
What is the sunspot number?
Updated 08 Aug 2011

Spotless Days
Current Stretch: 0 days
2011 total: 1 day (<1%)
2010 total: 51 days (14%)
2009 total: 260 days (71%)
Since 2004: 820 days
Typical Solar Min: 486 days
Updated 08 Aug 2011

The Radio Sun
10.7 cm flux: **102** sfu
explanation | more data
Updated 08 Aug 2011

Current Auroral Oval:



Switch to: Europe, USA, New Zealand, Antarctica
Credit: NOAA/POES

Planetary K-index
Now: **Kp= 1** quiet
24-hr max: **Kp= 3** quiet
explanation | more data

Interplanetary Mag. Field
B_{total}: **4.4** nT
B_z: **0.5** nT **south**
explanation | more data
Updated: Today at 1607 UT

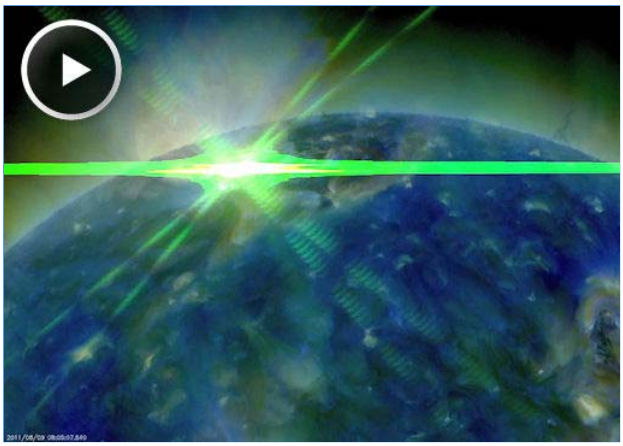
Coronal Holes: 09 Aug 11

What's up in space

Tuesday, Aug. 9, 2011

JUNO OBSERVED BY AMATEUR ASTRONOMERS: NASA's Juno spacecraft left Earth Friday, Aug. 5th, on a five-year voyage to the planet Jupiter. Amateur astronomers have photographed the car-sized spacecraft leaving the Earth-Moon system. **Images:** #1, #2, #3.

MAJOR SOLAR FLARE: This morning at 0805 UT, sunspot 1263 produced a powerful X7-class solar flare. NASA's Solar Dynamics Observatory captured the explosion's extreme ultraviolet flash:



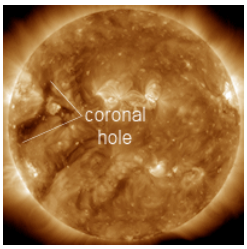
The brunt of the explosion was not Earth directed. Nevertheless, a minor proton storm is in progress around our planet, which could affect satellites in high-altitude orbits. Also, radiation from flare created waves of ionization in Earth's upper atmosphere, briefly disrupting communications at some VLF and HF radio frequencies.

SOHO coronagraphs show a CME emerging from the blast site. The cloud will probably miss Earth. At this time, however, we cannot rule out a glancing blow from the flank of the CME on or about August 11th. Stay tuned for updates.

more data: from Rob Stammes of Laukvik, Lofoten, Norway; from Andy Smith of Devon, United Kingdom.

WEEKEND AURORAS: A widespread display of auroras erupted late Friday, Aug. 5th, when a double-CME hit Earth's magnetic field and sparked a G4-category geomagnetic storm. Click on the image to view a time lapse video of the event recorded by Michael Ericsson on the shores of Tibbitt Lake in the Northwest Territories of Canada:

archives
August
9
2011
view



A new coronal hole is emerging over the sun's east limb. Credit: SDO/AIA.

SPACE WEATHER
NOAA Forecasts

Updated at: 2011 Aug 08 2200 UTC

FLARE	0-24 hr	24-48 hr
CLASS M	55 %	55 %
CLASS X	10 %	10 %

Geomagnetic Storms:
Probabilities for significant disturbances in Earth's magnetic field are given for three activity levels: active, minor storm, severe storm

Updated at: 2011 Aug 08 2200 UTC

Mid-latitudes

	0-24 hr	24-48 hr
ACTIVE	15 %	15 %
MINOR	05 %	05 %
SEVERE	05 %	01 %

High latitudes

	0-24 hr	24-48 hr
ACTIVE	20 %	20 %
MINOR	10 %	15 %
SEVERE	05 %	05 %

"Although not the most intense auroras I've ever seen, this one is definitely up there on my favorites list," he says.

The show was not restricted to Canada. Northern Lights spilled across the border into the United States as far south as Oregon, Utah, Colorado, and Nebraska. (Note: The faint red lights photographed in Nebraska are typical of low-latitude auroras during major geomagnetic storms.) Observers in Europe as far south as England, Germany and Poland also witnessed a fine display. Browse the gallery for more examples.

Did you miss the show? Don't let that happen again. Sign up for geomagnetic storm alerts: text, voice.

August 2011 Aurora Gallery

[**previous Augusts:** 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002]

2011 Noctilucent Cloud Gallery

[**previous years:** 2003, 2004, 2005, 2006, 2007, 2008, 2009]

Near Earth Asteroids

Potentially Hazardous Asteroids (PHAs) are space rocks larger than approximately 100m that can come closer to Earth than 0.05 AU. None of the known PHAs is on a collision course with our planet, although astronomers are finding new ones all the time.

On August 9, 2011 there were **1241** potentially hazardous asteroids.

Recent & Upcoming Earth-asteroid encounters:

Asteroid	Date(UT)	Miss Distance	Mag.	Size
2003 BK47	Jul 26	77.6 LD	--	1.1 km
2011 OD18	Jul 28	0.4 LD	--	22 m
2009 AV	Aug 22	49.7 LD	--	1.1 km
2003 QC10	Sep 18	50 LD	--	1.2 km
2004 SV55	Sep 19	67.5 LD	--	1.2 km
2007 TD	Sep 23	3.8 LD	--	58 m
2002 AG29	Oct 9	77.1 LD	--	1.0 km
2000 QJ8	Oct 13	49.8 LD	--	2.5 km
2009 TM8	Oct 17	1.1 LD	--	8 m
2011 FZ2	Nov 7	75.9 LD	--	1.6 km
2005 YU55	Nov 8	0.8 LD	--	175 m

Notes: LD means "Lunar Distance." 1 LD = 384,401 km, the distance between Earth and the Moon. 1 LD also equals 0.00256 AU. MAG is the visual magnitude of the asteroid on the date of closest approach.

Essential web links

LINK **NOAA Space Weather Prediction Center**

The official U.S. government space weather bureau

LINK **Atmospheric Optics**

The first place to look for information about sundogs, pillars, rainbows and related phenomena.

LINK **Solar Dynamics Observatory**

Researchers call it a "Hubble for the sun." SDO is the most advanced solar observatory ever.

LINK **STEREO**

3D views of the sun from NASA's Solar and Terrestrial Relations Observatory

LINK **Solar and Heliospheric Observatory**

Realtime and archival images of the Sun from SOHO.

LINK **Daily Sunspot Summaries**

from the NOAA Space Environment Center

LINK **Heliophysics**

the underlying science of space weather

LINK **Science Central**

LINK **Conquest Graphics**

for out-of-this-world printing and graphics

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