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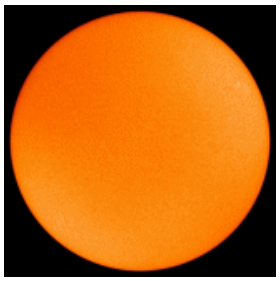
SPACE WEATHER
Current conditions

Solar wind
speed: **408.0** km/sec
density: **2.6** protons/cm^3
explanation | more data
Updated: Today at 2255 UT

X-ray Solar Flares
6-hr max: **A0** 2135 UT Oct20
24-hr: **A0** 2135 UT Oct20
explanation | more data
Updated: Today at: 2245 UT

Daily Sun: 20 Oct 08



The sun is blank--no sunspots.
Credit: SOHO/MDI

Sunspot number: 0
What is the sunspot number?
Updated 19 Oct. 2008

Far side of the Sun:

This holographic image reveals no sunspots on the far side of the sun.
Image credit: SOHO/MDI

Planetary K-index
Now: **Kp= 0** quiet
24-hr max: **Kp= 2** quiet
explanation | more data

Current Auroral Oval:

What's up in Space

October 20, 2008

BEHOLD THE SUN: Would you like to see fiery prominences and new-cycle sunspots with your own eyes? On sale now: Personal Solar Telescopes.

ORIONID METEORS: Earth is passing through a stream of dusty debris from Halley's Comet and this is giving rise to the annual Orionid meteor shower (so-called because the meteors emerge from the constellation Orion). This morning in the Netherlands, Koen Miskotte witnessed approximately 15 per hour "including many bright ones between magnitude +1 and -2," he says. Sky watchers should be alert for more during the hours before sunrise on Tuesday, Oct. 21st. [live counts] [sky map]

AURORA SURPRISE: No geomagnetic storm was predicted for Oct. 19th, but one happened anyway. "We had an outburst of beautiful auroras here in Finland," reports Sauli Koski. He recorded the green skies behind moonlit trees using his Nikon D3:

What happened? The interplanetary magnetic field (IMF) near Earth tipped south, opening a crack in our planet's magnetic defenses against the solar wind. Solar wind poured in and fueled the display.

"The clouds cleared just in time for some heavy auroras," says Thomas Hagen of Tromsø, Norway. "[It's] the greatest show on Earth!"

UPDATED: **Oct. 2008 Aurora Gallery**
[**Previous Octobers:** 2007, 2006, 2004, 2003, 2002, 2001, 2000]

PURPLE SUNSETS: "Sunsets in recent evenings have had a delicate purple color," reports William Helms of Buena Vista, Colorado. "This is not their usual color. Is there some particulate matter in the atmosphere?"

The answer is "yes." Lingering aerosols from Alaska's Kasatochi volcano are producing sunsets like this:

Cool links:

archives

October
20
2008
view

The Sun in Motion

SATELLITE FLYBYS

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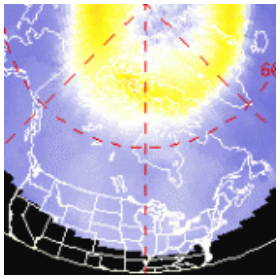
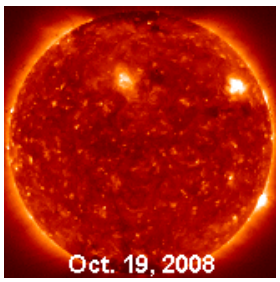


Switch to: Europe, USA, New Zealand, Antarctica
Credit: NOAA/POES
What is the auroral oval?

Interplanetary Mag. Field
B_{total}: **5.0** nT
B_z: **1.1** nT **south**
explanation | more data
Updated: Today at 2257 UT

Coronal Holes:



There are no coronal holes on the Earth-facing side of the sun. Credit: Hinode X-ray Telescope.

SPACE WEATHER
NOAA Forecasts

Updated at: 2008 Oct 20 2201 UTC

FLARE	0-24 hr	24-48 hr
CLASS M	01 %	01 %
CLASS X	01 %	01 %

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

Updated at: 2008 Oct 20 2201 UTC

Mid-latitudes

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

"In the foreground is Mt. Princeton, a little over 14,000 feet in elevation," says Helms. "I took the photograph with a Canon PowerShot A710 in automatic mode and I did not enhance it in any way."

Why purple? It's a mixture of red and blue. The blue likely comes from volcanic particles in the stratosphere small enough to act as Rayleigh scatterers. Rayleigh scattering by air molecules turns the daytime sky blue; likewise, Rayleigh scattering by tiny volcanic aerosols adds blue to the sunset. Mix that volcanic blue with a dash of ordinary sunset red and voila!--a purple sunset. (Note: This explanation should be considered speculative. The exact purple-producing mechanism is not well understood.)

When Kasatochi erupted on August 7th, it pumped more than a million tons of ash and sulfur dioxide into the stratosphere. Much of that material is still there, drifting around the Northern Hemisphere producing sunsets of subtle beauty. If don't see one tonight, look again tomorrow. The volcanic clouds are patchy and you may have to look many evenings in a row to catch the purple.

more images: from Mike Deep of Odessa, Florida; from Tamas Ladanyi of Balatonkenese, Hungary; from Doug Zubenel of De Soto, Kansas; from Jonathon Stone of Auburn, Alabama; from Aymen Ibrahem of Ras al Bar, Damietta, Egypt

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 October 20, 2008 there were **990** potentially hazardous asteroids.

Oct. 2008 Earth-asteroid encounters:

Asteroid	Date(UT)	Miss Distance	Mag.	Size
2008 QS11	Oct. 2	11 LD	14	470 m
2008 SH148	Oct. 4	5.8 LD	19	26 m
2005 GN59	Oct. 6	20 LD	15	1.4 km
2008 TC3	Oct. 7	IMPACT	-13	3 m
2008 TZ	Oct. 10	5.3 LD	18	37 m
1999 VP11	Oct. 16	72 LD	17	860 m
2001 UY4	Oct. 18	74 LD	17	1.1 km
Comet Barnard-Boattini	Oct. 22	75 LD	16	unknown
2008 TT26	Oct. 23	3.6 LD	15	70 m

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High latitudes

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

2000 EX106	Oct. 23	69 LD	18	1.1 km
2005 VN	Oct. 29	4.1 LD	15	116 m
4179 Toutatis	Nov. 9	20 LD	14	3.8 km

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 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 and Heliospheric Observatory**

Realtime and archival images of the Sun from SOHO.

LINK **STEREO**

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

LINK **Daily Sunspot Summaries**

from the NOAA Space Environment Center

LINK **Current Solar Images**

from the National Solar Data Analysis Center

LINK **Science Central**

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