What's up in Space

August 22, 2009

AURORA ALERT: Did you miss the Northern Lights? In July they descended as far south as Nebraska. Next time get a wake-up call: Spaceweather PHONE.

QUIET SUN: According to NOAA sunspot counts, the longest stretch of spotless suns during the current solar minimum was 52 days in July, August and Sept. of 2008. The current spate of blank suns is putting that record in jeopardy. There have been no sunspots for almost 42 days and there are none in the offing. Deep solar minimum continues.

NORTHERN LIGHTS: Sunspots are not required to make auroras. A solar wind stream can do the job just fine. Witness this display on August 20th:

The sky lit up north of Edmonton, Alberta, when a solar wind stream crashed into Earth's magnetic field. "Things were quiet then--POW!" says photographer Zoltan Kenwell, "I was able to photograph the Northern Lights for two hours."

He took the pictures using a Canon 5D2. "I pushed the envelope and set the camera to ISO 1600-5000 for 30 to 50 seconds. There was a substantial amount of fog on the lake and a few wisps of clouds that give the images a dreamy feel. The 5D2 is an amazing camera!"

The solar wind is still blowing. High-latitude sky watchers should remain alert for auroras.
Current Auroral Oval:

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

Interplanetary Mag. Field
Btotal: 4.7 nT
Bz: 2.3 nT south

Coronal Holes:

There are no large coronal holes on the Earth-facing side of the sun.
Credit: SOHO Extreme UV Telescope

SPACE WEATHER
NOAA Forecasts

FLARE
CLASS M
CLASS X

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

2009 Perseid Photo Gallery

2009 Perseids are Coming, Horse Flies and Meteors

Explore the Sunspot Cycle

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 22, 2009 there were 1068 potentially hazardous asteroids.

August 2009 Earth-asteroid encounters:

<table>
<thead>
<tr>
<th>Asteroid</th>
<th>Date(UT)</th>
<th>Miss Distance</th>
<th>Mag.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 MC9</td>
<td>Aug. 7</td>
<td>70.3 LD</td>
<td>16</td>
<td>1.2 km</td>
</tr>
<tr>
<td>2009 OF</td>
<td>Aug. 8</td>
<td>15.4 LD</td>
<td>18</td>
<td>220 m</td>
</tr>
<tr>
<td>2007 RQ17</td>
<td>Aug. 9</td>
<td>8.4 LD</td>
<td>17</td>
<td>130 m</td>
</tr>
<tr>
<td>2000 LC16</td>
<td>Aug. 17</td>
<td>75.6 LD</td>
<td>14</td>
<td>2.0 km</td>
</tr>
<tr>
<td>2006 SV19</td>
<td>Aug. 21</td>
<td>59.2 LD</td>
<td>16</td>
<td>1.3 km</td>
</tr>
</tbody>
</table>

FLYING ISLANDS: On August 14th, gravity was revoked in the Netherlands—or so it seemed when photographer Rik ter Horst looked out across the water and saw Schiermonnikoog Island floating in mid-air:

"It was just a mirage," he says. Temperature gradients in the air over the cool, open water caused light from the island and its surroundings to curve in unusual ways on route to the camera. The apparent gap between the island and the sea is actually an upside-down image of the sky above. Note the hint of antenna pointing into the water. But don't look too closely, cautions Horst. "You might start believing islands can fly."

more images: from Peter von Bagh of Porvoo, Finland; from Mila Zinkova of San Francisco, California, from Ivar Martinussen of Storlien, Sweden; from Becky Ramotowski of Amalfi, Texas
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](http://www.spaceweather.com)
  The official U.S. government space weather bureau

- **LINK** [Atmospheric Optics](http://www.atmosoptics.org)
  The first place to look for information about sundogs, pillars, rainbows and related phenomena.

- **LINK** [Solar and Heliospheric Observatory](http://solar.nascom.nasa.gov)
  Realtime and archival images of the Sun from SOHO.

- **LINK** [STEREO](http://stereo.msfc.nasa.gov)
  3D views of the sun from NASA's Solar and Terrestrial Relations Observatory

- **LINK** [Daily Sunspot Summaries](http://www.spaceweather.com)
  from the NOAA Space Environment Center

- **LINK** [Current Solar Images](http://www.solarimages.org)
  from the National Solar Data Analysis Center

- **LINK** [Science Central](http://sciencecentral.com)

  [more links...](http://spaceweather.com)