

## Current Conditions

## What's up in space

Friday, Sep. 13, 2019

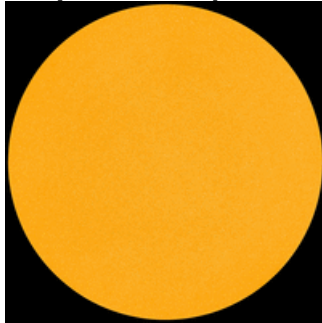
### Solar wind

speed: **474.0** km/sec  
density: **4.3** protons/cm<sup>3</sup>  
more data: [ACE](#), [DSCOVR](#)  
Updated: Today at 1111 UT

### X-ray Solar Flares

6-hr max: **A7** 0705 UT Sep13  
24-hr: **A7** 1706 UT Sep12  
[explanation](#) | [more data](#)  
Updated: Today at: 1100 UT

### Daily Sun: 13 Sep 19



The sun is blank--no sunspots. Credit: SDO/HMI

### Sunspot number: 0

[What is the sunspot number?](#)  
Updated 13 Sep 2019

### Spotless Days

Current Stretch: 10 days  
2019 total: 179 days (70%)  
2018 total: 221 days (61%)  
2017 total: 104 days (28%)  
2016 total: 32 days (9%)  
2015 total: 0 days (0%)  
2014 total: 1 day (<1%)  
2013 total: 0 days (0%)  
2012 total: 0 days (0%)  
2011 total: 2 days (<1%)  
2010 total: 51 days (14%)  
2009 total: 260 days (71%)  
2008 total: 268 days (73%)  
2007 total: 152 days (42%)  
2006 total: 70 days (19%)  
Updated 13 Sep 2019

### Thermosphere Climate Index

today:  $4.02 \times 10^{10}$  W **Cold**  
Max:  $49.4 \times 10^{10}$  W **Hot** (10/1957)  
Min:  $2.05 \times 10^{10}$  W **Cold** (02/2009)  
[explanation](#) | [more data](#): [gfx](#), [txt](#)  
Updated 12 Sep 2019

### The Radio Sun

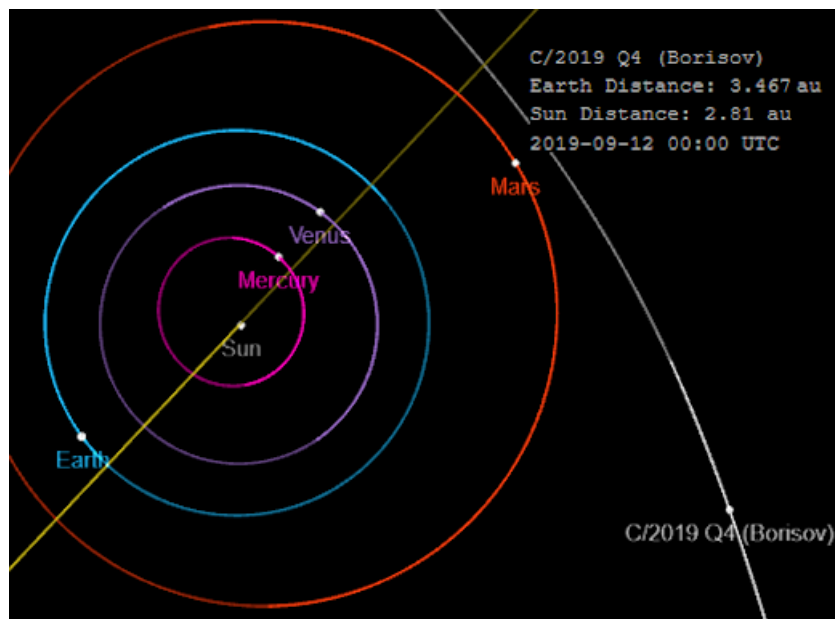
10.7 cm flux: **69** sfu  
[explanation](#) | [more data](#)  
Updated 13 Sep 2019

**Special Offer:** SAVE 600nok per person. Book a combination aurora borealis chase and scenic day tour during the months of September, October or November 2019 for the special price of 1800 kr. Check Marianne's webpage for [details!](#)



**WATCH OUT FOR THE HARVEST MOON:** Tonight's full Moon has a special name--the Harvest Moon. It's the full Moon closest to the northern autumnal equinox (Sept. 23rd). In years past, farmers depended on the light of the Harvest Moon to gather ripening crops late into the night. Post-Edison, we appreciate it mainly for its beauty. Enjoy the [Harvest moonlight](#).

**INTERSTELLAR COMET:** 'Oumuamua is not alone. Another interstellar visitor appears to be passing through the solar system--and this time it's definitely a comet. Ukrainian amateur astronomer Gennady Borisov discovered the object, now named C/2019 Q4 (Borisov), approaching from beyond the orbit of Mars on Aug. 30th. Click to view a 3D visualization of Comet Borisov's orbit from NASA's Jet Propulsion Lab:



Based on observations gathered since Borisov discovered the distant fuzzball, the comet seems to be following a [hyperbolic](#) orbit with an eccentricity greater than 3.5. This means the comet is unbound to the sun. Indeed, it is moving some 30.7 km/s (68,700 mph) too fast for the sun's gravity to hang onto it. Comet Borisov is a first time visitor to the inner solar system, and after this flyby it will return to deep space.

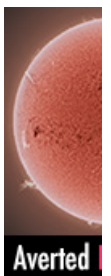
Comet Borisov will make its closest approach to the sun (2 AU) around Dec. 7th. Three weeks later, near the end of December, it will make its closest approach to Earth (also 2 AU). At the moment the comet is very dim, around magnitude +18. How bright it may become by December is anyone's guess.

### archives

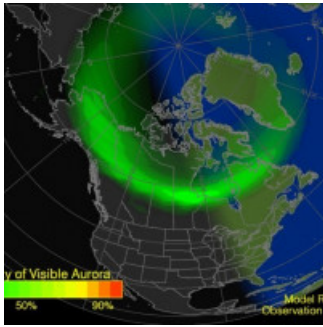
Septem

13

2019



## Current Auroral Oval:



Switch to: [Europe](#), [USA](#), [New Zealand](#), [Antarctica](#)  
Credit: NOAA/Ovation

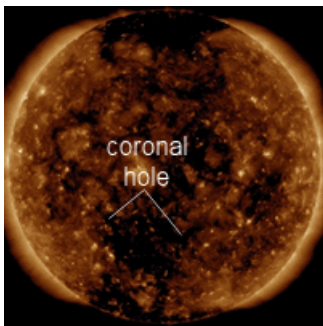
## Planetary K-index

Now: **Kp= 3** quiet  
24-hr max: **Kp= 3** quiet  
[explanation](#) | [more data](#)

## Interplanetary Mag. Field

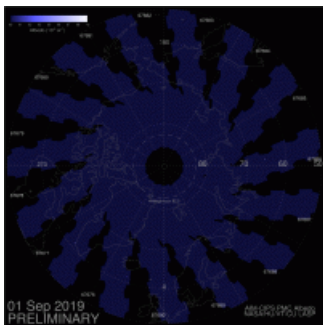
$B_{\text{total}}$ : **8.5 nT**  
 $B_z$ : **0.8 nT north**  
more data: [ACE](#), [DSCOVR](#)  
Updated: Today at 1110 UT

## Coronal Holes: 13 Sep 19



Solar wind flowing from this southern coronal hole could graze Earth's magnetic field on Sept. 16th or 17th.  
Credit: SDO/AIA

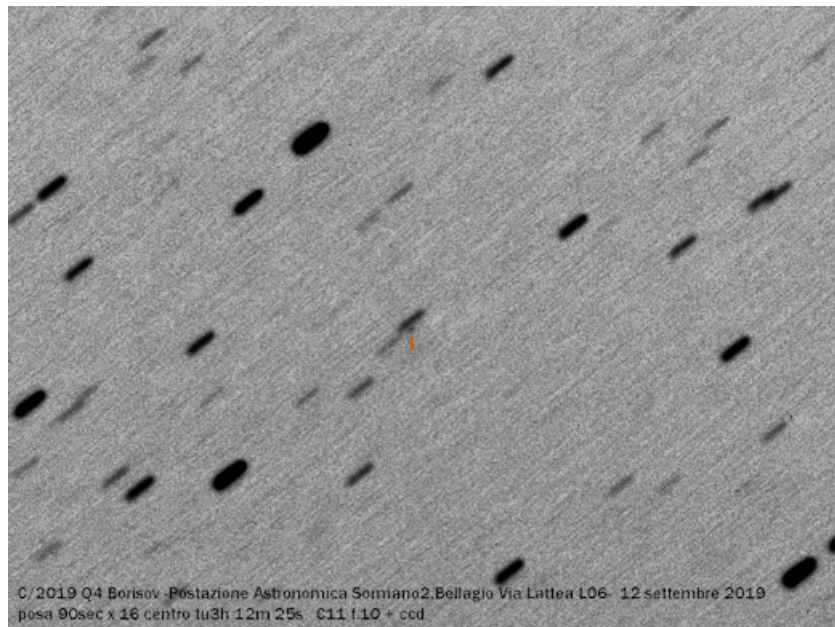
**Noctilucent Clouds** The northern season for noctilucent clouds has ended. NASA's AIM spacecraft is no longer detecting electric-blue clouds around the Arctic Circle.



Switch view: [Europe](#), [USA](#), [Asia](#), [Polar](#)

Updated at: 09-03-2019 13:55:02 UT

SPACE WEATHER  
**NOAA Forecasts**



Above: Dim and distant, Comet Borisov was photographed in the constellation Cancer on Sept. 12th by Graziano Ventre using an 11-inch telescope.

The first known interstellar object to visit our solar system, 'Oumuamua, caused a sensation when it was discovered racing away from the sun in late 2017. Speculation about its nature ranged from an [alien spacecraft](#) to a [fossil exocomet](#). Astronomers still aren't sure what it was. Comet Borisov, on the other hand, appears to have a fuzzy atmosphere (a "coma") and perhaps a stubby tail--signs that it really is a comet.

Because Comet Borisov is still just entering the solar system, astronomers will have plenty of time to study it in the months ahead. Is it truly interstellar? What are comets from other solar systems made of? Answers to these and many other questions are forthcoming.

Meanwhile, if you are a skilled amateur astronomer and wish to observe Comet Borisov, you may find orbital elements for pointing your telescope [here](#) and [here](#). Got a picture? Please [submit it to our photo gallery](#)!

## [Realtime Space Weather Photo Gallery](#)

Free: [Spaceweather.com Newsletter](#)

**SPECTACULAR DOUBLE RAINBOW:** Sometimes running out in the rain is a good idea. On the evening of Sept. 12th, Göran Strand of Östersund, Sweden, did just that. Here is what he saw:



"It was the most beautiful double rainbow I've ever seen," says Strand. "I was home when I noticed that there was some very special light outside, so I quickly grabbed my camera and went out in the rain to capture this photo."

Many people don't know it, but *all* rainbows are double. The bright primary arc is caused by sunlight [reflecting once](#) inside raindrops. The tall second rainbow

