



August 21, 2017 Total Solar Eclipse
by
Melissa Kirk

Copyright 2017 Melissa Kirk

Equipment Setup



- 6-inch Schmidt-Cassegrain f/10 Telescope, using an f/6.3 focal reducer, and broadband solar filter with 1/1000th of 1% transmission
- Digital astrophotography camera behind a star diagonal.

Copyright 2017 Melissa Kirk

Sunspots AR2671 and AR2672

<http://www.spaceweather.com>



Copyright 2017 Melissa Kirk

- ISO 50, 1/40 second exposure duration.
- Photo taken from Glendo State Park, WY, prior to totality.

Chromosphere



- Filaments are dark, thread-like features seen in hydrogen alpha light.
 - They are dense, somewhat cooler clouds of material suspended above the photosphere by magnetic field loops.
- Prominences are filaments seen projecting out above the limb.
- <https://solarscience.msfc.nasa.gov>
- ISO 200, 1/2000 second exposure, 8-inch Schmidt-Cassegrain Telescope with focal reducer, f/5.9 overall focal ratio
- Photo taken from Guernsey, WY

Copyright 2017 Paul Shubert
Reprinted with permission
paul@shubertnm.net

Coronal Features



Copyright 2017 Melissa Kirk

- Helmet streamers are large cap-like coronal structures with long, pointed peaks. They get their shape from
 - Large, active regions having magnetic fields penetrating the chromosphere and reconnecting into magnetic systems in the corona.
 - Outflowing gas or plasma in the corona or solar wind drawing them out into radial, linear features at several million kilometers from the photosphere.
- <https://eclipse2017.nasa.gov/helmet-streamers>
- ISO 200, 1/25 second exposure duration

Polar Plumes

- Polar plumes are long, thin streamers projecting outward from the Sun's magnetic North and South Poles.
 - They are associated with the “open” magnetic field lines at the poles.
 - Bright areas at the bases of the plumes are associated with small magnetic regions on the photosphere.
 - They are formed by the solar wind in much the same way as the peaks of the helmet streamers.
- <https://eclipse2017.nasa.gov>
<https://solarscience.msfc.nasa.gov/>

Environmental Effects



- 360° horizon glow during totality
- Sudden darkening upon the start of totality
- Waxing phase crescents projected
- Obvious, palpable temperature changes
- Photos taken by Whitson John Kirk III.

