

Solar Storms Notes

Topics in the 5-12 Curriculum

1. Doppler Effect
2. Sunspots and Magnetism
3. Magnetic Fields
4. Fusion and Thermonuclear Reactions
5. Electromagnetic Spectrum
6. Layers of Sun : Layers of Earth's Crust / Atmosphere
7. Wave Characteristics
8. Wave Particle Duality of Light
9. Energy and Wave Equations ($E = mc^2$; $E = hf$; $v = \frac{d}{t}$; $v = f\lambda$)
10. Sunspots and Changes in Temperature
11. Types of Instruments (Telescope, Satellite)
12. Satellites (History and Uses, Advantages, Orbit)
13. Measurements Associated with these instruments in relation to EM spectrum
14. Auroras – Electron Energy Levels, Spectral Lines

Websites to incorporate

[NASA Tracking a Solar Storm Homepage](http://science.nasa.gov/heliophysics/)

[http://science.nasa.gov/heliophysics/](http://www.nasa.gov/mission_pages/sdo/main/index.html)

http://www.nasa.gov/mission_pages/sdo/main/index.html

<http://sunearthday.nasa.gov/swac/>

[Space Weather Action Center](#)

[Space Weather Media Viewer](#)

The Sun, solar wind and aurora data is vibrant and up-to-date. Brilliant illustrations and visualization make this viewer a top resource.

[Space Weather Data](#)

Archived Data:

- [SOHO Data](#)
Select data from the past decade or longer by selecting image types and start and end dates (hint: search for a few days at a time. There is a lot of data).

Excellent Mission Resources:

- [SpaceWeather.com](#) (Great Summary page for daily use)
- [NASA Stereo Mission Page I](#)
- [NASA Stereo Mission Page II](#)
- [Solar Dynamics Observatory News and Mission Page](#)
- [The Solar Cycle, Updated Information](#)

NASA Curriculum Resources:

- [LIVE from the Aurora - Educator's Guide](#)
- **Exploring Magnetism with Worksheets and Rubrics (5 files)**
 - [Exploring Magnetism](#)
 - [Worksheets 1](#)
 - [Worksheets 2](#)
 - [Rubric 1](#)
 - [Rubric 2](#)
- [Magnetism and Electromagnetism](#)
- [Exploring Magnetism on Earth with Worksheets](#)
- [Space Weather](#)
- [Northern Lights](#)
- [Exploring Earth's Magnetic Field](#)

Content:

- [Simple Electromagnetic Spectrum Link](#)
- [NASA animation of with Magnetosphere protecting Earth](#)
- [Simple Electromagnetic Spectrum](#)
- [What Are Waves?](#)
- [Sunspot Animation](#)
- [What is a Sunspot?](#)
- [K-index and Aurora](#)
- [Sunspot Cycles](#)
- [iSWA \(Integrated Space Weather Analysis System\)](#)

Additional Solar Data Links:

- **Current SOHO Animations**
 - [current eit 304small.mpg](#)
 - [current mdi igrsmall.mpg](#)
 - [current mdi magsmall.mpg](#)
- [Additional Solar Image sites](#)
- [Solar Data Analysis Center \(SDAC\) Imagery \(miscellaneous\)](#)
- [Sunspot Cycle Prediction image](#)
- [NASA Stereo Mission Images and Multimedia](#)
- [3D-stereo Stereo Data](#)
- [iSPA \(integrated Space Weather Analysis\)](#)

Misc. Links:

- [Today's Magnetic Solar Link \(GONG\)](#)
- [Hear the Sun - 3rd one down](#)
- [Sunspot Observing System for Students](#)
- [Make a Pinhole Camera](#)