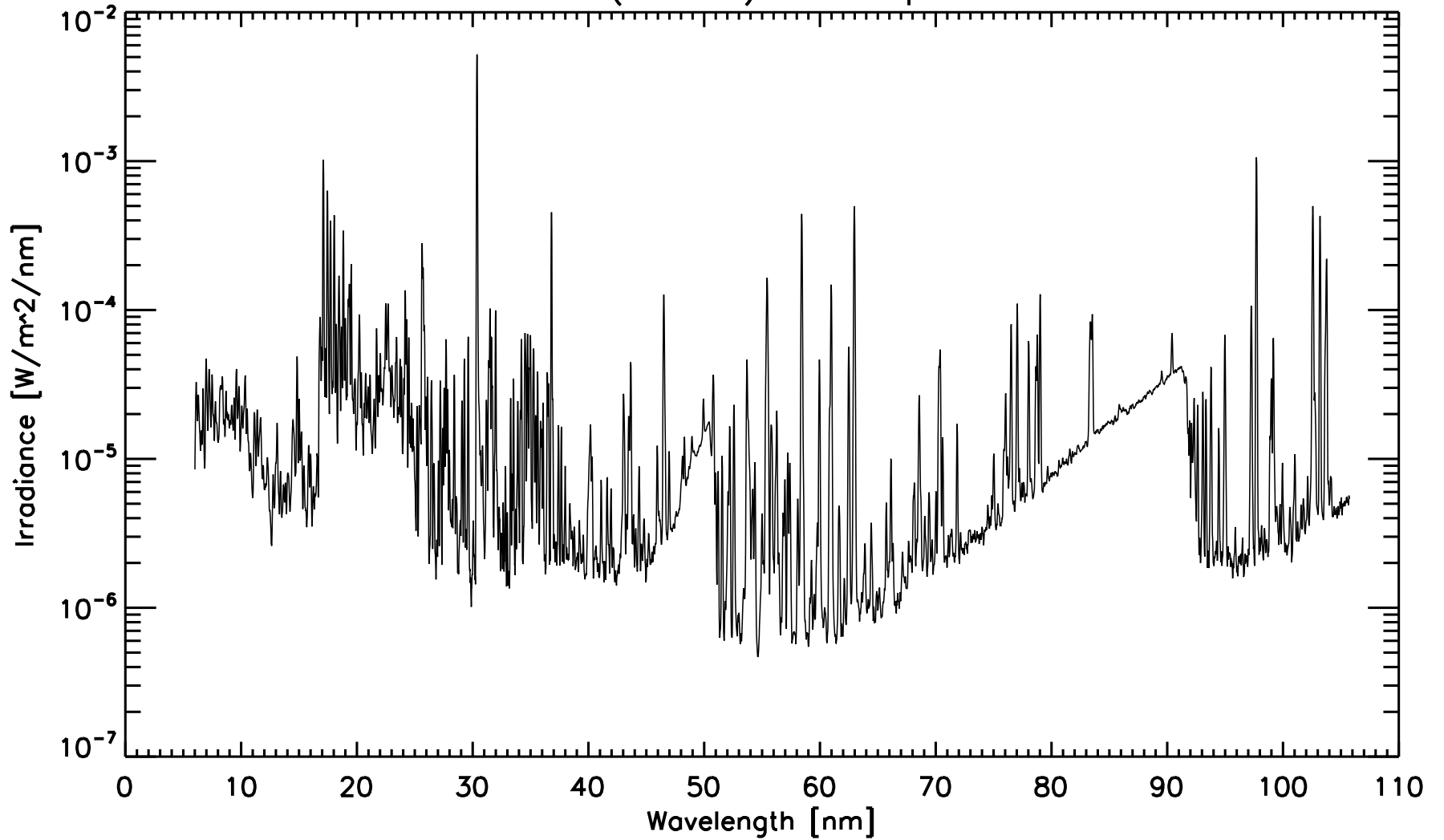


Why does it matter? Solar Physics

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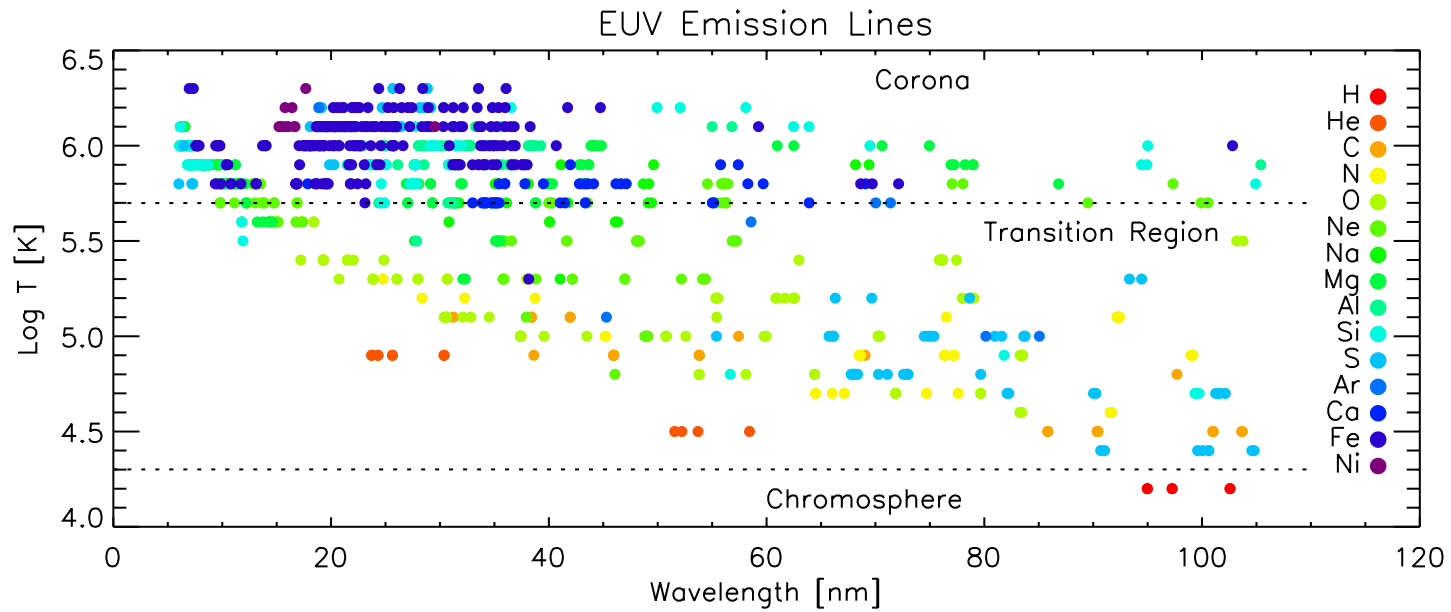
Rocket (36.240) MEGS Spectrum



What can this tell us about the Sun?

What does the EUV irradiance measure?

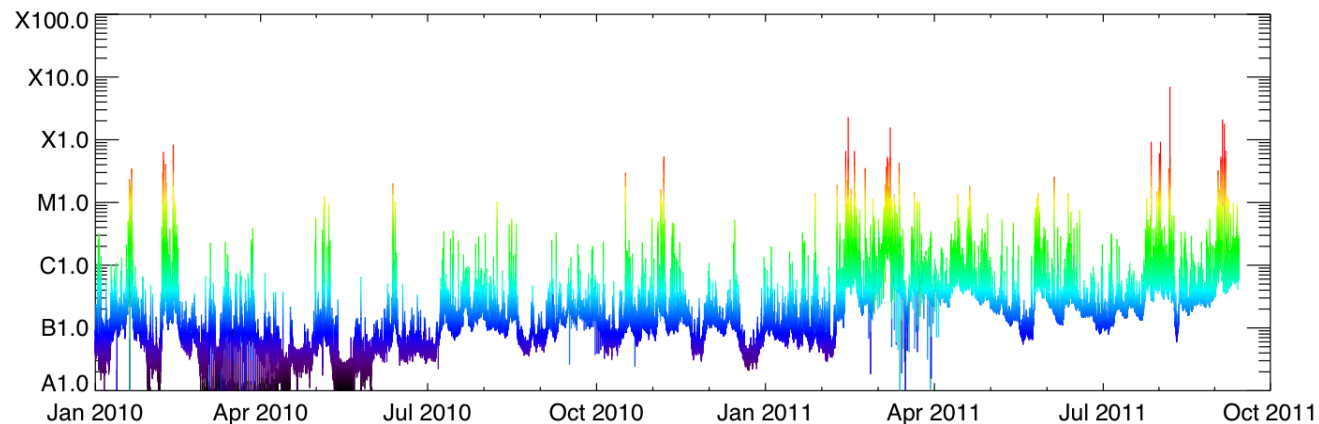
- EUV → outer layers of the solar atmosphere



- Optically thin emission lines → temperature and amount of plasma at that temperature

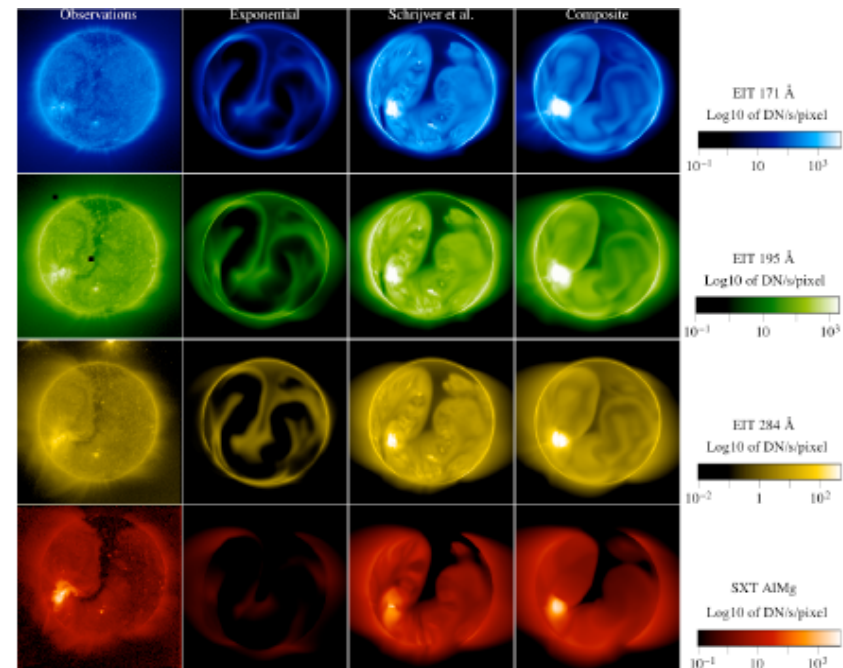
What can we learn?

- How is the corona heated?
- How is the EUV spectrum produced?
 - What is the corona's radiative loss function?
 - What are the relevant atomic data?
- What causes the corona to vary over all timescales?



Coronal Models & Atomic Data

- Many modeling methods, including:
 - Empirical (FISM)
 - Image deconstruction (SPRM, DEM)
 - Global 3D MHD (PSI)
- Are the atomic data (CHIANTI) correct?



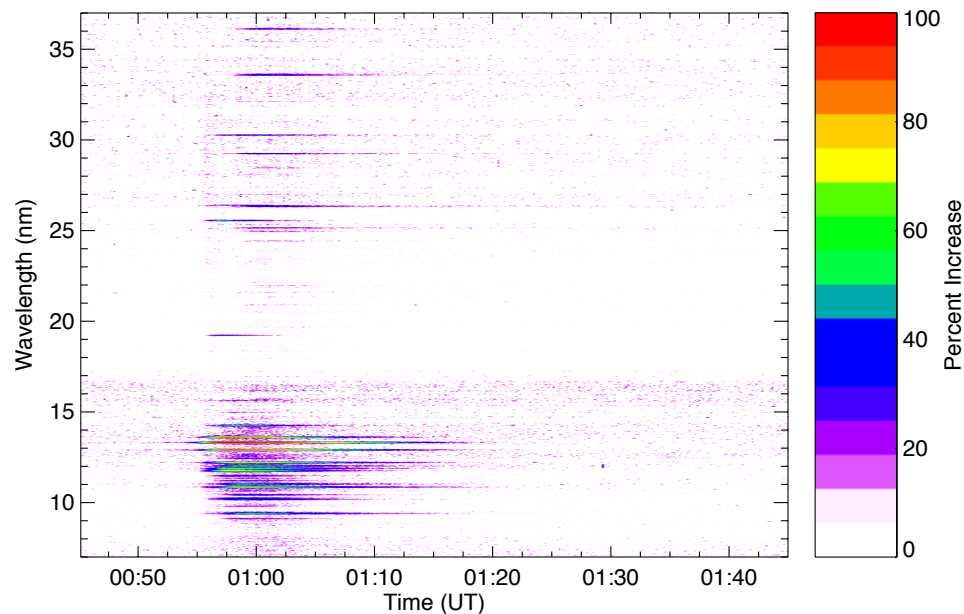
from Predictive Science, Inc.

Understanding Images

- Solar EUV images:
 - Broadband and include many lines at a range of temperatures
 - Generally not radiometrically calibrated
- Solar physicists want to study images in terms of temperatures instead of wavelengths.
 - Use a spectrum and the temperature/strength of the lines to determine the temperature bandpass
 - Use multiple wavelengths to do an inversion
- EUV spectra that overlap spectrally and temporally with images can be used to calibrate the images.

Solar Flares & Transient Events

- During transient events (flares, coronal dimmings, etc), changes in the irradiance can be attributed to localize phenomenon by assuming that the rest of the Sun is not changing.

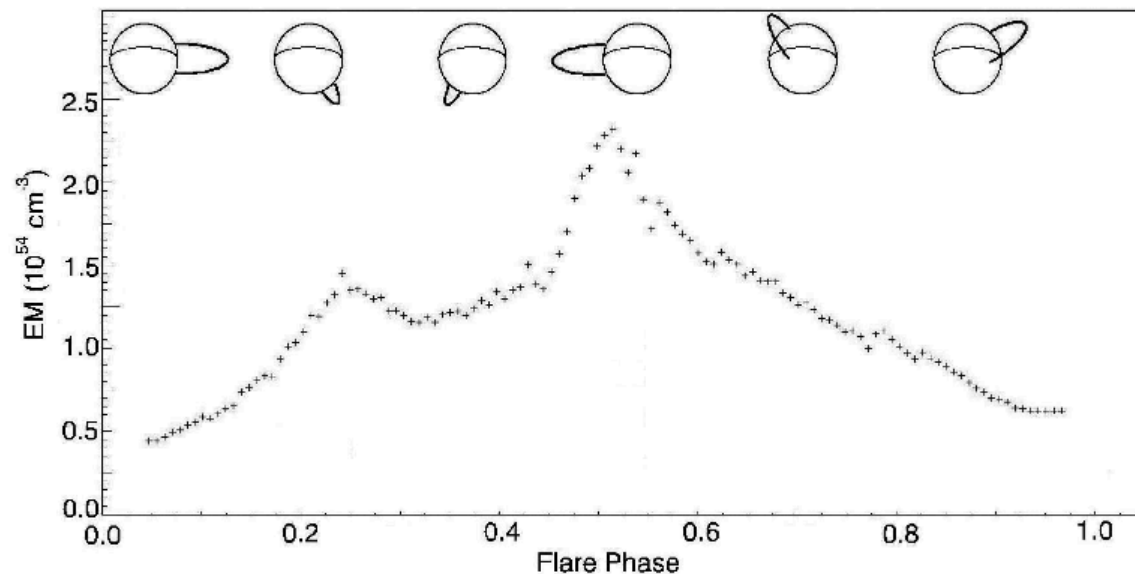


Solar Physics Topics from EVE

- EUV late phase flares
- Properties of long duration events
- Relationship between CMEs and coronal dimmings
- Coronal oscillations
- Doppler shifts during flares
- Variations due to microflares

Sun-Star Connection

- Irradiance is how we can connect the Sun to other stars
 - Stellar cycles
 - Stellar flares



Johnstone et al. 2011