

# Solar Dynamics Observatory (SDO)

**1Part of the Living With a Star (LWS)** program. Will observe the Sun for more than five years. Goal is to understand the Sun's influence on Earth and near-Earth space by studying the solar atmosphere.

**2Launched** February 11, 2010 from Cape Canaveral Air Force Station.

**3Mission controllers** will operate the spacecraft remotely from the Goddard Space Flight Center; send data to White Sands.

**4Study space weather**, Sun's interior, its mag field, solar radiation. Investigate the Sun's magnetic field  
How generated and structured  
How stored magnetic energy is converted and released in the form of solar wind, energetic particles, and variations in solar radiation.

**5Super resolution.** Generate approximately 1.5 terabytes of data/day.

**6Sun is in constant change** – movie? – next slide – life of solar flare.

**7Three instruments:**

Extreme Ultraviolet Variability Experiment (EVE) -- Measure the Sun's extreme ultraviolet radiation which is primarily what heats the Earth's upper atmosphere and creates the ionosphere, has a significant impact on atmospheric heating, satellite drag, and communications system degradation, including disruption of the Global Positioning System.

Helioseismic and Magnetic Imager (HMI) -- Studies solar variability and the Sun's interior and the various components of magnetic activity -- how processes inside are related to surface magnetic field and activity.

Atmospheric Imaging Assembly (AIA) -- Provides full-disk imaging of the Sun in ultraviolet and extreme ultraviolet (EUV) bands.

**8Dynamic** – sunspot cycle, some believe affects long-term weather.

**9Disrupt comm**, GPS, blackout several yrs ago.

