

For the past 3 years NASA's Solar Dynamics Observatory has been providing unprecedented views of our Sun. SDO's primary objective is to understand solar variability, on a wide range of timescales, and how this variability influences life on Earth and humanity's technological systems. It does so by a combination of high-resolution imaging and spectroscopy: the AIA (Atmospheric Imaging Assembly) instrument can image the Sun at resolutions 10 times greater than HD TV, while the EUV Variability Experiment (EVE) can quantify the most geoeffective component of the solar irradiance. However, EVE data can also be used to determine fundamental properties of solar flares; a major cause of solar variability. Accurate measurements of these properties (such as temperature, density and energy), and the time scales on which they vary, are crucial for comparing with current solar flare models to determine how these huge quantities of energy are released. Here I will present a number of recent advances made by novel analyses of EVE data, and how they relate to our understanding of solar activity over the rise of the current solar cycle.