Launched on February 11, 2010 and in full operation since May 2010, the Atmospheric Imaging Assembly (AIA) on the Solar Dynamics Observatory (SDO) has been collecting a set of eight 4096x4096 full disk images of the Sun and inner Corona every 12 seconds 24/7 - two terabytes per day. The images span the temperature range from 6000K to 20,000,000K and their cadence allows distinguishing spatial and temporal evolution. Also flying on SDO is the Heliospheric and Magnetic Imager (HMI) and the Extreme Ultraviolet Variability Experiment (EVE). HMI provides both longitudinal and vector field measurements as well as surface velocity maps for helioseismology, while the EVE provide spectral irradiance measurement with a spectral resolution of 0.1 nm from 0.1 to 105.0 nm. Operating together the SDO instruments are revealing a much more connected solar atmosphere than had previously been expected. Some of the new observations and their consequences will be presented. In particular a magnetic connection multiple flares and CME’s over more than 180 degrees has been demonstrated. Example of such events will be shown.