AUTOMATED FEATURE AND EVENT DETECTION WITH SDO AIA AND HMI DATA

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The Solar Dynamics Observatory (SDO) represents a new frontier in quantity and quality of solar data. At about 1.5 TB/day, the data will not be easily digestible by solar physicists using the same methods that have been employed for images from previous missions. In order for solar scientists to use the SDO data effectively they need meta-data that will allow them to identify and retrieve data sets that address their particular science questions. We are building a comprehensive computer vision pipeline for SDO, abstracting complete metadata on many of the features and events detectable on the Sun without human intervention. Our project unites more than a dozen individual, existing codes into a systematic tool that can be used by the entire solar community. The feature finding codes will run as part of the SDO Event Detection System (EDS) at the Joint Science Operations Center (JSOC; joint between Stanford and LMSAL). The metadata produced will be stored in the Heliophysics Event Knowledgebase (HEK), which will be accessible on-line for the rest of the world directly or via the Virtual Solar Observatory (VSO). Solar scientists will be able to use the HEK to select event and feature...
data to download for science studies.