

Hyperspectral Infrared Imager (HyspIRI) - A Sensor Optimized for Tracking Earth Surface Processes for Climate Analysis

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Among the sensors recommended in the 2007 National Research Council Decadal Survey for Earth science is a moderate resolution hyperspectral sensor with a repeat cycle sufficient to track seasonal processes in the biosphere and cryosphere. This recommendation led to the development of the HyspIRI mission concept, which is now being considered for flight in the ~2015 time period. The HyspIRI mission includes two instruments mounted on a satellite to be flown in low Earth orbit. There is an imaging spectrometer measuring from the visible to short wave infrared (VSWIR) and a multispectral thermal infrared (TIR) imager. The VSWIR and TIR instruments will both have a spatial resolution of 60 m at nadir. The VSWIR will have a temporal revisit of approximately 3 weeks and the TIR will have a temporal revisit of approximately 1 week. These data will be used for studies of terrestrial and coastal ecosystem composition, function, and condition; carbon cycle science; biomass burning (fuels, severity, recovery); water resource; volcanoes; cryospheric processes; and climate change impacts assessment and prediction. The presentation will focus on the support HyspIRI will provide to the climate sciences.

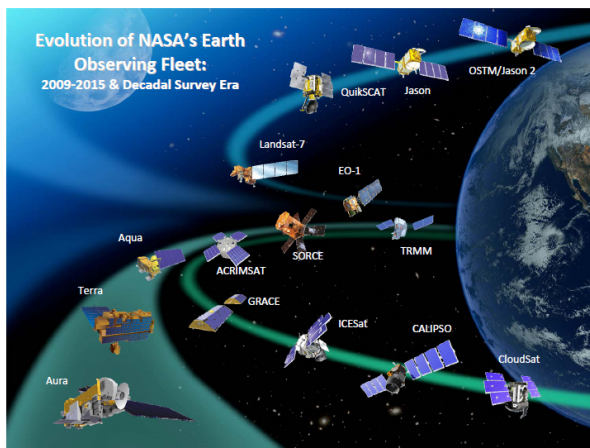


Figure 1. NASA has an extensive array of observing systems in 2010, though many are at or past their design life.

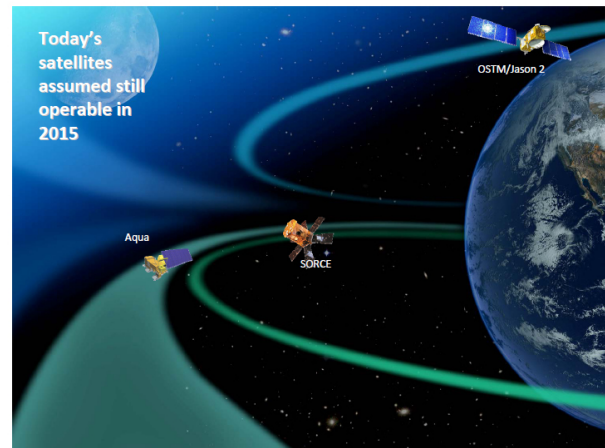


Figure 2. NASA's observing capabilities could be substantially thinned by 2015 unless new systems are deployed.