



NOAA Operational Space Environmental Monitoring - Current Capabilities and Future Directions

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During the next few years the U.S. National Oceanic and Atmospheric Administration (NOAA) will field new operational capabilities for monitoring the near-earth space environment in addition to maintaining continued measurements in geostationary orbit. The most exciting new capability will be transitioning routine solar wind and magnetic field measurements at L1 (240 Re) from the NASA Advanced Composition Explorer (ACE) satellite to the Deep Space Climate Observatory (DSCOVR) which will be launched in early 2015 with a projected on-orbit readiness in mid-2015. Also under consideration is a solar-sail demonstration mission, called SUNJAMMER, for acquiring plasma and field measurements at twice the L1 location. Both DSCOVR and SUNJAMMER will provide a near-term advanced warning of impending space weather events that can adversely affect communications, satellite operations, GPS positioning and commercial air transportation. NESDIS has also supported the development of a Compact Coronagraph (CCOR) which could provide a several day warning of space weather when coupled with an interplanetary disturbance propagation model like ENLIL. Routine monitoring of the ionosphere will be provided by the Constellation Observing System for Meteorology, Ionosphere and Climate (COSMIC) II as a system which is a partnership among the Taiwan's National Space Organization, the U.S. Air Force and NOAA. The new operational capabilities provided by DSCOVR, SUNJAMMER, CCOR and COSMIC II are provided against the backdrop of continued space environmental measurements from the Geostationary Operational Environmental Satellites (GOES) which, in the near future, will transition to the GOES-R series of advanced space weather sensors. Continued space environmental measurements in polar low earth orbit (LEO) will continue to be provided by the remaining Polar Operational Environmental Satellites (POES) and the European MetOp satellites. Instrument specialists at the National Geophysical Data Center and Space Weather Prediction Center are using a combination of operational measurements and models to develop advanced now-cast and forecast space weather applications. Present and future capabilities include but are not limited to the Oval Variation Assessment Tracking Intensity and Online Now-casting (OVATION) Prime based auroral forecast and magnetopause location and geosynchronous crossing detection applications.