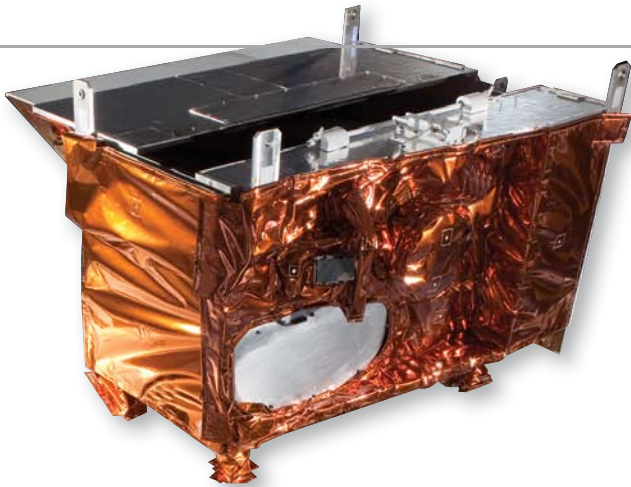


Visible/Infrared Imager Radiometer Suite (VIIRS)



The Visible/Infrared Imager Radiometer Suite will provide advanced imaging and radiometric capabilities for next generation civil and military Earth monitoring.

Benefits

- Designed to last nearly twice as long on orbit as the current operational polar weather sensors
- Able to meet environmental research program needs for a significant number of measurement types
- Maritime industry – ocean winds, waves, currents, marine warnings, and forecasts improve vessel routing for safety, fuel savings and efficient operations
- Commercial fishing industry – knowledge of sea surface temperature and ocean color
- Agricultural industry – fire monitoring, vegetation index, frost, hail, and flood warnings critical to production yield
- Helps to protect life and property

Meeting Environmental Forecasting and Research Needs

Next generation requirements for environmental research, weather forecasting and climate monitoring will be met by the Joint Polar Satellite System and Defense Weather Satellite System programs. Measurement capabilities for JPSS (a NOAA/NASA program) and DWSS (a U.S. Air Force program) include: atmospheric parameters such as clouds, radiation, temperature, humidity and ozone distribution; land surface parameters such as snow cover, vegetation and land use; ocean parameters such as sea surface temperature, phytoplankton production, sea ice, surface wind fields and sea height; and solar parameters such as total solar irradiance.

Future Capabilities Surpass Those of Current NOAA and DoD Polar-orbiting Satellites

In addition to maintaining the current NOAA polar-orbiting satellite capabilities, the JPSS and DWSS satellites will meet Department of Defense requirements derived from the Defense Meteorological Satellite Program, which is being converged into the new platforms. Thus, the JPSS and DWSS satellites represent the combined civil and national security requirements of these two programs. Additional civil requirements that will be met include increased sensitivity in moisture and temperature profiles and ozone mapping and profiling, as well as ocean color.

Additional DoD requirements that will be met by these next generation satellites include increased data availability and

data access. The satellites will be designed to last nearly twice as long on orbit as the current satellites.

VIIRS Capabilities

Raytheon's Visible Infrared Imager Radiometer Suite will combine the radiometric accuracy of the Advanced Very High Resolution Radiometer (AVHRR) currently flown on the NOAA polar orbiters with the high spatial resolution (0.65 km) of the Operational Linescan System (OLS) flown on the Defense Meteorological Satellite Program (DMSP). As a key part of the JPSS and DWSS programs, VIIRS will provide imagery of clouds under sunlit conditions in approximately a dozen bands, and will also provide coverage in a number of infrared bands for night and day cloud imaging applications.



A Raytheon engineer prepares the first VIIRS sensor, completed in January 2010, for customer delivery.

VIIRS will have multiband imaging capabilities to support the acquisition of high resolution atmospheric imagery and generation of a variety of applied products including visible and infrared imaging of hurricanes and detection of fires, smoke and atmospheric aerosols.

VIIRS will also provide capabilities to produce higher resolution and more accurate measurements of sea surface temperature than currently available from the heritage AVHRR instrument on POES, as well as provide an operational capability for ocean-color observations and a variety of derived ocean-color products.

Instrument Specifications

Spectral Bands	
Visible/Near IR:	9 plus day/night pan band
Mid-Wave IR:	8
Long-Wave IR:	4
Imaging Optics:	19.1 cm aperture, 114 cm focal length
Orbit Average Power:	200 Watts
Weight:	275 kg
Data Acquisition Parameters:	
Scanned Swath:	$\pm 56^\circ$, 3000 km
Horizontal Sample Interval on Ground:	<1.6 km @ end of scan
Data Quantization:	12 bit –14 bit A/D converters for lower noise
Data Rate:	10.5 Mbps (max.)

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