VIIRS use for the AF and EWS

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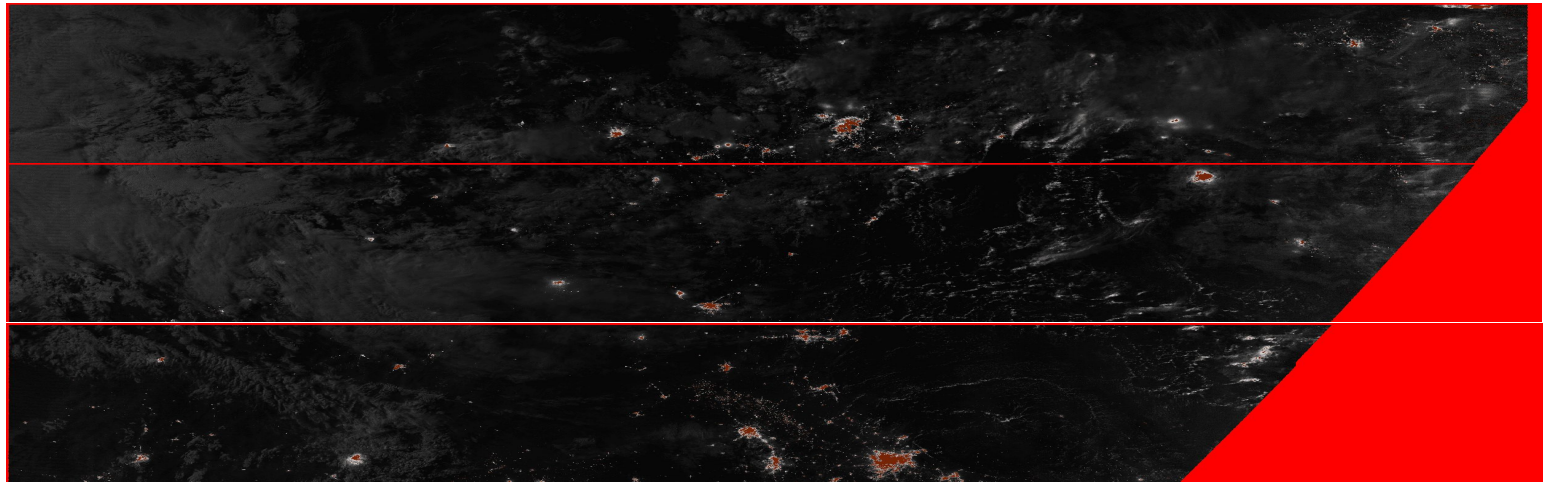
Did You Know?

- The original Day-Night Band (DNB) requirement came from the Department of Defense?
  - The development of the Near Constant Contrast (NCC) Imagery was based on the same logic used for the Operational Line Scan (OLS) payload on DMSP, circa late 1970s
  - NCC Imagery became a Key Performance Parameter in the mid-2010s
- The original Imagery requirement included only I-bands and the DNB as official Imagery products?
  - Months of negotiations in the 2004/2005 time-frame led to the addition of 6 M-bands as Imagery, driven by a compromise between the basic Imagery requirements and concerns with impacts to ground processing
  - Only in 2020 were all bands from VIIRS created as Imagery products
- The original VIIRS Cloud Mask (VCM) Cal/Val process for SNPP included a “30-day spin up” to allow downstream EDR Cal/Val processes to begin
  - During SNPP all VIIRS EDRs depended on the VCM, a paradigm established under NPOESS
  - The VCM finished this spin up less than 90 days after launch, before SDRs formally reached “beta”
  - The Enterprise Cloud Mask (ECM) replaced the VCM, in part, to give users more control in how the cloud mask defined “cloud” for their purposes

Early DNB Issues (all resolved during SNPP)



The “missing triangle”
Red means Not Available

Stray Light

Use of VIIRS in 557th WW Operations

Cloud Analysis

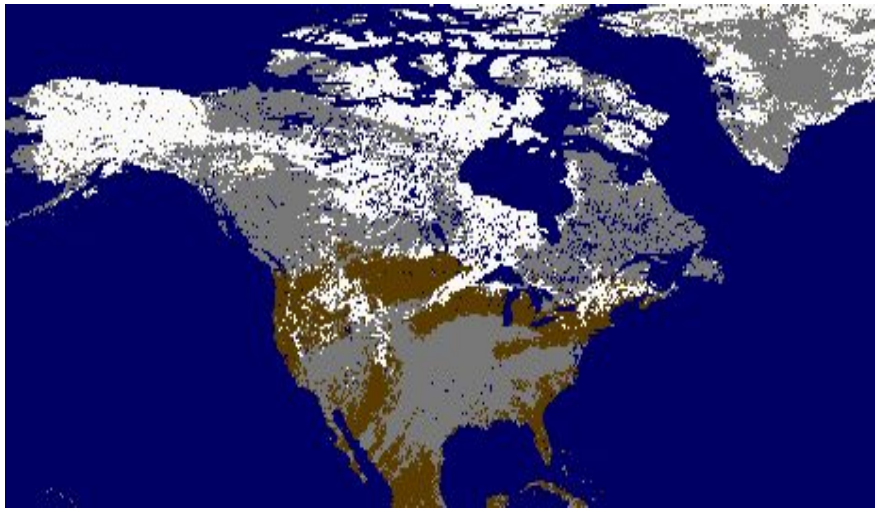
- VIIRS plays a vital role in our Cloud Analysis and Forecasting Mission
  - Particularly in polar regions where geostationary coverage is not available

Land Analyses

- VIIRS binary products are used heavily in the Land Surface Modeling Missions
  - Utilization of high resolution VIIRS products offer great improvement over legacy methods of Data Assimilation

Imagery

- VIIRS Imagery is displayed to users worldwide in support of tactical and strategic planning and operations

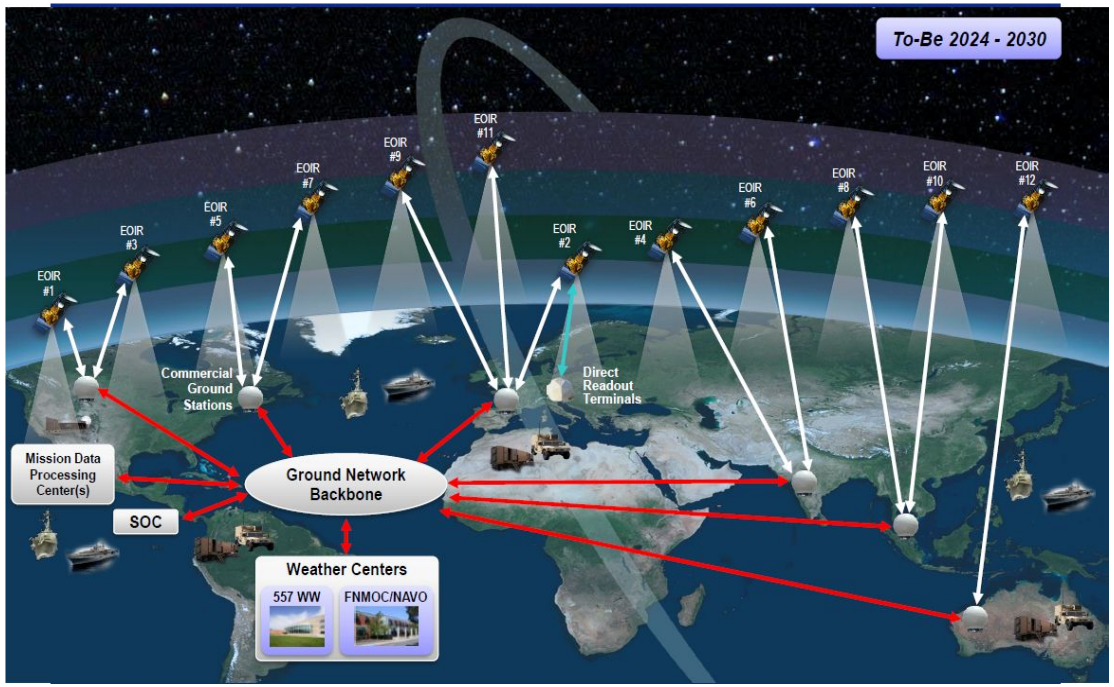


VIIRS Binary Snow cover

EO/IR Weather System (EWS)

Program Description:

- Multi-phase acq to provide scalable/resilient EO/IR imaging capability to address SBEM Gaps #1 (Cloud Characterization) and #2 (Theater Weather Imagery) requirements:
  - Use in mission planning, execution & BDA; supports joint ops needs & key to intelligence community collection capabilities
  - Feeds DoD Wx center modeling w/ rapid refresh of global cloud analysis, allowing for timely/accurate forecast updates
  - Maximizes mil advantage; enables warfighters to outpace adversary w/ most-up-to-date environmental intelligence
- System Capability: multi-spectral radiometer/imager
  - Collects/disseminates global hi-res visible/thermal cloud coverages & terrestrial atmospheric phenomena to DoD forces & intel community
  - Vis/IR cloud 3-D monitoring
  - Atmospheric phenomena detection/tracking
  - Nighttime activities
- Contracts/Prime Vendors
  - Prototype: Orion Space Solutions
  - Inc 0: General Atomics (GA)



Program Status – on-track to meet FY20 NDAA requirement:

- Orion prototype demo ILC by FY23
- Contract option exercised for GA Inc 0 ILC by FY25