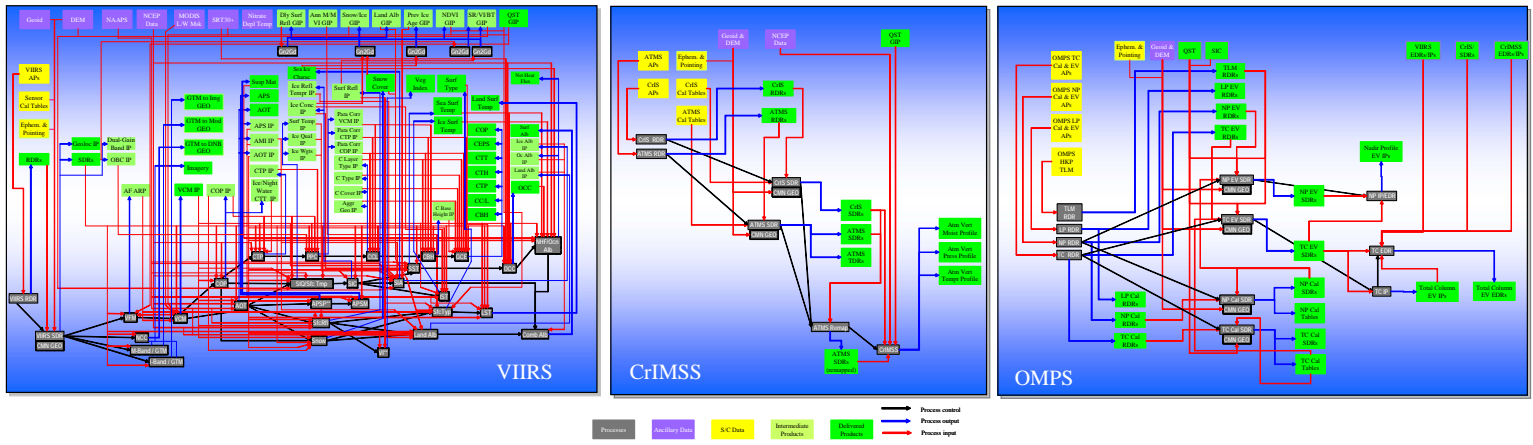


National Polar-orbiting Operational Environmental Satellite System (NPOESS)

NPOESS Preparatory Project (NPP) Environmental Data Products Quality and Latency



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NPOESS products are created from a complex network of processing algorithms. A number of interdependencies between algorithms exist in order to provide the required data quality to the end User. The diagrams above illustrate the interdependencies between products and processes within the IDPS needed to generate the NPP-era SDRs, EDRs, and Gridded Intermediate Products (GIP's). The algorithm interactions for the NPOESS era will be even more intricate

Figure 1 – EDR Production

IORD Compliant EDRs

VIIRS

Imagery	Veg Index	Cld Eff Part Size	Cld Top Press
Susp. Matter	Surf Type	Cld Top Temp	Cld Base Height
Surf Albedo	Cld Opt Prop	Cld Top Height	Net Heat Flux
Sea Surf Temp	Ice Surf Temp		

CrIMSS

Vert Moist Prf
Vert Temp Prf
Vert Press Prf

OMPS

Ozone TC/NP

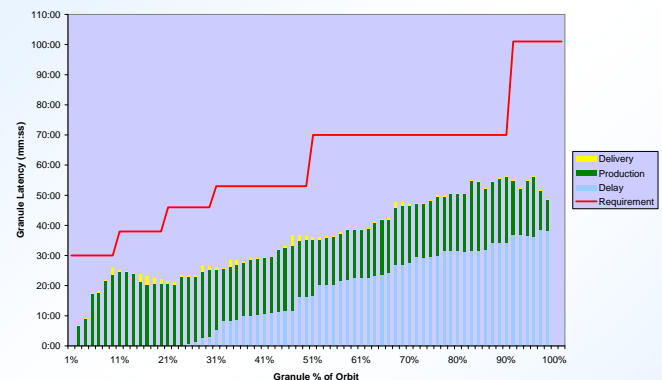
VIIRS EDRs In Work to Meet IORD Requirements

Aero Opt Thk Performance expected to be similar to MODIS with improved spatial resolution. Bias versus AERONET over ocean will be investigated and resolved. Additional enhancement for AOT over land possible.	Snow Cover Research is being monitored for potential infrared sensors use to determine snow cover depth. Snow fraction is being retrieved using imaginary resolution binary map. Expected Uncertainty of 25%. Spectral mixing algorithm does not work at this time and will not be implemented operationally.
Sea Ice Charac Research being monitored for improvements. SIA energy balance to classify First Year and New Young ice require further evaluation. Daytime performance approaches spec for Probability of Correct Type.	Ocean Color/Chl Current estimates of ACO inherent algorithm error are being estimated. Quantitative performance results with adequate confidence depend on analysis of VIIRS Synthetic Data. Accuracy spec will be met if Vicarious Calibration significantly reduces OC-C EDR errors, and if optical cross talk is mitigated.
Cld Cvr/ Layers Performance expected to be similar to MODIS, with improvements in some areas. Work continuing in collaboration with the science community to improve probability of correct typing for clear day over land and under all required environmental conditions.	Land Surf Temp Emissivity knowledge limits precision of retrieval. Expected performance 1.0K using split window during day. Science limitation is due to variation in surface emissivity within land surface types.

Figure 2 – EDR Quality Assessment

VIIRS Granule Performance vs. IDPS Requirement

SegInt5 OITL with 3-copy delivery, dual composite index prototype



The IDPS NPP Latency requirement is shown by the red line. It specifies the maximum time allowed to deliver a given percentage of the products on a per orbit basis. The vertical bars show the latency of specific granules within the orbit, inclusive of all products for that granule, delivered three separate times. Time zero for each granule begins with the arrival of that granule's primary RDR at the IDPS. The three copy delivery portion of the test demonstrates the maximum required delivery volume at a given Central. IDPS outperforms its NPP latency requirements by a considerable margin.

Figure 3 – EDR Latency Assessment