VIIRS Data Products at the Naval Oceanographic Office

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Ocean Feature Analysis

Supports ASW and Maritime Operations
WPAC, EPAC, NLANT, WIND, GIUK, MED

N-19
Metop-A
Metop-B
NPP

Satellite
Digital Imagery
Analysis

Annotated Imagery

Overlay2 Message

JOTS Message

Ocean Feature Analysis

Overlay2 Message

NRL–Stennis
Model validation

NOAA/NWS/NCEP/EMC
Ocean Model Validation

NOAA/NWS/NCEP/OPS
24hr Wind/Wave Forecast Chart
Ocean Model Validation

NOAA/NWS Forecast Offices
Coastal Marine Forecasts
Offshore Forecasts

Canadian Hydrographic Office
Digital Charts
Analyses

UK Hydrographic Office
Digital Charts
Analyses

UK Royal Navy
Decision Aids
Staff Briefing Material
Environmental Assessments
• OPS Planning
• Area Familiarization

NAVY FLEET
ASW Decision Aids
Staff Briefing Material
Environmental Assessments
• OPS Planning
• Area Familiarization

COAST GUARD ICE PATROL
Atlantic Iceberg Extent
Sea Ice Conditions

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Ocean Optics

- Product is designed to predict optical visibility from above the water.
- 7 Day Composites can remain substantially cloud filled.

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Climatology products can be used for planning.

Monthly climatology products are cloud free for most of the globe with some exceptions; Indian Ocean during Monsoon season.

Monthly climatology products average out all but seasonally persistent features.
Ocean Optics

- 7 Day Composites can resolve finer detail of eddies and fronts.
Implementation of Linear Matrix Inversion (LMI) in AOPS allows NAVO to merge Navy products from MODIS AQUA and NPP VIIRS. Multiple satellites will be used to provide **ONE** merged set of Navy products to the war fighter.

**MODIS AQUA Vert. Vis.**

**NPP VIIRS Vert. Vis.**

**MERGED Vertical Visibility**

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Satellite Sources – NAVO SSTs

Polar
- NOAA–18 GAC
- NOAA–19 GAC, LAC
- METOP–A GAC, FRAC
- METOP–B GAC, FRAC
- SNPP

Geostationary
- GOES–15 (WEST)
- GOES–13 (EAST)
Other SST Data Sources

- MTSAT (NOAA)
- MSG–3 (IFREMER)
- WindSAT (REMSS)
Future SST Data Sources

- Polar
  - AMSR–2
  - JPSS
  - Sentinel–3

- Geostationary
  - Himawari–8
  - GOES–R/S
  - MSG–4

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NAVOK 10km Gridded SST Field
VIIRS SST Enhancements

- NPP/VIIRS SST Process Improvements
  - Full swath processing
  - Extended bounds
  - Improved contamination screening techniques
  - New Algorithms
  - High Quality

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NRL tasks for FY16:

- Determine VIIRS ice concentration EDR errors
- Update the current data assimilation module (NCODA) to include VIIRS ice concentration EDR's
- Test the assimilation of VIIRS ice concentration into the existing ice forecast systems
Future NRL task:

- Investigate using VIIRS ice surface temperatures as a possible new data source for assimilation into Naval ice forecast systems.