

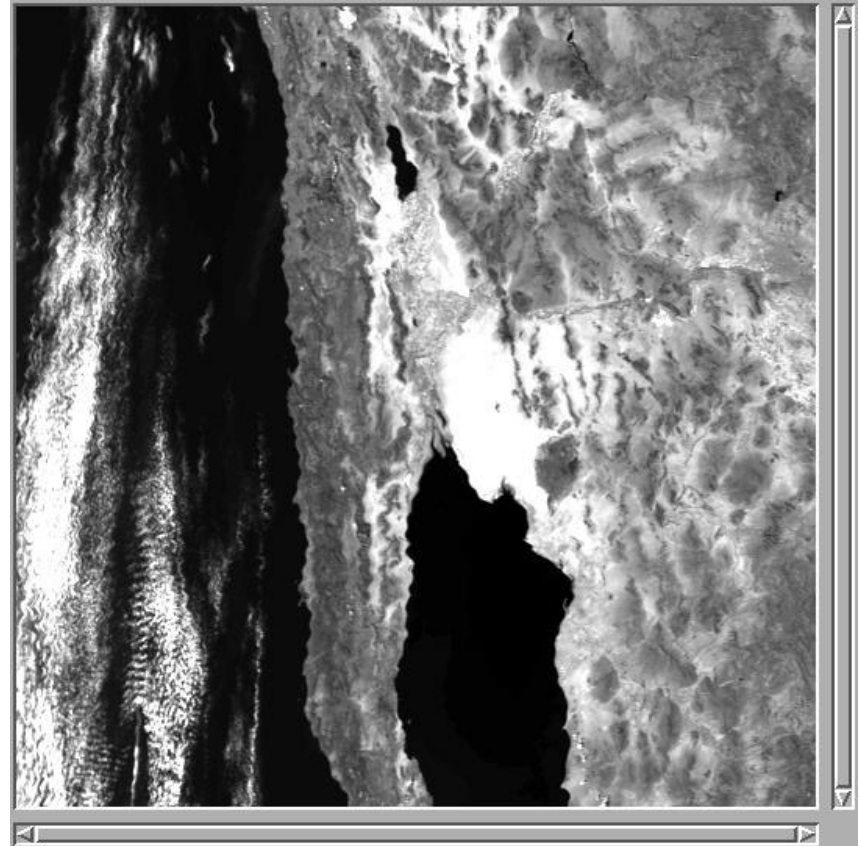
NOAA/NESDIS MODIS Transition to “Operations” Plan

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Motivation

- AVHRR on NOAA-16 is malfunctioning
- Greg Withee asked if we could use MODIS as an alternative/backup
- Letter to Withee from Justice asking how MODIS products are transitioned from research to operations



Workshop Objective

- Identify potential operational products from MODIS.
- Define the overlap between MODIS Science Team processing systems, algorithms and products and operational requirements of NESDIS users.
- Workshop report containing “Statement of Needs”, recommendations and budget estimates.
- Report will be presented to Greg Withee and NESDIS Office Directors. NASA management will be invited.

June 9th workshop

- Over 50 participants
- Morning session – presentations by discipline leaders – Justice, King, McClain, Feldman, Minnett
- Afternoon session
 - presentations by NOAA users – NCEP (land - Mitchell), NOS (ocean - Stumpf), JCSDA (atmosphere – LeMarshall)
- Open discussion
 - Identified potential “operational” products

NESDIS Real-Time MODIS activities

NOAA processing system at Goddard managed by Gene Legg.

We currently receive the raw telemetry (rate buffered) MODIS data, convert them to Level 0 (time ordered packets) and process to Level 1B (reflectance or radiances, depending on the channel) and then Level 2 (geophysical products...Land, SST, Ocean Color, etc.).

We provide the Level 0 data to the NASA RapidFire system, used to generate near real time fire images and applications.

We also provide the Level 0 data to the NASA Oceans Group (NPP Prototype Applications).

NESDIS Real-Time MODIS activities

Level 1B data are provided to the NASA Short-term Prediction Research and Transition Center (SPoRT) at Marshall.

Level 1B data are provided to the ORA and CIMSS for MODIS polar cloud drift winds product which has had an extremely positive impact at JCSDA(NCEP and GMAO) and ECMWF

L1B data are provided to the Navy (NRL at Monterey) who produce cloud/snow and cloud/dust discrimination imagery, using their own algorithms.

L1B data (images) are provided to NAVO at Stennis.

L1B data (images) are provided to the Air Force, primarily over the Middle East, for tactical support.

NESDIS Real-Time MODIS activities

L1B and L2 (Snow) data are provided to the NIC (National Ice Center).

L1B and L2 (Oceans and SST) are provided to NOAA CoastWatch.

L1B data and images are provided to the NOAA Hazards Project in SSD, via SATEPS.

NESDIS is modifying the AIRS processing package to integrate MODIS data to improve cloud clearing.

NESDIS will provide in near real-time, globally, a subset of products from the existing MODIS science team suite of ocean color and SST products, plus some NOAA unique products, from both AQUA and TERRA platforms.

Current Issues

- Communication constraints restricts the distribution of level 1 and level 2 data.
- Additional products are needed (NOAA-unique products).
- Ensure quality – a vibrant and sustained cal/val program.
- Ensure continued hardware maintenance.
- Budget

Definition of Operational Processing

- 24 x 7 continuous monitoring
- Redundant hardware
- Robust software, easily maintainable with documentation
- Sustained Science Support (including cal/val)
- User training and forums
- Archiving, with metadata
- Budget to sustain these activities

Discussion Highlights

- Should MODIS products be part of NESDIS operational suite requiring 24/7 operations and associated reliability support or in a quasi-operational mode (similar to the current MODIS and AIRS processing)?
- It was agreed that as long as NOAA AVHRRs were functioning, there appeared to be little reason for demanding a full-up operational capability, especially when there are no follow-on missions.
- A fallback to AVHRR can be accomplished by producing a AVHRR proxy level 1b from MODIS. This would provide users, using existing communication infrastructure, with AVHRR-like products.
- Delivery of quasi-operational MODIS products would serve as a bridge to prepare NOAA customers to advanced products from NPP and NPOESS.

Discussion Highlights

- Identified potential operational MODIS products.
- Agreed to convene NOAA/NASA land, ocean and atmosphere teams to prepare preliminary reports addressing the following topics:
 - Statement of NOAA user requirements
 - List of MODIS products to be transitioned to NOAA
 - Recommendations on communications, system architecture, and science support – cal/val, algorithms, Q/C, archive
 - Management structure for the program, including the NASA/NOAA partnership
 - Budget estimates for implementing the program

Land

Potential MODIS “operational” products

<u>Product</u>	<u>Resolution</u>	<u>Coverage</u>	<u>Frequency</u>
• Snow cover	1 km	Global land	by orbit and daily map
• Snow fraction	1 km	Global land	by orbit and daily map
• LST	1 km	Global land	daily map (day/night)
• Green vegetation fraction	1 km	Global land	weekly
• LAI	1 km	Global land	weekly
• Fire location (lat/long)	1 km	Global land	by orbit
• Fire temperature	1 km	Global land	by orbit
• Fire area		Global land	by orbit
• Burn scars		Global land	weekly

Atmosphere

- Polar winds
- Radiances for AIRS cloud detection /clearing
- Aerosol optical depth and particle size
- Volcanic ash
- Water vapor
- Stability indices
- Ozone
- Air quality
- OLR

Ocean

- Chlorophyll
- Water clarity
- Turbidity (suspended material)
- SST
- Water reflectance
- Absorption
- Backscatter

Summary

- Report will be prepared and presented to NESDIS and NASA management (~October).
- This report will include end-to-end requirements for MODIS quasi-operational products.
- Products are important for getting users ready for NPP and NPOESS and also to obtain important feedback from users so that we can maximize the investment of NPP and NPOESS.
- A sustained cal/val program needed to support routine production of MODIS products can provide a pathfinder for NPP and NPOESS.
- NOAA cannot do it alone, we need to continue our relationship with NASA not only for EOS but also for NPP and NPOESS.