



# **VIIRS Land PEATE**

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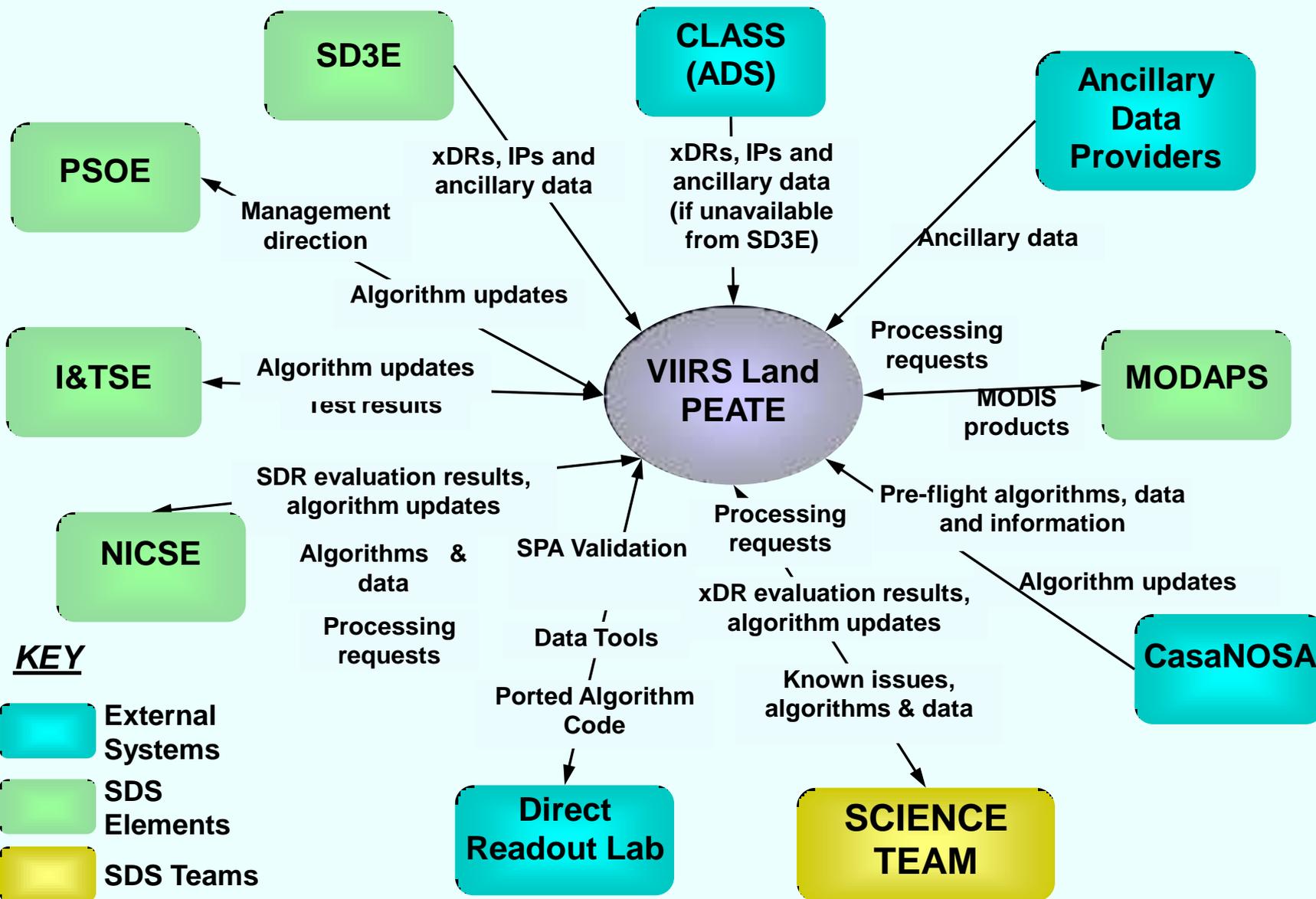
# Land PEATE Overview



- The NPOESS Preparatory Project (NPP) VIIRS Land Product Evaluation and Algorithm Test Element (PEATE) supports the NPP Science Team in assessing the utility of NPP Land Environmental Data Records (EDRs) for climate research
- Land PEATE builds upon the MODIS approach and infrastructure for science team support, product generation and quality assessment
  - ❑ VIIRS product generation software runs in MODAPS
  - ❑ Gridded (Level 3) products (Diagnostic Data Records) facilitate comparison with MODIS products and ground-truth
  - ❑ Products available online for Science Team evaluation
  - ❑ LDOPE (Land Data Operational Product Evaluation) team works with Science Team in evaluating product quality
- Land PEATE supports CERES on NPP with reprocessing of VIIRS SDR and aerosol products

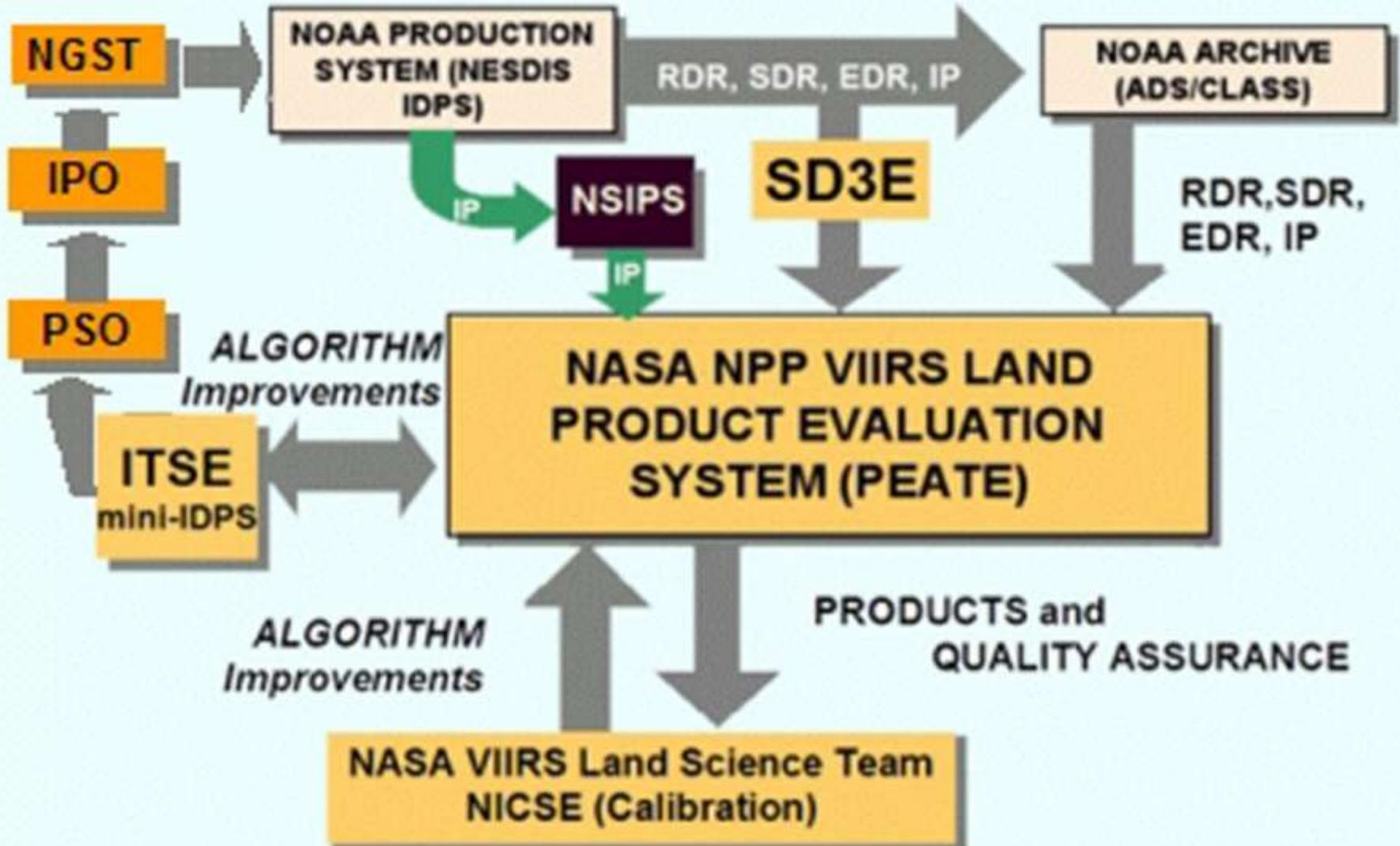


# Land PEATE Context Diagram





# Product Evaluation Flow

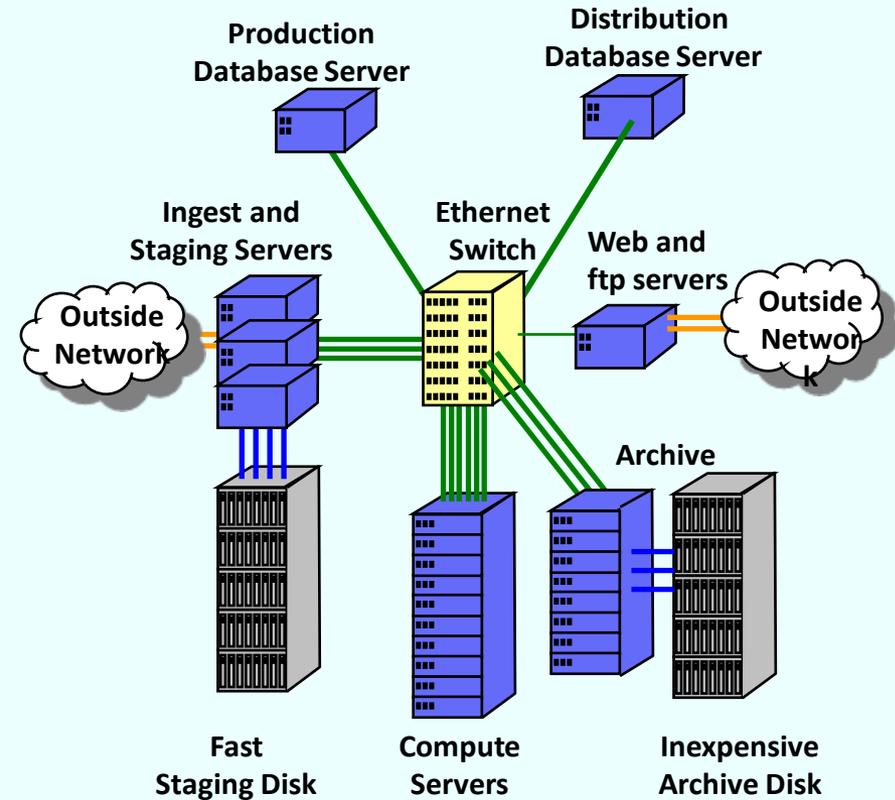




# Land PEATE Architecture - Overview



- Uses MODAPS software for processing and distribution
- Scalable clusters of inexpensive Intel-based servers running open source software
- Now: 16 servers and 20TB storage running VIIRS SCI and OPS s/w and Science Team improvements.
- At launch, 120 servers and 600GB storage, run processing at least 10x





# Upcoming Milestones



- Power installed for servers and storage – September 2008
- 360TB of storage and 40 more servers installed – October 2008
- Upgrade network bandwidth (1GigE to 10 GigE) – December 2008
- Launch-ready build of Land PEATE (Build 3) – March 2009
- Functional thread tests (ingest XDRs, validate XDRs, support Cal.) – June 2009
- “Day in the Life” test with NPP SDS – January 2010

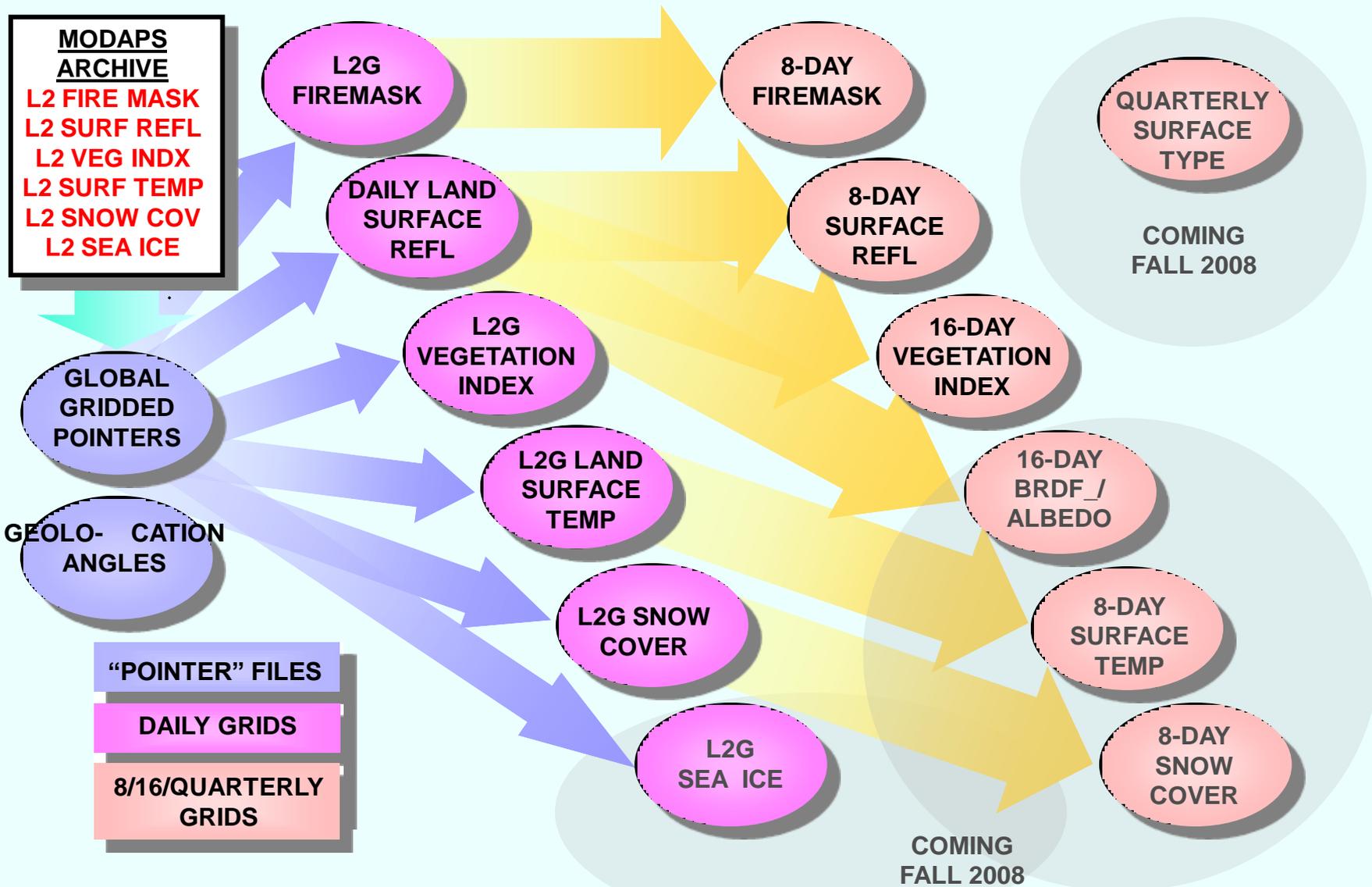


# LPEATE L2 PROCESSING





# LPEATE DIAGNOSTIC DATA RECORDS





# OPS code re-integration (Build 1.5)



Software	Status
Fire Mask	Completed
Cloud Mask	Completed
Aerosol Optical Thickness	Completed
Surface Reflectance	May
Vegetation Index	May
Land Surface Temperature	June
Aerosol Particle Size, Suspended Matter	June
Surface Type	June
Land Surface Albedo	July
Cloud Optical Properties	July
Snow	July
Sea Ice Characterization, Ice Surface Temp.	August



# Build 1.5 integration and DDRs



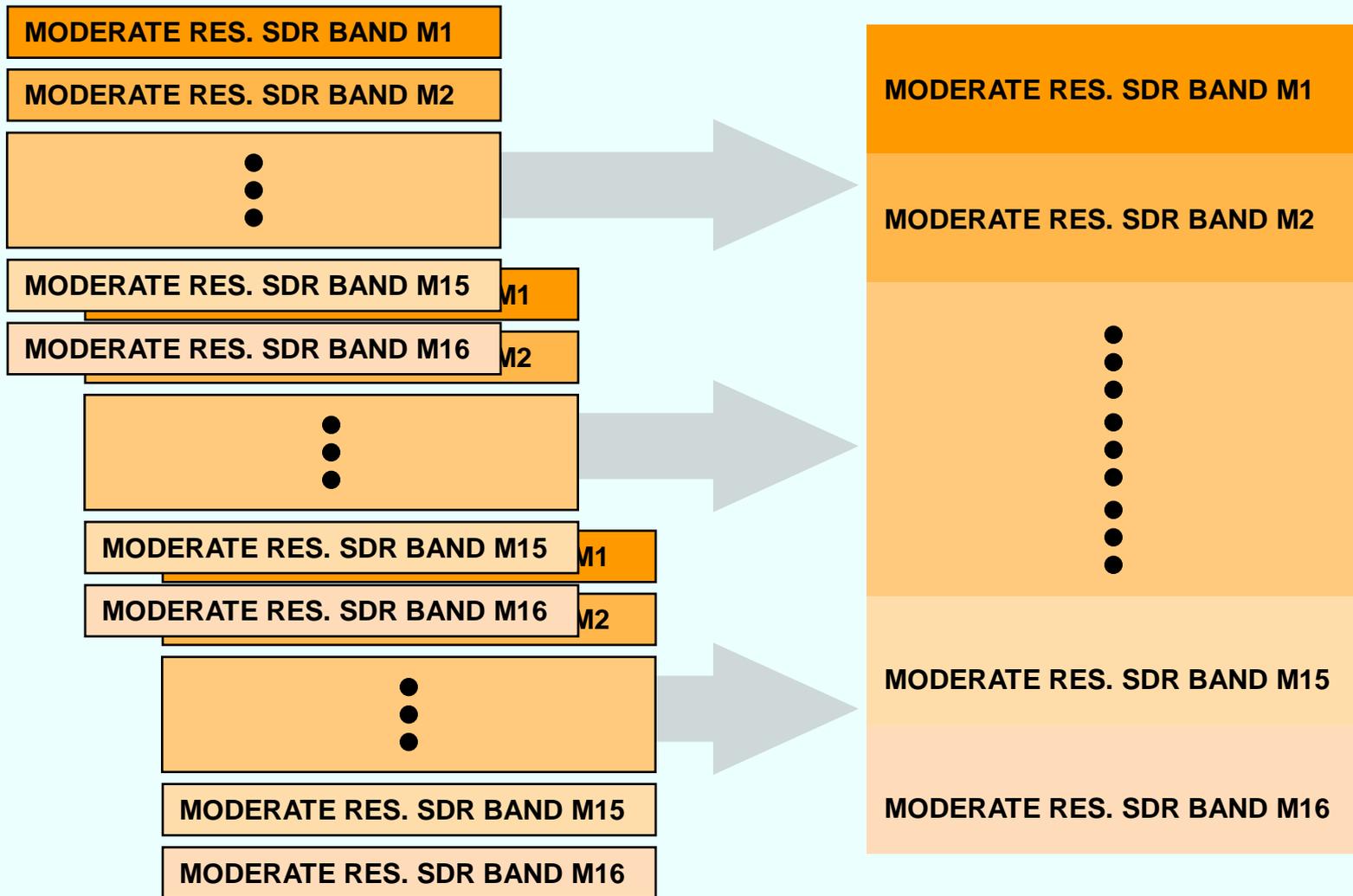
Software	Status
RDR-SDR-GEO Code	June-July
OPS Granulation/Gridding Wrapper	June-July
Granulation to Gridding Routines	July
Gridding to Gridding Routines	August
Adapt MODIS L2g to VIIRS geometry	Completed
VIIRS L2g pointers and L2g geo-angles	Completed
Daily Surface Reflectance, Fire and Snow DDR	Completed
8-day Surface Reflectance, Surface Temperature, Snow and Fire	June-Sept
16-day BRDR/Albedo, VI	October
96-day Surface Type	December



# LPEATE LEVEL 1 & 2 HDF5->4 AGGREGATOR

## IDPS 48-SCAN SINGLE-BAND HDF5 PRODUCTS

## AGGREGATED HDF4 APPROXIMATE 5-MINUTE GRANULES





# HDF 5->4 AGGREGATOR GUI



h54Aggregator

Input Files

/NPPdev/miniIDPS/V1.5\_Data/SDR/Gr  
/NPPdev/miniIDPS/V1.5\_Data/SDR/Gr  
/NPPdev/miniIDPS/V1.5\_Data/SDR/Gr  
/NPPdev/miniIDPS/V1.5\_Data/SDR/Gr

Output File SVDNB\_aggregated.hdf

Add Input Files

Begin Aggregating

Options

- Compress output (using GZIP compression)
- Append date and time to output filename
- View detailed output
- View simplified output
- First time segment missing
- First 2 time segments missing
- Last time segment missing
- Last 2 time segments missing

Additional Attributes

ShortName = SVDNB

Attribute Name

Attribute value

Add Attribute

Output

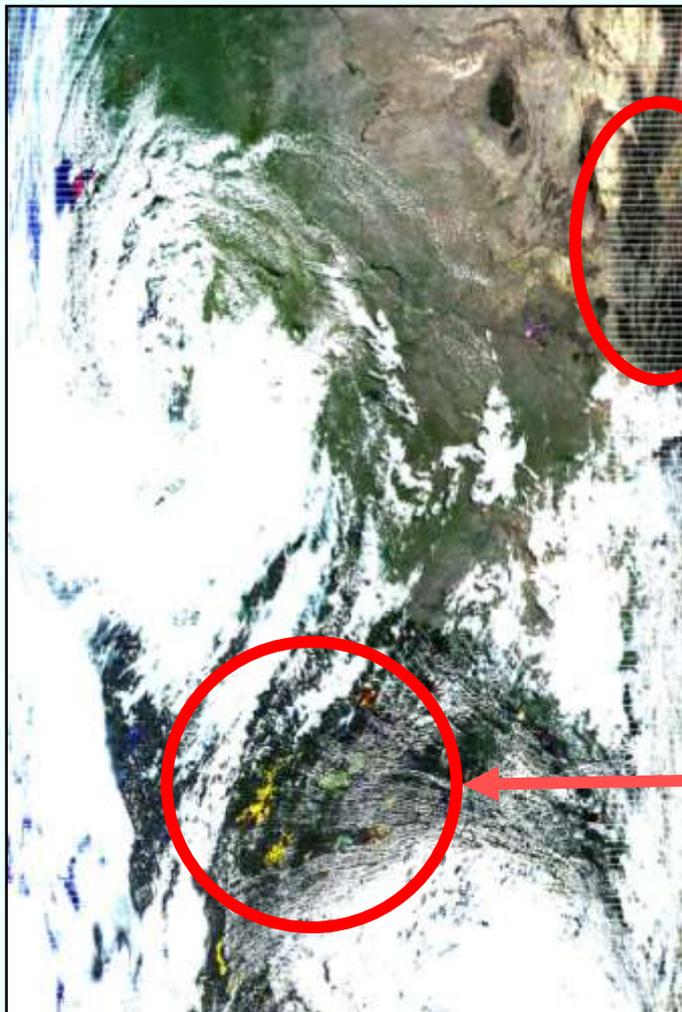
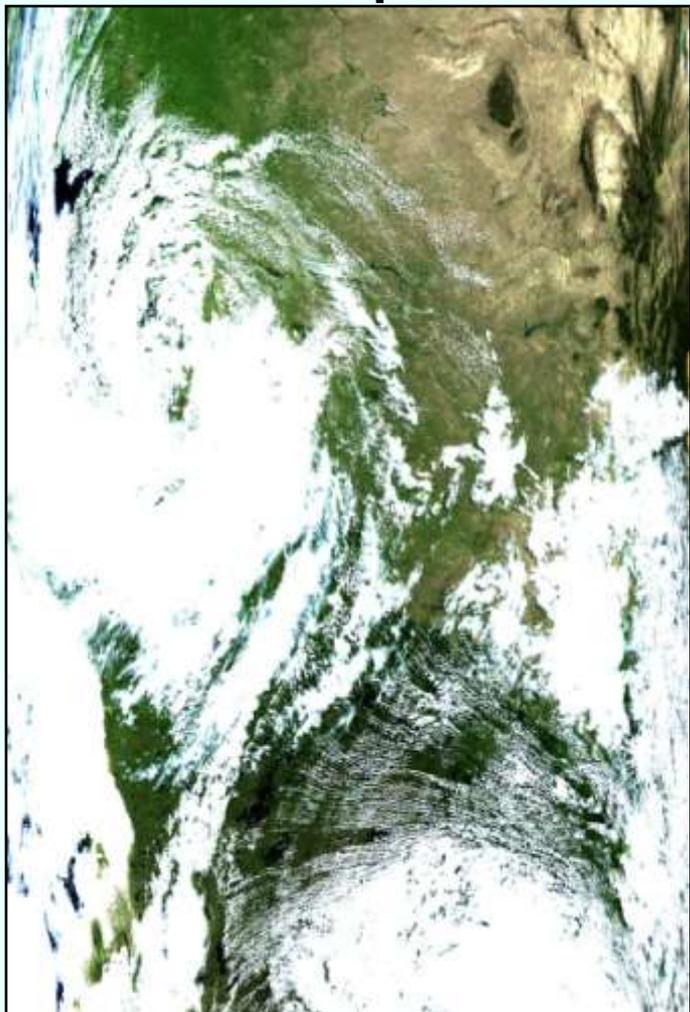
Aggregator is working...

```
Aggregating /NPPdev/miniIDPS/V1.5_Data/SDR/Granule_2008_0131/SVDNB_npp_d20030125_t084539_e08-
Scanning input files for group, dataset, and attribute names
/NPPdev/miniIDPS/V1.5_Data/SDR/Granule_2008_0131/SVDNB_npp_d20030125_t084539_e084705_bc
/NPPdev/miniIDPS/V1.5_Data/SDR/Granule_2008_0131/SVDNB_npp_d20030125_t084705_e084830_bc
/NPPdev/miniIDPS/V1.5_Data/SDR/Granule_2008_0131/SVDNB_npp_d20030125_t084830_e084955_bc
/NPPdev/miniIDPS/V1.5_Data/SDR/Granule_2008_0131/SVDNB_npp_d20030125_t084955_e085121_bc
Skipping "Mode": No LPEATE name found
Skipping "Pad": No LPEATE name found
Skipping "Pad2": No LPEATE name found
Retrieving scan information from the input files
Reading from input files and writing datasets to the output file
Writing fill fields
  QF_VIIRS_DNB_SDR_1
  QF_VIIRS_DNB_SDR_2
  QF_VIIRS_DNB_SDR_3
  Radiance_Dnb
  scan_mode
Reading in and writing out datasets:
```

# Algorithm Comparison

**MODIS Aqua C5**

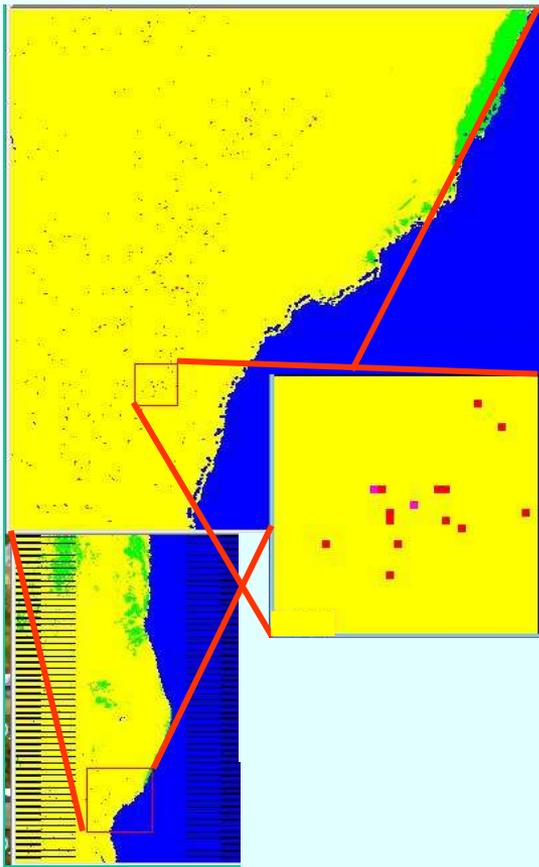
**NPP Build 1.4/1.5**



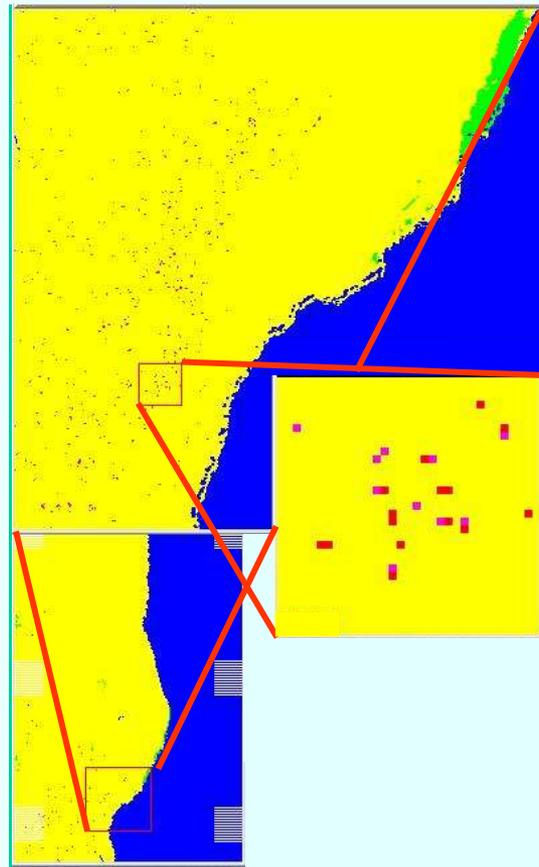
**BOWTIE DELETIONS  
(REMOVED ON  
REPROJECTION)**

**UNREALISTIC  
VALUES DUE TO  
OVERCORRECTION**

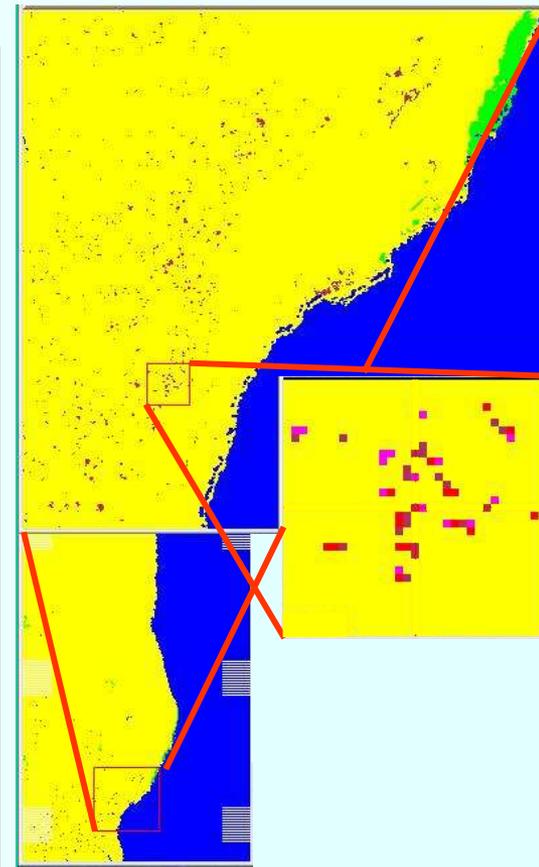
**Land Surface Reflectance (2002/222 19:40)**



**Science Code  
Algorithm**



**OPs V1.4 Code  
Algorithm**



**OPs V1.5 Code  
Algorithm**

**2002222 12:45 Namibia**