National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Sounder PEATE Status

NPOESS Preparatory Project (NPP)

California Institute of Technology
Jet Propulsion Laboratory

April 28, 2011

This work was carried out at the Jet Propulsion Laboratory, California Institute of Technology under a contract with the National Aeronautics and Space Administration.

Topics

Sounder PEATE Staffing

Application Software and Processing System Status

Hardware Status

Plans for the Future

But first…

JPSS in the age of austerity.

An experiment in saving money through restructuring.

... JPSS formed out of the ashes of NPOESS – February 2010

- Effects all aspects of NPP program
- IPO is out
- All IPs are retained!
- GRAVITE is out … no it's in, and they will provide IPs

- The role of the PSOE as a functional intermediary between the SDS/PEATEs and the Science Teams is out.
  … the connection is more direct!

- The role of the PEATES and Science Teams with the newly constituted JPSS Software Change Control Board is TBD!

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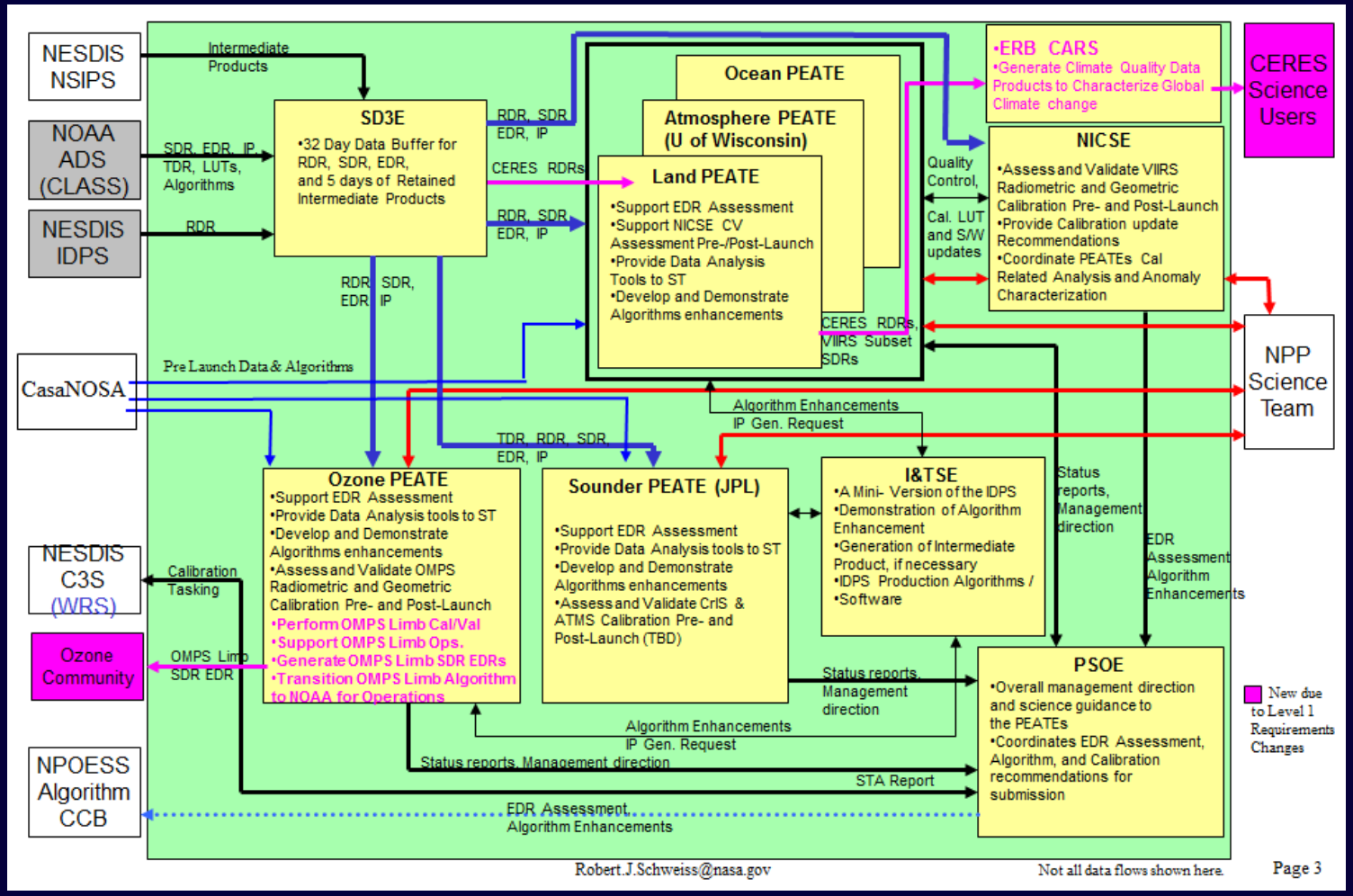
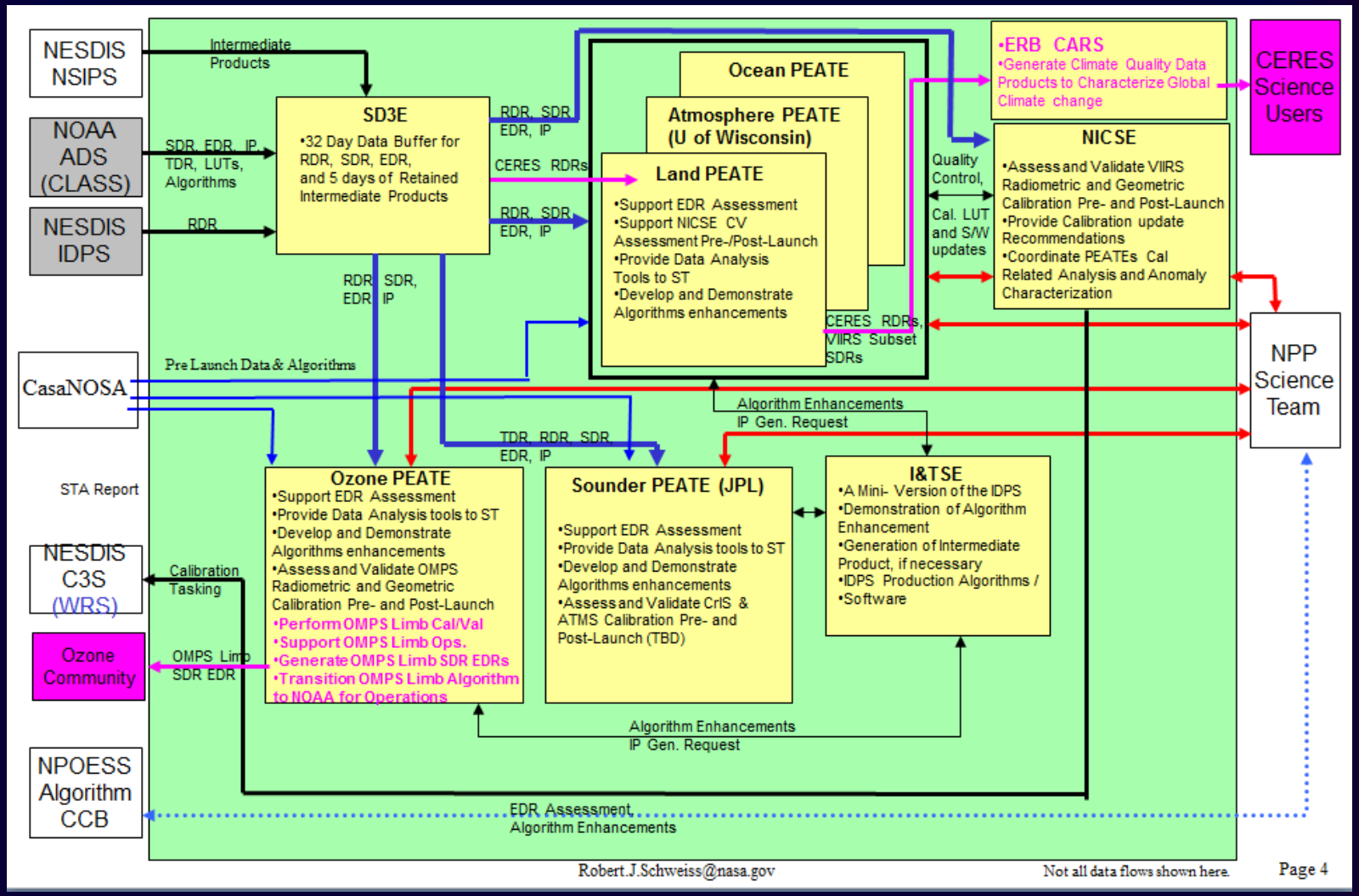
SDS Interfaces as They Were



SDS Interfaces as They Are



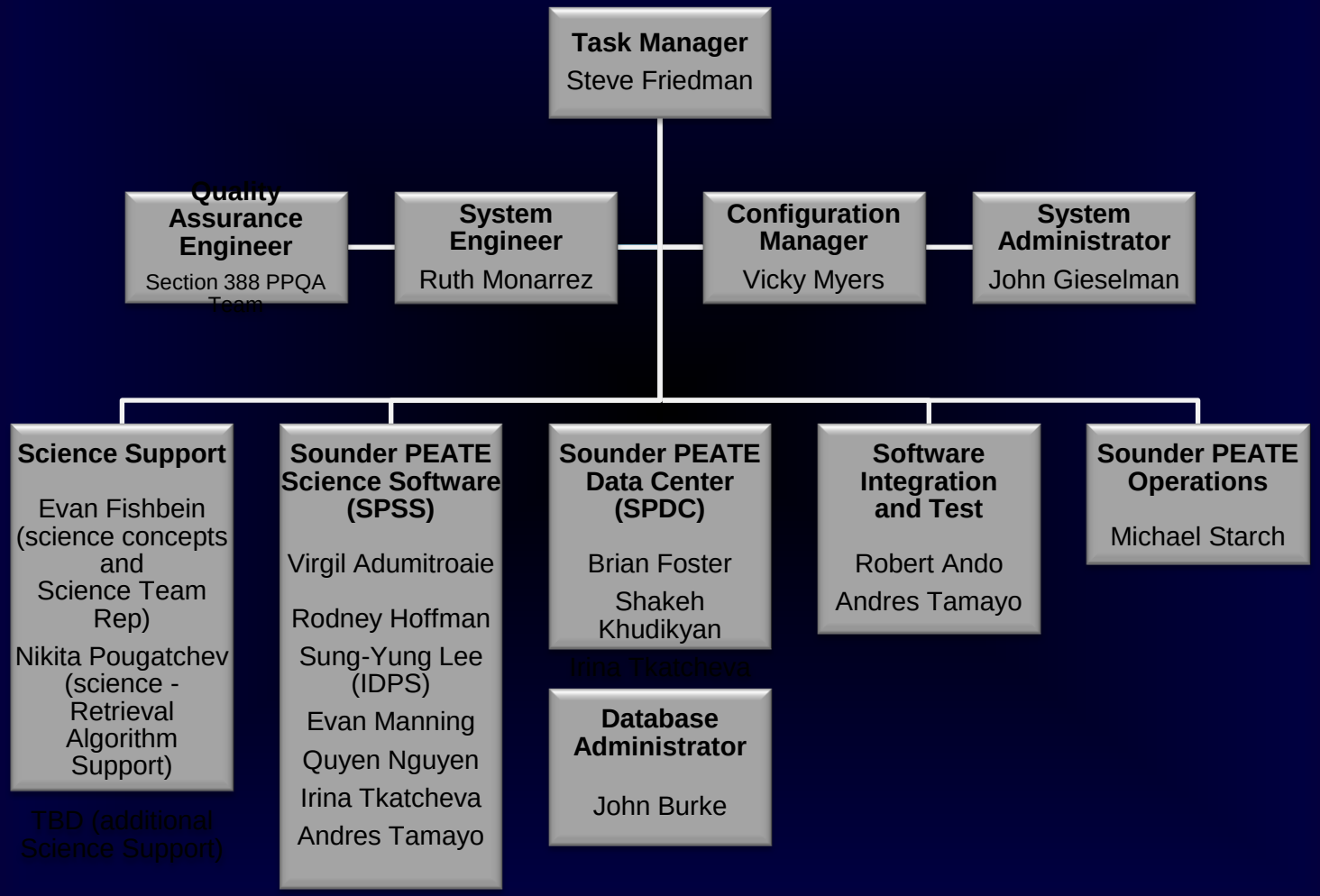
Sounder PEATE and Science Team Collaboration

- **The potential and importance of cultivating a synergistic relationship between the Sounder PEATE and the Sounder Science Team is more important than ever.**
  - PSOE advocacy is gone
  - JPSS / NOAA relationships w/ respect to Science Teams, SDS and PEATEs is still forming

- **The relationship between NOAA and JPSS appeared tenuous at last UC-NCF**

Now...
back to our
regularly scheduled
content

Sounder PEATE Staffing

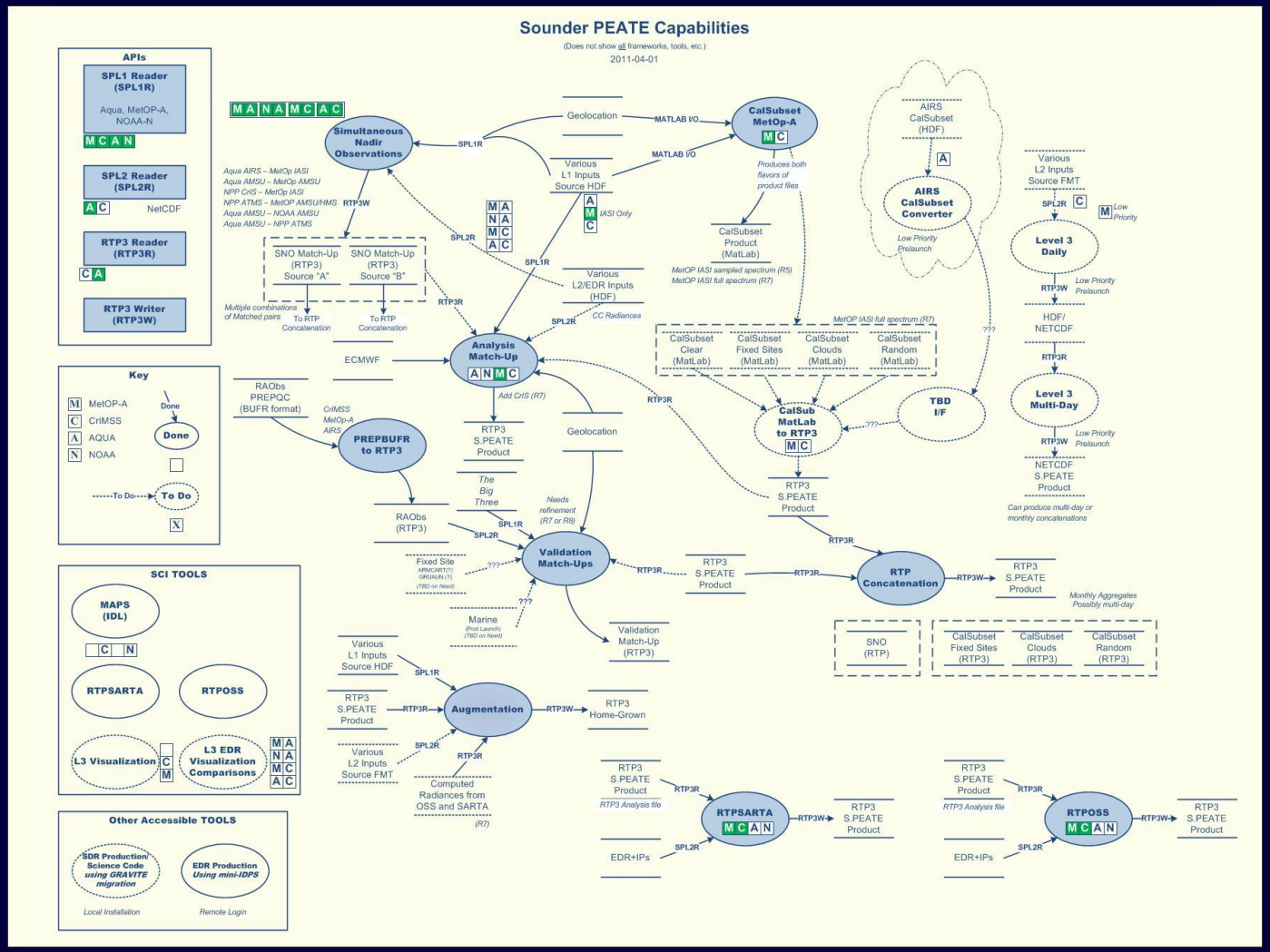


Current Sounder PEATE Operational Status

- Basic system features now available include:
  - Data ingest/archive
  - Granule maps (for MetOp-A: IASI, MHS, AMSU-A)
  - Calibration Subset (MetOp-A IASI)
  - Analysis PGE (IASI, CrIS)
  - Simultaneous Nadir Observation (SNO) – many platforms
  - SARTA and OSS as PGEs and stand-alone
  - Validation (RaObs) Match-up (basic)
- Supporting PGEs include
  - Augmentation
  - Concatenation

Software Development Status (cont'd.)

- **Currently operating with Build 6.1**
  - Supports many processing threads
  - Capably supported NCT-3 Part 2 testing
    - Ingested and archived all products
    - Ran many PGEs in typical production threads
    - Previously ran SNOs for all IASI/AIRS (before IASI format change)
- **Current Development Areas:**
  - Wrapping-up Build 7
    - Full-spectrum IASI CalSubset
    - RaObs Match-up to IR (NPP, Aqua, MetOP-A)
  - Starting Build 8 Development
    - Analysis (Aqua)
    - CalSubset basics for (CrIS) – MatLab and RTP3


Sounder PEATE Capabilities
(Does not show all frameworks, tools, etc.)
2011-04-01
APIs
SPL1 Reader (SPL1R)
Aqua, MetOP-A, NOAA-N
SPL2 Reader (SPL2R)
NetCDF
RTP3 Reader (RTP3R)
RTP3 Writer (RTP3W)
Key
MetOP-A
CrIMSS
AQUA
NOAA
Done
To Do
SCI TOOLS
MAPS (IDL)
RTPSARTA
RTPOSS
L3 Visualization
L3 EDR Visualization Comparisons
Other Accessible TOOLS
SDR Production/ Science Code using GRAVITE migration
EDR Production Using mini-IDPS
Local Installation
Remote Login
Simultaneous Nadir Observations
Aqua AIRS – MetOp IASI
Aqua AMSU – MetOp AMSU
NPP CrIS – MetOp IASI
NPP ATMS – MetOP AMSU/HMS
Aqua AMSU – NOAA AMSU
Aqua AMSU – NPP ATMS
SNO Match-Up (RTP3) Source "A"
SNO Match-Up (RTP3) Source "B"
Multiple combinations of Matched pairs
To RTP Concatenation
Geolocation
Various L1 Inputs Source HDF
IASI Only
Various L2/EDR Inputs (HDF)
CC Radiances
CalSubset MetOp-A
Produces both flavors of product files
CalSubset Product (MatLab)
MetOP IASI sampled spectrum (R5)
MetOP IASI full spectrum (R7)
AIRS CalSubset (HDF)
AIRS CalSubset Converter
Low Priority Prelaunch
Various L2 Inputs Source FMT
Level 3 Daily
HDF/ NETCDF
Level 3 Multi-Day
NETCDF S.PEATE Product
Can produce multi-day or monthly concatenations
CalSubset Clear (MatLab)
CalSubset Fixed Sites (MatLab)
CalSubset Clouds (MatLab)
CalSubset Random (MatLab)
TBD I/F
CalSub MatLab to RTP3
RTP3 S.PEATE Product
ECMWF
Analysis Match-Up
Add CrIS (R7)
RAObs PREPQC (BUFR format)
CrIMSS MetOp-A AIRS
PREPBUFR to RTP3
The Big Three
RAObs (RTP3)
Needs refinement (R1 or R8)
Fixed Site
Marine
Validation Match-Ups
Validation Match-Up (RTP3)
RTP Concatenation
Monthly Aggregates Possibly multi-day
SNO (RTP)
CalSubset Fixed Sites (RTP3)
CalSubset Clouds (RTP3)
CalSubset Random (RTP3)
Augmentation
RTP3 Home-Grown
Computed Radiances from OSS and SARTA
(R7)
RTPSARTA
RTP3 Analysis file
EDR+IPs
RTPOSS

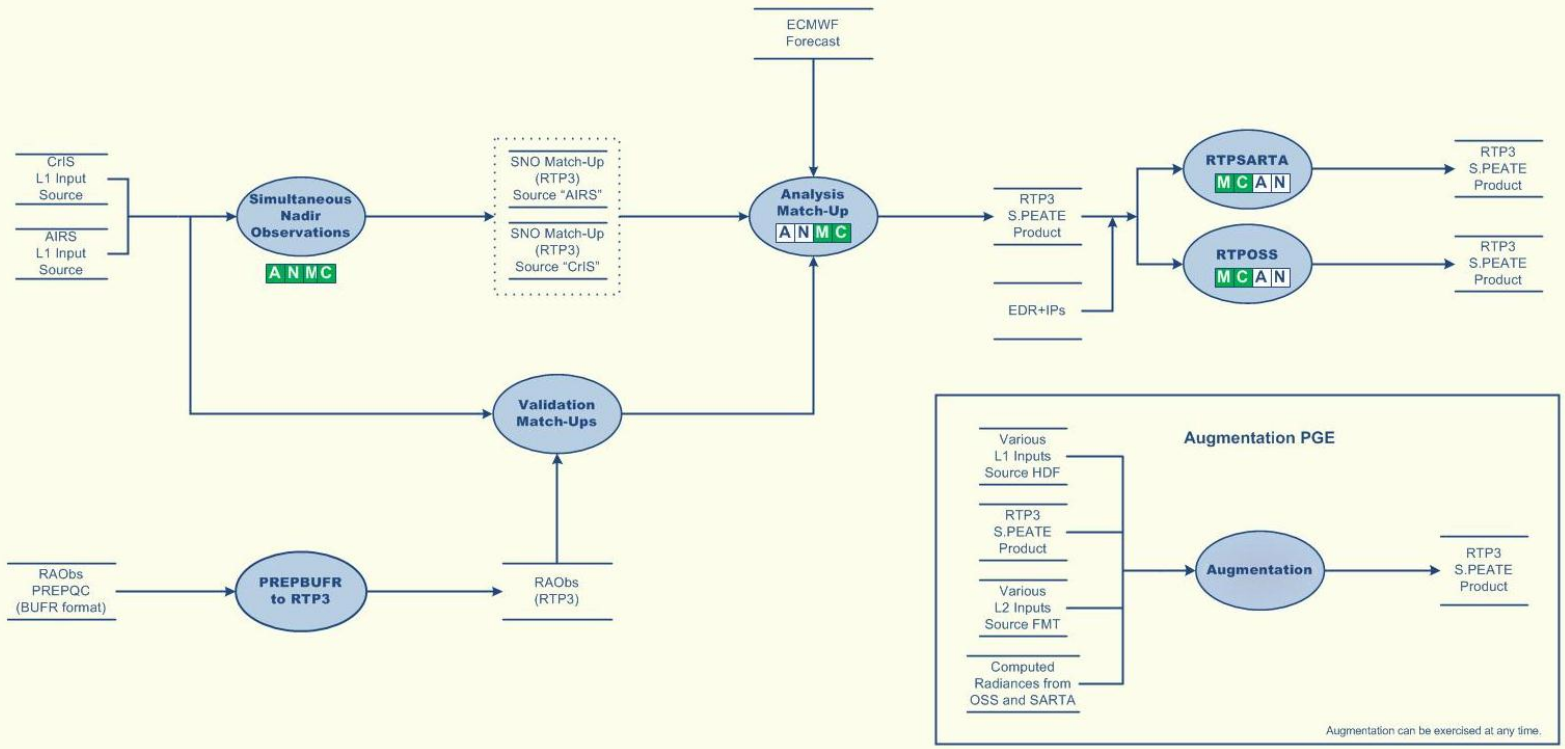
SDR and EDR code support

- **Sourced codes ingested and archived**
  - IDPS production source code – Build 1.5.4 and earlier
  - Science software prototypes ingested and stored
  - IDPS code ported GRAVITE (Linux)
    - In the process of obtaining SDR code installation
    - Awaiting release of EDR code

- **Exercising the code:**
  - Science code modules run locally in stand-alone and as PGE
  - EDR IDPS code run on mini-IDPS

Example Sounder PEATE Production Threads

2011-04-01



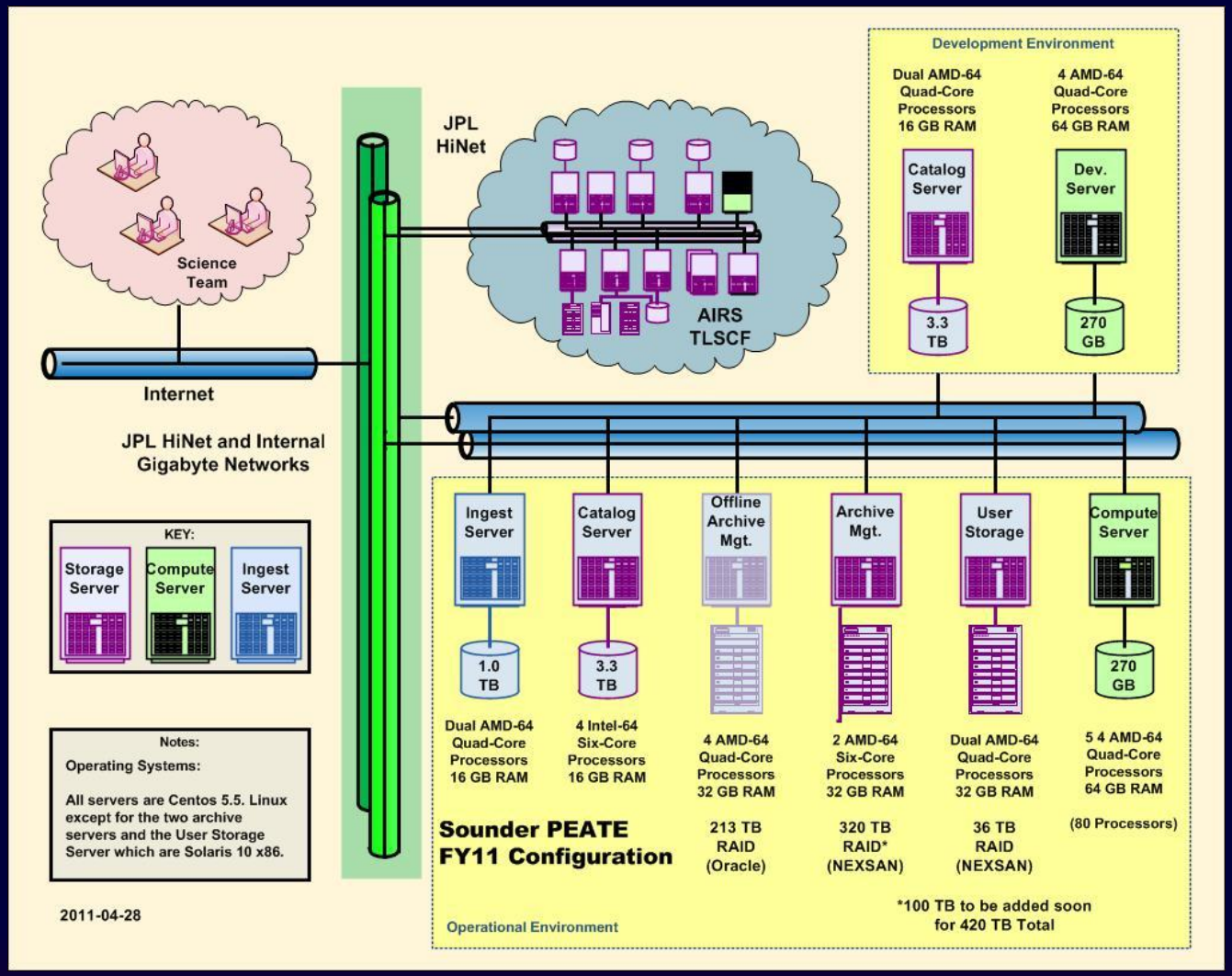
Hardware Status
Facility Upgrades

- **PEATE Processing System (partial list)**
  - Development Server (1 Sun Blade - 16 processors)
  - Compute Servers (5 Sun Blades – 80 total processors)
  - Data Archive – 420 TB RAID (320 TB active)
  - Additional Storage – 200 TB RAID
  - System Backup (a true backup system)

- **NPP Sounder Science Team may access the PEATE system to acquire data products in the archive or to utilize PEATE compute resources (when available)**
  - To do so, you must obtain valid JPL LDAP User ID!
    – *Contact Steve Friedman for details*

Hardware Status

Current Configuration



Plans for the Future

Planned Work Activities

- **Code Development**
  - Finish code development for pre-launch
  - Planned code for post launch:
    - Calibration Subset (as soon as algorithm is refined)
    - Level 3 – goal w/in a year
- **Document features and capabilities (for Science Team)**
- **Support NCT4 (maybe NCT5) testing**

Life After Launch - Beyond the Baseline

- **Software Development continues after launch:**
  - CrIMSS Calibration Subset *(first post-launch product)*
  - Gridded "L3-like" Products (Daily, Multi-Day, Monthly)
  - Specialized IPs, not included in standard EDR IP set
  - Other unique products/tools requested by Science Team
- **Enhancing the IDPS Code Base:**
  - Investigate upgrades to existing code
  - Upgrades (that improve EDR climate quality) submitted to the PSOE
  - Investigate alternate retrieval algorithms, as needed
- **NASA's current plans for the PEATES:**
  - Minimal Operational Life: 2 years after launch
  - Compete follow-on via ROSES