NPP Instrument Calibration Support Element NICSE

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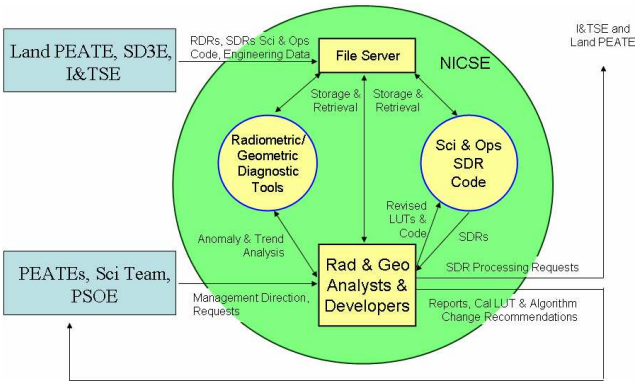
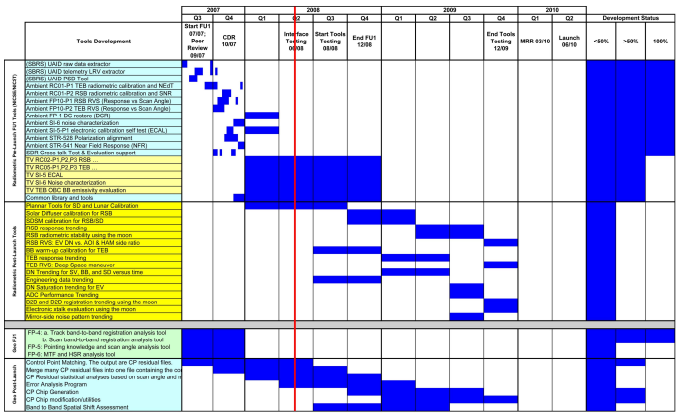
NICSE Objectives

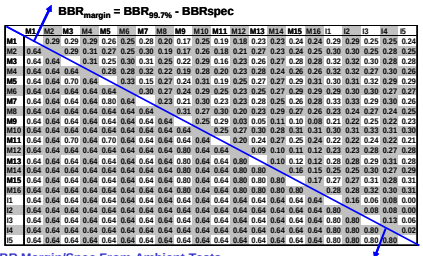
- Independent evaluation of VIIRS radiometric and geometric performance
- Ability to ingest data from various providers, e.g., Land PEATE, SD3E, CasaNOSA, CLASS/ADS, and others
- Radiometric Group verification of VIIRS instrument calibration and characterization
- Geometric Group verification of VIIRS instrument geolocation accuracy
- Ability to make recommendations to existing algorithms and LUTs



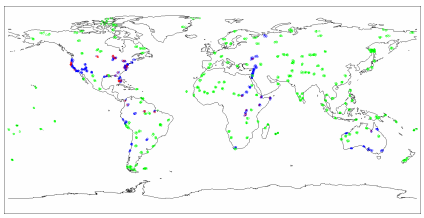


NICSE Tool Development

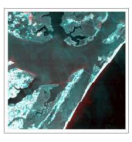
- Pre-launch tools and pre-launch FU1 testing
  - Ingest data, develop tools, analyze data, report to PEATEs, accept requests from the NPP Science Team & PEATEs, make recommendations through CasaNOSA
- Pre-launch preparation for RDR/SDR
  - Ingest test data, install science code & ops code, develop tools, analyze test data, report to PEATEs & Science Team, accept request for analysis from Science Team & PEATEs
- Post–launch RDR/SDR assessment
  - Ingest data, analyze test data, report to PEATEs & Science Team, accept request for analysis from Science Team & PEATEs, make recommendations to PSOE



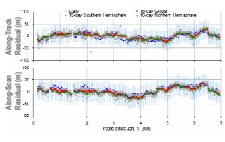
BBR Margin/Spec From Ambient Tests
After Corrective Action



Global Ground Control Points ("chips")



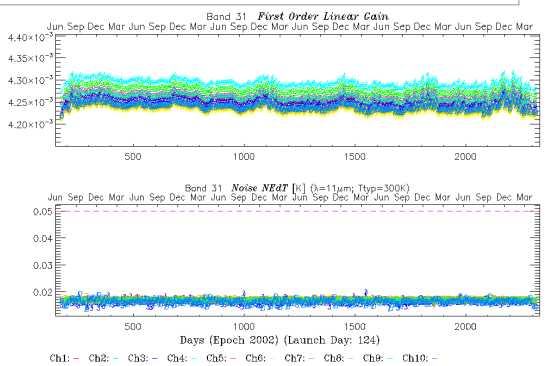
Individual Control Point



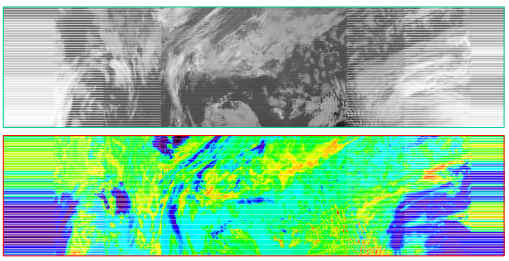
Geolocation Long-term Trend (MODIS)

Expected Results

- Geometric Analysis
  - Conduct data analysis from spatial performance tests.
  - Conduct diagnostic routines on geolocation SDR and Control Point Matching residual files
- Radiometric Analysis
  - Conduct data analysis for sensor radiometric calibration (w/NICST).
  - Conduct diagnostic routines on RDRs and SDRs
- Coordination with PEATEs and Science Team
  - Incorporate recommendations for algorithm and LUT changes
  - Provide algorithm and LUT recommendations to the PSOE
  - Improve products over the life of the mission



Radiometric Long-term Trending – *Gain and Noise.*
6-Year Aqua MODIS B31 post-launch weekly trending results using OBC-IP (VIIRS M15)



On-orbit Data – RDR and SDR
Greyscale = Simulated VIIRS Earth View Band M15 (10.76um)
Color = Run from Science Code using Aqua 10:30 orbit