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... and the Sounder Science Team

• William Blackwell
• Bjorn Lambrigtsen
• Evan Fishbein
• Henry Revercomb
• Larrabee Strow
Primary Objectives of Sounder PEATE

- **Primary Objective of the Sounder PEATE:**
  
  *Support the NPP Sounder Science Team evaluating NPP sounder products:*
  
  - Determine whether these products are climate quality
  - Can these products support ongoing and new climate studies?

- **Provide feedback to NASA and NOAA on observations**

- **Primary products to be evaluated are:**

<table>
<thead>
<tr>
<th>Sensor Data Records (SDRs)</th>
<th>Environmental Data Records (EDRs)</th>
</tr>
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<tbody>
<tr>
<td>CrIS SDR</td>
<td>CrIMSS* Vertical Temperature Profile</td>
</tr>
<tr>
<td>ATMS SDR</td>
<td>CrIMSS Vertical Moisture Profile</td>
</tr>
<tr>
<td>ATMS TDR</td>
<td>CrIMSS Vertical Pressure Profile</td>
</tr>
<tr>
<td></td>
<td>– (including surface)</td>
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<tr>
<td></td>
<td>CrIMSS Intermediate Products</td>
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*CrIMSS = Cross Track Infrared Microwave Sounding Suite: CrIS + ATMS*
Supporting the Science Team

- **Supportive Activities include:**
  - Providing data for Cal/Val
  - Assessing and validating Calibration xDRs
  - Assessing and validating climate quality of SDRs and EDRs
  - Evaluating the NPP Retrieval Code
    - Evaluate IDPS production and science code
      - develop, demonstrate, test and verify algorithm enhancements
  - Develop inter-instrument data comparison tools:
    - CrIMSS data compared to other instruments and correlative data
  - Provide data and analysis products to the Science Team
  - Provide compute resources and analysis tools for Science Team use
Sounder PEATE Functional Interfaces

William Blackwell (MIT)
Evan Fishbein (JPL)
Bjorn Lambrighton (JPL)
Henry Revercomb (UW)
L. Larrabee Strou (UMBC)

SDS Integration and Test System Element (I&TSE)
SDS Data Depository Element (SD3E)
NOAA Comprehensive Large Array-Data Stewardship System (CLASS)

SDDS, EDRs, Hybrid SDDS, EDRs
Correlative Data, Sounder PEATE Products

Processing Requests, Guidance,
Algorithm Suggestions
Beta & Production Executables
Look-up Tables

Correlative and Ancillary Data

Selected Sounder PEATE
Products (Proposed I/F to
GES DISC)

Correlative and Ancillary Data

AIRS L1, 2, 3 Products,
Other ancillary products
archived by AIRS Project

Forecast Data
GFS ECMWF

Match-Up Data
RAOB8S RTG

Friedman – PEATE Overview – Sounder Science Team Meeting 2012-11-15
• Calibration Subsets (CrIS and IASI) in four categories: Clear, Random, Deep-convective Cloud FOVs, Fixed-site
  • Also have access to AIRS Calibration Subsets

• Simultaneous Nadir Observations (SNO), NPP-CrIS/ATMS with:
  • Aqua-AIRS/AMSU
  • MetOp A/B-IASI/AMSU/MHS
  • NOAA-18, NOAA-19 AMSU

• Match-up Products
  – Analysis Matchup (Calculated radiances from forecast models)
  – Radiosonde Matchup
  – GPS-RO Matchup – *planned for this year*
• Calculated Radiances (SARTA, OSS)

• Level 3 Products - for all EDR and IPs
  • Daily
  • Multi-day
  • Monthly

• Rain Rate (ATMS) - (beta version - Blackwell)

• GPolygon Maps (granule coverage maps)
• Sounder Science Team has access to all Sounder PEATE products, NPP products and ancillary products archived at Sounder PEATE

• Currently, no public data access is available

• Archive and data ordering capability for selected Sounder PEATE Products may be available at GES DISC soon
  • Agreement established
  • Developing interface specification and support documentation
  • Product List:
    • SNO
    • Calibration Subset
    • Level 3
    • Other TBD PEATE products (depending on future requests)

• Data archived at GES DISC will be publically available
• We routinely evaluate products from each IDPS build

• Our analyses are shared with:
  – Sounder Science Team
  – Suomi NPP SDS and Suomi NPP Change Control Board
  – NOAA’s Cal/Val and EDR teams

• In addition to utilizing code developed at the Sounder PEATE, other resources are utilized as well to further evaluate data products
  – The “mini-IDPS”
  – ADL

Both tools provide additional capabilities
Data Product Evaluation:
Supporting the Sounder Science Team

- **Microwave Rain Rate (NPP ATMS)**
  - Daily product
  - Currently pre-beta version (early development)
  - Supporting research by William Blackwell

Rain Rate (mm/hr)
October 29, 2012
(Super-storm Sandy)
• Supporting Alternative Retrieval Algorithms (example)
  • Developing NPP retrievals based on AIRS Version 6 algorithm
  • Evaluating hybrid-CrIIMSS retrievals in comparison to AIRS standard Level 2 standard products and ECMWF forecasts.
  • Comparing retrieval yields and RMS differences with respect to ECMWF forecast
Level 3 Products

- Level 3 Products (NPP, MetOP, AIRS*)
  - Daily, Multi-day, Monthly
  - Currently beta version
  - Will be useful for characterization of global patterns of temperature, water vapor and key atmospheric constituents.
  - Will support cross-comparisons between NPP, MetOP and AQUA sounder products

*AIRS data from AIRS Project