Version 5 Release
Status and Plans

AIRS Science Team

Steven Friedman
Assistant Project Manager
Atmospheric Infrared Sounder Project

March 8, 2006
- V5 Focus Team Concept Review / Status
- V5 Testing
- V5 Schedule Update
Consensus was reached at the May 2005 Science Team Meeting:
- Improvements to Level 2 are possible
- Improvements can optimize the data for climate research

The overarching goal for Version 5:
- Enhance AIRS software to
  - expand its utility for climate research
  - improving impact on weather forecasting

Six focus groups were identified
- Bias correction
- Retrievals without AMSU (AIRS-only)
- Surface emissivity retrievals
- Level 2 product error estimation
- Minor constituents
- Calibration*  
  (*Note, established after Science Team MTG)
Each team was chartered to:

- Study and understand specific problems related to focus topics
- Prototype software improvements to confirm their assumptions
- Demonstrate improvements to Science Team
- Document their work
- Deliver "tested" code to JPL software engineers for installation into baseline code in accordance with CCB direction

Teams were reminded keep in mind that we have:

- Mutual dependencies!
- the end game! – we have to deliver V5
  ... a fully team-integrated V5
  ... a fully functional V5
- **V5 Focus Teams established March 2005**

  **September 2005**
  - Concept definition
  - Prototypes
    - proof of concept
  - V5 "features" decision to be made at this Science Team Meeting

  **December 2005**
  - Final design
  - Code delivery from most external teams

  **February 2006**
  - Minor Constituents
  - Final table updates

  **April 2006**
  - Code development complete
  - Begin Validation data processing

  **June 2006 Code Delivery to GSFC DAAC**
- V5 Focus Teams have progressed well
- Minimal schedule slip experienced to date
  - We are approximately 1 month behind schedule
- Still, some planned work remains
  - Trace Gases (McMillan, et al)
  - AIRS-Only (Lee)
- Additionally, new "limited-scope" activities
  - Channel Lists Update (Susskind)
  - Emissivity Upgrades (Susskind, Barnet)
  - Regression Coefficients (NOAA) – possibly (?)
- Additionally, additionally – more testing!
  - More on this topic follows!
• Science Team Verification and Testing
  
  • Results of work will be presented at following sessions of this Science Team
    • Most code has already been delivered (We trusted you)
    • New code is still being proposed
      - and test results must be presented before inclusion (We only trust you so much)
  
  • As with the V5 Focus Team concept, our testing approach is still being developed and enhanced.
    • We will learn together what works, what doesn’t
Testing at JPL will be more comprehensive
  - leading to an improved understanding of V5

Features:
  - Global and “Focus Granule” Analysis
  - Stratified Analysis
  - Improved procedures to delve within the secrets of the Level 2 PGE

Goals:
  - Identify problems
  - Fix what we can for V5
  - Document remaining problems as liens
  - V6 release candidates?
Detailed testing procedures are being developed

Test procedures to include:
- Input dataset descriptions, specifications
- Identification of parameters to be analyzed
- Description of “expected” outcomes

After completion of each test, detailed analysis will be performed

Each test will be documented

Each test will be reviewed by the AIRS Software CCB
Global Analysis
- Global maps of yield, changes in yield from V4
- Difference maps w/ respect to ECMWF and V4
- Quantitative assessments w/ respect to ECMWF of:
  - Yield
  - Bias
  - RMS
- Scatter plots of relevant parameters

Focus Granule Analysis
- 12 Focus Granules have been selected
  - Covers all of our V4 problem geographic regions
  - Includes several representative "focus days" in 2003
- Granule maps, comparative maps as above
- Additional intermediate parameters accessible within PGE
- Improved capability to look "within the granule"
Zonal and regional stratifications will supplement Global analysis procedures – for better understanding

- Tropical to higher-latitudes (≥66°)
  - Ocean
  - Land
    - Non-frozen
    - Frozen
- Polar (<66°)
  - Ocean
  - Land

Diurnal stratifications
- Ocean
- Land
- Polar

Seasonal variations
- Polar

AIRS Science Team: 03-08-06
Version 5 Testing
Delving into the PGE

- "Interim" Level 2 products will be analyzed:
  - Input QA filter (very beginning of PGE)
  - Microwave Retrieval / Cloudy Regression (AIRS-Only)
  - Initial Cloud-clearing
  - First Regression
  - Final Cloud-clearing
  - Final Retrieval
  - Output Processing

- In addition, IR RTA results will be analyzed for selected Focus Granules

- Trend Analysis will be performed for incremental builds as needed
<table>
<thead>
<tr>
<th>Level 2 Subsystem</th>
<th>Global Analysis</th>
<th>Stratified Zones*</th>
<th>Focus Granules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input QA</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW Retrieval / Cloudy Regression</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Initial Cloud-Clearing</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>First Regression</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Final Retrieval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Final Cloud-Clearing</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Output Processing</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>IR RTA</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Includes combinatory groups of: ocean, land, polar, day, night.
Current Progress
  - Most Focus Groups winding down
  - We are about 1 month behind schedule

Additional work to be accomplished
  - Additional work will require one to two months
  - Testing will require additional time, four to six weeks

Test findings may require consideration

We must still deliver V5 well before end of FY'06
- AIRS Delivery Schedule will be adjusted TBD months

Add new Schedule here