National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Version 5 Release Status and Plans

AIRS Science Team

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National Aeronautics and
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Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Agenda

- V5 Focus Team Concept Review / Status
- V5 Testing
- V5 Schedule Update

Version 5 Concept Review
Version 5 Science Focus

- **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)

Version 5 Concept Review

Roles and Responsibilities for the V5 Focus Teams

- **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

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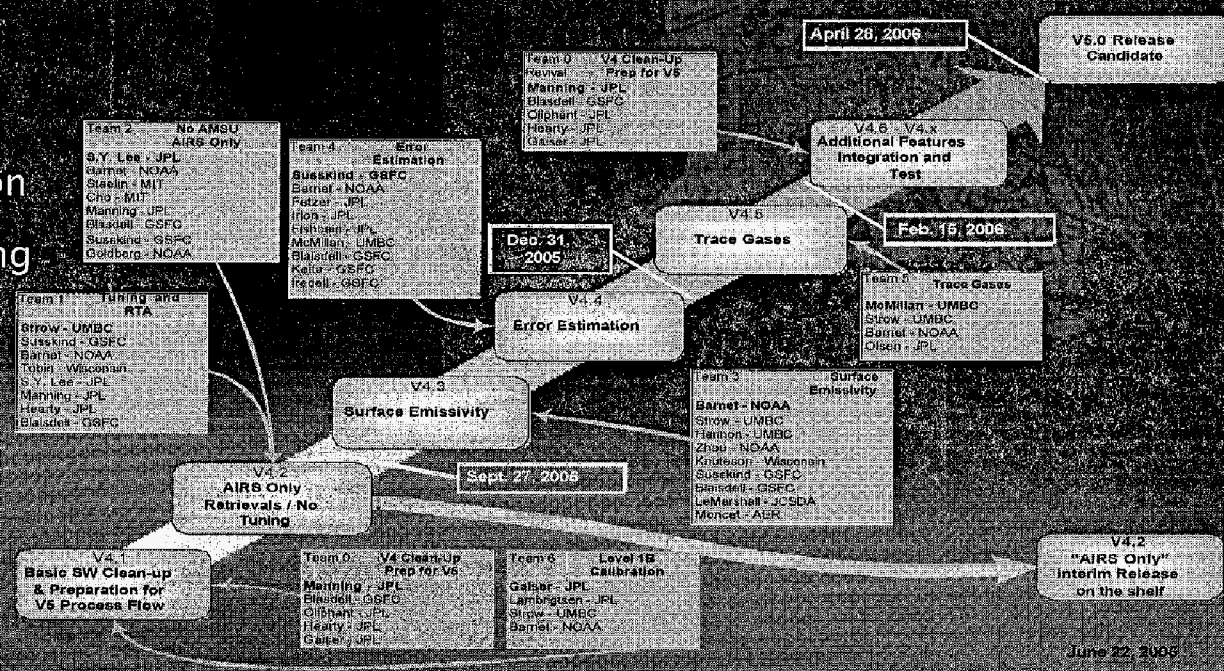
Version 5 Concept Review

V5 Teams – March 2005 Baseline Schedule

- 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 Development Status
Where are we today?

- **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!*

Version 5 Testing
Science Team Support

- **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

Version 5 Testing
JPL Testing Overview

- **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?

Version 5 Testing
Detailed Testing Procedures

- 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

Version 5 Testing
Global and Focus Granule Analysis

- **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"

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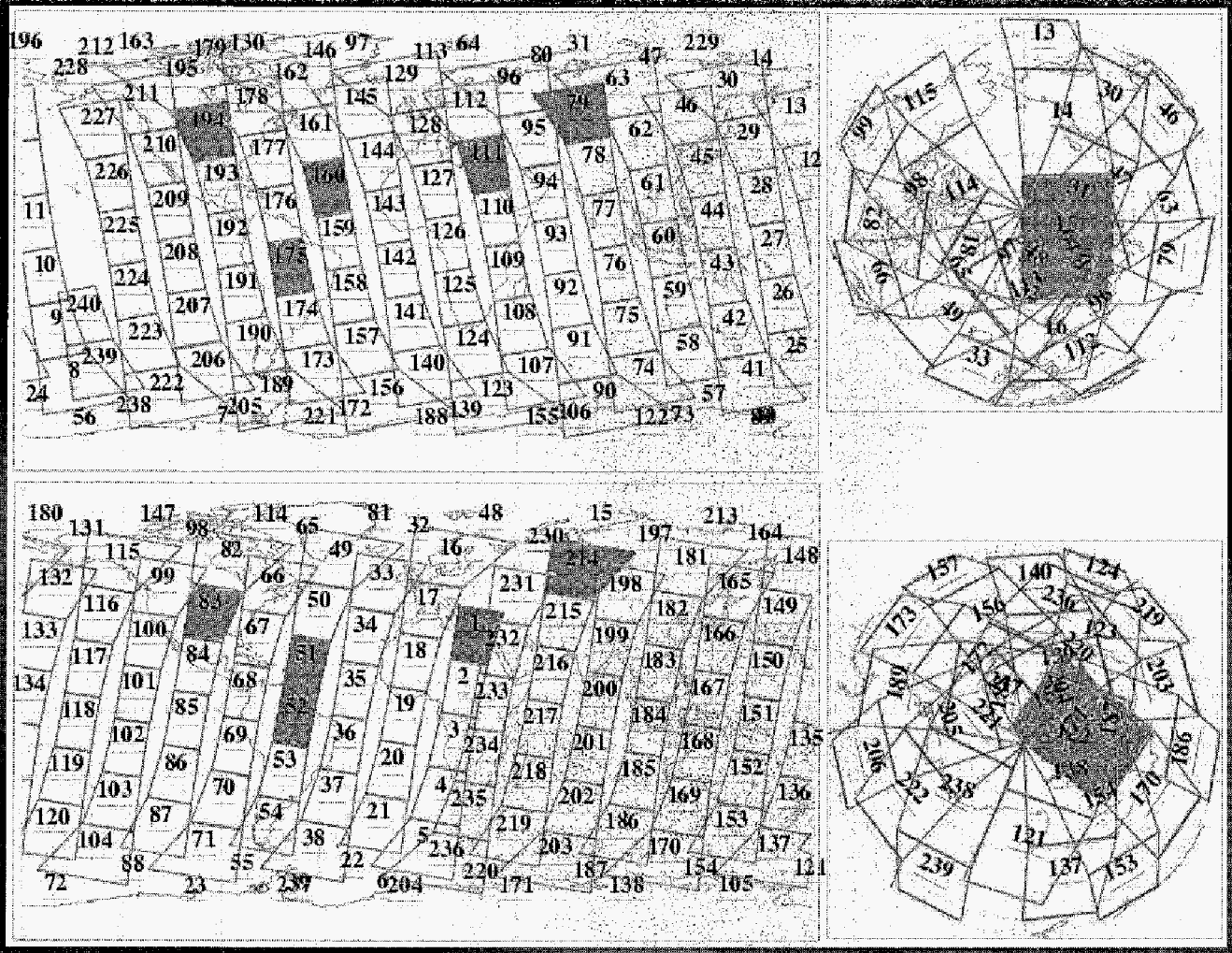
Version 5 Testing
Focus Granules



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Version 5 Testing
Stratified Analysis

- **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

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**

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Version 5 Testing
Testing Matrix

Level 2 Subsystem	Global Analysis	Stratified Zones*	Focus Granules
Input QA	X		
MW Retrieval / Cloudy Regression	X	X	X
Initial Cloud-Clearing			X
First Regression	X	X	X
Final Retrieval	X	X	X
Final Cloud-Clearing			X
Output Processing	X		X
IR RTA			X

*Includes combinatory groups of: ocean, land, polar, day, night.

V5 Schedule *Update*

- **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**

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V5 Schedule
Revised Milestones

- AIRS Delivery Schedule will be adjusted TBD months

Add new Schedule here