National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Progress Towards the Release of V6

Schedule and Status

Steven Friedman
AIRS Science Processing

April 27, 2011

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

- **Version 6 Recap with emphasis on Level 2**

- **V6 Completion – Schedule**

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

AIRS Software Development Activities – Development Status

- **Version 6 development began on 2007-07-11 w/ V5.1.0.0**

  - Since then more than 45 builds

  - Several significant test cycles

  - Current V6 development version is V5.7.5.0

  - Some Significant Builds:
    - V5.1.7.0 – 2007-10-02 - MW RTA an tuning
    - V5.3.0.0 – 2008-02-27 – AMSU-A Ch4 quick-fix (still using)
    - V5.3.2.0 – 2008-09-20 – Surface emissivity hinge-points
    - V5.4.0.0 – 2009-01-26 – Improved CO2, surface retrieval
    - V5.4.5.0 – 2009-05-20 – ECMWF as climatology startup opt.
    - V5.4.14.0 – 2009-12-14 – Remove AMSU-A Ch 4,5 from MW and final retrievals
    - V5.5.1.0 – 2010-02-25 – Incorporate SCCN as startup option
    - V5.6.2.0 – 2010-07-19 – Stability parameters
    - V5.6.3.0 – 2010-07-17 – New Regression
    - V5.7.0.0 – 2010-10-07 – MODIS Emissivity, New var. freq. RTA, cloud phase
      ALL MAJOR V6 COMPONENTS!

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

- *No significant changes in direction since last Science Team*

- Level 1B will remain unchanged for V6
  - V5 version of L1B is still good enough to go forward
  - Further upgrades will be deferred until V7

- Level 1C possible release for V6
  - *Level 1C products will not be produced at the GES DISC*
  - We will publish algorithm for L1C calculations
  - May need to address additional issues... probably in V7
    - radiometric discrepancy between detectors
    - maybe C_{ij}
  - Hand-off to NOAA to support creation of new BUFR product?

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

- **Significant progress made towards achieving our key L2 goals:**

  - **Bias trend over time** in mid-tropospheric temperature and water vapor retrievals
    – *significantly improved*

  - **OLR computation** – *improvement noted*

  - **Retrieval yield –**
    - *Multiple QC flags serving weather/climate*
    - *Generally improved over land/water & "no pixels left behind"*
    - *Surface retrieval improved over land/water*
    - Yield in problematic geographic regions – *still pending testing*
    - *Yield for trace gases and other minor constituents TBD*
    - *Water vapor yield – still pending testing*
  - Boundary layer sensitivity – *not significantly improved*

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

- **L2 Contributing Improvements**

  - **Start-up States -** Incorporated/tested new start-up states:
    – AIRS climatology
    – SCCNN - *yielding the best overall results (any statistical measures)*

  - **Regression**: Retrained regression over longer period
    - retrained atmosphere and surface regressions
    - revised channel list
    - *generally improved quality of L2*

  - **RTA**: Incorporated new RTA into the retrieval
    – variable frequencies, CO_2, trace gases
    - *general improvement, some issues remain with trace gases – CO, CH4*

  - Mitigated the **loss of AMSU-A Channel 5**
    - Modified MW+AIRS retrieval, new regression – *least possible impact*
    - *Ensured that the AIRS-only retrieval is of high quality*

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

- **L3 development continues**

- **Status already presented today**

- **Coding and testing can be extended past L2 timeframe for L3**
  - No impact to overall delivery schedule

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Back to V6

- We've been working on V6 for quite some time...

  - We are close to making some major decisions
and
We are close to moving beyond V6

- There is still much to be accomplished!

    - Time is short!

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

- **We may have decided which start-up state to use…**

  but other V6 decisions still needed to be made.

  - Further improvement of boundary layer retrievals (?)

  - Incorporation of back-end features
    (cloud properties, trace gases, …)

  - Level 3, possibly new Level 3 climate products

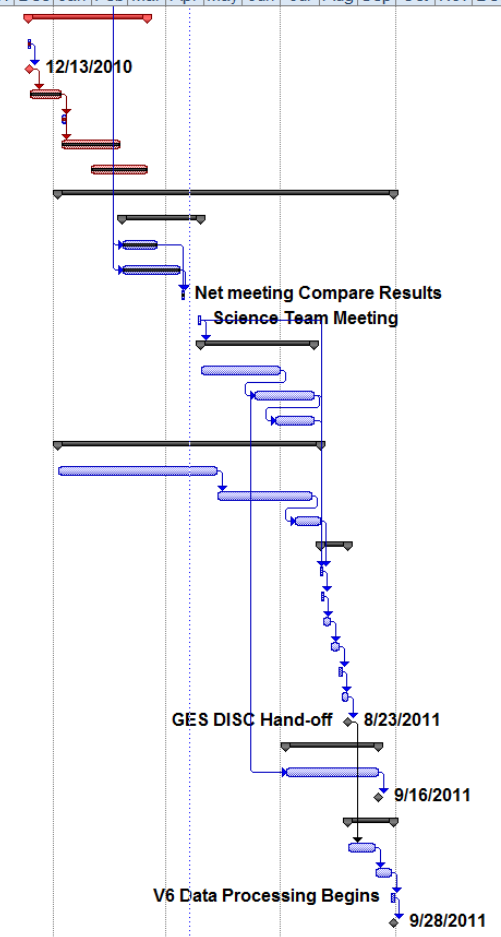 - Further refinement of QC and other status indicators
    expected

The Latest V6 Schedule

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

	Task Name	Start	Finish	Duration	% Complete	Predecess	R
14	System Intrusion (Unplanned)	Sun 12/12/10	Wed 3/16/11	64 days	100%		
15	Intrusion	Sun 12/12/10	Sun 12/12/10	1 day	100%		
16	Identification	Mon 12/13/10	Mon 12/13/10	0 days	100%	15	
17	Forensics	Mon 12/13/10	Thu 1/6/11	16 days	100%	16	
18	Systems Unavailable	Fri 1/7/11	Tue 1/11/11	3 days	100%	17	
19	Rebuild Systems	Fri 1/7/11	Tue 2/22/11	31 days	100%	17	
20	Rebuild Archive	Mon 1/31/11	Wed 3/16/11	32 days	100%		
21	Final V6 Development and Checkout	Wed 1/5/11	Wed 9/28/11	185 days	13%		
22	L2 PGE Testing - Startup States	Fri 2/25/11	Thu 4/28/11	45 days	95%		
23	Match-Up and Cal Subset	Fri 2/25/11	Thu 3/24/11	20 days	100%	12FS-10 days	
24	Generate L2 Products (extended period)	Fri 2/25/11	Mon 4/11/11	32 days	100%	12FS-10 days	
25	Science Team Net meeting	Thu 4/14/11	Thu 4/14/11	1 day	100%	23,24	
26	Science Team Meeting	Tue 4/26/11	Thu 4/28/11	3 days	0%		
27	Post Science Team Meeting Activities	Fri 4/29/11	Wed 7/27/11	61 days	0%	26	
28	Final L2 Mods	Fri 4/29/11	Thu 6/30/11	44 days	0%		
29	JPL Testing	Fri 6/10/11	Wed 7/27/11	32 days	0%	28FS-15 days	
30	Science Team V6 Checkout	Mon 6/27/11	Wed 7/27/11	21 days	0%	29FS-21 days	
31	Level 3 Algorithm Development	Wed 1/5/11	Mon 8/1/11	144 days	0%		
32	L3 Concept Development	Wed 1/5/11	Wed 5/11/11	89 days	0%		
33	L3 Coding	Thu 5/12/11	Mon 7/25/11	50 days	0%	32	
34	L3 Testing	Tue 7/12/11	Mon 8/1/11	15 days	0%	33FS-10 days	
35	Package and Deliver	Tue 8/2/11	Tue 8/23/11	16 days	0%		
36	Delivery Readiness Review	Tue 8/2/11	Tue 8/2/11	1 day	0%	34,26,29,30	
37	V6 Delivery Build	Wed 8/3/11	Wed 8/3/11	1 day	0%	36	
38	Final Checkout	Thu 8/4/11	Tue 8/9/11	4 days	0%	37	
39	V6 Packaging	Wed 8/10/11	Tue 8/16/11	5 days	0%	38	
40	V6 Code Delivery	Wed 8/17/11	Thu 8/18/11	2 days	0%	39	
41	JPL Unpack and Checkout	Fri 8/19/11	Tue 8/23/11	3 days	0%	40	
42	Hand-off to GES DISC	Tue 8/23/11	Tue 8/23/11	0 days	0%	41	
43	Documentation	Tue 7/5/11	Fri 9/16/11	53 days	0%		
44	Documentation - all testing	Tue 7/5/11	Fri 9/16/11	53 days	0%	29SS+15 days	
45	Deliver Documentation	Fri 9/16/11	Fri 9/16/11	0 days	0%	44	
46	GES DISC I&T	Wed 8/24/11	Wed 9/28/11	25 days	0%		
47	V6 Integration and Test (GES DISC)	Wed 8/24/11	Wed 9/14/11	15 days	0%	42	
48	V6 End-to End Flow Testing	Thu 9/15/11	Tue 9/27/11	9 days	0%	47	
49	V6 Data Processing Begins	Wed 9/28/11	Wed 9/28/11	1 day	0%	48	
50	V6 Product Support Begins	Wed 9/28/11	Wed 9/28/11	0 days	0%	49	

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Upcoming V6 Milestones

- **V6 Concluding Timeline**

  - **JUN 30** - Final "final" V6 coding/mods incorporated

  - **JUL 25** – Final L3 coding mods

  - **Mid-JUN** - Testing and checkout begins (incl. SciTeam)

  - **AUG 1** - Testing/checkout ends

  - **AUG 9** – Final Build and checkout

  - **AUG 23** – Hand-off to GES DISC, code and documents

  - **SEP 28** – Public Release V6 Data Products

- *This schedule allows for some minimal code adjustments to be made during the testing period. Schedule risk is involved!*