



National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Version 6 Validation, Other Documentation, and Loose Ends

Eric J. Fetzer

Jet Propulsion Laboratory / California Institute of Technology

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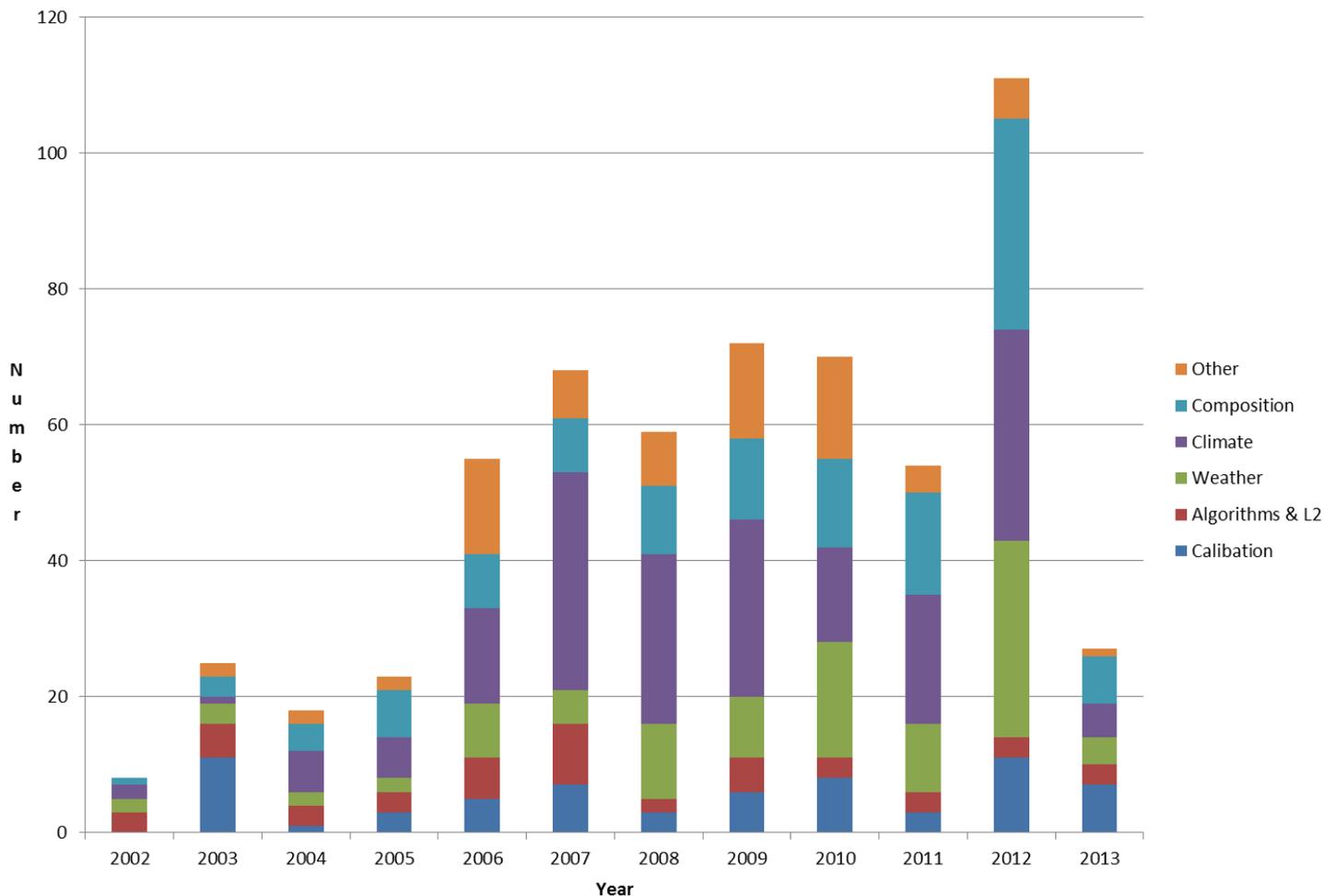


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AIRS Publications Off to a good start in 2013.

Over 590 AIRS Peer Reviewed Publications Through April 2013





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Validation Reports and ATBD

- ***V5 Validation Report:*** We are compiling a list of publications and will write a summary.
- ***V6 Validation Report*** will contain recent results.
 - *Some of the analyses are based on V6 testing studies.*
 - *Please start thinking about V6 validation papers*



Updating A Familiar Table

Tentative changes in red

AIRS Product	Product	Accuracy (V5)	Val Status (V5)
Core: Radiances			
AIRS IR Radiance	L1B-AIRS	<0.2K	Stage 3
AIRS VIS/NIR Radiance	L1B-VIS	15-20%	Stage 1
AMSU Radiance	L1B-AMSU	1-3 K	Stage 3
HSB Radiance	L1B-HSB	1-3 K	Stage 3
Core: Geophysical			
Cloud Cleared IR Radiance	L2	1.0 K	Stage 2
Sea Surface Temperature	L2	1.0 K	Stage 3
Land Surface Temperature	L2	2-3 K	Stage 2
Temperature Profile	L2	1 K / km	Stage 3
Water Vapor Profile	L2	15% / 2km	Stage 3
Total Precipitable Water	L2	5%	Stage 3
Fractional Cloud Cover	L2	20%	Stage 3
Cloud Top Height	L2	1 km	Stage 3
Cloud Top Temperature	L2	2.0 K	Stage 2
Carbon Monoxide	L2	15%	Stage 2
Carbon Dioxide	Post-Proc	1-2 ppm	Stage 1
Core: Necessary*			
Total Ozone Column	L2	5%	Stage 2
Ozone Profile	L2	20%	Stage 2
Land Surface Emissivity	L2	10%	Stage 2
IR Dust	L1B-Flag	0.5 K	Stage 1
Research Products			
Methane	L2	2%	Stage 2
OLR	L2-Support	5 W/m2	Stage 3
HNO3	L1B-Post	0.2 DU	Stage 1
Sulfur Dioxide	L1B-Flag	1 DU	Stage 1

*Necessary Products are required to retrieve accurate temperature profiles (1K/km) in all conditions

Validation Status Definitions (Common to all Aqua Instruments)

Stage 1: Validation Product accuracy has been estimated using a small number of independent measurements obtained from selected locations and time periods and ground-truth/field program effort.

Stage 2: Validation Product accuracy has been assessed over a widely distributed set of locations and time periods via several ground-truth and validation efforts.

Stage 3: Validation Product accuracy has been assessed, and the uncertainties in the product well-established via independent measurements made in a systematic and statistically robust way that represents global conditions.



Being Systematic

Checking updates in yellow

V5 and V6 Validation Planning and Summary
Started March 2008; Updated 24 April 2012; March 27, 2013, etc...

	<i>Validation Status by Geophysical Conditions</i>					
	<i>Ocean</i>		<i>Land</i>			<i>Polar</i>
	<i>Low lat</i>	<i>High lat</i>	<i>Desert</i>	<i>Temperate</i>	<i>Frozen</i>	
Radiances (need to check for instrument trends)						
IR Rad	Stage 3	-----	-----	-----	-----	-----
Vis/NIR	Stage 2	-----	-----	-----	-----	-----
AMSU	Stage 1	-----	-----	-----	-----	-----
HSB	Stage 1	-----	-----	-----	-----	-----
Core Products						
CC Rad	Stage 2; Chris Wilson with MODIS	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2
SST	Stage 3; diurnal cycle & cloud questions in 'truth'. AMSR-E needed, Thanks Bill!!!	Stage 3	N/A	N/A	N/A	N/A
LST	N/A	N/A	Stage 3	Stage 2	Stage 1	Stage 1



More Possible Updates

T(all)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
Microwave-only T, q	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2
T (p>700 hPa)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
T (300<p<700 hPa)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
T (100<p<300 hPa)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
T (p<100 hPa)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
q(all)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
q(p<700 hPa)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
q(300<p<700 hPa)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
q(p<300 hPa)	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
TPW	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
Cld Frc	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
CTH/pressure	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
CTT	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
Necessary Products						
Emissivity	Stage 1 (Hulley, 4/12/13)	Stage 1				
Tot O3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
O3 Prof	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2
IR Dust Flag	Stage 2	Stage 1	-----	-----	-----	-----
Research Products						
CO	Stage 3	Stage 3	Stage 3	Stage 3	Stage 2	Stage 2
Methane	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2	Stage 1
OLR	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
CO2	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	-----



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More Updates

HNO₃	Stage 1	----	----	----	----	----
SO ₂ flag	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2
Cloud radii	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2
Cloud optical depth	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2
Cloud phase	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2



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More on Validation

V6

- The quantities in the previous table need *estimates of uncertainty by geophysical conditions.*

V5

- We need to summarize the validation status of all the Version 5 products in the previous table.
- Cite appropriately from the 590 publications



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Version 6 ATBD

From the November 2012 Science Team Meeting:

- **We will begin regular telecons to plan the ATBD**
 - *Note: there was no V5 ATBD.*
 - *V6 first step: decide what needs to be included*
 - Perhaps an overview with appropriate citations
- **Real Soon Now... Special thanks to Joel Susskind for his contributions to date.**



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Keep on Keeping On

- **AIRS has a broad community of researchers. WE are uniquely positioned to make their job easier.**
- **Thanks for your help.**