AMSR-E SIPS Processing Status

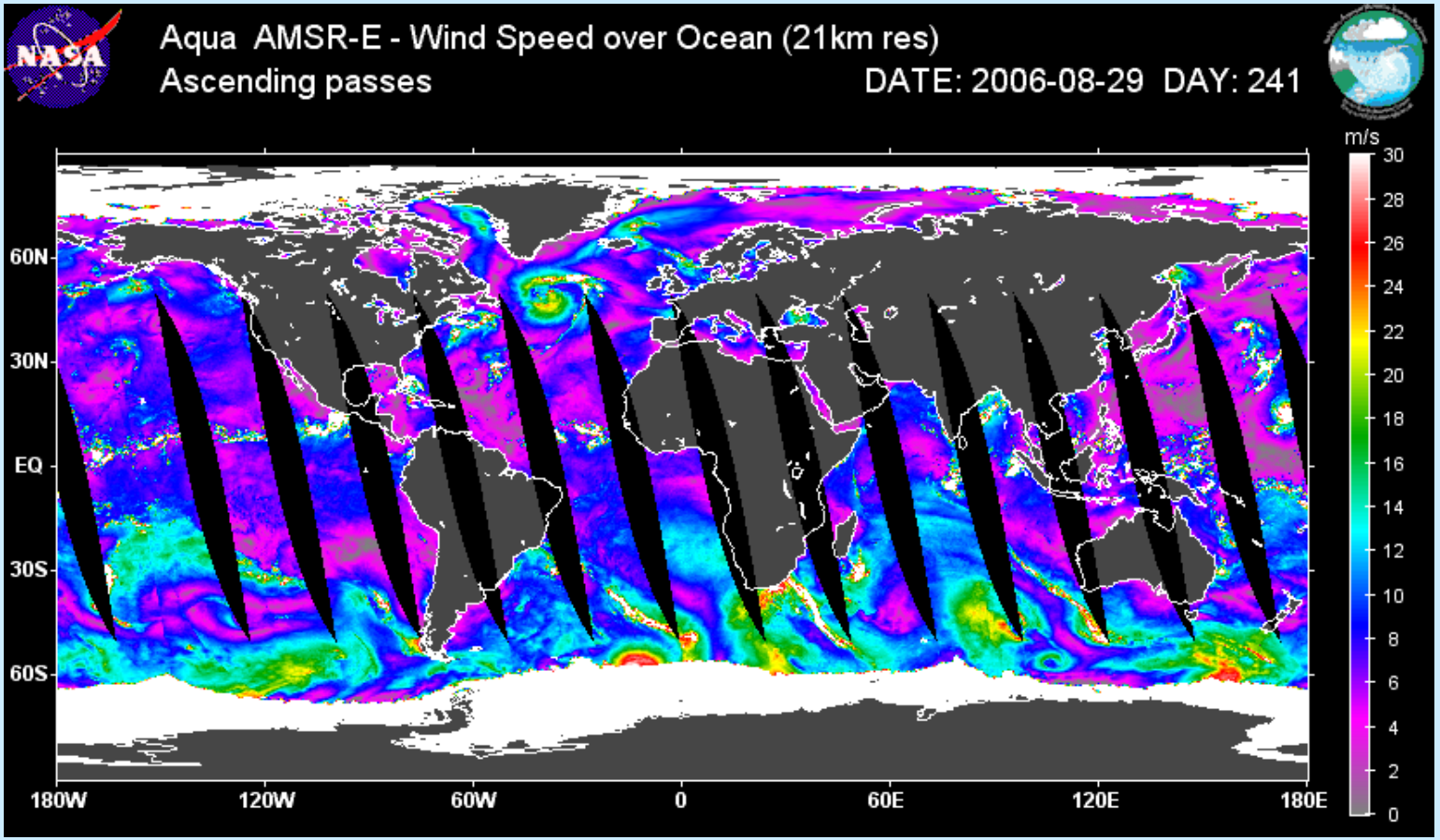

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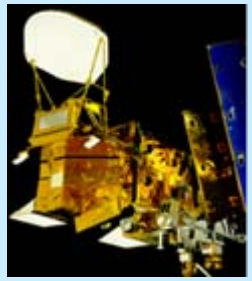
Image provided by Matt Smith

Outline

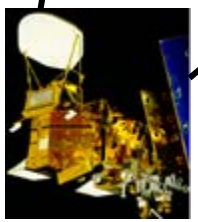
- What's New at the SIPS
- Data Flow Review
- Processing Status
- Hardware Configuration Update
- Reprocessing Plans

What's New



- The RSS-generated Level-2A brightness temperatures product is *validated*.
- New LINUX hardware has been received at the GHCC and is being configured for operations.

AMSR-E Data Flow



NASA EDOS

RBD & PDS

JAXA-EOC
L1A Product Generation

Level-0

Ground Stations

NASA FDS

GBAD

Level-1

PO.DAAC

Level-1

NSIDC DAAC
Data Archive and Distribution

Level-1

TLSCF
Science Software I&T

L2A algorithm

L2 and L3 algorithms

SIPS-RSS
L2A Product Generation

Level-2 and Level-3

L2B and L3 Algorithms

SIPS-GHCC

Product Delivery Record Server (PDRS)

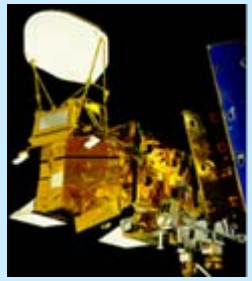
Rain | Algorithm Teams | Snow

Ocean | Sea Ice | Land

Data

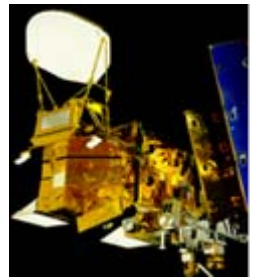
L2B and L3 Product Generation
(science, metadata, qa, ph, subsets, browse)

Forward Processing



- Routine forward processing is running very smoothly
  - *automated to run 24 x 7, unattended*
- Nominal near real time ingest of the L2A files at GHCC ranges typically from 10-12 hours after observation
- Routinely dealing with the occasional straggler or replacement Level-2A files, which requires
  - *regeneration of the composite products,*
  - *replacement files being sent to the DAAC for archive*

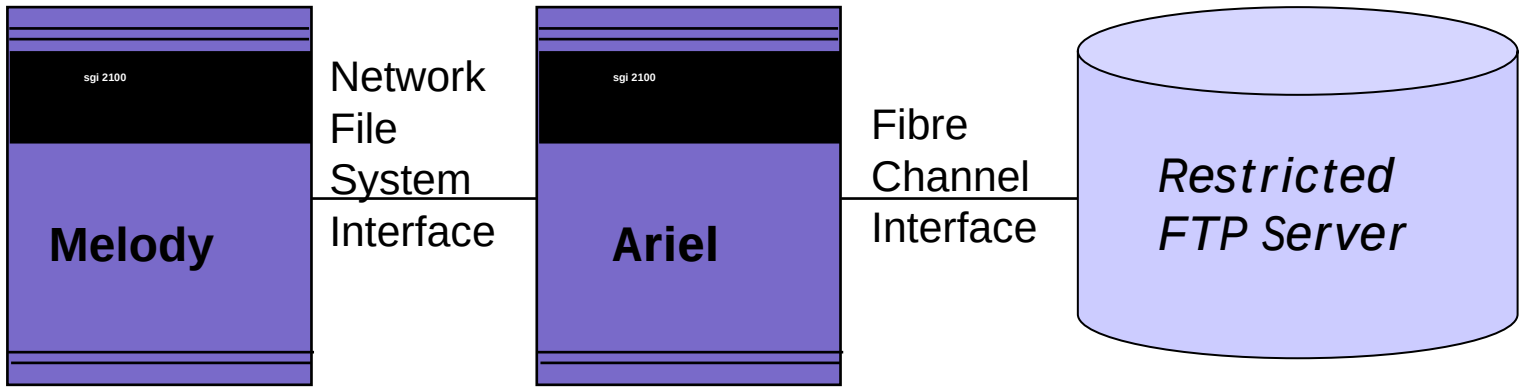
SIPS-GHCC Hardware Operational Configuration



SGI Origin 2100
4 x 350Mhz Processors
2GB RAM

SGI Origin 2100
4 x 250Mhz Processors
2GB RAM

2 TB RAID
file system

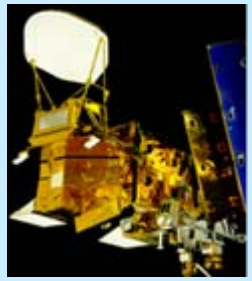


Used for:
- ❖ Reprocessing
- ❖ Special Processing
- ❖ Development
- ❖ Integration & test

Used for:
- ❖ Routine processing
- ❖ Late L2A processing

On line storage of most recent six weeks of Level-2 and Level-3 daily products for
- transfer to DAAC
- science team quality control

SIPS-GHCC Hardware Planned Configuration



Forward Processing

Reprocessing 1

Reprocessing 2

Development, Integration & Test

NASA Network (100 Mb/sec)

Dell PowerEdge 2850
2 x 3.4 GHz Processors
4 GB RAM

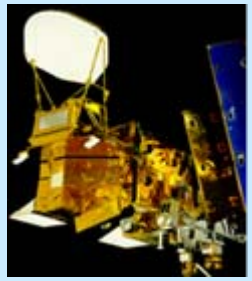
2 GB/sec Fibre Channel Switch

5.5 TB Dell EMC CX300
Storage Area Network Array

Restricted FTP Server

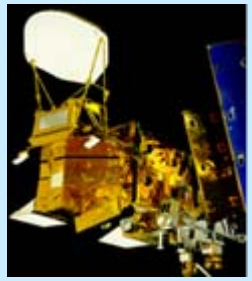
Near line storage of all Level-2A and most recent Level-2B & Level-3

Recertification Plans



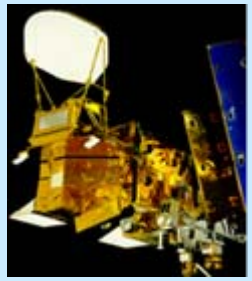
- Configuration of the new hardware is well under way and on target for completion this month
  - *currently installing commercial software and testing fault tolerance*
  - *SIPS processing automation scripts have been certified portable; TLSCF is porting and certifying the science algorithms in the SCF*
  - *planning to test with interfacing data centers, RSS and NSIDC, later this month*

First Reprocessing



- Plans are to begin reprocessing the standard products this fall, from the beginning of the mission
  - *using validated (V08) Level-2A files generated at RSS*
  - *using updated versions of Level-2B and Level-3 algorithms*
  - *product maturity will be either validated or transitional*
- The reprocessed data will be available to the science and validation teams on Ariel and for public distribution at the NSIDC DAAC.

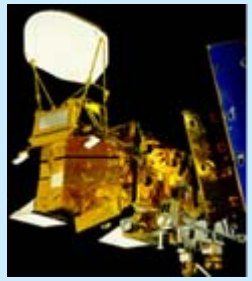
Algorithm Processing Rates (Ariel)



Algorithm Short Name	*Algorithm Version(s)*	*12-Month Average Aug 05 - Jul 06*
L2A Tb (Swath)	**05, 06, 07, 08**	**0.7 min ***
L2B Land (Swath)	**04, 05**	**0.49 min**
L2B Ocean (Swath)	**03, 04**	**7.24 min**
L2B Rain (Swath)	**07, 08**	**8.91 min**
L3 Daily Land	**03**	**0.76 min**
L3 Daily Ocean	**02**	**3.35 min**
L3 Daily Sea Ice (6 km)	**04, 05, 06**	**46.9 min**
L3 Daily Sea Ice (12.5 km)	**04, 05, 06**	**46.9 min**
L3 Daily Sea Ice (25 km)	**04, 05, 06**	**46.9 min**
L3 Daily Snow	**05, 06**	**14.74 min**
L3 5-Day Snow	**05, 06**	**0.15 min**
L3 Weekly Ocean	**02**	**21.99 min**
L3 Monthly Ocean	**02**	**88.8 min**
L3 Monthly Rain	**04, 05**	**362.26 min**
L3 Monthly Snow	**05, 06**	**0.25 min**

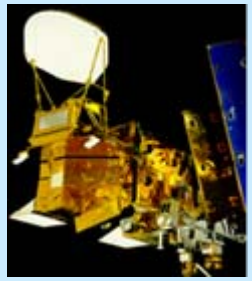
* Metadata and QA insertion, only

Estimated Reprocessing Rates (Current Hardware)



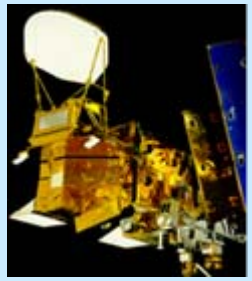
Algorithm Short Name	*1 Processing Environment*	*2 Processing Environments*
L2A Tb (Swath)	17 min per pass ~8 hrs per 29 pass ~3 days per day	 ~6 days per day
L2B Land (Swath)		
L2B Ocean (Swath)		
L2B Rain (Swath)		
L3 Daily Land	~ 160 min per day ~9 days per day	 ~18 days per day
L3 Daily Ocean		
L3 Daily Sea Ice (6 km)		
L3 Daily Sea Ice (12.5 km)		
L3 Daily Sea Ice (25 km)		
L3 Daily Snow		
L3 5-Day Snow	< 1 min per month	
L3 Weekly Ocean	~1.5 hrs per month	
L3 Monthly Ocean	~ 450 min per month ~ 7.5 hrs per month	
L3 Monthly Rain		
L3 Monthly Snow		

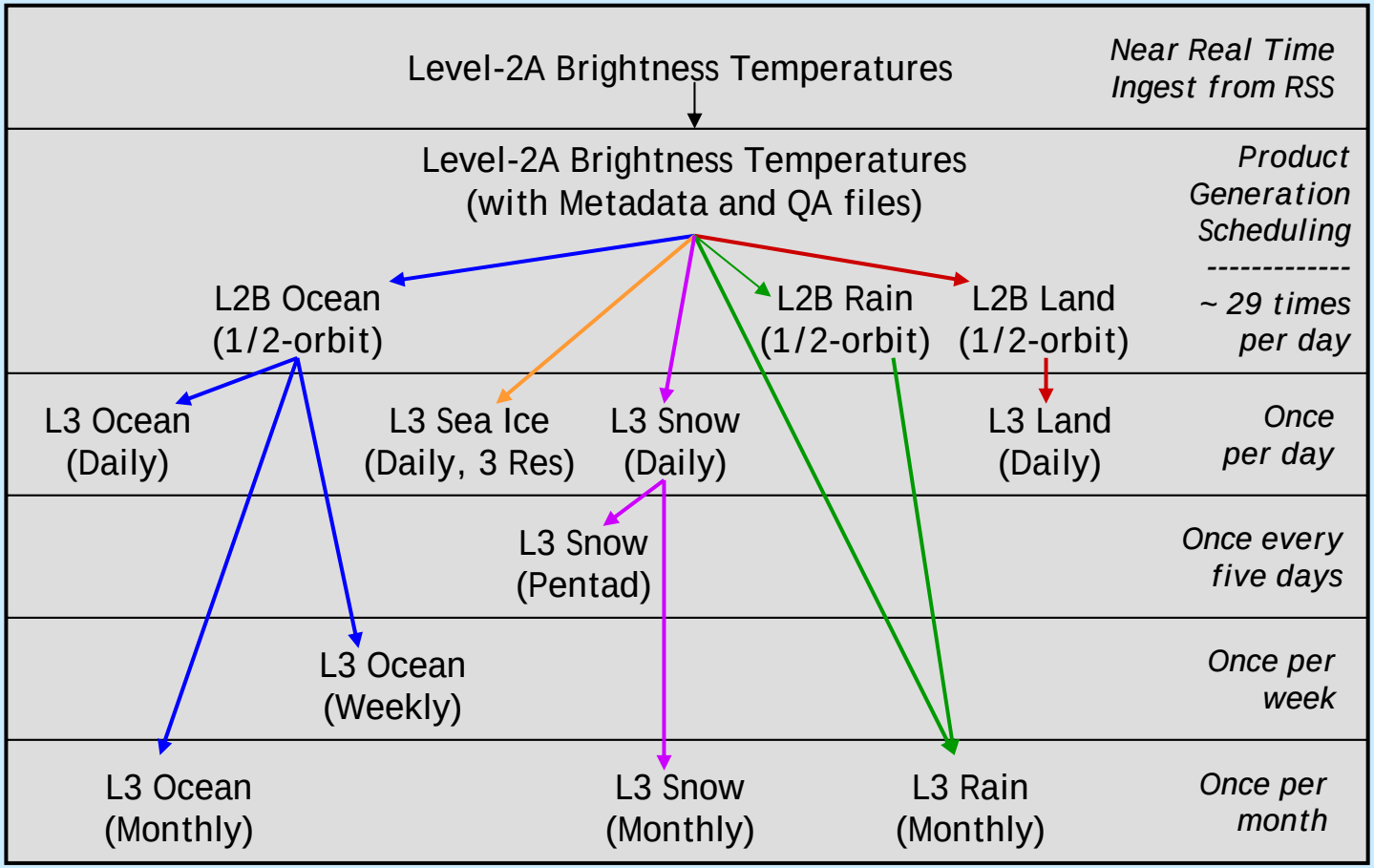
Estimated Reprocessing Rates (New Hardware)



- Assuming that the algorithms continue to run at the same or similar rates, SIPS expects processing and reprocessing on the new hardware to be significantly faster
  - *Twice the number of reprocessing environments*
  - *Much faster processor speeds (350 MHz to 3.4 GHz)*
- In addition, having space to keep all Level-2A data on-line will enable processing by product streams rather than in monthly chunks

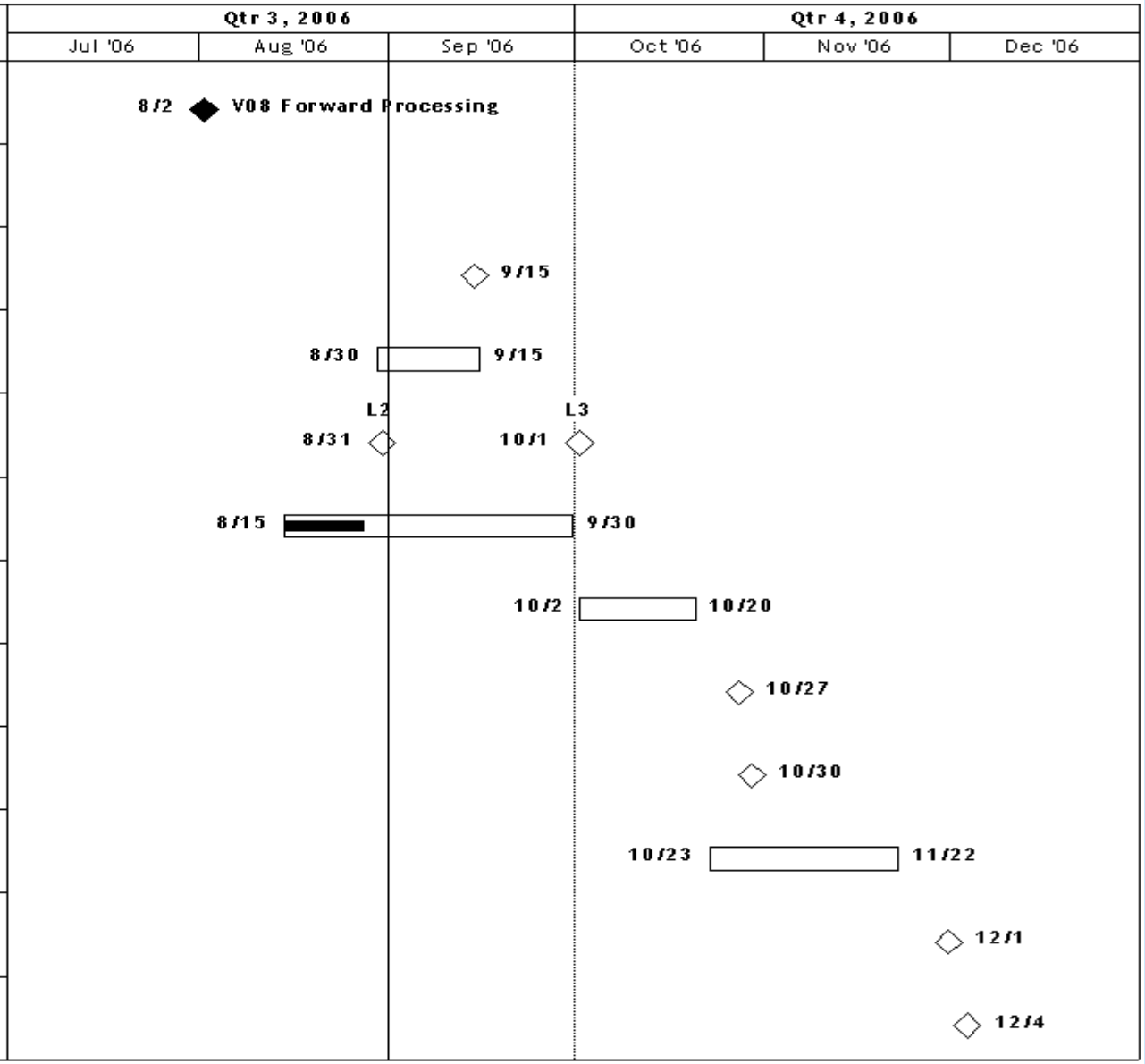
Software Architecture (Nominal Processing)





Reprocessing Schedule

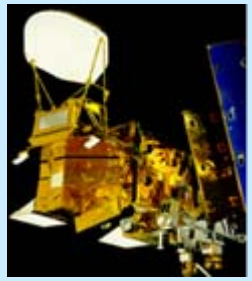
Task	Team
AMSR-E V08 Forward Processing	SIPS
AMSR-E V08 Reprocessing Preparation	TLSCF
Complete installation, configuration, and test of LINUX HW at SIPS	SIPS
Install and Configure LINUX Hardware at TLSCF	TLSCF
Deliver PGE Updates to TLSCF	Science Teams
SSIT new L2B algorithms and deliver to SIPS	TLSCF
Port L2B Algorithms to LINUX	TLSCF
Complete SW integration at SIPS and deliver Level-2B DAPs to NSIDC	SIPS
Begin Level-2B Reprocessing at SIPS	SIPS
SSIT new Level-3 algorithms and port to LINUX	TLSCF
Complete SW integration at SIPS and Deliver Level-3 DAPs to NSIDC	SIPS
Begin Level-3 Reprocessing at SIPS	SIPS



Backup Charts

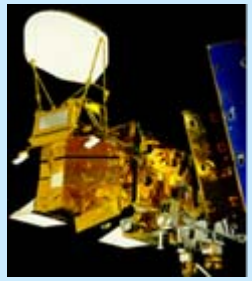
- Products Retention Plan
- Algorithm Versions
- FTP Data from Ariel
- Operational Hardware
- Beautiful Sea Ice

SIPS-GHCC Products Retention Plan



- Current:
  - *All Level-2 and Level-3 daily science files are kept on line for approximately 60 days, for science team QC and to facilitate product regeneration due to late arriving L2A files*
  - *The 5-day, weekly and monthly science files are kept on line for approximately 6 months*
- Future: Same as above, except *all* latest version Level-2A files will be kept on line to facilitate reprocessing.

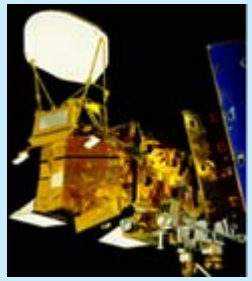
Algorithm Versions and Product Maturity Codes



Algorithm Short Name	Current Versions (as of 9/1/2006)	1st Reprocessing
L2A Tb	V08	V08
L2B Land	B05	T06
L2B Ocean	B04	V05
L2B Rain	B08	V09
L3 Land	B03	T04
L3 Ocean	B02	V03
L3 Rain	B05	T06
L3 Sea Ice	B06	T07
L3 Snow	B06	T07

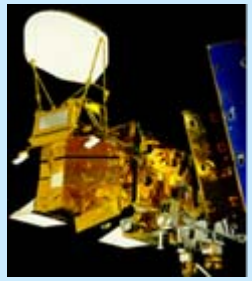
Product Maturity Codes
B=beta; T=transitional; V=validated

FTP Data from Ariel



- SIPS-GHCC completed the migration of science team users from Restricted FTP to Secure FTP in January 2005.
- If you are new to the team or have not yet made the switch to secure FTP and wish to be able to retrieve data from Ariel, please contact kregner@itsc.uah.edu

Hardware is Aging



- SIPS-GHCC processing servers were procured in 1999 (Ariel) and 2000 (Melody)
  - *SGI stopped manufacturing the Origin 2000 class of server on June 30, 2002*
  - *SGI will continue to support these systems through June 30, 2007 (also known as "end of life")*
- SIPS production systems must be under hardware maintenance plan
  - *implementing a plan to replace this hardware without impact to ongoing operations.*

South Polar view of sea ice showing the ice extent near its yearly maximum