

EOS Science Networks Performance Report

This is a summary of EOS QA SCF performance testing for the 3rd quarter of 2011 -- comparing the performance against the requirements, including Terra, TRMM, QuikScat, Aqua, Aura, ICESat, and GEOS requirements

Current results can be found on the EOS network performance web site (ENSIGHT): http://ensight.eos.nasa.gov/active_net_measure.html. Or click on any of the site links below.

Highlights:

- Mostly stable performance.
 - **All nodes but one rated at least Good** (mostly **Excellent!**)
 - LaRC → GHRC: **Adequate**
 - **GPA 3.77** (was 3.82 last quarter)
- Requirements: the Nov '07 requirements are used as the basis for the ratings
 - Requirements update continues

Ratings:

Rating Categories:

Excellent: median of daily worst cases > 3 x requirement

Good: median of daily worst cases > requirement

Adequate: median of daily worst cases < requirement
and
median of daily medians > requirement

Low: median of daily medians < requirement.

Bad: median of daily medians < 1/3 of the requirement.

Ratings Changes:

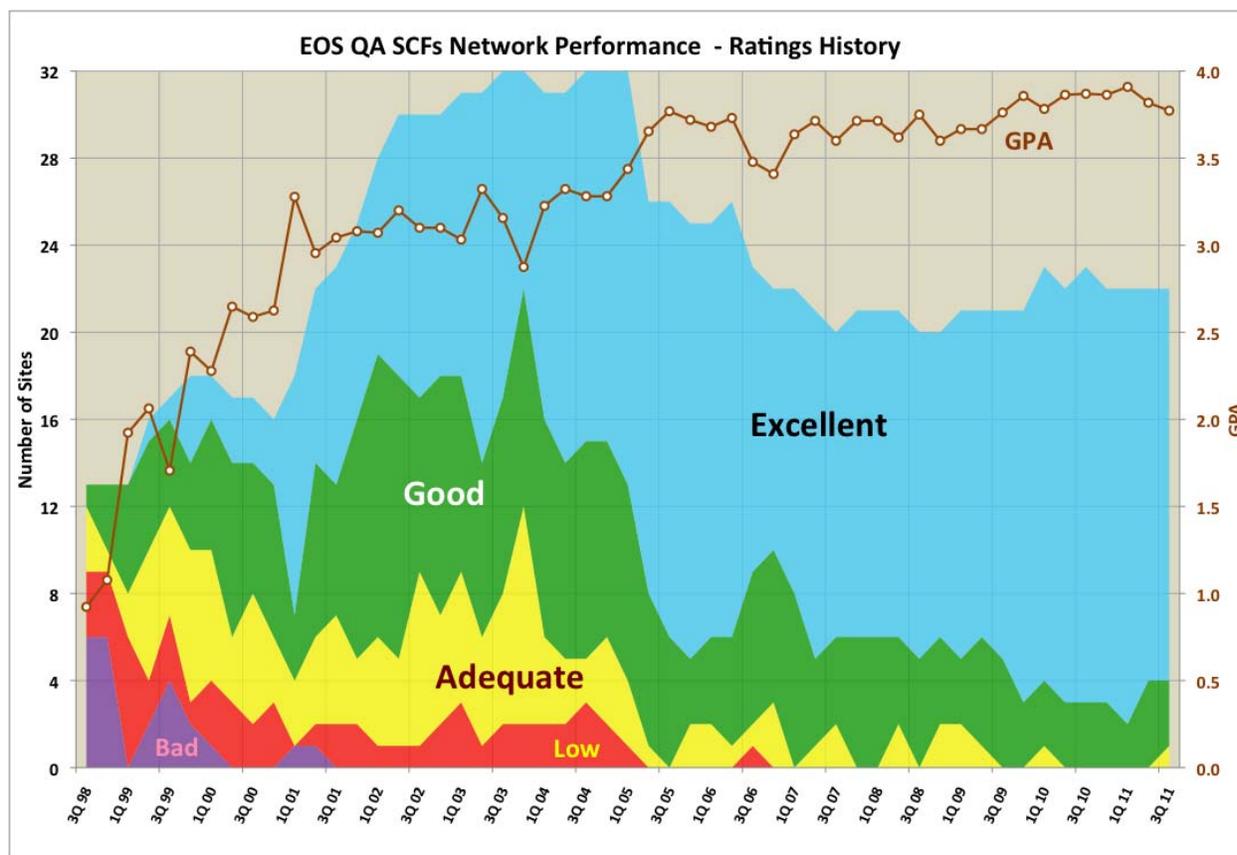
Upgrade: ↑ None

Downgrades: ↓

LaRC → GHRC: **Good** → **Adequate**

Ratings History:

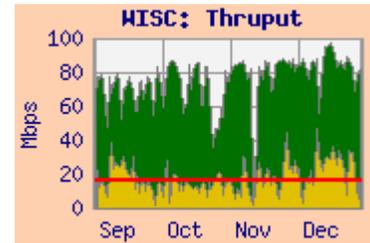
The chart below shows the number of sites in each classification since the testing started in 1998. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements. The GPA is calculated based on Excellent: 4, Good: 3, Adequate: 2, Low: 1, Bad: 0



Notes: The number of sites included in this chart has changed since 1Q'05 due to:

- 2Q05: Moving the reporting for 6 SIPS sites to the “EOS Production Sites” Network Performance Report.
- 2Q06: Testing discontinued to SAGE III Nodes
- 3Q06: Testing discontinued to NOAA and UMD
- 4Q06: Testing discontinued to UIUC
- 2Q07: Testing discontinued to U Washington
- 1Q09: Testing added to BADC (RAL).
- 1Q10: Testing to Oxford restored.
- 1Q10: ICESAT functions of Ohio State were transferred to Buffalo. Testing to Buffalo added.
- 2Q10: Testing to Ohio State discontinued.
- 3Q10: UIUC added [back]; Testing to MIT discontinued
- 2Q11: Testing discontinued to LANL, PNNL; requirements added to CCRS and Univ of Auckland

Integrated Charts: Integrated charts are now included for selected sites with the site details. These charts are “Area” charts, with a pink background. A sample Integrated chart is shown here. The yellow area at the bottom represents the daily average of the user flow from the source facility (e.g., GSFC, in this example) to the destination facility (e.g., Wisconsin, in this example) obtained from routers via “netflow”. The green area is stacked on top of the user flow, and represents the “adjusted” daily average iperf thruput between the source-destination pair most closely corresponding to the requirement. This iperf measurement essentially shows the circuit capacity remaining with the user flows active. The adjustments are made to compensate for various systematic effects, and are best considered as an approximation. The red line is the requirement for the flow from the source to destination facilities.



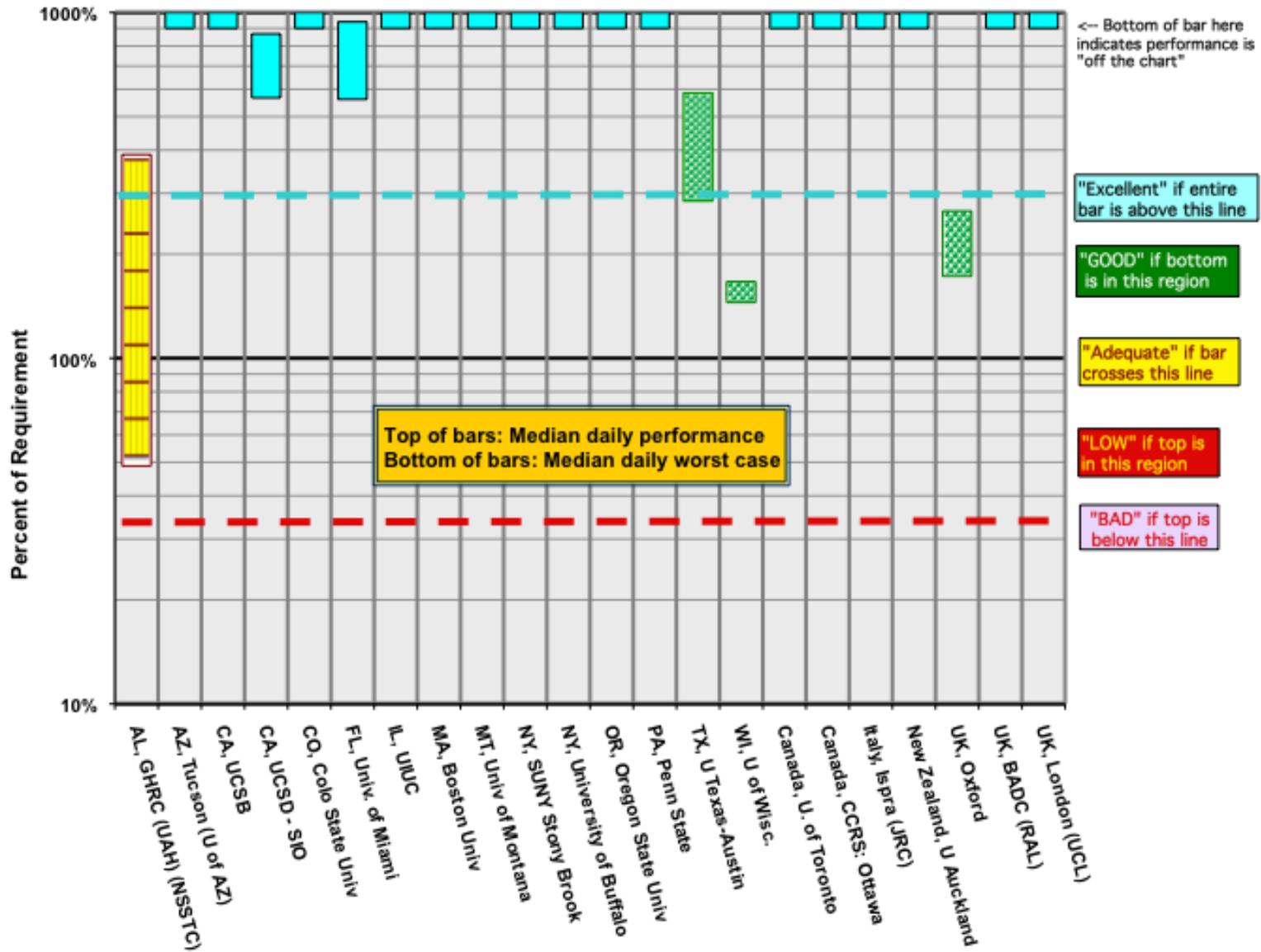
Note: User flow data is has not been available from LaRC since March 2007, so sites with primary requirements from LaRC will not include integrated graphs.

EOS QA SCF Sites Summary: Network Requirements vs. Measured Performance

3 rd Quarter 2011			Testing								
Destination	Team (s)	Requirement	Source Node	Median Daily Best	Median mbps	Median Daily Worst	Average User Flow	Rating re Current Requirements		Route Tested	
		Nov-07						3 Q 2011	2Q11		
AL, GHRC (UAH) (NSSTC)	CERES, ASTER, LIS	6.9	LaRC PTH	45.6	26.9	3.4		Adequate	Good	NISN / MAX / Internet2 / SOX / UAH	
AZ, Tucson (U of AZ)	MODIS	2.6	EROS LPDAAC	70.8	60.9	43.0	0.35	Excellent	Ex	StarLight (Chicago) / Internet2 / CENIC	
CA, UCSB	MODIS	3.1	GSFC-MODIS	84.5	70.1	52.2	0.45	Excellent	Ex	MAX / Internet2 / CENIC	
CA, UCSD - SIO	ICESAT, CERES	7.1	GSFC-ICESAT	73.7	61.6	40.3		Excellent	Ex	NISN / MAX / Internet2 / CENIC	
CO, Colo State Univ	CERES	2.1	LaRC ANGe	151.4	149.5	135.4		Excellent	Ex	NISN / MAX / Internet2 / FRGP	
FL, Univ. of Miami	MODIS, MISR	18.8	GSFC-MODIS	235.5	176.9	105.6	0.04	Excellent	Ex	MAX / Internet2 / SOX	
IL, UIUC	MISR	1.1	LaRC PTH	111.6	102.2	35.6		Excellent	Ex	Internet2 via NISN / MAX	
MA, Boston Univ	MODIS, MISR	3.0	EROS LPDAAC	240.0	201.8	123.0	1.3	Excellent	Ex	StarLight (Chicago) / Internet2 / NOX	
MT, Univ of Montana	MODIS	0.8	EROS LPDAAC	85.0	76.5	54.1	1.1	Excellent	Ex	StarLight (Chicago) / Internet2 / PNW	
NY, SUNY Stony Brook	CERES	0.6	LaRC ANGe	65.7	51.1	24.9		Excellent	Ex	NISN / MAX / Internet2 / NYSERnet	
NY, University of Buffalo	ICESAT	6.3	GSFC-ICESAT	91.4	86.0	70.1		Excellent	Ex	NISN / MAX / Internet2 / NYSERnet	
OR, Oregon State Univ	CERES, MODIS	7.6	LaTIS	115.1	114.8	114.2		Excellent	Ex	NISN / MAX / Internet2 / PNW	
PA, Penn State	MISR	2.6	LaRC PTH	59.8	59.1	55.3		Excellent	Ex	NISN / MAX / 3ROX	
TX, U Texas-Austin	ICESAT	11.1	GSFC-ICESAT	97.6	64.6	31.6	0.6	Good	Good	NISN / MAX / Internet2 / TX-learn	
WI, U of Wisc.	MODIS, CERES, AIRS, NPP	124.0	NPP SD3E	223.8	206.5	179.8	31.6	Good	Good	MAX / Internet2 / MREN	
Canada, U. of Toronto	MOPITT	0.6	LaRC DAAC	65.2	58.5	24.8		Excellent	Ex	NISN / StarLight (Chicago) / CA*net4	
Canada, CCRS: Ottawa	CEOS, MODIS	3.8	GSFC-MODIS	124.3	115.0	97.1	2.2	Excellent	Ex	MAX / Internet2 / CA*net4	
Italy, Ispra (JRC)	MISR	0.5	LaRC DAAC	21.9	18.3	15.3		Excellent	Ex	NISN / MAX / Géant (DC) / GARR	
New Zealand, U Auckland	MISR	0.3	LaRC PTH	53.3	39.6	13.4		Excellent	Ex	NISN / StarLight (Chicago) / PNW / PacWave	
UK, Oxford	HIRDLS	0.5	GSFC-ENPL-PTH	1.95	1.36	0.88	0.17	Good	Good	Internet2 / Géant (DC) / JAnet	
UK, BADC (RAL)	HIRDLS	0.2	GSFC-ESDIS-PTH	22.6	19.0	11.2		Excellent	Ex	Internet2 / Géant (DC) / JAnet	
UK, London (UCL)	MISR, MODIS	1.0	LaRC PTH	33.9	23.0	13.7		Excellent	Ex	NISN / MAX / Géant (DC) / JAnet	
		Revised									
		*Rating Criteria:					Summary				
								Current:	Prev		
								3 Q 2011	Report		
Excellent	Median Daily Worst >= 3 * Requirement						Excellent	18	18		
Good	Median Daily Worst >= Requirement						Good	3	4		
Adequate	Median Daily Worst < Requirement <= Median Daily Median						Adequate	1	0		
LOW	Median Daily Median < Requirement						LOW	0	0		
BAD	Median Daily Median < Requirement / 3						BAD	0	0		
							Total	22	22		
							GPA	3.77	3.82		

EOS QA SCF Sites

Daily Median and Worst Performance as a percent of Requirements



Details on individual sites:

Each site listed below is the DESTINATION for all the results reported in that section. The first test listed is the one on which the rating is based -- it is from the source most relevant to the driving requirement. Other tests are also listed. The three values listed are derived from [nominally] 24 tests per day. For each day, a daily best, worst, and median is obtained. The values shown below are the medians of those values over the test period.

1) AL, GHRC (UAH) (aka NSSTC)

Teams: CERES, AMSR

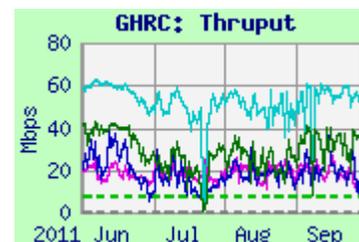
Web Page: <http://ensight.eos.nasa.gov/Missions/terra/NSSTC.shtml>

Rating: ↓ **Good** → **Adequate**

Domain: nsstc.uah.edu

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC-PTH	45.6	26.9	3.4	NISN / MAX / I2 / SOX
GSFC-CNE	61.9	52.2	5.5	
GSFC-EDOS	51.0	16.9	2.2	MAX / I2 / SOX



Requirements:

Source Node	FY	Mbps	Rating
LaRC ANGe	'06 – '09	7.0	Adequate

Comments: Although the daily best was similar to the previous period, the daily median, and especially the daily worst dropped from all sources – indicating serious congestion. **The median daily worst thruput from LaRC-PTH is now below the requirement, so the rating drops to Adequate.**

Testing was initiated in December '10 from **GSFC-EDOS** for LANCE flows;.

Note: Testing between GHRC, RSS and NSIDC for AMSR-E (AQUA) is included in the “Production Sites” report.

2) AZ, Tucson (U of AZ):

Team: MODIS

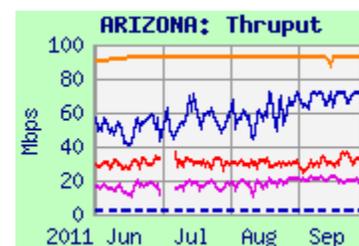
Web Page: <http://ensight.eos.nasa.gov/Missions/terra/ARIZONA.shtml>

Rating: Continued **Excellent**

Domain: arizona.edu

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EROS LPDAAC	70.8	60.9	43.0	StarLight / I2 / CENIC
EROS SCP	22.5	18.8	6.8	
EROS PTH SCP	42.4	30.3	6.3	
GSFC ENPL	92.6	92.6	92.0	MAX / I2 / CENIC



Requirements:

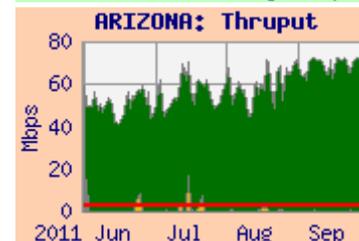
Source Node	FY	Mbps	Rating
EROS LPDAAC	'03 - '09	2.6	Excellent

Comments: Thruput from **EROS LPDAAC** has been stable since it improved in January '11. The median daily worst was way above 3 x the requirement, so the rating remains “**Excellent**”.

SCP testing from **EROS LPDAAC** is only about half of that seen from EROS PTH.

From **GSFC-ENPL**, thruput is even better and very stable.

The average user flow from EROS dropped to only about 0.35 mbps, way below the previous period (2.8 mbps) and the requirement.



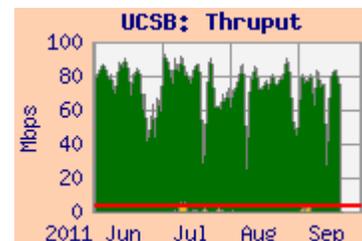
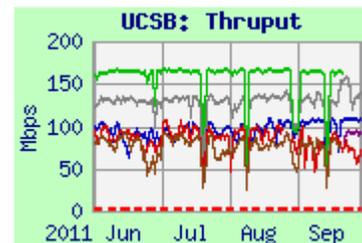
3) CA, UCSB :

Teams: MODIS
 Domain: ucsb.edu
 Web page: <http://ensight.eos.nasa.gov/Missions/terra/UCSB.shtml>

Ratings: GSFC: Continued **Excellent**
 EROS: Continued **Excellent**

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MODIS	92.9	77.9	44.7	MAX / I2 / CENIC
GSFC-GES DISC	109.0	86.8	46.3	
GSFC-ENPL	167.9	164.8	119.2	
EROS-LPDAAC	109.1	98.4	57.8	StarLight / I2 / CENIC
EROS-PTH	147.7	131.2	92.0	



Requirements:

Source Node	FY	mbps	Rating
GSFC	'04 - '09	3.1	Excellent
EROS-LPDAAC	'04 - '09	2.2	Excellent

Comments: The requirements are split between EROS and GSFC. **Thruput from all sites is pretty stable.** The rating remains “**Excellent**” from both EROS and **GSFC-MODIS**. The user flow from GSFC averaged only 0.45 mbps this period, well below typical and the requirement.

4) CA, UCSD (SIO):

Teams: CERES, ICESAT
 Domain: ucsd.edu
 Web Page: <http://ensight.eos.nasa.gov/Missions/terra/UCSD.shtml>

Ratings: ICESAT: Continued **Excellent**
 ANGe: Continued **Excellent**

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	73.7	61.6	40.3	NISN SIP / MAX / I2 / CENIC
LaRC ANGe (LaTIS)	167.9	166.0	159.6	
GSFC-ESDIS-PTH	132.4	119.5	91.8	MAX / I2 / CENIC
GSFC-ENPL	186.5	186.2	185.0	

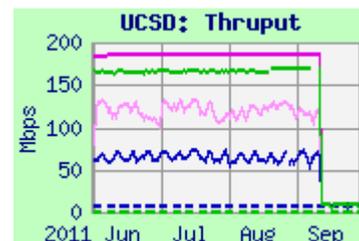
Requirements:

Source Node	FY	mbps	Rating
GSFC-ICESAT	'05 – '09	7.0	Excellent
LaRC ANGe	'02 - '09	0.26	Excellent

Comments: Performance from all sources was quite stable, until a dramatic drop in early September, with high packet loss (fixed in late October). The median daily minimum thruput from ICESAT was still above 3 x the requirement, so the rating remains “**Excellent**”

Performance from both **GSFC-ENPL** and **GSFC-ESDIS-PTH** is better and was very steady until the dropoff. There was no measurable user flow from ICESAT during this period.

Performance from **ANGe (LaTIS)** was also very stable until the dropoff. The **ANGe** rating continues as “**Excellent**”.



5) CO, Colo State Univ.:

Teams: CERES, ICESAT

Web page: http://ensight.eos.nasa.gov/Missions/terra/COLO_ST.shtmlRating: Continued **Excellent**

Domain: colostate.edu

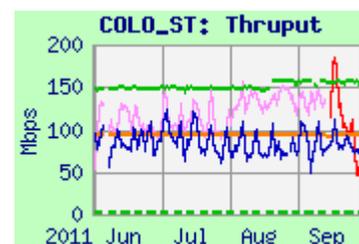
Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ANGe (LaTIS)	151.4	149.5	135.4	NISN SIP / MAX / I2 / FRGP
GSFC-ICESAT	120.2	79.0	39.4	
GSFC-ESDIS-PTH	164.2	127.7	80.6	MAX / I2 / FRGP
GSFC-ENPL	93.2	93.1	92.9	

Requirements:

Source Node	FY	mbps	Rating
LaRC ANGe (LaTIS)	'04 - '09	2.15	Excellent

Comments: Thruput from all sources was quite stable, with small best:worst ratios. Performance from LaRC ANGe remained well above 3 x the requirement, so the rating remains “**Excellent**”. Testing from GSFC-ENPL is very stable, outside most GSFC campus firewalls, limited by its 100 mbps ethernet connection. Testing from GSFC-ESDIS-PTH improved in late May, when TSO was disabled, reducing packet loss due to bursts.

**6) FL, Univ. of Miami:**

Teams: MODIS, MISR

Domain: rsmas.miami.edu

Web page: <http://ensight.eos.nasa.gov/Missions/terra/MIAMI.shtml>Rating: GSFC: Continued **Excellent**LaRC: Continued **Excellent****Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-NISN	193.8	173.5	81.2	MAX / I2 / SOX
GSFC-MODIS	235.5	176.9	105.6	
LaRC ASDC	174.8	172.4	122.9	NISN / MAX / I2 / SOX

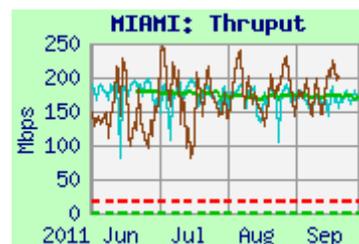
Requirements:

Source Node	FY	mbps	Rating
GSFC	'04 - '09	18.8	Excellent
LaRC ASDC	'04 - '09	1.1	Excellent

Comments: In April '11, thruput improved from all sources. Thruput from GSFC-NISN was steady, and the average daily worst was above 3x the requirement, so the rating remains “**Excellent**”.

Iperf testing from GSFC-MODIS resumed in May. Results were noisy but similar to GSFC-NISN.

Thruput was also steady from LaRC ASDC. The rating from LaRC remains “**Excellent**”.



7) IL, UIUC:

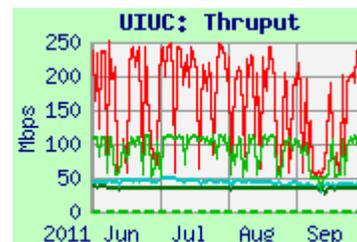
Teams: MISR

Web page: <http://ensight.eos.nasa.gov/Missions/terra/UIUC.shtml>Rating: LaRC: **Excellent**

Domain: uiuc.edu

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC PTH-SCP	111.6	102.2	35.6	NISN / StarLight / I2
LaRC PTH	38.3	34.9	29.2	
GSFC-NISN-SCP	258.1	191.7	44.2	MAX / I2
GSFC-NISN	50.4	43.5	35.9	

**Requirements:**

Source Node	FY	mbps	Rating
LaRC ASDC	'04 -	1.1	Excellent

Comments: Testing was added to UIUC in August '10. Initially, SCP testing was initiated from GSFC and LaRC, sending files to UIUC. SCP thrupt is noisy from both sources, somewhat bimodal, but well above the requirement; so the rating remains **Excellent**.

In October '10, nuttcp testing was added, initiated by UIUC, receiving from GSFC and LaRC. Thrupt on these tests is steadier than SCP, but much lower, apparently due to significant incoming packet loss (which is causing the noisiness on the SCPs as well).

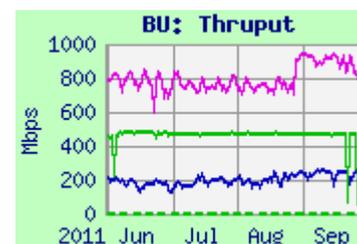
8) MA, Boston Univ:

Teams: MODIS, MISR

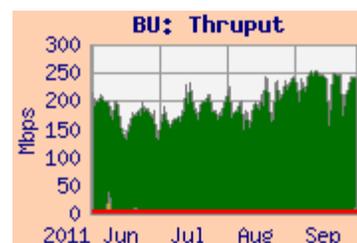
Domain: bu.edu

Ratings: EROS: Continued **Excellent**LaRC: Continued **Excellent**Web Page: <http://ensight.eos.nasa.gov/Missions/terra/BU.shtml>**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EROS LPDAAC	240.0	201.8	123.0	StarLight / I2 / NOX
GSFC ENPL	873.1	780.7	625.9	MAX / I2 / NOX
LaRC ASDC	477.4	473.6	330.6	NISN / MAX / I2 / NOX

**Requirements:**

Source Node	FY	mbps	Rating
EROS LPDAAC	'04 - '09	3.0	Excellent
LaRC ASDC DAAC	'04 - '09	1.2	Excellent



Comments: BU is well connected, with peaks close to 1 gbps. Thrupt from all sources was much better than the requirements, rating **Excellent**. From EROS LPDAAC, the user flow (shown on the integrated graph) averaged about 1.3 mbps for this period – lower than the requirement. Thrupt from GSFC and LaRC ASDC DAAC also greatly exceeded the requirements. User flow from GSFC averaged 1.2 mbps.

9) MT, Univ of Montana: Rating: Continued **Excellent**

Teams: MODIS

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/MONT.shtml>

Domain: ntsg.umt.edu

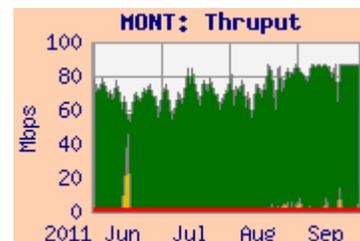
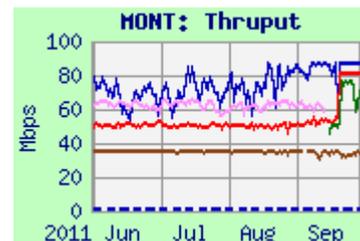
Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EROS LPDAAC	85.0	76.5	54.1	StarLight / I2 / PNW
EROS PTH	56.3	50.6	44.4	
GSFC-ESDIS	65.6	62.5	50.5	MAX / I2 / PNW
NSIDC	34.9	34.8	31.7	CU / FRGP / I2 / PNW

Requirement:

Source Node	FY	mbps	Rating
EROS LPDAAC	'04 - '09	0.82	Excellent

Comments: Performance from all sources was quite stable. With the very low requirement, the rating remains "**Excellent**". The average user flow from EROS was 1.1 mbps for the 3 month period – a bit above the requirement.

**10) NY, SUNY-SB:**

Teams: CERES, MODIS

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/SUNYSB.shtml>Rating: Continued **Excellent**

Domain: sunysb.edu

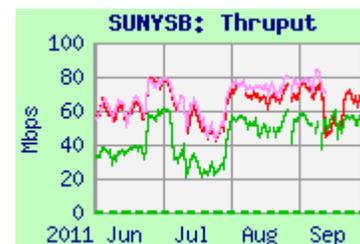
Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ANGe	65.7	51.1	24.9	NISN / MAX / I2 / NYSERnet
GSFC-ESDIS	84.6	72.2	47.3	MAX / I2 / NYSERnet

Requirements:

Source Node	FY	mbps	Rating
LaRC ANGe	'02-'09	0.57	Excellent

Comments: Thruput from ESDIS improved in late May with TSO being disabled, and from both sources in late June with retuning. The daily worst for this period was well above 3 x the requirement from both sources, so the rating remains "**Excellent**".

**11) NY, University of Buffalo:**

Team: ICESAT

Web Page: <http://ensight.eos.nasa.gov/Missions/icesat/BUFFALO.shtml>Rating: Continued **Excellent**

Domain: buffalo.edu

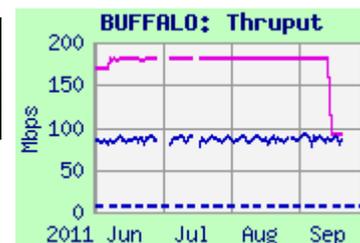
Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	91.4	86.0	70.1	NISN / MAX / I2 / NYSERnet
GSFC-ENPL	182.0	181.8	179.6	MAX / I2 / NYSERnet

Requirements:

Source Node	FY	mbps	Rating
GSFC-ICESAT	'09 -	6.3	Excellent

Comments: This node replaced Ohio-State for ICESAT, and assumes its requirement. The thrupt was very stable until the test node went down in mid-September (restored in mid October), and was well above 3 x the requirement from both sources, so the rating remains "**Excellent**".



12) OR, Oregon State Univ:Ratings: LaRC ANGe: Continued **Excellent**
GSFC: Continued **Excellent**

Teams: CERES, MODIS

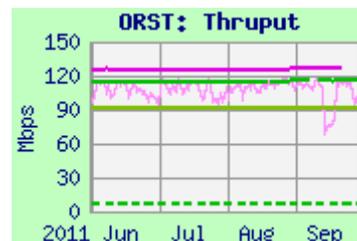
Domain: oce.orst.edu

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/ORST.shtml>**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ANGe (LaTIS)	115.1	114.8	114.2	NISN / MAX / I2 / PNW
JPL-PTH	91.2	91.0	90.9	CENIC / I2 / PNW
GSFC-ESDIS-PTH	118.2	110.0	85.0	MAX / I2 / PNW
GSFC-ENPL	126.7	125.1	124.1	

Requirements:

Source Node	FY	mbps	Rating
LaRC ANGe	'04 - '09	7.5	Excellent
GES DISC	'02 - '09	0.25	Excellent



Comments: Thruput was very stable from all sources for this period, and was well above the requirements. The ratings from both LaTIS and GSFC remain "**Excellent**".

Thruput from **GSFC-ESDIS-PTH** improved in late May when TSO was disabled, reducing packet loss. Testing from **GSFC-ENPL** is not subject to congestion at GSFC – its median and worst performance is higher.

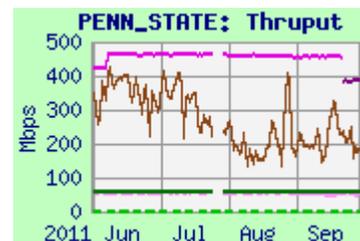
Thruput from **JPL-PTH** is also very stable.

13) PA: Penn State Univ:Rating: Continued **Excellent**
Domain: psu.edu

Team: MISR

Web Page: http://ensight.eos.nasa.gov/Missions/terra/PENN_STATE.shtml**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC-PTH	59.8	59.1	55.3	NISN / MAX / I2 / 3ROX
GSFC-ESDIS-PTH	57.5	55.1	46.7	MAX / I2 / 3ROX
GSFC-ENPL	466.4	460.1	440.0	
GSFC-ESTO	301.2	228.2	143.5	

**Requirements:**

Source Node	FY	mbps	Rating
LaRC DAAC	'03-'09	2.6	Excellent



Comments: Thruput from NISN sources is much lower than from non-NISN sources, due to much longer RTT. Note that the forward route is OK (see above), but the return route to LaRC and GSFC-ESDIS-PTH is much longer -- now via peering with NISN in Chicago! But due to the low requirement, the rating remains "**Excellent**".

From **GSFC-ESTO** (on the SEN at GSFC, not EBnet) and from **GSFC-ENPL** (direct GigE to MAX), the RTT is lower (due to the optimum return route), and the thruput is higher than from other sources.

14) TX: Univ. of Texas - Austin:

Team: ICESAT

Web Page: <http://ensight.eos.nasa.gov/Missions/icesat/TEXAS.shtml>Rating: Continued **Good**
Domain: utexas.edu**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	97.6	64.6	31.6	NISN / MAX / I2 / TX
GSFC-ENPL-PTH	118.6	111.1	98.4	MAX / I2 / TX
GSFC-ESDIS-PTH	212.4	170.3	96.1	

Requirements:

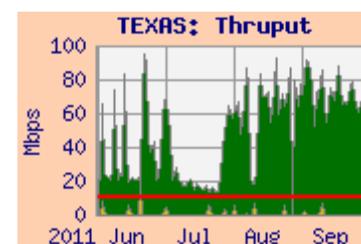
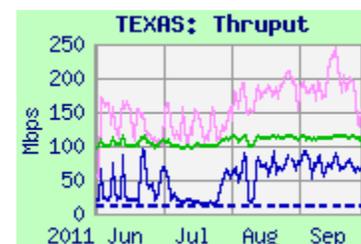
Source Node	FY	mbps	Rating
GSFC-ICESAT	05-'09	11.1	Good

Comments: Thruput from ICESAT became steadier in late July, but the daily minimum thruput remains slightly less than 3 x above the requirement, so the rating remains "**Good**".

Thruput from GSFC-ESDIS-PTH improved in late May, when TSO was disabled, reducing packet loss.

From GSFC-ENPL, outside most of the congested GSFC campus infrastructure, thruput is much less noisy – and higher.

The average user flow this period was only 650 kbps, only about 6% of the requirement, a bit higher than last quarter.

**15) WI, Univ. of Wisconsin:**

Teams: MODIS, CERES, AIRS, NPP

Domain: ssec.wisc.edu

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/WISC.shtml>Ratings: GSFC NPP: Continued **Good**
LARC: Continued **Excellent****Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-DISC	274.6	237.6	143.7	MAX / I2 / MREN
NPP-SD3E	223.8	206.5	179.8	
Mini IDPS	369.1	297.5	195.1	
LaRC ANGe	168.3	165.0	157.8	NISN / MAX / I2 / MREN
GSFC-ENPL	348.8	325.3	264.7	MAX / I2 / MREN

Requirements:

Source Node	FY	mbps	Rating
GSFC DISC	'04 - '09	16.5	Excellent
NPP-SD3E	'11 -	124	Good
LaRC Combined	'05 - '09	7.9	Excellent

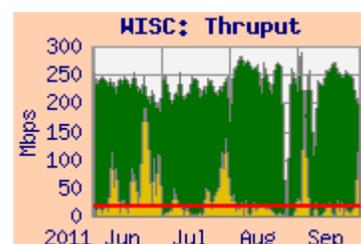
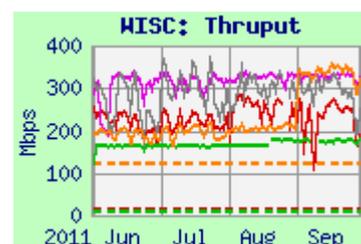
Comments: Performance from all sources was mostly stable this period, with improvement from NPP in early September, due to retuning.

The NPP requirement for flow from SD3E at GSFC to the Atmosphere PEATE at Wisconsin (124 mbps) was incorporated last period. This requirement is more than 7 x the previous GSFC requirement. Although the thruput was stable, this higher requirement results in a rating of "**Good**".

The user flow from GSFC averaged 31.6 mbps this period. Much of this flow was apparently for NPP.

Testing from GES DISC for Terra, Aqua, and Aura flows was stable, and rated "**Excellent**". Testing from GSFC-ENPL was also very stable. Thruput from NPP Mini IDPS at GSFC was similar to other GSFC sources.

Thruput from LaRC ANGe (LaTIS) was very stable; the rating from ANGe remains "**Excellent**".



16) Canada, Univ of Toronto:Rating: GSFC: Continued **Excellent**
LaRC: Continued **Excellent**

Team: MOPITT

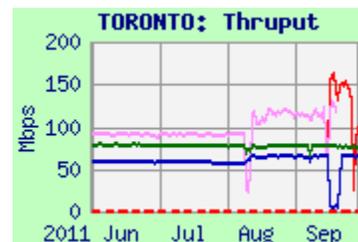
Domain: utoronto.ca

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/TORONTO.shtml>**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ASDC DAAC	65.2	58.5	24.8	NISN / StarLight / CA*net
LaRC PTH	77.3	77.1	69.1	
GSFC-ESDIS-PTH	117.3	92.4	77.0	MAX / I2 / NY / CA*net
GSFC-ESDIS-PS	183.2	142.6	40.7	

Requirements:

Source Node	FY	kbps	Rating
LaRC DAAC	'02 - '09	100	Excellent
GSFC EOC	'02 - '09	512	Excellent

**Comments:**

Thruput from GSFC-ESDIS-PTH improved in late May with the disabling of TSO. Testing was switched to GSFC-ESDIS-PS in mid September, with improved results..

Thruput from LaRC PTH was stable; LaRC ASDC DAAC was also stable but a bit noisier. The ratings from both sources remain "**Excellent**", due to the low requirements.

User flow from GSFC averaged only 9.5 kbps this period.

17) Canada: CCRS (Ottawa)Rating: **Excellent**

Teams: MODIS, CEOS

Domain: ccrs.nrcan.gc.ca

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/CCRS.shtml>**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MODAPS	124.3	115.0	97.1	MAX / I2 / CA*net
GSFC-ENPL	101.4	101.3	101.0	

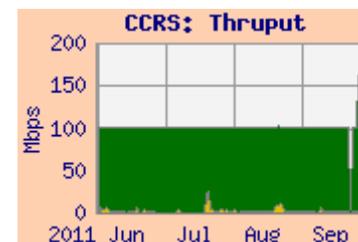
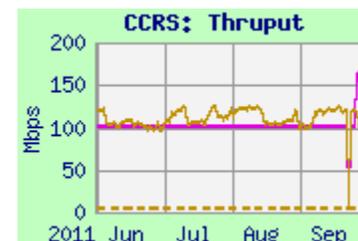
Requirement:

Source Node	FY	mbps	Rating
GSFC-MODAPS	'11 -	3.8	Excellent

The MODIS requirement (3.8 mbps) is now incorporated for this site.

Performance from both sources improved in April and again in May with retuning. Thruput was much more than 3 x the requirement, so is rated "**Excellent**".

User flow from GSFC averaged 2.2 mbps this period, consistent with the requirement (without contingency).



18) Italy, EC - JRC:

Team: MISR

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/JRC.shtml>Rating: Continued **Excellent**

Domain: jrc.it

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ASDC DAAC	21.9	18.3	15.3	NISN / MAX / Géant / Garr
GSFC-NISN	54.7	52.3	47.1	
GSFC-ENPL	44.5	43.5	42.6	MAX / I2 / Géant / Garr

Requirements:

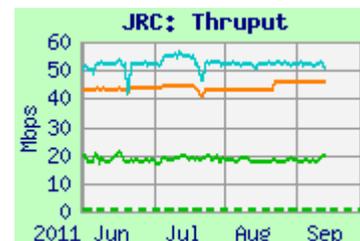
Source Node	FY	mbps	Rating
LaRC DAAC	'02 – '09	0.52	Excellent

Comments:

Thruput was stable from all sources this period. The median daily worst thrupt from LaRC ASDC DAAC remains well above 3 x the requirement, so the rating remains "**Excellent**".

Performance is similar from GSFC-NISN and GSFC-ENPL. LaRC flows now take a similar route as the GSFC nodes.

Testing was terminated in mid September on request from JRC. However, EOS has requested that testing be resumed.

**19) University of Auckland, New Zealand**

Teams: MISR

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/NZL.shtml>Rating: Continued **Excellent**

Domain: auckland.ac.nz

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC-PTH	53.3	39.6	13.4	NISN / Chicago / I2 / PNW / PacWave
GSFC-ESDIS-PTH	78.9	62.2	32.5	MAX / I2 / PNW /
GSFC-ESTO	14.1	11.4	6.5	PacWave

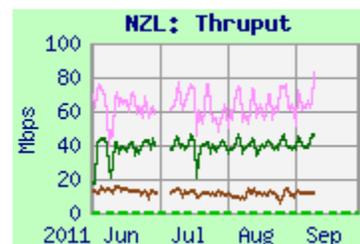
Requirement:

Source Node	FY	mbps	Rating
LaRC	'11 -	0.3	Excellent

The MISR requirement (0.3 mbps) is now incorporated for this site.

Thruput from LaRC-PTH improved at the beginning of June with retuning. With the low requirement, the rating is "**Excellent**".

Thruput was higher from GSFC-ESDIS-PTH, and improved in late May with disabling of TSO.



20) UK, London: (University College)Rating: Continued **Excellent**

Teams: MODIS, MISR

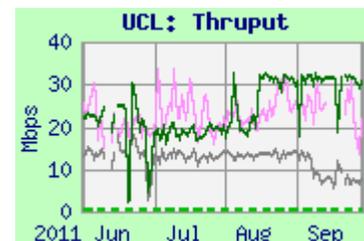
Domain: ucl.ac.uk

Web Page: <http://ensight.eos.nasa.gov/Missions/terra/UCLSCF.shtml>**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC PTH	33.9	23.0	13.7	NISN / MAX / Géant / JAnet
GSFC-ESDIS-PTH	35.3	23.2	12.9	MAX / I2 / Géant (DC) / JAnet
EROS-PTH	18.5	12.9	6.8	StarLight / I2 / Géant (DC) / JAnet

Requirements

Source Node	FY	mbps	Rating
LaRC DAAC	'02 – '09	1.03	Excellent



Comments: Testing since November and December '10 is by nuttcp pulls, initiated at UCL.

NISN began peering with Géant in September '09, with improved thruput from LaRC. Previously, the route from LaRC was via NISN peering with Teleglobe on the US west coast, unnecessarily increasing RTT and reducing thruput.

Thruput was stable from all sources until mid May, when there were problems at UCL – cleared up in early July. The median daily worst thruput from LaRC remained well above 3 x the requirement, so the rating remains “**Excellent**”

From GSFC-ESDIS, thruput improved in late May with disabling of TSO.

Thruput from EROS is similar to the other sites, but a bit lower due to a longer RTT.

21) UK, Oxford Univ.:Rating: Continued **Good**

Team: HIRDLS

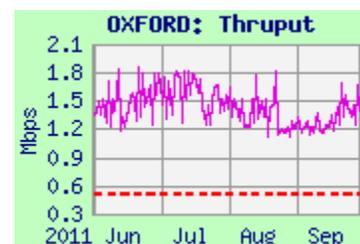
Domain: ox.ac.uk

Web Page: <http://ensight.eos.nasa.gov/Missions/aura/OXFORD.shtml>**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ENPL	1.95	1.36	0.88	MAX / I2 / Géant (DC) / JAnet

Requirements: (IST Only)

Source Node	FY	kbps	Rating
GSFC	'03 – '09	512	Good



Comments: Testing resumed in April '10, but using “flood pings”, which is a poor substitute for iperf, and provides much lower results, now rated “**Good**”. User flow from GSFC to Oxford averaged only 175 kbps for this period (vs. 630 last period).

Note: Testing to Oxford had been down since the old Oxford test host was retired (in April '08). At that time iperf performance had been mostly stable at about 25 mbps since October '06 (similar to BADDC, below, which is similarly connected to JAnet), rating “**Excellent**”.

22) British Atmospheric Data Centre

(Rutherford Appleton Laboratory)

Team: HIRDLS

Rating: Continued **Excellent**

Domain: rl.ac.uk

Web Page: http://ensight.eos.nasa.gov/Missions/aura/UK_RAL.shtml**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ENPL	35.8	28.1	13.7	MAX / I2 / Géant (DC) / JAnet
GSFC-ESDIS-PTH	22.6	19.0	11.2	

Requirements:

Source Node	FY	mbps	Rating
GSFC	'02 – '09	0.19	Excellent

Comments: Thruput from both sources became very noisy around 1 June; it improved again in August. Thruput from GSFC-ENPL was higher than from GSFC-ESDIS-PTH, due to packet loss on EBnet at GSFC until late May, when TSO was disabled on GSFC-ESDIS-PTH, and the thruput became similar on the two nodes. The thruput has consistently been much higher than the requirement, so the rating remains “**Excellent**”.

