

EOS Science Networks Performance Report

This is a summary of EOS QA SCF performance testing for the 3rd quarter of 2010 -- 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:

- **GSFC:** EBnet: 10 Gig upgrade substantially complete.
 - 10 gig MODIS connection in July
- EROS Proxy firewall removed in May
 - outgoing performance improved
 - But incoming performance dropped – packet loss increased
- Otherwise, mostly stable performance.
 - **ALL Nodes rated at least Good**
 - **GPA 3.87** (was 3.86 last quarter) **New High rating!**
 - Performance to nodes at Universities dropped somewhat when the students returned in late August or September
- The Nov '07 requirements are used as the basis for the ratings
 - Requirements update is [still] in progress

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.

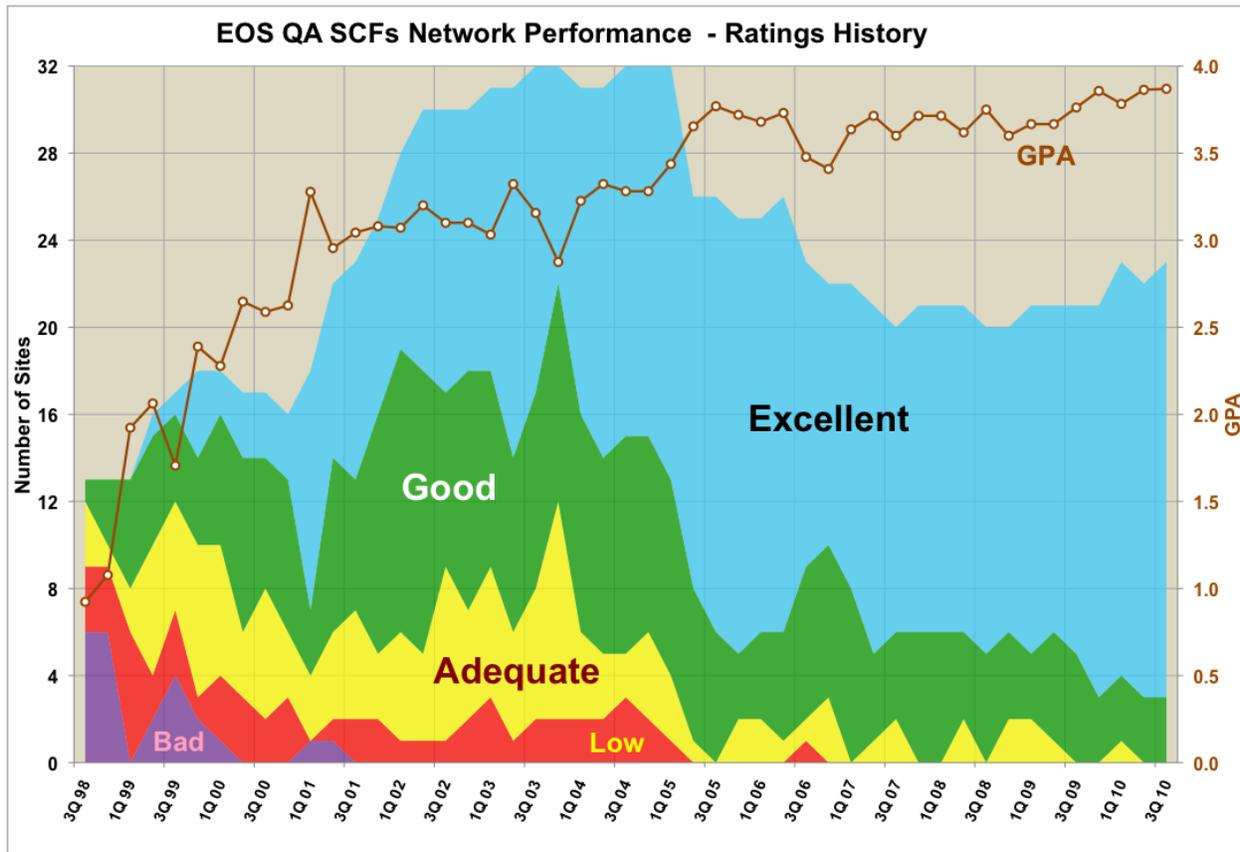
Ratings Changes: None

Testing Added: UIUC: **Excellent**

Testing Discontinued: MIT: No longer receiving ICESAT data

Ratings History:

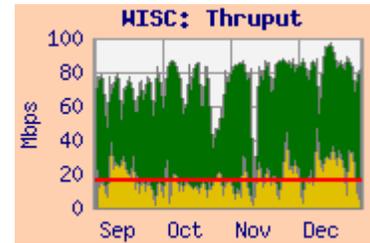
The chart below shows the number of sites in each classification since the testing started in 1998. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements. The GPA is calculated based on Excellent: 4, Good: 3, Adequate: 2, Low: 1, Bad: 0



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

- Moving the reporting for 6 SIPS sites to the “EOS Production Sites” Network Performance Report (2Q05).
- Discontinuation of tests to SAGE III Nodes (2Q06)
- Discontinuation of tests to NOAA and UMD (3Q06)
- Discontinuation of tests to U Washington (2Q07) and UIUC (4Q06)
- BADC added in 2009.
- Testing to Oxford was restored in March, 2010.
- ICESAT functions of Ohio State were transferred to Buffalo. Testing to Buffalo added 1Q10; Ohio State dropped 2Q10.
- UIUC added [back] in 3Q10.

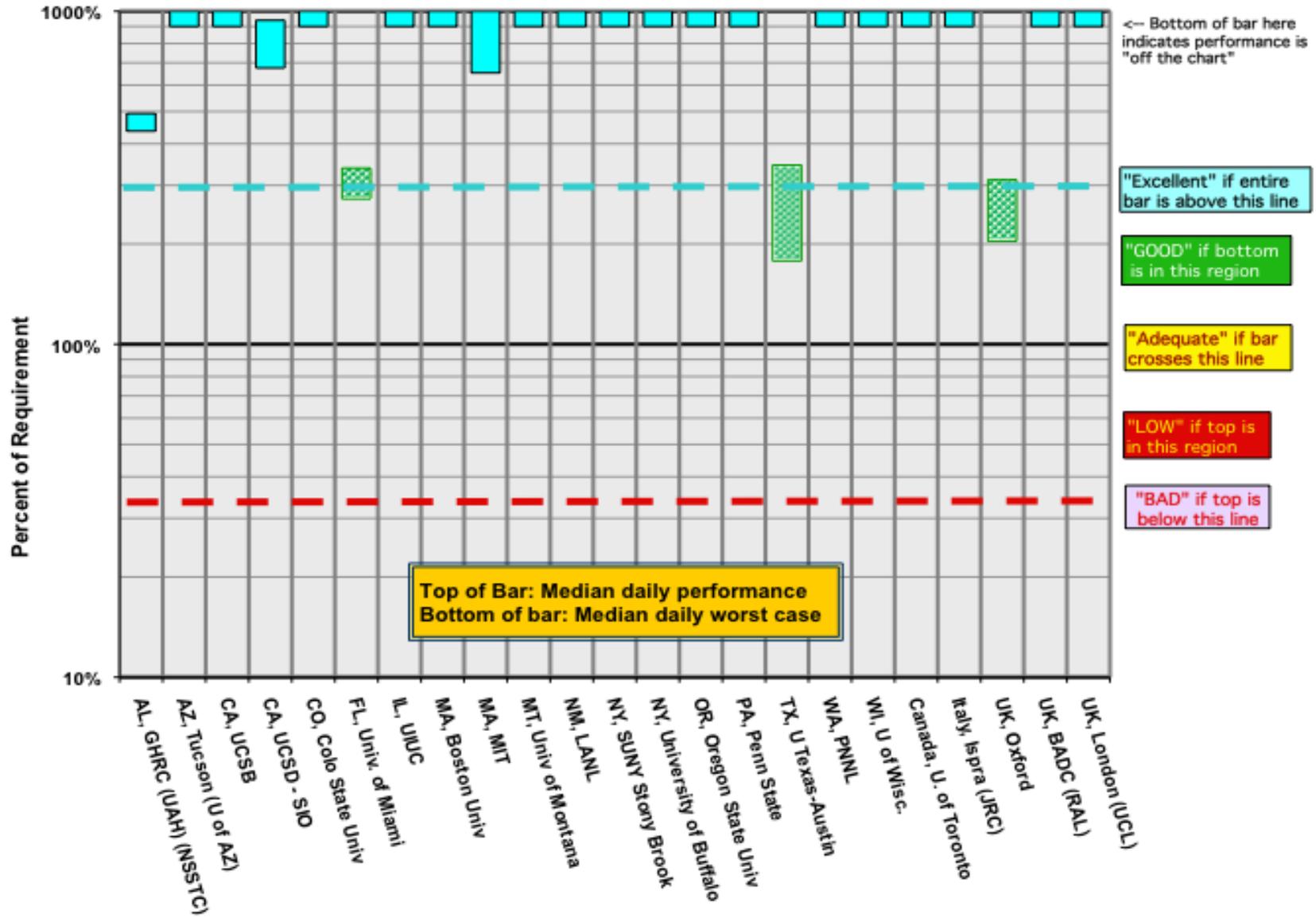
Integrated Charts: Integrated charts are now included for selected sites with the site details. These charts are “Area” charts, with a pink background. A sample Integrated chart is shown here. The yellow area at the bottom represents the daily average of the user flow from the source facility (e.g., 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

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

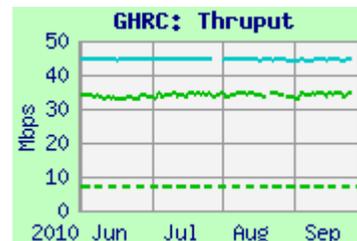
Web Page: <http://ensight.eos.nasa.gov/Missions/terra/NSSTC.shtml>

Rating: Continued **Excellent**

Domain: nsstc.uah.edu

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ANGe	35.0	34.2	30.3	NISN / MAX / I2 / SOX
GSFC-CNE	45.0	44.6	43.4	MAX / I2 / SOX



Requirements:

Source Node	FY	Mbps	Rating
LaRC ANGe	'06 - '09	7.0	Excellent

Comments: Performance from both sources was very steady; median daily worst thrupt remains above 3x the requirement, so the rating remains "**Excellent**".

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

2) AZ, Tucson (U of AZ):

Team: MODIS

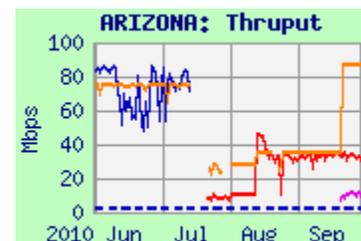
Web Page: <http://ensight.eos.nasa.gov/Missions/terra/ARIZONA.shtml>

Rating: Continued **Excellent**

Domain: arizona.edu

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EROS LPDAAC	86.0	74.8	38.3	StarLight / I2 / CENIC
EROS PTH SCP	39.2	31.7	16.9	
GSFC ENPL	35.3	35.3	34.9	MAX / I2 / CENIC



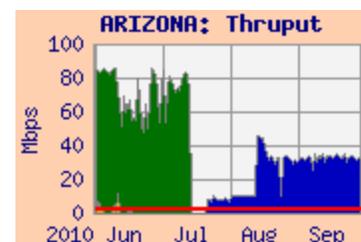
Requirements:

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

Comments: The Arizona test node was replaced in July – initially only SCP tests were possible (iperf testing from EROS resumed in October). The ratings are therefore based on the SCP flow from EROS-PTH. The median daily worst from EROS-PTH-SCP remained way above 3 x the requirement, so the rating remains "**Excellent**".

From GSFC-ENPL, iperf testing was initiated to the replacement node in July, and was returned in September. Thrupt is now slightly better than to the old node.

The average user flow from EROS was not measured this period, due to the changing test parameters.



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:**

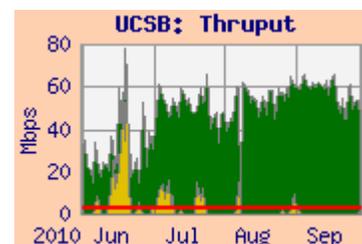
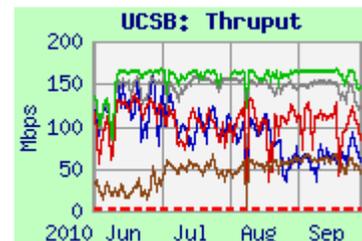
Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MODIS	66.4	54.2	32.2	MAX / I2 / CENIC
GSFC-GES DISC	134.1	106.8	57.9	
GSFC-ENPL	167.1	163.0	132.3	
EROS-LPDAAC	133.9	83.0	34.5	StarLight / I2 / CENIC
EROS-PTH	154.6	150.1	117.3	

Requirements:

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

Comments: The requirements are split between EROS and GSFC. Thruput from MODIS at GSFC was less noisy due to the MODIS upgrade to 10 Gig.

Performance from ENPL and GES DISC (on the 10 gig EBnet backbone since June '09) remains more stable. Thruput from EROS LPDAAC improved with the removal of the EROS proxy firewall in May, but performance is still better from EROS-PTH (outside the ECS firewall). The rating remains "**Excellent**" from both EROS and GSFC-MODIS. The user flow from GSFC averaged a more typical 1.85 mbps this period, consistent with 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	76.8	66.7	48.0	NISN SIP / MAX / I2 / CENIC
LaRC ANGe (LaTIS)	165.3	163.3	154.4	
GSFC-ESDIS-PTH	113.6	94.8	63.9	MAX / I2 / CENIC
GSFC-ENPL	184.3	182.3	179.3	

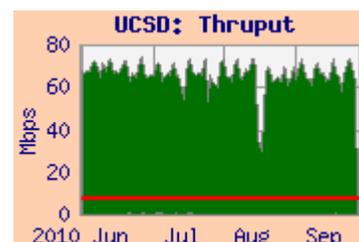
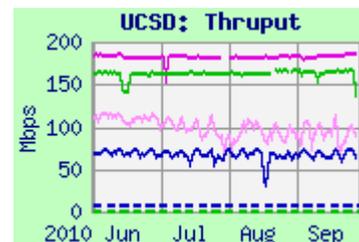
Requirements:

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

Comments: Performance from ICESAT improved in February '10, due to adding the capability to send multiple concurrent streams. The daily minimum thrupt from ICESAT is above 3 x the requirement, so the rating remains "**Excellent**"

Peak performance from GSFC-ENPL is better and very steady. GSFC-ESDIS-PTH replaced GSFC-EBnet-PTH in March – performance was steady but lower than from GSFC-EBnet-PTH, perhaps due to it's "advanced" Auto tuning of TCP parameters. User flow from GSFC averaged only 240 kbps during the test period, much lower than the requirement.

Performance from ANGe (LaTIS) was very stable. 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

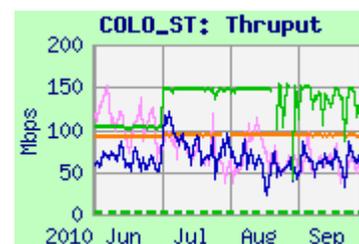
Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ANGe (LaTIS)	150.5	147.7	89.0	NISN SIP / MAX / I2 / FRGP
GSFC-ICESAT	102.0	63.9	31.3	
GSFC-ESDIS-PTH	114.2	63.7	35.7	MAX / I2 / FRGP
GSFC-ENPL	93.1	93.0	90.7	

Requirements:

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

Comments: Performance from LaRC ANGe improved in July with retuning, and remained well above 3 x the requirement, so the rating remains “**Excellent**”. Thruput from GSFC-ESDIS-PTH (replacing GSFC-PTH) was somewhat noisy. Thruput from GSFC-ICESAT improved in March due to the use of multiple streams. Testing from GSFC-ENPL is very stable, outside most GSFC campus firewalls, limited by its 100 mbps ethernet connection.

**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 **Good**LaRC: Continued **Excellent****Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MODIS	73.4	63.6	51.4	MAX / I2 / SOX
GSFC-ENPL	30.6	30.5	28.7	
LaRC ASDC	26.1	23.9	21.6	NISN / MAX / I2 / SOX

Requirements:

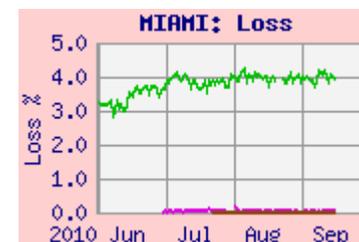
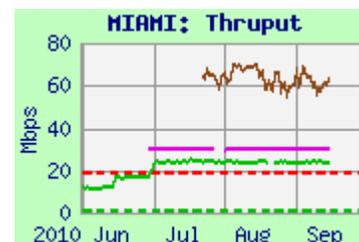
Source Node	FY	mbps	Rating
GSFC	'04 - '09	18.8	Good
LaRC ASDC	'04 - '09	1.1	Excellent

Comments: Thruput from GSFC-MODIS improved in July, with the MODIS upgrade to 10 gig. The integrated daily worst from MODIS remained above the requirement, but by slightly less than 3 x, so the rating remains “**Good**”. Testing from MODIS and ENPL became blocked after configuration changes at Miami in May. Testing has resumed from ENPL in July.

Miami replaced its test host in mid September, and testing was again blocked at that time. So testing was resumed in October, but additional firewall rules are needed to resume full testing.

Thruput improved in June from LaRC ASDC DAAC, due to retuning. The rating from LaRC remains “**Excellent**”, due to the much lower requirement.

Note: Thruput was about 133 mbps from GSFC and 38 mbps from LaRC until Aug '05. An increase in packet loss was observed at that time. Since this loss began from all sources at the same time, the problem appears to be in or near Miami.



7) IL, UIUC:

Teams: MISR

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

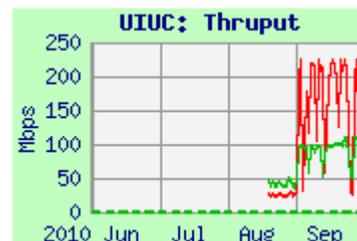
Domain: uiuc.edu

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC PTH-SCP	111.6	97.2	33.1	NISN / StarLight / I2
GSFC-NISN-SCP	228.6	183.3	18.4	MAX / I2

Requirements:

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



Comments: Testing was added to UIUC in August. Initially, SCP testing was run from GSFC and LaRC, sending files to UIUC. In October iperf testing was added, with UIUC receiving from GSFC and LaRC.

Thruput is noisy from both sources, but well above the requirement; the rating is **Excellent**.

8) MA, Boston Univ:

Teams: MODIS, MISR

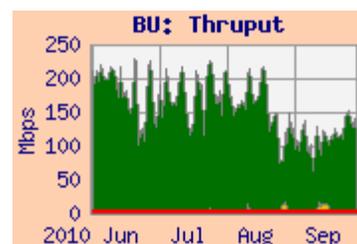
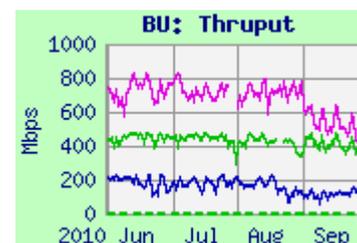
Domain: bu.edu

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	216.2	149.4	77.3	StarLight / I2 / NOX
GSFC ENPL	831.3	687.7	525.0	MAX / I2 / NOX
LaRC ASDC	470.8	432.0	253.2	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: From **EROS LPDAAC**, thrupt was limited by packet loss at **EROS**, until the proxy firewall was removed in May. The user flow averaged about 2.0 mbps for this period (consistent with the requirement without contingency). Thrupt from **GSFC** and **LaRC ASDC DAAC** greatly exceeded the requirements, and user flow from GSFC was an average of 4.3 mbps, also above the [formerly] stated requirement. Thrupt from all sources dropped in late August, apparently when students returned. The rating from both sources remains "**Excellent**".

9) MA, MIT:

Teams: ICESAT

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

Domain: mit.edu

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	79.1	73.8	45.8	NISN / MAX / I2 / NOX
GSFC-ESDIS-PTH	92.3	89.3	80.0	MAX / I2 / NOX
GSFC-ENPL	93.5	93.4	82.6	

Requirements:

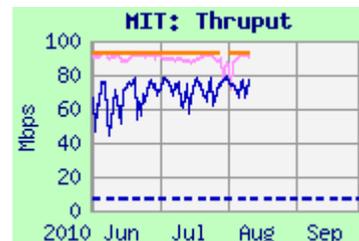
Source Node	FY	mbps	Rating
GSFC	'05 – '09	7.0	Excellent

Comments: Performance from **GSFC ICESAT** to MIT is noisy but stable; the median daily worst remained above 3 x the requirement, so the rating remains "**Excellent**".

Thruput from **GSFC-ESDIS-PTH** (replacing GSFC-EBnet-PTH) and **GSFC-ENPL** was very stable.

The daily average user flow from GSFC was only 850 kbps – only about 12% of the requirement.

Testing to MIT was discontinued at MIT's request in August – MIT no longer receives ICESAT data. **This section will not be included in future reports.**

**10) MT, Univ of Montana:**

Teams: MODIS

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

Domain: ntsg.umt.edu

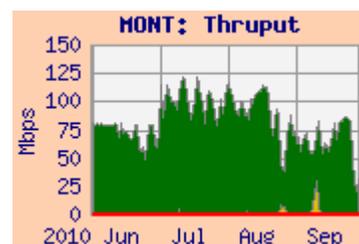
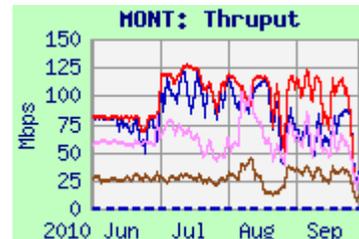
Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EROS LPDAAC	114.2	88.3	49.2	StarLight / I2 / PNW
EROS PTH	118.4	111.6	88.3	
GSFC-ESDIS	77.6	59.1	44.8	MAX / I2 / PNW
NSIDC	36.4	27.5	18.8	CU / FRGP / I2 / PNW

Requirement:

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

Comments: Performance from most sources improved in May due to an upgrade at Montana, and again at the end of June with retuning. With the very low requirement, the rating remains "**Excellent**". The average user flow from EROS was about 1.0 mbps – a little above the requirement (!), mostly in occasional bursts far above the requirement.



11) NM, LANL

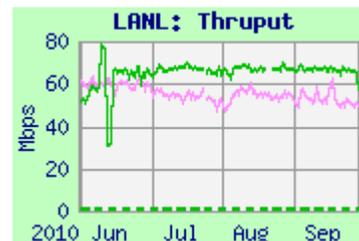
Teams: MISR

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

Domain: lanl.gov

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ASDC DAAC	72.3	66.7	55.4	NISN / MAX / I2
GSFC-ESDIS-PTH	61.4	53.6	41.3	MAX / ESnet

**Requirements:**

Source Node	FY	mbps	Rating
LaRC DAAC	'03-'09	1.03	Excellent

Comments: Performance from LaRC ASDC DAAC was stable. With the low requirement, the rating remains "**Excellent**". From GSFC-ESDIS-PTH (replacing EBnet-PTH) performance was also stable.

12) NY, SUNY-SB:

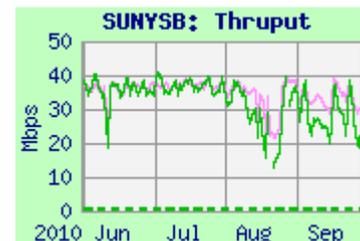
Teams: CERES, MODIS

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	48.6	34.1	17.5	NISN / MAX / I2 / NYSERnet
GSFC-ESDIS	41.9	36.2	25.9	MAX / I2 / NYSERnet

**Requirements:**

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

Comments: Performance from LaRC ANGe (LaTIS) has been stable since March '07. Due to the very low requirement, the rating remains "**Excellent**". From GSFC-ESDIS-PTH (replacing EBnet-PTH) performance was also stable

13) 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:

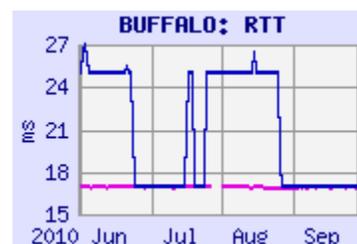
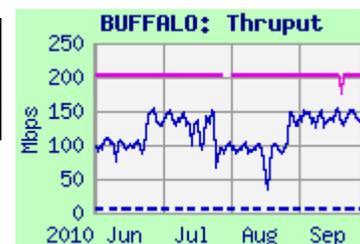
Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	154.8	130.4	84.0	NISN / MAX / I2 / NYSERnet
GSFC-ENPL	203.6	203.3	197.5	MAX / I2 / NYSERnet

Requirements:

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

Comments: This node replaced Ohio-State for ICESAT, and assumes its requirement. Performance from ICESAT improved in March with the use of multiple streams. Return route variations within NYSERnet caused different RTTs and corresponding performance changes; the rating remains "**Excellent**".

Testing was very stable from ENPL.

**14) OR, Oregon State Univ:**

Teams: CERES, MODIS

Domain: oce.orst.edu

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

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ANGe (LaTIS)	113.6	113.0	104.5	NISN / MAX / I2 / PNW
JPL-PTH	83.8	83.6	78.7	CENIC / I2 / PNW
GSFC-ESDIS-PTH	75.4	60.0	42.3	MAX / I2 / PNW
GSFC-ENPL	126.0	125.1	119.0	

Requirements:

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

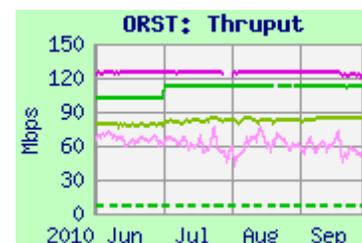
Comments: Performance from LaRC ANGe (LaTIS) was very stable for this period, after improving in late June due to a NISN upgrade; thruput was well above the requirement.

Thruput from GSFC-ESDIS-PTH (replacing GSFC-EBnet-PTH) was also stable, but lower than previously from GSFC-EBnet-PTH, apparently due to its use of "autotuning" of TCP parameters.

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.

The ratings from both LaTIS and GSFC remain "**Excellent**".



15) PA: Penn State Univ:

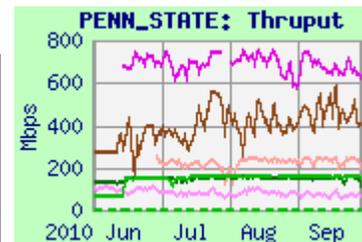
Team: MISR

Web Page: http://ensight.eos.nasa.gov/Missions/terra/PENN_STATE.shtmlRating: Continued **Excellent**

Domain: psu.edu

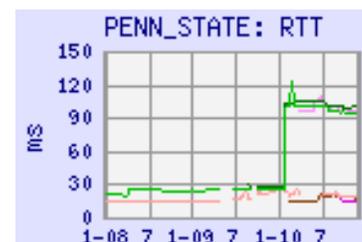
Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ASDC DAAC	161.9	159.9	81.9	NISN / MAX / I2 / 3ROX
LaRC-PTH	156.6	153.2	71.4	
GSFC-ESDIS-PTH	102.1	76.3	33.0	MAX / I2 / 3ROX
GSFC-ENPL	764.0	687.2	511.2	
GSFC-ESTO	555.7	414.2	214.4	

**Requirements:**

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

Comments: Thruput from LaRC and LaRC-PTH dropped dramatically in mid January (had been typically 200 mbps), corresponding to an increase in RTT. The forward route did not change, but the return route is now peering with NISN in Chicago! Performance improved in June due to retuning. Due to the low requirement, the rating remains “**Excellent**”.



From GSFC-ESDIS-PTH (replacing GSFC-EBnet-PTH) thruput is stable and was similar to LaRC. It also sees the long return route.

New tests have been added: from GSFC-ESTO (on the SEN at GSFC, not EBnet) in February, and from GSFC-ENPL in June (direct GigE to MAX). These sources have lower RTT (due to the optimum return route) and higher thruput than other sources, and are more steady.

16) TX: Univ. of Texas - Austin:

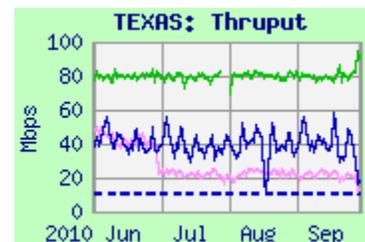
Team: ICESAT

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	70.1	38.2	19.7	NISN / MAX / I2 / TX
GSFC-ENPL	90.9	79.6	63.3	
GSFC-ESDIS	29.9	21.8	14.2	MAX / I2 / TX

**Requirements:**

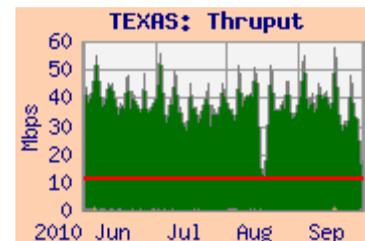
Source Node	FY	mbps	Rating
GSFC-ICESAT	05-'09	11.1	Good

Comments: Performance from ICESAT improved in February '10, due to adding the capability to send multiple concurrent streams. The daily minimum thruput from ICESAT remains above the requirement, so the rating remains “**Good**”.

Thruput from GSFC-ESDIS-PTH (replacing GSFC-EBnet-PTH) was also stable, but lower than previously from GSFC-EBnet-PTH, apparently due to its use of “autotuning” of TCP parameters.

From GSFC-ENPL, outside most of the congested GSFC campus infrastructure, thruput is much less noisy – and higher. It would be rated “Excellent”.

The average user flow this period was only 150 kbps, only about 1.4% of the requirement.



17) WA, PNNL:

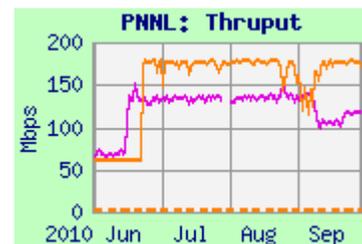
Team: MISR

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

Domain: pnl.gov

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC-PTH	178.5	176.6	131.6	NISN / MAX / ESnet
GSFC-ENPL	152.3	133.3	109.8	MAX / ESnet

**Requirements:**

Source Node	FY	mbps	Rating
LaRC	'04-'09	1.4	Excellent

Comments: Performance from both sources improved in June with retuning. Thruput from LaRC PTH was stable, (and is no longer limited by a 100 mbps Ethernet connection at LaRC); the rating remains **Excellent**. Performance from GSFC-ENPL was also stable.

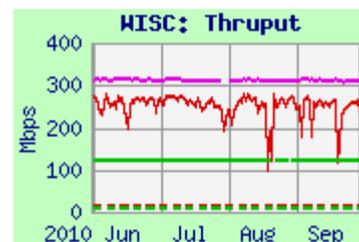
18) WI, Univ. of Wisconsin:

Teams: MODIS, CERES, AIRS, NPP

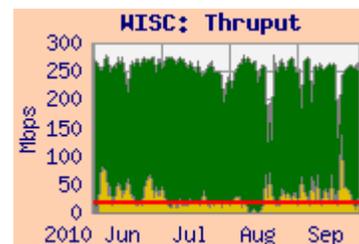
Domain: ssec.wisc.edu

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

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-DISC	286.7	259.9	186.3	MAX / I2 / MREN
LaRC ANGe	122.8	122.6	118.9	NISN / MAX / I2 / MREN
GSFC-ENPL	313.6	312.5	304.6	MAX / I2 / MREN

**Requirements:**

Source Node	FY	mbps	Rating
GSFC	'04 - '09	16.5	Excellent
LaRC Combined	'05 - '09	7.9	Excellent



Comments: Performance from all sources was mostly stable this period, having recovered in May from a drop of about 30% in February.

The user flow from GSFC increased in November '09, and averaged 26 mbps this period (vs 36 mbps in Q2 and 107 mbps in Q1), now **above** the requirement. Due to this high user flow, the rating is based on the integrated results from GSFC DISC, shown above. The integrated daily worst remained well above 3 x the requirement, so the rating remains "Excellent".

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

Testing from ENPL was also very stable other than the step changes noted above.

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

Team: MOPITT

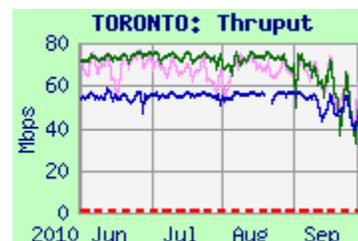
Domain: utoronto.ca

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	57.1	55.1	40.2	NISN / StarLight / CA*net4
LaRC PTH	76.0	72.2	36.2	
GSFC-ESDIS-PTH	77.1	66.8	49.7	MAX / I2 / NY / CA*net4

Requirements:

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



Comments: Thruput from all sources to Toronto became much less noisy from all sources in late April, but got noisier again in September (students!).

Testing from GSFC-ESDIS-PTH replaced GSFC-EBnet-PTH, with results similar to LaRC-PTH. The ratings from both sources remain "**Excellent**", due to the low requirements.

User flow from GSFC averaged only 4 kbps this period.

20) Italy, EC - JRC:Rating: Continued **Excellent**
Domain: jrc.it

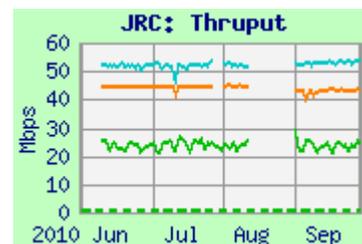
Team: MISR

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

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC ASDC DAAC	28.4	23.7	19.6	NISN / MAX / Géant / Garr
GSFC-NISN	54.7	52.5	48.5	
GSFC-ENPL	44.9	44.7	42.8	MAX / I2 / Géant / Garr

Requirements:

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



Comments: JRC was connected to Géant in June '07, with significant performance improvement. NISN began peering with Géant in late September '09. Previously, the route from LDAAC was via NISN to StarLight in Chicago, then Canarie's ITN, peering with Géant in NY (but a high performance route anyway).

Thruput was stable from all sources this period. The median daily worst thruput from LaRC ASDC DAAC remain 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.

21) 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	25.0	21.9	17.8	NISN / MAX / Géant / JAnet
GSFC-ESDIS	6.7	5.7	4.1	MAX / I2 / Géant (DC) / JAnet
EROS-PTH	16.0	11.8	9.1	StarLight / I2 / Géant (DC) / JAnet

Requirements

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

Comments: In September '06 the testing was modified due to a new firewall at UCL – now using ftp pulls by UCL instead of iperf from GSFC and LaRC. Results are much lower using this method – previous iperf thruput was 9.5 mbps from LaRC and 32 mbps from GSFC.

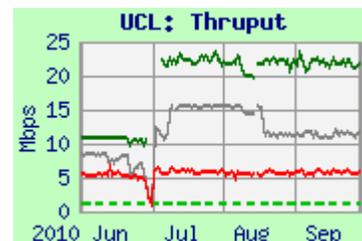
NISN began peering with Géant in September '09, with improved thruput.

Previously, the route from LaRC was via NISN peering with Teleglobe on the US west coast, unnecessarily increasing RTT and reducing thruput.

Thruput improved from LaRC in July, due to a NISN upgrade. Thruput was otherwise stable from all sources; the median daily worst thruput from LaRC remained well above 3 x the requirement, so the rating remains “**Excellent**”

From **GSFC-ESDIS** (replacing GSFC-EBnet-PTH) the route (peering with Géant at MAX) is optimum. The thruput is stable.

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

**22) UK, Oxford:**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	2.14	1.50	1.01	MAX / I2 / Géant (DC) / JAnet

Requirements: (IST Only)

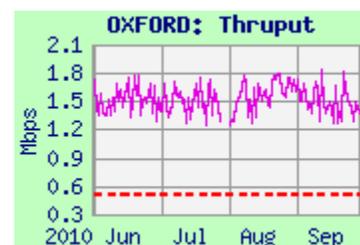
Source Node	FY	kbps	Rating
GSFC	'03 – '09	512	Good

Comments: Iperf testing to Oxford was restored for a few days at the end of March (after which it was discontinued again by Oxford) (Testing to Oxford had been down since the Oxford test host was retired in April '08).

Performance for that brief period was well in excess of the requirement, rating “Excellent”

Testing resumed in April using “flood pings”, which is a poor substitute for iperf, and provides much lower results, now rated “Good”.

Previously, performance had been mostly stable at about 25 mbps since October '06 (similar to BADDC, below, which is similarly connected to Janet), rating “**Excellent**”.



23) 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	34.8	33.9	27.9	MAX / I2 / Géant (DC) / JAnet
GSFC-ESDIS-PTH	29.9	23.5	16.4	MAX / I2 / Géant (DC) / JAnet

Requirements:

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

Comments: Thruput to RAL was very stable from GSFC-ENPL. It was very similar and also steady from GSFC-ESDIS-PTH, replacing GSFC-EBnet-PTH. The thruput has consistently been much higher than the requirement, so the rating remains "**Excellent**".

