

## EOS Science Networks Performance Report

This is a summary of EOS QA and SCF performance testing for the 4<sup>th</sup> quarter of 2014 - comparing the performance against the requirements, including Terra, TRMM, QuikScat, Aqua, Aura, ICESat, NPP, 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](http://ensight.eos.nasa.gov/active_net_measure.html). Or click on any of the site links below.

### Highlights:

- Requirements updated to use the June 2014 database
  - MISR requirement to Toronto restored
    - Had been removed erroneously
  - There are no longer requirements BADC
    - This site has been removed from the ratings
      - But it are still tested, and results reported
  - There are still sites with requirements, but are not tested:
    - University of Washington, JRC (Ispra, Italy), JAXA (Japan).
- Performance was mostly stable
  - **All nodes now rated Excellent!**
  - **GPA 4.0 ! (same as last 2 quarters)**

### Ratings:

#### Rating Categories:

<b>Excellent</b>	: median of daily worst cases > 3 x requirement
<b>Good</b>	: median of daily worst cases > requirement
<b>Adequate</b>	: median of daily worst cases < requirement and median of daily medians > requirement
<b>Almost Adequate</b>	: requirement > median of daily medians > requirement / 1.5 (i.e., median thrupt is below requirement, but above requirement without contingency)
<b>Low</b>	: median of daily medians < requirement / 1.5.
<b>Bad</b>	: median of daily medians < requirement / 3.

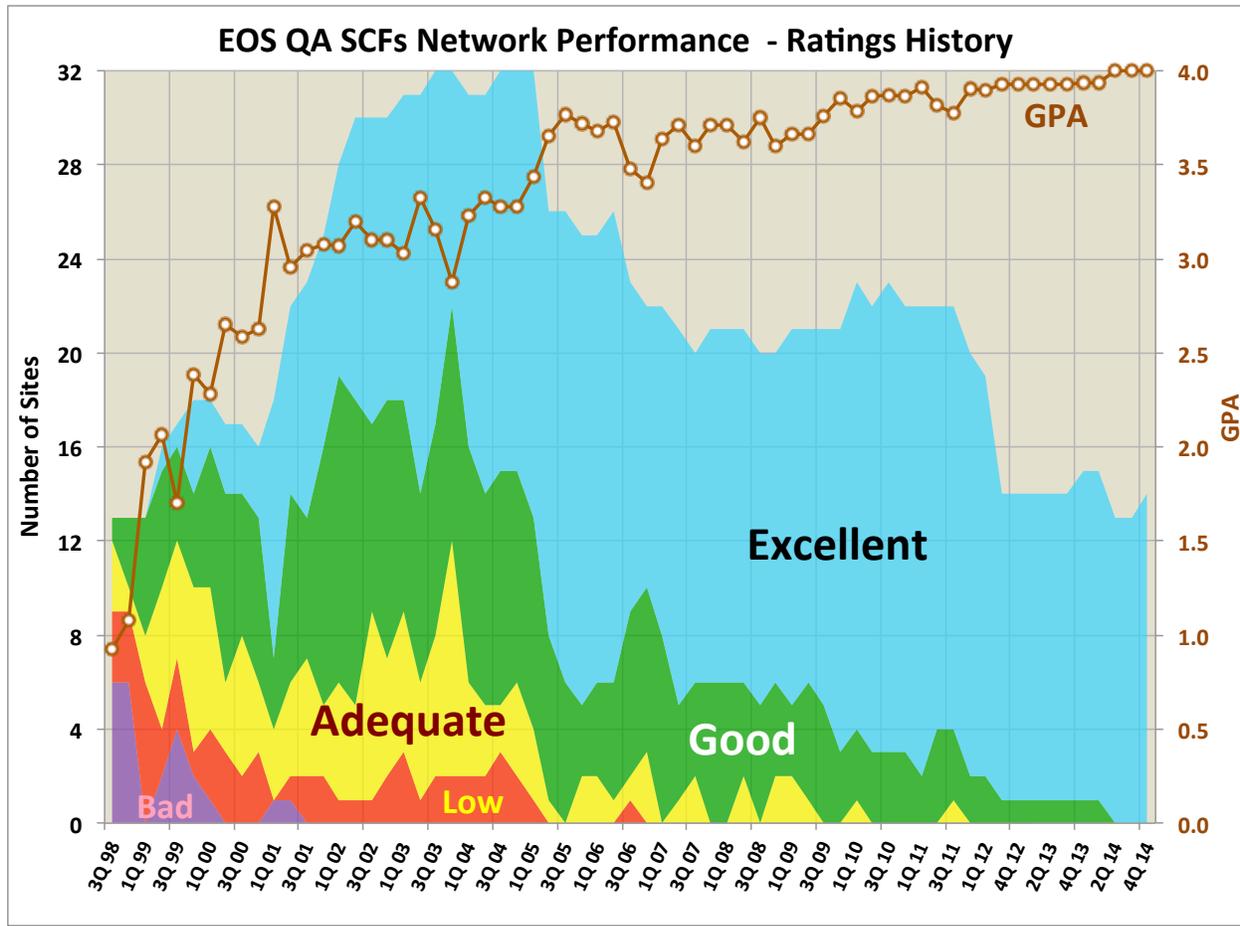
### Ratings Changes:

Upgrades: ↑ None

Downgrades: ↓ None

### Ratings History:

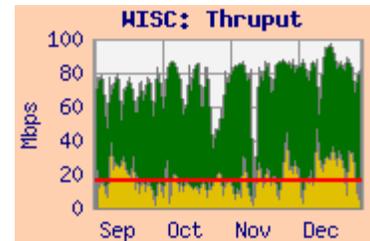
The chart below shows the number of sites in each classification since the testing started in 1998. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements. The GPA is calculated based on Excellent: 4, Good: 3, Adequate: 2, Low: 1, Bad: 0



**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.
- 2006: Testing discontinued to SAGE III Nodes, NOAA, UMD, UIUC
- 2Q07: Testing discontinued to U Washington
- 1Q09: Testing added to BADC (RAL).
- 2010: Testing to Oxford restored, ICESAT functions of Ohio State were transferred to Buffalo, testing to Buffalo added, 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
- 4Q11: Testing to JRC discontinued, Wisconsin moved to production sites report.
- 1Q12: Testing to Univ Auckland, NZ failing.
- 2-3Q12: Discontinued testing to Arizona, UCSD, Colo State, Miami, Montana, SUNY SB, and Buffalo – no longer any requirements. Added testing to Hawaii, ORNL.
- 4Q13: Testing to Auckland, NZ restored.
- 2Q14: Removed results from BADC (RAL) and Toronto -- no longer any requirements.
- 4Q14: Restored results from Toronto – requirements had been removed erroneously.

**Integrated Charts:** Integrated charts are 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/EBnet, 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.



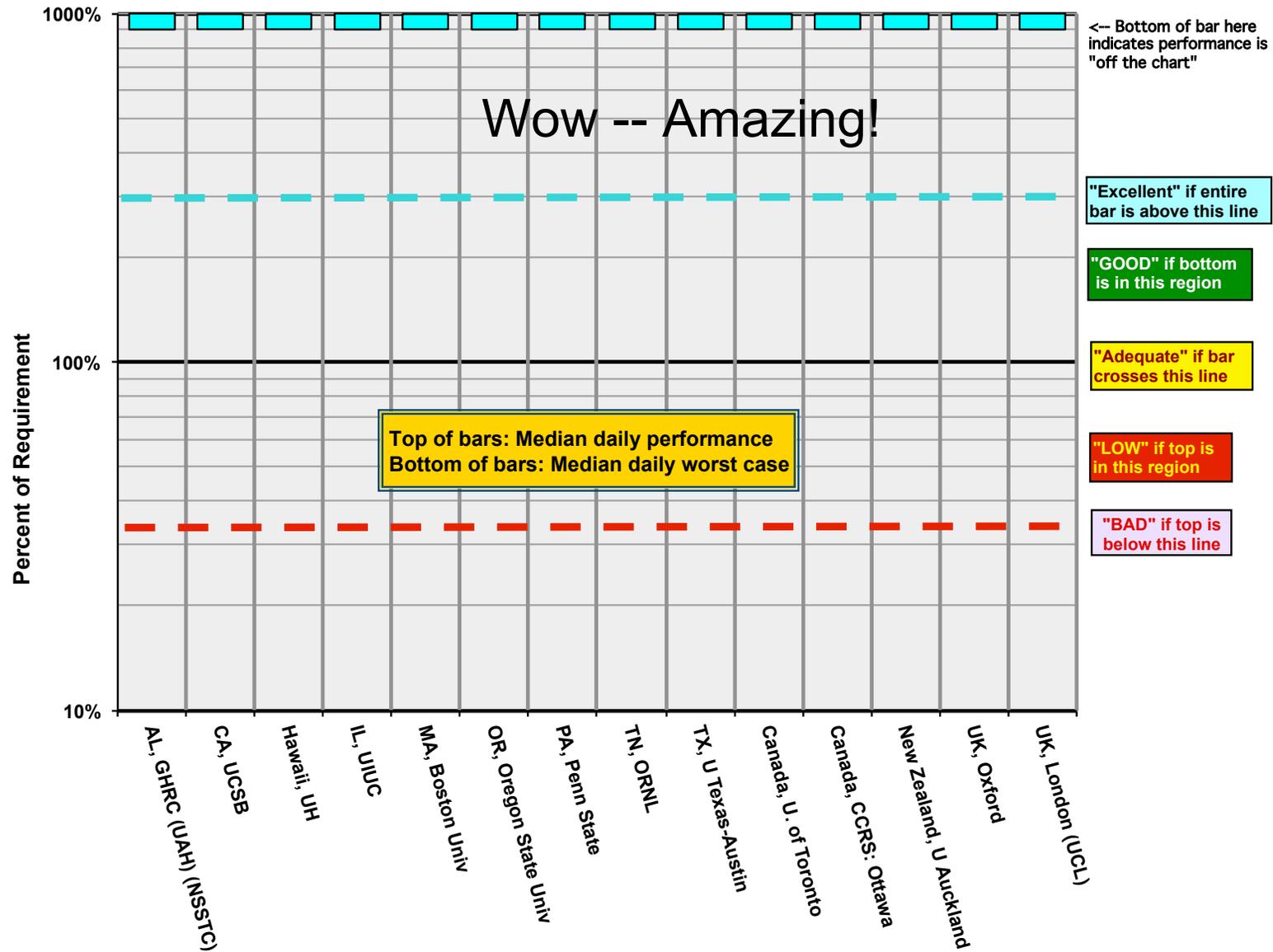
**Note:** User flow data is has not been available from LaRC since March 2007, so sites with primary requirements from LaRC will not include integrated graphs. (But JPL ← → LaRC flow data is available from JPL, and GSFC-EBnet ← → LaRC is available from EBnet).

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

4 <sup>th</sup> Quarter 2014				Testing							
Destination	Team (s)	Requirements		Source Node	Median Daily Best	Median mbps	Median Daily Worst	Average User Flow	Rating re Current Requirements		Route Tested
		Jun-14	Jun-12						4Q 2014	3Q 2014	
AL, GHRC (UAH) (NSSTC)	MODIS, LANCE	2.9	2.9	GSFC-EDOS	517.4	235.2	59.7	6.3	Excellent	Ex	MAX - Internet2 - SOX - UAH
CA, UCSB	MODIS	0.17	0.2	GSFC-MODIS	145.3	142.9	131.1	0.005	Excellent	Ex	EBnet - MAX - Internet2 - CENIC
Hawaii, UH	MODIS	0.02	0.0	GSFC-ENPL	2153.6	2121.3	1123.6	3.8	Excellent	Ex	EBnet - MAX - Internet2 - LA
IL, UIUC	MISR	0.56	0.56	LaRC PTH	196.5	195.2	177.9		Excellent	Ex	NISN - MAX - Internet2 - StarLight (Chicago)
MA, Boston Univ	MODIS, MISR	0.69	2.6	LaRC ASDC	146.6	97.7	69.4		Excellent	Ex	NISN - MAX - Internet2 - NOX
OR, Oregon State Univ	CERES, MODIS, MISR	0.69	0.7	LaRC ANGe	99.1	97.6	91.5		Excellent	Ex	NISN - MAX - Internet2 - PNW
PA, Penn State	MISR	0.6	0.6	LaRC PTH	191.2	189.3	179.3		Excellent	Ex	NISN - MAX - 3ROX
TN, ORNL	MODIS	19.2	10.1	GSFC-ENPL	8040.2	7108.6	3304.9		Excellent	Ex	MAX - ESnet
TX, U Texas-Austin	MODIS	0.67	0.67	GSFC-ESDIS-PTH	539.0	506.0	480.4	0.161	Excellent	Ex	NISN - MAX - Internet2 - TX-learn
WA, U Washington	MISR	2.4	2.4		n/a	n/a	n/a				Internet2 via NISN / MAX
Canada, U. of Toronto	MOPITT, GEOS	0.1	0.1	LaRC PTH	189.4	121.1	55.3		Excellent	Ex	NISN - StarLight (Chicago) - CA*net
Canada, CCRS: Ottawa	CEOS, MODIS	1.1	1.1	GSFC-MODIS	157.6	154.8	120.7	3.1	Excellent	Ex	EBnet - MAX - Internet2 - CA*net
Italy, Ispra (JRC)	MISR	9.7	9.7		n/a	n/a	n/a				NISN / MAX / Géant (DC) / GARR
New Zealand, U Auckland	MISR	0.28	0.28	LaRC PTH	185.6	184.4	177.4		Excellent	Ex	NISN - StarLight (Chicago) - I2 - Reannz
UK, Oxford	HIRDLS	0.15	0.37	GSFC-ENPL-PTH	2852.2	2249.2	870.7	3.8	Excellent	Ex	MAX - Géant (DC) - JAnet
UK, BADC (RAL)	HIRDLS	-0-	0.2	GSFC-ESDIS-PTH	34.6	27.0	20.8	0.2			EBnet - MAX - Géant (DC) - JAnet
UK, London (UCL)	MISR, MODIS	0.56	0.56	LaRC PTH	175.2	167.6	38.4		Excellent	Ex	NISN - MAX - Géant (DC) - JAnet
		Significant Change							Summary		
	*Rating Criteria:								Current:	Prev	
									4Q 2014	Report	
Excellent	Median Daily Worst >= 3 * Requirement								Excellent	14	14
Good	Median Daily Worst >= Requirement								Good	0	0
Adequate	Median Daily Worst < Requirement <= Median Daily Median								Adequate	0	0
LOW	Median Daily Median < Requirement								LOW	0	0
BAD	Median Daily Median < Requirement / 3								BAD	0	0
									Total	14	14
									GPA	4.00	4.00

## 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. 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: AMSR, MODIS, LANCE

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

Rating: Continued **Excellent**

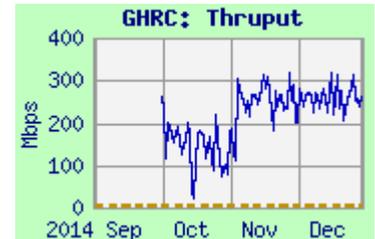
Domain: nsstc.uah.edu

#### Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
<b>GSFC-EDOS</b>	517.4	235.2	59.7	NISN / MSFC

#### Requirements:

Source Node	FY	Mbps	Rating
<b>MODIS</b>	'12 –	2.9	<b>Excellent</b>



**Comments:** Testing was initiated in December '10 from GSFC-EDOS via both NISN and Internet2 for LANCE flows. Testing from MODAPS-PDR via I2 was initiated in November '12. **This testing was discontinued in mid March – on request from the GHRC POC.**

Testing was initiated at the end of April 2014 from **GSFC-ENPL** and **LaRC-PTH** to a bwctl server at UAH. **This testing failed in Mid May, was restored in July, then failed again in late July.**

Testing to a new LANCE Server via NISN was started in October. The thruput is well above 3 x the MODIS requirement, so the rating remains **Excellent**

User flow is measured for GSFC to GHRC, combined for the NISN and UAH addresses. The major flow is MODIS NRT to NISN addresses, but both paths have significant user flows. The average user flow this quarter was 6.25 mbps – over 2 x the requirement!

#### Notes:

- There is no longer a CERES requirement from LaRC (was 6.9 mbps).
- Testing between GHRC, RSS and NSIDC for AMSR-E (Aqua) is now in the “Production Sites” report.

**2) CA, UCSB :**

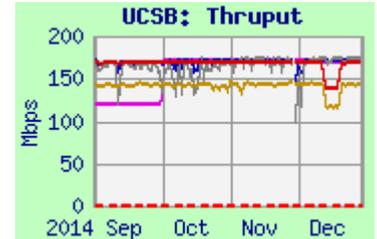
Ratings: GSFC: Continued **Excellent**  
 Domain: ucsb.edu

Teams: MODIS

Web page: <http://ensight.eos.nasa.gov/Missions/terra/UCSB.shtml>

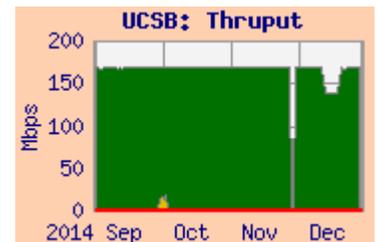
**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MODIS	145.3	142.9	131.1	MAX / I2 / CENIC
GSFC-GES DISC	169.4	168.9	164.7	
GSFC-ENPL	171.0	171.0	167.0	
EROS-LPDAAC	173.1	172.4	153.0	StarLight / I2 / CENIC
EROS-PTH	174.0	168.0	111.0	



**Requirements:**

Source Node	FY	kbps	Rating
GSFC	'12 -	170	Excellent



**Comments:** The GSFC requirement was reduced (was 3.1 mbps), and the EROS requirement was eliminated (was 2.2 mbps) in the 2012 database update.

Thruput from all sites was stable this quarter. Thruput was well above the requirement, so the rating from **GSFC-MODIS** remains **Excellent**.

The user flow from GSFC averaged 0.39 mbps this period, below the flow last quarter, but above the requirement. The user flow from **EROS-LPDAAC** averaged 0.33 mbps this period, well below the old requirement.

**3) HI, University of Hawaii:**

Ratings: GSFC: Continued **Excellent**  
 Domain: uhnet.net

Team: MODIS

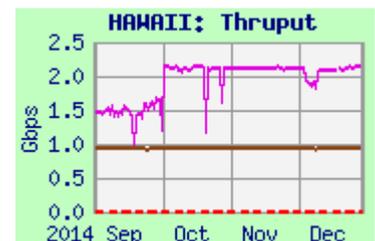
Web Page: <http://ensight.eos.nasa.gov/Missions/terra/HAWAII.shtml>

**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ENPL	2153.6	2121.3	1123.6	MAX / I2 / LA / UHnet
GSFC-ESTO	941.8	937.9	920.6	

**Requirements:**

Source Node	FY	kbps	Rating
GSFC-MODIS	'12 -	21	Excellent



**Comments:** Testing was initiated to a PerfSonar node at UH in April '12, based on a [very small] MODIS requirement in the new ICD. Performance from **GSFC-ENPL** improved in April '13 when testing was switched to use its 10 gig interface to a 10 gig PerfSonar node at the University of Hawaii.

The thrupt from **GSFC-ENPL** is much more than the tiny requirement, so the rating remains **Excellent**. User flow from EBnet this month was 3.8 mbps, many times higher than the requirement.

Testing was added in June from **GSFC-ESTO**, to provide an alternate source, if **GSFC-ENPL** is down. Its thrupt is consistent with its Gig-E interface limitation.

**4) IL, UIUC:**

Teams: MISR

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

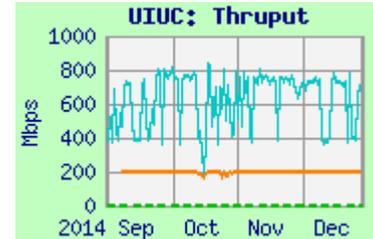
Rating: LaRC: **Excellent**  
Domain: uiuc.edu

**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC PTH	196.5	195.2	177.9	NISN / StarLight / I2
GSFC-NISN	850.5	722.8	309.0	

**Requirements:**

Source Node	FY	kbps	Rating
LaRC ASDC	'12 -	556	<b>Excellent</b>



**Comments:** Testing was added to UIUC in August '10. Initially, SCP testing was initiated from GSFC and LaRC, sending files to UIUC. SCP thrupt was noisy from both sources, and somewhat bimodal.

In March 2012, testing from **GSFC-NISN** and **LaRC PTH** was switched to a PerfSonar server at UIUC, with greatly improved thrupt. The SCP tests were discontinued in May 2012.

The thrupt to the PerfSonar server was well above the revised requirement (which was 1.1 mbps previously); the rating remains **Excellent**. Note that outflow from **LaRC PTH** is limited to 200 mbps by agreement with CSO / NISN.

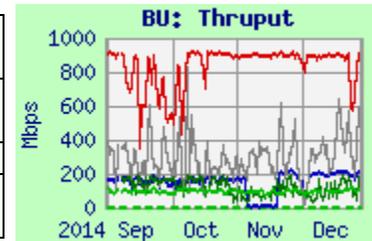
**5) MA, Boston Univ:**

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	
<b>EROS LPDAAC</b>	205.4	167.9	71.6	StarLight / I2 / NOX
<b>EROS PTH</b>	620.5	286.3	46.7	
<b>GSFC GES DISC</b>	919.3	895.6	497.1	MAX / I2 / NOX
<b>LaRC ASDC</b>	146.6	97.7	69.4	NISN / MAX / I2 / NOX
<b>LaRC PTH</b>	192.0	104.9	34.9	

**Requirements:**

Source Node	FY	mbps	Rating
<b>EROS LPDAAC</b>	'12 -	2.6	<b>Excellent</b>
<b>LaRC ASDC DAAC</b>	'12 -	0.7	<b>Excellent</b>

**Comments:** The old BU test node was retired in December '13. Testing was switched to a replacement test node in late March.

Thruput from **EROS LPDAAC** was noisy, but much better than the [revised lower, was 3.0 mbps] requirements, rating **Excellent**. The user flow from **EROS** averaged about 600 kbps for this period – below the requirement. Testing was initiated in March '14 from **EROS PTH**, which had much higher peaks, but was also very noisy.

Testing from **LaRC ASDC DAAC** greatly exceeded the requirements, rating **Excellent**. Testing was added from **LaRC PTH**; performance was mostly steady, but is limited to 200 mbps by agreement with CSO / NISN.

Testing from **GSFC GES DISC** was initiated in June '14, when firewall rules were installed. Initial performance was higher than any other source. There is currently no requirement for flows from GSFC to BU.

**6) OR, Oregon State Univ.:**Ratings: LaRC ANGe: Continued **Excellent**

Teams: MISR

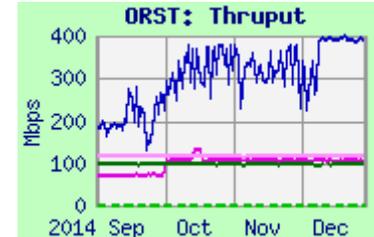
Domain: oce.orst.edu

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	99.1	97.6	91.5	NISN / MAX / I2 / PNW
JPL PODAAC	389.4	339.6	192.4	CENIC / I2 / PNW
GSFC-ESDIS-PTH	120.4	118.4	113.0	MAX / I2 / PNW
GSFC-ENPL	115.0	107.0	95.6	

**Requirements:**

Source Node	FY	kbps	Rating
LaRC ANGe	'12 -	694	<b>Excellent</b>
GSFC	'02 - '11	250	<b>Excellent</b>



**Comments:** The requirements were reduced (was 7.6 mbps from LaRC prior to 2012) since the requirements for CERES and MODIS have been eliminated. Thruput was mostly stable from all sources (but a bit noisy from JPL) for this period, and was well above the requirements. The rating from **LaRC ANGe** remains **Excellent**. Results from the East coast sites are limited by the longer RTT and a small window size at ORST.

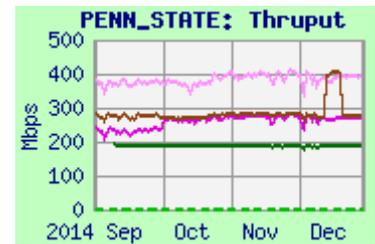
**7) PA: Penn State Univ.:**Rating: Continued **Excellent**

Team: MISR

Domain: psu.edu

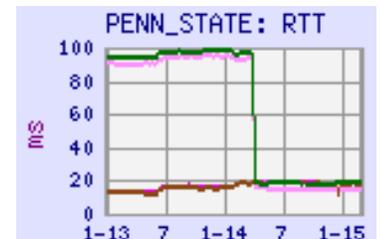
Web Page: [http://ensight.eos.nasa.gov/Missions/terra/PENN\\_STATE.shtml](http://ensight.eos.nasa.gov/Missions/terra/PENN_STATE.shtml)**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC-PTH	191.2	189.3	179.3	NISN / MAX / I2 / 3ROX
GSFC-ESDIS-PTH	407.6	389.6	330.6	MAX / I2 / 3ROX
GSFC-ENPL	278.5	269.5	236.0	
GSFC-ESTO	283.4	277.7	224.1	

**Requirements:**

Source Node	FY	kbps	Rating
LaRC ASDC DAAC	'03 -	556	<b>Excellent</b>

**Comments:** Thruput from NISN sources was much lower than from non-NISN sources until late March, due to much longer RTT. Note that the forward route (to PSU) has been OK, but the return route to **LaRC** and **GSFC-ESDIS-PTH** was much longer -- via peering with NISN in Chicago! This return route issue was fixed in late March '14. The RTT from **LaRC-PTH** and **GSFC-ESDIS-PTH** dropped to similar value to the non-NISN nodes, and the performance increased correspondingly.



Based on the low [reduced from 2.6 mbps] requirement, the rating remains **Excellent**.

From **GSFC-ESTO** (on the SEN at GSFC, not EBnet) and from **GSFC-ENPL** (direct 10GigE to MAX), the RTT has always been lower (due to the optimum return route), and the thruput was thus much higher than from other sources until they were fixed.

**8) TN, Oak Ridge National Lab:**

Teams: MODIS, DAAC

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

Rating: GSFC: **Excellent**

Domain: ornl.gov

**Test Results:**

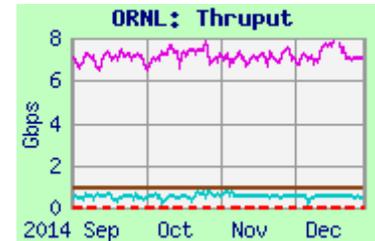
Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-NISN	813.6	538.6	277.9	NISN / MAX / ESnet
GSFC-ENPL-PTH	8040.2	7108.6	3304.9	MAX / ESnet
GSFC-ESTO	985.6	985.0	816.3	

**Requirements:**

Source Node	FY	mbps	Rating
GSFC	'14 -	19.2	<b>Excellent</b>

**Comments:** The requirement was increased with the June '14 database update – was 10.1 mbps previously.

Testing was added in February 2014 from **GSFC-ENPL-PTH** a 10 gig connected node at GSFC, to the 10 gig PerfSonar node at ORNL, with excellent thruput.



Thruput to the PerfSonar node at ORNL stabilized from **GSFC-NISN** and **GSFC-ESTO** in December 2012. Performance was well above the requirement; the rating is therefore **Excellent**.

User flow from EBnet has been minimal, however, averaging less than 1 kbps.

**9) TX: Univ. of Texas - Austin:**

Team: MODIS, ICESAT

Web Page: <http://ensight.eos.nasa.gov/Missions/icesat/TEXAS.shtml>

Rating: Continued **Excellent**

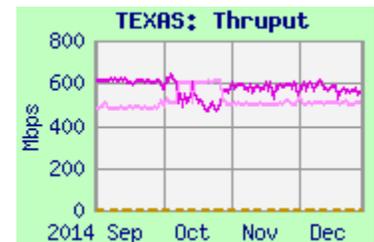
Domain: utexas.edu

**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ENPL-PTH	634.5	571.0	457.0	MAX / I2 / TX
GSFC-ESDIS-PTH	539.0	506.0	480.4	

**Requirements:**

Source Node	FY	kbps	Rating
GSFC-MODIS	'12 -	666	<b>Excellent</b>



**Comments:** Thruput from **GSFC-ESDIS-PTH** was well above 3 x the MODIS requirement, so the rating remains **Excellent**. Average user flow from GSFC this month was 160 kbps, below the requirement.

From **GSFC-ENPL-PTH**, thruput is similar but a bit better. This test was moved to a PerfSonar node at UT in August 2012, with greatly improved results. The results improved further in September 2013, with the switch to the 10 gig interface from **GSFC-ENPL-PTH**. In November 2013, the Texas PerfSonar server stopped responding, so testing was switched back to the SCF.

The previous 11.1 mbps ICESAT requirement has been eliminated, and testing from ICESAT discontinued.

**10) Canada, Univ of Toronto:**

Rating: GSFC: Continued **Excellent**  
 LaRC: Continued **Excellent**

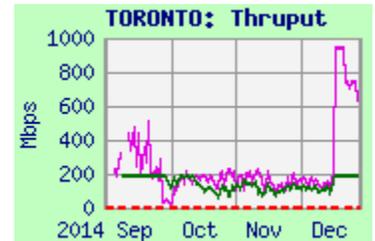
Team: MOPITT Domain: utoronto.ca  
 Web Page: <http://ensight.eos.nasa.gov/Missions/terra/TORONTO.shtml>

**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC PTH	189.4	121.1	55.3	NISN / StarLight / CA*net
GSFC-ENPL-PTH	303.0	166.3	71.6	MAX / I2 / NY / CA*net

**Requirements:**

Source Node	FY	kbps	Rating
LaRC DAAC	'02 – '13	100	<b>Excellent</b>
GSFC EOC	'02 – '13	512	<b>Excellent</b>



**Comments:** In the previous (3Q14) report, it was erroneously stated that the MOPITT team was no longer at the University of Toronto; this has now been corrected.

The Toronto PerfSonar server was readdressed in late August 2014. Testing from LaRC ASDC DAAC and GSFC-ESDIS-PS was discontinued at that time; testing from GSFC-ENPL-PTH was initiated to the new address. Performance from both sources was noisy. Thruput from LaRC PTH was steady, limited to 200 mbps by agreement with CSO / NISN. It was much higher than the requirement, rating **Excellent**.

From GSFC, thruput from GSFC-ENPL-PTH was also well above the requirement, rating **Excellent**. The test parameters were retuned in December, resulting in greatly improved performance.

**11) Canada: CCRS (Ottawa)**

Rating: Continued **Excellent**  
 Domain: ccrs.nrcan.gc.ca

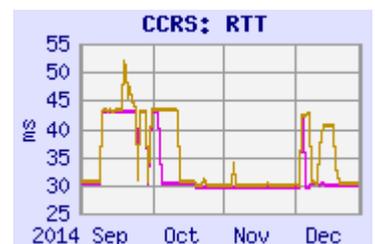
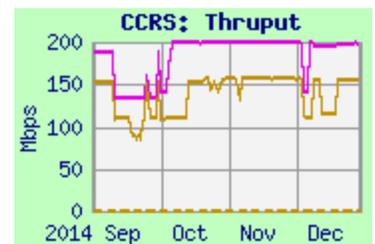
Teams: MODIS, CEOS  
 Web Page: <http://ensight.eos.nasa.gov/Missions/terra/CCRS.shtml>

**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MODAPS	157.6	154.8	120.7	MAX / I2 / CA*net
GSFC-ENPL	200.0	199.0	195.0	

**Requirement:**

Source Node	FY	mbps	Rating
GSFC-MODAPS	'11 -	1.1	<b>Excellent</b>



The MODIS requirement was reduced from 3.8 mbps through FY'10.

Performance from both sources was bimodal, with thruput changes corresponding inversely to RTT changes. Thruput from GSFC-MODAPS was otherwise stable, and remained much more than 3 x the requirement, so is rated **Excellent**.

Thruput from GSFC-ENPL was also stable.

User flow from GSFC again averaged 3.1 mbps this period, similar to the last quarter, and much higher than the requirement (but consistent with the old requirement).

**12) UK, Oxford Univ.:**

Team: HIRDLS

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

Domain: ox.ac.uk

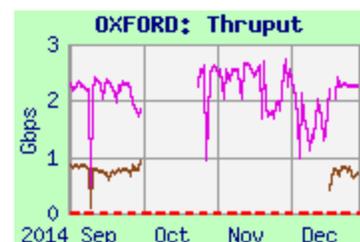
**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ENPL-PTH	2852.2	2249.2	870.7	MAX / I2 / Géant (DC) / JAnet
GSFC-ESTO	875.6	727.2	397.2	

**Requirements: (IST Only)**

Source Node	FY	kbps	Rating
GSFC	'03 –	368	<b>Excellent</b>

**Comments:** Beginning in late March 2012, testing was switched to a PerfSonar server at Oxford, using iperf. Testing previously had used, “flood pings”, which is a poor substitute for iperf, and provided much lower results. Performance improved again in June 2012 when the Oxford PerfSonar node was upgraded, and again in March 2014 by using a 10 gig interface from GSFC-ENPL-PTH. The thruput is much higher than the modest requirement, so the rating continues **Excellent**.



User flow from GSFC to Oxford averaged 3.8 mbps for this period, much higher than the requirement, but above the 150 kbps during the previous period.

**13) UK, London: (University College)**

Teams: MODIS, MISR

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

Domain: ucl.ac.uk

**Test Results:**

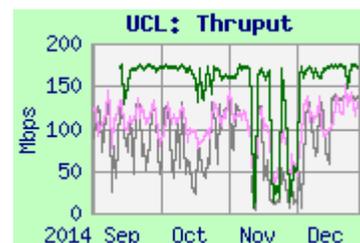
Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC PTH	175.2	167.6	38.4	NISN / MAX / Géant / JAnet
GSFC-ESDIS-PTH	158.3	105.6	53.8	MAX / I2 / Géant (DC) / JAnet
EROS-PTH	144.3	75.0	7.2	StarLight / I2 / Géant (DC) / JAnet

**Requirements**

Source Node	FY	kbps	Rating
LaRC DAAC	'12 –	556	<b>Excellent</b>

**Comments:** Testing since late 2010 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 from all sources was similar, and improved in May 2014 with retuning. Thruput from LaRC PTH improved in September with a node upgrade. The median daily worst thruput from LaRC PTH remained well above 3 x the requirement, so the rating remains **Excellent**.

**14) British Atmospheric Data Centre**

(Rutherford Appleton Laboratory)

Team: HIRDLS

Rating: **N/A**

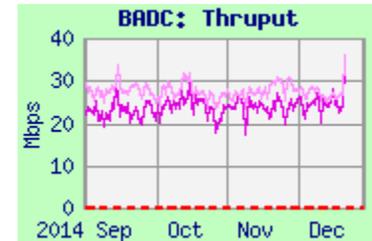
Domain: rl.ac.uk

Web Page: [http://ensight.eos.nasa.gov/Missions/aura/UK\\_RAL.shtml](http://ensight.eos.nasa.gov/Missions/aura/UK_RAL.shtml)**Test Results:**

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ESDIS-PTH	34.6	27.0	20.8	MAX / I2 / Géant (DC) / JAnet
GSFC-ENPL-PTH	36.6	24.1	16.2	

**Requirements:**

Source Node	FY	kbps	Rating
GSFC	'02 – '13	190	<b>N/A</b>



**Comments:** There are no longer any requirements to BADC in the database – so no rating is therefore assigned.

Thruput from **GSFC-ESDIS-PTH** was mostly steady, and consistently much higher than the previous requirement, so the rating would continue to be **Excellent**.

Thruput from **GSFC-ENPL-PTH** was very similar to that from **GSFC-ESDIS-PTH**.

User flow averaged 230 kbps this quarter, close to the requirement (was 20 mbps last quarter, much higher than the requirement and any previous period.)

**15) New Zealand**

Team: MISR

Rating: **Excellent**

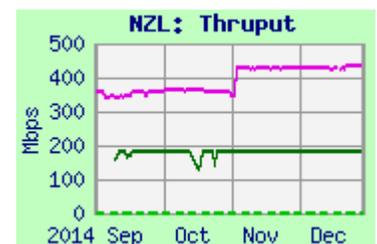
Domain: reannz.co.nz

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

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC PTH	185.6	184.4	177.4	NISN / StarLight / I2 / PNW / ReanNZ
GSFC-ENPL-PTH	435.1	427.3	388.1	MAX / I2 / PNW / ReanNZ

**Requirements:**

Source Node	FY	kbps	Rating
GSFC	'02 –	190	<b>Excellent</b>



**Comments:** Testing to the University of Auckland was discontinued in November 2011. Testing was reinstated in October 2013, to a PerfSonar node in Auckland provided by the Reannz network. Note that the route to the University of Auckland uses Reannz – so the results are plausibly applicable.

Thruput from **LaRC PTH** consistently was much higher than the requirement, so the rating is **Excellent**. Thruput from **LaRC PTH** improved in September 2014 with a node upgrade. Note that thruput from **LaRC PTH** is limited to 200 mbps by agreement with CSO / NISN.

Thruput from **GSFC-ENPL-PTH** was stable, after retuning in late July, and better than that from **LaRC PTH**.