# EOS Science Networks Performance Report

**April 2002**

This is a summary of EOS QA SCF performance testing for April 2002 -- comparing the performance against the requirements from BAH, including Terra, TRMM, and QuikScat, Aqua, ADEOS II, partial Aura and SAGE III, and ICESat requirements. Still waiting for the rest of Aura. The requirements were increased in May 2001 by adding a 50% contingency factor to all QA and SIPS requirements, which were omitted with the change to the new BAH requirements in March 2001. In June 2001 the requirements were modified to incorporate an updated number of EOS funded users at each tested site, based on the latest SPSO database. The total number of users increased in this way from 434 to 1012 (US only).

Up to date graphical results can be found on the EOS network performance web site (now pretty stable): http://corn.eos.nasa.gov/performance/Net_Health/EOS_list.html.

## Highlights:

- Testing from EDC resumed April 30 – to Montana only (had stopped 10 February, due to host problems at EDC. Will re-establish testing to other sites in May.

- Testing resumed from NSIDC to all sites April 11(had stopped on Jan 12) and from GDAAC to all sites on April 8 (had stopped Jan 19), both due to firewall installation. Discontinued tests from substitute nodes.

- LaTIS performance appears limited by window size of new firewall

- Added in results to KNMI, RAL, and INPE. Testing has been ongoing to these sites for some time, but requirements were not on record. Now using IST requirements for ratings.

- Otherwise mostly stable performance.

## Ratings:

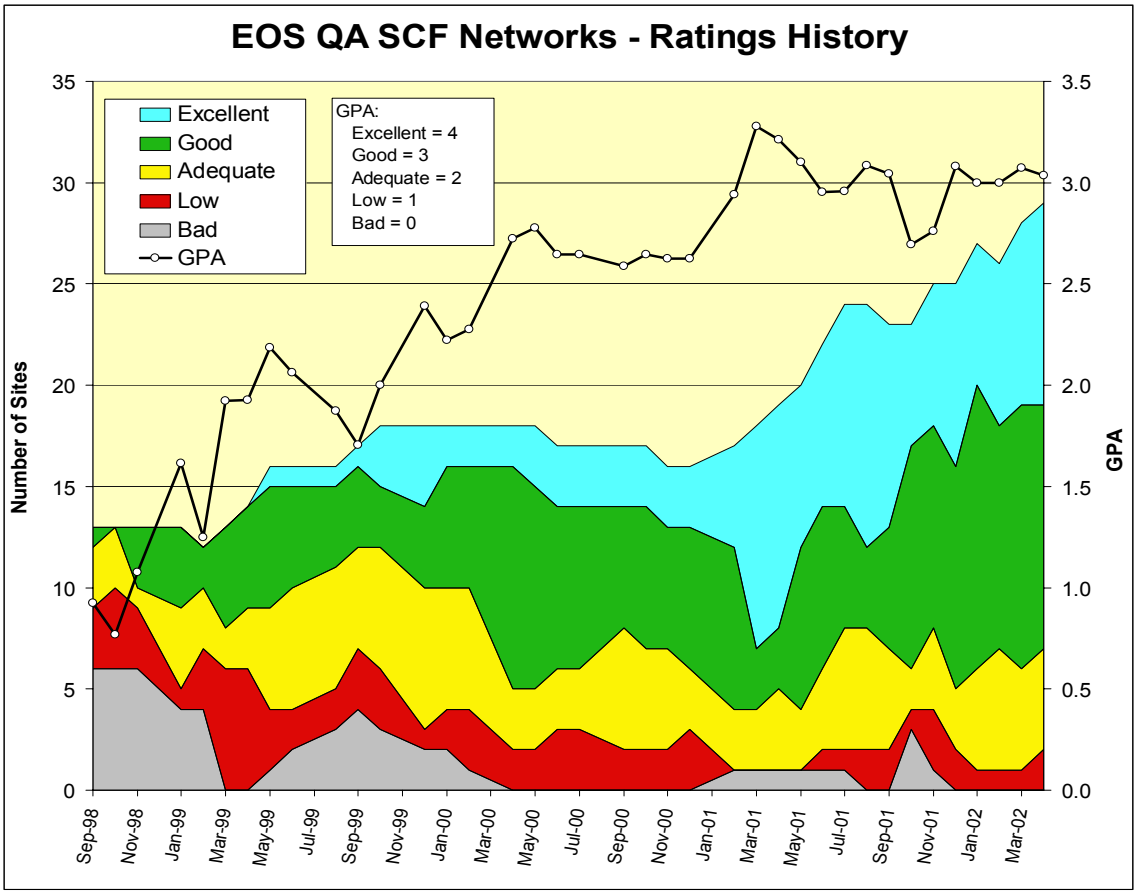
### Rating Categories:

**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.

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.




## Ratings Changes:

**Upgrades:** ↑

LANL: Good → **Excellent**
Wisconsin: Adequate → **Good**

**Downgrades:** ↓

Arizona: Excellent → **Adequate**
JPL: Adequate → **Low**
UCSB: Good → **Adequate**

**Testing Stopped:**

**Testing (Re)Started:**

Montana: **Excellent**

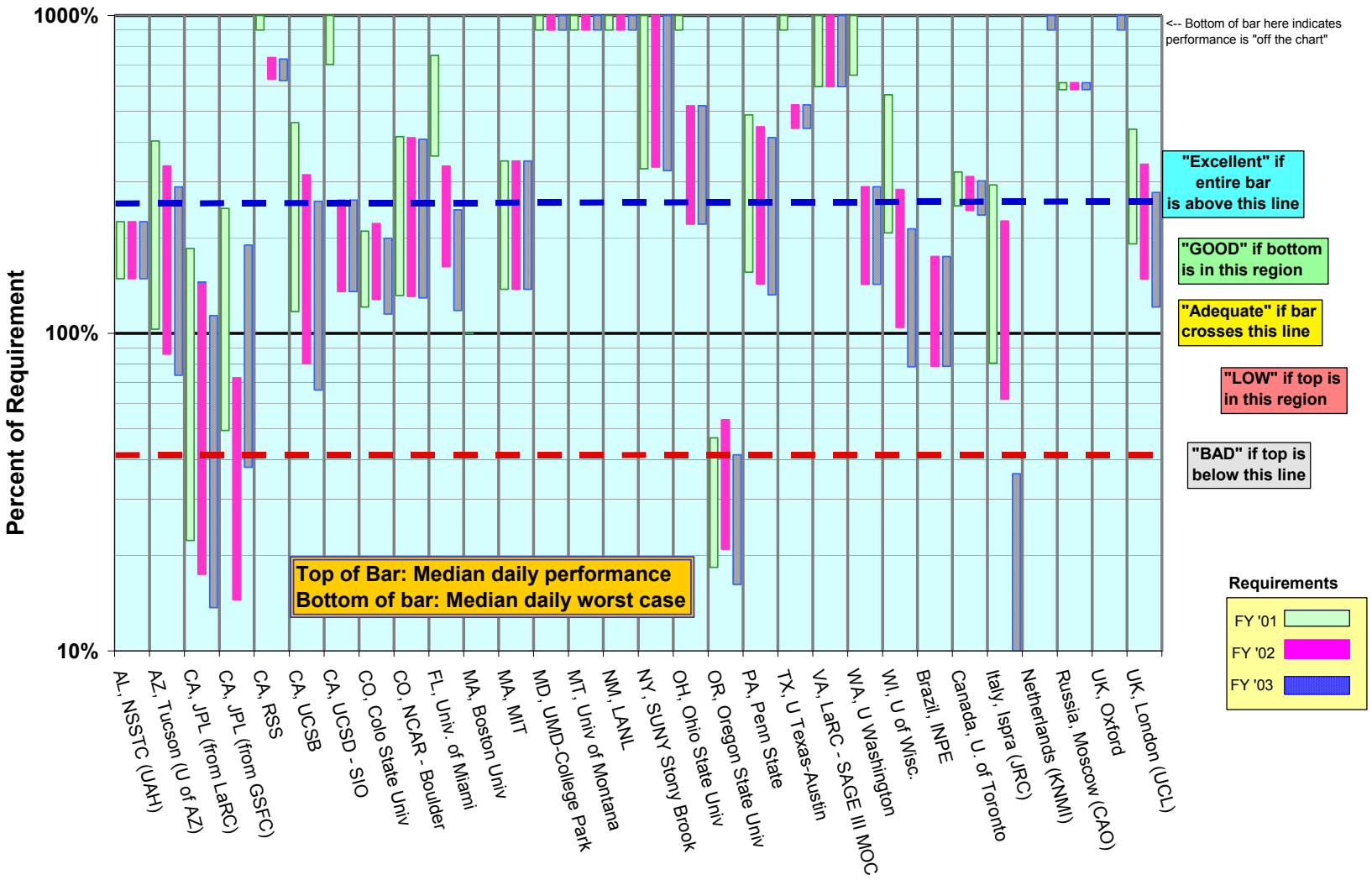
# EOS QA SCF Sites: Network Requirements vs. Measured Performance

| April 2002 | | Requirements (kbps) (including 50% QA contingency) | | | Testing | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Destination | Team (s) | Previous: FY '01 | Current: FY '02 | Future: FY '03 | Source Node: Test Period | Median kbps | Median Daily Worst | Current Rating* (FY '02) | Last Month | Future Rating* (FY '03) | Route Tested | Upgrade |
| AL, NSSTC (UAH) | CERES, AMSR | 1809 | 1809 | 1809 | LaTIS: 01-Apr-02 - 30-Apr-02 | 4057 | 2686 | GOOD | G | GOOD | NISN + FDDI | |
| AZ, Tucson (U of AZ) | MODIS, MISR | 2981 | 3571 | 4161 | LDAAC: 15-Apr-02 - 30-Apr-02 | 12008 | 3069 | Adequate | E | Adequate | Abilene via MAX | |
| CA, JPL (from LaRC) | MISR | 8762 | 11192 | 14258 | LDAAC-MISR-ATM: 01-Apr-02 - 30-Apr-02 | 16202 | 1952 | Adequate | A | Adequate | NISN Private VC | Increase VC |
| CA, JPL (from GSFC) | AIRS, TES, others | 5144 | 17556 | 6713 | GSFC-MISR: 01-Apr-02 - 30-Apr-02 | 12708 | 2542 | LOW | A | Adequate | NISN Private VC | Increase VC |
| CA, RSS | AMSR | 200 | 376 | 380 | JPL PODAAC: 26-Jan-02 - 30-Apr-02 | 2768 | 2371 | Excellent | E | Excellent | 2 * T1 - Consolidated | |
| CA, UCSB | MODIS | 2453 | 3583 | 4336 | GSFC MTVS1: 01-Apr-02 - 30-Apr-02 | 11285 | 2871 | Adequate | G | Adequate | Abilene via NISN-MAX | |
| CA, UCSD - SIO | ICESAT, CERES | 1200 | 6225 | 6225 | GSFC: 04-Mar-02 - 30-Apr-02 | 16333 | 8421 | GOOD | G | GOOD | vBNS+ via MAX / WOR | |
| CO, Colo State Univ | CERES | 1758 | 1665 | 1851 | LaTIS: 01-Apr-02 - 30-Apr-02 | 3686 | 2128 | GOOD | G | GOOD | NISN -> Abilene | |
| CO, NCAR - Boulder | MOPITT, HIRDLS | 4681 | 4716 | 4768 | LaRC DAAC: 01-Apr-02 - 30-Apr-02 | 19461 | 6159 | GOOD | G | GOOD | NISN -> Abilene | |
| CO, NOAA / ERL, Boulder | CERES | 1709 | 1708 | 1711 | | | | | | | | |
| FL, Univ. of Miami | MODIS, MISR | 4612 | 10282 | 14121 | GSFC: 01-Mar-02 - 30-Apr-02 | 34528 | 16651 | GOOD | G | GOOD | Abilene via MAX | |
| IL, UIUC | MISR | 1134 | 1134 | 1134 | | | | | | | | |
| MA, Boston Univ | MODIS, MISR | 1207 | 1967 | 2474 | EDC: Testing restarted May 02 | | | N/A | N/A | N/A | Abilene via vBNS+ | |
| MA, MIT | ICESAT | 1700 | 1700 | 1700 | GSFC : 28-Jan-02 - 30-Apr-02 | 5921 | 2337 | GOOD | G | GOOD | Abilene via MAX | |
| MD, UMD-College Park | MODIS | 1928 | 1969 | 1997 | GSFC-MAX: 01-Jan-02 - 30-Apr-02 | 149761 | 114937 | Excellent | E | Excellent | Direct Fiber | |
| MT, Univ of Montana | MODIS | 244 | 459 | 603 | EDC DAAC: 30-Apr-02 - 30-Apr-02 | 10941 | 8510 | Excellent | N/A | Excellent | Abilene via vBNS+ | |
| NM, LANL | MISR | 478 | 616 | 755 | LaRC DAAC: 03-Apr-02 - 30-Apr-02 | 12909 | 6795 | Excellent | G | Excellent | ESNet via ARC | |
| NY, SUNY Stony Brook | CERES | 544 | 536 | 551 | LaTIS: 20-Apr-02 - 30-Apr-02 | 7242 | 1789 | Excellent | E | Excellent | NISN -> vBNS | |
| OH, Ohio State Univ | ICESAT | 400 | 5425 | 5425 | GSFC: 22-Nov-01 - 30-Apr-02 | 28210 | 11958 | GOOD | G | GOOD | Abilene via MAX | |
| OR, Oregon State Univ | CERES, MODIS | 5007 | 4390 | 5666 | LaTIS: 07-Mar-02 - 30-Apr-02 | 2347 | 918 | LOW | L | LOW | NISN -> Abilene | LaRC Firewall |
| PA, Penn State | MISR | 1947 | 2121 | 2295 | LaRC DAAC: 08-Jan-02 - 30-Apr-02 | 9474 | 3032 | GOOD | G | GOOD | NISN -> Abilene | |
| TX, Texas A&M | AMSR | 400 | 400 | 400 | | | | | | | | |
| TX, U Texas-Austin | ICESAT | 700 | 8755 | 8755 | GSFC: 01-Feb-02 - 30-Apr-02 | 45869 | 38648 | Excellent | E | Excellent | Abilene via MAX | |
| VA, LaRC - SAGE III MOC | SAGE III | 200 | 200 | 200 | GSFC-CSAFS: 01-Apr-02 - 30-Apr-02 | 3614 | 1196 | Excellent | E | Excellent | Abilene via NISN-MAX | |
| WA, NOAA PNNL | MISR | 400 | 400 | 400 | | | | | | | | |
| WA, U Washington | ICESAT | 2400 | 10920 | 10920 | GSFC: 12-Mar-02 - 30-Apr-02 | 31561 | 15571 | GOOD | G | GOOD | Abilene via MAX | |
| WI, U of Wisc. | MODIS, AIRS | 4599 | 9135 | 12152 | GSFC: 01-Apr-02 - 30-Apr-02 | 25889 | 9521 | GOOD | A | Adequate | Abilene via MAX | |
| Brazil, INPE | HSB | 0 | 622 | 622 | GSFC: 15-Sep-01 - 21-Apr-02 | 1085 | 490 | Adequate | A | Adequate | Abilene -> AMpath-> ANSP | |
| Canada, U. of Toronto | MOPITT | 441 | 456 | 471 | LARC DAAC: 07-Dec-01 - 30-Apr-02 | 1420 | 1110 | GOOD | G | GOOD | NISN T1 | NISN-CA*net3 |
| France, Palaiseau | CERES | 204 | 203 | 204 | | | | | | | | |
| Italy, Ispra (JRC) | MISR | 237 | 308 | 1923 | LaRC DAAC: 13-Mar-02 - 26-Apr-02 | 695 | 191 | Adequate | A | LOW | NISN-UUNET-Milan | |
| Netherlands (KNMI) | OMI | 0 | 0 | 311 | GSFC: 11-Mar-02 - 30-Apr-02 | 37713 | 6740 | Excellent | E | Excellent | Abilene --> Chi -> Surfnet | |
| Russia, Moscow (CAO) | SAGE III | 26 | 26 | 26 | CAO-LaRC-N: 09-Nov-01 - 30-Apr-02 | 154 | 152 | Excellent | E | Excellent | NISN -> Moscow | |
| UK, Oxford | HIRDLS | 0 | 0 | 311 | GSFC: 12-Mar-01 - 30-Apr-02 | 4838 | 3704 | Excellent | E | Excellent | Abilene->JAnet (NY) | |
| UK, London (UCL) | MISR, MODIS | 478 | 616 | 755 | LDAAC-UCL-SCF: 01-Jan-02 - 30-Apr-02 | 2096 | 913 | GOOD | G | GOOD | Abilene->JAnet (NY) | |

| *Rating Criteria: | | Rating | Current Score | Prev. Score | re FY '03 Score |
|---|---|---|---|---|---|
| Excellent | Median of Daily worst hours >= 3 *Requirement | Excellent | 10 | 9 | 10 |
| GOOD | Median of Daily worst hours >= Requirement | GOOD | 12 | 13 | 11 |
| Adequate | Median of Daily worst hours < Requirement <= Median of Daily Medians | Adequate | 5 | 5 | 6 |
| LOW | Requirement > Median of Daily Medians | LOW | 2 | 1 | 2 |
| BAD | Requirement > 3 * Median of Daily Medians | BAD | 0 | 0 | 0 |
| | | Total | 29 | 28 | 29 |

| Change History: | | |
|---|---|---|
| | 8-Jun-98 | Original |
| | 10-Jul-98 | Incorporated new MISR QA flows |
| | 10-Sep-98 | Added % of requirements columns and associated chart |
| | 28-Oct-99 | Added Previous Status Column |
| | 1-Jul-00 | Added "Excellent" Status, Ratings Summary Chart |
| | 10-Apr-01 | Updated requirements with BAH, added additional sites and missions |
| | 7-Jun-01 | Added ICESAT sites and requirements, added contingency to QA and SIPS |
| | 13-Jul-01 | Updated requirements for latest # of users |

# 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, NSSTC (UAH) (aka GHCC)

Rating: Continued **Good**

Teams: CERES, AMSR

Domain: nsstc.uah.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC LaTIS | 4.3 | 4.1 | 2.7 | NISN SIP |
| GSFC | 4.8 | 4.7 | 3.0 | NISN SIP |
| EDC | | | | |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| LaRC LaTIS | '02, '03 | 1.8 | **Good** |

**Comments:** LaRC Firewall reconfiguration around March 6 improved daily worst performance from 0.4 to 2.7 mbps; daily median and best performance stable. Median daily worst is now above the requirement, the rating improves to "Good". Performance from GSFC very stable.

Testing to NSSTC from EDC for AMSR, also via NISN SIP stopped on 10 Feb, due to EDC host problems. Results had been similar to the other sources; not quite as good on peaks, but the absence local congestion at EDC resulted in better minima than LaTIS when it had the firewall problem. Will restart in May

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## 2) AZ, Tucson (U of AZ):

Rating: ↓ Excellent → **Adequate**

Teams: MODIS, MISR

Domain: arizona.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 20.0 | 12.2 | 2.5 | Abilene via NISN/Chicago |
| EDC | | | | Abilene via vBNS+/Chicago |
| GSFC | 27.6 | 20.7 | 5.4 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02 | 3.6 | **Adequate** |
| EDC DAAC | '02 | 0.7 | **N/A** |
| LaRC DAAC | '03 | 4.2 | **Adequate** |
| EDC DAAC | '03 | 0.8 | **N/A** |

**Comments:** Test host stopped responding on 16 March – restored 15 April with revised configuratiojn at Arizona. Performance from LaRC and GSFC dropped over this transition, most severely in daily worst

value. Previously, from LaRC, median was 20 mbps, daily worst was 11.2 mbps. Perhaps AZ firewall is getting congested at peak times.

Testing stopped from EDC on 10 Feb due to host problems at EDC; restarted in May.

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## 3) CA, JPL:

Rating ↓ Adequate → Low
Teams: MISR, AIRS, TES, MLS, ASTER
Domain: jpl.nasa.gov

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 17.4 | 16.2 | 2.0 | NISN PVC |
| GSFC DAAC | 21.7 | 12.7 | 2.5 | NISN SIP |
| LaRC DAAC | 15.4 | 3.2 | 0.7 | NISN SIP |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02 | 11.2 | Adequate |
| LaRC DAAC | '03 | 14.3 | Adequate |
| GSFC | '02 | 17.6 | Low |
| GSFC | '03 | 6.7 (?) | Adequate |

**Comments:**. Requirements were split as shown in Feb. between GSFC and LaRC. Performance from LaRC via NISN private ATM VC between LaRC and MISR was mostly stable, but a drop in the daily worst (was 4.7 mbps) indicates increased congestion. This is rated as "Adequate" against split LaRC requirements.

From GSFC the performance also exhibits increased congestion, with the daily median and worst dropping from 21.1 / 6.8 mbps last month. This downgrades the FY '02 rating to "LOW". For FY '03 the AIRS requirement is shown as stopping, with the rating back to "Adequate", but this requirements drop seems unlikely to be accurate.

The proposal by JPL to eliminate the private PVC, and use NISN SIP, appears to have dropped off the radar screen., in part because the NISN SIP service performance from LaRC dropped in March (was 18 mbps in November), and would be rated "BAD".

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## 4) CA, RSS: (Santa Rosa):

Rating: Continued Excellent
Teams: AMSR
Domain: remss.com

Test Results:

| Source Node | Medians of daily tests (kbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| JPL PODAAC | 2846 | 2768 | 2371 | NISN SIP: 2 x T1 |

Requirements:

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| JPL PODAAC | '02 | 376 | Excellent |
| JPL PODAAC | '03 | 380 | Excellent |

**Comments:** NISN upgraded the router software to allow the 2 T1s to be combined on Jan 26, and performance increased to a median of 2.8 mbps, as expected. The median daily worst is now well above 3 x the requirement, so rates as Excellent.

## 5) CA, UCSB:

Rating: ↓ Good → **Adequate**

Teams: MODIS

Domain: s2k.ucsb.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC-MODIS | 12.6 | 11.3 | 2.9 | Abilene via NISN / MAX |
| EDC | | | | Abilene via vBNS+/Chicago |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC-MODIS | '02 | 3.6 | Adequate |
| GSFC-MODIS | '03 | 4.3 | Adequate |

**Comments**: Performance mostly stable from MODIS, but increased congestion reduced median daily worst below requirement, dropping rating to "Adequate". Thruput apparently limited to about 13 mbps at UCSB – will try multi threaded TCP test next month. Testing stopped from EDC on 10 Feb due to host problems at EDC, expect to resume in May

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## 6) CA, UCSD (SIO):

Rating: Continued **Good**

Teams: CERES, ICESAT

Domain: ucsd.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 23.5 | 16.3 | 8.4 | VBNS+ via MAX / WOR |
| LaTIS | 5.7 | 5.2 | 3.0 | Abilene via NISN / Chi |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC | '02, '03 | 6.2 | Good |
| LaTIS | '02, '03 | 0.25 | Excellent |

**Comments:** Requirements split in March into GSFC and LaTIS, with 2 users (100 kbps / user requirement) allocated to LaTIS, and 12 to GSFC, in proportion to QA/SIPS requirements).

Route from LaTIS switched back to Abilene from vBNS+, but still using vBNS+ from GSFC (since January). Performance from GSFC stable; rates as "Good".

From LaTIS, performance is now much steadier (but with lower peaks) with the reconfigured firewall. Will try parallel streams next month to try to improve performance.

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## 7) CO, Colo State Univ.:

Rating: **Continued** **Good**

Teams: CERES

Domain: colostate.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaTIS | 3.9 | 3.7 | 2.1 | Abilene via NISN / Chicago |
| GSFC | 4.4 | 4.3 | 4.1 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| LaTIS | '02 | 1.67 | Good |
| LaTIS | '03 | 1.85 | Good |

**Comments:** Performance from LaTIS improved slightly this month. The daily worst is above the requirement for '02, (and is now also above the '03 requirement). Performance from GSFC is very steady. The thruput limitation (about 4.5 mbps) is the CSU 10M Ethernet LAN.

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## 8) CO, NCAR:

Rating: Continued Good

Teams:MOPITT

Domain: scd.ucar.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 22.6 | 19.5 | 6.2 | Abilene via NISN / Chicago |
| GSFC | 42.3 | 26.3 | 18.7 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02 | 4.7 | Good |
| LaRC DAAC | '03 | 4.8 | Good |

**Comments:** Performance from LaRC DAAC mostly stable since the NISN reconfiguration at LaRC on October 16—slight drop appears due to increased congestion. Performance from GSFC dropped somewhat on March 7, but would still be rated "Excellent".

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## 9) FL, Univ. of Miami:

Rating: Continued Good

Teams: MODIS, MISR

Domain: rsmas.miami.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 53.2 | 34.5 | 16.7 | Abilene via MAX |
| GSFC-MODIS | 30.3 | 16.5 | 3.5 | Abilene via NISN / MAX |
| LaRC DAAC | 12.1 | 7.4 | 2.1 | Abilene via NISN / Chicago |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC | '02 | 9.7 | Good |
| GSFC | '03 | 13.3 | Good |
| LaRC DAAC | '02 | 0.6 | Excellent |
| LaRC DAAC | '03 | 0.8 | Good |

**Comments:** Requirements split between LaRC (MISR) and GSFC (MODIS) last month. Performance from all sources continues short term variable, but long term stable; slightly improved this month". Performance from MODIS at GSFC is lower due to IONet and firewall; would score as Adequate for FY'02 and '03. Testing from LDAAC added in Feb '02, performance via NISN to Abilene is lower but well above the MISR requirements.

## 10) MA, Boston Univ:

Rating: Continued N/A
Teams: MODIS, MISR
Domain: bu.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| EDC DAAC | | | | Abilene via vBNS+ / Chicago |
| GSFC | 90.2 | 74.8 | 31.1 | Abilene via MAX |
| LaRC DAAC | 24.6 | 20.2 | 3.0 | Abilene via NISN / Chicago |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| EDC DAAC | '02 | 2.0 | **N/A** |
| EDC DAAC | '03 | 2.5 | **N/A** |

**Comments**: Testing from EDC Stopped on 10 Feb due to EDC host problems – resumed in May. Performance had been very stable from EDC via vBNS+ to Abilene. Still excellent from GSFC via MAX to Abilene. Testing from LDAAC started late Feb, looks typical, no MISR QA flow requirements listed.

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## 11) MA, MIT:

Rating: Continued **Good**
Teams: ICESAT
Domain: mit.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 6.3 | 5.9 | 2.3 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC | '02, '03 | 1.7 | **Good** |

**Comments**: Testing began 28 January 2002 . Performance via Abilene very stable. The thruput limit is a 10M Ethernet at MIT.

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## 12) MD, Univ. of Maryland:

Rating: Continued **Excellent**
Teams: MODIS
Domain: umd.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC-MAX | 155.2 | 149.8 | 114.9 | Direct Fiber OC-12 / MAX / SCF |
| GSFC-MODIS | 14.5 | 9.4 | 1.7 | NISN / MAX / UMIACS |
| EDC | | | | VBNS+ / Chi / Abilene / MAX / SCF |
| NSIDC | 36.0 | 16.7 | 6.5 | Abilene / MAX / SCF |

Requirements (QA only):

| Source Node | FY | mbps | Rating |
|---|---|---|---|

| | | | |
|---|---|---|---|
| GSFC DAAC | '02 | 1.9 | **Excellent** |
| GSFC DAAC | '03 | 2.5 | **Excellent** |

**Comments:** Steady performance from GSFC-MAX. Reconfiguration at UMD in November 2001 removed the OC-3 ATM interface, now upgraded to GigE. Problems at UMD reduce performance to UMIACS test node. Testing from EDC stopped Feb10, due to host problems at EDC; resumed in May. Performance from NSIDC remained stable after improvment on Feb 28.

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## 13) MT, Univ of Montana:

Rating: N/A → **Excellent**
Teams: MODIS
Domain: ntsg.umt.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| EDC DAAC | 15.0 | 10.9 | 8.5 | VBNS+ / Chi / Abilene |
| GSFC | 8.4 | 8.3 | 5.9 | MAX / Abilene |
| NSIDC | 17.1 | 16.7 | 8.4 | Abilene |

Requirements:

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| EDC DAAC | '02 | 459 | **Excellent** |
| EDC DAAC | '03 | 603 | **Excellent** |

**Comments:** Testing from EDC stopped Feb10, due to host problems at EDC; restarted 30 April. Performance from other sources stable since November '01; now seems to be window size limited at Montana. Will try to use parallel TCP threads next month to work around window size limitation and improve thruput.

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## 14) NM, LANL:

Rating: ↑ Good → **Excellent**
Teams: MISR
Domain: lanl.gov

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 16.9 | 12.9 | 6.8 | NISN SIP / MAE-W (Ames) / ESnet |
| GSFC | 19.7 | 18.6 | 11.8 | MAX / ESnet |

Requirements:

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02 | 616 | **Excellent** |
| LaRC DAAC | '03 | 755 | **Excellent** |

**Comments:** On April 2, a reconfiguration at LANL improved performance dramatically from both hosts (was 2.3 mbps typ from LDAAC and 3.2 from GSFC), upgrading the rating to "Excellent".

## 15) NY, SUNY-SB:

Rating: ↑ Adequate → **Excellent**
Teams: CERES, MODIS
Domain: sunysb.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaTIS | 11.6 | 7.2 | 1.8 | NISN SIP / Chi / Abilene / NYSernet |
| GSFC | 53.2 | 38.0 | 19.2 | MAX / Abilene / NYSernet |

Requirements:

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| LaTIS | '02 | 536 | **Excellent** |
| LaTIS | '03 | 551 | **Excellent** |

**Comments:** Performance from LaTIS dropped from 17 mbps typical to about 5 mbps on March 28, then improved again (to 15 mbps) on April 8, then dropped again (to 7 mbps) on April 20. These changes mostly correspond to routing changes – the route was vBNS until March 28. A similar dip occurred from GSFC March 28-April 8, but performance recovered back to previous levels. The rating remains "Excellent", but no longer by a wide margin.

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## 16) OH, Ohio State Univ:

Rating: Continued **Good**
Teams: ICESAT
Domain: ohio-state.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 43.1 | 28.2 | 12.0 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC | '02, '03 | 5.4 | **Good** |

**Comments:** Performance steady since 22-Nov-01.

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## 17) OR, Oregon State Univ:

Rating:Continued **Low**
Teams: CERES, MODIS
Domain: oce.orst.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaTIS | 2.6 | 2.4 | 0.9 | Abilene via NISN / Chicago |
| JPL | 27.7 | 25.2 | 19.8 | CalREN / Abilene |
| GSFC | 23.7 | 15.8 | 5.8 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| LaTIS | '02 | 4.4 | **Low** |
| LaTIS | '03 | 5.7 | **Low** |
| GDAAC | '02, '03 | 0.12 | **Excellent** |

**Comments:** LaRC firewall reconfiguration on 6 March reduced daily cycle, but it now appears that the firewall is imposing a window size restriction which limits thruput from LaTIS to about 3 mbps – peaks were typically 11 mbps before the firewall "fix", but with the improved LaTIS host (as of 24 Jan. 02). Next month will try parallel TCP streams to work around this limitation.

Steady performance from JPL shows the capabilities of Abilene and ORST, and much higher performance from GSFC shows that the ORST node is not the problem.

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## 18) PA: Penn State Univ

Rating: Continued **Good**

Teams:MISR

Domain: psu.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 17.4 | 9.4 | 3.0 | Abilene via NISN / Chicago |
| GSFC | 17.0 | 12.0 | 6.2 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02 | 2.1 | **Good** |
| LaRC DAAC | '03 | 2.3 | **Good** |

**Comments:** Performance from LDAAC long term stable, short term A bit better, but quite similar performance from GSFC. Both sites had a moderate performance dip from April 17-May 12, but it has now recovered.

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## 19) TX: Univ. Texas - Austin

Rating: Continued **Excellent**

Teams: ICESAT

Domain: utexas.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 47.3 | 45.9 | 38.6 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC | '02, '03 | 8.8 | **Excellent** |

**Comments:** Performance from GSFC via Abilene very stable

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## 20) VA, LaRC - SAGE III MOC:

Rating: Continued **Excellent**

Teams: SAGE III

Domain: larc.nasa.gov

Test Results:

| Source Node | Medians of daily tests (kbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC-SAFS | 4181 | 3614 | 1196 | NISN SIP |

Requirements:

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| GSFC SAFS | '02, '03 | 200 | **Excellent** |

**Comments:** LaRC firewall upgrade removed the former daily cycle. Median daily worst performance almost doubled again(!) from 695 kbps last month, now more than 3 x the requirement. Daily median and best also improved.

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## 21) WA, Univ Washington:

Rating: **Continued Good**

Teams: ICESAT

Domain: washington.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 49.4 | 31.6 | 15.6 | Abilene via MAX |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC | '02, '03 | 10.9 | **Good** |

**Comments:** Performance testing stable since restart 12 March with a new host (had been stopped since September 30, 2001). Previously, from GSFC DAAC to old host via Abilene, thruput was stable at 5.2-6.0 mbps, rated Low

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## 22) Univ. of Wisconsin:

Rating: ↑ Adequate→ **Good**

Teams: MODIS

Domain: ssec.wisc.edu

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC-MAX | 38.9 | 25.9 | 9.5 | MAX / Abilene / Chi / MREN |
| GSFC-MODIS | 16.0 | 14.2 | 7.3 | NISN / Chicago / MREN |

Requirements:

| Source Node | FY | mbps | Rating |
|---|---|---|---|
| GSFC | '02 | 9.1 | **Good** |
| GSFC | '03 | 12.2 | **Adequate** |

**Comments:** Thruput improved in April from GSFC-MAX – now via Abilene; was stable from both "GSFC-NISN" and "GSFC-MODIS" via NISN.

## 23) Brazil, INPE:

New Rating: **Adequate**
Team: HSB
Domain: inpe.br

Test Results:

| Source Node | Medians of daily tests (kbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 1702 | 1085 | 490 | MAX / Abilene / AMPath / ANSP |

Requirements: (2 ISTs only)

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| GSFC EOC | '02, '03 | 622 | **Adequate** |

**Comments:** Although testing to INPE-HSB has been performed since June '00, it was not reported here due to unknown requirements. However, the two HSB ISTs are known requirements, so the rating will be based on that. Note: testing stopped after April 21, due to the installation of a firewall at INPE—will ttry to restart.

The route to INPE was upgraded fairly recently to AMPath, although no major change in performance has been noted.

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## 24) CA, Univ of Toronto:

Rating: Continued **Good**
Team: MOPITT
Domain: physics.utoronto.ca

Test Results:

| Source Node | Medians of daily tests (kbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 1426 | 1420 | 1110 | NISN / GSFC / T1 |
| LaRC DAAC | 17310 | 15523 | 4445 | NISN / Chicago / CA*net3 |
| GSFC | 1432 | 1422 | 1056 | NISN / T1 |
| GSFC | 23548 | 21288 | 13791 | MAX / Abilene / Chicago / CA*net3 |

Requirements:

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02, '03 | 160 | **Excellent** |
| GSFC EOC | '02, '03 | 311 | **Excellent** |
| Combined | '02, '03 | 471 | **Good** |

**Comments:** Performance from both LDAAC (Source of QA data) and GSFC (Source for IST) via NISN dedicated T1 very steady. Rating from either alone would be "Excellent", but since both flow together on the T1, the combined requirement rates as "Good".

Performance from both LaRC and GSFC via Chicago / CA*net3 / ONet is MUCH better than the NISN dedicated circuit -- would be rated "Excellent". Recommend changing routing to make this the primary path, and drop the T1 down to 512 kbps dedicated circuit for backup.

## 25) IT, EC - JRC:

Rating: Continued **Adequate**
Teams: MISR
Domain: ceo.sai.jrc.it

Test Results:

| Source Node | Medians of daily tests (kbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 814 | 695 | 191 | NISN / UUnet / Milan |

Requirements:

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02 | 308 | Adequate |
| LaRC DAAC | '03 | 1923 | Low |

**Comments:** Performance has been stable, with no daily congestion cycle observed after testing resumed March 13. It is unlikely that the FY'03 requirement can be met without additional resources.

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## 26) Netherlands, KNMI:

New Rating: **Excellent**
Teams: OMI
Domain: nadc.nl

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 44.5 | 39.6 | 7.2 | MAX / Abilene/ Chi / Surfnet |

Requirements:

| Source Node | FY | Mbps | Rating |
|---|---|---|---|
| GSFC | '03 | 0.311 | Excellent |

**Comments:** Testing resumed 11 March 2002, with more variance. Peaks and medians were higher (previously 30/28 in Feb), but daily minimum was lower (prev 17.6). This is exceptionally good performance for US to Europe!

New Requirement stated above at 311 kbps is for IST only.

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## 27) RU, CAO (Moscow):

Rating: continued **Excellent**
Teams: SAGE III
Domain: mipt.ru

Test Results:

| Source → Dest | Medians of daily tests (kbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| CAO → LaRC | 155 | 154 | 152 | MIPT / TCnet / NISN SIP |
| CAO → LaRC | 1119 | 1054 | 604 | Commodity Internet |
| LaRC → CAO | 157 | 138 | 120 | NISN SIP / TCnet / MIPT |
| LaRC → CAO | 1323 | 1130 | 559 | Commodity Internet |

Requirements:

| Source → Dest | FY | kbps | Rating |
|---|---|---|---|
| CAO → LaRC | '02 | 26 | Excellent |
| LaRC → CAO | '02 | 26 | Excellent |

**Comments:** Performance testing running since 1 November, with dual routes. Performance on NISN dedicated circuit to Moscow, then TCnet (NASA Russian ISP) tunnel to CAO ISP (MIPT) is extremely steady in both directions. The dual route configuration also allows testing via the commodity internet route; performance via that route is better but more variable, also would rate Excellent.

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## 28) UK, London: (UCL SCF)

Rating: Continued **Good**
Teams: MODIS, MISR
Domain: ucl.ac.uk

Test Results:

| Source Node | Medians of daily tests (kbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| LaRC DAAC | 2845 | 2096 | 913 | MAX / Abilene / NY / JAnet |
| GSFC DAAC | 3993 | 3474 | 2072 | MAX / Abilene / NY / JAnet |

Requirements

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| LaRC DAAC | '02 | 616 | Good |
| LaRC DAAC | '03 | 755 | Good |

**Comments:** Testing resumed 19 April 2002 (had stopped 18 March 2002 due to host down at UCL). Performance has been very stable since April '01 from both GSFC and L-DAAC.

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## 29) UK, Oxford:

New Rating: **Excellent**
Teams: HIRDLS
Domain: ox.ac.uk

Test Results:

| Source Node | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC | 5.3 | 4.8 | 3.7 | MAX / Abilene / NY / JAnet |

Requirements

| Source Node | FY | kbps | Rating |
|---|---|---|---|
| GSFC EOC | '03 | 311 | Excellent |

**Comments:** Although testing to Oxford has been performed since March '00, it was not reported here due to unknown requirements. However, the HIRDLS IST is a known requirement, so the rating will be based on that. The route via MAX / Abilene / NY / Janet seems optimum.

Results to other EOS HIRDLS UK Sites: (Requirements still TBD)

| Source → Dest | Medians of daily tests (mbps) | | | Route |
|---|---|---|---|---|
| | Best | Median | Worst | |
| GSFC → RAL | 18.7 | 13.5 | 6.0 | MAX / Abilene / NY / JAnet |

**Comments:** Thruput to RAL dropped a bit (median was 15.1 mbps), but remains excellent.