

## EOS Production Sites Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for April 2006 -- comparing the measured performance against the requirements.

### Highlights:

- Mostly stable performance
- GSFC to JPL-AIRS via PIP -- Fixed !
- SAGE III: Contact lost with spacecraft in March – mission apparently completed.
- Outstanding Issues:
  - New requirements are still being worked
    - Old requirements used again this time.
- Significant changes in testing are indicated in Blue, Problems in Red

### Ratings:

#### Rating Categories:

| Rating           | Value | Criteria                                          |
|------------------|-------|---------------------------------------------------|
| Excellent:       | 4     | Total Kbps > Requirement * 3                      |
| Good:            | 3     | 1.3 * Requirement <= Total Kbps < Requirement * 3 |
| Adequate:        | 2     | :Requirement < Total Kbps < Requirement * 1.3     |
| Almost Adequate: | 1.5   | Requirement / 1.3 < Total Kbps < Requirement      |
| Low:             | 1     | Requirement / 3 < Total Kbps < Requirement / 1.3  |
| Bad:             | 0     | Total Kbps < Requirement / 3                      |

Where Total Kbps = Integrated Kbps (where available)  
Else = User Flow + iperf monthly average

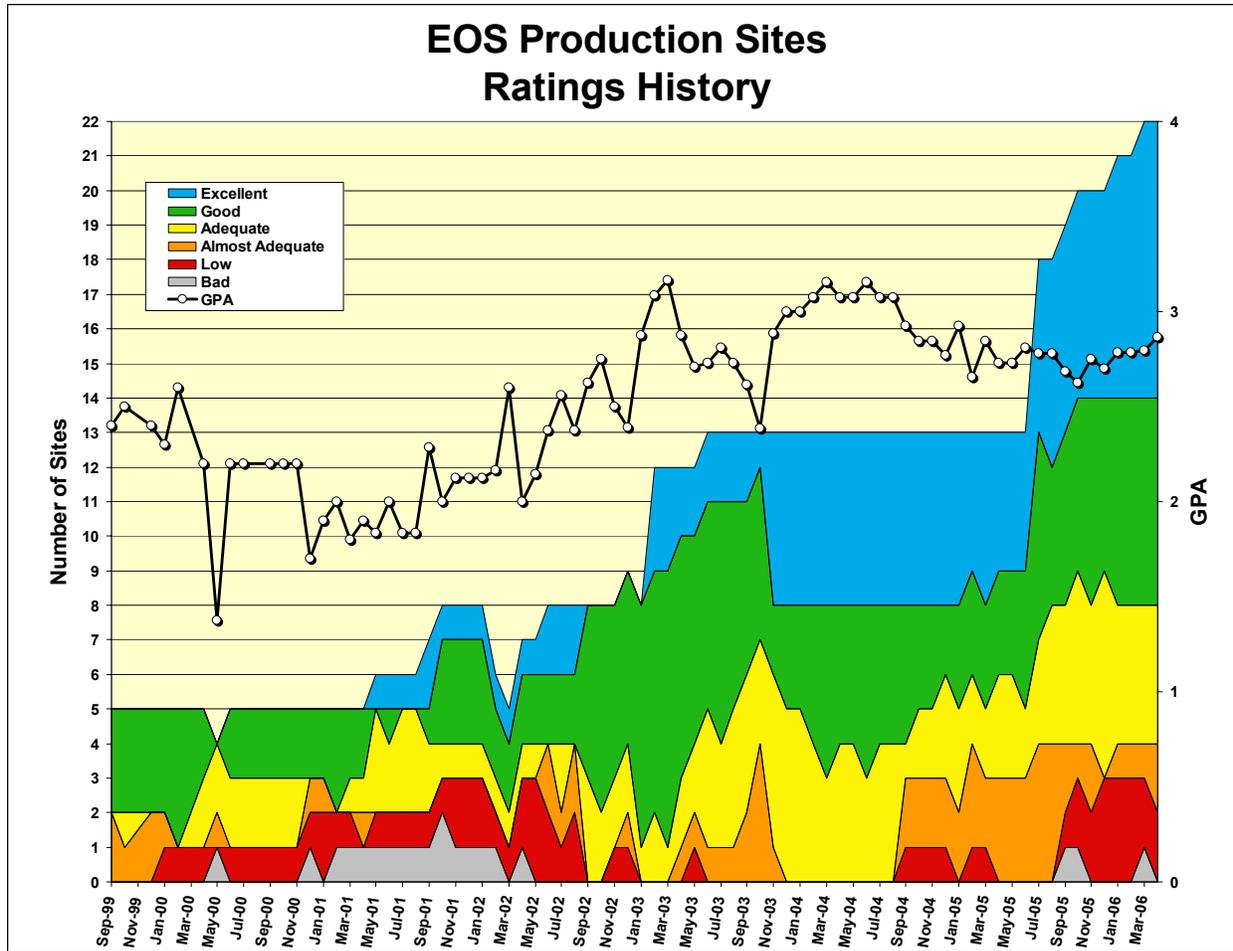
### Ratings Changes:

Upgrades: ↑:

GSFC to JPL-AIRS: Bad → **Good**

Downgrades: ↓:

GSFC to NSIDC: Good → **Almost Adequate**

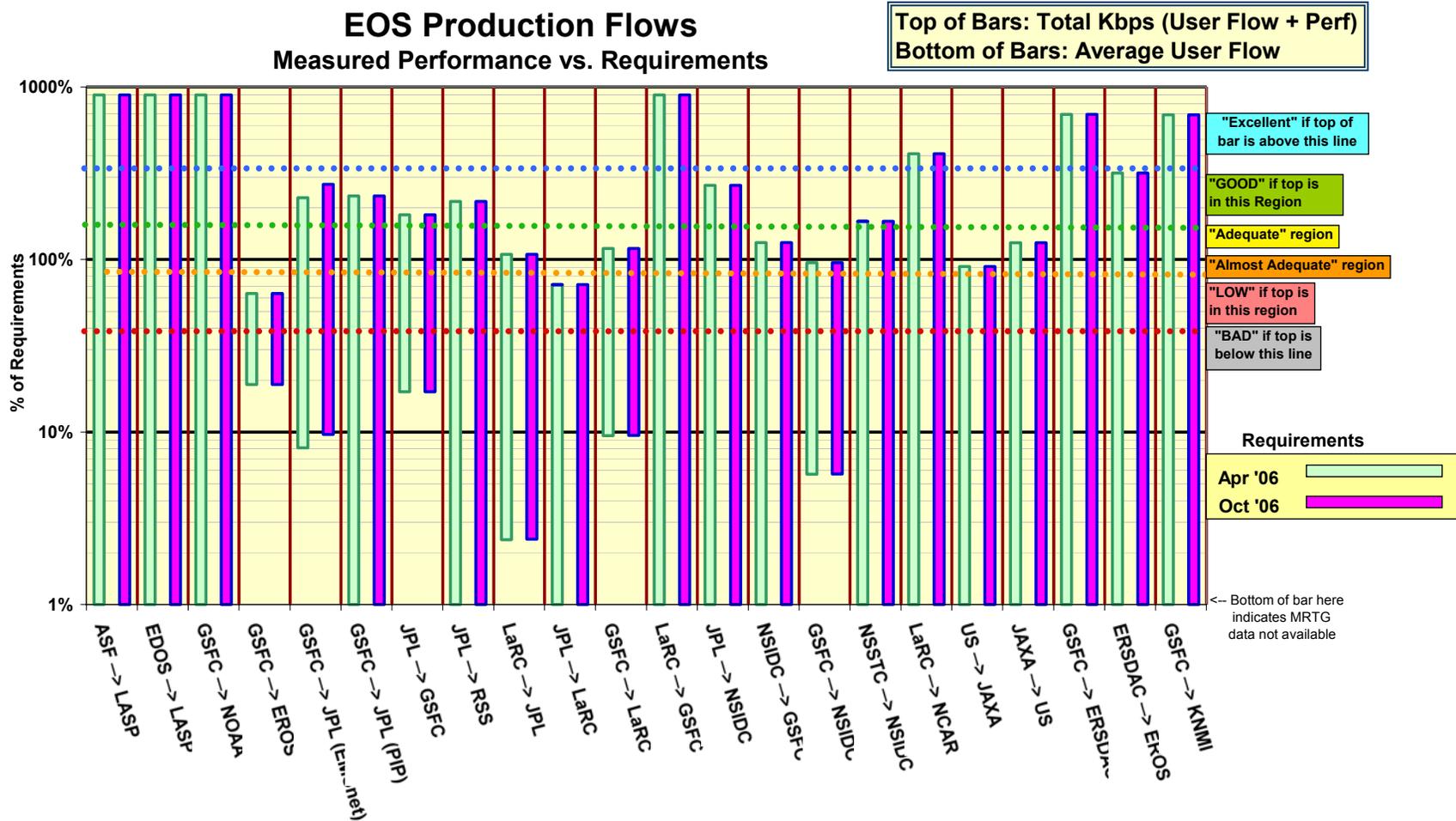


The chart above shows the number of sites in each classification since EMSnet testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

Network Requirements vs. Measured Performance

| April 2006                                                                        |                            | Requirements (kbps)                            |        | Testing                   |                    |                        |                | Ratings                |                                |               |           |
|-----------------------------------------------------------------------------------|----------------------------|------------------------------------------------|--------|---------------------------|--------------------|------------------------|----------------|------------------------|--------------------------------|---------------|-----------|
| Source → Destination                                                              | Team (s)                   | Current                                        | Future | Source → Dest Nodes       | Avg User Flow kbps | iperf Avg kbps         | Total Avg kbps | Integrated kbps        | Rating re Current Requirements |               | Rating re |
|                                                                                   |                            | Apr-06                                         | Oct-06 |                           |                    |                        |                |                        | Apr-06                         | Last Month    | Oct-06    |
| GSFC → ASF                                                                        | QuikScat, Radarsat         | n/a                                            | n/a    | GSFC-CSAFS → ASF          | n/a                | 1443                   | 1443           |                        | n/a                            | n/a           | n/a       |
| ASF → LASP                                                                        | QuikScat                   | 24                                             | 24     | ASF → LASP [via IOnet]    | n/a                | 811                    | 811            |                        | Excellent                      | E             | Excellent |
| EDOS → LASP                                                                       | ICESat, QuikScat           | 400                                            | 400    | EDOS → LASP [via IOnet]   | n/a                | 18378                  | 18378          |                        | Excellent                      | E             | Excellent |
| GSFC → NOAA                                                                       | QuikScat                   | 189                                            | 0      | GSFC-CSAFS → NESDIS       | n/a                | 6859                   | 6859           |                        | Excellent                      | E             | Excellent |
| GSFC → EROS                                                                       | MODIS, LandSat             | 285361                                         | 285361 | GDAAC → EROS LPDAAC       | 53790              | 158998                 | 212788         | 181011                 | LOW                            | L             | LOW       |
| GSFC → JPL (EMSnet)                                                               | ASTER, QuikScat, MLS, etc. | 3144                                           | 2634   | GSFC-CSAFS → JPL-SEAPAC   | 254                | 7140                   | 7395           | 7174                   | GOOD                           | G             | GOOD      |
| GSFC → JPL (PIP)                                                                  | AIRS, ISTs                 | 15757                                          | 15757  | GDAAC → JPL-AIRS          | n/a                | 36806                  | 36806          |                        | GOOD                           | B             | GOOD      |
| JPL → GSFC                                                                        | AMSR-E, MISR, etc.         | 7387                                           | 7387   | JPL-PODAAC → GDAAC        | 1263               | 12128                  | 13391          |                        | GOOD                           | G             | GOOD      |
| JPL → RSS                                                                         | AMSR-E                     | 2488                                           | 2488   | JPL-PODAAC → RSS          | n/a                | 5400                   | 5400           |                        | GOOD                           | G             | GOOD      |
| LaRC → JPL                                                                        | TES, MISR                  | 39553                                          | 39553  | LARC-PTH → JPL-TES        | 938                | 41318                  | 42256          | 42314                  | Adequate                       | A             | Adequate  |
| JPL → LaRC                                                                        | TES                        | 52626                                          | 52626  | JPL-PTH → LARC-PTH        | n/a                | 37574                  | 37574          |                        | LOW                            | L             | LOW       |
| GSFC → LaRC                                                                       | CERES, MISR, MOPITT        | 58594                                          | 58594  | GDAAC → LDAAC             | 5581               | 66379                  | 71960          | 67890                  | Adequate                       | A             | Adequate  |
| LaRC → GSFC                                                                       | MODIS, TES                 | 3160                                           | 3160   | LDAAC → GDAAC             | 9                  | 51008                  | 51017          | 51008                  | Excellent                      | E             | Excellent |
| JPL → NSIDC                                                                       | AMSR-E                     | 1342                                           | 1342   | JPL-PODAAC → NSIDC SIDADS | n/a                | 3610                   | 3610           |                        | GOOD                           | G             | GOOD      |
| NSIDC → GSFC                                                                      | MODIS, ICESAT, QuikScat    | 13317                                          | 13317  | NSIDC DAAC → GDAAC        | n/a                | 16688                  | 16688          |                        | Adequate                       | A             | Adequate  |
| GSFC → NSIDC                                                                      | MODIS, ICESAT, QuikScat    | 90813                                          | 90813  | GDAAC → NSIDC-DAAC        | 5171               | 86567                  | 91738          | 87087                  | A A                            | G             | A A       |
| NSSTC → NSIDC                                                                     | AMSR-E                     | 7497                                           | 7497   | NSSTC → NSIDC DAAC        | n/a                | 12469                  | 12469          |                        | GOOD                           | G             | GOOD      |
| LaRC → NCAR                                                                       | HIRDLS                     | 5395                                           | 5395   | LDAAC → NCAR              | n/a                | 22135                  | 22135          |                        | Excellent                      | E             | Excellent |
| US → JAXA                                                                         | QuikScat, TRMM, AMSR       | 1431                                           | 1431   | GSFC-CSAFS → JAXA         | n/a                | 1302                   | 1302           |                        | A A                            | A A           | A A       |
| JAXA → US                                                                         | AMSR-E                     | 1282                                           | 1282   | JAXA → JPL-SEAPAC         | n/a                | 1602                   | 1602           |                        | Adequate                       | A             | Adequate  |
| GSFC → ERSDAC                                                                     | ASTER                      | 12450                                          | 12450  | ENPL-PTH → ERSDAC         | n/a                | 86408                  | 86408          |                        | Excellent                      | E             | Excellent |
| ERSDAC → EROS                                                                     | ASTER                      | 26832                                          | 26832  | ERSDAC → EROS PTH         | n/a                | 85249                  | 85249          |                        | Excellent                      | E             | Excellent |
| GSFC → KNMI                                                                       | OMI                        | 3282                                           | 3282   | GSFC-MAX → OMI-PDR        | n/a                | 22688                  | 22688          |                        | Excellent                      | E             | Excellent |
| <b>Notes:</b> Flow Requirements include TRMM, Terra, Aqua, Aura, ICESAT, QuikScat |                            |                                                |        |                           |                    |                        |                | <b>Ratings Summary</b> |                                |               |           |
|                                                                                   |                            |                                                |        |                           |                    |                        |                | <b>Apr-06</b>          | <b>Req</b>                     | <b>Oct-06</b> |           |
|                                                                                   |                            |                                                |        |                           |                    |                        |                | <b>Score</b>           | <b>Prev</b>                    | <b>Score</b>  |           |
| <b>*Criteria:</b>                                                                 | <b>Excellent</b>           | Total Kbps > Requirement * 3                   |        |                           |                    | <b>Excellent</b>       |                | 8                      | 8                              | 8             |           |
|                                                                                   | <b>GOOD</b>                | 1.3 * Requirement <= Total Kbps < Requirement  |        |                           |                    | <b>GOOD</b>            |                | 6                      | 6                              | 6             |           |
|                                                                                   | <b>Adequate</b>            | Requirement < Total Kbps < Requirement * 1.3   |        |                           |                    | <b>Adequate</b>        |                | 4                      | 4                              | 4             |           |
|                                                                                   | <b>Almost Adequate</b>     | Requirement / 1.3 < Total Kbps < Requirement   |        |                           |                    | <b>Almost Adequate</b> |                | 2                      | 1                              | 2             |           |
|                                                                                   | <b>LOW</b>                 | Requirement / 3 < Total Kbps < Requirement / 1 |        |                           |                    | <b>LOW</b>             |                | 2                      | 2                              | 2             |           |
|                                                                                   | <b>BAD</b>                 | Total Kbps < Requirement / 3                   |        |                           |                    | <b>BAD</b>             |                | 0                      | 1                              | 0             |           |
|                                                                                   |                            |                                                |        |                           |                    |                        |                | <b>Total</b>           | 22                             | 22            | 22        |
|                                                                                   |                            |                                                |        |                           |                    |                        |                | <b>GPA</b>             | 2.86                           | 2.80          | 2.86      |

This graph shows two bars for each source-destination pair. Each bar uses the same actual measured performance, but compares it to the requirements for two different times (April and October, '06). Thus as the requirements increase, the same measured performance will be lower in comparison.



Interpretation: The bottom of each bar is the average measured MRTG flow to a site. Thus the bottom of each bar indicates the relationship between the requirements and actual flows. Note that the requirements include a 50% contingency factor above what was specified by the projects, so a value of 66% would indicate that the project is flowing as much data as requested. The top of each bar represents the sum of the MRTG user flow plus the iperf measurement – it is this value which is used as the basis of the ratings

**1) EROS:**Rating: Continued **Low**Web Page: <http://ensight.eos.nasa.gov/Networks/emsnet/EROS.shtml>

## Test Results:

| Source → Dest              | Medians of daily tests (mbps) |        |       | User Flow                    | TOTAL | Integrated |
|----------------------------|-------------------------------|--------|-------|------------------------------|-------|------------|
|                            | Best                          | Median | Worst |                              |       |            |
| GSFC-DAAC → EROS LPDAAC    | 205.0                         | 159.0  | 48.0  | 53.8                         | 212.8 | 181.0      |
| <b>GSFC-PTH → EROS PTH</b> | 152.4                         | 119.0  | 61.2  |                              |       |            |
| ERSDAC → EROS              | 86.3                          | 85.2   | 19.8  | (via APAN / Abilene / vBNS+) |       |            |
| EROS LPDAAC → GSFC DAAC    | 127.4                         | 110.6  | 54.4  |                              |       |            |
| EROS LPDAAC → GSFC ECHO    | 83.4                          | 69.0   | 52.5  |                              |       |            |
| EROS PTH → GSFC PTH        | 355.3                         | 342.6  | 311.3 |                              |       |            |

## Requirements:

| Source → Dest | Date   | mbps  | Rating           |
|---------------|--------|-------|------------------|
| GSFC → EROS   | FY '06 | 285.4 | <b>Low</b>       |
| ERSDAC → EROS | FY '06 | 26.8  | <b>Excellent</b> |

**Comments:**

The problem from GSFC-PTH to EROS-PTH remains (apparently packet loss on or near vBNS+), so the rating is again based on testing between from GDAAC to EROS LPDAAC. The PTH hosts are outside the ECS firewalls, and therefore normally have higher thruput – but that is again true this month only for EROS → GSFC flows.

The rating is based on the "Integrated" measurement, and as usual is lower than the sum of the User Flow + iperf. The user flow this month increased, but had only a modest contribution to the integrated measurement. This 181 mbps value is below 30% under the requirement, so the rating remains "Low". Hopefully when the PTH problem is fixed the rating will improve again.

The median thruput from ERSDAC to EDC-PTH (in support of the ERSDAC to EDC ASTER flow, replacing tapes) is more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating.

Thruput from EROS-PTH to GSFC-PTH improved substantially this month – the median was only 207 mbps last month.

It is planned to discontinue use of vBNS+ this summer, and switch to using a peering in Chicago between NISN and a dedicated circuit from EROS.

**2) JPL:****2.1) JPL ↔ GSFC:**

Ratings: GSFC → JPL: PIP: ↑ Bad → **Good**  
 EMSnet: Continued **Good**  
 JPL → GSFC: Continued **Good**

Web Pages:

[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_QSCAT.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_QSCAT.shtml)  
[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_PODAAC.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_PODAAC.shtml)  
[http://ensight.eos.nasa.gov/Missions/aqua/JPL\\_AIRS.shtml](http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml)

Test Results:

| Source → Dest             | NET | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|---------------------------|-----|-------------------------------|--------|-------|-----------|-------|------------|
|                           |     | Best                          | Median | Worst |           |       |            |
| GSFC-CSAFS → JPL-QSCAT    | EMS | 7.7                           | 7.1    | 5.2   | 0.3       | 7.4   | 7.2        |
| GSFC-CSAFS → JPL-QSCAT-BU | EMS | 7.6                           | 7.3    | 4.2   |           |       |            |
| GSFC-PTH → JPL-PODAAC     | EMS | 6.3                           | 6.2    | 3.8   |           |       |            |
| GSFC-DAAC → JPL-AIRS      | PIP | 40.1                          | 36.8   | 9.6   |           |       |            |
| GSFC-PTH → JPL-AIRS       | PIP | 52.4                          | 45.5   | 20.2  |           |       |            |
| GSFC-CNE → JPL-AIRS       | SIP | 23.0                          | 21.7   | 13.4  |           |       |            |
| GSFC-CNE → JPL-MISR       | SIP | 22.6                          | 20.2   | 10.2  |           |       |            |
| JPL-PODAAC → GSFC DAAC    | EMS | 12.3                          | 12.1   | 1.0   |           |       |            |

Requirements:

| Source → Dest         | Date   | Mbps | Rating      |
|-----------------------|--------|------|-------------|
| GSFC → JPL via EMSnet | FY '06 | 3.1  | <b>Good</b> |
| GSFC → JPL via PIP    | FY '06 | 15.8 | <b>Good</b> |
| JPL → GSFC combined   | CY '06 | 7.4  | <b>Good</b> |

**Comments:**

**GSFC → JPL:** Most GSFC-JPL flows moved from EMSnet to NISN PIP on 2 December (But some remained on EMSnet); the requirements are therefore correspondingly divided.

**EMSnet:** Performance on this circuit recovered to 8 mbps in mid March, and remains OK (had dropped in mid February to 1-4 mbps). The rating remains "Good".

**PIP:** The PIP flows include QA data from GDAAC to JPL-AIRS, ISTs for several missions (but the JAXA AMSR-E ISTs flow to JPL via EMSnet), and science user flow estimates, totaling 15.76 mbps. Performance from GSFC to JPL-AIRS improved dramatically on approx April 1, due to NISN reconfiguration (was very noisy. with 5 mbps median thruput in March), improving the rating to "Good".

**JPL → GSFC:** The MLS requirements increased in March (total was 3.2 mbps in December). Performance was stable; the rating remains "Good".

**2.2) JPL ↔ LaRC**

Ratings: LaRC → JPL: Continued **Adequate**  
 JPL → LaRC: Continued **Low**

Web Pages:

[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_TES.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_TES.shtml)

[http://ensight.eos.nasa.gov/Missions/terra/JPL\\_MISR.shtml](http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml)

Test Results:

| Source → Dest        | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|----------------------|-------------------------------|--------|-------|-----------|-------|------------|
|                      | Best                          | Median | Worst |           |       |            |
| LaRC PTH → JPL-PTH   | 41.0                          | 40.9   | 33.6  | 1.0       | 41.9  | 40.9       |
| LaRC DAAC → JPL-TES  | 40.7                          | 39.8   | 23.5  |           |       |            |
| LaRC DAAC → JPL-MISR | 41.4                          | 39.1   | 18.4  |           |       |            |
| JPL-PTH → LaRC PTH   | 37.6                          | 37.6   | 37.4  |           |       |            |

Requirements:

| Source → Dest            | Date   | Mbps | Rating          |
|--------------------------|--------|------|-----------------|
| LaRC DAAC → JPL-TES      | FY '06 | 29.8 | <b>Adequate</b> |
| LaRC DAAC → JPL-MISR     | FY '06 | 18.5 | <b>Good</b>     |
| LaRC DAAC → JPL-Combined | FY '06 | 39.6 | <b>Adequate</b> |
| JPL → LaRC               | FY '06 | 52.6 | <b>Low</b>      |

**Comments:**

**LaRC → JPL:** Performance has been stable since this flow was switched to NISN PIP in Feb '05; MRTG data became unavailable at that time -- the passive "flows" data is now being used instead. The "integrated" thrupt is slightly above the requirement; the rating remains "Adequate".

**JPL → LaRC:** This requirement is for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. The measured thrupt was again stable this month. However, the nominal requirements increased in December (was 35.1 mbps previously) to support increased TES reprocessing. The rating remains "Low".

**2.3) ERSDAC → JPL ASTER IST**

Rating: n/a

Test Results:

| Source → Dest          | Medians of daily tests (mbps) |        |       |
|------------------------|-------------------------------|--------|-------|
|                        | Best                          | Median | Worst |
| ERSDAC → JPL-ASTER-IST | 85.2                          | 49.7   | 19.3  |

**Comments:**

**ERSDAC → JPL-ASTER-IST:** This test was initiated in March '05, via APAN replacing the EBnet circuit. The typical 50 mbps must be well in excess of the requirements (IST requirements are generally 311 kbps).

**3) Boulder CO:**

Ratings: GSFC → NSIDC: ↓ Good → **Almost Adequate**  
 NSIDC → GSFC: Continued **Adequate**

Web Pages: [http://ensight.eos.nasa.gov/Networks/emsnet/NSIDC\\_EMS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/NSIDC_EMS.shtml)  
[http://ensight.eos.nasa.gov/Missions/aqua/NSIDC\\_u.shtml](http://ensight.eos.nasa.gov/Missions/aqua/NSIDC_u.shtml)

**GSFC ↔ NSIDC Test Results:**

| Source → Dest          | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|------------------------|-------------------------------|--------|-------|-----------|-------|------------|
|                        | Best                          | Median | Worst |           |       |            |
| GSFC-DAAC → NSIDC-DAAC | 90.8                          | 86.6   | 34.5  | 5.2       | 91.7  | 87.1       |
| GSFC-PTH → NSIDC-DAAC  | 91.2                          | 86.9   | 50.9  |           |       |            |
| NSIDC DAAC → GSFC-DAAC | 17.0                          | 16.7   | 10.4  |           |       |            |

## Requirements:

| Source → Dest | Date    | Mbps | Rating                 |
|---------------|---------|------|------------------------|
| GSFC → NSIDC  | Apr '06 | 90.8 | <b>Almost Adequate</b> |
| NSIDC → GSFC  | FY '06  | 13.3 | <b>Adequate</b>        |

**Comments: GSFC → NSIDC:** This rating is based on testing from GDAAC to the NSIDC DAAC. The iperf and integrated thruput values were stable this month. The requirement, however, varies from month to month, based on planned ICESAT reprocessing. This month the reprocessing **IS** included. The thruput is now slightly below this requirement (but by less than 30%), so the rating drops to "Almost Adequate".

**NSIDC → GSFC:** Performance from NSIDC to GSFC was stable this month, and the median remains slightly less than 30% above the requirement, so the rating remains "Adequate".

**Other Testing:**

| Source → Dest              | Medians of daily tests (mbps) |        |       | Requirement | Rating           |
|----------------------------|-------------------------------|--------|-------|-------------|------------------|
|                            | Best                          | Median | Worst |             |                  |
| JPL → NSIDC-SIDADS         | 4.1                           | 3.6    | 1.7   | 1.34        | <b>Good</b>      |
| GSFC-ISIPS → NSIDC (iperf) | 90.2                          | 84.8   | 27.8  |             |                  |
| GSFC-ISIPS → NSIDC (ftp)   | 23.1                          | 23.0   | 11.5  |             |                  |
| NSIDC → GSFC-ISIPS (iperf) | 16.3                          | 15.7   | 13.8  |             |                  |
| NSSTC → NSIDC DAAC         | 12.7                          | 12.5   | 0.3   | 7.5         | <b>Good</b>      |
| ASF → LASP                 | 1.22                          | 0.81   | 0.35  | 0.024       | <b>Excellent</b> |
| GSFC EDOS → LASP           | 43.1                          | 18.4   | 9.2   | 0.4         | <b>Excellent</b> |
| GSFC PTH → LASP            | 44.4                          | 20.9   | 9.3   |             |                  |

**Comments:**

**JPL → NSIDC-SIDADS:** This flow switched from EMSnet to PIP in Feb '05, and thruput dropped from 6.1 mbps previously. Thruput remains below 3 x the requirement, so the rating remains "Good".

**GSFC-ISIPS ↔ NSIDC:** Performance from ISIPS to NSIDC was fixed in Feb '05, after having problems since July '04. Performance is at nominal levels for the circuit capacity. Testing from NSIDC to ISIPS is stable and gets thruput similar to NSIDC to GDAAC.

**NSSTC (GHCC) → NSIDC:** NSSTC (Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. Median thruput is more than 30 % over the requirement, so is rated "Good"

**LASP:** The requirements are now divided into ASF and GSFC sources: (Note: these tests were switched to IOnet last month).

**ASF → LASP:** Thruput from ASF to LASP is limited by ASF T1 circuit, rating "Excellent", due to the modest requirement

**GSFC → LASP:** Began testing from GSFC-EDOS to LASP last month -- thruput improved in April due to switching EDOS hosts, also similar from GSFC-PTH. Performance is well above the requirement, rating "Excellent". **However, LASP POC reports sftp performance is not nearly as good as indicated above – under investigation.**

**4) GSFC ↔ LaRC:**

Ratings: LDAAC → GDAAC: Continued **Excellent**  
 GSFC → LARC: Continued **Adequate**

Web Pages: <http://ensight.eos.nasa.gov/Networks/emsnet/LARC.shtml>  
<http://ensight.eos.nasa.gov/Networks/emsnet/LATIS.shtml>  
[http://ensight.eos.nasa.gov/Missions/sage/SAGE\\_MOC.shtml](http://ensight.eos.nasa.gov/Missions/sage/SAGE_MOC.shtml)

## Test Results:

| Source → Dest                    | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|----------------------------------|-------------------------------|--------|-------|-----------|-------|------------|
|                                  | Best                          | Median | Worst |           |       |            |
| GDAAC → LDAAC                    | 77.6                          | 62.8   | 15.5  | 2.0       | 64.8  | 62.8       |
| GSFC-NISN → LaTIS                | 79.0                          | 60.5   | 14.2  |           |       |            |
| GSFC-PTH → LaRC-PTH              | 78.5                          | 70.0   | 32.9  |           |       |            |
| GSFC-SAFS →<br>LaRC-SAGE III MOC | 5.4                           | 4.8    | 1.4   |           |       |            |
| LDAAC → GDAAC                    | 52.2                          | 48.7   | 5.8   | 0.003     | 48.7  | 48.7       |
| LDAAC → GSFC-ECHO                | 43.3                          | 38.4   | 22.8  |           |       |            |

## Requirements:

| Source → Dest                 | Date   | Mbps | Rating           |
|-------------------------------|--------|------|------------------|
| GSFC → LARC (Combined)        | FY '06 | 58.5 | <b>Adequate</b>  |
| GDAAC → LaRC ECS              | FY '06 | 17.8 | <b>Excellent</b> |
| GSFC-SAFS → LaRC-SAGE III MOC | FY '06 | 0.26 | <b>Excellent</b> |
| GSFC → LATIS                  | FY '06 | 40.7 | <b>Good</b>      |
| LDAAC → GDAAC                 | FY '06 | 3.2  | <b>Excellent</b> |

**Comments:**

**GSFC → LaRC:** The combined 58.5 mbps requirement had been split between LDAAC and LaTIS when the flows were on separate circuits, but is now treated as a single requirement as they have been both on PIP since Feb '05. So the rating is now based on the GDAAC to LaRC ECS DAAC thrupt, compared to the combined requirement. MRTG and LaTIS user flow data are also no longer available (but the ECS user flow data is used for the "User Flow" above).

So the **GSFC → LaRC ECS DAAC** thrupt remains above the combined requirement, but by less than 30%, so the combined rating remains "Adequate". **Note:** on the ensight web site testing to LaTIS is now shown separately from LaRC ECS – see the new URL above.

GSFC-SAFS → LaRC-SAGE III MOC flows were moved to this section in December -- from the SCF report. Although the thrupt is much lower than the other GSFC-LaRC flows, it is more than 3 times the modest requirement, resulting in an "Excellent" rating". **Note:** The Meteor III spacecraft (on which the SAGE III instrument is flying) stopped responding in March.

**LaRC → GSFC:** Performance from LDAAC → GDAAC remained stable with the switch to PIP in Feb '05. The thrupt remains more than 3 x the 3.2 mbps requirement (with the backhaul flows removed), so the rating continues as "Excellent".

The thrupt from LDAAC to GSFC-ECHO is similar to but a bit lower than LDAAC to GDAAC.

**5) ASF**Rating: **Excellent**Web Page: [http://ensight.eos.nasa.gov/Networks/emsnet/ASF\\_EMS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/ASF_EMS.shtml)

Test Results:

| Source → Dest    | Medians of daily tests (mbps) |        |       |
|------------------|-------------------------------|--------|-------|
|                  | Best                          | Median | Worst |
| GSFC-CSAFS → ASF | 1.45                          | 1.44   | 1.04  |
| ASF → LASP       | 1.32                          | 1.05   | 0.43  |
| ASF → GSFC-CSAFS | 1.22                          | 0.81   | 0.35  |

**Comments:** Testing to ASF transitioned to IOnet last month – accordingly, testing was discontinued from ASF to NOAA and JPL-SEAPAC, and user flow data is no longer available.

Performance is consistent with the T1 (1.5 mbps) circuit capacity.

Requirements:

| Source → Dest | Date   | kbps | Rating           |
|---------------|--------|------|------------------|
| ASF → LASP    | FY '06 | 24   | <b>Excellent</b> |

**6) NOAA NESDIS:**Rating: Continued **Excellent**Web Page: [http://ensight.eos.nasa.gov/Networks/emsnet/NOAA\\_NESDIS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/NOAA_NESDIS.shtml)

Test Results:

| Source → Dest    | Medians of daily tests (mbps) |        |       |
|------------------|-------------------------------|--------|-------|
|                  | Best                          | Median | Worst |
| GSFC-SAFS → NOAA | 7.05                          | 6.86   | 4.29  |
| JAXA → NOAA      | 1.83                          | 1.64   | 0.83  |
| JPL → NOAA       | 4.82                          | 4.74   | 3.75  |

Requirements:

| Source → Dest       | FY  | Mbps | Rating           |
|---------------------|-----|------|------------------|
| GSFC-CSAFS → NESDIS | '06 | 0.19 | <b>Excellent</b> |

**Comments:** The NOAA EMSnet test host was replaced in October '05; all flows are now via the MAX connection. The dominant flow to NOAA is Quikscat data, from GSFC CSAFS. Thruput was stable from all sources, and much higher than the requirement, rating “Excellent”. Thruput to this node from JAXA is consistent with circuit limitations.

**7) US ↔ JAXA:**

Ratings: JAXA → US: Continued **Adequate**  
 US → JAXA: Continued **Almost Adequate**

Web Pages [http://ensight.eos.nasa.gov/Networks/emsnet/JAXA\\_EOC.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JAXA_EOC.shtml)  
[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_SEAPAC.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_SEAPAC.shtml)  
[http://ensight.eos.nasa.gov/Networks/emsnet/GSFC\\_SAFS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/GSFC_SAFS.shtml)

Test Results:

| Source → Dest         | Medians of daily tests (mbps) |        |       |
|-----------------------|-------------------------------|--------|-------|
|                       | Best                          | Median | Worst |
| GSFC-CSAFS → JAXA-EOC | 1.54                          | 1.30   | 0.82  |
| JPL → JAXA-EOC        | 1.67                          | 1.41   | 0.49  |
| JAXA-EOC → JPL-QSCAT  | 1.61                          | 1.60   | 0.91  |
| JAXA-EOC → GSFC-DAAC  | 1.50                          | 1.41   | 0.56  |

Requirements

| Source → Dest | Date         | mbps | Rating                 |
|---------------|--------------|------|------------------------|
| GSFC → JAXA   | FY '05, '06  | 1.43 | <b>Almost Adequate</b> |
| JAXA → US     | FY '04 - '06 | 1.28 | <b>Adequate</b>        |

**Comments:**

The JAXA circuit was moved to PIP on December 2 – performance reductions were observed. Also, MRTG data was no longer available.

**US → JAXA:** Performance from GSFC was stable this month – thruput remains below but within 30% of the requirement, so the rating remains “Almost Adequate”.

Performance from JPL was similar, with slightly higher peaks.

**JAXA → US:** Performance remained consistent with the ATM PVC. The requirement was increased in Version 1.4 of the EOS Networks Handbook. This month testing from JAXA to JPL was stable; but without adding the MRTG, the thruput was no longer 30% over the requirement, so the rating remains “Adequate”.

**Slnet / APAN Testing:**

It is planned to remove the NASA – JAXA dedicated circuit above, by September 2006. After that, all the above data will be transferred via Slnet or APAN. Accordingly, the following tests are run via Slnet:

| Source → Dest | Medians of daily tests (mbps) |        |       | Requirement | Rating                    |
|---------------|-------------------------------|--------|-------|-------------|---------------------------|
|               | Best                          | Median | Worst |             |                           |
| GSFC → JAXA   | 2.63                          | 2.09   | 1.58  | 1.43        | ↓ Excellent → <b>Good</b> |
| JAXA → GSFC   | 8.79                          | 3.25   | 0.66  | 1.28        | ↓ Excellent → <b>Good</b> |

Thruput from GSFC to JAXA was considerably better via this path than the dedicated ATM circuit – about 9 mbps steady last month. **But performance in both directions dropped substantially – to the values above – on April 6.** This would drop the rating from “Excellent” to “Good”. Based on the better performance from JAXA to GSFC, it would appear that the problem is packet loss in the GSFC to JAXA direction. Based on other testing (e.g., to Tokyo-XP), it would seem that the problem is from Tokyo-XP to JAXA (or within JAXA).

Even in this degraded condition, performance via Slnet is still superior to the ATM circuit (also cheaper!).

**8) ERSDAC ↔ US:**Rating: Continued **Excellent**Web Page : <http://ensight.eos.nasa.gov/Networks/emsnet/ERSDAC.shtml>

## Test Results:

| Source → Dest                      | Medians of daily tests (mbps) |        |       |
|------------------------------------|-------------------------------|--------|-------|
|                                    | Best                          | Median | Worst |
| GDAAC → ERSDAC                     | 23.5                          | 16.8   | 7.0   |
| GSFC ENPL (Fast Ethernet) → ERSDAC | 89.2                          | 86.4   | 27.1  |
| <b>GSFC-EDOS → ERSDAC</b>          | 6.2                           | 2.6    | 1.6   |

## Requirements:

| Source → Dest | FY        | Mbps | Rating           |
|---------------|-----------|------|------------------|
| GSFC → ERSDAC | '03 - '06 | 12.5 | <b>Excellent</b> |

**Comments:** Dataflow from GSFC to ERSDAC was switched to APAN in February '05, and the performance above is via that route. MRTG and user flow data are no longer available due to this change.

The thrupt from GDAAC is apparently limited by packet loss at the GigE to FastE switch at Tokyo-XP. The GigE GDAAC source does not see any bottlenecks until this switch (The Abilene and APAN backbones are 10 Gbps), and thus exceeds capacity of the switch's FastE output circuit. But the FastE connected GSFC-ENPL node is limited to 100 mbps by its own interface, so does not suffer performance degrading packet loss – its performance is much higher. **Note: Testing from EDOS to ERSDAC was switched in late March to an EDOS FastE production node, but no performance improvement was observed – under investigation.**

The requirement now includes the level 0 flows which used to be sent by tapes. The thrupt is still more than 3 x this increased requirement, so the rating remains “Excellent”.

**Other Testing:**

| Source → Dest          | Medians of daily tests (mbps) |        |       |
|------------------------|-------------------------------|--------|-------|
|                        | Best                          | Median | Worst |
| ERSDAC → JPL-ASTER IST | 85.2                          | 49.7   | 19.3  |
| ERSDAC → EROS          | 86.3                          | 85.2   | 19.8  |

## Requirements:

| Source → Dest | Date   | mbps | Rating           |
|---------------|--------|------|------------------|
| ERSDAC → EROS | FY '06 | 26.8 | <b>Excellent</b> |

**Comments:**

**ERSDAC → EROS:** The results from this test (in support of the ERSDAC to EROS ASTER flow, replacing tapes) were stable this month. Thrupt improved to these present values in April '05 after the Abilene to NGIX-E connection was repaired. The median thrupt is more than 3 x the requirement, so the rating remains “Excellent”

**ERSDAC → JPL-ASTER-IST:** This test was initiated in March '05, via APAN replacing the EBnet circuit. The results are much higher than previously via the 1 mbps ATM circuit, and should be considered “Excellent” (no requirement is specified at this time – but other IST requirements are 311 kbps)

## 9) SIPS Sites:

Web Pages <http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml>  
<http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml>  
<http://ensight.eos.nasa.gov/Missions/aqua/NSSTC.shtml>  
[http://ensight.eos.nasa.gov/Missions/aura/KNMI\\_OMIPDR.shtml](http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml)

Test Results:

| Source → Dest        | Medians of daily tests (mbps) |        |       | Requirement | Rating    |
|----------------------|-------------------------------|--------|-------|-------------|-----------|
|                      | Best                          | Median | Worst |             |           |
| LaRC → NCAR          | 24.3                          | 22.1   | 15.6  | 5.4         | Excellent |
| GSFC → NCAR          | 93.1                          | 93.1   | 92.4  | 5.1         | Excellent |
| JPL → RSS            | 5.5                           | 5.4    | 2.2   | 2.4         | Good      |
| GHCC → NSIDC         | 12.7                          | 12.5   | 0.3   | 7.5         | Good      |
| GSFC → KNMI-ODPS     | 22.8                          | 22.7   | 20.9  | 3.3         | Excellent |
| GSFC → KNMI-ODPS-B/U | 85.1                          | 85.0   | 82.9  |             |           |

### Comments:

**NCAR:** NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. Thruput from LaRC (via NISN to MAX to Abilene) is a bit above 3 x the requirement, so the rating remains “Excellent”. From GSFC the median thruput is extremely steady at well over 3 x the requirement (from a Fast-E test source), so that rating also remains “Excellent”. From a GigE test source, a problem similar to the ERSDAC “GigE” problem, above, exists, and creates considerable variability to the results. Thruput therefore has higher peaks and medians (154 and 139 mbps), but lower dips (15 mbps) than from the Fast-E source.

**RSS:** RSS (Santa Rosa, CA) is a SIPS for AMSR-E, receiving data from JPL, and sending its results to GHCC (Huntsville, AL). The NISN dedicated circuit from JPL to RSS was upgraded in August '05 from 2 T1s (3 mbps) to 4 T1s (6 mbps) to accommodate the larger RSS to GHCC flow. Thruput improved to the above values at that time – more that 30% above the requirement, the rating remains “Good”.

Note that with the present configuration (passive servers at both RSS and GHCC), the RSS to GHCC performance cannot be tested.

**GHCC (NSSTC) → NSIDC:** This flow represents Layer 2 and 3 AMSR-E products produced at GHCC, and sent to NSIDC for archiving. Median thruput is more than 30% over the requirement, rating “Good”.

**KNMI:** KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Abilene, peering in NY with Surfnet’s 10Gbps circuit to Amsterdam. Thruput to the ODPS backup server at KNMI is limited only by a Fast Ethernet connection at KNMI, and gets about 85 mbps steady! The rating is based on the results to the OMI PDR primary server, protected by a firewall, and are quite a bit lower. Thruput improved from 17 mbps in late March, and remains well above 3 x the requirement, rating “Excellent”.