

152-TR-000-049

ECS Response to Comments on the January 1997 Version of ECS External Data Traffic Requirements (223-CD-001-004)

Technical Record

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RESPONSIBLE ENGINEER

<u>Ezra Jalleta /s/</u>	<u>5/1/97</u>
Ezra Jalleta	Date
EOSDIS Core System Project	

SUBMITTED BY

<u>Paul Fingerman /s/</u>	<u>5/1/97</u>
Paul Fingerman, ECS CCB Chairman	Date
EOSDIS Core System Project	

Hughes Information Technology Systems
Upper Marlboro, Maryland

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Preface

This document (152-TR-000-049) addresses all ESDIS comments on the January 1997 version of DID 223 (ECS External Data Traffic Requirements). It is also part of the response to the April 14, 1997 ESDIS letter rejecting the document. The May 1997 version of the CDRL (DID 223) which has incorporated most of the editorial comments will be delivered along with this document. Any questions related to this document should be addressed to Ezra Jalleta, ejalleta@eos.hitc.com or to the Data Management Office at:

The ECS Project Office
Hughes Information Technology Systems
1616 McCormick Drive
Upper Marlboro, MD 20785-5372

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ECS Response to Comments on the January 1997 Version of ECS External Data Traffic Requirements (223-CD-001-004)

1. GENERAL:

RR (DSNO)

Comment:

For some reason, the following DSNO comments provided to ECS contractor on the previous release of ECS External Traffic Requirement document (223-CD-001-003) dated November 1996 have not been incorporated or addressed in the current release of DID 223 document. In addition, no itemized response to the previous DSNO comments have been provided, which would have been very helpful. It is recommended that future updates of this document should include the itemized response to comments and changes should be identified by vertical bars to make it easy for the reviewers to verify the changes based on the comments.

Response:

Some comments were not incorporated because they were based on the use of ETRD data from May'96 instead of October'96. Other comments conflicted with ESDIS directives and/or previous comments. Approximately 6 weeks prior to the release of DID 223, a snapshot of the database is delivered to Hughes to be used to develop the tables in Section 3 of the document. The release date of the information for incorporation in DID 223 is listed in Section 1.4.1. This listing also shows all associated CCRs. Therefore, reviewers are encouraged to refer to this section so that the proper data is used for comparison. Itemized responses to comments just like this one will be provided along with future releases. Change pages will also be provided in future releases. However, for the May'97 release, this response document will serve as the change page.

Comment:

a) References to EBnet, NSI and NASCOM should be changed to *[recognized as part of]* NISN which is the new consolidated NASA network organization. While the identification of NSI and NASCOM becomes NISN, EBnet as a mission-specific implementation should remain as designated, but as provided by NISN.

Response:

Hughes has not received a Technical Directive to use the term NISN in the ECS project.

Comment:

b) This document uses the February 96 Technical Baseline, which is considerably out of date. For example, we know that at least one change has occurred since February 96, because the GSFC DAAC's processing resources have been upgraded to handle the processing of MODIS Level 2G product, which originally was to be

done at the EDC DAAC. However, EDC's network requirements have not been accordingly updated (nor have EDC's archive requirements been updated, but that isn't an issue for this document).

Response:

While the February Technical Baseline is out of date, it is the only formal reference that exists for use in DID 223 (and other purposes in ECS). When the Technical baseline is updated, the data in the updated version will be used.

Comment:

c) There will be 15 GB a day of V0 to V1 DAAC data migration(starting June 97), which is not included in the traffic database or this document.

Response:

V0 to ECS data migration schedule details have not been resolved at this point. As a result, data rates can not be determined.

Comment:

d) Replace “pages will released” with “pages will be released” (Preface, Line 4)

Response:

Agree. Change has been made per comment.

Comment:

e) Delete ADEOSII because best estimates of ADEOS II data flows are not included in this document as stated in the next sentence. There may be a requirement for stating these flows but the data flows are not provided since they are not available (Abstract, Line 5, Page v).

Response:

References to ADEOS II have been removed. ADEOS II related EBnet flows are non-ECS therefore they do not belong in DID 223.

Comment:

f) Again ADEOSII data flows are not included as stated in the first sentence. Delete ADEOSII from the first sentence. It is covered in the second sentence (Section 1.2, Para 1).

Response:

References to ADEOS II have been removed. ADEOS II related EBnet flows are non-ECS therefore they do not belong in DID 223.

Comment:

g) Given the Replan, replace the 4th sentence “The resulting DAAC to DAAC data flows include processing, reprocessing, and dependency flows” with the following sentence (Section 1.2, Para 1):

“The resulting DAAC to DAAC data flows include reprocessing, reprocessing, and dependency flows based on the subsetting of data products assumed by the AHWGP”

Response:

Agree. Change has been made per comment.

Comment:

h) EBnet and NASCOM are now NISN also. We need to find a new name for these services. There are the former designations of mission critical, mission essential and mission success networks (Section 1.2, Para 2).

Response:

Hughes has not received a Technical Directive to use the term NISN in the ECS project.

Comment:

i) Replace the last document "EOSDIS External Networks Review" with “NASA Internet (NI) Earth Observing System (EOS) Networking Project Plan, September 1996, Author: NI-EOS Networking Project,NASA Ames Research Center” (Section 2.3, Page 2-2).

Response:

Agree. Change has been made per comment.

Comment:

j) There were several flows in the traffic database not listed in section 3 (Section 3, Pages 3-1 thru 3-5):.

TRMM GDAAC to LIS SCF MSFC

TRMM LIS SCF MSFC to GDAAC

Ancillary NOAA suitland to GDAAC[this may be dropped]

TRMM SDPF to GDAAC [this should be dropped from the traffic database]

Response:

TRMM flows are not applicable to ECS anymore.

Comment:

k) After adding the traffic database GDAAC records in a spreadsheet, some discrepancies were found with some numbers in ETRD table 3.2.3-1 (Section 3.2.3, Table 3.2.3-1, Page 3-4):.

Flow source and destination	my #'s from DB	ETRD
EDC DAAC to GDAAC 1999	1809.2	2119.6
EDC DAAC to GDAAC 2000	1809.2	4237.7
EDC DAAC to GDAAC 2001	1807.6	7230.5
EDC DAAC to GDAAC 2002	1807.6	7230.5
The traffic database is missing the reprocessing flows.?.		
GDAAC to EDC DAAC 1999	4051.2	8101.5
GDAAC to EDC DAAC 2000	4051.2	16202.2
GDAAC to EDC DAAC 2001	4050.3	16201.3
GDAAC to EDC DAAC 2002	4050.3	16201.3
Again traffic database is missing the reprocessing flows.?.		
GDAAC to LaRC DAAC 1999	18414.1	17768.9
GDAAC to LaRC DAAC 2000	18414.1	35530.0
GDAAC to LaRC DAAC 2001	18410.4	39016.3
GDAAC to LaRC DAAC 2002	18410.4	39016.3
Traffic database is missing the reprocessing flows?		
GDAAC to NSIDC DAAC 1999	61.7	122.8
GDAAC to NSIDC DAAC 2000	61.7	245.1
GDAAC to NSIDC DAAC 2001	61.1	244.6
GDAAC to NSIDC DAAC 2002	61.1	244.6
Traffic database is missing the reprocessing flows?		
JPL DAAC to GDAAC 1997	.5	
JPL DAAC to GDAAC 1998	.5	
JPL DAAC to GDAAC 1999	.6	
JPL DAAC to GDAAC 1900	.6	
JPL DAAC to GDAAC 1901	.6	
JPL DAAC to GDAAC 1902	.6	

What happened to the user queries/responses here?

Since they are available in the same database, it would be useful to also have roll-up tables with the design rates (that would include the analysis of peak rates and overheads).

Response:

The release date of the ETRD information for incorporation in DID 223 is listed in Section 1.4.1. This listing also shows all associated CCRs. Therefore, reviewers are encouraged to refer to this section so that the proper data is used for comparison. In this particular case, data from May'96 was used instead of October'96. For the May'97 version of DID 223, use ETRD information from April 14, 1997. Please note that comments regarding the traffic database should be addressed to EBnet.

Comment:

l) The published version of the Ebnet traffic database is dated May 9, 1996. On page 3-5, the ETRD states that the traffic database was obtained on 10/24/96. It is not clear what version of the traffic database was used, but it appears to have been a different one than the published version (Section 3.2.3, Note 1, Page 3-5).

Response:

See opening reply (reply to the very first comment under "General"). In preparing DID 223, a snapshot of the traffic database is taken at the time of document update (appx. every quarter). The date when the information was taken from the traffic database is provided as indicated by the comment.

Comment:

m) It is assumed that there will be reprocessing for CHEM1 and PM1, but I don't see those numbers included in either the database or the ETRD (Section 3.2.3, Table 3.2.3-2, Page 3-5).

Response:

There is no sufficient information to estimate inter-DAAC flows for PM-1 and CHEM at this time.

Comment:

n) It is not clear if EBnet circuit utilization factor (= 1.25) and the EBnet retransmission factor (= 1.1) are included in the calculations? (Section 3.3 Overhead Factors, Page 3-5).

Response:

The overheads were not included in the calculations. It was decided early on to provide only raw data flows in this document. The overhead factors suggested were included in Section 3.3 as a convenience; they have been removed and a reference has been made to the EBnet home page.

Comment:

o) Delete Federal Internet Exchanges (FIXes) since connectivity is now at MAEs and NAPs (Section 4.1, Para 1 (Page 4-1)).

Response:

Agree. All references to FIXs will be removed.

Comment:

r) The last 7 words “therefore it is not discussed separately herein” should be a separate sentence (Section 4.2, Para 1, Page 4-1).

Response:

This paragraph was re-written and no longer requires the phrase in question

Comment:

s) Line 4 change to “community were” to conform to ”recent trends” (Section 4.2.1, Page 4-2).

Response:

Agree. Change has been made per comment.

Comment:

t) Could you provide with more detailed information on how these GSFC DAAC numbers were arrived at? (Section 4.2.1, Table 4.2-1, Page 4-2).

Response:

Section 4.2 as a whole has been rearranged so that the information in the table in question (Table 4.2-1) is more meaningful. A pointer to a reference to a white paper has also been included for details on how user flows were determined.

Comment:

u) Change “Canada” to “Un of Toronto” in first line and also in Table 4.2.2-1. All the others are sites. Canada is not a site (Section 4.2.2, Page 4-3).

Response:

Agree. Change has been made per comment.

Comment:

v) Add the following Network Performance Requirements (Table 4.2.2-1, Page 4-3):

Function	Parameter	50%	90%	99%
Interactive Commands	Round Trip Time	500 ms	1 sec	2 sec
Real Time Monitoring	Latency jitter	1 sec	2 sec	4 sec

Response:

Agree. Change has been made per comment.

Comment:

w) The transfer times for a 7.0 MB file seem to fit a gamma distribution. If so, more complete information about the network performance requirement could be supplied by adding the assumed values of the parameters of the distribution to the footnote, along with the measurement or other source. The requirement could then be recast in terms of the distribution and its parameters representing an upper bound (Table 4.2.2-1, Page 4-3).

Response:

The representation of this requirement was coordinated with ESDIS, FOS and NSI and was considered to be sufficient. If the audience of this document feels that expanding on this requirement will add value to the document and system designers then the parties that are particularly affected by this should revisit the issue and provide a concise direction on how it should be represented.

ADDITIONAL NEW COMMENTS

1. **Abstract (Page v):**

RR (DSNO)

Comment:

i) Delete “ADEOS II” from second sentence.

Response:

References to ADEOS II have been removed. ADEOS II related EBnet flows are non-ECS therefore they do not belong in DID 223.

Comment:

ii) ECS Technical Baseline of February 1996 (AHWGP processing scenarios) used for deriving the production data traffic seems to be out of date.

Response:

While the February Technical Baseline is out of date, it is the only formal reference that exists for use in DID 223 (and other purposes in ECS). When the Technical baseline is updated, the data in the updated version will be used.

2. Section 1.2, Scope, Para 2 (Page1-1)

RR (DSNO)

Comment:

“does not provide internet connectivity requirements for non-ECS locations, as these are defined and limited by the ESDIS-NSI IPA”

The ESDIS-IPA does not contain the internet connectivity requirements for ECS to non-ECS locations. The NSI internet connectivity requirements are maintained in NSI requirement database. It has been clearly mentioned at several places in ESDIS-NSI IPA, ECS-NSI, and NSI-Non ECS elements IRD that the ECS traffic requirements contained in NSI requirements database are also referenced in ECS DID 223, and the data volume requirements to which the NSI responds to are maintained in DID 223 for ECS related requirements (NSI IRD pages 3-1 and 4-1), which is not completely true.

For completeness, it is important that DID 223 document covers the requirements for all external data traffic going out of and coming into each ECS DAAC site via EBnet and NSI both.

Response:

The statement will change just to read: “does not 3) provide Internet connectivity requirements for non-ECS locations,”

3. Section 2.2, Applicable Documents (Page 2-1):

RR (DSNO)

Comment:

The document dates are missing. In absence of the document release or change dates, it is very very difficult to know which version of document was used as a source for DID 223. Since the data traffic is being derived from the applicable documents listed in this section and these documents are being constantly updated through CCRs, it is very important that the latest release of source document are used to derive the data traffic and the release/revision dates and/or version numbers are specified for each of the applicable document.

For example: The ESDIS-NSI IPA document date specified as April 14, 1994 is way out of date. The latest ESDIS-NSI IPA is version 2.5 dated September 5, 1996.

NSI Internet - EOS Networking Project Baselined Implementation Plan document version 3.0.1 dated September has not been specified or referred any where in this document.

Response:

Document dates will be included and those that have dates will be updated. Relevant documents will be referenced as needed.

4. Section 2.3, Information Document (Page 2-1): RR (DSNO)

Comment:

The document release dates are missing.

Since the “ECS Technical Baseline” document is one of the source document for deriving the production data traffic, this document should be listed along with its latest revision date in Section 2.2 under Applicable documents.

Response:

Agree. Change has been made per comment.

5. Section 3.2, Item 3 (Page 3-2): RR (DSNO)

Comment:

The February 1996 ECS Technical Baseline used for deriving the TRMM, Landsat 7 and AM-1 production data traffic estimates may be out of date because of ECS changes since February 1996.

Similarly, the user query and query response data flow estimates taken from old DID 220 document dated October 1995 may be out of date. Need to verify them.

Response:

While the February Technical Baseline is out of date, it is the only formal reference that exists for use in DID 223 (and other purposes in ECS). When the Technical baseline is updated, the data in the updated version will be used.

6. Section 3.2, Item 4 (Page 3-2): RR (DSNO)

Comment:

The ECS-TRMM IRD (CH01) dated 8/22/95 used for deriving the ECS traffic estimates is out of date. The latest ECS-TRMM IRD (CH05) is dated August 29, 1996. This IRD has already gone through 4 CCRs since CH01 and there have been significant changes to the TRMM product volume and EOSDIS-TSDIS Traffic volume estimates.

Response:

There are no TRMM requirements for ECS so the reference to TRMM will be removed in the May'97 version of the document.

7. Section 3.2, Item 5 (Page 3-2): RR (DSNO)

Comment:

The intra-EDC data flows have been derived from EOSDIS-Landsat 7 IRD dated July 1995, which is out of date. The latest EOSDIS-Landsat 7 IRD (CH05) is dated September 5, 1996. This IRD has already gone through 4 CCRs since July 1995.

Response:

This comment should be directed to EBnet since the information in question is provided by EBnet.

8. Table 3.2.2-1 (Page 3-3): RR (DSNO)

Comment:

Since this document's scope is to provide the ECS external data traffic requirements only, the AM-1 EDOS-to-ASTER GDS data traffic does not belong here.

Response:

Agree. Change has been made per comment.

9. Section 3.2.3 (Pages 3-4 and 3-5): RR (DSNO)

Comment:

Does this Section provides the production and reprocessing data flows for SWS instruments on ADEOS II and DAS from DAO? If not then provide a note indicating it.

Response:

The reference to "flows for SWS instruments on ADEOS II and DAS from DAO" has been removed

Comment:

The titles for Tables 3.2.3-1 and 3.2.3-2 are wrong. For example, Table 3.2.3-1 contains the non-DAAC (such as EDOS) to DAAC data traffic requirements and the title of this Table is DAAC-to-DAAC data flows. They need to be corrected.

Replace “DAAC to DAAC” with “Non-DAAC to DAAC” and vice-versa in para 2 and Tables 3.2.3-1 and 3.2.3-2.

Response:

Agree. Change has been made per comment.

10. Table 3.2.3-1 (Page 3-5):

RR (DSNO)

Comment:

- a) ASTER GDS-to-JPL IST non-ECS data traffic specified in Table 3.2.3-1 does not belong here.
- b) Following data traffic requirements missing in this Table:
 - o ASTER GDS -to- EDC DAAC (Level 1 Product Data with Ancillary/Metadata/Browse, Algorithms etc.)
 - o TRMM Data Traffic:
 - ECS -to- TSDIS at GSFC (Correlative and Ancillary Data)
 - SDPF at GSFC to LaRC DAAC (CERES Level 0, Quick-Look, and Orbit Data)
 - o Landsat 7 Product Distribution:
 - EDC DAAC -to- Landsat Users (Level 0 Products @ 50 GB/Day)
 - EDC DAAC -to- Landsat IAS (Level 0 Products @ 5 GB/Day)
 - ECS - Landsat Users (Non-Image Product components @ 3 GB/Day)
 - o Landsat 7 Ingest and Archive Data:
 - MOC - ECS (Engineering and Metadata)
 - IAS - ECS (Calibration Information and Metadata updates)
 - IGSs - ECS (Inventory Information and Browse Data)
- c) Based on the latest ECS-TRMM IRD, following TRMM data traffic estimates are not correct:
 - o TSDIS -to- GSFC DAAC (L1a-L3 Products, Ancillary Data /Reprocessing, HK and Orbit Data @ 71.55 MB/Day or 9.9 Mbps)
 - o GSFC DAAC -to-TSDIS (L1a-L3 Products, Browse, and Algorithms @ 24.2 MB/day or 3.4 Mbps)

Response:

- a) **Agree. Change has been made per comment.**
- b) **1. Tapes are used for the ASTER GDS-to-EDC DAAC flows stated in the comment.**

2. There are no TRMM requirements for ECS.
 3. Landsat 7 related flows to users have been incorporated in determining data flows to users shown in Table 4.2-1 and stated in Section 4.2.
 4. IAS to ECS flows at EDC are campus flows and such flows have not been included in DID 223 to date. It has been the responsibility of the “external systems on campus” to arrange with their campus networking authority for access to a local ECS DAAC.
 5. MOC-to-ECS and IGS-to-ECS flows are TBD.
- c) There are no TRMM requirements for ECS

11. Table 3.2.3-2 (Page 3-6):

RR (DSNO)

Comment:

a) The source for the inter-DAAC User Queries and Query Response data traffic has been specified as DID-220 document, which has already been replaced by this document. Since its replacement by DID 223 long back, the User Query and Query response data traffic estimates are simply being carried forward in this document ‘as is’ without any change or verification. The DID-220 document cannot be the real source of this traffic estimate. The real source has to be some thing other than DID-220. The real source, basic assumptions, and how these traffic data estimates were originally derived need to be identified. It also needs to be confirmed that the data traffic estimates provided in this document are still valid and have not changed since then.

Response:

The source for this data is the ECS User Modeling group. An update to the original flow sizes has been provided to EBnet for inclusion in the traffic database. The changes are in the noise.

Comment:

b) Verify that the February 1996 ECS Technical Baseline used for deriving the inter-DAAC data traffic estimates is the latest and there has been no change in the estimates.

Response:

While the February Technical Baseline is out of date, it is the only formal reference that exists for use in DID 223 (and other purposes in ECS). When the Technical baseline is updated, the data in the updated version will be used.

12. Section 4.1, Para 1 (Page 4-1):

GM (NSI)

Comment:

The FIXes no longer exist. Delete the words "two Federal Internet Exchanges (FIXes)"

Response:

Agree. Change has been made per comment.

13. Section 4.2, Line 1 (Page 4-1): GM (NSI)

Comment:

4.2 first line: Change “consists” to “consist”

IDS Team: Spell out what IDS stands for and add “IDS” to the acronym list

Response:

Agree. Change has been made per comment.

14. Section 4.2.1, Line 9 (Page 4-3): GM (NSI)

Comment:

a) Change "community was" to "community were" (the verb refers to the preceding "Recent trends")

b) In the first part of DID 223 you refer to ADEOSII and here you use ADEOS II. Please be consistent. Preferably use ADEOS II.

c) Under Launch dates you refer to Landsat but everywhere else you refer to Landsat 7. Please use Landsat 7 consistently.

d) Delete "per year". There is nothing to do with per year in that sentence (3rd to last line on Page 4-3)

Response :

Agree. Change have been made as follows:

a) change made per comment

b) ADEOS II (with a space) is now used in the document

c) Landsat 7 (with space) is now used in the document

d) “per year” has been deleted and “are” in “.....3Q 2002 are” will be replaced by “is”

15. Table 4.2.3-2 (Page 4-5):

RR (DSNO), GM (NSI)

Comment:

If the EOC-to-IST network performance requirements are to be stated, it should be stated for all of the IST data transfers. Add the following performance requirements to this Table for ISTs:

Function	Parameter	50%	90%	99%
Interactive Commands Real Time	Round Trip Time	500 ms	1 sec	2 sec
	Latency Jitter	1 sec	2 sec	4 sec

Response:

Agree. Change has been made per comment.

16. Section 4.3.2-1, QA SCF Requirements (Page 4-6)

RR (DSNO)

Comment:

It would be very helpful if the data traffic requirements between the QA SCFs and ECS DAACs are provided in a separate Table as provided in Non-ECS NSI IRD.

Response:

Refer to Appendix B. QA flows by DAAC are listed in a table in the May'97 version.

17. Acronyms (Pages AB-1 thru AB-4)

RR (DSNO)

Comment:

Add the missing Acronyms.

Response:

Agree. Change has been made per comment.