

## Appendix C. TBD List and Work-Off Plan

This appendix lists all L4 requirements that contain TBDs. The table includes the L4 ID and text and each L4 is accompanied by a statement of the proposed plan for resolution of the TBD. A date is provided to give guidance on the expected timescale for resolution.

### ***TBD List and Work-Off Plans***

L4 ID	Rel	L4 Text	TBD Resolution Plan	Due Date
S-CLS-01450	B	Desktop objects shall utilize a <TBD> external format.	TBD represents the following options: 1. Possible use of COTS in the future (namely CDE). 2. Use of the custom ECS DESKT. 3. UI Consistency Issues.	By TRR-B, ECS will have resolved Items #2 and 3. Analysis on Item #1 will be provided at CLS Design Review (9/96).
S-CLS-01460	B	Desktop object references shall be in <TBD> format.	TBD represents the following options: 1. Possible use of COTS in the future (namely CDE). 2. Use of the custom ECS DESKT. 3. UI Consistency Issues.	By TRR-B, ECS will have resolved Items #2 and 3. Analysis on Item #1 will be provided at CLS Design Review (9/96).
S-DMS-00210	B	The LIMGR CI internal data base management shall be expressed in a <TBD> standard query language	It is planned to replace the TBD by "SQL-92".	May 31, 1996
S-DMS-10610	B	The DIMGR CI internal data base management Queries shall be expressed in a <TBD> query language	It is planned to replace the TBD by "SQL-92".	May 31, 1996
S-DPS-61040	A	The SPRHW CI computer platform shall provide a hard media device with a capacity of TBD GB for software and system maintenance and upgrade support.	Requirement will be reworded by CCR (CCR 96-0308) to delete the TBD. "...with a capacity of TBD GB..." has been removed.	Application of the referenced CCR to the RTM Main database.
S-DSS-60970	A	The ACMHW CI at the GSFC DAAC shall be capable of ingesting data at a nominal rate of TBD bytes per day from the DAO by network data transfer.	The DAO interface issue is under discussion with NASA and the DAO currently. When the issue is successfully resolved the requirement will be updated accordingly to reflect its resolution.	May 31st, 1996 dependent on successful conclusion to discussions with NASA and DAO before then.

### **TBD List and Work-Off Plans**

<b>L4 ID</b>	<b>Rel</b>	<b>L4 Text</b>	<b>TBD Resolution Plan</b>	<b>Due Date</b>
S-DSS-61020	A	The ACMHW CI at the LaRC DAAC shall be capable of ingesting data at a nominal rate of TBD bytes per day from the DAO by network data transfer.	The DAO interface issue is under discussion with NASA and the DAO currently. When the issue is successfully resolved the requirement will be updated accordingly to reflect its resolution.	May 31st, 1996 dependent on successful conclusion to discussions with NASA and DAO before then.
S-IOS-00870	A	The ADSRV CI shall support submission of advertisements in <TBD> format.	ECS is currently investigating two options: - HTML forms format or - PV list format.	A decision will be made during May with CCR update by May 31st, 1996.
S-PLS-61610	A	Each PLNHW CI workstation platform shall provide a hard media device with a capacity of TBD GB for software and system maintenance and upgrade support.	Requirement will be modified by CCR to remove the TBD. Wording will make the requirement generic and non-design-constraining.	May 31st, 1996

**TBD List & Work-Off Plans (3 of 3)**

<b>L4 ID</b>	<b>Rel</b>	<b>L4 Text</b>	<b>TBD Resolution Plan</b>	<b>Due Date</b>
S-CLS-01450	B	Desktop objects shall utilize a <TBD> external format.	TBD represents the following options: 1. Possible use of COTS in the future (namely CDE). 2. Use of the custom ECS DESKT. 3. UI Consistency Issues.	By TRR-B, ECS will have resolved Items #2 and 3. Analysis on Item #1 will be provided at CLS Design Review (9/96).
S-CLS-01460	B	Desktop object references shall be in <TBD> format.	TBD represents the following options: 1. Possible use of COTS in the future (namely CDE). 2. Use of the custom ECS DESKT. 3. UI Consistency Issues.	By TRR-B, ECS will have resolved Items #2 and 3. Analysis on Item #1 will be provided at CLS Design Review (9/96).
S-DMS-00210	B	The LIMGR CI internal data base management shall be expressed in a <TBD> standard query language	It is planned to replace the TBD by "SQL-92".	May 31, 1996
S-DMS-10610	B	The DIMGR CI internal data base management Queries shall be expressed in a <TBD> query language	It is planned to replace the TBD by "SQL-92".	May 31, 1996
S-DPS-61040	A	The SPRHW CI computer platform shall provide a hard media device with a capacity of TBD GB for software and system maintenance and upgrade support.	Requirement will be reworded by CCR (CCR 96-0308) to delete the TBD. "...with a capacity of TBD GB..." has been removed.	Application of the referenced CCR to the RTM Main database.
S-DSS-60970	A	The ACMHW CI at the GSFC DAAC shall be capable of ingesting data at a nominal rate of TBD bytes per day from the DAO by network data transfer.	The DAO interface issue is under discussion with NASA and the DAO currently. When the issue is successfully resolved the requirement will be updated accordingly to reflect its resolution.	May 31st, 1996 dependent on successful conclusion to discussions with NASA and DAO before then.
S-DSS-61020	A	The ACMHW CI at the LaRC DAAC shall be capable of ingesting data at a nominal rate of TBD bytes per day from the DAO by network data transfer.	The DAO interface issue is under discussion with NASA and the DAO currently. When the issue is successfully resolved the requirement will be updated accordingly to reflect its resolution.	May 31st, 1996 dependent on successful conclusion to discussions with NASA and DAO before then.
S-IOS-00870	A	The ADSRV CI shall support submission of advertisements in <TBD> format.	ECS is currently investigating two options: - HTML forms format or - PV list format.	A decision will be made during May with CCR update by May 31st, 1996.
S-PLS-61610	A	Each PLNHW CI workstation platform shall provide a hard media device with a capacity of TBD GB for software and system maintenance and upgrade support.	Requirement will be modified by CCR to remove the TBD. Wording will make the requirement generic and non-design-constraining.	May 31st, 1996

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## Appendix D.

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# Appendix E. SDPS Performance Parameter Synopsis

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Appendix E of this requirements specification provides a synopsis of the key baseline sizing parameters for the SDPS. These synopsis are derived, in many cases, from larger information sets which include the following:

- *ECS Technical Baseline*—For the Release-B IDR, the technical baseline was dated August of 1995, as derived from the ECS IDR Technical Baseline technical paper (Reference #: 210-TP-001-004). This baseline document provides full details for the following:
  - Mission Baseline (Spacecraft/Instrument manifests)
  - Data Product Set (Data products/parameters and required resources - processing, storage and dependencies)
  - User “pull” baseline (Baseline user load in terms of number of users, accesses and distribution load for various time periods)
  - Level 3 Requirements baseline (F&PRS Version and any modifications)
  - M&O DAAC Implementation Baseline (DAAC activation and hours of operational support)
  - Phasing of Capacities (Capacity buildup (processing/archive) relative to launch for those products not defined by the Ad hoc Working Group on Production (AHWGP) results.
- *Adhoc Working Group on Production (AHWGP) Data*—Although it is discussed separately here, this data from the AHWGP is a part of the ECS Technical Baseline. This data includes the following forms of information:
  - *Process Descriptions*: Information provided by the AHWGP that describes the processes that produce products for CERES/LIS and all AM-1 instruments. Data with respect to operations, I/O files and when processes are to be executed is provided by the Process Descriptions.
  - *File Descriptions*: Information provided by the AHWGP that describes the files input and output by the processes. Data with respect to file types, sizes, archived location are provided at a minimum.
  - *Processing Timelines*: This data reflects the processing load (MFLOPS) required by each instrument/process, as derived from the information provided by the AHWGP. This information is provided for each calendar year quarter (as applicable).

- *Volume Timelines*: Similar to Processing Timelines, but applied to volume instead. This data reflects the volumes (in GBytes/day) that are required to be archived for each file, as derived from the information provided by the AHWGP. This information is provided for each calendar year quarter (as applicable).

Multiple mission epochs are covered by this AHWGP data and it is anticipated that this data will be revised. A synopsis of the Release-B specific parameters (available as of the ECS SDPS IDR time frame) is provided within this appendix. For full details, please reference the ECS Technical Baseline.

- *Data Model*–In addition to supplying details with respect to the data architecture of the ECS holdings for specific releases, the Core Metadata analysis has yielded static sizing parameters which drive system sizing. These parameters are provided here in synopsis form and are applied as a function of the number of granules to be held in inventory. This information envelopes DBMS static disk sizing on a DAAC by DAAC basis as a function of granules held in the data pyramids particular to the site. Full details are provided within the SDPS Database Design and Database Schema Specifications (Reference #: 311-CD-002-003).
- *User Model*–The User Modeling effort has derived predicted user access and distribution loads on the “pull” side of the ECS system including: the anticipated number of users, system accesses and volumes of data to be distributed. Although focused (so far) primarily on Release-B, key parameters are applied to Release-A “pull” system sizing. The key parameters are applied as ratios to the maximum distribution volume cap requirement supplied by ESDIS (specifically: electronic distribution equal to one times production volume, per day, and media-based distribution equal to one time production volume, per day). Full details are provided within the User Pull Analysis Notebook (Reference #: 160-TP-004-001).

The subsections that follow include synopsis material relevant to Release-A & -B baseline requirements including: AHWGP loading factors, Platform product loading, Ingest loading parameters (including known Ancillary datasets), V0 dataset migration details, Core Metadata static sizing parameters (as applied to the number of granules to be held within the Data Servers), user access load parameters expected, service performance response time budgets, and miscellaneous hardware sizings.

## **E.1 AHWGP Production Loading**

This section includes a synopsis of the loading requirements suggested by the AHWGP data for the Release-A & B time frames (Table E-1). This information is taken from the ECS Technical Baseline (August, 1995), and is expected to be revised.

**Table E-1. Static Analysis of Epoch k "Push" Processing**

Site	Hours of operation per week	Instrument	DAAC	Process Activations (per day)	Processing rate (MFLOPS)	Staging I/O rate (MB/sec)	Destaging I/O rate (MB/sec)
EDC (24x7)	168.0	ASTER	EDC	962	584	1.6	0.8
GSFC (24x7)	168.0	MODIS	EDC	1,334	1,051	19.5	12.6
JPL (8x5)	40.0	<b>DAAC Total</b>	<b>EDC</b>	<b>2,296</b>	<b>1,635</b>	<b>21.1</b>	<b>13.4</b>
LaRC (24x7)	168.0	COLOR	GSFC	N/A	36	N/A	N/A
NSIDC (8x7)	56.0	DAO	GSFC	4	50,000	0.2	0.3
		LIS	GSFC	2	2	0.1	0.0
		MODIS	GSFC	4,000	4,838	6.1	16.3
		<b>DAAC Total</b>	<b>GSFC</b>	<b>4,006</b>	<b>54,876</b>	<b>6.4</b>	<b>16.9</b>
		DFA & MR	JPL	114	178	0.3	0.0
		SWS	JPL	62	195	0.4	0.1
		<b>DAAC Total</b>	<b>JPL</b>	<b>45</b>	<b>373</b>	<b>0.7</b>	<b>0.1</b>
		CERES (AM)	LaRC	103	1,827	0.2	3.3
		CERES (TRMM)	LaRC	103	895	0.2	1.0
		MISR	LaRC	566	3,299	2.7	2.7
		MOPITT	LaRC	4	9	0.0	0.0
		SAGE III	LaRC	1	3	0.0	0.0
		<b>DAAC Total</b>	<b>LaRC</b>	<b>630</b>	<b>6,033</b>	<b>3.1</b>	<b>7.0</b>
		MODIS	NSIDC	535	45	0.6	0.7
			<b>Grand Total</b>	<b>7,512</b>	<b>62,962</b>	<b>31.9</b>	<b>38.1</b>

**Assumptions: (1) rates are calculated as averages over a month; (2) only first-time "push" production loads are included; (3) loads correspond to epoch k: 3Q99; (4) the February 1996 baseline was used.**

## **E.2 Platform Product Loads**

This section includes a synopsis of the loading requirements of Platforms supported for Release-B (Table E-2). This information is taken from the ECS Technical Baseline (February 1996).

**Table E-2. Platform Product Estimates for EOS Instruments**

Data Volume for At-Launch and Post-Launch Data Products (As Derived from AHWGP Results)												
Platform	Launch Date	Instrument	Avg. Data Rate		Daily Data Volume (GB/day)					Total * (L0 - L4)	Previous Baseline	Delta
			(Kbps)	L-0 **	L-1A	L-1B	L-2	L-3/4				
TRMM	Aug-1997	CERES	10.000		Use AHWGP Inputs ( Totals show peak values)					12.130	12.130	0.000
		LIS	6.000		Use AHWGP Inputs ( Totals show peak values)					1.630	1.630	0.000
		TMI/PR/VIRS			Use AHWGP Inputs ( Totals show peak values)					17.680	17.680	0.000
		<b>Total</b>	<b>16.000</b>							<b>31.440</b>	<b>31.440</b>	<b>0.000</b>
Landsat 7	May-1998	ETM			Use AHWGP Inputs ( Totals show peak values)					139.400	139.400	0.000
AM-1	Jun-1998	ASTER	8300.000		Use AHWGP Inputs ( Totals show peak values)					193.180	193.180	0.000
		CERES	20.000		Use AHWGP Inputs ( Totals show peak values)					16.240	16.410	-0.170
		MISR	3800.000		Use AHWGP Inputs ( Totals show peak values)					171.610	171.610	0.000
		MODIS	6200.000		Use AHWGP Inputs ( Totals show peak values)					537.100	537.120	-0.020
		MOPITT	6.000		Use AHWGP Inputs ( Totals show peak values)					0.170	0.170	0.000
		DAO			Use AHWGP Inputs ( Totals show peak values)					146.130	146.130	0.000
		<b>Total</b>	<b>18326.000</b>						<b>1064.430</b>	<b>1064.620</b>	<b>-0.190</b>	
FOO	Jul-1998	COLOR	347.220	3.750	0.000	5.500	0.461	0.536	10.247	10.247	0.000	
ADEOS II	Feb-1999	SWS	5.100		Use AHWGP Inputs ( Totals show peak values)					4.720	4.730	-0.010
ALT RADAR	Mar-1999	DFA	1.375		Use AHWGP Inputs ( Totals show peak values)					0.340	0.340	0.000
		MR	0.125		Use AHWGP Inputs ( Totals show peak values)					0.003	0.003	0.000
		<b>Total</b>	<b>1.500</b>		<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.343</b>	<b>0.343</b>	<b>0.000</b>	
ACRIMSAT	Jun-1999	ACRIM	1.000	0.011	0.046	0.000	0.000	0.000	0.057	0.057	0.000	
METEOR	Aug-1998	SAGE III	24.267		Use AHWGP Inputs ( Totals show peak values)					0.130	0.130	0.000
SPACESTATION	Jun-2000	SAGE III	24.267	0.262	0.000	0.016	0.002	0.000	0.280	0.280	0.000	
PM-1	Dec-2000	AIRS	1420.000		Use AHWGP Inputs ( Totals show peak values)					149.580	117.830	31.750
		AMSU-A	3.200		Use AHWGP Inputs ( Totals show peak values)					0.700	0.700	0.000
		CERES	20.000		Use AHWGP Inputs ( Totals show peak values)					8.790	8.750	0.040
		MHS	4.200		Use AHWGP Inputs ( Totals show peak values)					2.320	3.490	-1.170
		MIMR	67.000	0.724	0.000	5.100	0.069	0.013	5.906	5.906	0.000	
		MODIS	6200.000	66.960	175.000	519.200	173.104	3.988	938.252	938.252	0.000	
		<b>Total</b>	<b>7714.400</b>						<b>1105.548</b>	<b>1074.928</b>	<b>30.620</b>	
CHEM	Dec-2002	HIRDLS	40.000	0.432	0.000	0.634	0.095	0.090	1.251	1.251	0.000	
		MLS	5.000	0.054	0.200	0.200	0.200	0.015	0.669	0.669	0.000	
		TES	3240.000	34.992	0.000	30.000	0.501	0.000	65.493	65.493	0.000	
		<b>Total</b>	<b>3285.000</b>	<b>35.478</b>	<b>0.200</b>	<b>30.834</b>	<b>0.797</b>	<b>0.105</b>	<b>67.413</b>	<b>67.413</b>	<b>0.000</b>	
ALT LASER	Jul-2003	GLAS	100.000		Use AHWGP Inputs ( Totals show peak values)					5.970	5.970	0.000

Note:

- Data volume estimates are for at-launch and post-launch data products, excluding interim, special, and on-request products.
- \* Totals for AHWGP instruments do not include Level 0 data
- \*\* Level 0 data for ASTER is not archived by ECS, L0 delivered to Japan by EDOS
- For CERES data volume specified reflects additional capacity required beyond previous mission

Total Delta 30.42

### E.3 Ingest of Mission Critical and Ancillary Data

This section includes a synopsis of the loading requirements of imposed by mission critical and ancillary data during the Release-A time frame. Table E-3 provides a snapshot of the key as they are presently known. This information will be revised with data sets, data types, ingest rates, data formats, etc. as details become available for each interface and associated product(s).

**Table E-3a. Daily Level 0 Data Ingest by DAAC\***

Daily L0 data ingest by mission by DAAC (GB/day)	TRMM (9/97)	Landsat-7 (5/98)	AM-1 (6/98)	FOO/COLOR (7/98)	SAGE III (8/98)	ADEOS II (2/99)	ALT RADAR (3/99)	ACRIMS (6/99)
EDC		139.4**						
GSFC			70.2	3.75				0.05
JPL						0.12	0.15	
LaRC	0.25		47.4		0.13			

\* Does not include ASF or DAO inputs.

\*\* Landsat-7 L0R data is ingested through Ingest Client Host servers, stored temporarily in Ingest Working Storage, and transferred to the permanent Data Server archive.

**Table E-3b. Ingest Subsystem Capacities and Performance Capabilities by DAAC**

Ingest Subsystem Capabilities by DAAC	Total Daily L0 Ingest Volume (GB/day)	Average Data Ingest Rate (Mbits/sec)*	Short-term (Working) Storage Volume (GB)**	Level 0 Rolling Storage (1 year) Volume (GB)***
EDC	139.4	12.91	174.25	0****
GSFC	70.4	6.5	176	25,696
JPL	0.27	0.025	0.675	98.6
LaRC	47.6	4.4	119	17,374

\* Average daily rate = total daily ingest volume over a 24 hour period

\*\* Working storage volume = (daily volume x 2) plus 25%

\*\*\* Rolling store volume = daily volume x 365

\*\*\*\* The archive repository for Landsat-7 L0R data is supplied by the Data Server Subsystem.

**Table E-3c. Non-EOS Data Sets Required for ECS Release A Standard Product Generation**

<b>Data set name</b>	<b>Source</b>	<b>Required by</b>
1. NMC gridded geopotential, wind speed, water vapor, layered atmospheric temperature (Medium Range Forecast System 0-hour Forecast)	NOAA/NCEP	CERES
2. NMC gridded snow depth (Final Analysis and Forecast System—Global Analysis)	NOAA/NCEP	CERES
4. Aerosol global analyzed field (optical depth units)	NOAA/NESDIS	CERES
5. Snow/Ice Cover (Navy Algorithm) [IOC March '93]	NOAA/NESDIS	CERES
6. AVHRR Weekly Global Vegetation index	NOAA/NESDIS	CERES, DAO
7. Global Digital Elevation Model*	EDC DAAC	CERES, TRMMDIS
8. Surface map of water conditions*	NOAA/NGDC	CERES
9. Surface map of vegetation*	NOAA/NGDC	CERES
10. SBUV/2 stratospheric ozone profiles	NOAA/NESDIS	CERES
11. TOMS gridded ozone	GSFC DAAC	CERES
12. SAGE-II thin stratospheric aerosol optical depth	LARC DAAC	CERES
13. SAGE-II stratospheric ozone	LARC DAAC	CERES
14. ISCCP B1 Data (Geostationary Satellite Data)	NOAA/NESDIS	CERES
15. SSM/I microwave water path over oceans	New Pathfinder Product	CERES, DAO, TRMMDIS
16. SSM/I Level 1B Brightness Temp. Data	LIS Sci Comp. Facility/MSFC	TRMMDIS, DAO
17. GPCP	NOAA/NCEP	TRMMDIS
18. Surface Flux Data	NOAA/NCEP	CERES
19. GPCC	NOAA/NCDC	TRMMDIS
20. CAMS Gauge Analysis Data	NOAA/NCEP/CAC	TRMMDIS

\* = static data set

References: 1. Ad Hoc Working Group on Production

**Table E-3d. Non-EOS Data Sets Required for ECS Release B Standard Product Generation**

<b>Data Set Name</b>	<b>Source</b>	<b>Required By</b>
1. NMC gridded, layered atmospheric temperature, pressure and winds(GDAS 0-hour Forecast)	NOAA/NMC	MODIS, MISR, ASTER, SeaWinds
2. NMC gridded, layered atmospheric temperature and pressure (Medium Range Forecast System 0-hour Forecast)	NOAA/NMC	MISR, MODIS
3. MLS Stratospheric Temperature Data	GSFC DAAC	DAO
4. NCEP Surface and In situ Observations (buoys, ships, aircraft, surface stations and radiosondes)	NOAA/NCEP	MODIS, DAO
5. NCEP Reynolds Blended SST	NCEP	MODIS
6. NCEP Global 4-D Assimilation	NOAA/NCEP	MODIS
7. Final Analysis and Forecast system, Global Analyses at 00 hours	NOAA/NMC	ASTER , MOPITT
8. TOMS column ozone	GSFC DAAC	ASTER , MISR, MODIS
9. SAGE-II thin stratospheric ozone	LARC DAAC	CERES, ASTER, MODIS
10. SAGE-II thin stratospheric aerosol optical depth	LARC DAAC	CERES, MISR, ASTER
11. Snow/Ice Cover (Navy Algorithm) [IOC March '93]	NOAA/NESDIS	MISR, SeaWinds, MODIS, ASTER
12. Provisional Land Cover (IGBP/Loveland IGBP Project)*	EDC	MISR, MODIS
13. Land/Sea Mask*	EDC DAAC	MODIS, ASTER, MISR
14. Global Digital Elevation Model*	EDC DAAC	CERES, TRMMDIS, MODIS, MISR, and ASTER
15. SBUV/2 stratospheric ozone profiles	NOAA/NESDIS	CERES, MODIS, ASTER
16. HIRS/2 Retrievals and Radiances	NOAA/NESDIS	MODIS, DAO
17. SSM/I microwave water path over oceans	New Pathfinder Product	CERES, DAO, TRMMDIS
18. SSM/I Level 1B Brightness Temp. Data	LIS Sci Comp. Facility/MSFC	TRMMDIS, DAO
19. SMMR Wind Product	GSFC DAAC	DAO
20. ISCCP B1 Data (Geostationary Satellite Data)	NOAA/NESDIS	CERES
21. GPCC	NOAA/NCDC	TRMMDIS
22. GPCP	NOAA/NCDC	TRMMDIS
23. CAMS Gauge Analysis Data	NOAA/NCEP/CAC	TRMMDIS
24. NSCAT Level 1B Data and Level 2 Products	NOAA/NCEP	DAO
25.ADEOS-2/AMSR level 1B Brightness Temp Data	NASDA/EOIS	SeaWinds

\* = static data set

References: 1. Ad Hoc Working Group on Production

## E.4 V0 Data Migration Volumes and Data Types

This section presents the initial volumes of V0 data products to be migrated at the new Release B DAACs (ASF, EDC, JPL, NSIDC). Also presented are the total volumes of V0 data products that are expected to be migrated by the end of Release B at all DAACs. The initial V0 data products are presented in Table E-4.

**NB. Investigations and discussions on V0 data migration volumes are currently underway. All values provided in this table and in Table E-5 are subject to change therefore.**

**Table E-4. Initial V0 Data Products to be Migrated at the New Release B DAACs (ASF, EDC, JPL, NSIDC) (1 of 2)**

Prod ID	Data Set	Rel B Data Volume (GB)	ECS Archive Site
A-8	ERS-1&2 SAR Images, L1	380	ASF
A-12	ERS-1&2 Ice motion vectors, L3	.3	ASF
A-13	ERS-1&2 Ice classification, L3	1.6	ASF
A-14	ERS-1&2 Wave Spectra, L3	.001	ASF
E-01b	North American Landscape Characterization Triplicates, L3	383.5	EDC
E-01c	Humid Tropical Forest products, L1A	285.5	EDC
E-01d	Global Land Cover Test Sites, L2	300	EDC
E-02b	Global 1 km Land Data Set, 10 Day Composite, L3	1620	EDC
E-08	SIR-C Data Set, L1B	2800	EDC
J-32	TOPEX/Poseidon Altimeter Merged Geophysical Data, L2	54	JPL
J-39	AVHRR Oceans Pathfinder Global Equal-Angle All SST, L3	210	JPL

**Table E-4. Initial V0 Data Products to be Migrated at the New Release B DAACs (ASF, EDC, JPL, NSIDC) (2 of 2)**

Prod ID	Data Set	Rel B Data Volume (GB)	ECS Archive Site
J-40	AVHRR Oceans Pathfinder Global Equal-Angle Best SST, L3	160	JPL
J-41	AVHRR Oceans Pathfinder Global Equal-Area All SST, L3	100	JPL
J-42	AVHRR Oceans Pathfinder .5 Degree Spatial Resolution All SST, L3	8	JPL
SI-04	Gridded Brightness Temperatures (EASE), L3	8.5	NSIDC
SI-16	Rawinsonde over Polar Regions, L1B	2.8	NSIDC
SI-28	AVHRR 1km Polar Subset, L1B	550	NSIDC

Table E-5 presents the total volumes of V0 data products that are expected to be migrated by the end of Release B at each DAAC.

**N.B. This table has been derived from the Science Data Plan (July 94, version 3) which is currently being updated. These values are also therefore subject to change.**

***Table E-5. Total Volumes of V0 Data Products that are Expected to be Migrated by the End of Release B***

<b>DAAC</b>	<b>Total Volume (GBytes)</b>
ASF	594
EDC	12,519
GSFC	10,688
JPL	8,310
LaRC	1,847
MSFC	2,468
NSIDC	216
<b>Total (all DAACs)</b>	<b>36,642</b>

## E.5 Core Metadata Static Sizing

This section includes a synopsis of the static table size parameters derived from the Data Modeling analysis. Full details are provided within the SDPS Database Design and Database Schema Specifications (Reference #: 311-CD-002-003). Table E-6 provides estimated sizing on a pyramid level by level basis.

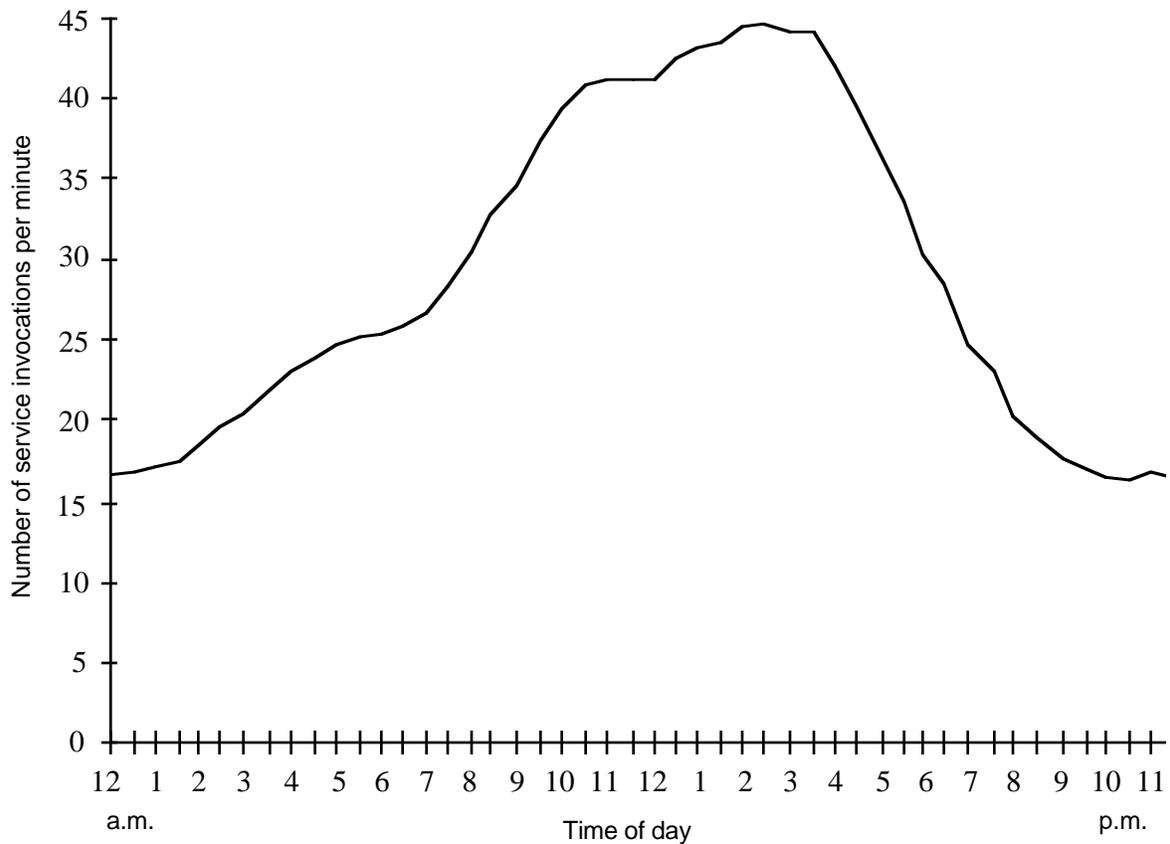
**Table E-6. Estimated Core Metadata Sizing by Pyramid Level**

Core Metadata Item	Estimated Size (MB)	Multiplier
Directory	0.009262	per product
Guide	0.0009727	per product
Biblio Ref.	0.000993	per product
Inventory	0.010786	per granule
QA Stats	0.002609	per granule
Summ. Stats	0.002609	per granule
Algorithm	0.001466	per product
Prod Hist	0.002104	per granule
Browse	0.000255	per granule
L4	0	n/a
L3	0	n/a
L2	0	n/a
L1B	0	n/a
L1A	0	n/a
<i>Total MB/product</i>	0.030768	
<i>Total MB/granule</i>	0.006434	

## E.6 User Loading Profiles

This section includes a synopsis of the key user load parameters derived from the User Modeling analysis. Figure E-1 provides a plot describing simultaneous user service requests as a function of time. Table E-7 provides summary statistics associated with service requests made by level of data pyramid accessed. Please refer to User Pull Analysis Notebook (Reference #: 160-TP-004-001) for full details on the assumptions and the analysis.

**Requests as a Function of Time** The overall system service request rate was estimated by counting the number of times that each of 68 mid-level services were invoked in each scenario per year, multiplying by estimated science user demographics, and then summing across the 27 science user scenarios. The average number of services invoked per day was obtained by dividing the total number of service invocations by a 250 day work-year. The average number of invocations per day was then distributed over a 24-hour period based upon a time-of-day usage curve from an existing machine at GSFC. Users in all 24 time zones were accounted for, and results were referenced to local time at GSFC. For more detailed information regarding the methodology, please see *ECS User Model Inputs to System Performance Model: Methodology and Results*, January, 1995 (Reference #: 160-WK-001-001). Figure E-1 below provides a synopsis of the user service request rate for the Release B timeframe, plotted as a function of time of day.



**Figure E-1. Service Request Rate for Mid-1999**

**User Accesses to Data Pyramid Layers** The 27 science user scenarios (User Scenario Notebook, Reference # 194-00311TPW) and the science user demographics (User Pull Technical Baseline 6/21/95; ECS User Characterization Methodology and Results, Reference # 194-00313TPW) were analyzed to arrive at the estimates for the number of user accesses to the metadata layers of the data pyramid and also the Browse layer. To estimate the number of accesses per year to the Level 1 through Level 4 layers of the data pyramid, the scenario information and the science user demographics were augmented with the results of the EOSDIS Product Use Survey. The survey did not attempt to address the interest of the users in the information contained in the upper layers of the data pyramid; thus access estimates to these layers are based on scenarios and demographics only.

**Table E-7. Number of User Accesses per Year to Data in Each Data Pyramid Layer in Mid-1999**

<b>Data Pyramid Layer</b>	<b>Minimum Number of User Accesses</b>	<b>Maximum Number of User Accesses</b>
Directory	3,898	6,185
Guide	435,962	691,478
Biblio. Refs.	131,257	208,254
Inventory	40,967	65,006
QA Stats	43,560	69,096
Summary Stats	63,958	101,479
Algorithm	21,230	33,689
Product History	97,349	154,397
Browse	294,419	467,457
L4	328,020	520,200
L3	1,745,928	2,768,833
L2	1,458,494	2,312,998
L1	832,013	1,319,473
<b>Grand Total</b>	<b>5,497,055</b>	<b>8,718,545</b>
Metadata Total	1,132,600	1,797,041

## **E.7 Service Performance Response**

The following tables (Table E-8.1 for Release A and Table E-8.2 for Release B) provide subsystem target response time budgets for each service type pertinent to the Release A & B design. The response time budgets are mapped to entire subsystems and are not broken down to specific CSCI/HWCI components within subsystems. N/A (not applicable) means that there is no activity to be performed by a subsystem with regard to processing the service type in question. Notice that Guide Search and Document Search service types are applied to both Data Management and Data Server subsystems individually since they provide separate services for Guide and Document searches that are not reliant on one another.

\*Response time budgets are from initiation of query to start of display, exclusive of user environment and network delay. Resolution is currently provided at the Subsystem level. Future updates will provide testable constraints at the CI level where those constraints are meaningful.

**Table E-8.1. Release A Service Performance Response Time Budgets by Subsystem (1 of 2)**

Service	Release	Number of Operations per Hour	Specific Operation	Total Response Time Requirement *	DM R/T Requirement *	Data Server R/T Requirement *	CSS R/T Requirement *	ISS R/T Requirement *
Log-on and Authorisation (DM specific)	A	100	Account confirmation and authorization	13 seconds	4 seconds	N/A	8.5 seconds	0.5 seconds
Directory Search (DM specific)	A	80	Search by single keyword attribute	8 seconds	7.4 seconds	N/A	0.1 seconds	0.5 seconds
	A		Search by multiple keyword and time or space range check	13 seconds	12.4 seconds	N/A	0.1 seconds	0.5 seconds
Guide Search (DM specific)	A	40	Search for document by keyword	8 seconds	7.4 seconds	N/A	0.1 seconds	0.5 seconds
Guide Search (Data Server specific)	A	40	Search for document by keyword	8 seconds	N/A	7.4 seconds	0.1 seconds	0.5 seconds

**Table E-8.1. Release A Service Performance Response Time Budgets by Subsystem (2 of 2)**

Service	Release	Number of Operations per Hour	Specific Operation	Total Response Time Requirement *	DM R/T Requirement *	Data Server R/T Requirement *	CSS R/T Requirement *	ISS R/T Requirement *
Inventory Search	A	120	Search one instrument by multiple keyword attribute w/time or space range check (1 DAAC)	8 seconds	2.5 seconds	4.9 seconds	0.1 seconds	0.5 seconds
	A		Search multiple instruments by multiple keyword attributes w/time or space range check (1 DAAC)	18 seconds	2.5 seconds	14.9 seconds	0.1 seconds	0.5 seconds
Browse (for data selection)	A	50	Retrieve and begin to display standard pre-computed browse product	58 seconds	8 seconds	49.4 seconds	0.1 seconds	0.5 seconds
Document Search (DM specific)	A	10	Search 1000 document pages by keyword	3 seconds	2.4 seconds	N/A	0.1 seconds	0.5 seconds
Document Search (Data Server specific)	A	10	Search 1000 document pages by keyword	3 seconds	N/A	2.4 seconds	0.1 seconds	0.5 seconds
Ordering Services	A	25	Local DAAC order submission and confirmation	13 seconds	2.5 seconds	9.9 seconds	0.1 seconds	0.5 seconds

**Table E-8.2. Release B Service Performance Response Time Budgets by Subsystem (1 of 3)**

Service	Release	Number of Operations per Hour	Specific Operation	Total Response Time Requirement *	DM R/T Requirement *	Data Server R/T Requirement *	CSS R/T Requirement *	ISS R/T Requirement *
Log-on and Authorisation (CIDM specific)	B	100	Account confirmation and authorization	13 seconds	4 seconds	N/A	8.5 seconds	0.5 seconds
Log-on and Authorization (Data Server specific)	B	100	Account confirmation and authorization	13 seconds	N/A	4 seconds	8.5 seconds	0.5 seconds
Directory Search (CIDM specific)	B	80	Search by single keyword attribute	8 seconds	7.4 seconds	N/A	0.1 seconds	0.5 seconds
	B		Search by multiple keyword and time or space range check	13 seconds	12.4 seconds	N/A	0.1 seconds	0.5 seconds
Directory Search (Data Server specific)	B	80	Search by single keyword attribute	8 seconds	N/A	7.4 seconds	0.1 seconds	0.5 seconds
	B		Search by multiple keyword and time or space range check	13 seconds	N/A	12.4 seconds	0.1 seconds	0.5 seconds
Guide Search	B	40	Search for document by keyword	8 seconds	2.5 seconds	4.9 seconds	0.1 seconds	0.5 seconds

**Table E-8.2. Release B Service Performance Response Time Budgets by Subsystem (2 of 3)**

Service	Release	Number of Operations per Hour	Specific Operation	Total Response Time Requirement *	CIDM R/T Requirement	Data Server R/T Requirement	CSS R/T Requirement	ISS R/T Requirement
Inventory Search	B	120	Search one instrument by multiple keyword attribute w/time or space range check (1 DAAC)	8 seconds	2.5 seconds	4.9 seconds	0.1 seconds	0.5 seconds
	B		Search multiple instruments by multiple keyword attributes w/time or space range check (1 DAAC)	18 seconds	2.5 seconds	14.9 seconds	0.1 seconds	0.5 seconds
	B		Multiple DAAC inventory search by keyword attributes and time and/or space range check	58 seconds	42.5 seconds	14.9 seconds	0.1 seconds	0.5 seconds
Status Check (account or request)	B	60	Status of pending order or Data Acquisition Request	13 seconds	2.5 seconds	9.9 seconds	.1 seconds	0.5 seconds
	B		Account status retrieval	13 seconds	2.5 seconds	9.9 seconds	.1 seconds	0.5 seconds

**Table E-8.2. Release B Service Performance Response Time Budgets by Subsystem (3 of 3)**

Service	Release	Number of Operations per Hour	Specific Operation	Total Response Time Requirement *	CIDM R/T Requirement	Data Server R/T Requirement	CSS R/T Requirement	ISS R/T Requirement
Browse (for data selection)	B	50	Retrieve and begin to display standard pre-computed browse product	58 seconds	8 seconds	49.4 seconds	0.1 seconds	0.5 seconds
Document Search (CIDM specific)	B	10	Search 1000 document pages by keyword	3 seconds	2.4 seconds	N/A	0.1 seconds	0.5 seconds
Document Search (Data Server specific)	B	10	Search 1000 document pages by keyword	3 seconds	N/A	2.4 seconds	0.1 seconds	0.5 seconds
Ordering Services	B	25	Local DAAC order submission and confirmation	13 seconds	2.5 seconds	9.9 seconds	0.1 seconds	0.5 seconds
	B		Remote DAAC order submission and confirmation	38 seconds	5 seconds	32.4 seconds	0.1 seconds	0.5 seconds
	B		Order cost estimate	13 seconds	2.5 seconds	9.9 seconds	0.1 seconds	0.5 seconds