

Release B CDR RID Report

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Document

RID ID	CDR	80
Review	Release B CDR	
Originator Ref		
Priority	2	

Section

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Figure Table

Category Name Data Server (DSS) Design

Actionee ECS

Sub Category

Subject Compression/Subsetting for MODIS Data

Description of Problem or Suggestion:

According to the technical baseline, approximately 30 percent of the MODIS activations are for data compression/subsetting. This lessens data transfer volumes of MODIS products to various DAACs. At the GSFC DAAC, out of 19000 activations, 6500 are for compression/subsetting.

The current separation of these processes makes the destaging to a different DAAC inoperable, since subsetting/compression has not yet occurred.

Originator's Recommendation

Combine the 6500 compression/subsetting processes to the destaging part of the standard product generation.

GSFC Response by:

GSFC Response Date

HAIS Response by: Will Knauss

HAIS Schedule

HAIS R. E. Smith/Schwartz

HAIS Response Date 12/2/96

The compression/subsetting of MODIS data is described below. Also described below is the process of destaging to a different DAAC (remote insert). This design will allow the system to accomplish its objective of minimizing the network traffic while having a minimal impact on the routine processing at GSFC.

The current version of the ECS Technical Baseline (Feb 1996) indicates that the subsetting/masking/compression functions are performed by separate PGE's in the DPS. As the RID originator has pointed out, this increases the number of PGE activations per day at GSFC. This will be corrected in the next update to the ECS Technical Baseline.

For the purposes of this RID response, production subsetting will be broken into two categories - compression-decompression, and more advanced subsetting, which incorporates geographic masking, channel selection and swath reduction.

Compression-decompression is handled in the ECS system by the DPS subsystem in concert with the DSS insert/acquire service. At the time of insert, the DPS subsystem checks its location against the archive centre for the product (contained in the ESĐT description). If the sites are not the same, it performs compression on the file prior to insert, checking to avoid for negative compression, and then sets a compression flag in the insert command to notify the DSS that the file is compressed if it was. It will create a session to the remote DSS to request the insert, in the same way as for connecting to a local DSS. The DSS on receipt of an insert with the compression flag set will perform a decompression using an identical service before archiving.

Similarly, on an acquire the DPS will make a comparison of its location to the product archive centre and request compression via a flag in the acquire command. It will create a session to the remote DSS to request the acquire, in the same way as for connecting to a local DSS. The DSS Acquire service will compress using the same service as described above for insert if the flag is set, and will return a flag indicating if compression was used (to allow for the negative compression case). DPS will check this flag to determine whether or not to decompress it before use.

The compression/decompression service is implemented by a server (DpPrCompressionServer), buffered by a CSS method to ensure consistency of use, rather than by PGEs.

This covers the functionality referred to in the Feb 1996 ECS Technical Baseline as PGEs SUB1:xxx through SUB6:xxx, SUB9:xxx through SUB12:xxx, SUB17:xxx, SUB18:xxx and SUB25:xxx through SUB28:xxx.

Analysis of those data types requiring more advanced subsetting to reduce inter-DAAC traffic, as defined in Change Order CDR/405701-41-089, reveals that in all but one case the product is produced and archived at a different site. Hence the more advanced subsetting methods are handled in the ECS system as an ESĐT service. The DPS with the exception of the ESĐT service, which is handled by the ESĐT service, is not used for this purpose.

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Analysis of those data types requiring more advanced subsetting to reduce inter-DAAC traffic, as defined in Change Order CCR 505-01-41- 089, reveals that in all but one case the product is produced and archived at the same site, then acquired from a different site. Hence the more advanced subsetting methods are handled in the ECS system as an ESDT service for those products. The DPS at the remote site at SSIT time is loaded with the ESDT description, including the request for the production subsetting service, and on the acquire requests the product to be subsetting before transfer from the DSS. The DSS as previously stated performs the subsetting using an ESDT service, before making the product available to the DPS.

This eliminates from the ECS Technical Baseline PGEs SUB7:xxx, SUB8: xxx, SUB15:xxx, SUB16:xxx, SUB19:xxx through SUB24:xxx and SUB29: xxx through SUB31:xxx.

The one exception is MOD14_L2, which is marked in the Change Order as being created at GSFC and archived at EDC, and requiring land/ sea masking . However MOD14_L2 contains thermal anomaly values which should largely be restricted to land areas, with fill values for the remaining pixels. Therefore, only the compression step is needed in this process. Since this is performed for all products going between sites, no addition is needed to the design to accommodate this.

It would be useful if the MODIS team can estimate the fraction of the MOD14_L2 pixels which will consist of non-fill values. Currently, we are assuming that 30% of the pixels (corresponding to land areas) will have non-fill values. However, the actual fraction could be significantly less if thermal anomalies are only recorded when they exceed an established threshold. Since this is a science issue, it should be addressed by the MODIS team, rather than by ECS.

Hence all the additional PGEs mentioned in the RID Problem description have been removed.

The physical transfer of files between DPS at one site and DSS at another (or vice-versa), occurs for acquire via an ftp transfer, and for insert via a DFS transfer, with the DPS placing the file for remote insert on a local disk which is visible via DFS to the remote DSS.

Status **Closed**

Date Closed **2/21/97**

Sponsor **Kobler**

***** **Attachment if any** *****

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