

**Earth Science Data and Information System Project, Code 423
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**Interface Control Document Between the
EOSDIS Core System (ECS) and the
Science Investigator-Led Processing
Systems (SIPS)
Volume 4: ECS-ASTER DEM Data Flows**

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Space Administration

Goddard Space Flight Center
Greenbelt, Maryland

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**Interface Control Document between the EOSDIS Core System (ECS) and
the Science Investigator-Led Processing
Systems (SIPS) Volume 4 ECS-ASTER DEM Data Flows**

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Preface

This document is a formal contract deliverable with an approval code 1. It requires Government review and approval prior to acceptance and use. This document is under ECS contractor configuration control. Once this document is approved, Contractor approved changes are handled in accordance with Class I and Class II change control requirements described in the EOS Configuration Management Plan, and changes to this document shall be made by document change notice (DCN) or by complete revision.

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Abstract

ASTER Digital Elevation Model (DEM) data is transferred from the ASTER DEM Operations Machine to ECS Ingest using the standard SIPS interface as defined in of the ECS-SIPS ICD. The entire interface is behind the ECS firewall at the EROS Data Center DAAC.

Keywords: ASTER DEM, data types, ESDT, ingest, PDR, PDRD, PAN, polling, SIPS

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1. Introduction

1.1 Scope

This volume provides information specific to the interface at the EROS Data Center DAAC (EDC) for transfer of ASTER Digital Elevation Model (DEM) data into the ECS. It does not address (1) the user's interface for ordering ASTER DEM product; (2) operational procedures that may form the context for the system interface with ECS; or (3) technical specifications for the SIPS interface, which are maintained in ECS-SIPS ICD.

Included are:

- Documentation references.
- Context and infrastructure information for the ASTER DEM-ECS interface.
- Identification of ASTER DEM products transferred to ECS for archive and distribution. Data product granule size and transfer frequency are included.

1.2 Purpose

This volume supplements the ECS-SIPS ICD with interface configurations and data type specifications specific to the ASTER DEM-ECS interface.

1.3 Mission Description

Authorized users use a Web Form (On Demand Form; ODFRM) to enter orders for ASTER on-demand products, including the ASTER DEM product. Prior to ordering, the user obtains data files needed to prepare the ODFRM form. The target area may first have to be requested via an ASTER data acquisition request (DAR) (see ICD Between the ECS and the ASTER GDS). When an ASTER DEM order has been entered using the form, an e-mail specifying the order is sent to a configurable e-mail account for the ASTER DEM operator at the EDC DAAC. This e-mail is not part of the SIPS interface per se. To avoid creating additional documentation, its specification and an example message are captured in Appendix A of this document. Upon receipt of the message, the ASTER DEM operator carries out the steps necessary for approval of the order by the ASTER Science Team, production of the requested product, and ingest of the product into the ECS archives. The specific Level 1A or Level 1B stereo pair needed as input to fill a DEM product request is obtained by the EDC DEM operator, who may use the ECS SSI&T Manager tool for that purpose. Ingest of the ASTER DEM product

is the subject of this ICD and is accomplished using the standard SIPS interface, as documented in the ECS-SIPS ICD. ASTER DEM products for which production is approved are permanently archived in the ECS.

1.4 SIPS-Unique Requirements

None

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2. References

2.1 Parent Documents

423-41-57 Goddard Space Flight Center, Interface Control Document Between the EOSDIS Core System (ECS) and the Science Investigator-Led Processing Systems (SIPS).

2.2 Applicable Documents

The latest versions of all documents below should be used. The latest ESDIS Project documents can be obtained from URL:

http://spsosun.gsfc.nasa.gov/ESDIS_Pub.html.

ESDIS documents have a document number starting with either 423 or 505.

The latest EOSDIS Core System (ECS) documents can be obtained from URL:

<http://edhs1.gsfc.nasa.gov/>.

423-41-34 Interface Control Document Between EOSDIS Core System (ECS) and Aster Ground Data System

423-42-03 Goddard Space Flight Center, Responsibilities for Standard Product Generation Using Science Investigator-Led Processing Systems

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3. ASTER DEM SIPS Interface Specifics

3.1 Interface Context

This ASTER DEM-ECS interface occurs within the ECS firewall at the EDC DAAC. As shown in Figure 3-1, the “SIPS side” of the interface is the ASTER DEM Operations Machine, managed by the ECS ASTER DEM operator. The PDR server consists of a directory managed by the ECS ASTER DEM operator.

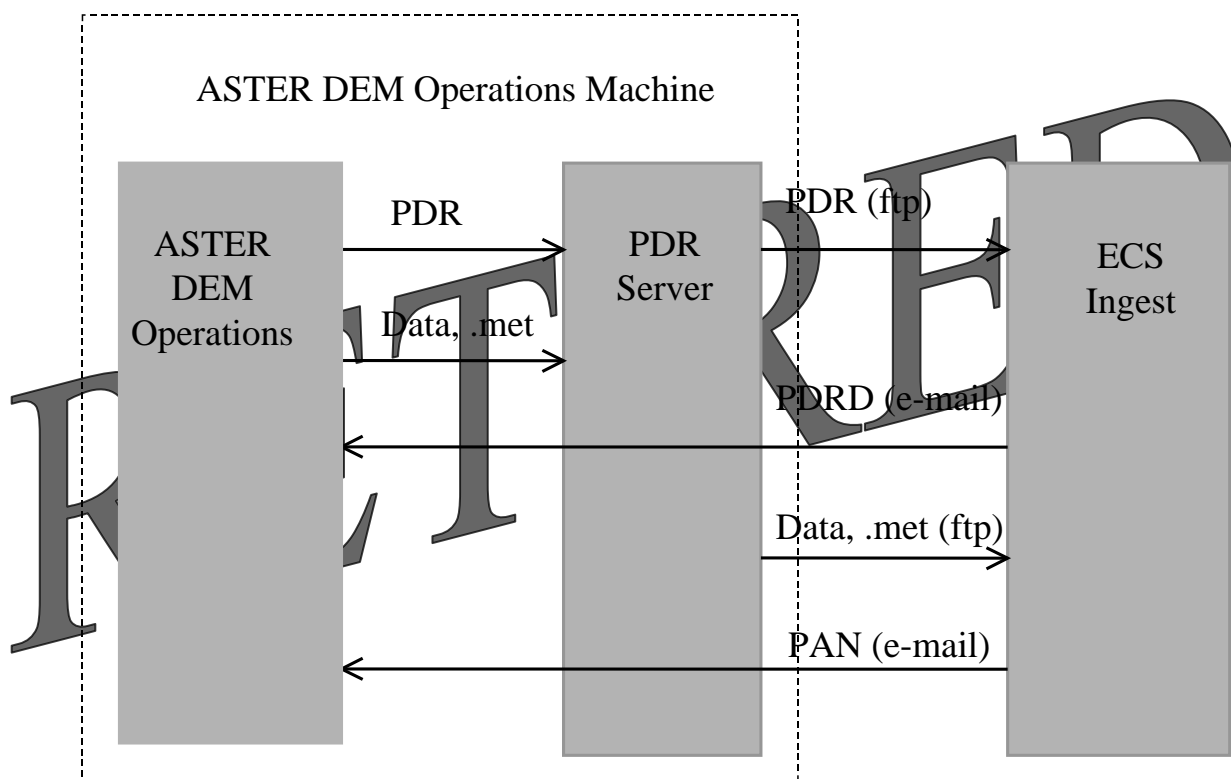


Figure 3-1. ASTER DEM PDR Interface Data and Message Flows

3.2 Network Topology

The ASTER DEM Operations Machine is part of the EDC production network. It is connected to ECS Ingest via FDDI. The EDC production network configuration is included in the ECS Technical Baseline, which can be viewed on the Web at URL <http://cmdm.east.hitc.com/baseline/index.html>. Select the EDC Hardware/Network Diagram (921-TDE-002).

3.3 Standing Order Subscriptions

Because the ASTER DEM product is generated only on demand, Section 4.3 of the ECS-SIPS ICD does not apply: standing order subscriptions will not be used to obtain input data.

3.4 ASTER DEM Products Produced by EDC DAAC for Delivery to ECS at the EDC DAAC

The ASTER DEM operations provides one Data Type, as defined in Table 3-1, to the ECS 7 to 10 times a week, using the Polling with Delivery Record interface specified in Section 4.5, of the ECS-SIPS ICD.

Table 3-1. EOS Standard Data Products

Data Type ShortName	FILE_TYPE ¹	Collection Description	Granule Size	Transfer Frequency
AST14DEM	HDF-EOS and METADATA	ASTER DEM product	12 MB	Nominally 7-10 data files per week

¹ Per Table 4-5-4, of the ECS-SIPS ICD.

3.5 SIPS Interface Specifics

Figure 3-1 summarizes the data flows between ASTER DEM Operations and the ECS. The ECS ASTER DEM operator places on the PDR server specified for the ingest interface, a PDR file specifying the locations of the ASTER DEM data file and the accompanying metadata file. The PDR server is a directory on the ASTER DEM Operations machine. The data and metadata files reside in other directories on that machine.

The PDR contains one file group, consisting of the AST14DEM file and its metadata file. The ASTER DEM operator controls the PDR server, which is in close proximity to the ECS ingest operator. Thus the operators can easily coordinate on file management of the PDR server, and the EXPIRATION_TIME parameter is omitted from the PDR. Linkage files are not currently used. The ORIGINATING_SYSTEM parameter is ASTERDEM.

With operator-tunable periodicity, ECS Ingest polls the PDR server and retrieves the PDR file when found. The ECS automatically returns PDRDs, as required, and PANs via e-mail to the ASTER DEM operator using an agreed-on address.

Appendix A. On-Demand Request ODL Message Structure

When a qualified user has filled out an on demand processing request for an ASTER DEM product using the ECS ODFRM (On Demand Form), an ODL e-mail message is automatically sent to the ASTER DEM operator at the EDC DAAC. Table A-1 is the specification for that message, while Figure A-1 is an example message.

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**Table A-1. Specification for ASTER DEM On-Demand Request ODL File
(1 of 2)**

Object	Attribute	Type	Size	Valids
TransactionInfo	SubmissionDate Time	DATETIME		
	RequestType	STRING	3	DEM
	OrderID	STRING	30 max	-
UserInfo	FirstName	STRING	20 max	-
	MiddleInitial	STRING	1	-
	LastName	STRING	20 max	-
	EEmailAddress	STRING	128 max	-
	Telephone	STRING	22 max	-
	UserCategory	STRING	255 max	Other, NASA (non- EOS), EOS, AST
	GrantNumber	STRING	6	XEOS, XOther, XAST, XNASA (non-EOS)
UserInfo:DistributionOptions	Media Type	STRING	7	FtpPull, FtpPush, 8MM
UserInfo:DistributionOptions:ShippingAddress	FullName	STRING	45 max	-
	StreetAddress1	STRING	255 max	-
	StreetAddress2	STRING	255 max	-
	StreetAddress3	STRING	255 max	-
	City	STRING	30 max	-
	StateProvince	STRING	20 max	-
	Country	STRING	30 max	-
	PostalCode	STRING	10 max	
InputInfo:InputURs	Num_Val	INTEGER	i*8	1
	ECS_GeoIDs	STRING	255 max	Valid ECS GeoID
ProductInfo	Class	INTEGER	i*8	1
	ProductName	STRING	7	AST14DEM
	PGENAME	STRING	3	DEM
	DEMType	STRING	8	Absolute or Relative
	GCPCoordSys	STRING	3	GEO or UTM
	GCPCComments	STRING	255 max	-
	GCPDatum	STRING	255	NAD83 or WGS84

**Table A-1. Specification for ASTER DEM On-Demand Request ODL File
(2 of 2)**

Object	Attribute	Type	Size	Valids
ProductInfo:GCPInfo				
	Class	INTEGER	i*8	-
	GCPnum	INTEGER	i*8	-
	GCPLat	STRING	255 max	valid latitude
	GCPLong	STRING	255 max	valid longitude
	GCPZoneRow	STRING	255	1A to 60X (Zone+Row: Zone is 1-60, Row is A-X)
	GCPEasting	STRING	10	-1,000,000 to +1,000,000
	GCPNorthing	STRING	11	-10,000,000 to +10,000,000
	GCPElev	INTEGER	i*8	-999 to 9999
	GCPAccurX	INTEGER	i*8	0 to 999
	GCPAccurY	INTEGER	i*8	0 to 999
	GCPAccurZ	INTEGER	i*8	0 to 999
	GCP3NLine	INTEGER	i*8	0 to 4200
	GCP3NSample	INTEGER	i*8	0 to 4980
	GCP3BLine	INTEGER	i*8	0 to 4200
	GCP3BSample	INTEGER	i*8	0 to 4980
	GCPSource	STRING	40	GPS, Map, Photogrammetry, or Survey
	GCPFeature	STRING	64 max	-

```

/*
*/
/* This message is being sent to you to acknowledge receipt of your
*/
/* request for the product below.
*/
/*
*/
/* You will be notified via e-mail when your product has been created,
*/
/* and any additional instructions will be included in that message.
*/
/*
*/
OBJECT = TransactionInfo
  SubmissionDateTime = "1999-08-25T17:07:11Z"
  RequestType = "DEM"
  OrderID = "Theobald_1999-08-25T17:07:11Z"
END_OBJECT = TransactionInfo

OBJECT = UserInfo
  FirstName = "Mike"
  MiddleInitial = ""
  LastName = "Theobald"
  EMailAddress = "mtheobal@eos.hitc.com"
  Telephone = "(301) 925-0759"
  UserCategory = "EOS"
  GrantNumber = "XEOS"
  OBJECT = DistributionOptions
    MediaType = "8MM"
  /* ShippingAddress needed only for tape requests */
  OBJECT = ShippingAddress
    FullName = "Mike Theobald"
    StreetAddress1 = "1616 McCormick Drive"
    StreetAddress2 = ""
    StreetAddress3 = ""
    City = "Landover"
    StateProvince = "MD"
    Country = "USA"
    PostalCode = "20785"
  END_OBJECT = ShippingAddress
  END_OBJECT = DistributionOptions
END_OBJECT = UserInfo

OBJECT = InputInfo
  OBJECT = InputURs
    Num_Val = 1
    ECS_GeoIDs = ("AST_L1B.001:2000003276")
  END_OBJECT = InputURs
END_OBJECT = InputInfo

OBJECT = ProductInfo
  Class = 1
  ProductName = "AST14DEM"
  PGName = "DEM"
  DEMType = "Absolute"
  /* GCP parameters only needed for DEMType = Absolute */
  GCPCoordSys = "GEO"
  GCPComments = "This is a GCP from the Winter 99 Field Experiment"
  GCPDatum = "NAD83"

```



```
OBJECT = GCPInfo
  Class = 1
  GCPnum = 1
  GCPLat = "1:2:3.4N"
  GCPLong = "5:6:7.8E"
  GCPZoneRow = ""
  GCPEasting =
  GCPNorthing =
  GCPElev = 12
  GCPAccurX = 1
  GCPAccurY = 1
  GCPAccurZ = 1
  GCP3NLine = 12
  GCP3NSample = 22
  GCP3BLine = 11
  GCP3BSample = 21
  GCPSource = "GPS"
  GCPFeature = "Road Intersection"
END_OBJECT = GCPInfo
OBJECT = GCPInfo
  Class = 2
  GCPnum = 2
  GCPLat = "9:8:7.6N"
  GCPLong = "5:4:3.2E"
  GCPZoneRow = ""
  GCPEasting =
  GCPNorthing =
  GCPElev = 21
  GCPAccurX = 2
  GCPAccurY = 2
  GCPAccurZ = 2
  GCP3NLine = 31
  GCP3NSample = 33
  GCP3BLine = 11
  GCP3BSample = 13
  GCPSource = "GPS"
  GCPFeature = "NW Corner of Post Office"
END_OBJECT = GCPInfo
END_OBJECT = ProductInfo
```

Figure A-1. Example ODL File for ASTER DEM On-Demand Request

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