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EARTHNET ERS-1

ACRONYMS, ABBREVIATIONS
and GLOSSARY of TERMINOLOGY

EUROPEAN SPACE AGENCY

EARTHNET PROGRAMME OFFICE

ERS-1 GROUND SEGMENT

ACRONYMS, ABBREVIATIONS

AND GLOSSARY OF TERMINOLOGY

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ACRONYMS AND ABBREVIATIONS

ACC	Accounting
ALT	Radar Altimeter
AMI	Active Microwave Instrument
AO	Announcement of Opportunity
ASCII	American National Standard Code for Information Interchange
ATN	Advanced Tiros-N
ATSR	Along Track Scanning Radiometer & Microwave Sounder
AVHRR	Advanced Very High Resolution Radiometer
BER	Bit Error Rate
bpi	bits per inch
BS	Browse Service
CAL/VAL	Calibration/Validation
CBT	Computer Based Training
CCITT	International Telegraph and Telephone Consultative Committee
CCRS	Canada Centre for Remote Sensing
CCT	Computer Compatible Tape
CERSAT	Centre ERS-1 d'Archivage et Traitement
CEOS	Committee on Earth Observation Satellites
CEOS-WGD	CEOS - Working Group on Data
CI	Computer Interconnect
CMS	Control and Monitoring Subsystem
COM	Communication
CPU	Central Processing Unit
CRT	Cathode Ray Tube
CTRS	Conventional Terrestrial Reference System
CUS	Central User Service
DAF	Data Acquisition Facility
DBA	Data Base Administrator
DBM	Data Base Management
DBMS	Data Base Management System
DCE	Data Circuit-Terminating Equipment
DDL	Data Definition Language
DEC	Digital Equipment Corporation
DFVLR	Deutsche Forschungs und Versuchsanstalt fuer Luft und Raumfahrt
DMA	Direct Memory Access
DMOP	Detailed Mission Operations Plan
DNA	Digital Network Architecture
DOD	Digital Optical Disk
DPMC	Data Processing Monitoring and Control
DPS	Data Path Switcher
DRR	Data Recording and Reproduction
DTE	Data Terminal Equipment
EBCDIC	Extended Binary Coded Decimal Interchange Code
ECMWF	European Centre for Medium range Weather Forecasting

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EECF	Earthnet ERS-1 Central Facility
EOPAG	ERS-1 Operation Plan Advisory Group
EPDS	Earthnet Product Distribution Service
EPO	Earthnet Programme Office
ERS	European Remote Sensing Satellite
ESA	European Space Agency
ESANET	ESA Telecommunication NETwork
ESOC	European Space Operations Centre
ESRIN	European Space Research Institute
FD	Fast Delivery
FDP	Fast Delivery Product
FDPDF	Fast Delivery Processing and Dissemination Facility
FS	Frame Synchroniser
FTP	File Transfer Protocol
GAP	Global Activity Plan
GH	General Header
GKS	Graphic Kernel System
GRS	Ground Reference System
HBR	High Bit Rate
HDDR	High Density Digital Recorder
HDDT	High Density Digital Tape
HDLC	High level Data Link Control
HK	House-Keeping
HLOP	High Level Operations Plan
HMI	Human-Machine Interface
HRFS	High Rate Frame Synchroniser
IBM	International Business Machines
ICI	Interface Control Information
ID	Identification/Identifier
IDHT	Instrument Data Handling and Transmission
IDU	Interface Data Unit
IEEE	Institute of Electrical and Electronics Engineers
I/F	Interface
IFREMER	Institut Francais de Recherche pour l'Exploitation de la Mer
IMS	Information Management System
I/O	Input/Output
IP	Intermediate Product
ISO	International Standards Organization
JERS	Japan Earth Remote Sensing Satellite
Kbps	Kilobits per second
LAN	Local Area Network
LBR	Low Bit Rate
LRDPF	Low Rate Data Processing Facility
LRFS	Low Rate Frame Synchroniser
LUT	Look-Up Table
Mbps	Megabits per second
MIPS	Million Instructions Per Second
MMCC	Mission Management and Control Centre
MMI	Man-Machine Interface
MMS	Mail Message Subsystem
MOU	Memorandum Of Understanding
MSM	Mission Manager

MSQ	Marsden Square
MSSL	Mullard Space Science Laboratory
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NFS	National (incl. Transportable) and Foreign Station
NOAA	National Oceanographic and Atmospheric Administration
NROSS	Navy Remote Ocean Sensing Satellite
OHS	Order Handling and Scheduling
OIP	Operations Implementation Plan
OSI	Open System Interconnection
PA	Product Assurance
PAD	Packet Assembly/Disassembly
PAF	Processing and Archiving Facility
PCI	Protocol Control Information
PCS	Product Control Service
PDF	Product Dissemination Facility
PDU	Protocol Data Unit
PEP	Payload Exploitation Plan
PI	Principal Investigator
POP	Payload Operations and Planning
PRARE	Precision Range and Range Rate Equipment
PSDN	Packet Switched Data Network
PSN	Piano Spaziale Nazionale
PSTN	Public Switched Telephone Network
PVC	Permanent Virtual Circuit
QA	Quality Assessment
QC	Quality Control
RA	Radar Altimeter
RAE	Royal Aerospace Establishment
RAL	Rutherford Appleton Laboratory
RCS	Radar Cross Section
RDBMS	Relational DBMS
RQS	Request
RSP	Response
RT	Real-Time
RTM	Roll Tilt Mode
SAR	Synthetic Aperture Radar
S/C	Spacecraft
SDU	Service Data Unit
S/N	Signal to Noise Ratio
SNA	System Network Architecture
SQL	Structured Query Language
SRD	System Requirements Document
SST	Sea Surface Temperature
STD	Standard
STE	Signalling Terminal Exchange
SWH	Significant Wave Height
TBC	To Be Confirmed
TBD	To Be Determined
TCP/IP	Transmission Control Protocol/Internet Product
TCS	Telecommunication Subsystem
TLC	Telecommunication
TTC	Tracking, Telemetry and Command

UTC	Universal Time Coordinated
VAX	Virtual Address eXtension
VC	Virtual Circuit
VMS	Virtual Memory System
WAN	Wide Area Network
WRS	World Reference System

1 INTRODUCTION

1.1 Scope

This document contains the acronyms, abbreviations and glossary of terminology for the ERS-1 project, mainly in the area of the Ground Segment.

1.2 Overview

The ERS-1 system is an end-to-end remote-sensing system designed to provide, in general, all-weather, day and night, high-accuracy observations of the Earth's surface from space. It comprises both a space segment, consisting of the satellite with its ground support equipment and an Ariane launcher, and a ground segment, consisting of data acquisition, archiving, processing, and dissemination facilities.

The ERS-1 mission is oriented towards ice and ocean monitoring. It will provide wind fields, wave spectra and wave heights (to refine physical oceanography models), altimetry measurements and microwave imagery (to study ice-sheet profiles and sea-ice boundaries in the polar regions), and, on an experimental basis, all-weather microwave imaging over land areas.

The ERS-1 Ground Segment is mainly composed of Ground Stations, acquiring the data by the satellite and generating fast delivery products, and Processing and Archiving Facilities, devoted to precision products' generation, monitored and controlled by the Earthnet ERS-1 Central Facility (EECF). The EECF is linked to the Mission Management and Control Centre (MMCC), which is in charge of spacecraft and Kiruna station monitoring and control.

2 GLOSSARY OF TERMINOLOGY

-Acquired Data: Data which has been acquired by a ground station and for which the ground station has sent to CUS an acquisition report.

***Acquisition-Type Request:** A type of user request which cannot be filled by entries from the past or future catalogue, and thus requires sensing operations to be planned.

-Archived Data: Data received from the ERS-1 satellite and any other data types necessary for later data processing or investigation. Data is copied to archive media, maintained and stored in a library.

-Archived Data Products: Data products archived at a PAF and for which the PAF has sent to CUS an archive report.

-Catalogue: an ordered collection of concise descriptors and pointers, permitting to locate easily the relevant item(s): in the ERS-1 case the catalogue permits to identify the data products complying with specific requirements like geographical area, time coverage, quality , etc.

***Catalogue-Type Request:** A type of user request which can be filled by entries from the past or future catalogue, and thus does not requires sensing operations to be planned.

-Commissioning Phase: The initial months after launch of the ERS-1 satellite. This period will be used for satellite and payload verification and instrument calibration.

-Cycle Orbit Number: the orbit number within a given cycle. Cycle orbit numbers increase sequentially with time to the number of orbits in the cycle.

-Data Product (or simply **Product**): A product generated from a standardly-framed scene of ERS-1 sensing data; it includes annotated, transcribed or decommutated raw data, validation data, auxiliary data, and intermediate, fast delivery, regenerated, or precision products.

-Database: a structured collection of records.

-Dissemination: Transmission of data from one facility to many other facilities.

-Dissemination Schedule: A projected plan which designates at a fixed time in the future the transmission of data from one facility to other facilities.

-ERS-1 Data Product Catalogue: A data base containing information identifying all the raw data collected and archived, and all the products produced and archived for ERS-1 during the satellite operational lifetime and follow-on. Specific information stored will include the type of data, geographic coverage, time acquired, and reference to product source.

-ESA ERS-1 Team: All the ESA management, scientific and support staff involved in the various aspects of the ERS-1 mission.

-Facility: A collection of hardware, software, personnel, and infrastructures (centralized or decentralized) with an identified functionality necessary for the support of the ERS-1 mission.

***Fast Delivery Format Product:** These products make up a subset of all the product types defined in "ERS-1 Product Sizing and Centering. Note that fast delivery format products may be produced at a ground station or at a PAF. Fast delivery format products generated at the stations are referred to as fast delivery products.

-Fast Delivery Product: A data product which must be delivered within a few hours from sensing. Fast Delivery Products are processed at a ground station and distributed to the user via telecommunication lines and/or satellite links.

***Frame Number:** A number which can identify the along-track location of a standardly-framed scene. Note that Image products may be centered on any frame, but other products may be centered not on all frames.

-Future Catalogue: Includes all catalogue entries which are planned for acquisition and not yet acquired.

-Geographic Grid: A reference system dividing the surface of the Earth into elements or cells.

-Geophysical Product Validation: Verification that ERS-1 Geophysical products are consistent with best available independent geophysical measurements.

-Global Activity Plan: The plan of ERS-1 sensing and planned production operations over the course of the entire ERS-1 mission. It contains data such as sensor on-off times and sensing operations being planned (including those for fast delivery products) resulting from user requests.

-Graphic Display Workstation: A display terminal capable of displaying both alphanumeric text and graphics. The graphic display can be accomplished by the interpretation of specific commands as received from the central computer or interpreting the data received graphically (see intelligent terminal).

-Ground Reference System: A reference system describing the ground coverage of sensors and products in a way not linked to the satellite and sensor characteristics, but to ground reference methods.

-Ground Track Segment: A contiguous portion of a ground track for a given orbit. The bounds of a ground track segment may be determined based on one or more user request areas, or created arbitrarily by the operations planner.

-Image Display Workstation: An intelligent terminal used for the display of raw imagery and product data. The workstation will have functionality to perform various image processing functions on the displayed data.

-Intelligent Terminal: A normal display Cathode Ray Tube (CRT) with additional capabilities in the form of an imbedded microprocessor and often local storage. This additional functionality allows the intelligent terminal to manipulate the data received from the central transmitting computer to which it is interfaced.

-Intermediate Product: A product expressed in engineering units resulting from the application of data processing algorithms to the raw data. This product will be produced as an intermediate result of the application of one or more of the processing steps in processing chain required to produce a geophysical product.

***LBR Default Mission** (or **LBR Global Mission**): The set of default LBR activities defined by the HLOP for a given phase.

-Look-Up Table: tables of data containing reference and calibration parameters for fast delivery processing

-Mission Manager: A member of the ESA ERS-1 team responsible for the preparation and maintenance of the High Level Operations Plan (HLOP) and for the interfaces within the user community. During Phase E the mission manager is also responsible for the overall management and coordination of the ERS-1 observational programme and operation.

-Mission Orbit Number: an orbit number referenced to the start of mission. Mission orbit number increases sequentially with time throughout the life of the satellite.

-Mission Phase (or simply **Phase**): A temporal period of the ERS-1 mission, characterized by a different assignment of priorities for the various sensing activities, and a different set of orbital characteristics.

-Mission Plans: These include High Level Operations Plan (HLOP), Global Activity Plan (GAP), Detailed Mission Operations Plan (DMOP) and Operations Implementation Plan (OIP). Their content will include: instrument operations, acquisition and processing schedules of various levels of detail and the principles, rules and guidelines related to the ERS-1 satellite operation.

***Mission Plan Segments (Payload Exploitation Plans):** Specific time periods within an orbit which identify the operational mode of the ERS-1 payload. They will be generated from the user requests received by the CUS, the national requirements, responses to the Announcement of Opportunity (AO), Calibration/Validation (CAL/VAL) campaigns, and ESA requirements.

-Nominated Centres: Scientific institutions and/or engineering establishments receiving ERS-1 data and nominated at national level to provide coordination between the ESA/ERS-1 programme and end users for specific data requirements or to play a significant role in the ERS-1 research related activities.

-Normal User: A normal user will be anyone having authorized access to the CUS system. This group includes the Nominated Centres, local and end users. A user will, in general, be a member of the remote sensing community and will comprise the largest group accessing the CUS. A user will be able to access mission plans, perform catalogue searches, place product orders and check the status of these orders.

-Observation: Each time the area referenced by a user request is covered.

-Off-line Product: A data product produced at a PAF. A variety of product types may be produced at a PAF, including products in raw format or fast delivery format.

-Order Desk: The term Order Desk describes the service at Earthnet which assist all the users in all aspects relating to ERS-1 product ordering, status monitoring and reporting. This is a staffed service.

-Pass: Consists of a specific portion of the orbit when the satellite is visible from the ground station. A pass is identified by the orbit number, the date and time interval of visibility. A pass may be either ascending or descending.

-Past Catalogue: Includes all archived processed data products and all unprocessed data which has been acquired and archived.

***Path Number:** Identifies orbits from the point of view of ground coverage. Path numbers increase sequentially moving from east to west on the ground. The maximum path number fro a given phase is the same as the number of orbits per cycle for that phase.

-Phase Orbit Number: an orbit number referenced to the start of a given phase. Phase orbit numbers increase sequentially with time for the duration of one phase.

-Precise Orbit: This will be the most accurate estimate of the actual orbit. It will be generated by the German Processing and Archiving Facility (PAF) and will be available a few months after the satellite pass.

-Predicted Orbit: Predicted orbit estimated from the actual satellite orbit observed and the model of the acting forces. The predicted orbit is provided daily by the Mission Management and Control Centre (MMCC) for the next 16 orbits.

-Preliminary Orbit: The first estimate of the actual satellite orbit. This estimate is generated by the German PAF and will be available one week after the pass.

***Primary User:** The primary user will have all the CUS functionality associated with a normal user. In addition, certain system level functions will be accessible by this group. An example of primary users of the CUS will be the ESA ERS-1 Team who will require additional CUS functionality during the early stages of the ERS-1 mission.

-Processed Data: Standardly-framed ERS-1 data which has been derived from unprocessed data or intermediate data products, and used to generate a product. Examples of processed data include SAR annotated raw data, SAR precision image, wave imagette precision spectrum, etc.

-Product Confidence Data: Quality Parameters generated by the ERS-1 Acquisition and Fast Delivery Processing chains, related to raw data or fast delivery products.

***Product Journal Entry:** Records the products that satisfy a user request. This includes both fast delivery products and off-line products. In the case of off-line products, the product journal entry is used to generate the product order. Product journal entries exist for products that are generated from acquired or archived data. This is an internal CUS structure not available outside.

-Product Order: An order for an off-line data product (or product series). The product order is generated at EECF and sent to the assigned PAF. It is referenced by a unique product order identifier. The product order contains all the information

required for the PAF to process the request, such as product order id, sensor, processing level, date and requestor name/address.

-Product Quality Assessment: Quantitative assessment of the quality of a given data product with respect to the specifications for data of that class.

-Product Quality Assurance: Taking all steps necessary to ensure that ERS-1 data products conform to specifications. Requires Quality Assessment and Quality Control.

-Product Quality Control: A decision making procedure which, on the basis of quality assessment results, causes one of a number of logical paths to be selected in processing and dissemination systems.

-Product Quality Parameter: Result of Product Quality Assessment.

***Product Series:** A contiguous range of products for the same ground track.

***Product Set:** Refers to all the products generated for each observation of a user request product specification. It refers to all products for a given sensor, sensor mode and product type, within the geographic area specified by the user request. A user request may generate multiple product sets if it is a standing user request, or if it is related to multiple sensors or product types.

-Product Type: Defines the processing applied to ERS-1 data. Examples of product types include raw, precision, geocoded, ocean product, fast delivery format, etc. Product types do not include a designation for the sensor. The sensor/product-type pair specifies a processed data product, but not all sensor/product-type pairs are valid.

***Product-Type Request:** A type of user request in which product generation is requested. Product-type requests may not be mixed with sensing-only type requests.

-Raw Data: The data received from the satellite prior to the application of any on ground data processing algorithms. The raw data media will be as for products, i.e. hard copy and various forms of computer-compatible media.

-Restituted Orbit: Daily restitution of the actual satellite orbit observed.

-Schedule: Timed information on activities to be performed. There are various types of schedules: acquisition, processing, dissemination, distribution and delivery.