IRS

L E D A – 13
Landsat

The full set of LEDA includes :

1) Landsat series
2) NOAA/TIROS series

FILE SUPPLIER

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FILE DESCRIPTION

LEDA (on-Line-Earthnet Data Availability) is a catalogue of remotely-sensed satellite imagery currently consisting of 2 branches : one dealing with the Multi-Spectral Scanner, Thematic Mapper and Return Beam Vidicon sensors of the LANDSAT series; the other with the Advanced Very High Resolution Radiometer (AVHRR) of the NOAA/TIROS series. On entering LEDA, the user must choose which satellite series is to be accessed (LA or TI) whereupon the appropriate TOP LEVEL MENU will be displayed. Upon exiting from this (command EX) a search may then be conducted in the other satellite series. To exit from LEDA, the user should input EN.

This infosheet describes the LANDSAT databank. The databank is a catalogue of imagery remotely sensed by the LANDSAT series of satellites (LANDSAT 1 to 5) available at ESA/Earthnet and acquired at Fucino (Italy), Kiruna (Sweden) and Maspalomas (Canaries). The databank includes the EROS Data Center Catalogue with information on images acquired by the Landsat stations in the US, in Canada, Brazil, Argentina, South Africa, Australia and Japan. The data contain geographical location information pertaining to the centre of each frame covering a 185x185sq.km on the earth either through the conventional World Reference Systems (path/row or track/frame numbers) or latitude/longitude co-ordinates. It also gives information on the sensing satellite, sensors used, image quality, cloud coverage per quadrant, sun azimuth and sun elevation and date of acquisition.

SUBJECT COVERAGE

ESA/Earthnet covers areas within a radius of 2500 km around each station. The coverage therefore extends from the polar zones (Greenland, Iceland, Svalbard), Scandinavia and Western Soviet Union to West and North African countries, the Middle East and part of Saudi Arabia. The EROS Data Center catalogue has a worldwide coverage.

SOURCES

The following imaging sensors are acquired: ESA/Earthnet: Multispectral Scanner (MSS) on all satellites, Return Beam Vidicon (RBV) on Landsat 3, Thematic Mapper (TM) on Landsat 4 (December 1982 to February 1983) and Landsat 5 (April 1984 onwards). EROS Data Center Catalogue (including Landsat stations worldwide): MSS on Landsat 1 to 5, RBV on Landsat 3, TM-data Landsat 4,5.

USER AIDS

The Leda User Manual is available from the file supplier.

ESA QUEST AVAILABILITY

File number	13
Time span	EROS Data Center: 1972 to present
	Fucino : 1975 to present
	Kiruna : 1978 to present
	Maspalomas : 1984 to present
File update	1400 refs/week
File size	1.100.000 (December 1987)

ON-LINE TUTORIALS

?FILE13   ?COMMANDS.13   ?OUTPUT.13   ?NPOC
?GENERAL.13 ?FURTHER.INFO.13 ?AVAILABILITY.13 ?ADDRESSES

LEGEND

MIS:	Mission N°	Landsat spacecraft used for acquisition
TRK:	Track N°	Expressed in the World Ref. System of relevance to the satellite considered
FRM:	Frame N°	Expressed in the World Ref. System of relevance to the satellite considered
STZ:	Station	FO for Fucino, KI for Kiruna, MP for Maspalomas, US for EOSAT/USA, BR for Brazil,CA for Canada, SA for S.Africa, AU for Australia, JA for Japan, AR for Argentina
SENS:	Sensor	MSS for Multispectral Scanner, RBV for Return Beam Vidicon, TM for Thematic Mapper
DATE:	Acquisition date	Expressed in year month day (YYMMDD)
CLOUD-COV:	Cloud cover	Per quadrant in 10% increments. 9 is fully clouded
ACQ:	Acquisition vote	Data loss; 0=no data loss, 9 means 3 or more lines lost
VIS:	Visibility vote	Image contrast; 0 is very good, 9 very poor
LAT-CF:	Latitude	Of frame centre in hundredths of degree
LON-CF:	Longitude	Of frame centre in hundredths of degree
ELEV.:	Sun elevation	At frame centre in hundredths of degree
AZIM.:	Sun azimuth	At frame centre in hundredths of degree
NO.:	Number	Sequential number used as counter in the printout and for reference in the order handling section of the catalogue

NOTE : 1) The order in which the quadrants for cloud cover are
given is upper left, upper right, lower left, lower right
2) Tracks are numbered east to west. There are 251 orbital
tracks for Landsat 1-3 starting with track 001 which
crosses the equator at 65.29 degrees west. For Landsat 4-5
there are only 233 tracks. The definition of track 001 is
the same as above.
3) Frames are numbered in ascending sequence from north to
south - day passes - and from south to north - night passes
- along a given track. Each frame number represents the
geographical coordinates for the nominal centre of a
185 x 185 sq.km area (MSS).
4) The maximum range for sun azimuth is 10000 to 30000 (100
to 300 degrees). The maximum range for sun elevation is
0 to 9000 (0 to 90 degrees).

ACCESS POINTS

LEDA is a menu driven searchable databank.
The menus are evoked in their logical order i.e. top level menu,
geographic coverage selection, image parameters selection, output,
display. For each menu a series of specific commands are proposed.
For proper input some require the specification of parameters. The
tables below indicate the command mnemonic, its function, the nature
of the parameters to be input (in parentheses) and examples which -
wherever possible - indicate the practical range of permissible values

Note that the standard separator between commands is «CR» or "+" and
between parameters is the comma. See the role of the CARRIAGE RETURN
key («CR») under GENERAL COMMANDS .

While it is mandatory to perform a geographical selection through
one of the proposed functions in Level 2, within Level 3 most of the
functions need not to be defined (with the exception of perhaps DD);
undefined functions are defaulted to "no limitations". However
setting additional functions (e.g. SN,CC,MS and ST) will speed up
the search.

TOP LEVEL MENU (Level 1)

COMMAND	FUNCTION (PARAMETERS)	EXAMPLE
SI	Single image retrieval (WRS, track, frame + date)	SI+2,255,50+841224
GS	Geographic coverage selection - go to Level 2	GS
OD	On-line documentation (8 pages: 1H 2H 3H 4H 5H 6H 7H 8H)	OD+7H
NW	Catalogue information	NW
LO	Current list of orders	LO
H	General commands	H

GEOGRAPHIC COVERAGE SELECTION MENU (Level 2)

COMMAND	FUNCTION (PARAMETERS)	EXAMPLE
RT	Geographic coordinate range (low lat, high lat, left long, right long)	RT+4600,4800,0,1000
TF	Segment of frames on track (WRS, track, north frame, south frame)	TF+2,191,29,31
PN	Geographic point (latitude, longitude)	PN+4700,1000
RF	Range of frames and tracks (WRS, min track, max track, min frame, max frame)	RF+2,194,197,27,28
PO	Polygon (lat, long - clockwise, in hundredths of degrees, south and west are negative numbers)	PO+4700,-400+4900 200+4600,0
SH	Show defined tracks/frames	SH
LI	List of existing special commands	LI
SC	Special command execution (name assigned to area, e.g. WRS2 France	SC+2FRANCE
CS	Create set of current geographic coverage selection and save as special command	CS+MYDATA
AC	Geographic area compression (for elimination of duplicates)	AC
SE	End geographic coverage selection - go to Level 3	SE
H	General commands	H

IMAGE PARAMETER SELECTION MENU (Level 3)

COMMAND	FUNCTION (PARAMETERS)	EXAMPLE
DD	Acquisition period (start date, end date)	DD+750421,830630+
SN	Sensors (1 = MSS, 2 = RBV, 5 = TM)	SN+5+
CC	Cloud coverage (by quadrant) (min values per quadrant, max values)	CC+0,0,0,0,2,2,2,2
MA	Acquisition vote (min, max)	MA+0,3+
MS	Mission code (Landsat 1 to 5)	MS+5+
MV	Visibility vote (min, max)	MV+0,3
ST	Station code (1=Fucino, 2=Kiruna, 3=Maspalomas, 8=EROS Data, etc.	ST+2+
EL	Sun elevation (min,max hundr.deg)	EL+2000,9000
AZ	Sun azimuth (min, max hundr.deg)	AZ+10000,30000
LI	List of special commands avail.	LI
SH	Show current set of parameters retained	SH
SC	Special command execution (cloud free, all best, this year, default, etc.)	SC+ALLBEST
CS	Create set of current selected parameters and save as special command)	CS+MYDATA
OU	Exit to output menu - do search and go to Level 4	OU
H	General commands	H

OUTPUT MENU (Level 4)

COMMAND	FUNCTION (PARAMETERS)	EXAMPLE
TT	List of first 16 lines of output - go to display options (Level 5)	TT
SR	Sort instructions (Track=TK, Frame=FM, Date=DD, Cloud Cover=CC, Acq.vote=MA, visib.vote=MV), default: sorted by Track-Frame	SR
LP	Off-line print service,	LP+my text+
SE	Return to image parameter selection menu - go back to Level 3	SE
PS	Off-line print service, sorted	PS+my comments+
H	General commands	H

DISPLAY OPTIONS AND ORDER HANDLING MENU (Level 5)

COMMAND	FUNCTION (PARAMETERS)	EXAMPLE
RW	Display first page of data output	RW
BS	Display previous page of data output	BS
SQ	Display next 16 lines of data output	SQ
OR	Enter on-line ordering section	OR
OD	On-line documentation (8 pages: 1H 2H 3H 4H 5H 6H 7H 8H)	OD
LO	Current list of orders DE=delete, AP=append,NO=confirm	LO

GENERAL COMMANDS (valid at all Levels)

COMMAND	FUNCTION (PARAMETERS)
H	General commands help-messages
?	On context help-message (provides an explanation of current commands)
#	Required parameter range
<	Set short form of dialogue
>	Set long form of dialogue
EX	Return to top level menu
DF	Assign the current default value
<<CR>>	Enter key/Carriage return key – assign the current default value or return to menu (input performed)
*	Return to previous menu or return back to current main menu
+	Command separator on string (sequence of commands)
EN	End of session

ON-LINE ORDERING SECTION

Within the DISPLAY OPTIONS the user may enter into the order handling section (command is OR) of LEDA. It is based on the previously made search where all retrieved items are numbered. Only images acquired by ESA/Earthnet stations can be ordered. The user has to indicate the sequence number as well as the product code found in the on-line Documentation (command is OD+7H) as well as in the Eurimage-ESA/ Earthnet price list. If further indications are needed the system will ask for them giving an example. The list of current orders can be printed with command LO. At this point items can be deleted or comment lines added. Leaving LEDA (command is EN) the order becomes definitive and will be processed. For all addresses return to QUEST (command is EN) and type: ?ADDRESSES and/or: ?NPOC.

EXAMPLE OF A LEDA - SEARCH ON ESA/IRS (QUEST)

        INPUT :   B13
           File 13, LEDA 1972-TODAY
           (ESA/EARTHNET CATALOGUE)
           Connection with LEDA in progress
                         L E D A 5
           WELCOME TO EARTHNET COMPUTERISED CATALOGUE
           ENTER CATALOGUE SERVICE REQUIRED
           FOR LANDSAT CATALOGUE ENTER : LA
           FOR TIROS   CATALOGUE ENTER : TI
           FOR GENERAL HELP INFORMATION : H
           AVAILABLE OPTIONS : LA TI H
           DEFAULT : LA >

        INPUT :   LA

LEVEL 1 : TOP LEVEL MENU

           YOU ARE IN THE LANDSAT CATALOGUE
           ENTER ACTIVITY MODE :
           AVAILABLE OPTIONS : SI GS OD NW LO H
           DEFAULT : GS >

        INPUT :   GS

LEVEL 2 : GEOGRAPHIC SELECTION

           ENTER GEOGRAPHIC SELECTION MODE. THE RESULTING GEOGRAPHIC
           AREA IS THE SUM OF SUCCESSIVE SELECTIONS. YOU MAY LOOP ON
           THE FOLLOWING CHOICES:
           AVAILABLE OPTIONS: RT TF PN RF PO SH LI SC CS AC SE H
           DEFAULT: SE>

GEOGRAPHIC POLYGON AREA DEFINITION

        INPUT :   PO

           GEOGRAPHIC POLYGON. ENTER FIRST OR NEXT CLOCKWISE POINT OF
           POLYGON COORDINATES LAT, LON (HUNDREDTHS OF DEGREE). AFTER
           THE LAST POINT ENTER <<CR>>:

        INPUT :   4000,800+4100,900+4000,1000+
           . . . .

        I NEED 4-8 SECONDS FOR GEOGRAPHIC COVERAGE COMPUTATION.

```
                    NUMBER OF LAST  SELECTED FRAMES :  13
                    NUMBER OF TOTAL SELECTED FRAMES :  13

                    ENTER GEOGRAPHIC SELECTION MODE. THE RESULTING GEOGRAPHIC
                    AREA IS THE SUM OF SUCCESSIVE SELECTIONS. YOU MAY LOOP ON
                    THE FOLLOWING CHOICES:
                    AVAILABLE OPTIONS: RT TF PN RF PO SH LI SC CS AC SE H
                    DEFAULT: SE>
```

SHOW LIST OF TRACK/FRAMES

```
        INPUT :   SH

            SELECTED GEOGRAPHIC AREA EXPRESSED IN TRACK-FRAME
            WRS : 1    TRACK = 206    FRAMES FROM    32 TO 32
            WRS : 1    TRACK = 207    FRAMES FROM    31 TO 32
            WRS : 1    TRACK = 208    FRAMES FROM    31 TO 32
            WRS : 1    TRACK = 209    FRAMES FROM    31 TO 32
            WRS : 2    TRACK = 192    FRAMES FROM    31 TO 32
            WRS : 2    TRACK = 193    FRAMES FROM    31 TO 32
            WRS : 2    TRACK = 194    FRAMES FROM    31 TO 32
            . . . . . . . . . .
        INPUT :   SE
```

LEVEL 3: IMAGE PARAMETER SELECTION

```
                ENTER IMAGE PARAMETER SELECTION:
                THE IMAGE SELECTION IS MADE ON THE "AND" OF ALL POSSIBLE
                PARAMETER; DEFAULTS ARE ALREADY SET. YOU MAY LOOP ON THE
                FOLLOWING CHOICES :

                AVAILABLE OPTIONS : DD SN CC MA MS MV ST EL AZ LI SH SC CS
                                    OU H
                DEFAULT : OU >
```

SET DATE LIMITS

```
        INPUT : DD

            ENTER STARTING, ENDING DATE (YYMMDD, YYMMDD).
            TO RETURN TO MAIN MENU ENTER <<CR>> :

        INPUT : 810501,810701+820301,820501+
                . . . . . . . . . .
                . . . . . . . . . .
```

SET CLOUD COVER LIMITS

```
        INPUT :  CC

            ENTER 4 MSS QUADRANTS CLOUD COVER RANGE (4 MINIMA, 4 MAXIMA)

        INPUT :  0,0,0,0,0,0,0,0+DF

            I NEED (ABOUT) 11 SECONDS FOR IMAGE SELECTION
```

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Vidicon (RBV) on Landsat 3, Thematic Mapper (TM) on Landsat 4
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SAMPLE RECORD (each record 75 characters)

MIS	TRK	FRM	STZ	SENS	DATE	CLOUD-COV.	ACQ.-VIS		LAT-LON-C.F.	ELEV.AZIM.	NO.
4	200	25	FO	MSS	820814	0 4 0 2	0	3	5028/ 144	4818/13962	1
4	200	25	FO	MSS	830222	0 0 0 0	0	0	5028/ 140	2463/14939	2
4	200	25	FO	MSS	830716	0 0 0 0	0	3	5028/ 130	5460/13502	3

```
                    NUMBER OF RETRIEVED IMAGES = 9

                    ENTER FURTHER SELECTION MODE :
                    AVAILABLE OPTIONS : YE NO
                    DEFAULT : NO >

            INPUT : NO

LEVEL 4: OUTPUT PRESENTATION ON TERMINAL

                    ENTER OUTPUT PRESENTATION MODE :
                    AVAILABLE OPTIONS : TT SR LP SE PS H
                    DEFAULT : TT >

            INPUT : <<CR>>
```

MIS	TRK	FRM	STZ	SENS	DATE	CLOUD-COV				ACQ	VIS	LAT.	LONG.	ELEV.	AZIM.	NO.
2	206	32	FO	MSS	810616	0	0	0	0	0	3	4020	1111	5937	11412	1
2	206	32	KI	MSS	810616	0	0	0	0	0	1	4020	1110	5890	11328	2
3	206	32	FO	MSS	820409	0	0	0	0	0	3	4020	1117	4814	13336	3
2	208	31	FO	MSS	810531	0	0	0	0	0	3	4161	874	5857	11972	4
3	208	32	FO	MSS	820411	0	0	0	0	0	3	4020	830	4883	13290	5

```
                . . . . . . . . . .
        EXIT

            INPUT : LOGOFF
                . . . . . . . . .

LEDA session terminated

--------------14Dec88   10:39:55   User04341--
    0.70 AU 2.11 Minutes in File 13
    0.35 AU Telecomm charge
    1.05 AU approx Total


ESA-QUEST session terminated at 10:40:01
```