EO Satellite Mission Data Analysis according to Softw. Eng. Standards

Project: Sea Level Analysis using Altimeter Data

Data Formats

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Data Format

ENVISAT:

Cycle Numbers: 33-64
Start: 2004-11-08 21:34:30
End: 2008-01-07 21:34:20

JASON-1:

Cycle Numbers: 110-220
Start: 2004-12-31 00:30:21
End: 2008-01-05 15:47:10

Data Format

Reduced Altimeter Data Format - ENVISAT Binary Files (Part 1)

ENVISAT Record Map

Nr.	NBytes	Format	Content
001	4	-5.d	jday.00 julian day epoch 2000.0
002	4	-6.deg	glat.00 geodetic latitude of satellite footprint
003	+4	-6.deg	glon.00 longitude of satellite footprint
004	+4	-3.m	hsat.00 satellite height above ellipsoid
005	+4	-3.m	ralt.00 altimeter range
006	2	-3.m	stdalt.00 standard deviation of altimeter range
007	2	-3.m	swh.00 significant wave height
008	2	-3.m	otide.09 ocean tide correction
009	2	-3.m	etide.00 solid Earth tide correction
010	2	-3.m	invb.00 inverse barometer effect
011	2	-3.m	wtrop.00 wet tropospheric correction
012	2	-3.m	dtrop.00 Dry tropospheric correction
013	2	-3.m	ionos.00 ionospheric correction
014	4	-3.m	mssh.01 mean sea surface height
015	4	-3.m	geoh.00 Geoid heights
016	+1	0.-	iflags.00 instrument status and quality flags
017	+1	0.-	oflags.00 Orbit status and quality flags
018	2	-3.m	ptide.00 pole tide correction
019	2	-3.m	emb.00 Electro-magnetic bias
020	2	-3.m	cuso.60 Ultra stable oscillator range correction

NBytes	
4	signed I4
+4	unsigned I4
2	signed I2
+1	unsigned I1

Data Format

Reduced Altimeter Data Format - ENVISAT Binary Files (Part 2)

Nr	Parameter	Description	Format	Unit
1	JulianDay	Julian day epoch 2000.0	%16.5f	-
2	Latitude	Geodetic latitude of satellite	%15.6f	Deg
3	Longitude	Geodetic longitude of satellite	%15.6f	Deg
4	Orbit Height	Satellite height above ellipsoid	%10.3f	m
5	Altimeter range	Raw altimeter range (without any corrections)	%10.3f	m
6	Sigma of altimeter range	Standard deviation of altimeter range	%10.3f	m
7	SWH	Significant wave height	%10.3f	m
8	Ocean tide	Ocean tide correction	%10.3f	m
9	Solid earth tide	Solid Earth tide correction	%10.3f	m
10	Inverse barometric effect	Air pressure impact on sea surface	%10.3f	m
11	Wet troposphere	Wet tropospheric correction	%10.3f	m
12	Dry Troposphere	Dry tropospheric correction	%10.3f	m
13	Ionosphere	Ionosphere correction	%10.3f	m
14	MSH	Height of mean sea surface above the reference ellipsoid	%10.3f	m
15	Geoid height	Geoid height above the reference ellipsoid	%10.3f	m

Data Format

Reduced Altimeter Data Format - ENVISAT Binary Files (Part 3)

Nr	Parameter	Description			Format	Unit
16	Instrument flags	Instrument status and quality flags			%5.0f (Bit-field)	-
		Bit	Worth	Condition		
		0	1	AGC/σAGC < 0.1		
		1	2	σSWH < 0.5 or σSWH /SWH > 0.1		
		2	4	Not set		
		3	8	n20 Hz <12		
		4	16	Not set		
		5	32	Not set		
		6	64	Rain or ice		
		7	128	ralt = 4294967295 or σralt = 65535		

Data Format

Reduced Altimeter Data Format - ENVISAT Binary Files (Part 4)

Nr	Parameter	Description			Format	Unit
17	Orbital flags	Orbital status and quality flags			%5.0f (Bit-field)	-
		0	1	Not set		
		1	2	Ocean depth > -2000 m		
		2	4	Ocean depth > -200 m		
		3	8	Land (Microwave-radiometers)		
		4	16	Land (DTM2000)		
		5	32	Not set		
		6	64	Maneuver		
		7	128	Not set		
18	Pole tide	Pole tide correction			%10.3f	m
19	Electro magnetic bias	Electro-magnetic bias			%10.3f	m
20	Oscillator range correction	Ultra stable oscillator range correction			%10.3f	m

Data Format

Reduced Altimeter Data Format – JASON-1 Binary Files (Part 1)

JASON-1 Record Map

Nr.	NBytes	Format	Content
001	4	-5.d	jday.00 julian day epoch 2000.0
002	4	-6.deg	glat.00 geodetic latitude of satellite footprint
003	+4	-6.deg	glon.00 longitude of satellite footprint
004	+4	-3.m	hsat.00 satellite height above ellipsoid
005	+4	-3.m	ralt.00 altimeter range
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