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ASAR MONTHLY REPORT

APRIL 2005

PUBLIC SUMMARY

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Agence spatiale européenne

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1 EXECUTIVE SUMMARY

This document summarizes the instrument and product quality status as derived from data acquired during April 2005.

No major anomalies have been experienced during this period. The list of unavailability periods is provided in Chapter 2.

Chapter 3 provides information on the actual low rate BRM mission planning.

Details on the Doppler Centroid evolution are provided in chapter 4.

Radiometric stability is measured by means of ASAR and Radarsat transponders. Detailed results are provided in chapter 5.

An updated list of auxiliary data files is provided in chapters 6 and 7.

2 INSTRUMENT STATUS

No major anomalies experienced during this period.
Tree single Antenna Transmit/Receive Module (TRM) failures have been experienced (the first ones after the launch):

- TRM-14 in tile B2: failed to transmit in H polarization since 12-APR-2004
- TRM-15 in tile A1: failed to transmit in V polarization since 17-APR-2004
- TRM-06 in tile A1: failed to transmit in V polarization since 17-NOV-2004
- TRM-12 in tile C4: failed to transmit in H polarization since 16-JAN-2005

Please note that a single TRM transmit failures have no significant impact on the instrument performance nor on the antenna pattern radiation shape.

2.1 Instrument unavailability

The new events with respect to the previous report are given in the table below. Please note that the full unavailability list is available on appendix A.

Unavailability report reference	Start	Stop
EN-UNA-2005/0113	13 /04/ 2005 20:21:40 Orbit = 16315	13 /04/ 2005 20:21:40 Orbit = 16315
EN-UNA-2005/0125	21/04/2005 04:17:47 Orbit = 16419	21/04/2005 04:17:47 Orbit = 16419
EN-UNA-2005/0149	12 /05/ 2005 10:50:00 Orbit = 16724	12 /05/ 2005 10:50:00 Orbit = 16724
EN-UNA-2005/0159	18/05/2005 01:49:01 Orbit = 16804	18/05/2005 01:49:01 Orbit = 16804
EN-UNA-2005/0161	18 /05/ 2005 13:57:30 Orbit = 16812	18 /05/ 2005 13:57:30 Orbit = 16812
EN-UNA-2005/0164	20 /05/ 2005 12:09:50 Orbit = 16839	20 /05/ 2005 12:09:50 Orbit = 16839

2.2 Data disclaimer

A data quality disclaimer is issued each time that ASAR data of degraded quality is acquired between specific time intervals. Details on the available disclaimers are provided online at **http://earth.esa.int/pcs/envisat/asar/disclaimer**. Please note that the full disclaimer list is available on appendix B.

During April 2005 no disclaimer has been issued.

3 LOW RATE BACKGROUND REGIONAL MISSION

The current Low Rte BRM definition is provided below:

Mode	Where	Swath	Polarization
Wave	Over the sea (-15 sec from the coast line), including the Mediterranean Sea	IS2	**VV**
Global Monitoring	Everywhere else		**HH** over land, ice and sea-ice including the following areas: - Antarctica extended (1) - Artic (2) - Greenland and Greenland Sea (4) - Labrador Sea and North of Canada (3,4) Kara Sea (4) Baffin Bay (4) - Golf of Mexico & Caribbean Sea (5) **VV:** None. All GM acquisitions in HH

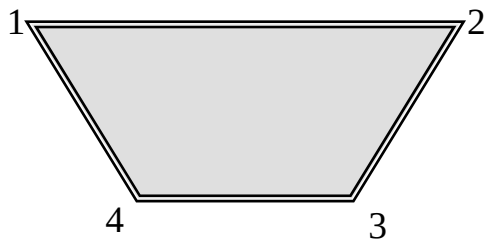
No low rate BRM (GM in this case) has been planned between 3rd and 17th November 2004 over the area defined below to support RA-2 tests to be performed with no ASAR imaging operations.

point 1
78deg 45' 43" E
36deg 59' 53" N

point 2
92deg 41' 45" E
35deg 38' 25" N

point 3
91deg 30' 54" E
29deg 30' 00" N

point 4
80deg 24' 55" E
29deg 40' 37" N



4 DOPPLER MONITORING

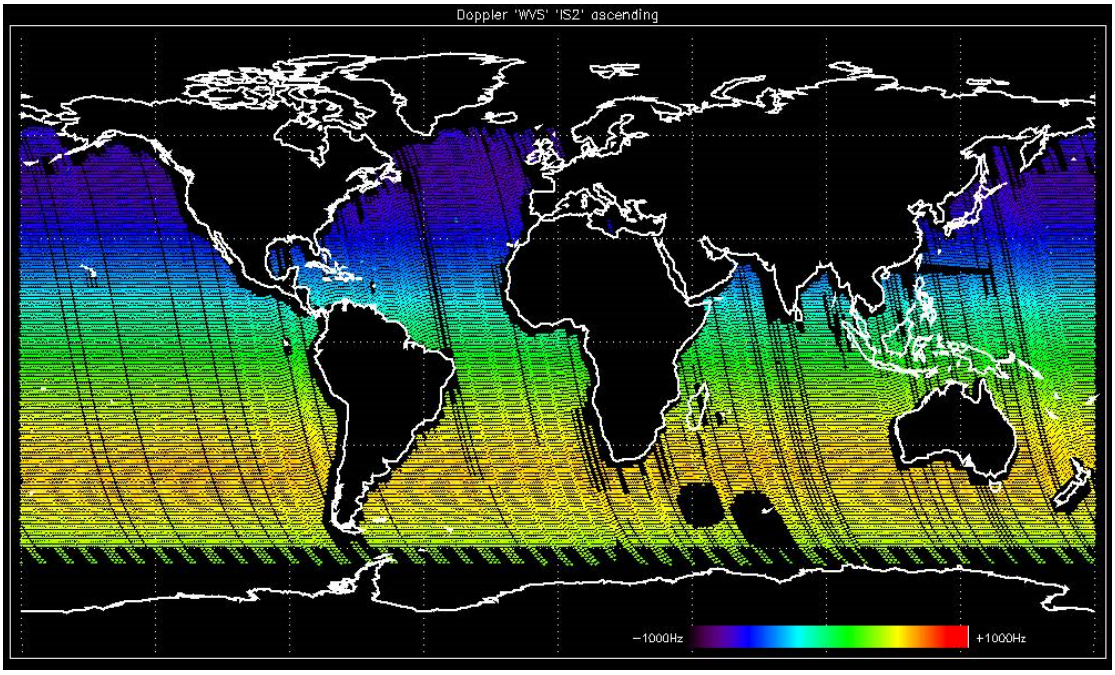
The Envisat Orbit Control Manoeuvres (OCM) can affect the platform attitude stability even few ours after the burst with a direct impact on the Doppler centroid frequency evolution. An updated list of the OCM can be found at **http://nng.esoc.esa.de/envisat/ENVmano.html**.

Latest AOCS corrections

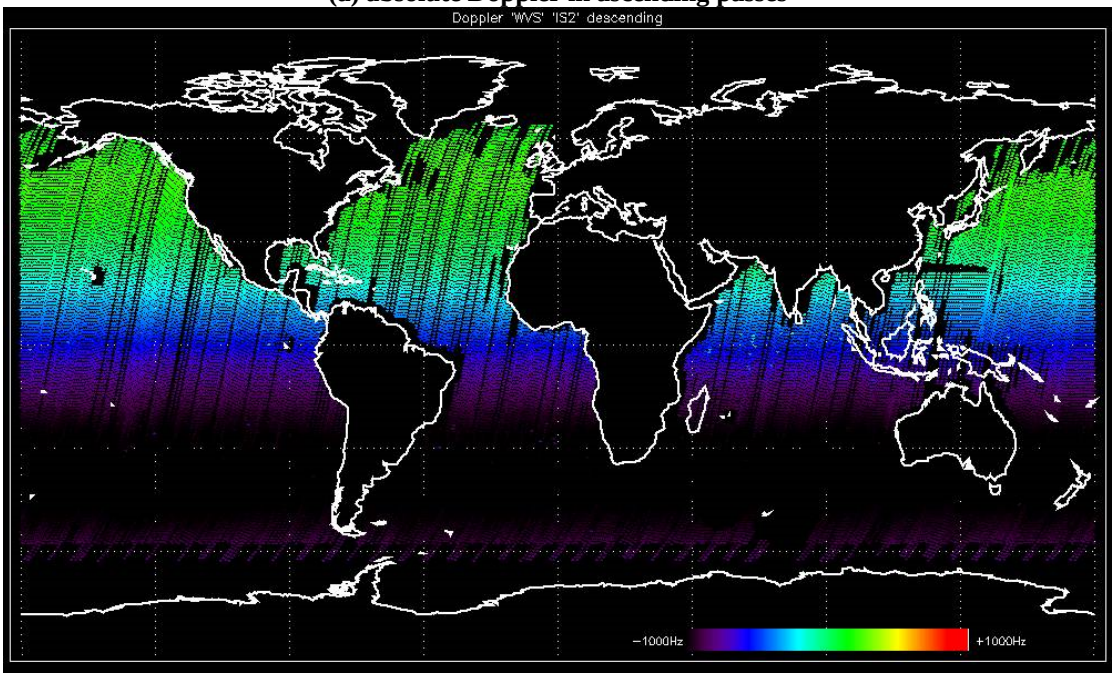
- The continuous decreasing trend in the absolute Doppler Centroid frequency observed since June 2003 was corrected with the AOCS changes implemented on 11 December 2003. Please see figure 3.
- A Doppler discontinuity, previously observed daily at ~ 15:00 hours, has also been removed with the AOCS s/w upgrade. Please see figure 5.b and figure 6.b.

The plots of the figure 1 and figure 2 show the evolution of the Doppler centroid over the world for the last 35 days. No anomaly on the Doppler centroid distribution is noticed.

4.1 Absolute WV-IS2 Doppler Centroid evolution



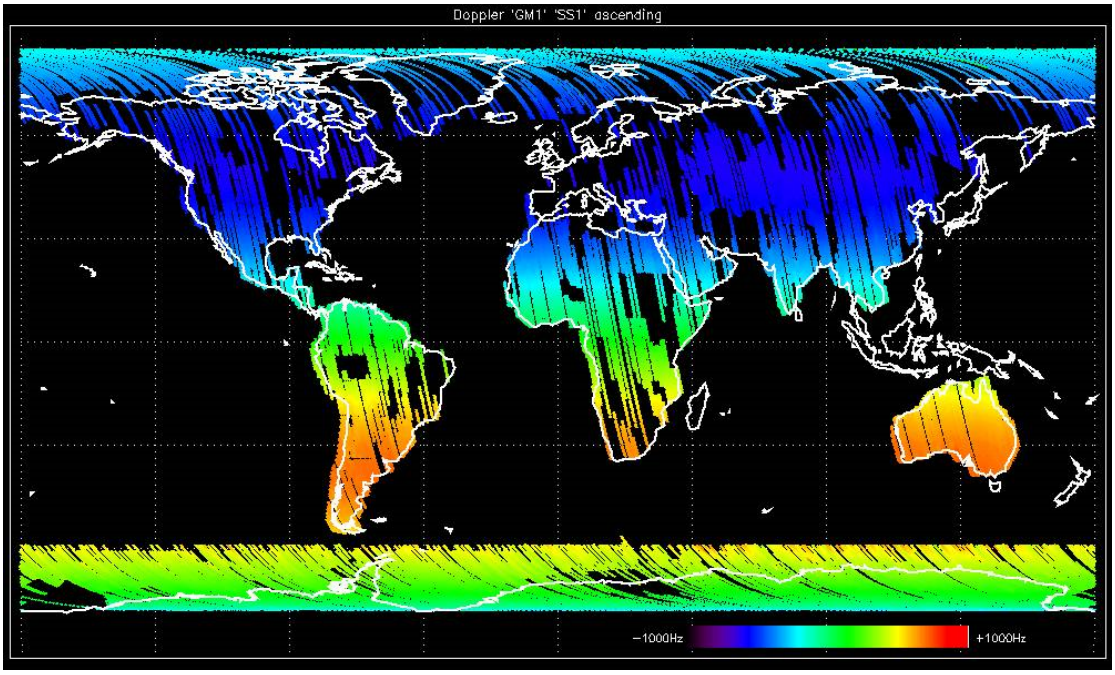
(a) absolute Doppler in ascending passes



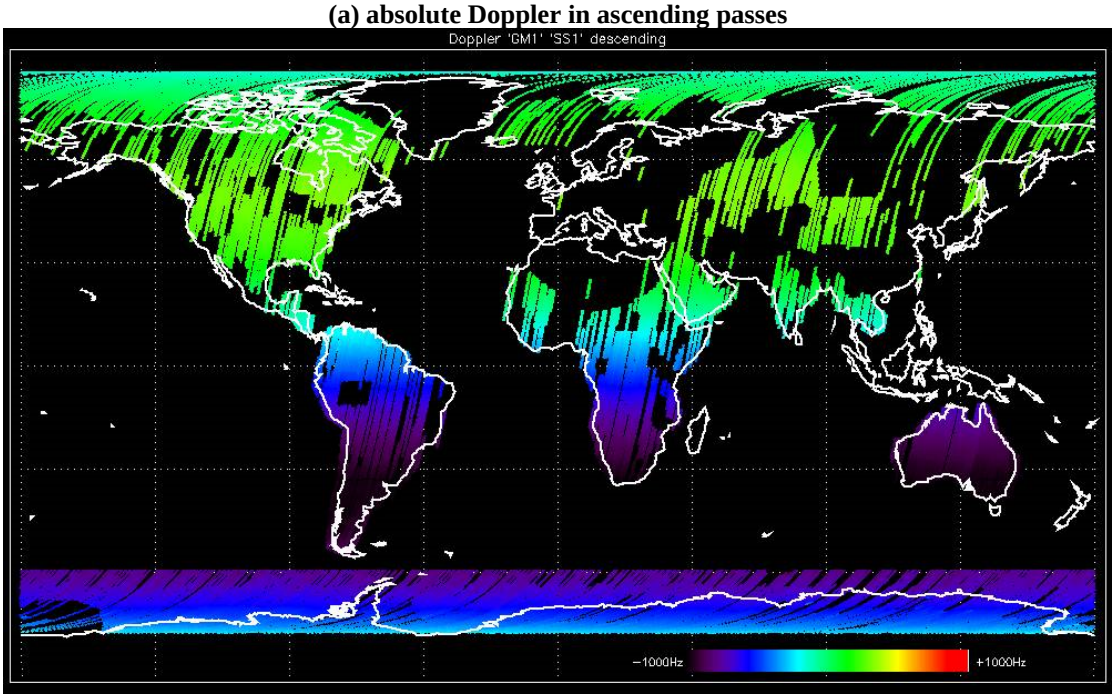
(b) absolute Doppler in descending passes

figure 1: Absolute Wave mode Doppler evolution over the world

4.2 Absolute GM SS1 Doppler Centroid evolution



(a) absolute Doppler in ascending passes

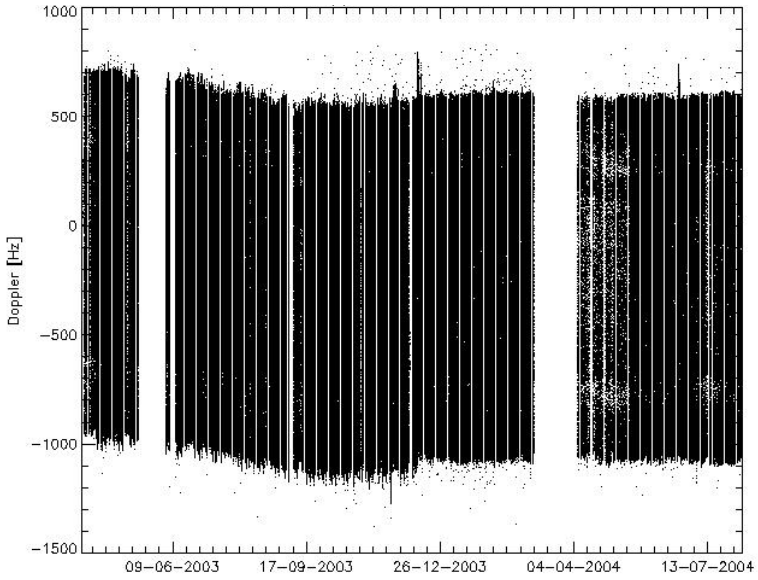


(b) absolute Doppler in descending passes

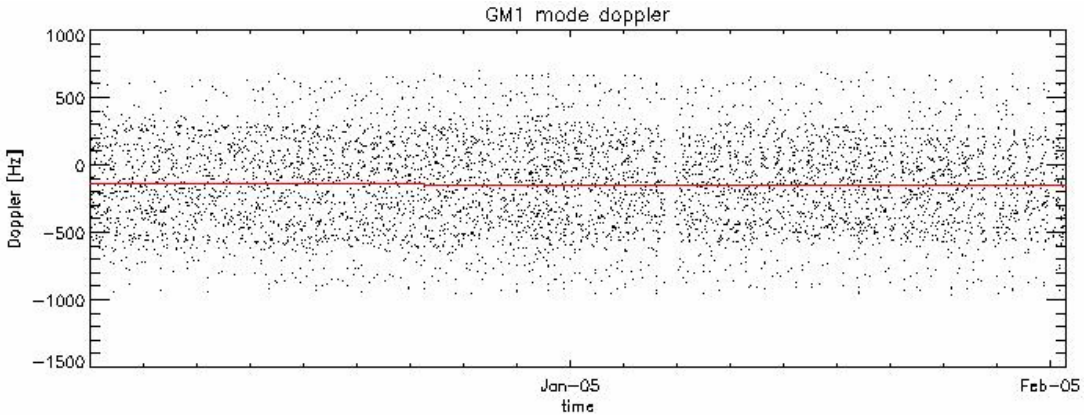
figure 2: Absolute GM mode Doppler evolution over the world

4.3 Absolute WV-IS2 Doppler Centroid evolution in time

As observed in figure 3.a, the decreasing trend in the ASAR Doppler has been corrected with the AOCS s/w upgrade in 11 December 2003. The Doppler has reached a stable level with a low slope of -61Hz/year



(a) Impact of the AOCS s/w upgrade of 11-DEC-2003 in the Doppler evolution

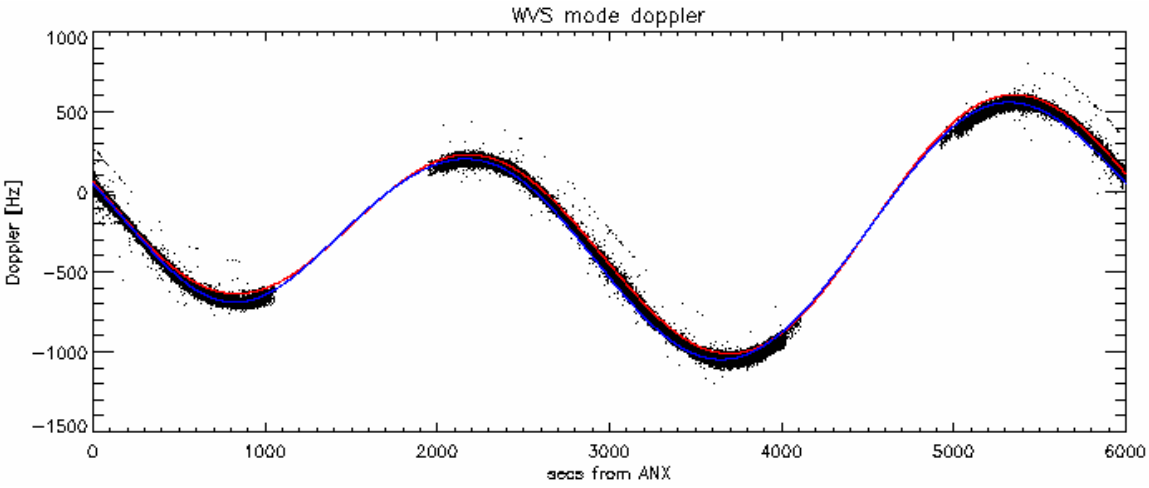


(b)Absolute Doppler evolution since December-2004

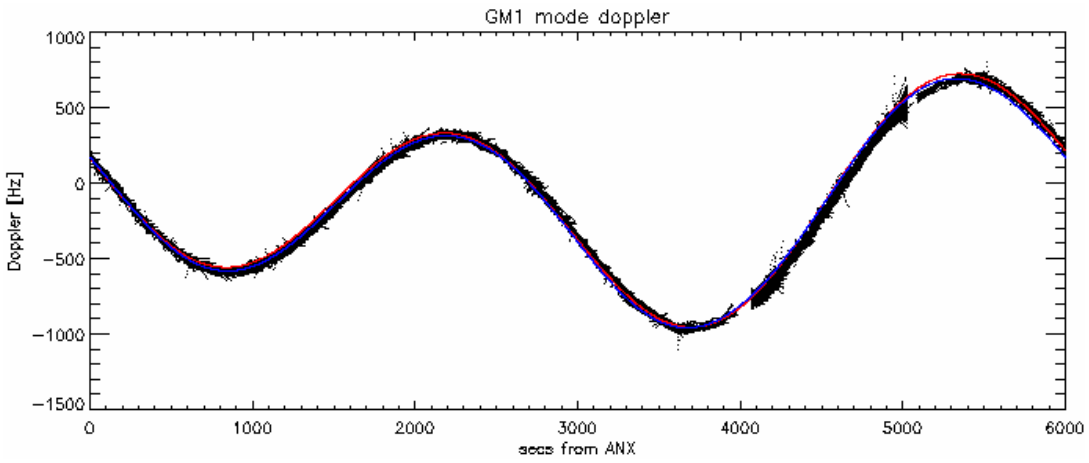
figure 3: Absolute Doppler evolution in time

4.4 Absolute Doppler Centroid evolution vs ANX

The (a) shows the Wave mode Doppler evolution (IS2, VV) against the elapsed seconds from the ascending node (ANX) for data acquired during April 2005. Theoretical Doppler is in red while the blue curve stands for Doppler evolution model obtained by Fourier series decomposition.



(a)Wave mode Doppler

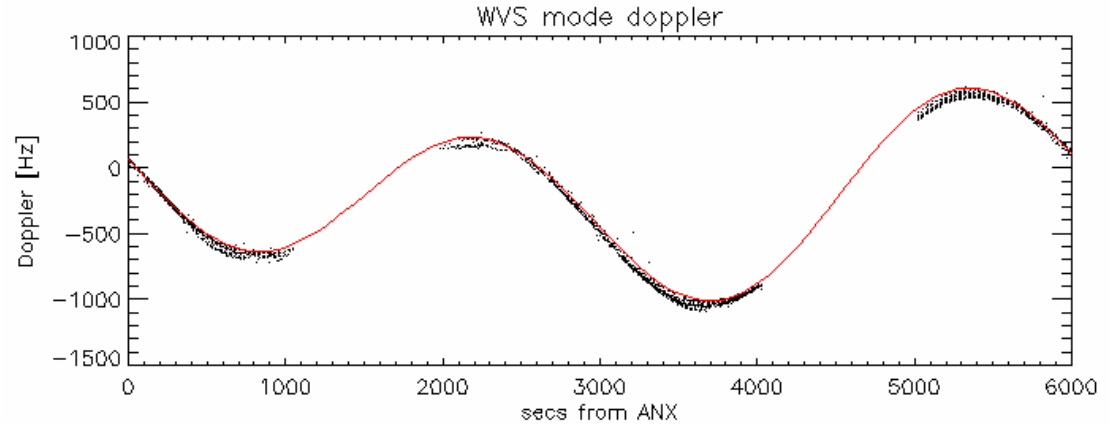


(a)GM1 Doppler

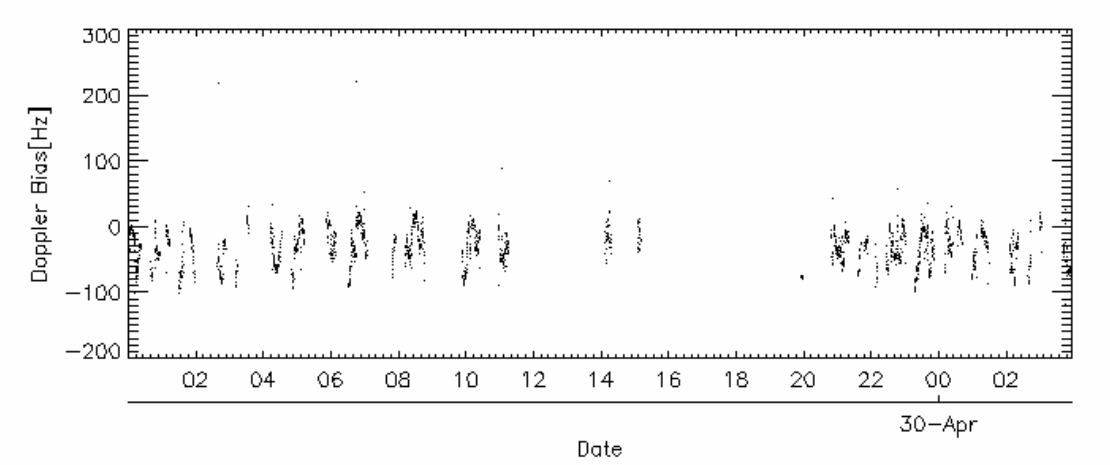
figure 4: Absolute Doppler evolution wrt elapsed seconds since ANX

4.5 Residual Doppler Centroid evolution vs. time of the day

The figure 5 shows the WV mode Doppler frequency (a) with respect to the expected frequency (in red) and the residual Doppler (b) versus the time of the day (UTC time). With respect to the theoretical evolution, the Wave Doppler has a bias of -36Hz.



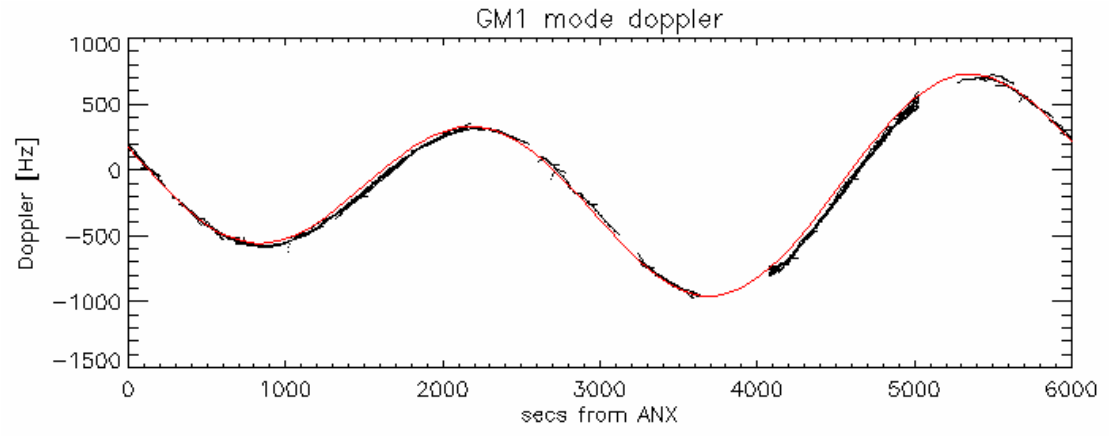
(a) Doppler evolution vs elapsed seconds since ANX



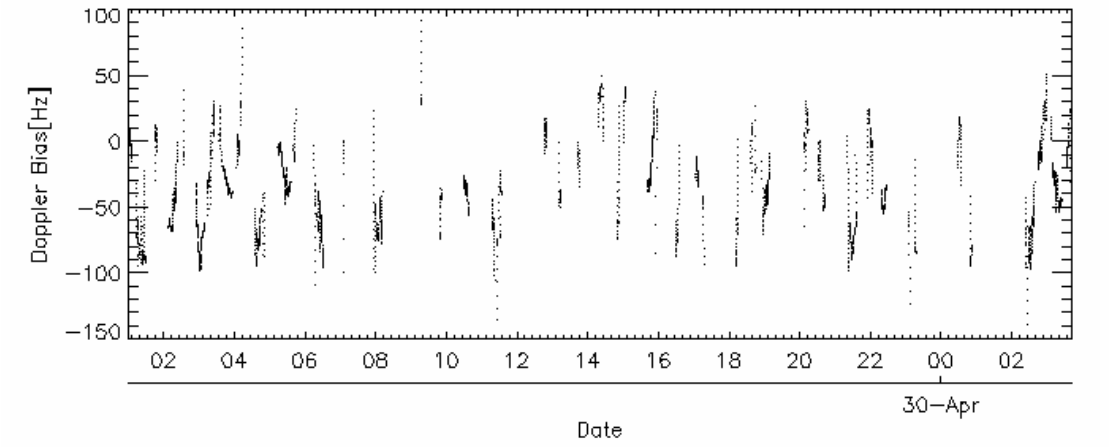
(b) residual Doppler evolution versus time of day

figure 5: Residual Doppler centroid evolution for WVS data

The figure 6 shows the same information but for data acquired in GM mode. The Doppler bias is about -18Hz.



(a) Doppler evolution versus elapsed seconds since ANX



(b) residual Doppler evolution versus time of day

figure 6: Residual Doppler centroid evolution for GM1 data

5 IRF ANALYSIS

The analysis of the ASAR and Radarsat transponders is used to characterize the products in term of:

- ✓ spatial resolution,
- ✓ Impulse Response Function (IRF) parameters (PSLR, ISLR, SSLR) and
- ✓ Absolute calibration factor.

The analysis is performed for all the modes, beams and polarizations.

The Table 1 shows the relative Radar Cross Section (RCS)[1] per mode, beam and set of transponders. The values provided per sub-swath correspond to the mean absolute calibration error. Values provided per all swaths correspond to the mean error value and the corresponding standard deviation. **All values are in dB.** Please note that cells in orange are not updated with respect to the previous report.

Product type	Transponder	Relative RCS [dB]							
		All Swaths	IS1	IS2	IS3	IS4	IS5	IS6	IS7
IMP	All	1.00±1.05	1.32	0.18	1.23	0.48	1.45	1.15	1.20
	ASAR	0.23±0.40	0.22	0.03	0.15	0.30	0.15	0.58	0.40
	Radarsat	1.41±1.07	1.79	0.63	1.68	0.58	1.82	1.55	1.42
IMG	All	0.69±0.92							
IMS	All	0.84±1.05							
IMM	All	1.056±1.16							
APP	All	0.53±1.00	0.30	0.31	0.33	1.06	0.41	0.93	0.54
	ASAR	-0.65±0.43	-0.16	-0.64	-0.96	-0.47	-0.66	-0.66	-1.25
	Radarsat	0.64±0.96	0.34	0.51	0.37	1.34	0.49	1.07	0.68
APG	All	0.10±1.10							
APS	All	0.34±0.95							
APM	All	1.10±1.47							
WSM	All	0.15±1.04							

Table 1: ASAR Image Relative Radar Cross-Sections per mode and beam.

The Table 2 gives the relative RCS for the full resolutions products as a function of the polarization. **All values are in dB.** Please note that cells in orange are not updated with respect to the previous report.

Product type	Transponder	Relative RCS [dB]			
		VV	HH	VH	HV
IMP	All	1.34±0.94	0.42±0.99		
	ASAR	0.37±0.38	-0.03±0.31		
	Radarsat	1.87±0.70	0.64±1.13		

[1]The relative RCS is defined as the difference between the nominal RCS and the measured RCS.

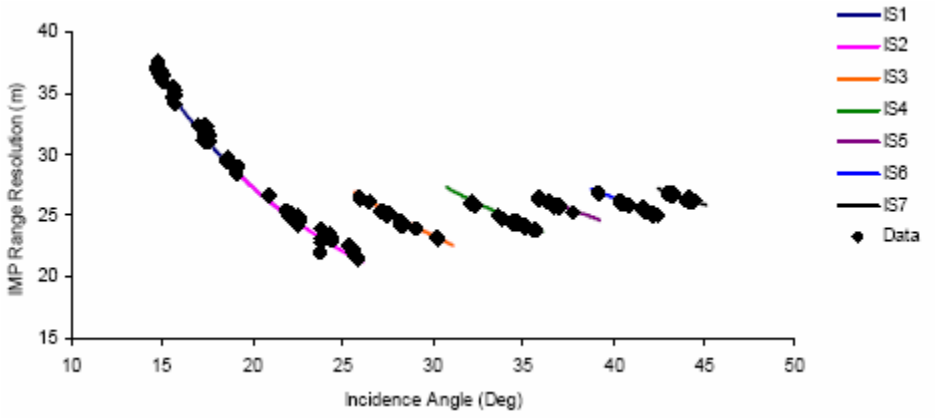
APP	All	0.90±0.60	-0.06±1.14	0.54±0.83	0.89±1.19
	ASAR	-0.56±0.43	-0.57±0.45	-0.72±0.41	-0.79±0.60
	Radarsat	0.94±0.55	0.01±1.18	0.80±0.63	0.98±1.14

Table 2: ASAR Image Relative Radar Cross-Sections per mode and polarization

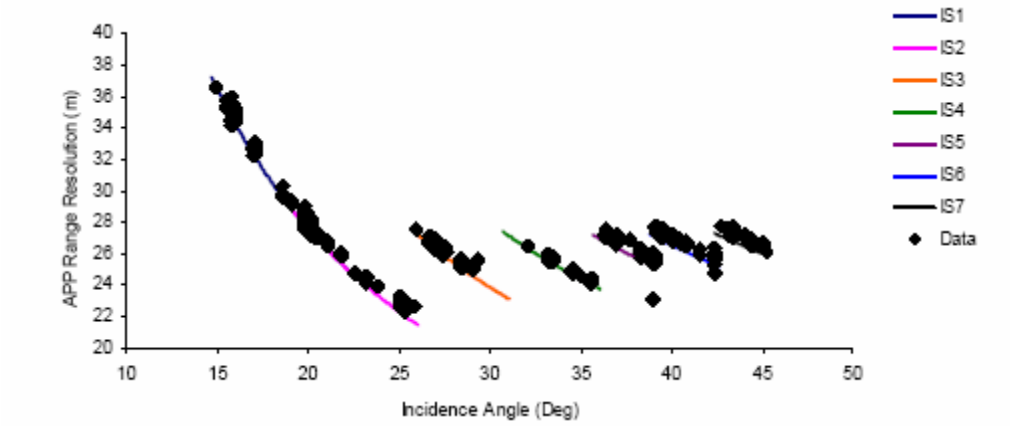
The Table 3 shows the IRF parameters measured per different product types. Please note that the performance for WSM products are given only for transponders reprocessed with 40m pixel spacing. Please note that cells in orange are not updated with respect to the previous report.

Product Type	Azimuth Res (m)	Range Res (m) (Range dependent)	ISLR (dB)	PSLR (dB)	SSLR (dB)	No of Results
IMP	22.06±0.43	(figure 7.a)	-13.07±1.50	-16.62±0.89	-22.43±1.90	227
IMG	22.29±0.38	22.7 - 35.4	-13.39±0.63	-16.82±0.98	-23.38±1.49	34
IMS	4.74±0.02 5.55±0.07	9.44±0.06	-14.28±0.64	-19.15±0.58	-28.05±1.20	76
IMM	147.50 ± 3.57	(figure 8.a) 140.71- 162.76	-7.20 ± 4.52	-16.05±1.99	-15.21±3.83	62
APP	27.67±0.77	(figure 7.b)	-12.27±1.76	-18.98±0.85	-25.48±2.76	473
APG	27.74±0.49	23.2 - 30.3	-13.06±0.43	-19.29±0.80	-27.44±1.58	20
APS	5.09±1.72	8.39±0.10	2.91±2.40	-2.52±1.30	-17.66±4.21	85
APM	145.63± 3.09	(figure 8.b) 136.73-154.43	-7.60±5.13	-15.53±3.59	-17.29±5.13	38
WSM	107.81±1.81	(figure 8.c) 103.56-112.63	-9.38±3.47	-18.69±1.33	-17.26±5.20	63

Table 3: ASAR IRF parameters per product type

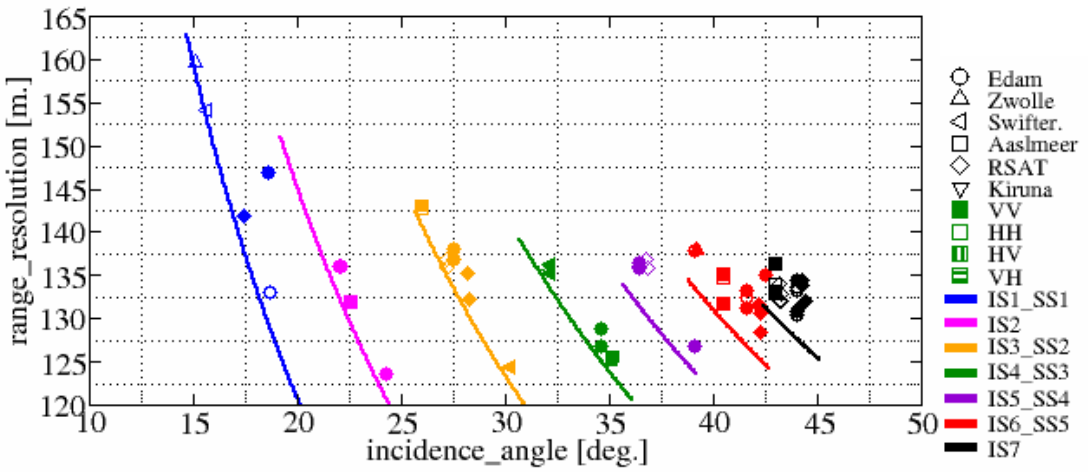


(a) IMP products

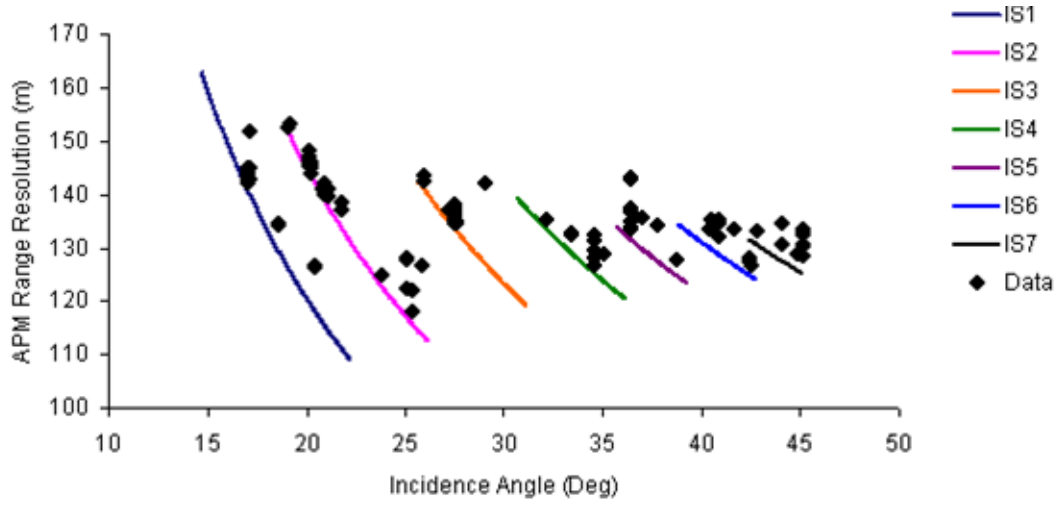


(b) APP products

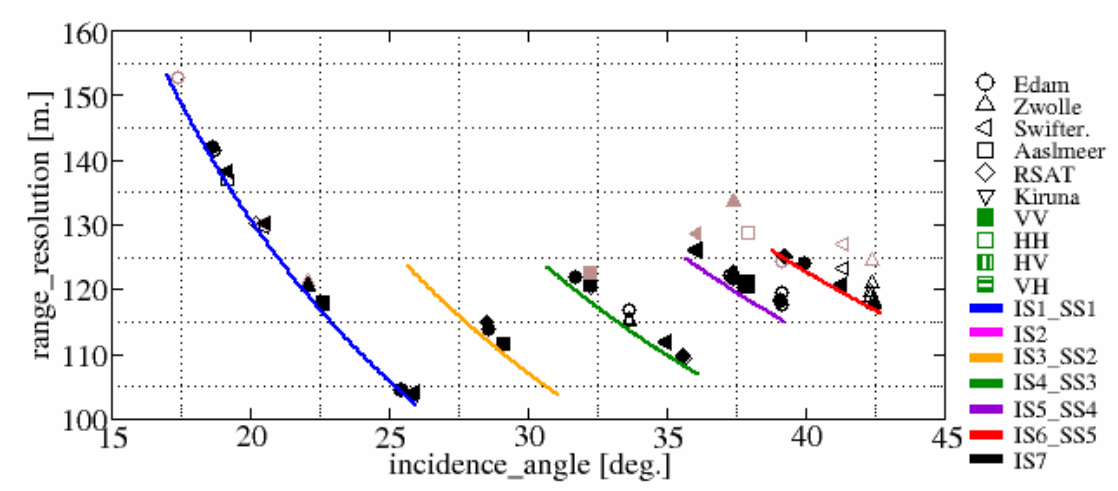
figure 7: Range resolution as a function of the incidence angle for the full resolution products



(a) IMM products



(b) APM products



(c) WSM products. Black symbols stand for the 40m pixel spacing data while brown are the 75m ones.

figure 8: Range resolution as a function of the incidence angle for the medium resolution products.

6 ELEVATION ANTENNA PATTERN MONITORING

6.1 Most recent elevation antenna pattern updates

The elevation antenna pattern has been updated for SS1 HH, IS3_SS2 HH, IS3_SS2 VV and IS4_SS3 HH on 12 August 2004. The table below show the most recent updates (since Aug.2003) for each beam and polarisation.

BEAM	POL	RECENT ELEVATION ANTENNA PATTERN UPDATES				
SS1	HH	27/08/2003		06/04/2004	12/08/2004	
SS1	VV	27/08/2003		06/04/2004		
IS1	HH		09/12/2003			
IS1	VV		09/12/2003	06/04/2004		
IS1	HV					
IS1	VH		09/12/2003	06/04/2004		
IS2	HH			06/04/2004		
IS2	VV		09/12/2003	06/04/2004		
IS2	HV			06/04/2004		
IS2	VH			06/04/2004		
IS3_SS2	HH	27/08/2003	09/12/2003		12/08/2004	27/10/2004
IS3_SS2	VV	27/08/2003			12/08/2004	
IS3_SS2	HV					
IS3_SS2	VH					
IS4_SS3	HH				12/08/2004	
IS4_SS3	VV					27/10/2004
IS4_SS3	HV			06/04/2004		
IS4_SS3	VH			06/04/2004		
IS5_SS4	HH	27/08/2003		06/04/2004		27/10/2004
IS5_SS4	VV	27/08/2003				
IS5_SS4	HV			06/04/2004		
IS5_SS4	VH			06/04/2004		
IS6_SS5	HH					27/10/2004
IS6_SS5	VV					
IS6_SS5	HV			06/04/2004		
IS6_SS5	VH			06/04/2004		
IS7	HH					
IS7	VV					
IS7	HV					
IS7	VH					

6.2 History of elevation antenna pattern updates

The table below summarizes the evolution of the elevation antenna pattern used for processing since August 2002.
The files are available on line at **http://earth.esa.int/services/auxiliary_data/asar/**

The source information indicates whether the pattern has been derived from data acquired over the Rain Forest ("RF") or whether it has been derived from antenna synthesis using results from Module Stepping acquisitions ("SYN").

Please note that pre-launch antenna pattern where used before the first ASA_XCA_AX update.

Please note that the table indicates for each beam, in which file the update took place. Any file created after this date will include that update unless a new file is specified for the beam. For instance, the pattern for IS3_SS2 VV was updated on 27 August 2003. The file created on 9 December 2003 (when the IS1 VV pattern was updated) will include the same pattern for IS3_SS2 VV as in the file of 27 August 2003, since the table does no indicate any further update for the IS3_SS2 VV pattern.

ASAR ELEVATION ANTENNA PATTERNS UPDATES IN THE ASAR EXTERNAL CALIBRATION FILE					
Swath & polarization	**Source**	**Update time** (file used in operations since 1 day after this date)	**File Name**	**Applicable to data acquired between:**	
				Start	**Stop**
IS1 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
	NA[1]	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
	RF	20021122	ASA_XCA_AXVIEC20021122_130838_20020413_000000_20021231_00000[2]	20020413	20021231
	RF	20031209	ASA_XCA_AXVIEC20031209_113559_20030211_000000_20041231_000000	20030211	20041231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS1 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
	RF	20031209	ASA_XCA_AXVIEC20031209_113559_20030211_000000_20041231_000000	20030211	20041231
IS1 HV	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231

[1] A corrupted IS1 VV pattern was included into the ASA_ XCA_ 1P file updated of 11 Nov. 2002

[2] The corrupted IS1 VV pattern in the operational ASA_ XCA_ 1P file was corrected on 22 Nov. 2002. Please note that the IS1 VV pattern in ASA_ XCA_ AXVIEC20021122_ 130838_ 20020413_ 000000_ 20021231_ 00000 is the same as in ASA_ XCA_ AXVIEC20020813_ 080042_ 20020413_ 000000_ 20021231_ 000000

IS1 VH	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20031209	ASA_XCA_AXVIEC20031209_113559_20030211_000000_20041231_000000	20030211	20041231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS2 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
	RF	20031209	ASA_XCA_AXVIEC20031209_113559_20030211_000000_20041231_000000	20030211	20041231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS2 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS2 HV	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS2 VH	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS3_SS2 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
	RF	20021018	ASA_XCA_AXVIEC20021018_121708_20020413_000000_20021231_000000	20020413	20021231
	RF	20030801	ASA_XCA_AXVIEC20030801_133024_20030428_000000_20031231_000000	20030428	20031231
	RF	20030801	ASA_XCA_AXVIEC20030801_134802_20020413_000000_20030211_000000	20020413	20030211
	RF	20030827	ASA_XCA_AXVIEC20030827_140210_20030211_000000_20031231_000000	20030211	20031231

	RF	20040812	ASA_XCA_AXVIEC20040812_170224_20040412_000000_20041231_000000	20040412	20041231
IS3_SS2 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
	RF	20030801	ASA_XCA_AXVIEC20030801_133024_20030428_000000_20031231_000000	20030428	20031231
	RF	20030801	ASA_XCA_AXVIEC20030801_134802_20020413_000000_20030211_000000	20020413	20030211
	RF	20030827	ASA_XCA_AXVIEC20030827_140210_20030211_000000_20031231_000000	20030211	20031231
	RF	20031209	ASA_XCA_AXVIEC20031209_113559_20030211_000000_20041231_000000	20030211	20041231
	RF	20040812	ASA_XCA_AXVIEC20040812_170224_20040412_000000_20041231_000000	20040412	20041231
	RF	20041027	ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000	20040412	20051231
IS3 HV	SYN.	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
IS3 VH	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
IS4_SS3 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
	RF	20021018	ASA_XCA_AXVIEC20021018_121708_20020413_000000_20021231_000000	20020413	20021231
	RF	20041027	ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000	20040412	20051231
IS4_SS3 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
	RF	20040812	ASA_XCA_AXVIEC20040812_170224_20040412_000000_20041231_000000	20040412	20041231
IS4 HV	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231

IS4 VH	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS5_SS4 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
	RF	20021018	ASA_XCA_AXVIEC20021018_121708_20020413_000000_20021231_000000	20020413	20021231
IS5_SS4 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
	RF	20041027	ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000	20040412	20051231
IS5 HV	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS5 VH	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS6_SS5 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
	RF	20021018	ASA_XCA_AXVIEC20021018_121708_20020413_000000_20021231_000000	20020413	20021231
	RF	20030801	ASA_XCA_AXVIEC20030801_133024_20030428_000000_20031231_000000	20030428	20031231
	RF	20030801	ASA_XCA_AXVIEC20030801_134802_20020413_000000_20030211_000000	20020413	20030211
	RF	20030827	ASA_XCA_AXVIEC20030827_140210_20030211_000000_20031231_000000	20030211	20031231
IS6_SS5 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231

	RF	20030801	ASA_XCA_AXVIEC20030801_133024_20030428_000000_20031231_000000	20030428	20031231
	RF	20030801	ASA_XCA_AXVIEC20030801_134802_20020413_000000_20030211_000000	20020413	20030211
	RF	20030827	ASA_XCA_AXVIEC20030827_140210_20030211_000000_20031231_000000	20030211	20031231
	RF	20041027	ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000	20040412	20051231
IS6 HV	SYN.	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS6 VH	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
IS7 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
IS7 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
IS7 HV	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
IS7 VH	RF	20021217	ASA_XCA_AXVIEC20021217_150852_20020413_000000_20031231_000000	20020413	20031231
SS1 VV	RF	20020813	ASA_XCA_AXVIEC20020813_080042_20020413_000000_20021231_000000	20020413	20021231
	RF	20021018	ASA_XCA_AXVIEC20021018_121708_20020413_000000_20021231_000000	20020413	20021231
	RF	20030801	ASA_XCA_AXVIEC20030801_133024_20030428_000000_20031231_000000	20030428	20031231
	RF	20030801	ASA_XCA_AXVIEC20030801_134802_20020413_000000_20030211_000000	20020413	20030211
	RF	20030827	ASA_XCA_AXVIEC20030827_140210_20030211_000000_20031231_000000	20030211	20031231

	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
SS1 HH	RF	20021107	ASA_XCA_AXVIEC20021107_144746_20020413_000000_20021231_000000	20020413	20021231
	RF	20030801	ASA_XCA_AXVIEC20030801_133024_20030428_000000_20031231_000000	20030428	20031231
	RF	20030801	ASA_XCA_AXVIEC20030801_134802_20020413_000000_20030211_000000	20020413	20030211
	RF	20030827	ASA_XCA_AXVIEC20030827_140210_20030211_000000_20031231_000000	20030211	20031231
	RF	20040406	ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000	20030211	20041231
	RF	20040812	ASA_XCA_AXVIEC20040812_170224_20040412_000000_20041231_000000	20040412	20041231

7 AUXILIARY FILES UPDATE

7.1 Operational auxiliary data files

The latest version of the ASAR auxiliary data files, currently used for the operational processing of ASAR data in the ENVISAT Ground Segment and which contain the most recent information on calibration and instrument parameters, are listed below.
During the reported period one new ASA_CON_AX file has been disseminated.

Processor configuration file
ASA_CON_AXVIEC20050324_172815_20030601_000000_20051231_000000
ASA_CON_AXVIEC20041215_180008_20021017_130000_20030601_000000

External calibration data
ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000
ASA_XCA_AXVIEC20041028_154000_20030804_000000_20040412_000000
ASA_XCA_AXVIEC20041027_163611_20030601_000000_20030804_000000
ASA_XCA_AXVIEC20041027_162907_20030211_000000_20030601_000000
ASA_XCA_AXVIEC20041129_173057_20020413_000000_20030211_000000

Instrument auxiliary file
ASA_INS_AXVIEC20041215_180208_20030211_000000_20051231_000000
ASA_INS_AXVIEC20031209_113259_20021030_110000_20030211_000000
ASA_INS_AXVIEC20031212_105841_20021017_162400_20021030_110000
ASA_INS_AXVIEC20031212_122530_20020815_131000_20021017_162400

External characterization file
ASA_XCH_AXVIEC20041215_180350_20020301_000000_20051231_000000

These files as well as the previous versions of them can be downloaded from:
http://earth.esa.int/services/auxiliary_data/asar/

7.2 Recent auxiliary file updates and description of changes

The most recent updates of auxiliary files are listed below in chronological order:

ASA_XCA_AXVIEC20041129_173057_20020413_000000_20030211_000000
- ✓ Absolute calibration constant values updated for data acquired during this period. Major changes affect AP IS5 and IS7 products.

- ✓ Other parameters are the same as previous XCA file covering this time period (file created on 20030801).

ASA_XCA_AXVIEC20041028_154000_20030804_000000_20040412_000000

- ✓ The SS2-VV elevation antenna pattern used for data acquired after 12 April 2004 is also applied now to data acquired after 4 August 2004.
- ✓ New calibration constant (K) for WV IS2 VV after the DSS change in May 2003. Due to the drift observed in the WV K after May2003, the new value is valid since 1 June 2003 till 12 April 2004. The K value for WV IS2 VV for this period is 51571.6
- ✓ Updated elevation antenna pattern for SS3 VV. Valid since 4 Aug 2003.

ASA_CON_AXVIEC20041027_165251_20021017_130000_20051231_000000

- ✓ File consistent with updated format in PF-ASAR v4.0 (additional parameters in spare fields included and parameters for the new WSS product included).
- ✓ Normalization for WSM products changed to Reference Energy.
- ✓ Updated reference energy values for WSM products (values in dB):
- ✓ HH (from SS1 to SS5): 1.08, 6.96, 7.5, 7.95, 9.13
- ✓ VV (from SS1 to SS5): 1.11, 6.9, 7.5, 7.95, 9.1

ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000

- ✓ Updated calibration constant (K) for WV IS2 VV to follow an observed drift. The new K is valid since 12 April 2004.with a value of 50222.9
- ✓ Updated elevation antenna patterns for: SS2 HH, SS4 HH, SS5 HH. They are valid since 12 April 2004.
- ✓ Updated elevation antenna pattern for SS3 VV. Valid since 4 Aug 2003 (this is the same pattern as in file valid from 4-Aug-04 to 12-Apr-04).

ASA_XCA_AXVIEC20041027_163611_20030601_000000_20030804_000000

- ✓ New calibration constant (K) for WV IS2 after the DSS change in May 2003. Due to the drift observed in the WV K after May2003. The new K is valid since 1 June 2003 till 12 April 2004 with a value of 51571.6

ASA_XCA_AXVIEC20041027_162907_20030211_000000_20030601_000000

- ✓ Created to use a different K for WV (IS2 VV) before and after May 2003.
- ✓ No changes with respect to the previous XCA file covering this time period.

ASA_XCA_AXVIEC20040812_170224_20040412_000000_20041231_000000

- ✓ Update of elevation antenna pattern for: SS1_HH, SS2_IS3_HH, SS3_IS4_HH and SS2_IS3_VV.

ASA_INS_AXVIEC20040521_160843_20030211_000000_20041231_000000

- ✓ GM ISG increased by 1 for all sub-swaths

ASA_CON_AXVIEC20040407_173947_20021017_130000_20041231_000000
- ✓ Increased GM SS3 HH gain (by decreasing 0.5 dB the Eq. Energy for GM SS3 HH)

ASA_XCA_AXVIEC20040406_160451_20030211_000000_20041231_000000
- ✓ Updated elevation patterns for: SS1 HH-VV, IS1 VV-VH, IS2 HH-VV-HV-VH, IS4 HV-VH, IS5 HH-HV-VH, IS6 HV-VH

ASA_XCA_AXVIEC20040326_190217_20030211_000000_20041231_000000
- ✓ Inserted calibration constant for GMM products: 73.4 dB for HH and 74.0 dB for VV.

ASA_CON_AXVIEC20040322_164757_20021017_130000_20041231_000000
- ✓ Same as last update (20040308): Updated AP Eq. Energy values (different per each polarization).
- ✓ Changed AP normalization method from reference energy to equivalent energy.
- ✓ Enable DAR for GM.

ASA_CON_AXVIEC20040308_103426_20021017_130000_20041231_000000
- ✓ Updated AP Eq. Energy values (different per each polarization).
- ✓ Changed AP normalization method from reference energy to equivalent energy.
- ✓ Enable DAR for GM.

ASA_INS_AXVIEC20031212_122530_20020815_131000_20021017_162400
- ✓ SWST bias updated.

ASA_CON_AXVIEC20031212_122409_20021017_130000_20041231_000000
- ✓ End validity date extended till 31-12-2004

ASA_INS_AXVIEC20031212_105841_20021017_162400_20021030_110000
- ✓ SWST bias updated

ASA_CON_AXVIEC20031212_105603_20021017_130000_20031231_000000
- ✓ Dates adjusted to previous ASA_CON_AX version from 09-09-03.

ASA_XCA_AXVIEC20031209_113559_20030211_000000_20041231_000000
- ✓ End validity time extended until 31 December 2004.
- ✓ Elevation antenna patterns updated for: IS1 VV, IS1 HH, IS1 VH, IS2 VV and SS2_IS3 HH.

ASA_INS_AXVIEC20031209_113421_20030211_000000_20041231_000000
- ✓ SWST Bias updated.
- ✓ End validity time extended until 31 December 2004.

ASA_INS_AXVIEC20031209_113259_20021030_110000_20030211_000000

- ✓ SWST Bias updated

ASA_XCH_AXVIEC20031209_112947_20020301_000000_20041231_000000
- ✓ End validity time extended until 31 December 2004

ASA_CON_AXVIEC20031209_112721_20020301_000000_20041231_000000
- ✓ End validity time extended until 12 December 2004

ASA_CON_AXVIEC20041215_175442_20030601_000000_20051231_000000
- ✓ Image mode (IM) Reference Energy updated for data acquired after the DSS redundancy change in May 2003. IM Reference Energy before the DSS redundancy change can be found in the **ASA_CON_AXVIEC20041215_180008_20021017_130000_20030601_000000** file.
- ✓ End validity time extended to 31-DEC-2005.

ASA_CON_AXVIEC20041215_180008_20021017_130000_20030601_000000
- ✓ File created to have different reference energy values before/after the DSS change after May 2003.

ASA_XCH_AXVIEC20041215_180350_20020301_000000_20051231_000000
- ✓ End validity time extended to 31-DEC-2005.

ASA_INS_AXVIEC20041215_180208_20030211_000000_20051231_000000
- ✓ End validity time extended to 31-DEC-2005.

ASA_CON_AXVIEC20050324_172815_20030601_000000_20051231_000000
- ✓ WSS processing gain values set.

APPENDIX A : INSTRUMENT UNVAILABILITIES LIST

Unavailability report reference	Start	Stop
EN-UNA-2004/0111	14/04/2004 02:45:00	14/04/2004 13:40:00
EN-UNA-2004/0114	20/04/2004 08:15:46	20/04/2004 08:23:31
EN-UNA-2004/0118	20/04/2004 10:00:54	20/04/2004 11:56:40
EN-UNA-2004/0124	26/04/2004 21:32:03	27/04/2004 09:41:43
EN-UNA-2004/0125	29/04/2004 08:32:08	29/04/2004 10:18:18
EN-UNA-2004/0129	02/05/2004 21:32:47	03/05/2004 09:41:44
EN-UNA-2004/0176	12/07/2004 11:21:46	12/07/2004 18:01:40
EN-UNA-2004/0191	04/08/2004 09:19:00	04/08/2004 09:26:00
EN-UNA-2004/0193	05/08/2004 23:07:33	05/08/2004 23:43:27
EN-UNA-2004/0229	12/09/2004 10:54:47	12/09/2004 11:12:40
EN-UNA-2004/0246	23/09/2004 06:13:17	23/09/2004 09:55:38
EN-UNA-2004/0252	26/09/2004 21:24:58	27/09/2004 11:02:04
EN-UNA-2004/0261	17/10/2004 02:28:31	17/10/2004 07:45:11
EN-UNA-2004/0265	01/11/2004 05:00:40	01/11/2004 05:01:40
EN-UNA-2004/0268	03/11/2004 09:59:30 Orbit = 14004	03/11/2004 10:04:58 Orbit = 14004
EN-UNA-2004/0270	07/11/2004 03:41:28 Orbit=14054	07/11/2004 08:00:03 Orbit=14060
EN-UNA-2004/0276	12/11/2004 21:46:59 Orbit = 14140	12/11/2004 23:43:46 Orbit = 14141
EN-UNA-2004/0281	16/11/2004 02:34:15 Orbit = 14185	16/11/2004 03:16:49 Orbit = 14186
EN-UNA-2004/0290	21/11/2004 19:36:58 Orbit = 14267	21/11/2004 22:19:32 Orbit = 14269
EN-UNA-2004/0299	29/11/2004 00:42:03 Orbit = 14370	29/11/2004 03:09:35 Orbit = 14372
EN-UNA-2004/0307	05/12/2004 15:06:14 Orbit = 14465	05/12/2004 15:35:42 Orbit = 14465
EN-UNA-2004/0309	09/12/2004 00:32:56 orbit=14513	09/12/2004 00:56:03 orbit=14514

EN-UNA-2004/0314	27/12/2004 01:50:26 orbit=14772	27/12/2004 07:10:58 orbit=14775
EN-UNA-2005/0002	01/01/2005 20:17:59 orbit=14854	01/01/2005 22:37:38 orbit=14856
EN-UNA-2005/0005	07/01/2005 03:00:00 orbit=14936	07/01/2005 13:00:00 orbit=14936
EN-UNA-2005/0010	07/01/2005 13:00:00 orbit=14936	07/01/2005 18:20:00 orbit=14939
EN-UNA-2005/0011	09/01/2005 06:39:29 orbit=14961	09/01/2005 06:45:03 orbit=14961
EN-UNA-2005/0020	20/01/2005 16:49:16 Orbit = 15124	20/01/2005 17:05:23 Orbit = 15125
EN-UNA-2005/0032	27/01/2005 19:59:57 Orbit = 15226	27/01/2005 22:52:29 Orbit = 15228
EN-UNA-2005/0039	05/02/2005 06:12:44 Orbit = 15347	05/02/2005 09:46:32 Orbit = 15349
EN-UNA-2005/0009	09/02/2005 08:38:15 Orbit = 15406	10/02/2005 00:17:26 Orbit = 15415
EN-UNA-2005/0054	21/02/2005 14:07:52 Orbit=15581	21/02/2005 15:53:57 Orbit=15582
EN-UNA-2005/0071	10/03/2005 10:38:15 Orbit = 15822	10/03/2005 10:49:45 Orbit = 15822
EN-UNA-2005/0072	10/03/2005 20:02:46 Orbit = 15828	10/03/2005 22:00:18 Orbit = 15829
EN-UNA-2005/0073	12/03/2005 15:51:15 Orbit = 15854	12/03/2005 15:56:28 Orbit = 15854
EN-UNA-2005/0078	17 Mar 2005 01:00:00 Orbit = 15917	17 Mar 2005 13:00:00 Orbit = 15924
EN-UNA-2005/0093	22/03/2005 09:03:10 Orbit = 15993	22/03/2005 09:09:10 Orbit = 15993
EN-UNA-2005/0103	02/04/2005 02:48:28 Orbit = 16147	02/04/2005 06:35:25 Orbit = 16149
EN-UNA-2005/0109	06/04/2005 02:53:21 Orbit = 16204	06/04/2005 06:10:08 Orbit = 16206
EN-UNA-2005/0113	13 /04/ 2005 20:21:40 Orbit = 16315	13 /04/ 2005 20:21:40 Orbit = 16315
EN-UNA-2005/0125	21/04/2005 04:17:47 Orbit = 16419	21/04/2005 04:17:47 Orbit = 16419

EN-UNA-2005/0149	12 /05/ 2005 10:50:00 Orbit = 16724	12 /05/ 2005 10:50:00 Orbit = 16724
EN-UNA-2005/0159	18/05/2005 01:49:01 Orbit = 16804	18/05/2005 01:49:01 Orbit = 16804
EN-UNA-2005/0161	18 /05/ 2005 13:57:30 Orbit = 16812	18 /05/ 2005 13:57:30 Orbit = 16812
EN-UNA-2005/0164	20 /05/ 2005 12:09:50 Orbit = 16839	20 /05/ 2005 12:09:50 Orbit = 16839

APPENDIX B : DATA DISCLAIMER LIST

- From 10-Jul-2003 20:20 UTC to 11-Jul-2003 16:57 UTC.

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 03-Aug-2003 21:15 UTC to 04-Aug-2003 12:43 UTC.

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 19-Oct-2003 12:50:59 UTC to 20-Oct-2003 15.37.47.000 UTC

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 28-Oct-2003 06:26:28 UTC to 28-Oct-2003 13:10:01 UTC

Problem description:
Data not acquired in Yaw Steering Mode but in Fine Pointing Mode (FPM).Large Doppler frequency values are expected.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 4-Dec-2003 21:5:23 UTC to 4-Dec-2003 22:03:31UTC

Problem description:

Data not acquired in Yaw Steering Mode but in Fine Pointing Mode (FPM).Large Doppler frequency values are expected.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 11-Dec-2003 01:45:00 UTC to 11-Dec-2003 15:11:15 UTC

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 04-Jan-2004 09:15:00 UTC to 05-Jan-2003 15:25:20 UTC.

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products
All ASAR products, including level 0 products, acquired during this period.

- From 13-Feb-2004 13:38 UTC to 14-Feb-2004 11:06:01 UTC.

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 20-Feb-2004 18:00 UTC to 23-Feb-2004 13:08 UTC.

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 18-Nov-2003 until 22-May-2004 00:00:00 UTC

Problem description:
Degraded ASAR GM products location accuracy.
Affected products:
All ASAR GM level 1 products (ASA_GM1_1P), acquired during this period.
Correction:
The location error in ASA_GM1_1P products acquired before 22nd of May 2004 can be corrected by the user multiplying the line numbers in the Geolocation Grid ADS by 0.97169.

- From 21-Jun-2004 07:56:33 UTC to 22-Jun-2004 11:50:18 UTC

Problem description:
Degraded Attitude Stability. Instrument operating in Yaw Steering Mode (YSM) rather than in Stellar YSM. A positive Doppler bias of about 300 Hz is observed on data acquired during this period.
Affected products:

All ASAR products, including level 0 products, acquired during this period.

- From 04-Aug-2004 02:00 UTC to 04-Aug-2004 09:26:00 UTC.

Problem description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products, acquired during this period.

- From 16-Sep-2004 03:36:39UTC to 16-Sep-2004 08:53:15 UTC

Problem Description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products

- From 12-Sep-2004 03:46:00 UTC to 12-Sep-2004 12:40:00 UTC

Problem Description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products

- From 12-Aug-2004 13:53:54 UTC to 12-Aug-2004 19:09:50 UTC

Problem Description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products

- From 14-AUG-2004 07:36:00 UTC to 17-AUG-2004 10:57:45 UTC

Problem Description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products

- From 02-NOV-2004 14:17:25 UTC to 03-NOV-2004 10:04:58 UTC

Problem Description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products

- From 05-DEC-2004 10:03:48 UTC to 05-DEC-2004 15:35:45 UTC

Problem Description:
Degraded radiometric quality due to an instrument anomaly.
Affected products:
All ASAR products, including level 0 products

- From 13-APR-2002 to 11-FEB-2003

Problem Description:

The absolute calibration factor annotated in all ASAR level 1 products acquired between 13-APR-2002 and 11-FEB-2003 and processed between 01-AUG-2003 and 29-NOV-2004 is not correct. These products with incorrect calibration factor annotated in the Main Processing Parameters ADS can be identified by checking the auxiliary files used for processing. The name of the auxiliary files used in the processing is provided in the product SPH (use "view as HTML" in EnviView to visualise them). Products with incorrect calibration factor have been processed with the following external calibration auxiliary file:
ASA_XCA_AXVIEC20030801_134802_20020413_000000_20030211_000000
The correct calibration factors for these products are provided in the following auxiliary file:
ASA_XCA_AXVIEC20041129_173057_20020413_000000_20030211_000000
available on line at: http://earth.esa.int/services/auxiliary_data/asar/

Affected products:

All ASAR level1 products.

- From 09-JAN-2005 03:13:21 to 09-JAN-2005 06:45:03 UTC

Problem Description:

Due to an on-board anomaly, data acquired during this period is affected by a change of the antenna radiation pattern. The overall quality of these data is degraded. Radiometric normalisation of level 1 product is clearly corrupted, with significant residual antenna pattern modulation and differences from sub-swath to sub-swath in the ScanSAR cases (WS and GM).

Affected products:

All ASAR products, including level 0 products

- From 25-JAN-2005 to 02-FEB-2005

Problem Description:

Due to a problem on the ESRIN Low Bit Rate acquistion chain, the ASAR Wave and GM data could be of bad quality.

Affected products:

All ASAR Low bit rate products (Wave and GM), including level 0 products acquired at PDHS-E (ESRIN)

- From 22-MAR-2005 00:54:10 to 22-MAR-2005 00:54:10

Problem Description:

Due to an on-board anomaly, data acquired during this period is affected by a change of the antenna radiation pattern. The overall quality of these data is degraded. Radiometric normalisation of level 1 product is clearly corrupted, with significant residual antenna pattern modulation and differences from sub-swath to sub-swath in the ScanSAR cases (WS and GM).

Affected products:

All ASAR products, including level 0 products