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ASAR ALTERNATING POLARISATION PRODUCT UPDATE

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CHANGE RECORD

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1. INTRODUCTION

The aim of this document is to describe the changes that were made at the end of May 2009 to the ENVISAT ASAR alternating polarisation (AP) swaths characteristics. These changes were made to avoid unplanned shut-downs of the ASAR instrument that have occurred since launch when acquiring AP data. Unplanned shut-downs of the ASAR are undesirable due to their impact on the possible degradation of the instrument hardware. The number of AP acquisitions was reduced significantly in early 2007 while the usage of IS5 was suspended at the end of 2006, both to reduce the occurrence of these unplanned shut-downs [1].

The changes made to the AP swaths have been designed to reduce the number of shut-downs and thus to enable the resumption of AP IS5 data acquisitions and the increased usage of all other AP swaths.

2. NEW AP SWATH CHARACTERISTICS

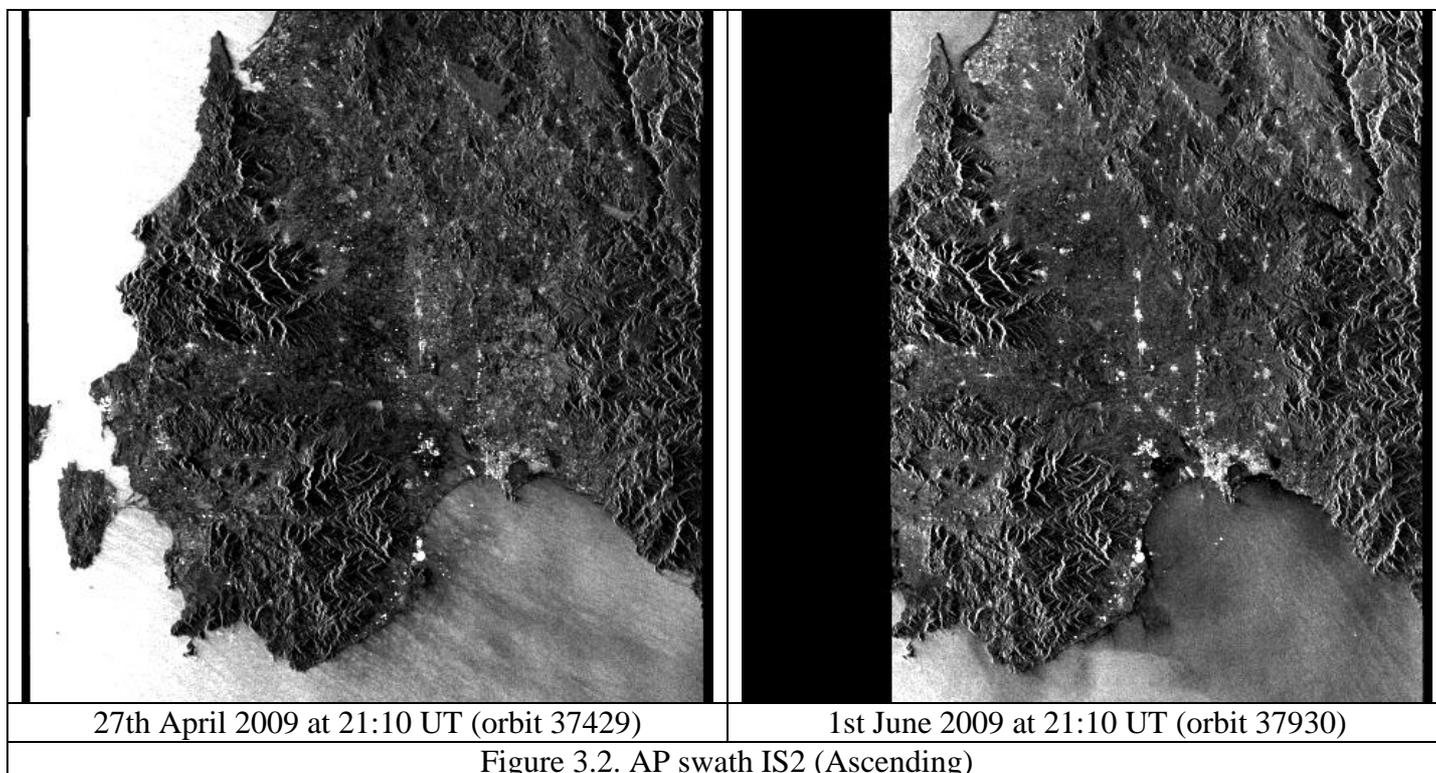
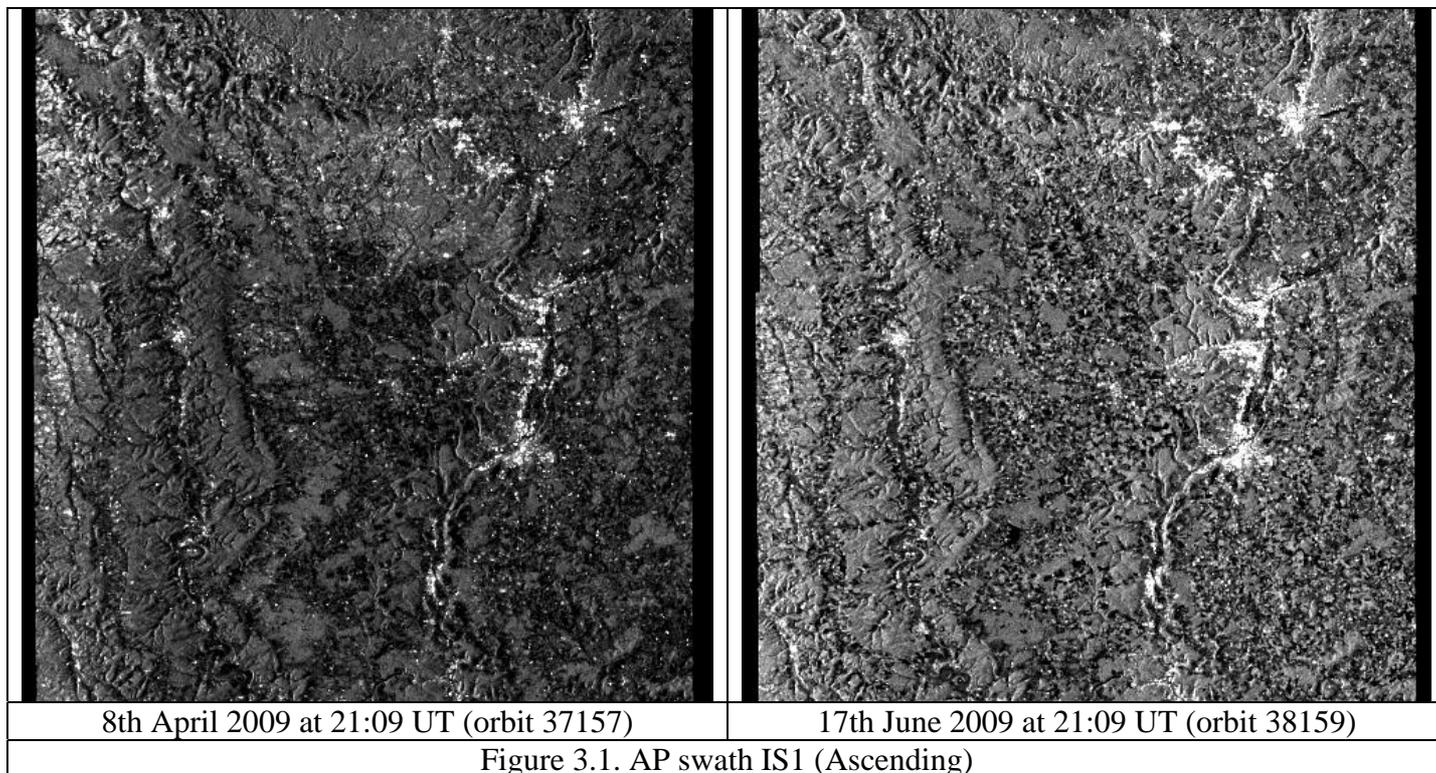
Table 2.1 gives the incidence angles, swath width and the overlap between swaths for the AP IS1 to IS7 swaths before and after the change on 29th May 2009 (orbit 37876). For swaths IS2 to IS7 the near range incidence angles have increased while the far range incidence angles have remained the same. The consequence of these changes is the reduced swath width and reduced overlap between the swaths. There are no changes for swath IS1.

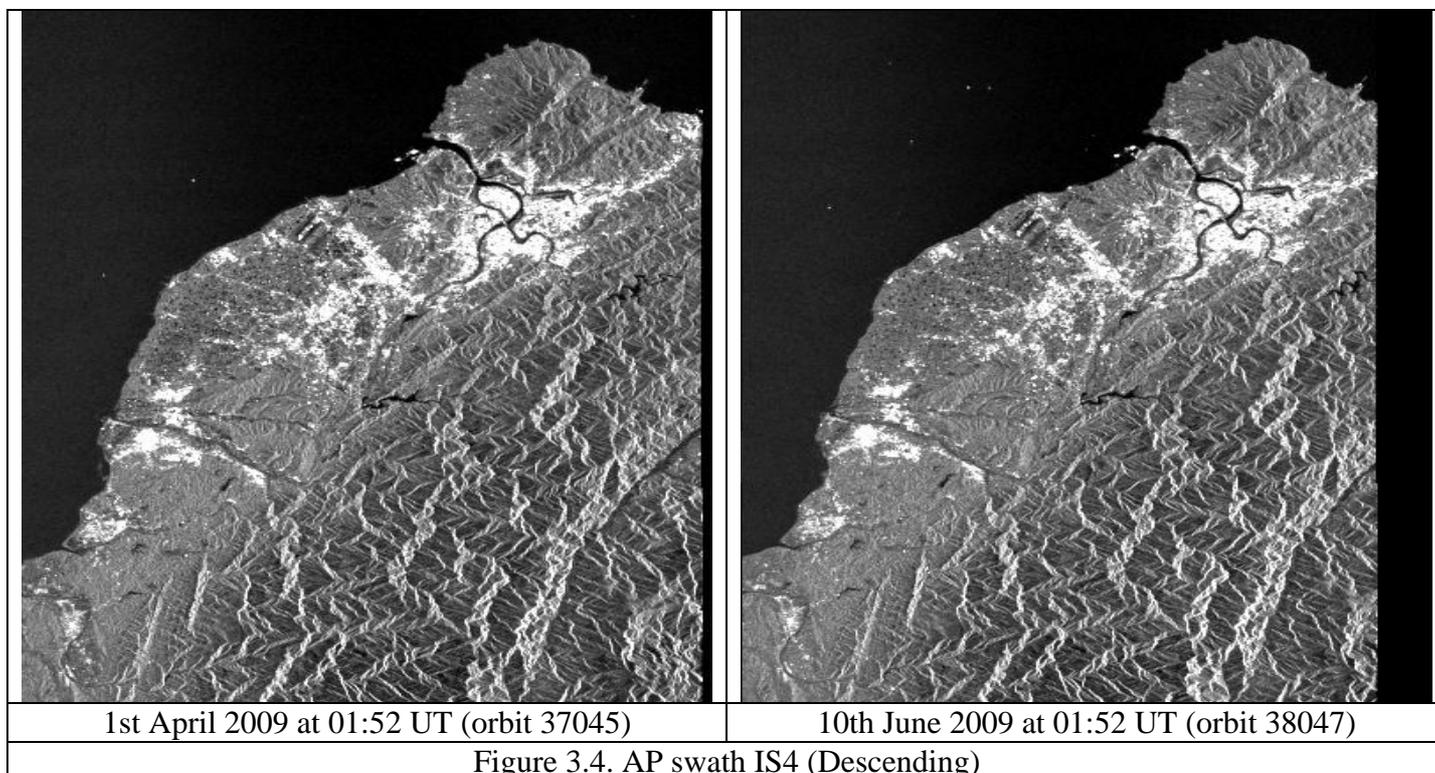
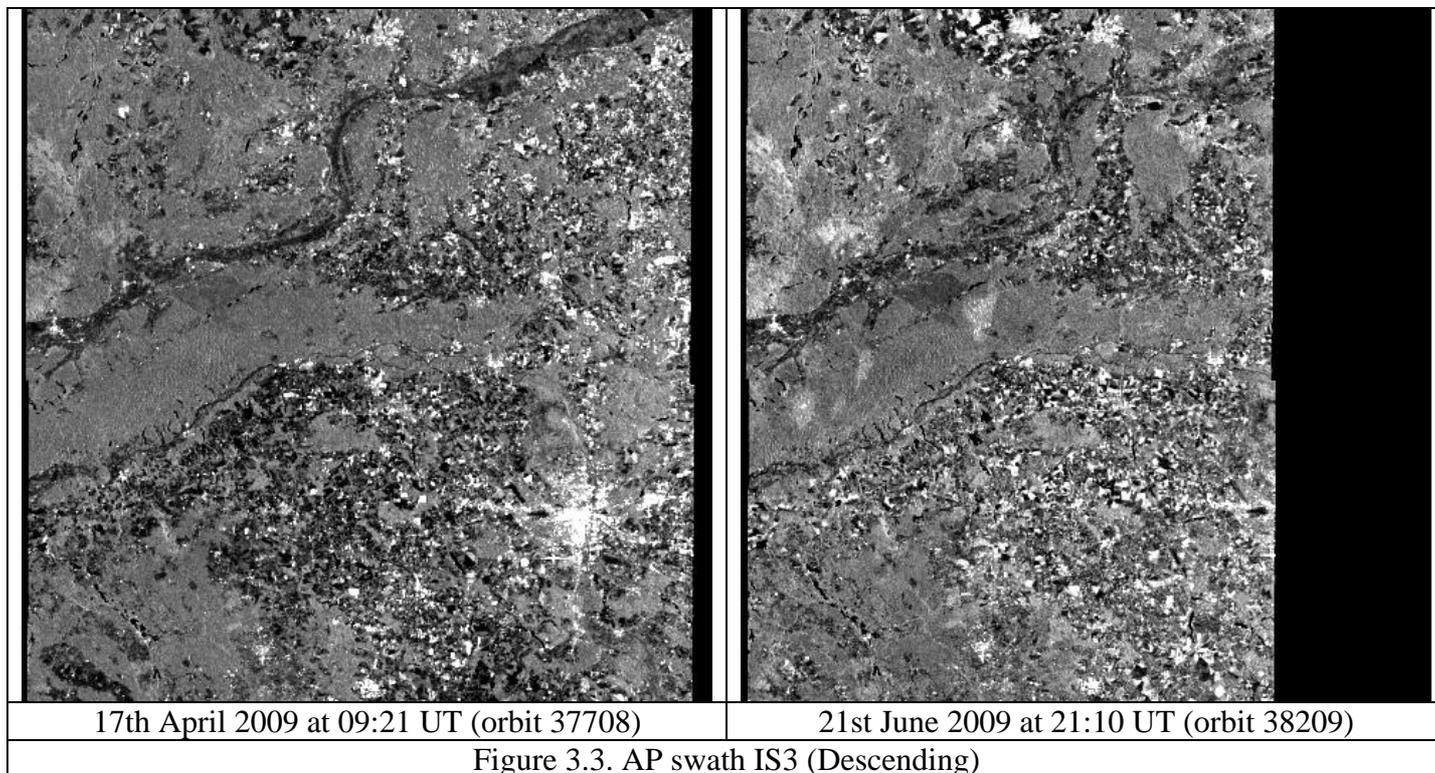
SWATH	Range of Incidence Angles [degrees]		Swath Width (ground-range) [km]		Overlap with previous swath (ground-range) [km]	
	old	new	old	new	old	new
IS1	14.36 - 22.32	14.36 - 22.32	106.3	106.3	-	-
IS2	18.68 - 26.22	20.30 - 26.22	105.3	83.4	49.6	27.7
IS3	25.78 - 31.27	26.73 - 31.27	83.1	69.2	6.4	-7.4
IS4	30.89 - 36.20	31.28 - 36.20	87.5	81.3	5.9	-0.3
IS5	35.68 - 39.35	36.81 - 39.35	65.4	45.6	9.0	-10.7
IS6	39.02 - 42.76	39.61 - 42.76	71.7	60.9	6.1	-4.7
IS7	42.48 - 45.27	43.30 - 45.27	57.4	40.8	5.7	-11.0

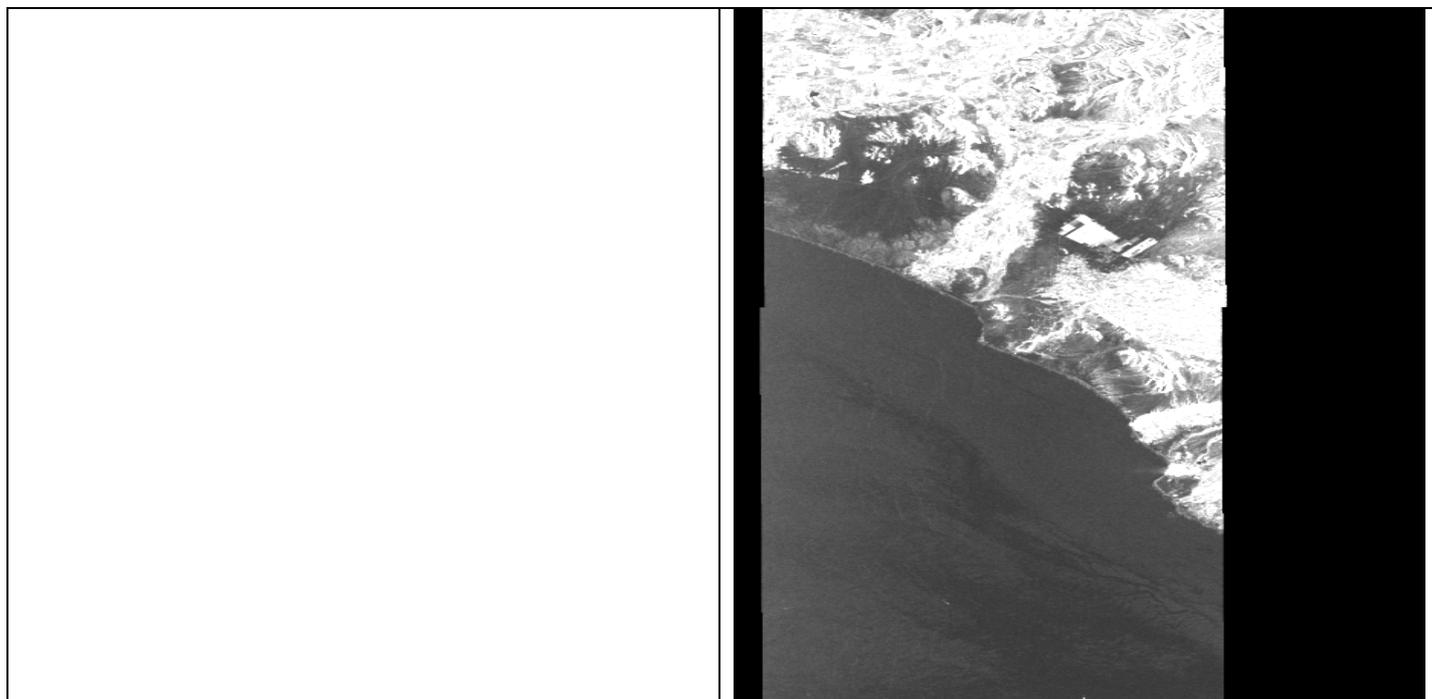
Table 2.1 Old and new AP Swath Characteristics

3. EXAMPLE AP SWATHS

Below are example quick look images of the new AP swath. The left images are from an acquisition before the AP swath changes and the right image after the swath changes for the same orbit track (i.e. the acquisitions for each swath are one or more repeat periods apart). Note that for IS5 there is no corresponding image acquired one or more repeat periods before the IS5 acquisition with the new AP swath characteristics. The black borders around the image data only appear in quick look and medium resolution product types.

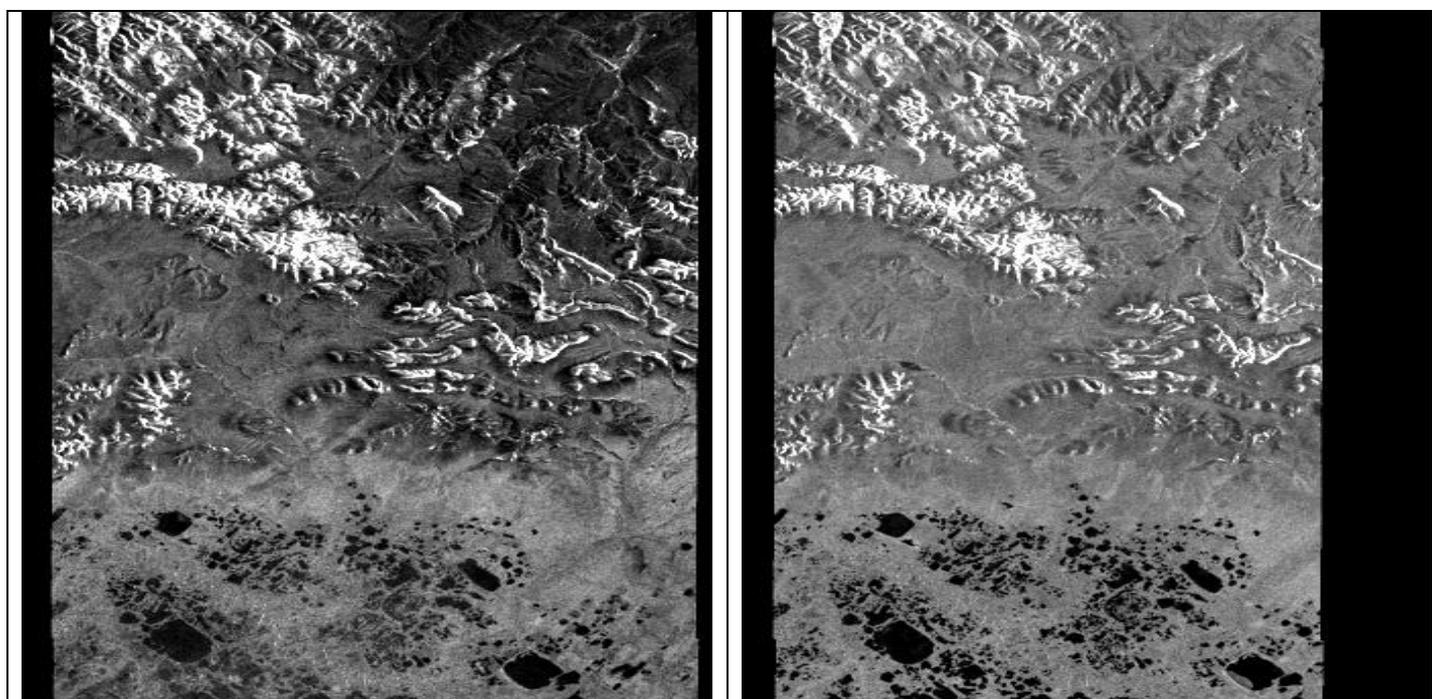






11th June 2009 at 14:54 UT (orbit 38069)

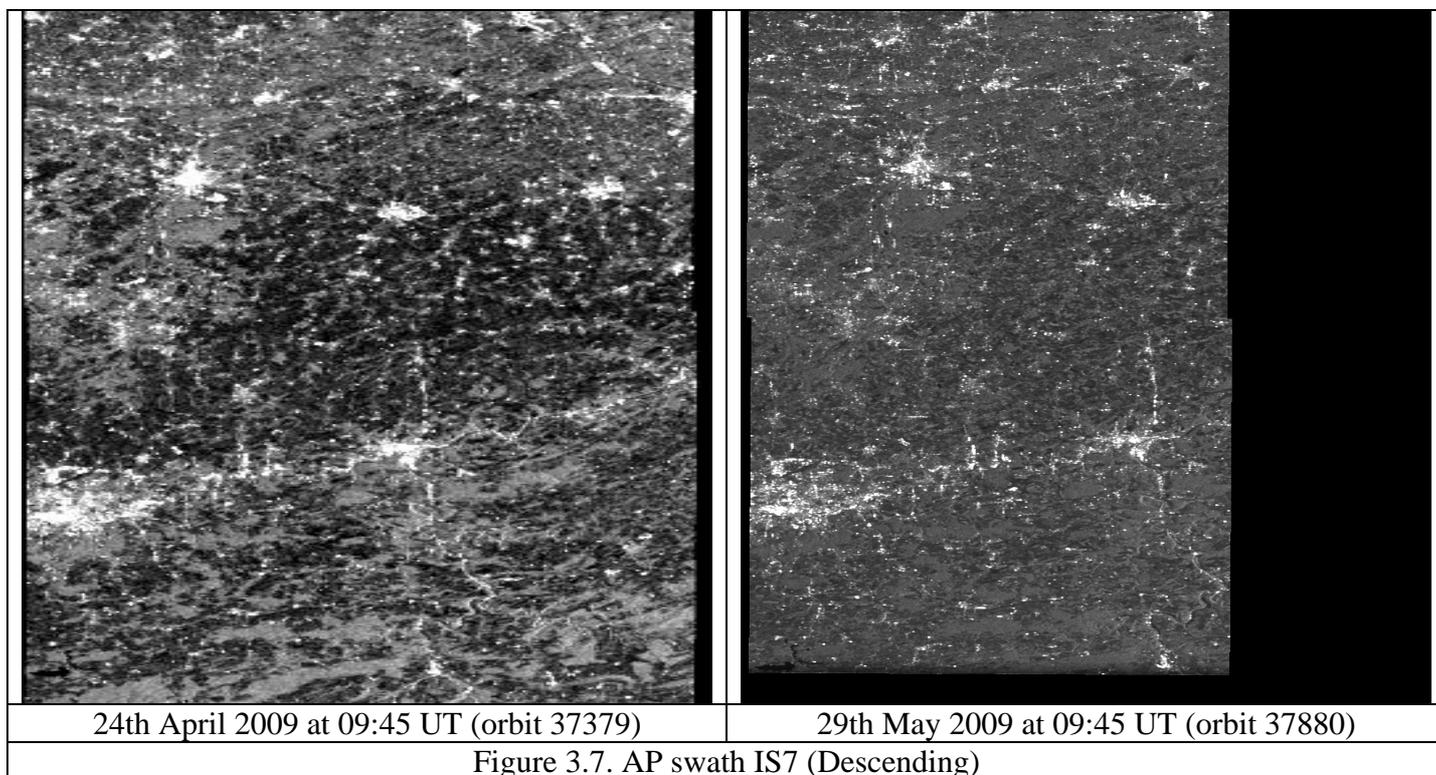
Figure 3.5. AP swath IS5 (Descending)



13th May 2009 at 19:46 UT (orbit 37657)

17th June 2009 at 19:46 UT (orbit 38158)

Figure 3.6. AP swath IS6 (Descending)



4. REFERENCES

- [1] Rosich, B., Meadows, P.J, Monti-Guarnieri, A., D’Aria, D., Tranfaglia, M., Santuari, M. & Navas, I., 2007, ‘Review of ASAR Performance and Product Quality Evolution’, Proceedings of the Envisat Symposium, 23-27 April 2007, Montreux, Switzerland.