S C I A M A C H Y	Operation Change Request	OCR No: 040
		Issue:

Title: CEOS/GEOMON Campaign for NO2

Description of Request:
Between 8 June and 19 July to optimise the number of nadir pixels overlapping Cabauw (51.6N, 4.6E). If the narrow swath overlaps Cabauw, the request is to have a nadir state with narrow swath over Cabauw.

Originator: Ankie Piters	Date of Issue: 20-1-2009	Signature: via e-mail 20-1-2009

Assessment of SSAG (necessary for requests by scientists):
The CEOS/GEOMON campaign in Cabauw has a special focus to characterise the quality of tropospheric NO2 measurements. Many groups will measure trop. NO2 and related parameters on ground (MAX-DOAS, in-situ, LIDAR etc.) to evaluate in detail trop. NO2 from satellites (GOME-2, OMI, SCIAMACHY). This is therefore a very unique opportunity to assess the quality of trop. NO2 derived from SCIAMACHY and the proposed narrow swath observations will help to draw detailed conclusions. The OCR is therefore recommended for investigation and implementation.

SSAG: H. Bovensmann	Date: 23.3.2009	Signature: e-mail, 23.3.2009

Classification of OCR:

OCR Analysis (incl. Implementation Option):
The implementation of this OCR requires two steps:
- finetuning the execution of sequence 1/sequence 2 timelines such that a maximum number of nadir states over Cabauw is achieved (as for previous OCRs)
- whenever Cabauw lies within a nadir small swath width (about $\pm$ 60 km across track), the nominal nadir wide swath state shall be replaced by the corresponding nadir small swath state.

Between June 8th and July 19th the wide swath nadir states with indices 1 (ID1), 2 (ID2) in the ascending part of the orbit and 10 (ID6), 11 (ID6), 12 (ID7) in the descending part of the orbit could cover Cabauw. They would be replaced by small swath nadir states ID9, ID10, ID14 and ID15. These states shall become part of two new test timelines (sequence 1 and sequence 2) but only for those nadir indices coinciding with Cabauw. All other wide swath nadir states remain untouched. If Cabauw cannot be covered with a small swath nadir state, no nadir state exchange shall occur.

SOST: M. Gottwald, DLR-IMF (ESA, Industry if necessary)	Date: 11/03/2009	Signature: via e-mail 11/03/2009

Approval of Proposed Implementation:

Originator Approval: A. Piters, KNMI	Date: 24/04/2009	Signature: via e-mail 24/04/2009
SSAG Approval: H. Bovensmann	Date: 23.3.2009	Signature: e-mail, 23.3.2009

Decision / Approval:
OCR shall be implemented as proposed.

DLR Approval: A. Friker	Date: 09.04.2009	Signature: e-mail, 09.04.2009

Implementation by SOST:

The author of this OCR has specified that only coverages in the descending part of the orbit shall be considered (24/04/2009).

In the first step the limb/nadir sequences 1 and 2 were adjusted such that whenever possible a nadir state covers Cabauw. In total 28 suitable orbits were identified between June 8th and July 19th.

The detailed analysis of the second step showed that only one nadir state is executed over Cabauw. This is state ID6 (11th nadir state in the timeline 47). Whenever Cabauw lies at the subsatellite track of ENVISAT state ID6 is replaced by state ID14 (same PET settings, swath width 120 km) and one test timeline is specified replacing, for the duration of this OCR, the nominal timelines 47 (t/l 29 replaces t/l 47) for descending matches. In total 3 orbits with a small swath nadir state over Cabauw could be obtained. For the rest of the 28 orbits the nominal wide swath nadir state is scheduled over Cabauw.

The annex lists all orbits with nadir Cabauw coverage. Wide and small swath opportunitiest can be identified. In the descending part Cabauw coverage occurst about 2080 sec after ANX.

SOST: M. Gottwald, DLR-IMF	Date: 27/04/2009	Signature: via e-mail 23/04/2009

Annex:

Orbit	Date	ANX Time (UTC)	Swath
38038	09-JUN-2009	10:03:47,9	wide
38052	10-JUN-2009	09:32:10,9	wide
38081	12-JUN-2009	10:09:32,8	wide
38095	13-JUN-2009	09:37:55,8	wide
38124	15-JUN-2009	10:15:17,7	wide
38138	16-JUN-2009	09:43:40,7	wide
38167	18-JUN-2009	10:21:02,6	wide
38181	19-JUN-2009	09:49:25,6	small
38224	22-JUN-2009	09:55:10,6	wide
38238	23-JUN-2009	09:23:33,5	wide
38267	25-JUN-2009	10:00:55,5	wide
38281	26-JUN-2009	09:29:18,5	wide
38310	28-JUN-2009	10:06:40,4	wide
38324	29-JUN-2009	09:35:03,4	wide
38353	01-JUL-2009	10:12:25,3	wide
38367	02-JUL-2009	09:40:48,3	wide
38396	04-JUL-2009	10:18:10,2	wide
38410	05-JUL-2009	09:46:33,2	small
38424	06-JUL-2009	09:14:56,2	wide
38439	07-JUL-2009	10:23:55,1	wide
38453	08-JUL-2009	09:52:18,1	small
38467	09-JUL-2009	09:20:41,1	wide
38496	11-JUL-2009	09:58:03,0	wide
38510	12-JUL-2009	09:26:26,0	wide
38539	14-JUL-2009	10:03:47,9	wide
38553	15-JUL-2009	09:32:10,9	wide
38582	17-JUL-2009	10:09:32,8	wide
38596	18-JUL-2009	09:37:55,8	wide

Table: ENVISAT orbits with Cabauw coverage between June 8th and July 19th

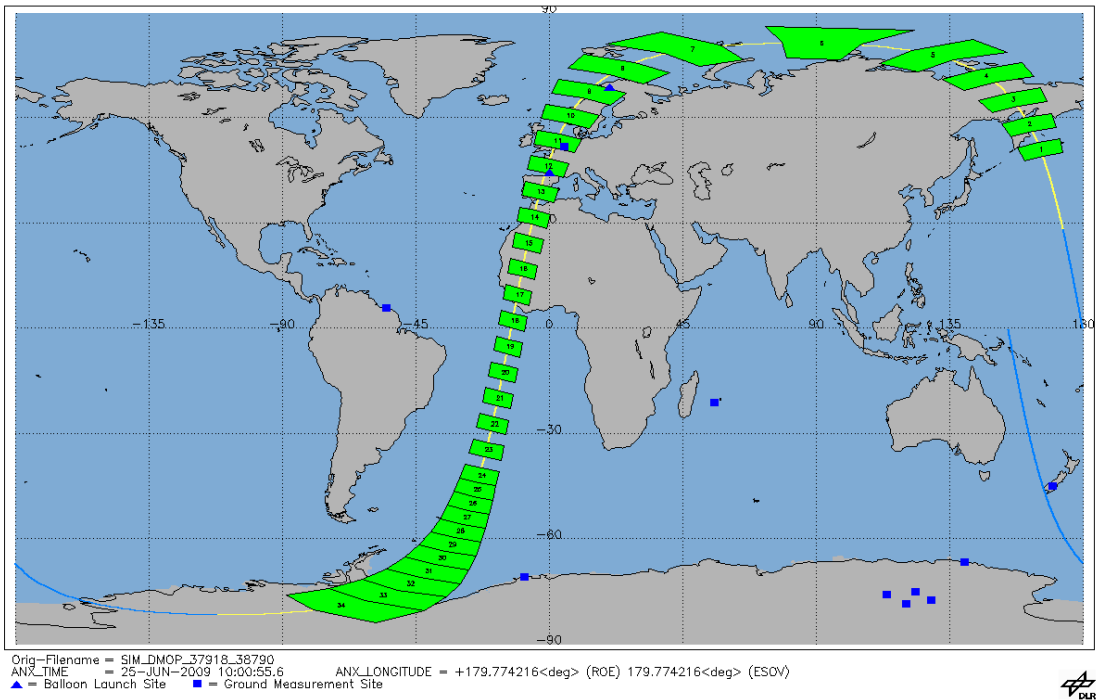SCIAMACHY Swath Geolocation Display for Nadir in Orbit 38267

Fig. 1: Example of nadir wide swath coverage over Cabauw
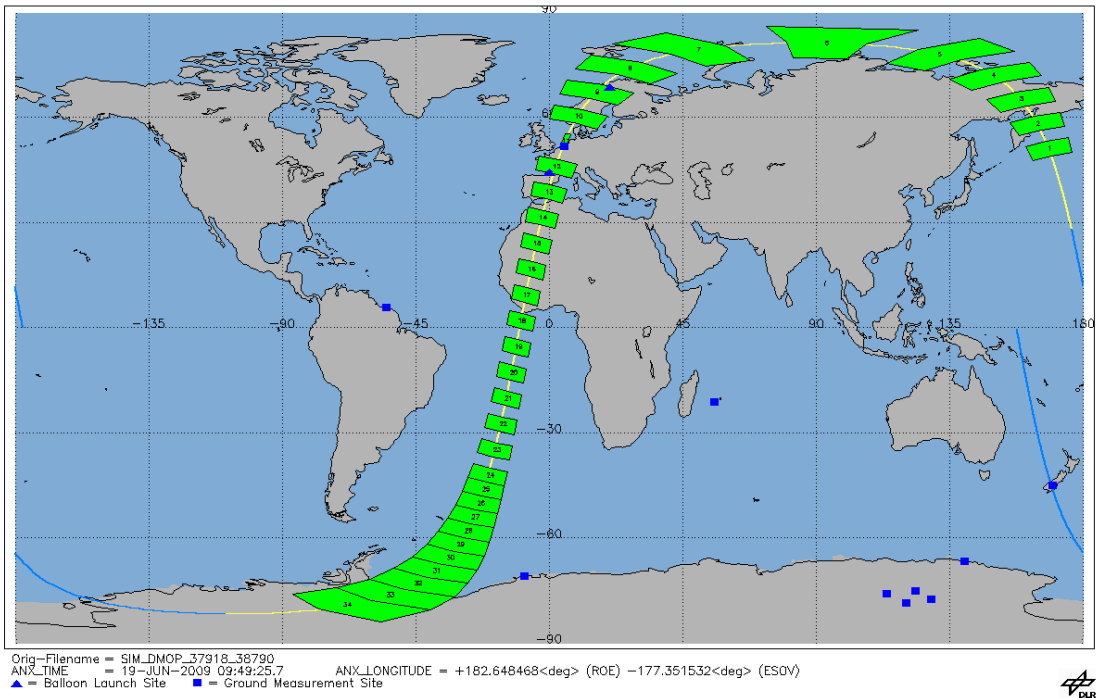
SCIAMACHY Swath Geolocation Display for Nadir in Orbit 38181

Fig. 2: Example of nadir small swath coverage over Cabauw