	<h2>Operation Change Request</h2>	OCR No: 054
		Issue:
Title: ELGIN Improved Coverage		
<p>Description of Request: To support estimates of CH₄ release into the atmosphere due to the severe gas leak at the Elgin Well Head Platform, it is requested to optimise the number of nadir pixels overlapping with the platform ELGIN (1.84°E, 57.01°N) and its surrounding (50 - 100 km). If the nadir narrow swath (120 km) overlaps ELGIN, the request is to have a nadir state with narrow swath over ELGIN for May 2012.</p> <p>http://www.telegraph.co.uk/finance/newsbysector/energy/9166853/North-Sea-gas-leak-sea-bubbling-under-platform.html</p>		
Originator: Michael Buchwitz	Date of Issue: 29-3-2012	Signature: via e-mail 29-3-2012
<p>Assessment of SSAG (necessary for requests by scientists): According to initial estimates the gas leakage rate is in the order of some 50kT/year, which will result - depending on wind speed - in CH₄ total column increase of up to a few 1/10 of a percent. With that and taking current channel 6+ detector performance into account there exists a small probability to quantify or at least give an upper estimate of the release CH₄ using SCIAMACHY data. As this is a very unique opportunity, the investigation of implementation options and implementation of appropriate coverage is strongly recommended, assuming that it does not affect monthly calibration or instrument safety and health.</p> <p>http://www.theoildrum.com/node/9072?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+theoildrum+%28The+Oil+Drum%29&utm_content=Google+Reader</p>		
SSAG: H. Bovensmann	Date: 29.3.2012	Signature: e-mail, 29.3.2012
Classification of OCR:		

ELGIN_improved_coverage

OCR Analysis (incl. Implementation Option):

This OCR requires timeline modifications. The ELGIN platform is located where in the May period the 21st-23rd (t/l 50) and 22nd-24th (t/l 47) states in the nominal timelines (matching limb/nadir on the orbit dayside) are executed. They consist of the state nad06 and limb05.

For improving the nadir coverage 2 new test timelines are created where in the timelines (t/l 06_47_02 and t/l_06_50_02) these particular states are replaced by state nad14 (small swath). This provides continuous nadir small swath coverage over the North Sea. Both timelines are scheduled whenever the ENVISAT overpass leads exactly over the ELGIN platform. The timelines are given in annex 1.

Notes:

- A new timeline set 06 is required as a measure of precaution in case small swath measurements should be extended to June. Then using only t/l set 09 would lead to a mismatch with the Venus transit observations which are planned for early June.
- General rule is that whenever an ELGIN visibility orbit falls into a period with lunar occultation measurements, the monthly blocks of limb_mesosphere_lower_thermosphere observations or a subsolar calibration orbit, the exchange of timelines is omitted. Defining and handling the wealth of corresponding timelines for such periods is beyond the capabilities of the currently operating ENVISAT/SCIAMACHY mission planning system. However this rule is not applied in May when the first ELGIN observation falls into the lunar window and one orbit with a lunar occultation is used. Omitting this opportunity on May 3rd would yield measurements rather late (May 11th) such that a decision for an extension into the June timeframe would occur too late for updating the June planning.
- If measurements from OCR_054 continue into the June/July/August timeframe the t/l set 06 test timelines have to be adjusted to account for seasonal effects (earlier sunrise, i.e. North Sea overpass occurs for different nadir states).

SOST: M. Gottwald, DLR-IMF	Date: 02/04/2012	Signature: via e-mail 02/04/2012
----------------------------	------------------	----------------------------------

Approval of Proposed Implementation:

ASAP implementation of two timelines (t/l 06_47_02 and t/l_06_50_02) with small swath over ELGIN recommended. Increase North Sea coverage with nominal large swath not recommended for implementation.

Originator Approval: M. Buchwitz	Date: 30.3.2012	Signature: e-mail, 30.3.2012
-------------------------------------	-----------------	------------------------------

SSAG Approval: H. Bovensmann	Date: 30.3.2012	Signature: :e-mail, 30.3.2012
---------------------------------	--------------------	----------------------------------

Decision / Approval:

With respect to the uniqueness of the situation the OCR is approved although the skipped lunar calibration is in formal disagreement with the SSAG assessment saying "the investigation of implementation options and implementation of appropriate coverage is strongly recommended, assuming that it does not affect monthly calibration".

DLR Approval: (if necessary NIVR, SPEC) A. Friker	Date: 03/04/2012	Signature: A. Friker via e-mail 03/04/2012
---	---------------------	---

Implementation by SOST:

The two test timelines (06_47_02 and 06_50_02) with three consecutive state 14 executions are generated and submitted to FOCC. They are used in an OSDF for May triggering 4x the corresponding t/l exchanges for orbits 53226, 53341, 53384 and 53499 (annex 2 and 3). The first small swath measurement over the North Sea shall occur on May 3rd.

SOST: M. Gottwald, DLR-IMF	Date: 04/04/2012	Signature: via e-mail 04/04/2012
----------------------------	------------------	----------------------------------

ELGIN_improved_coverage

Annex 1: Timelines for improved ELGIN coverage

H:\scia\Timing\Timeline_set_06\Tl_06_47_02.xls		SOC_end_ecl_beg_limb_nadir_sq1_small_ocr054		Table start ID =	2945	Event_type =	n/a
DURATION <s>=	3895.12109375	DTX0 <s>=	n/a	DTX1 <s>=	n/a	DTX2 <s>=	n/a
SCHED_TYPE =	NF_FB	GEO_TYPE =	n/a	GEO_NUM <>=	n/a	FOV_CHECK =	NO
RATE_TYPE =	LOW	DTX3 <s>=	n/a	DTX4 <s>=	n/a	TL_PAD <s>=	1.00000000
State Running Index	State ID	State Description	State TT (relative, ct)	State TT (relative, sec)	Start Time (absolute, sec) T1 +	State Duration (sec)	End Time (absolute, sec) T1 +
		T/L setup			0	2,77	
1	29	limb02	709	2,77	2,77	54,18	56,95
2	29	limb02	13871	54,18	56,95	54,18	111,14
3	29	limb02	13871	54,18	111,14	54,18	165,32
4	29	limb02	13871	54,18	165,32	54,18	219,50
5	1	nad01	13871	54,18	219,50	68,56	288,06
6	30	limb03	17551	68,56	288,06	54,18	342,25
7	2	nad02	13871	54,18	342,25	68,56	410,80
8	30	limb03	17551	68,56	410,80	54,18	464,99
9	3	nad03	13871	54,18	464,99	68,56	533,55
10	31	limb04	17551	68,56	533,55	54,18	587,73
11	3	nad03	13871	54,18	587,73	68,56	656,29
12	31	limb04	17551	68,56	656,29	54,18	710,47
13	4	nad04	13871	54,18	710,47	68,56	779,03
14	32	limb05	17551	68,56	779,03	54,18	833,21
15	5	nad05	13871	54,18	833,21	68,56	901,77
16	32	limb05	17551	68,56	901,77	54,18	955,96
17	5	nad05	13871	54,18	955,96	68,56	1024,52
18	32	limb05	17551	68,56	1024,52	54,18	1078,70
19	6	nad06	13871	54,18	1078,70	68,56	1147,26
20	32	limb05	17551	68,56	1147,26	54,18	1201,44
21	6	nad06	13871	54,18	1201,44	68,56	1270,00
22	14	nad14	17551	68,56	1270,00	68,56	1338,56
23	14	nad14	17551	68,56	1338,56	68,56	1407,12
24	14	nad14	17551	68,56	1407,12	68,56	1475,68
25	6	nad06	17551	68,56	1475,68	68,56	1544,23
26	32	limb05	17551	68,56	1544,23	54,18	1598,42
27	7	nad07	13871	54,18	1598,42	68,56	1666,98
28	32	limb05	17551	68,56	1666,98	54,18	1721,16
29	7	nad07	13871	54,18	1721,16	68,56	1789,72
30	32	limb05	17551	68,56	1789,72	54,18	1843,90
31	7	nad07	13871	54,18	1843,90	68,56	1912,46
32	32	limb05	17551	68,56	1912,46	54,18	1966,64
33	7	nad07	13871	54,18	1966,64	68,56	2035,20
34	32	limb05	17551	68,56	2035,20	54,18	2089,39
35	7	nad07	13871	54,18	2089,39	68,56	2157,95
36	32	limb05	17551	68,56	2157,95	54,18	2212,13
37	7	nad07	13871	54,18	2212,13	68,56	2280,69
38	32	limb05	17551	68,56	2280,69	54,18	2334,87
39	6	nad06	13871	54,18	2334,87	68,56	2403,43
40	32	limb05	17551	68,56	2403,43	54,18	2457,61
41	6	nad06	13871	54,18	2457,61	68,56	2526,17
42	31	limb04	17551	68,56	2526,17	54,18	2580,36
43	6	nad06	13871	54,18	2580,36	68,56	2648,91
44	31	limb04	17551	68,56	2648,91	54,18	2703,10
45	6	nad06	13871	54,18	2703,10	68,56	2771,66
46	31	limb04	17551	68,56	2771,66	54,18	2825,84
47	5	nad05	13871	54,18	2825,84	68,56	2894,40
48	30	limb03	17551	68,56	2894,40	54,18	2948,58
49	5	nad05	13871	54,18	2948,58	68,56	3017,14
50	33	limb06	17551	68,56	3017,14	54,18	3071,32
51	4	nad04	13871	54,18	3071,32	68,56	3139,88
52	4	nad04	17551	68,56	3139,88	68,56	3208,44
53	3	nad03	17551	68,56	3208,44	68,56	3277,00
54	3	nad03	17551	68,56	3277,00	68,56	3345,56
55	3	nad03	17551	68,56	3345,56	68,56	3414,12
56	3	nad03	17551	68,56	3414,12	68,56	3482,68
57	2	nad02	17551	68,56	3482,68	68,56	3551,23
58	1	nad01	17551	68,56	3551,23	68,56	3619,79
59	1	nad01	17551	68,56	3619,79	68,56	3688,35
60	1	nad01	17551	68,56	3688,35	68,56	3756,91
61	1	nad01	17551	68,56	3756,91	68,56	3825,47
62	1	nad01	17551	68,56	3825,47	68,56	3894,03
63	End of Timeline	End of Timeline	17551	68,56			
64	End of Timeline	End of Timeline	0				
		T/L Cleanup	996871		3894,03	0,09	3894,12

Table 1: Timeline 06_47_02 (limb/nadir matching sequence 1, small swath)

ELGIN_improved_coverage

H:\scia\Timing\Timeline_set_06\06_50_02.xls		SOC_end_ecl_beg_limb_nadir_sq2_small_ocr054		Table start ID =	3137	Event_type =	n/a
DURATION <s>=	3909.49609375	DTX0 <s>=	n/a	DTX1 <s>=	n/a	DTX2 <s>=	n/a
SCHED_TYPE =	NF_FB	GEO_TYPE =	n/a	GEO_NUM <>=	n/a	FOV_CHECK =	NO
RATE_TYPE =	LOW	DTX3 <s>=	n/a	DTX4 <s>=	n/a	TL_PAD <s>=	1.00000000
State Running Index	State ID	State Description	State TT (relative, sec)	State TT (relative, ct)	Start Time (absolute, sec) T1 +	State Duration (sec)	End Time (absolute, sec) T1 +
		T/L setup			0	2.77	
1	29	limb02	709	2.77	2.77	54.18	56.95
2	29	limb02	13871	54.18	56.95	54.18	111.14
3	29	limb02	13871	54.18	111.14	54.18	165.32
4	1	nad01	13871	54.18	165.32	68.56	233.88
5	30	limb03	17551	68.56	233.88	54.18	288.06
6	1	nad01	13871	54.18	288.06	68.56	356.62
7	30	limb03	17551	68.56	356.62	54.18	410.80
8	3	nad03	13871	54.18	410.80	68.56	479.36
9	30	limb03	17551	68.56	479.36	54.18	533.55
10	3	nad03	13871	54.18	533.55	68.56	602.11
11	31	limb04	17551	68.56	602.11	54.18	656.29
12	4	nad04	13871	54.18	656.29	68.56	724.85
13	32	limb05	17551	68.56	724.85	54.18	779.03
14	4	nad04	13871	54.18	779.03	68.56	847.59
15	32	limb05	17551	68.56	847.59	54.18	901.77
16	5	nad05	13871	54.18	901.77	68.56	970.33
17	32	limb05	17551	68.56	970.33	54.18	1024.52
18	6	nad06	13871	54.18	1024.52	68.56	1093.07
19	32	limb05	17551	68.56	1093.07	54.18	1147.26
20	6	nad06	13871	54.18	1147.26	68.56	1215.82
21	14	nad14	17551	68.56	1215.82	68.56	1284.38
22	14	nad14	17551	68.56	1284.38	68.56	1352.93
23	14	nad14	17551	68.56	1352.93	68.56	1421.49
24	6	nad06	17551	68.56	1421.49	68.56	1490.05
25	32	limb05	17551	68.56	1490.05	54.18	1544.23
26	6	nad06	13871	54.18	1544.23	68.56	1612.79
27	32	limb05	17551	68.56	1612.79	54.18	1666.98
28	7	nad07	13871	54.18	1666.98	68.56	1735.54
29	32	limb05	17551	68.56	1735.54	54.18	1789.72
30	7	nad07	13871	54.18	1789.72	68.56	1858.28
31	32	limb05	17551	68.56	1858.28	54.18	1912.46
32	7	nad07	13871	54.18	1912.46	68.56	1981.02
33	32	limb05	17551	68.56	1981.02	54.18	2035.20
34	7	nad07	13871	54.18	2035.20	68.56	2103.76
35	32	limb05	17551	68.56	2103.76	54.18	2157.95
36	7	nad07	13871	54.18	2157.95	68.56	2226.50
37	32	limb05	17551	68.56	2226.50	54.18	2280.69
38	6	nad06	13871	54.18	2280.69	68.56	2349.25
39	32	limb05	17551	68.56	2349.25	54.18	2403.43
40	6	nad06	13871	54.18	2403.43	68.56	2471.99
41	32	limb05	17551	68.56	2471.99	54.18	2526.17
42	6	nad06	13871	54.18	2526.17	68.56	2594.73
43	31	limb04	17551	68.56	2594.73	54.18	2648.91
44	6	nad06	13871	54.18	2648.91	68.56	2717.47
45	31	limb04	17551	68.56	2717.47	54.18	2771.66
46	6	nad06	13871	54.18	2771.66	68.56	2840.21
47	31	limb04	17551	68.56	2840.21	54.18	2894.40
48	5	nad05	13871	54.18	2894.40	68.56	2962.96
49	30	limb03	17551	68.56	2962.96	54.18	3017.14
50	4	nad04	13871	54.18	3017.14	68.56	3085.70
51	4	nad04	17551	68.56	3085.70	68.56	3154.26
52	3	nad03	17551	68.56	3154.26	68.56	3222.82
53	3	nad03	17551	68.56	3222.82	68.56	3291.38
54	3	nad03	17551	68.56	3291.38	68.56	3359.93
55	3	nad03	17551	68.56	3359.93	68.56	3428.49
56	2	nad02	17551	68.56	3428.49	68.56	3497.05
57	1	nad01	17551	68.56	3497.05	68.56	3565.61
58	1	nad01	17551	68.56	3565.61	68.56	3634.17
59	1	nad01	17551	68.56	3634.17	68.56	3702.73
60	1	nad01	17551	68.56	3702.73	68.56	3771.29
61	1	nad01	17551	68.56	3771.29	68.56	3839.84
62	1	nad01	17551	68.56	3839.84	68.56	3908.40
63	End of Timeline	End of Timeline	17551	68.56			
64	End of Timeline	End of Timeline	0				
		T/L Cleanup	1000551		3908.40	0.09	3908.50

Table 2: Timeline 06_50_02 (limb/nadir matching sequence 2, small swath)

ELGIN_improved_coverage

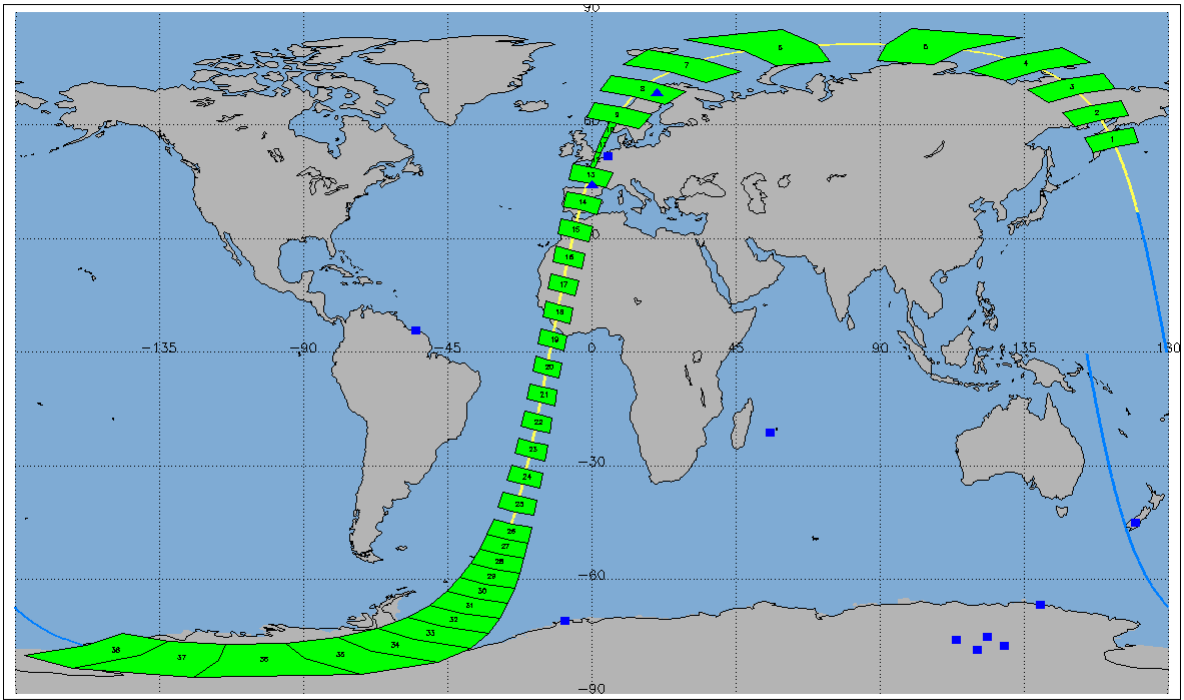
Annex 2: ENVISAT orbits with ELGIN coverage (April 16th – August 31st)

Orbit	Date	ANX (UTC)	ANX Longitude
52996	17-APR-2012	09:56:14,5	182,692887
53025	19-APR-2012	10:22:58,4	176,010752
53068	22-APR-2012	10:12:57,2	178,516553
53111	25-APR-2012	10:02:55,9	181,022353
53140	27-APR-2012	10:29:39,8	174,340219
53183	30-APR-2012	10:19:38,5	176,846019
53226	03-MAY-2012	10:09:37,3	179,351820
53269	06-MAY-2012	09:59:36,1	181,857620
53298	08-MAY-2012	10:26:19,9	175,175486
53341	11-MAY-2012	10:16:18,7	177,681286
53384	14-MAY-2012	10:06:17,4	180,187087
53427	17-MAY-2012	09:56:16,2	182,692887
53456	19-MAY-2012	10:23:00,0	176,010752
53499	22-MAY-2012	10:12:58,8	178,516553
53542	25-MAY-2012	10:02:57,6	181,022353
53571	27-MAY-2012	10:29:41,4	174,340219
53614	30-MAY-2012	10:19:40,2	176,846019
53657	02-JUN-2012	10:09:38,9	179,351820
53700	05-JUN-2012	09:59:37,7	181,857620
53729	07-JUN-2012	10:26:21,5	175,175486
53772	10-JUN-2012	10:16:20,3	177,681286
53815	13-JUN-2012	10:06:19,1	180,187087
53858	16-JUN-2012	09:56:17,8	182,692887
53887	18-JUN-2012	10:23:01,7	176,010752
53930	21-JUN-2012	10:13:00,4	178,516553
53973	24-JUN-2012	10:02:59,2	181,022353
54002	26-JUN-2012	10:29:43,0	174,340219
54045	29-JUN-2012	10:19:41,8	176,846019
54088	02-JUL-2012	10:09:40,6	179,351820
54131	05-JUL-2012	09:59:39,4	181,857620
54160	07-JUL-2012	10:26:23,2	175,175486
54203	10-JUL-2012	10:16:21,9	177,681286
54246	13-JUL-2012	10:06:20,7	180,187087
54289	16-JUL-2012	09:56:19,5	182,692887
54318	18-JUL-2012	10:23:03,3	176,010752
54361	21-JUL-2012	10:13:02,1	178,516553
54404	24-JUL-2012	10:03:00,9	181,022353
54433	26-JUL-2012	10:29:44,7	174,340219
54476	29-JUL-2012	10:19:43,5	176,846019
54519	01-AUG-2012	10:09:42,2	179,351820
54562	04-AUG-2012	09:59:41,0	181,857620
54591	06-AUG-2012	10:26:24,8	175,175486
54634	09-AUG-2012	10:16:23,6	177,681286
54677	12-AUG-2012	10:06:22,4	180,187087
54720	15-AUG-2012	09:56:21,1	182,692887
54749	17-AUG-2012	10:23:05,0	176,010752
54792	20-AUG-2012	10:13:03,7	178,516553
54835	23-AUG-2012	10:03:02,5	181,022353
54864	25-AUG-2012	10:29:46,3	174,340219
54907	28-AUG-2012	10:19:45,1	176,846019
54950	31-AUG-2012	10:09:43,9	179,351820

Table 3: ENVISAT orbits with ELGIN coverage between April 16th and August 31st. The blue entries are those where small swath measurements are possible.

ELGIN_improved_coverage

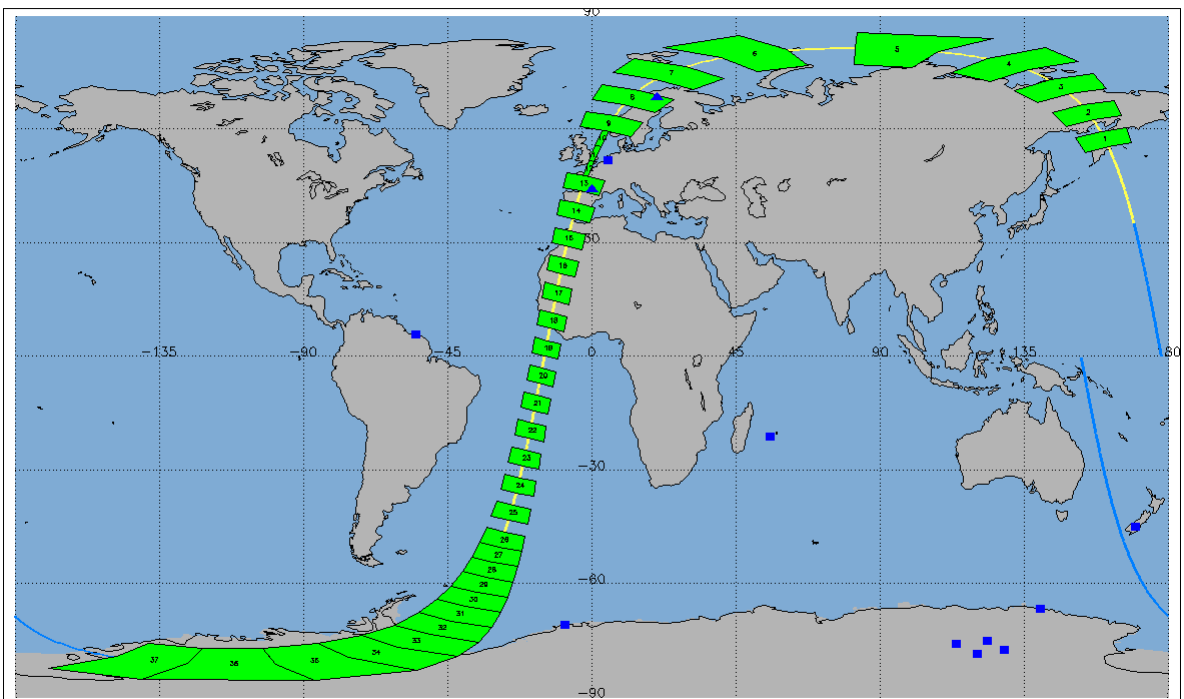
SCIAMACHY Swath Geolocation Display for Nadir in Orbit 53226



Orig-Filename = SIM_DMOP_53192_53636
ANX_TIME = 03-MAY-2012 10:09:37.3 ANX_LONGITUDE = +179.351822<deg> (ROE) 179.351822<deg> (ESOV)
▲ = Balloon Launch Site ■ = Ground Measurement Site



SCIAMACHY Swath Geolocation Display for Nadir in Orbit 53341

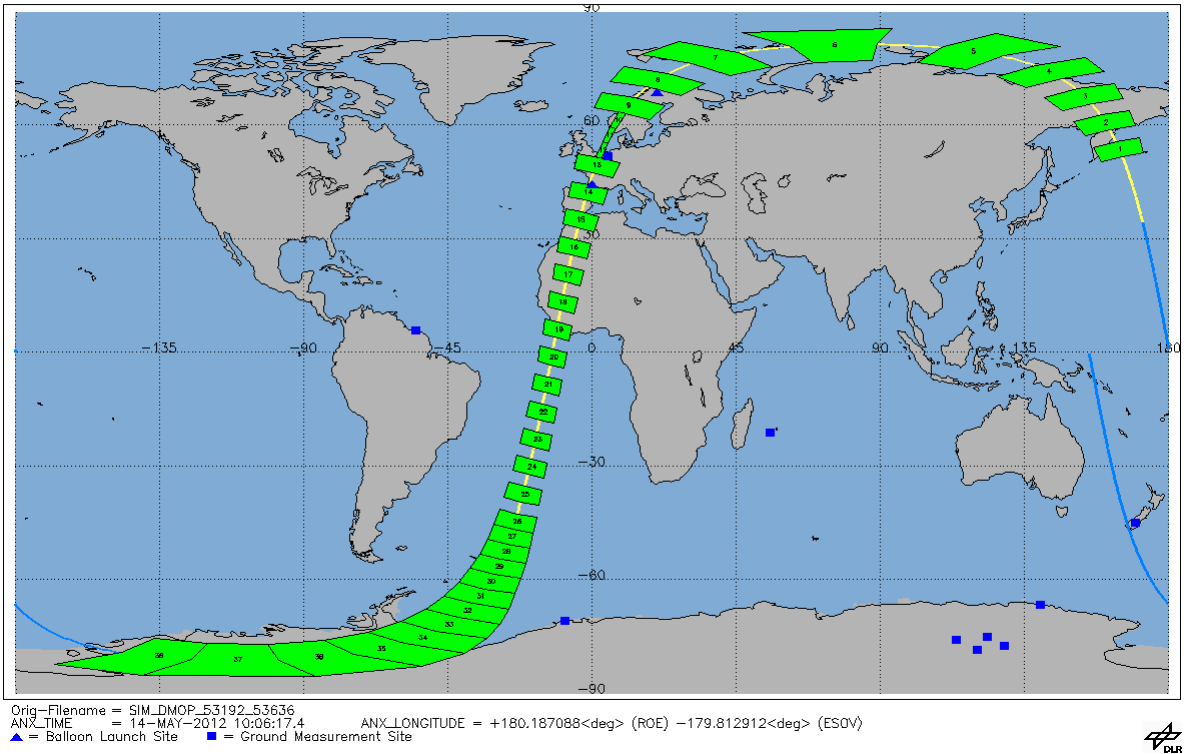


Orig-Filename = SIM_DMOP_53192_53636
ANX_TIME = 11-MAY-2012 10:16:18.6 ANX_LONGITUDE = +177.681290<deg> (ROE) 177.681290<deg> (ESOV)
▲ = Balloon Launch Site ■ = Ground Measurement Site



ELGIN_improved_coverage

SCIAMACHY Swath Geolocation Display for Nadir in Orbit 53384



SCIAMACHY Swath Geolocation Display for Nadir in Orbit 53499

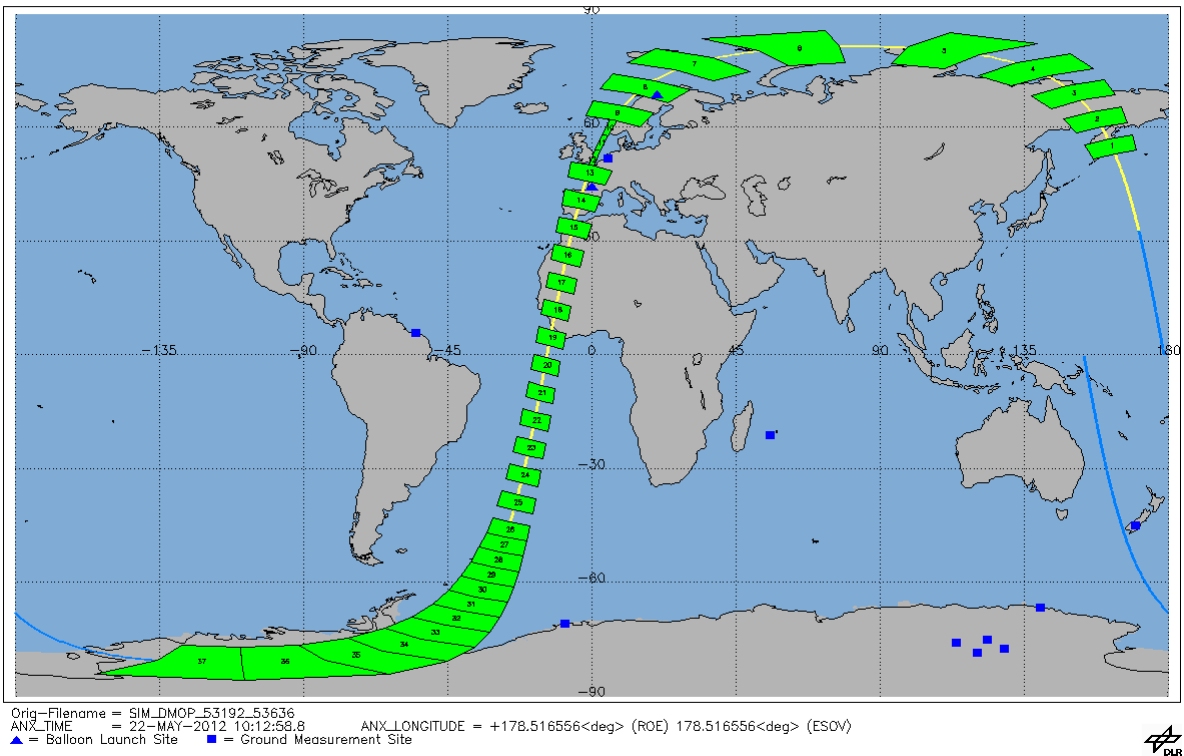


Fig. 1: The four ENVISAT orbits with North Sea coverage and small swath nadir states as a result of SOST's SCIAMACHY scheduling simulation.