

ANOMALIES (01.01.2010 - 31.12.2010)

On June 22 2003 the ERS-2 tape recorder became permanently unavailable due to a technical failure. The ERS-2 tape recorders were used to record the ERS-2 Low Rate mission globally. After eight years of continuous acquisition, this service was discontinued. The ERS-2 Low Rate mission has continued within the visibility of ESA ground stations over Europe, North Atlantic, the Arctic, Antarctica and western North America.

Additionally, the DLR Antarctic Receiving Station at the O'Higgins base has been providing GOME data in near-real time since 22 October 2003, allowing the continuation of the monitoring of the ozone hole over the South Pole. During the year 2006 two new stations have been added: Hobart (13 February 2006), and Singapore (18 October 2006). In 2007 the station of Chetumal (Mexico, 19 October 2007) has been added. In 2008 the station of Johannesburg (South Africa, 17 July 2008) has been added. Currently GOME data are acquired at the following ground stations:

Kiruna (Sweden), Maspalomas (Canary Islands, Spain), Gatineau and Prince Albert (Canada), McMurdo (Antarctica), Matera (Italy), Singapore, Beijing (China), Miami (USA), Chetumal (Mexico), Hobart (Tasmania), Johannesburg (South Africa), O'Higgins (Antarctica).

In 2008-2009 padded frames (frame 20) occurred (February-September 2008; from 18th December on) due to ATSR/IRR switch off. This feature disappeared after ATSR IRR switch on (3 February 2009, without heater and stirling coolers to minimize power consumption).

Special GOME operations such as the operational switch off/switch-on in time tag (on calendar days 04, 14, 24 each month) are continuing after the unavailability of the tape recorders. Nevertheless due to the non completeness of data, analysis of cooler switchings and instrument switch-offs cannot be completely performed and detailed information is missing in the tables below.

Quarterly calibration is operated in the following way:

5 Calibration orbits are scheduled for 28 January, 28 April, 28 July, 28 October each calendar year started in October 2004.

The yearly report gives an overview on Lamp Failures as well as on nominally executed calibration lamp sequences.

Since June 2009 a new daily report is published on the web at

[GOME/NEWDAILY/REPORTS/](#); past reports, starting from the year 2000, are also available on the same pages. We recommend to refer to such pages for detailed instrument/data information.

listed are:

1. single event upsets

2. patches of the on-board software

3. cooler switchings

4. list of datagaps due to anomalies or special GOME instrument operations

5. timeline interruption (operation in static nadir view)

6. narrow swath timeline GMNNOT41

7. commanding problems - incorrect timelines executions

8. moon measurements

9. lamp failures

10. Calibration Lamp Sequences without Lamp Failure

11. other events

single event upsets:

| Date | reason |
|-------------|---|
| 13-14/04/10 | GOME anomaly occurred $\frac{1}{2}$ from 13-Apr-2010 at ca 18:00 UTC, orbit 78323, to 14-Apr-2010 ca 17:00 UTC, orbit 78337 - Error on solar shutter The anomaly was solved with the Power Cycle executed $\frac{1}{2}$ in concomitance with GOME Narrow Swath operations |
| 21/04/10 | A GOME anomaly occurred $\frac{1}{2}$ at ca 15:00 UTC, orbit 78435, - anomalous high values FPA temp. Ch1 Ch2 Ch3 Ch4 The anomaly was cured with a power cycle at $\frac{1}{2}$ 16:28:32 UTC, orbit 78437; instrument back to normal starting from 16:39:27 (outside gs visibility) |
| 23/04/10 | GOME anomaly occurred after ca 13:00, orbit 78463, cured with a power cycle at 13:44:30, orbit 78463 |
| 21/07/10 | When GOME went back on an anomaly occurred $\frac{1}{2}$ from 09:34:30 $\frac{1}{2}$ to 12:07:23 orbits 79735-79736, 3xNack flag on, afterwards the data were back to nominal. |
| 24/09/10 | A GOME anomaly occurred from 18:37:37 to 19:51:19, orbits 80671-80672; scan mirror position at 268.1, data were back to nominal after the execution of a power cycle at 19:51:19. |
| 04/10/10 | A GOME anomaly occurred at 13:28:33 (in concomitance with the Narrow Swath Timeline execution), orbit 80811; after the execution of a power cycle at 14:36:20 data were back to nominal |
| 11/10/10 | GOME anomaly (SEU) starting from 01:31, orbit 80904; the anomaly was cured with a power cycle at 15:57:39, orbit 80912; afterwards data were back to normal. |
| 12/11/10 | $\frac{1}{2}$ GOME switched off from 00:34:25 to 09:02:54 due to the occurrence of some anomalous values |
| 22/11/10 | GOME anomaly (SEU) starting from 00:45:03, orbit 81505; the anomaly was cured with a power cycle at 08:59:12, orbit 81510; afterwards data were back to normal. |

patches of the on-board software: none

cooler switchings:

| Date | coolers off/on | maximum detector warm up temperature [Kelvin] |
|----------|---|--|
| 20/05/10 | 18:34:25 (outside gs visibility) Off $\frac{1}{2}$ $\frac{1}{2}$ 18:36:20 $\frac{1}{2}$ On | FPA 1: 279.1 FPA 2: 279.9 FPA 3: 279.5 FPA 4: 279.7 |
| 21/05/10 | 15:22:49 (outside gs visibility) Off $\frac{1}{2}$ $\frac{1}{2}$ 19:45:17 $\frac{1}{2}$ On | FPA 1: 279.2 FPA 2: 280.0 FPA 3: 279.6 FPA 4: 279.9 |

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|----------|--|--|
| 21/07/10 | 03:24 Off (outside gs visibility) 10:14 On | FPA 1: 273.4 FPA 2: 274.0 FPA 3: 273.6 FPA 4: 274.0 |
|----------|--|--|

list of datagaps due to anomalies or special GOME instrument operations: (For detailed information see monthly performance)

| Date | Orbit | duration (GOME off/start of nominal operations) | reason |
|-------------|-----------------|---|---|
| 30/01/10 | 77275 - 77278 | 12:11:50 - 18:07:40 | Data gap due to IDHT unavailability (ERS-2 Unavailability Report 2010005) |
| 09/02/10 | 77418 - 77419 | 12:54:50 - 14:14:53 | data gap due to Timeline Interruption (ERS-2 Unavailability Report ERS200007) |
| 13-14/04/10 | 78323 - 78337 | 13-Apr ca 18:00 - 14-Apr ca 17:00 | data gap due to GOME SEU |
| 21/04/10 | 78435 - 78437 | ca 15:00 - 16:39:27 | data gap due to GOME SEU |
| 23/04/10 | 78463 | ca 13:00 - 13:44:30 | data gap due to GOME SEU |
| 21/07/10 | 79731- 79735 | 03:24:42 - 09:26:42 | Missing data due to GOME OFF (ERS-2 Unav. Rep. 2010024) |
| 24/09/10 | 80671- 80672 | 18:37:37 - 19:51:19 | data gap due to GOME SEU |
| 04/10/10 | 80811 | 13:28:33 - 14:36:20 | data gap due to GOME SEU |
| 11/10/10 | 80904 - 80912 | 01:31 - 15:57:39 | data gap due to GOME SEU |
| 12/11/10 | 81361 - 81366 | 00:34:25 - 09:02:54 | Data gap due to GOME OFF |
| 22/11/10 | 81505 - 81510 | 00:45:03 - 08:59:12 | Data gap due to GOME OFF |

Timeline Interruption (operations in static nadir view):

| Date | Orbit No. | duration | reason |
|----------|---------------|-----------------------------------|---|
| 28/01/10 | 77243-77244 | Start: 07:00 Stop: 10:30 | GOME in Nadir Static View |
| 30/01/10 | 77278 - 77279 | Start 18:02:52 Stop 19:32:03 | GOME Timeline stopped /activated due to IDHT Unavailability (ERS-2 Unavailability Report 2010005) |
| 31/01/10 | 77289 | Start 11:11:59 Stop: 12:17:58 | GOME Timeline stopped /activated due to AMI anomaly (ERS-2 Unavailability Report 2010006) |
| 09/02/10 | 77418 - 77419 | Start: 12:54:50 Stop: 14:14:53 | GOME Timeline stopped /activated due to AMI Anomaly (ERS-2 Unavailability Report 2010007) |
| 28/02/10 | 77689 - 77690 | Start 11:59:21 Stop 12:34:55 | GOME Timeline stopped /activated due to AMI Anomaly (ERS-2 Unavailability Report 2010009) |

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|-----------|---------------|--|---|
| 07/03/10 | 77794 - 77795 | Start: 18:56:19 Stop: 20:36:55 | GOME Timeline stopped /activated due to RA Anomaly $i_c/2$ (ERS-2 Unavailability Report 2010010) |
| 19/05/10 | 78835 | Start: 12:49:16 Stop: 13:52:37 | GOME Timeline stopped /activated due to AMI Anomaly $i_c/2$ (ERS-2 Unavailability Report 2010013) |
| 08/072010 | 79549 - 79550 | Start: 10:05:55 Stop: 10:59:25 | Payload synchronization (ERS-2 Unavailability Report 2010021) |
| 21/07/10 | 79736-79737 | Start: 12:07:25 Stop: 12:32:03 | $i_c/2$ (ERS-2 Unavailability Report 2010024) |
| 22/07/10 | 79756 | Start: 20:56:14 Stop: 21:20:36 (outside gs visibility) | GOME Timeline stopped activated due to RA anomaly (ERS-2 Unavailability Report 2010026) |

Narrow Swath Timeline GMNNOT41

| Date | Orbit No. | Duration |
|-------------|---------------------|---------------------------------------|
| 04-0/01/10 | 76904 - 76917 | ~15:00 (04/01/10) - ~12:00 (05/01/10) |
| 14-15/01/10 | 77046 - 77059 | ~12:30 (14/01/10) - ~10:00 (15/01/10) |
| 24-25/01/10 | 77190 - 77203 | ~14:00 (24/01/10) - ~12:00 (25/01/10) |
| 04-0/02/10 | 77346 - 77361 | ~11:30 (04/02/10) - ~12:30 (05/02/10) |
| 14-15/02/10 | 77490 - 77503 | ~13:00 (14/02/10) - ~11:00 (15/02/10) |
| 24-25/02/10 | 77634 - 77648 | ~14:00 (24/02/10) - ~14:00 (25/02/10) |
| 04-05/03/10 | 77740 - 77763 | ~17:00 (04/03/10) - ~14:30 (05/03/10) |
| 14-15/03/10 | 77892 - 77908 | ~15:00 (14/03/10) - ~18:00 (15/03/10) |
| 24-25/03/10 | 78036 - 78049 | ~17:00 (24/03/10) - ~14:00 (25/03/10) |
| 04-05/04/10 | 78196 - 78209 | ~12:00 (04/04/10) - ~18:00 (05/04/10) |
| 14-15/04/10 | 78337 - 78352 | ~19:00 (14/04/10) - ~18:00 (15/04/10) |
| 24-25/04/10 | 78482 - 78495 | ~20:30 (24/04/10) - ~18:00 (25/04/10) |
| 04-05/05/10 | 78624 - 78638 | ~18:30 (04/05/10) - ~18:30 (05/05/10) |
| 14-15/05/10 | 78768 - 78781 | ~20:00 (14/05/10) - ~17:30 (15/05/10) |
| 21-25/05/10 | 78868 - 78924 | ~21:00 (21/05/10) - ~19:00 (25/05/10) |
| 04-05/06/10 | 79068 - 79080 | ~18:30 (04/06/10) - ~16:00 (05/06/10) |
| 14-15/06/10 | 79212 - 79225 | ~20:00 (14/06/10) - ~18:00 (15/06/10) |
| 24-25/06/10 | 79354 - 79369 | ~18:00 (24/06/10) - ~20:00 (25/06/10) |
| 04-05/07/10 | 79498 $i_c/2$ 79512 | ~20:00 (04/07/10) - ~18:30 (05/07/10) |
| 14-15/07/10 | 79642 - 79655 | ~21:30 (14/07/10) - ~19:00 (15/07/10) |
| 24-25/07/10 | 79784- 79797 | ~19:00 (24/07/10) - ~18:00 (25/07/10) |
| 04-05/08/10 | 79942 - 79955 | ~20:00 (04/08/10) - ~18:00 (05/08/10) |
| 14-15/08/10 | 80084 - 80098 | ~18:30 (14/08/10) - ~18:30 (15/08/10) |
| 21-25/08/10 | 80228 - 80242 | ~19:30 (21/08/10) - ~19:00 (25/08/10) |
| 04-05/09/10 | 80386 - 80399 | ~21:00 (04/09/10) - ~19:00 (05/09/10) |
| 14-15/09/10 | 80528 - 80542 | ~19:00 (14/09/10) - ~18:30 (15/09/10) |
| 24-25/09/10 | 80672 - 80685 | ~20:00 (21/09/10) - ~18:00 (25/09/10) |
| 04-05/10/10 | 80812 - 80827 | ~15:00 (04/10/10) - ~15:30 (05/10/10) |
| 14-15/10/10 | 80956 - 80969 | ~16:00 (14/10/10) - ~14:00 (15/10/10) |
| 24-25/10/10 | 81100 - 81113 | ~18:00 (21/10/10) - ~17:00 (25/10/10) |
| 04-05/11/10 | 81254 - 81269 | ~12:00 (04/11/10) - ~13:00 (05/11/10) |

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| 14-15/11/10 | 81398 - 81411 | ~13:30 (14/11/10) - ~12:00 (15/11/10) |
| 24-25/11/10 | 81542 - 81555 | ~15:00 (21/11/10) - ~12:00 (25/11/10) |
| 04-05/12/10 | 81684 - 81696 | ~13:00 (04/12/10) - ~10:00 (05/12/10) |
| 14-15/12/10 | 81828 - 81841 | ~14:00 (14/12/10) - ~12:00 (15/12/10) |
| 24-25/12/10 | 81970 - 81983 | ~12:00 (21/12/10) - ~10:00 (25/12/10) |

Commanding Problems i_c^{1/2} Incorrect Timelines Executions:

| Date | Orbit No. | Duration | remark |
|----------|-----------|----------|---|
| 07/04/10 | | | Removal of i _c ^{1/2} Solar Calibration Timeline |
| 21/05/10 | | | Narrow Swath activated after GOME Switch-off |

Moon Measurements: none

Lamp Failures:

| Date | Lamp Failure / Orbit | remark |
|----------|--|---|
| 29/04/10 | Lamp Failure (no. 263) Orbit 78543 | Lamp Failure occurred during quarterly calibration Start 03:13:44 (no visibility gs) Stop 03:14:00 |
| 29/04/10 | Lamp Failure (no. 264) Orbit 78543 | Lamp Failure occurred during quarterly calibration Start 04:09:53 (no visibility gs) Stop 04:17:04 |
| 29/04/10 | Lamp Failure (no. 265) Orbit 78544 | Lamp Failure occurred during quarterly calibration Start 04:54:34 Stop 05:01:30 (no visibility gs) |
| 29/04/10 | Lamp Failure (no. 266) Orbit 78544 | Lamp Failure occurred during quarterly calibration Start 05:19:36 (no visibility gs) Stop 05:22:15 |
| 29/04/10 | Lamp Failure (no. 267) Orbit 78545 | Lamp Failure occurred during quarterly calibration Start 05:57:16 (no visibility gs) Stop 05:57:40 |
| 28/10/10 | Lamp Failure (no. 268) Orbit 81157 | Lamp Failure occurred during quarterly calibration Start 17:12:20 (no visibility gs) Stop 17:15:16 |
| 28/10/10 | Lamp Failure (no. 269) Orbit 81157 | Lamp Failure occurred during quarterly calibration Start 17:29:37 (no visibility gs) Stop 17:30:58 |

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| 28/10/10 | Lamp Failure (no. 270) Orbit 81157 | Lamp Failure occurred during quarterly calibration Start 17:52:34½ (no visibility gs) Stop 17:53:10 |
| 28/10/10 | Lamp Failure (no. 271) Orbit 81158 | Lamp Failure occurred during quarterly calibration Start 19:07:27 (no visibility gs) Stop 19:11:30 |
| 28/10/10 | Lamp Failure (no. 272) Orbit 81159 | Lamp Failure occurred during quarterly calibration Start 20:47:07 (no visibility gs) Stop 20:52:07 |
| 12/11/10 | Lamp Failure (no. 273) Orbit 81367 | Lamp Failure occurred at restart Start 09:51:58 (no visibility gs) Stop 09:52:16 (no visibility gs) |

Calibration Lamp Sequences without Lamp Failure:

| Date | Orbit | remark |
|----------|-------|--|
| 28/01/10 | 77246 | Start 12:22:36 Stop 12:32:31 GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77247 | Start 14:03:13 Stop after 14:06:11 (no visibility gs) GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77248 | Start 15:12:37 Stop after 15:21:12 (no visibility gs) GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77248 | Start 15:43:49 Stop 15:53:42 GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77248 | Start 16:53:14 Stop 16:55:14 GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77249 | Start before 17:09:42 (no visibility gs) stop 17:12:03 ½GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77249 | Start before 17:31:03 (no visibility gs) stop 17:34:18 31 GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77250 | Start before 18:47:44 (no visibility gs) stop 18:52:40 GOOD Lamp cal measurements, no instability |
| 28/01/10 | 77251 | Start before 20:26:52 (no visibility gs) stop 20:33:15 GOOD Lamp cal measurements, no instability |
| 20/05/10 | 78853 | Start: 18:30:28 ½TST44 calibration lamp instabilities: value at ca 197 V (nominal would be 198 V) |
| 21/05/10 | 78867 | Start: 19:34:47 ½(outside gs visibility) TST44 calibration lamp instabilities: value at ca 197 (nominal would be 198 V) |
| 21/05/10 | 78867 | Start: 19:43:23 ½(outside gs visibility) TST44 calibration lamp instabilities: value at ca 197 (nominal would be 198 V) |
| 28/04/10 | 78539 | Start: 21:47:01 stop after 21:52:15½ (no visibility gs) Calibration lamp instabilities: value jump between ½ ca 177 and 180 V (nominal would be 198 V) |

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|----------|-------|--|
| 28/04/10 | 78540 | Start before 22:31:38 (no visibility gs) stop: 22:39:54 Calibration lamp instabilities: value jump at $i_c/2$ ca 175 V (nominal would be 198 V) |
| 28/04/10 | 78541 | Start before 23:07:41 (no visibility gs) stop: 23:15:18 Calibration lamp instabilities: value jump between $i_c/2$ ca 180 and 197 V (nominal would be 198 V) |
| 28/04/10 | 78541 | Start before 23:21:35 (no visibility gs) stop: 23:27:34 Calibration lamp instabilities: value at $i_c/2$ ca 197.5 V (nominal would be 198 V) |
| 29/04/10 | 78542 | Start before 00:50:13 (no visibility gs) stop: 00:55:54 Calibration lamp instabilities: jumps between $i_c/2$ ca 180 and 197 V (nominal would be 198 V) |
| 29/04/10 | 78542 | Start: 01:08:07 stop after $i_c/2$ 01:08:16 (no visibility gs) Calibration lamp instabilities: value at $i_c/2$ ca 200 V (nominal would be 198 V) |
| 29/04/10 | 78542 | Start before 01:54:24 (no visibility gs) stop: 02:01:03 Calibration lamp instabilities: value at ca 175 V (nominal would be 198 V) |
| 29/04/10 | 78543 | Start before 02:30:39 (no visibility gs) stop: 02:36:29 Calibration lamp instabilities: value at ca 179 V (nominal would be 198 V) |
| 29/07/10 | 79844 | Start before: 00:53:21 (no visibility gs) stop: 00:59:28 $i_c/2$ Calibration lamp instabilities: value at $i_c/2$ ca 197.5 $i_c/2$ V (nominal would be 198 V) |
| 29/07/10 | 79845 | Start: 01:47:17 stop after 01:48:55 $i_c/2$ (no visibility gs) Calibration lamp instabilities: value at $i_c/2$ ca 197.5 $i_c/2$ V (nominal would be 198 V) |
| 29/07/10 | 79845 | Start: 02:35:43 stop after 02:40:13 $i_c/2$ (no visibility gs) Calibration lamp instabilities: value at $i_c/2$ ca 182.3 $i_c/2$ V (nominal would be 198 V) |
| 29/07/10 | 79846 | Start before: 03:13:52 (no visibility gs) stop: 03:15:39 $i_c/2$ Calibration lamp instabilities: value at $i_c/2$ ca 182.0 $i_c/2$ V (nominal would be 198 V) |
| 29/07/10 | 79846 | Start: 03:27:54 stop after 03:28:48 $i_c/2$ (no visibility gs) Calibration lamp instabilities: value at $i_c/2$ ca 181.0 V (nominal would be 198 V) |
| 29/07/10 | 79846 | Start before: 04:18:27 (no visibility gs) stop: 04:20:48 $i_c/2$ Calibration lamp instabilities: value at $i_c/2$ ca 181.5 $i_c/2$ V (nominal would be 198 V) |
| 29/07/10 | 79847 | Start before: 04:51:03 (no visibility gs) stop: 04:56:11 $i_c/2$ Calibration lamp instabilities: value at $i_c/2$ ca 182.1 $i_c/2$ V (nominal would be 198 V) |
| 28/10/10 | 81154 | Start 12:41:23 $i_c/2$ stop after 12:48:26 (no visibility gs) Calibration lamp instabilities: some values at $i_c/2$ ca 181.0 V (nominal would be 198 V) |

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|----------|-------|--|
| 28/10/10 | 81154 | Start 13:24:23 i _c /2stop 13:34:22 i _c /2Calibration lamp instabilities: some values at i _c /2 ca 182.0 V (nominal would be 198 V) |
| 28/10/10 | 81155 | Start before 13:52:33 (no visibility gs)i _c /2i _c /2i _c /2i _c /2i _c /2i _c /2 stop 13:52:55 Calibration lamp instabilities: some values at i _c /2 ca 182.0 V (nominal would be 198 V) |
| 28/10/10 | 81155 | Start 14:22:36 i _c /2stop after 14:25:42 (no visibility gs)i _c /2i _c /2i _c /2 Calibration lamp instabilities: some values at i _c /2 ca 183.0 V (nominal would be 198 V) |
| 28/10/10 | 81156 | Start 16:02:00i _c /2i _c /2i _c /2i _c /2 stop after 16:03:57 (no visibility gs)i _c /2i _c /2i _c /2 Calibration lamp instabilities: some values at i _c /2 ca 181.5 V (nominal would be 198 V) |
| 28/10/10 | 81156 | Start before 16:09:54 i _c /2i _c /2(no visibility gs)i _c /2i _c /2i _c /2 stop 16:12:33 i _c /2Calibration lamp instabilities: some values at i _c /2 ca 181.5 V (nominal would be 198 V) |

Other Events

| Date | Orbit | remark |
|--------------------|---------------|--|
| 09/01/10 | 76985 | anomalous long science dump at GS, no data processing possible |
| 26/01/10 | 77220 | anomalous long science dump at SG, no data processing possible |
| 20/02/10 | 77581 | anomalous long science dump at MS, no data processing possible |
| 05/03/10 | 77767 | anomalous long science dump at MA, no data processing possible |
| 10/03/10 -30/04/10 | 77826 - | GOME North Polar View operations |
| 15/03/10 | 77906 | anomalous long science dump at SG, no data processing possible |
| 05/09/10 -31/10/10 | 80388 - 81197 | South Polar View operations |
| 20/12/09 | 76683 | anomalous long science dump at MI, no data processing possible |