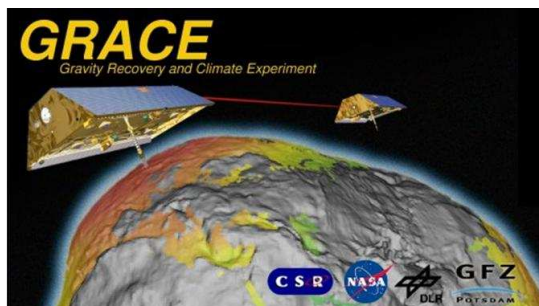


# GRACE Science Data System Monthly Report

## October 2007



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### Highlights:

- The CSR-RL04 solution for July 2007 has been replaced on November 19, 2007. The product is labeled

“GSM-2\_2007182-2007212\_0028\_UTCSR\_0060\_0004”

**If you downloaded this product before Nov 19, 2007, please be sure to download this file again.** The correct file should have the comment line:

CMMNT Updated GSM file based on run n28b (updated on 15 November 2007)

- CSR has generated and delivered RL04 Level-2 products for August and September 2007, as well.
- GFZ has generated RL04 Level-2 products for August 2007. May 2007 Level-2 products pending due to still incomplete GPS constellations (orbits and clocks).
- For further details see GRACE Level-2 Product Generation and Distribution Section below.
- All AOD1B products between June 23, 2006 and September 20, 2007 have been reprocessed due to double reduction of the S2 atmospheric tide from the surface pressure data used to force the OMCT model. The reprocessed AOD1B products can be recognized by the product creation date in the product header, e.g.

```
PRODUCT CREATE START TIME(UTC): 2007-11-08 10:51:24.000
```

```
PRODUCT CREATE END TIME(UTC) : 2007-11-08 13:19:25.000
```

which has to be a November 2007 time stamp.

**If you use AOD1B RL04 products e.g. for GRACE POD or gravity field recovery, please be sure to download these files again!** Fortunately, **the wrong AOD1B products had no influence on the monthly mean Level-2 GAA/GAB/GAC/GAD products.** Therefore these products will not be replaced by any of the three processing centers. The influence of the wrong AOD1B RL04 on the Level-2 GSM products is presently investigated at GFZ and

CSR. First tests showed that the influence of the error can be neglected.

- Generation of AOD1B RL04 has been continued again and the AOD1B products have been provided to the archives for September 21 until November 16, 2007.
- Routinely generated statistics to monitor AOD1B RL04 product quality will be online available at <http://www.gfz-potsdam.de/pb1/op/grace/results> shortly (follow link “AOD1B RL04 Statistics”).
- The Joint International GRACE Science Team Meeting and German Special Priority Program “Mass Transport and Mass Distribution in the Earth System” Symposium took place at GFZ Potsdam between October 15 and 17, 2007 (about 170 participants). Secure PDFs of oral and poster presentations are now online available at the meeting site <http://www.massentransporte.de/index.php?id=151> .

#### **Satellite Science Relevant Events:**

- Operation in Science Mode throughout the month except some KBR anomalies on GRACE-A. For further details refer to the Level-1 Data Processing Section below.
- The GRACE-1 Brouwer mean orbital elements on November 1, 2007 00:00:00 are as follows:  
A [m] = 6840099.092  
E [-] = 0.001476  
I [°] = 89.004850
- The satellites separation was 208 km on November 1, 2007 with a rate of +0.77 km/d. Next orbit maintenance maneuver won't be needed for some months.

#### **Level-0 raw data dump reception statistics at DLR ground stations Weilheim and Neustrelitz:**

GRACE-1 Housekeeping:	100.0 %
GRACE-1 Science:	100.0 %
GRACE-2 Housekeeping:	100.0 %
GRACE-2 Science:	100.0 %

## **Level-1 Data Processing:**

- Level-1B Release 01 instrument data have been processed at JPL and archived at GRACE-ISDC and JPL PO.DAAC.
- **Notes**
  - On 2007-09-30 19:28 the GRACE-A IPU (Instrument Processing Unit) executed an autonomous restart tracker command. After that, the KBR data appeared nominal but post processing revealed a KBR range drift of 1.5 cm/sec compared to the actual range determined from GPS derived orbits resulting in large KBR-GPS residuals (see below). The KBR data became nominal after a GRACE-A IPU reboot on 2007-10-01 16:16. Also, the KBR data failed the prefit test in this interval. Therefore, it is recommended to exclude the L1B data from the gravity determination process during this time span.
  - For 2007-10-01 see 2007-09-30
  - On 2007-10-02 the same KBR anomaly occurred as on 2007-09-30. For full description see 2007-09-30. The KBR data was nominal after a GRACE-A IPU reboot on 2007-10-03 16:16. The KBR data also failed the prefit test in this interval. It is recommended to exclude the L1B data from the gravity determination process during this time span.
  - For 2007-10-03 see 2007-10-02
  - On day 2007-10-11 GRACE-A KBR1B data is anomalous from 2007-10-11 13:58:44 till 2007-10-12 04:03:15 due to an anomalous Missed Interrupt. Caution should be used when using this data for gravity field determination
  - For day 2007-10-12 see 2007-10-11. On 2007-10-12 at 04:03:15 the GRACE-A KBR failed to re-acquire after a restart tracker command. The KBR returned to nominal operations after a commanded reboot at 7:29:00. This resulted in a KBR1B data loss of approximately 3.5 hours
- **KBR statistics:**
  - A) KBR1B product name
  - B) Total arc length with data (hours)
  - C) Number of observations used in residual calculation
  - D) KBR-GPS range residual RMS (cm)
  - E) minimum KBR-GPS range residual (cm)
  - F) maximum KBR-GPS range residual (cm)
  - G) number of continuous segments in the KBR product

A	B	C	D	E	F	G
KBR1B_2007-10-01_X_01.dat	24.0	17256	21917.33	-46082.6	46071.3	2
KBR1B_2007-10-02_X_01.dat	24.0	17251	16616.44	-38307.1	38332.2	2
KBR1B_2007-10-03_X_01.dat	23.9	17205	23092.42	-47638.0	47662.7	2
KBR1B_2007-10-04_X_01.dat	23.8	17125	1.84	-5.3	5.2	2
KBR1B_2007-10-05_X_01.dat	23.7	17065	1.68	-7.4	4.5	2
KBR1B_2007-10-06_X_01.dat	24.0	17237	1.77	-5.3	4.0	2
KBR1B_2007-10-07_X_01.dat	23.8	17124	1.80	-4.7	4.4	3
KBR1B_2007-10-08_X_01.dat	24.0	17260	1.79	-5.2	4.7	1
KBR1B_2007-10-09_X_01.dat	24.0	17260	1.63	-4.4	4.0	1
KBR1B_2007-10-10_X_01.dat	24.0	17260	2.16	-4.9	6.3	1
KBR1B_2007-10-11_X_01.dat	24.0	17245	1.72	-5.1	5.1	2
KBR1B_2007-10-12_X_01.dat	20.5	14772	1.62	-4.0	4.5	2
KBR1B_2007-10-13_X_01.dat	24.0	17260	2.08	-6.3	5.3	1
KBR1B_2007-10-14_X_01.dat	24.0	17260	1.71	-3.9	5.2	1
KBR1B_2007-10-15_X_01.dat	24.0	17246	2.04	-7.8	5.2	2
KBR1B_2007-10-16_X_01.dat	23.8	17123	1.77	-5.5	6.5	3
KBR1B_2007-10-17_X_01.dat	23.7	17065	1.72	-4.4	4.8	2
KBR1B_2007-10-18_X_01.dat	24.0	17260	1.98	-4.8	5.2	1
KBR1B_2007-10-19_X_01.dat	24.0	17260	1.70	-4.0	5.8	1
KBR1B_2007-10-20_X_01.dat	24.0	17260	1.67	-5.3	4.9	1
KBR1B_2007-10-21_X_01.dat	23.8	17125	1.90	-4.9	5.7	2
KBR1B_2007-10-22_X_01.dat	23.9	17202	1.81	-5.7	4.9	3
KBR1B_2007-10-23_X_01.dat	24.0	17260	1.64	-4.5	4.2	1
KBR1B_2007-10-24_X_01.dat	24.0	17260	1.50	-4.5	3.3	1
KBR1B_2007-10-25_X_01.dat	23.9	17223	2.20	-5.5	7.1	3
KBR1B_2007-10-26_X_01.dat	24.0	17280	2.17	-6.7	6.5	1
KBR1B_2007-10-27_X_01.dat	24.0	17260	1.89	-6.2	5.9	1
KBR1B_2007-10-28_X_01.dat	24.0	17260	1.87	-4.4	7.5	1
KBR1B_2007-10-29_X_01.dat	24.0	17260	1.79	-5.0	4.3	1
KBR1B_2007-10-30_X_01.dat	24.0	17260	1.51	-5.1	4.7	1
KBR1B_2007-10-31_X_01.dat	23.8	17125	2.15	-6.5	5.7	2

- Following JPL RL00 (yellow) and RL01 (green) L1B products are publicly available. June and July 2002 are not provided due to accelerometer problems.

L1B data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004												
2005												
2006												
2007												

- L1B De-aliasing Products Status (for details see AOD1B Product Description Document):
  - Release 01: Generation has been stopped June 30, 2007.
  - Release 03: Generation has been stopped January 31, 2007.
  - Release 04: Generation for period September 21, 2007 until November 16, 2007.  
 Products for June 23, 2006 until September 20, 2007 have been reprocessed due to wrong S2 tide correction in OMCT output data. This error primarily affected the C22/S22 AOD1B RL04 coefficients in the mentioned period. New (correct) products can be recognized by the product create start and stop times which shall have a November 2007 time stamp. For further details see section “Highlights”.
  - Quality statistics for Release 04 products will be shortly online available at <http://www.gfz-potsdam.de/pb1/op/grace/results> (follow link “AOD1B RL04 Statistics”).
  - Following AOD1B products are publicly available (yellow: RL01, RL03 and RL04; green: RL01 and RL04, blue: RL04 only):

AOD1B	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004												
2005												
2006												
2007												

**Level-2 Product Generation and Distribution:**

- Besides historical CSR RL01, GFZ RL03 and JPL RL02 time-series (see below) and more experimental releases which are only available to the GRACE Science Team the following RL04 L2 products are presently available to the public (green: available, yellow: in preparation; red: missing due to accelerometer data problems)

- GFZ: GSM solutions for August 2002 until August 2007. July 2004 until October 2004 and December 2006 are also available as constrained solutions (\*GK2-\*). Corresponding background GAA, GAB, GAC and GAD products and calibrated errors (GSM\*.txt) have been provided too. May 2007 not yet available due to still incomplete GPS constellations (orbits and clocks). Details are listed in the GFZ L2 Release Notes.

GFZ RL04	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004							GK2	GK2	GK2	GK2		
2005												
2006												GK2
2007												

- CSR: GSM solutions along with the GAC and GAD background model files and calibrated errors (GSM\*.txt) are available for the period April 2002 until September 2007. Details are listed in the CSR L2 Release Notes.

CSR RL04	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004												
2005												
2006												
2007												

- JPL: GSM solutions along with the GAC and GAD background model files and calibrated errors (GSM\*.txt) are available for the period January 2003 until November 2006. At present, it is not foreseen to prolong this time series. Details are listed in the JPL L2 Release Notes.

JPL RL04	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004												
2005												
2006												
2007												

- GFZ has stopped RL03 processing (Feb 2003 until Jan 2007 available at the archives. For further details refer to the GFZ RL03 release notes for Level-2 products).
- CSR has stopped RL01 processing. (Apr. 2002 until Dec 2006 available at the archives. For further details refer to the CSR RL01 release notes for Level-2 products).
- JPL has stopped RL02 processing (January 2003 until November 2005 available at the

archives. For further details refer to the JPL RL02 release notes for Level-2 products).

- TN05 containing C20 estimates derived from SLR is periodically updated (maybe used to substitute C20 values of CSR RL01 products).

### **Miscellaneous:**

- A list of GRACE related publications which can be sorted by author or date is available at [http://www.gfz-potsdam.de/pb1/op/grace/index\\_GRACE.html](http://www.gfz-potsdam.de/pb1/op/grace/index_GRACE.html) under item “Publications”. This list will be regularly updated and maybe incomplete. If you are missing a publication please send an e-mail to Frank Flechtner.
- Science data users are encouraged to submit citations of their own and other works related with GRACE to the bibliography web page implemented at PO.DAAC: <http://podaac.jpl.nasa.gov/grace/bibliography.html> .
- Secure PDFs of oral and poster presentations from the Joint International GRACE Science Team Meeting and German Special Priority Program “Mass Transport and Mass Distribution in the Earth System” Symposium which took place at GFZ Potsdam between October 15 and 17, 2007 are online available at <http://www.massentransporte.de/index.php?id=151> .