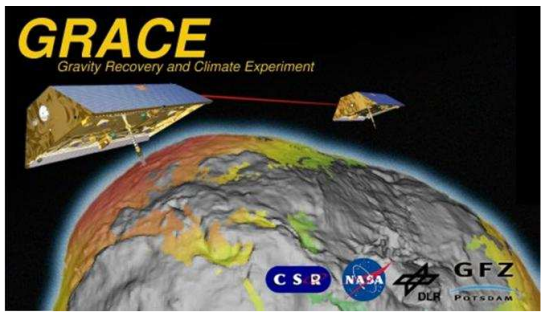
GRACE Science Data System Monthly Report January 2008



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Highlights:

- GFZ has generated and delivered RL04 Level-2 products for January 2008.
- Due to the S2 problems with AOD1B RL04 between June 23, 2006 and September 20, 2007, Level-2 products in this interval have been re-processed and delivered to the archives by GFZ (details already listed in the newsletter for December 2007) and CSR:
  - Correct CSR GSM products can be recognized by the additional header comment line "CMMNT Updated GSM file based on run n28b (updated on 15 November 2007)"
  - For simplicity all CSR GAC and GAD products have been reprocessed too.
  - Further details are given in the CSR RL04 release notes and in the L2 Product Generation and Distribution section below.
- We strongly recommend that users replace the old fields with the new ones for these 16 months.
- In order to help users assess impacts of this substitution, the TN06 "Impact of change in AOD1B on RL04 monthly GSM products" has been provided in GRACE documents.
- JPL has not completely finished their reprocessing for June 2006 till September 2007. Further information will be provided in the February 2008 newsletter.

Satellite Science Relevant Events:

- Operations in Science Mode throughout the month except the events mentioned in the Level-1 Data Processing Section below.

- The GRACE-1 Brouwer mean orbital elements on February 1, 2008 00:00:00 are as follows:

  A [m] = 6839776.664

  E [-] = 0.001455

  I [º] = 89.003998
- The satellites separation was 254 km on February 1, 2008 with a rate of +0.19 km/d. Next orbit maintenance maneuver will be needed in about two 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:	99.9 %
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 2008-01-08 the number of available GPS orbits and clocks was reduced by 6. This resulted in an increase of the KBR-GPS range residual RMS. The KBR1B data quality is not affected and can be used for gravity field determination purposes.
  - On 2008-01-13 00:16:41 the GRACE-B Accelerometer Sensor Unit experienced a small jump in the X1 electrode causing the linear acceleration in the Y-axis (Science Reference Frame) to jump as well as the angular acceleration in the Z-axis (Science Reference Frame). For the ACC1B product the bias jump for the linear acceleration was corrected by adding -13.77 nm/sec2 from 00:00:00 until 00:16:41. No correction was made for the angular acceleration. The ACC1B is considered nominal after the bias correction and should be used in the gravity field determination process.
  - On 2008-01-15 at 07:42 until 2008-01-16 08:45 the maximum GPS satellites tracked on GRACE-B was lowered from 10 to 8 during a software upload to the GPS receiver. This resulted in a lower number of GPS1B data than nominal operations.
  - For 2008-01-16 see 2008-01-15.

- **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_2008-01-01_X_01.dat	24.0	17280	1.81	-7.3	4.6	1
KBR1B_2008-01-02_X_01.dat	24.0	17280	1.77	-4.9	7.4	1
KBR1B_2008-01-03_X_01.dat	24.0	17280	1.49	-4.2	3.3	1
KBR1B_2008-01-04_X_01.dat	24.0	17280	2.15	-6.2	9.4	1
KBR1B_2008-01-05_X_01.dat	24.0	17280	1.90	-6.7	5.2	1
KBR1B_2008-01-06_X_01.dat	24.0	17280	1.88	-5.8	6.7	1
KBR1B_2008-01-07_X_01.dat	24.0	17280	1.83	-5.3	6.8	1
KBR1B_2008-01-08_X_01.dat	24.0	17280	2.87	-7.1	8.8	1
KBR1B_2008-01-09_X_01.dat	24.0	17280	1.82	-4.7	5.5	1
KBR1B_2008-01-10_X_01.dat	24.0	17280	1.64	-3.6	4.0	1
KBR1B_2008-01-11_X_01.dat	24.0	17280	2.09	-5.7	7.1	1
KBR1B_2008-01-12_X_01.dat	24.0	17280	2.28	-7.6	8.2	1
KBR1B_2008-01-13_X_01.dat	24.0	17280	2.10	-6.0	6.4	1
KBR1B_2008-01-14_X_01.dat	24.0	17280	1.60	-4.8	4.5	1
KBR1B_2008-01-15_X_01.dat	24.0	17280	2.11	-6.9	6.1	1
KBR1B_2008-01-16_X_01.dat	23.8	17145	1.63	-4.5	5.8	2
KBR1B_2008-01-17_X_01.dat	24.0	17280	1.73	-4.6	6.8	1
KBR1B_2008-01-18_X_01.dat	24.0	17280	1.81	-5.6	3.7	1
KBR1B_2008-01-19_X_01.dat	24.0	17280	1.72	-4.3	5.4	1
KBR1B_2008-01-20_X_01.dat	24.0	17280	1.69	-6.4	5.2	1
KBR1B_2008-01-21_X_01.dat	24.0	17280	1.89	-5.8	5.0	1
KBR1B_2008-01-22_X_01.dat	24.0	17280	1.88	-6.3	6.6	1
KBR1B_2008-01-23_X_01.dat	24.0	17280	1.77	-4.6	6.0	1
KBR1B_2008-01-24_X_01.dat	24.0	17280	2.11	-5.9	7.7	1
KBR1B_2008-01-25_X_01.dat	23.6	17010	2.00	-7.5	5.8	3
KBR1B_2008-01-26_X_01.dat	24.0	17280	1.68	-4.0	6.4	1

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KBR1B_2008-01-27_X_01.dat   24.0   17280   2.16     -7.5     8.2   1
KBR1B_2008-01-28_X_01.dat   23.7   17083   1.81     -4.6     3.7   1
KBR1B_2008-01-29_X_01.dat   24.0   17280   1.98     -5.3     5.5   1
KBR1B_2008-01-30_X_01.dat   23.9   17235   2.13     -7.5     8.1   3
KBR1B_2008-01-31_X_01.dat   24.0   17280   1.69     -3.6     3.9   1
```

- Following JPL RL00 (yellow) and RL01 (green) L1B products are publicly available. June and July 2002 (red) 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												
2008												

- 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: Generated until February 20, 2008.

    Note: 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 October 2007 newsletter.
  - Quality statistics for Release 04 products are online available at http://www.gfz-potsdam.de/pb1/op/grace/results (follow link “GRACE Atmosphere and Ocean De-aliasing 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												
2008												

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, green striped: will be reprocessed shortly, yellow: in preparation; red: missing due to accelerometer data problems)

  - GFZ: GSM solutions for August 2002 until January 2008. 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. 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												
2008												

  - 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 October 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												
2008												

  - JPL: GSM version 4.1 labeled "*JPLEM_0001_0004" along with the GAC and GAD background model files and calibrated errors (GSM*.txt) are available for the period April 2002 until July 2007. Details are listed in the JPL L2 Release Notes.
    Note: As mentioned in the "Highlights Section" all GSM RL04 between June 2006 and July 2007 will be reprocessed soon.

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 and using GRACE RL04 standards is periodically updated.

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 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 .