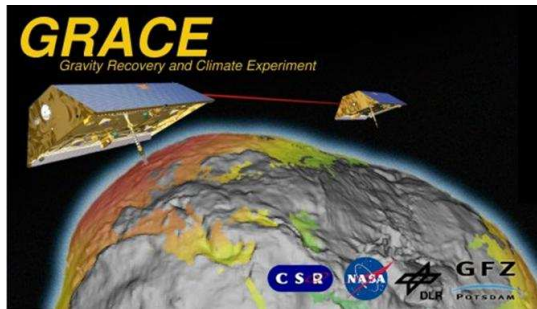


GRACE Science Data System Monthly Report

December 2008



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Highlights:

- The GRACE Science Team Meeting was held on Dec 12-13, 2008 in the Holiday Inn Golden Gateway in San Francisco. Proceedings will be made available shortly (please check availability at <http://www.csr.utexas.edu/grace/GSTM/>).
- CSR has generated and delivered RL04 Level-2 products for November 2008, GFZ for October 2008 and JPL for September and October 2008.
- CSR has provided a static gravity field called GGM03S which is based on 4 years of GRACE mission data.
- GFZ has derived pure unconstrained RL04 weekly solutions (aligned to GPS calendar week) complete up to degree and order 30 which are available at ISDC (choose "GFZ Potsdam weekly" processing facility) along with the corresponding GAX products. Calibrated errors will be provided soon. Further details will be available in the GSTM proceedings (see Session A.1, Ch. Dahle: GFZ EIGEN-GRACE05S Weekly Gravity Field Time Series).
- The RL04 AOD1B product time series has been extended to 1976-2000 based on ERA40 meteorological data and OMCT output and made available at ISDC. Details are described in a GFZ Scientific Technical Report (STR0812) which can be downloaded at <http://www.gfz-potsdam.de/pb1/op/grace/results> (follow link "GRACE Atmosphere and Ocean De-aliasing Statistics").

Satellite Science Relevant Events:

- Operations in Science Mode throughout the month.
- The GRACE-1 Brouwer mean orbital elements on January 1, 2009 00:00:00 are as follows:

A [m] = 6838759.684
 E [-] = 0.001736
 I [°] = 89.011014

- The satellites separation was 264 km on December 30, 2008 with a rate of +.22 km/d. Orbit maintenance maneuver will not be needed for some months.

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

GRACE-A Housekeeping:	100.0 %	GRACE-B Housekeeping:	99.9 %
GRACE-A Science:	99.9 %	GRACE-B 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. Please refer to the statistics below.
- Notes:
 - o On 2008-12-23 GRACE-B experienced an anomalous IPU reboot at 05:28 which caused GRACE-B to enter in to Coarse pointing mode. Nominal attitude and IPU operation was restored at 06:06. In total about 40 minutes of KBR1B data was lost.
- **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_2008-11-28_X_01.dat	24.0	17280	1.43	-3.8	4.5	1	
KBR1B_2008-11-29_X_01.dat	24.0	17280	1.30	-4.0	3.6	1	
KBR1B_2008-11-30_X_01.dat	24.0	17280	1.45	-4.3	3.0	1	
KBR1B_2008-12-01_X_01.dat	24.0	17280	1.62	-5.5	5.1	1	
KBR1B_2008-12-02_X_01.dat	24.0	17280	1.44	-3.3	3.5	1	

KBR1B_2008-12-03_X_01.dat	23.8	17145	1.32	-4.6	4.0	2
KBR1B_2008-12-04_X_01.dat	24.0	17280	1.30	-3.4	3.3	1
KBR1B_2008-12-05_X_01.dat	24.0	17280	1.57	-5.9	4.8	1
KBR1B_2008-12-06_X_01.dat	24.0	17280	1.37	-3.2	4.8	1
KBR1B_2008-12-07_X_01.dat	23.8	17145	1.36	-4.3	3.8	2
KBR1B_2008-12-08_X_01.dat	24.0	17280	1.47	-3.1	5.3	1
KBR1B_2008-12-09_X_01.dat	23.8	17145	1.53	-3.8	5.6	2
KBR1B_2008-12-10_X_01.dat	24.0	17280	1.45	-4.0	4.8	1
KBR1B_2008-12-11_X_01.dat	24.0	17280	1.54	-4.0	4.3	1
KBR1B_2008-12-12_X_01.dat	24.0	17280	1.43	-3.4	4.3	1
KBR1B_2008-12-13_X_01.dat	24.0	17280	1.04	-2.6	2.5	1
KBR1B_2008-12-14_X_01.dat	24.0	17280	1.50	-3.7	5.3	1
KBR1B_2008-12-15_X_01.dat	24.0	17280	1.25	-2.7	3.0	1
KBR1B_2008-12-16_X_01.dat	24.0	17280	1.53	-4.7	4.2	1
KBR1B_2008-12-17_X_01.dat	24.0	17280	1.44	-4.1	4.5	1
KBR1B_2008-12-18_X_01.dat	24.0	17280	1.13	-3.3	3.2	1
KBR1B_2008-12-19_X_01.dat	24.0	17280	1.22	-4.0	2.6	1
KBR1B_2008-12-20_X_01.dat	24.0	17280	1.44	-3.4	5.4	1
KBR1B_2008-12-21_X_01.dat	24.0	17280	1.25	-2.7	4.1	1
KBR1B_2008-12-22_X_01.dat	24.0	17280	1.29	-3.2	5.5	1
KBR1B_2008-12-23_X_01.dat	23.4	16815	1.17	-3.1	2.9	2
KBR1B_2008-12-24_X_01.dat	24.0	17280	1.39	-3.6	3.4	1
KBR1B_2008-12-25_X_01.dat	24.0	17280	1.28	-3.0	4.3	1
KBR1B_2008-12-26_X_01.dat	24.0	17280	1.39	-3.8	5.1	1
KBR1B_2008-12-27_X_01.dat	24.0	17280	1.29	-6.1	3.3	1
KBR1B_2008-12-28_X_01.dat	23.7	17085	1.18	-3.9	3.2	2
KBR1B_2008-12-29_X_01.dat	24.0	17280	1.46	-3.9	3.7	1
KBR1B_2008-12-30_X_01.dat	24.0	17280	1.24	-3.7	3.2	1
KBR1B_2008-12-31_X_01.dat	24.0	17280	1.22	-3.3	3.1	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												

- The software to convert from GRACE GPS1x format to Rinex format has been updated to handle the presence of data from PRN32 since Feb. 26, 2008. Users should download and re-install the entire Level-1 Read software suite (RELEASE_2008-03-20) from the GRACE archives. This software is backwards compatible and can process all mission data.
- L1B De-aliasing Products Status (for details see AOD1B Product Description Document):
 - o Release 01: Generation has been stopped June 30, 2007.
 - o Release 03: Generation has been stopped January 31, 2007.
 - o Release 04: Generated until January 10, 2009 and extended to 1976-2000 (see highlights above).
 - o 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”).
 - o 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
1976												
...												
1999												
2000												
2001												
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, yellow: in preparation; red: missing due to accelerometer data problems):

- 0 **GFZ:** GSM solutions for August 2002 until October 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.

[illegible]

- o **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 November 2008. Details are listed in the CSR L2 Release Notes.

[illegible]

- o JPL: GSM version 4.1 labeled “*JPLEM_0001_0004” along with the GAA, GAB, GAC and GAD background model files and calibrated errors (GSM*.txt) are available for the period April 2002 until October 2008. Details are listed in the JPL L2 Release Notes.

[illegible]

- 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” (current status: 439 papers). This list is regularly updated and maybe incomplete. If you are missing a publication please send an e-mail to Frank Flechtner (flechtne@gfz-potsdam.de).
- 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> .