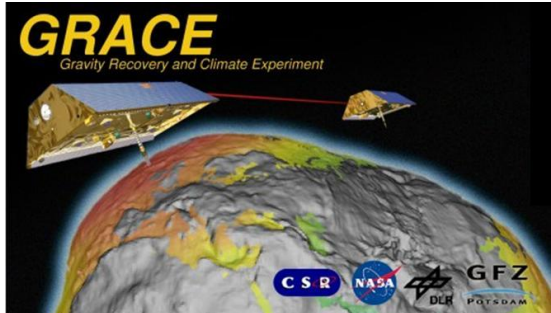


GRACE Science Data System Monthly Report

November 2011



Prepared by:
Frank Flechtner GFZ flechtne@gfz-potsdam.de

Contributions by:
Srinivas Bettadpur UTCSR srinivas@csr.utexas.edu
Mike Watkins JPL michael.m.watkins@jpl.nasa.gov
Gerhard Kruizinga JPL gerhard.kruizinga@jpl.nasa.gov

Approved by:
Byron Tapley UTCSR tapley@csr.utexas.edu

Highlights:

- CSR has generated and delivered RL04 Level-2 products for September and October 2011
- GFZ has generated and delivered RL04 Level-2 products for October 2011.
- The next GRACE Science Team Meeting (GSTM) will take place at the German Research Centre for Geosciences (GFZ) in Potsdam, Germany, between September 17 and 19, 2012. It will be combined with the Final Colloquium of the DFG Special Priority Program "Mass Transport and Mass Distribution in System Earth" and followed by a one day Sea Level Workshop (September 20). Further details will become available in spring.

Satellite Science Relevant Events:

- Operations in Science Mode throughout the month except for the periods highlighted in the L1B Data Processing section below.
- The actual mission status can be monitored at http://www.csr.utexas.edu/grace/operations/mission_status/.
- The GRACE-1 Brouwer mean orbital elements on December 1, 2011 00:00:00 are as follows:
A [m] = 6828466.700
E [-] = 0.001370
I [°] = 89.014324
- The satellites separation was 245 km on December 1, 2011 with a rate of -0.06 km/d. An orbit maneuver will be needed in March 2012.

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

GRACE-A Housekeeping:	100.0 %	GRACE-B Housekeeping:	100.0 %
GRACE-A Science:	100.0 %	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:
 - Starting on 2011-11-01 the Level-1 Precision Orbit Determination (POD) parameter setup has been re-optimized for the increased drag signatures caused by increasing solar activity. The new POD strategy is yielding similar or slightly degraded results compared to POD results prior to the increased drag signatures.
 - On 2011-11-16 GRACE-A ACC was powered off at 12:34:13 to reduce the battery load. This means no nominal gravity processing is possible after 12:34:13.
 - On 2011-11-17 GRACE-B ACC was powered off at 12:00:11 to reduce the battery load.
 - Power-on of both accelerometers was successfully performed on December 7 at 11:00 UTC (GRACE-B) and December 12 at 9:42 UTC (GRACE-A). For further details please refer to the December 2011 newsletter which will be distributed early 2012.
- **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_2011-10-28_X_01.dat	24.0	17280	0.33	-1.3	1.2	1	
KBR1B_2011-10-29_X_01.dat	24.0	17280	0.31	-1.2	0.8	1	
KBR1B_2011-10-30_X_01.dat	24.0	17280	0.58	-1.6	3.5	1	
KBR1B_2011-10-31_X_01.dat	24.0	17280	0.34	-1.0	1.4	1	
KBR1B_2011-11-01_X_01.dat	24.0	17280	0.43	-1.2	1.7	1	

KBR1B_2011-11-02_X_01.dat	24.0	17261	0.39	-2.1	1.1	1
KBR1B_2011-11-03_X_01.dat	23.8	17124	0.39	-1.9	2.1	3
KBR1B_2011-11-04_X_01.dat	24.0	17280	0.44	-2.6	1.3	1
KBR1B_2011-11-05_X_01.dat	24.0	17280	0.91	-1.9	4.6	1
KBR1B_2011-11-06_X_01.dat	24.0	17280	0.48	-1.2	2.1	1
KBR1B_2011-11-07_X_01.dat	23.8	17153	0.57	-1.3	3.5	1
KBR1B_2011-11-08_X_01.dat	23.9	17194	0.64	-2.0	2.1	2
KBR1B_2011-11-09_X_01.dat	24.0	17280	0.41	-1.9	0.9	1
KBR1B_2011-11-10_X_01.dat	24.0	17260	0.65	-2.5	3.2	2
KBR1B_2011-11-11_X_01.dat	24.0	17280	0.48	-2.4	1.1	1
KBR1B_2011-11-12_X_01.dat	24.0	17280	0.72	-4.6	2.5	1
KBR1B_2011-11-13_X_01.dat	24.0	17280	0.36	-1.6	1.0	1
KBR1B_2011-11-14_X_01.dat	24.0	17280	0.48	-2.6	1.5	1
KBR1B_2011-11-15_X_01.dat	24.0	17280	0.60	-1.7	3.3	1
KBR1B_2011-11-16_X_01.dat	24.0	17280	0.41	-1.0	2.3	1
KBR1B_2011-11-17_X_01.dat	24.0	17280	0.37	-1.4	1.6	1
KBR1B_2011-11-18_X_01.dat	24.0	17280	0.71	-1.9	3.4	1
KBR1B_2011-11-19_X_01.dat	24.0	17280	0.43	-1.5	2.5	1
KBR1B_2011-11-20_X_01.dat	24.0	17280	0.42	-1.5	1.6	1
KBR1B_2011-11-21_X_01.dat	24.0	17280	0.77	-4.2	2.5	1
KBR1B_2011-11-22_X_01.dat	24.0	17280	0.41	-2.0	1.4	1
KBR1B_2011-11-23_X_01.dat	24.0	17280	0.59	-3.4	2.8	1
KBR1B_2011-11-24_X_01.dat	24.0	17280	0.47	-2.7	1.5	1
KBR1B_2011-11-25_X_01.dat	24.0	17280	0.45	-2.0	2.2	1
KBR1B_2011-11-26_X_01.dat	24.0	17280	0.48	-2.7	1.4	1
KBR1B_2011-11-27_X_01.dat	24.0	17280	0.34	-1.4	1.1	1
KBR1B_2011-11-28_X_01.dat	23.7	17061	0.80	-4.8	1.2	2
KBR1B_2011-11-29_X_01.dat	24.0	17280	0.88	-2.2	6.3	1
KBR1B_2011-11-30_X_01.dat	24.0	17280	0.81	-3.2	3.8	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. See also comment in the Highlights Section. For January and June 2011 (blue) no accelerometer data are available (see corresponding newsletters).

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 are available for August 2002 until October 2011. July 2004 until October 2004 and December 2006 are also available as constrained solutions (*GK2-*, reason is GRACE 4d repeat orbit and GPS anomaly on GRACE-B, respectively). October 2008 until September 2010 are also available as unconstrained solutions up to degree and order 60 (*GM60*, reason is GRACE 7d repeat orbit). 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]

- **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 2011. Details are listed in the CSR L2 Release Notes.

[illegible]

- **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 August 2011. 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												
2008												
2009												
2010												
2011												

- 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:

- The Proceedings of the 2011 Grace Science Team Meeting are online. See the Past Meetings link to the right at <http://www.csr.utexas.edu/grace/GSTM/> .
- The following acknowledgement shall be added to any new GRACE related publication (paper, poster etc.): *Acknowledgement: We would like to thank the German Space Operations Center (GSOC) of the German Aerospace Center (DLR) for providing continuously and nearly 100% of the raw telemetry data of the twin GRACE satellites.*
- A list of GRACE related publications which can be sorted by author or date is available at http://www.gfz-potsdam.de/portal/gfz/Struktur/Departments/Department+1/sec12/projects/grace/grace_publications (current status: 824 papers). This list maybe still 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>.