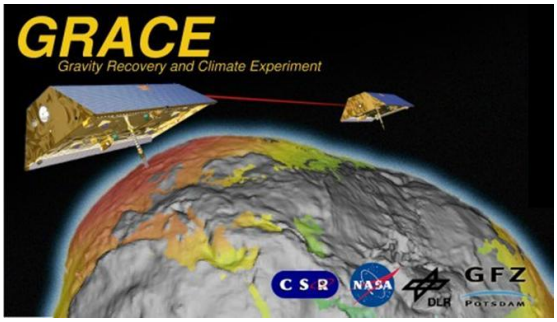
GRACE Science Data System Monthly Report
June 2011



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Highlights:

- The GRACE satellites have passed the β'=0 event on June 16. Consequently, the accelerometers had already been turned off on June 6 (GRACE-B) and June 7 (GRACE-A), respectively, in order to manage the battery use. The accelerometers have been successfully switched on again on July 4 (GRACE-A) and June 29 (GRACE-B), respectively. Please recall that the remainder of the data (KBR, GPS & star camera) has been collected routinely all along. The actual mission status can be monitored at http://www.csr.utexas.edu/grace/operations/mission_status/ .
- No RL04 Level-2 products for June 2011 have been generated so far.
- The Scientific Sessions and Abstracts link on the GSTM2011 page http://www.csr.utexas.edu/grace/GSTM/ is now available for you to submit your abstracts (due by August 1, 2011). The format is very similar to the past meetings. Please remember to register as soon as you know you can make it to the meeting. Information on Housing is available as well. As before, this remains the responsibility of the attendee.

Satellite Science Relevant Events:

- Operations in Science Mode throughout the month except for the periods highlighted in the L1B Data Processing section below.
- The GRACE-1 Brouwer mean orbital elements on July 1, 2011 00:00:00 are as follows:

  A [m] = 6832668.291
  E [-] = 0.001765
  I [°] = 89.012131

- The satellites separation was 206 km on July 1, 2011 with a rate of -0.55 km/d. Next orbit maintenance maneuver will be necessary approximately in August 2011.

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:
  - On 2011-06-01 from 20:12 till 21:10 the accelerometers for GRACE-A&B were powered off to reduce the power load on the batteries during a lunar shadow crossing event. After power on, both Y-SRFs biases started to drift. These drifts need to be accommodated in the gravity field determination process. The Y-SRF biases stabilized on 2011-06-05 00:00:00
  - On 2011-06-06 GRACE-B ACC was powered off at 22:47 to reduce the battery load. This means no nominal gravity processing is possible after 22:47.
  - For 2011-06-07 see note 2011-06-06. GRACE-A ACC was powered off at 13:56 to reduce the battery load.
  - Both accelerometers were powered on June 29 (GRACE-B) and July 4 (GRACE-A), respectively (see also note 2011-06-29).
  - For 2011-06-08 till 2011-06-28 see notes 2011-06-06 and 2011-06-07
  - On 2011-06-21 multiple GRACE-B IPU reboots caused a 33 minute KBR1B data loss.
  - On 2011-06-23 multiple GRACE-B IPU reboots caused a 44 minute KBR1B data loss.
  - On 2011-06-24 multiple GRACE-B IPU reboots caused a 65 minute KBR1B data loss.
  - On 2011-06-25 multiple GRACE-B IPU reboots caused a 28 minute KBR1B data loss.
  - On 2011-06-27 multiple GRACE-B IPU reboots caused a 28 minute KBR1B data loss.
  - On 2011-06-29 GRACE-B ACC was powered on again at 09:07:56. Large ACC bias gradients are observed after the power on, lasting for about 4 days. The GRACE-B ACC biases stabilized on 2011-07-05 00:00:00. The ACC data in this period cannot be used directly in the nominal gravity field processing. Furthermore GRACE-A ACC was still powered off during this period as well (powered on again on July 4).

- For 2011-06-29 see note 2011-06-07
- For 2011-06-30 see notes 2011-06-29 and 2011-06-07
- On 2011-06-30 multiple GRACE-B IPU reboots caused a 33 minute KBR1B data loss.

- **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_2011-06-01_X_01.dat	24.0	17280	0.31	-0.7	1.0	1
KBR1B_2011-06-02_X_01.dat	23.9	17234	0.20	-1.0	0.6	3
KBR1B_2011-06-03_X_01.dat	24.0	17280	0.20	-0.6	0.7	1
KBR1B_2011-06-04_X_01.dat	24.0	17280	0.23	-0.8	1.1	1
KBR1B_2011-06-05_X_01.dat	24.0	17280	0.35	-0.8	1.9	1
KBR1B_2011-06-06_X_01.dat	23.7	17085	0.26	-1.1	0.8	2
KBR1B_2011-06-07_X_01.dat	24.0	17280	0.22	-0.8	0.7	1
KBR1B_2011-06-08_X_01.dat	24.0	17280	0.28	-1.2	1.1	1
KBR1B_2011-06-09_X_01.dat	24.0	17280	0.24	-0.8	0.8	1
KBR1B_2011-06-10_X_01.dat	24.0	17280	0.29	-1.0	1.5	1
KBR1B_2011-06-11_X_01.dat	24.0	17280	0.37	-1.7	1.7	1
KBR1B_2011-06-12_X_01.dat	23.8	17145	0.22	-0.7	0.8	2
KBR1B_2011-06-13_X_01.dat	23.8	17124	0.33	-1.8	0.9	2
KBR1B_2011-06-14_X_01.dat	24.0	17280	0.33	-0.9	1.7	1
KBR1B_2011-06-15_X_01.dat	23.8	17145	0.37	-2.2	1.0	2
KBR1B_2011-06-16_X_01.dat	24.0	17280	0.21	-0.7	0.8	1
KBR1B_2011-06-17_X_01.dat	24.0	17280	0.38	-2.1	0.8	1
KBR1B_2011-06-18_X_01.dat	24.0	17280	0.22	-0.7	0.8	1
KBR1B_2011-06-19_X_01.dat	24.0	17280	0.22	-0.8	0.8	1
KBR1B_2011-06-20_X_01.dat	24.0	17280	0.38	-0.8	1.8	1
KBR1B_2011-06-21_X_01.dat	23.5	16890	0.34	-0.9	2.1	3
KBR1B_2011-06-22_X_01.dat	23.8	17145	0.40	-2.0	1.0	2
KBR1B_2011-06-23_X_01.dat	23.3	16755	0.43	-1.6	1.7	4

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KBR1B_2011-06-24_X_01.dat   22.9   16500   0.37     -1.1     2.0   5
KBR1B_2011-06-25_X_01.dat   23.5   16950   0.37     -1.9     1.1   3
KBR1B_2011-06-26_X_01.dat   23.8   17145   0.24     -0.8     0.7   2
KBR1B_2011-06-27_X_01.dat   23.5   16947   0.32     -1.9     0.7   3
KBR1B_2011-06-28_X_01.dat   24.0   17280   0.28     -0.8     1.2   1
KBR1B_2011-06-29_X_01.dat   23.7   17085   0.41     -1.7     1.9   2
KBR1B_2011-06-30_X_01.dat   23.5   16890   0.31     -1.8     0.8   3
```

- Following JPL RL00 (yellow) and RL01 (green) L1B products are publicly available. June and July 2002 and January and June 2011 (red) are not provided due to accelerometer problems. See also comment in the Highlights Section.

L1B data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004												
2005												
2006												
2007												
2008												
2009												
2010												
2011												

- The L1B Read software has been updated to accommodate 64-bit machines but the software will also work on 32 bit machines. Please change RELEASE_2008-03-20 to RELEASE_2010-03-31 available at ftp://podaac.jpl.nasa.gov/allData/grace/sw/.
- 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 July 2, 2011 and extended to 1976-2000 (see newsletter for December 2008). Quality statistics for Release 04 products are online available at http://www-app2.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
1976												
…												
1999												
2000												
2001												
2002												
2003												
2004												
2005												
2006												
2007												
2008												
2009												
2010												
2011												

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 May 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.

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										**M60**	**M60**	**M60**
2009	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**
2010	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**	**M60**			
2011												

- **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 May 2011. 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												
2009												
2010												
2011												

- **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 May 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 Grace Science Team Meeting at GFZ in Potsdam on 11/12 November 2010 are online available at http://www.gfz-potsdam.de/portal/gfz/Neuestes/Veranstaltungen/Tagungen+und+Konferenzen/2010-Conferences/GSTM-2010/proceedings
- 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: 771 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.