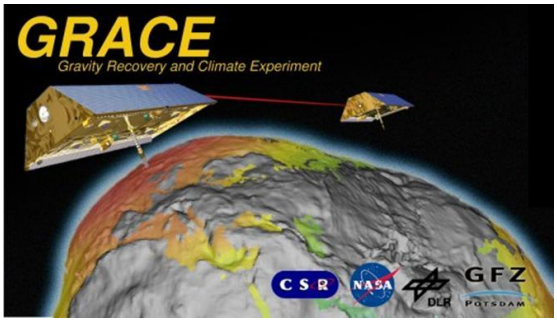
GRACE Science Data System Monthly Report
July 2012



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Highlights:

- CSR and GFZ have generated and delivered RL05 Level-2 products for July 2012.
- JPL has generated and delivered RL05 Level-2 products for June and July 2012.
- Still missing Level-2 RL05 products of the three centers (see tables below) will be provided soon. Please refer to the upcoming newsletters.
- The AOD1B product web page has moved to http://www.gfz-potsdam.de/AOD1B.
- The Joint GRACE Science Team Meeting 2012 and Final Colloquium of the DFG Special Priority Program SPP1257 "Mass Transport and Mass Distribution in System Earth" took place at the German Research Centre for Geosciences in Potsdam between September 17 and 19, 2012. Further information can be found at http://www.gfz-potsdam.de/portal/gfz/Neuestes/Veranstaltungen/Tagungen+und+Konferenzen/2012/GRACE+Meeting . Proceedings will be made available mid of October 2012.

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 August 1, 2012 00:00:00 are as follows:

  A [m] = 6821764.433
  E [-] = 0.001324
  I [°] = 89.012243

- A station keeping maneuver was made on July 4, 2012 on GRACE-2 at 07:03 to reverse the separation rate. The satellites separation was 208 km on August 1, 2012 with a rate of 1.21 km/d. The next orbit maneuver will be needed in approximately 5 months.

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 02 instrument data have been processed at JPL and archived at GRACE-ISDC and JPL PO.DAAC. Please refer to the statistics below.
- RL02 Notes:
  - On 2012-07-04 GRACE-B performed orbital maintenance maneuver OTM-11 from 07:03:25 to 07:05:22. The KBR1B data is available during the maneuver but deemed unreliable +/- 5 min around the maneuver. During the maneuver the ACC data are saturated and were removed for the ACC1B data generation.
  - On 2011-07-17 GRACE A&B performed Center of mass calibration maneuvers. Both spacecraft were in non-science mode from 17:50 to 2011-07-18 04:11. Data in this interval may be degraded and caution should be used when using this data in the gravity field determination process.
  - On 2011-07-20 GRACE-A and GRACE-B executed a 90 deg yaw turn to discharge the batteries during the full sun period. The turns started 15:50 and ended at 16:19. The KBR1B data is missing in during this interval.
  - On 2011-07-25 GRACE-A and GRACE-B executed a 90 deg yaw turn to discharge the batteries during the full sun period. The turns started 03:24 and ended at 03:53. The KBR1B data is missing in during this interval.
  - On 2011-07-30 GRACE-A and GRACE-B executed a 90 deg yaw turn to discharge the batteries during the full sun period. The turns started 14:21 and ended at 14:50. The KBR1B data is missing in during this interval.
  - 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_2012-07-01_X_02.dat	24.0	17276	0.46	-1.0	2.5	1
KBR1B_2012-07-02_X_02.dat	24.0	17280	0.38	-1.1	1.9	1
KBR1B_2012-07-03_X_02.dat	24.0	17280	0.29	-1.1	1.0	1
KBR1B_2012-07-04_X_02.dat	23.9	17205	0.88	-29.4	7.9	2
KBR1B_2012-07-05_X_02.dat	24.0	17256	0.35	-1.0	1.7	2
KBR1B_2012-07-06_X_02.dat	24.0	17280	0.47	-2.8	1.0	1
KBR1B_2012-07-07_X_02.dat	23.9	17244	0.37	-2.2	1.0	3
KBR1B_2012-07-08_X_02.dat	24.0	17280	0.34	-1.3	0.9	1
KBR1B_2012-07-09_X_02.dat	23.9	17238	0.40	-1.0	2.0	3
KBR1B_2012-07-10_X_02.dat	24.0	17280	0.37	-1.2	1.6	1
KBR1B_2012-07-11_X_02.dat	24.0	17280	0.34	-1.3	1.2	1
KBR1B_2012-07-12_X_02.dat	23.9	17205	0.35	-1.1	1.2	2
KBR1B_2012-07-13_X_02.dat	24.0	17280	0.36	-1.0	2.2	1
KBR1B_2012-07-14_X_02.dat	24.0	17280	0.28	-0.8	0.9	1
KBR1B_2012-07-15_X_02.dat	24.0	17280	0.34	-1.0	1.1	1
KBR1B_2012-07-16_X_02.dat	23.8	17145	0.41	-1.2	1.8	2
KBR1B_2012-07-17_X_02.dat	24.0	17280	0.70	-1.1	5.9	1
KBR1B_2012-07-18_X_02.dat	24.0	17280	0.29	-0.8	0.9	1
KBR1B_2012-07-19_X_02.dat	24.0	17280	0.35	-1.3	1.0	1
KBR1B_2012-07-20_X_02.dat	23.4	16864	0.43	-2.0	2.0	4
KBR1B_2012-07-21_X_02.dat	24.0	17280	0.34	-1.4	1.7	1
KBR1B_2012-07-22_X_02.dat	23.7	17085	0.35	-1.1	1.6	2
KBR1B_2012-07-23_X_02.dat	24.0	17257	0.29	-0.8	1.1	2
KBR1B_2012-07-24_X_02.dat	24.0	17280	0.35	-1.4	1.2	1
KBR1B_2012-07-25_X_02.dat	23.6	16988	0.39	-2.3	1.3	2
KBR1B_2012-07-26_X_02.dat	24.0	17280	0.39	-2.0	1.2	1
KBR1B_2012-07-27_X_02.dat	24.0	17280	0.36	-1.0	1.8	1
KBR1B_2012-07-28_X_02.dat	24.0	17280	0.32	-1.1	1.2	1
KBR1B_2012-07-29_X_02.dat	24.0	17280	0.29	-1.0	1.0	1
KBR1B_2012-07-30_X_02.dat	23.6	16978	0.45	-1.9	1.9	2
KBR1B_2012-07-31_X_02.dat	23.7	17042	0.30	-1.3	0.9	4

Following JPL RL00 (yellow), RL01 (green) and RL02 ("x") 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 several months a significant number of Level-1 data is not available (blue): January and June 2011 (accelerometer data), May 2012 (accelerometer and K-Band data). See also corresponding newsletters.

L1B data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004	x	x	x	x	x	x	x	x	x	x	x	x
2005	x	x	x	x	x	x	x	x	x	x	x	x
2006	x	x	x	x	x	x	x	x	x	x	x	x
2007	x	x	x	x	x	x	x	x	x	x	x	x
2008	x	x	x	x	x	x	x	x	x	x	x	x
2009	x	x	x	x	x	x	x	x	x	x	x	x
2010	x	x	x	x	x	x	x	x	x	x	x	x
2011	x	x	x	x	x	x	x	x	x	x	x	x
2012	x	x	x	x	x	x	x					

- 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/.
- Level-1B Release 01 generation has stopped with 30 April 2012.
- 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 April 30, 2012 and extended to 1976-2000 (see newsletter for December 2008). Generation has been stopped April 30, 2012.
    - Release 05: Generated for 1 January 2001 till 6 September 2012. Further information is available at http://www.gfz-potsdam.de/AOD1B.
    - Following AOD1B products are publicly available (yellow: RL01, RL03 and RL04; green: RL01 and RL04, blue: RL04 only, 'x' RL05):

AOD1B	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1976												
…												
1999												
2000												
2001	x	x	x	x	x	x	x	x	x	x	x	x
2002	x	x	x	x	x	x	x	x	x	x	x	x
2003	x	x	x	x	x	x	x	x	x	x	x	x
2004	x	x	x	x	x	x	x	x	x	x	x	x
2005	x	x	x	x	x	x	x	x	x	x	x	x
2006	x	x	x	x	x	x	x	x	x	x	x	x
2007	x	x	x	x	x	x	x	x	x	x	x	x
2008	x	x	x	x	x	x	x	x	x	x	x	x
2009	x	x	x	x	x	x	x	x	x	x	x	x
2010	x	x	x	x	x	x	x	x	x	x	x	x
2011	x	x	x	x	x	x	x	x	x	x	x	x
2012	x	x	x	x	x	x	x	x				

Level-2 Product Generation and Distribution:

Besides historical RL00 till RL04 time-series (see below) the following RL05 L2 products are presently available to the public (green: available, yellow: in preparation; red: missing due to accelerometer data problems):

- **GFZ RL05:** GSM solutions are available for February 2004 until July 2012. 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 RL05	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002												
2003												
2004												
2005												
2006												
2007												
2008												
2009												
2010												
2011												
2012												

- **CSR RL05:** GSM solutions along with the GAC and GAD background model files are available for the period January 2004 until July 2012. So far no calibrated errors (GSM*.txt) are available, but will be provided later. Note that CSR has put zeroes in the GSM files in fields that contain the formal errors. 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												
2012												

- **JPL RL05:** GSM solutions along with the GAA, GAB, GAC and GAD background model files and calibrated errors (GSM*.txt) are available for the period January 2004 until July 2012. 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												
2012												

- GFZ and CSR have stopped RL04 processing end of April 2012
- JPL has stopped RL04 processing end of January 2012
- 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/TN07 containing C20 estimates derived from SLR and using GRACE RL04/RL05 standards is periodically updated.

Miscellaneous:

- Lecture material from the 2011 summer school of the DFG Special Priority Program "Mass transport and mass distribution in the system Earth" can be downloaded at www.massentransporte.de. Before using, please read the agreements on the cover page.

- 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: 936 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.