GRACE Science Data System Monthly Report
June 2006

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Highlights:

- CSR RL01 and GFZ RL03 Level-2 products for May 2006 have been provided to the archives.
- All GFZ RL03 calibrated errors (GSM*.txt) have been updated on July 7 2006. For details see Level-2 Release Notes.

Satellite Science Relevant Events:

- Nominal operation in Science Mode throughout the month except between June 14 and June 17 (GRACE-1 MMU-B latch-up, KBR problems). For details see Level-1 data processing.
- The GRACE-1 Brouwer mean orbital elements on July 01, 2006 00:00:00 are as follows:

  A [m] = 6842352.813
  E [-] = 0.001682
  I [º] = 89.026947

  The satellites separation was 257 km on June 30, 2006 with a rate of 0.14 km/d. Next maintenance maneuver is needed in about three months.

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

GRACE-1 Housekeeping:	98.7 %
GRACE-1 Science:	100.0 %
GRACE-2 Housekeeping:	99.8 %
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 2006-05-20 the GRACE-B KBR did not properly lock on the Ka signal after an IPU reboot at 00:04:20. Until 00:30:00 the Ka measurement SNR (signal to noise ratio) was too low and rendered the measurements unusable. This anomaly resulted in a 26 minutes of KBR1B data loss
    - On 2006-06-14 the onboard data storage system of GRACE-A experienced around 3:20 a SEU which resulted in about 21 minutes of KBR1B data loss. Furthermore the KBR system experienced an anomaly around 6:05 and 6:11 which resulted in a once per revolution residual signature in the KBR1B prefit check. Finally on 21:50 a KBR missed interrupt occurred on GRACE-A which was the first of a sequence of missed interrupt events that occurred between 2006-06-14 21:50 and 2006-06-17 04:00. Even though these events appeared to be missed interrupts, closer inspection revealed that the time tag shifts normally applied for missed interrupts could not correctly model the observed once per revolution signals. This was also confirmed in the KBR1B prefit check. Both KBR anomalies are under investigation

      In conclusion: The data from 2006-06-14 06:00 till 2006-06-17 04:00 are considered unreliable and should be scrutinized by the L1B data users, before using the data in any gravity field solution.
    - For 2006-06-15, 2006-06-16 and 2006-06-17 see 2006-06-14 note.
    - On 2006-06-20 GRACEA1 experienced a KBR anomaly at 09:30:14 which resulted in time tag shift in the KBR measurements which can not be modeled using the standard KBR missed interrupt time tag shifts. This KBR anomaly is under investigation. A once per revolution signature was found in the KBR1B prefit check. Therefore KBR1B data from 2006-06-20 09:30 till 2006-06-21 09:45 are considered unreliable and should be scrutinized by the L1B data users, before using the data in any gravity field solution.

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_2006-05-19_X_01.dat	24.0	17265	1.57	-4.0	4.8	2
KBR1B_2006-05-20_X_01.dat	23.1	16580	1.52	-3.7	4.2	3
KBR1B_2006-05-21_X_01.dat	24.0	17266	1.24	-2.8	3.6	2
KBR1B_2006-05-22_X_01.dat	23.9	17235	1.42	-3.8	6.3	3
KBR1B_2006-05-23_X_01.dat	23.6	17010	1.66	-6.7	4.9	3
KBR1B_2006-05-24_X_01.dat	24.0	17214	1.63	-4.5	4.2	2
KBR1B_2006-05-25_X_01.dat	23.7	17045	1.49	-4.1	3.5	4
KBR1B_2006-05-26_X_01.dat	23.8	17167	1.16	-4.8	3.0	4
KBR1B_2006-05-27_X_01.dat	23.9	17205	1.67	-5.0	4.6	2
KBR1B_2006-05-28_X_01.dat	24.0	17266	1.26	-4.0	3.1	2
KBR1B_2006-05-29_X_01.dat	24.0	17249	1.54	-6.2	4.3	2
KBR1B_2006-05-30_X_01.dat	23.9	17205	1.30	-5.6	2.8	2
KBR1B_2006-05-31_X_01.dat	23.9	17191	1.42	-4.4	3.9	3
KBR1B_2006-06-01_X_01.dat	24.0	17256	1.05	-4.1	2.6	2
KBR1B_2006-06-02_X_01.dat	24.0	17280	1.89	-8.2	7.4	1
KBR1B_2006-06-03_X_01.dat	23.8	17145	1.20	-3.0	4.5	2
KBR1B_2006-06-04_X_01.dat	24.0	17280	1.31	-4.2	4.2	1
KBR1B_2006-06-05_X_01.dat	24.0	17280	1.49	-4.5	3.9	1
KBR1B_2006-06-06_X_01.dat	23.8	17125	1.51	-6.3	4.4	2
KBR1B_2006-06-07_X_01.dat	23.9	17182	1.63	-5.2	3.6	2
KBR1B_2006-06-08_X_01.dat	24.0	17260	1.30	-2.9	3.5	1
KBR1B_2006-06-09_X_01.dat	24.0	17260	1.61	-4.5	5.2	1
KBR1B_2006-06-10_X_01.dat	24.0	17260	1.56	-5.4	5.3	1
KBR1B_2006-06-11_X_01.dat	23.8	17145	1.45	-4.0	3.6	2
KBR1B_2006-06-12_X_01.dat	23.8	17110	1.40	-3.8	4.9	3
KBR1B_2006-06-13_X_01.dat	23.9	17222	1.47	-4.4	4.0	4
KBR1B_2006-06-14_X_01.dat	23.6	16694	1.77	-5.3	6.5	3
KBR1B_2006-06-15_X_01.dat	24.0	17162	2.35	-6.1	5.7	2
KBR1B_2006-06-16_X_01.dat	24.0	17243	1.65	-6.4	3.7	2
KBR1B_2006-06-17_X_01.dat	23.8	17103	1.31	-3.9	3.2	3
KBR1B_2006-06-18_X_01.dat	23.8	17111	1.46	-4.4	4.5	3

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KBR1B_2006-06-19_X_01.dat  23.7  17085  1.24    -3.9    4.3  2
KBR1B_2006-06-20_X_01.dat  23.6  16990  2.11    -6.5    5.2  3
KBR1B_2006-06-21_X_01.dat  23.8  17145  1.87    -5.9    4.7  2
KBR1B_2006-06-22_X_01.dat  24.0  17280  1.43    -4.1    4.2  1
KBR1B_2006-06-23_X_01.dat  not yet distributed
…
KBR1B_2006-06-30_X_01.dat  not yet distributed
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- Release 01 Level-1B barotropic sea level products (OCN1B) and de-aliasing products (AOD1B) were calculated by GFZ until June 30, 2006 and archived at GRACE-ISDC.
- Release 03 Level 1B de-aliasing products (AOD1B) based on OMCT (Ocean Model for Circulation and Tides) baroclinic ocean model for May 2006 generated and archived at GRACE-ISDC, processing of June 2006 will be started soon.

Level-2 Data Processing:

- All 3 L2 centers at CSR, JPL and GFZ continued processing of release 01 (CSR), release 02 (JPL) and release 03 (GFZ) products.
- Spurious slopes over land, which are due to the non-mass-conserving OMCT model output in AOD1B RL03 (used in JPL RL02 and GFZ RL03 L2 products), can and have to be corrected by re-adding the GAB product over land. A technical note TN04 was prepared and is available since May 10, 2006.

GRACE Product Distribution:

- GFZ RL03 L2 products are available for February 2003 until May 2006. Missing months are June 2003 and January 2004. July 2004 until October 2004 are also available as constrained solutions (*GK2-*). Corresponding background GAA, GAB and GAC products and calibrated errors (GSM*.txt) have been provided too. **All monthly calibrated errors have been updated on July 7 2006**. Details are listed in the GFZ L2 Release Notes.
- CSR RL01 unconstrained GSM solutions along with the GAC background model files and calibrated errors (GSM*.txt) are available for the period August 2002 – May 2006 (only June 2003 is missing due to accelerometer data problems). Details are listed in the CSR L2 Release Notes.
- JPL RL02 L2 products along with the GAB and GAC background model files and calibrated errors (GSM*.txt) are available for February 2003 until November 2005 except for June 2003

and August to October 2004. Details are listed in the JPL L2 Release Notes.

Miscellaneous:

- Next GRACE Science Team Meeting will be held in San Francisco at the Holiday Inn Golden Gateway on December 8/9, 2006.
- Last GRACE Science Team Meeting (GSTM) proceedings (October 2005) are available online (http://www.csr.utexas.edu/grace/GSTM).
- A list of GRACE related publications which can be sorted by author or data is now available at http://www.gfz-potsdam.de/pb1/op/grace/index_GRACE.html under item “Publications”. This list will be regularly updated and maybe still 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.