GRACE Science Data System Monthly Report
March 2007

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
	Christoph Reigber	GFZ	reigber@gfz-potsdam.de

Highlights:

- On March 17 the GRACE satellites exceeded their mission's design lifetime (5 years) with good prospects for another 5 years and more.
- Additional CSR and GFZ reprocessed RL04 Level-2 products based on improved background models, more secular trends and full IERS2003 conventions have been made available to the public on April 13 (see GRACE Product Distribution Section below).
- Missing CSR RL01 and GFZ RL03 L2 products delayed due to heavy workload on RL04 L2 reprocessing.
- The AOD1B Product Description Document has been updated wrt the definition of the new GAD product. Version 3.1 is now online available.
- Papers from the Potsdam Joint CHAMP/GRACE Science Meeting in July 2004 are now online available at http://www.gfz-potsdam.de/pb1/JCG/ .

Satellite Science Relevant Events:

- Nominal operation in Science Mode throughout the month except the events mentioned in the Level-1 Data Processing Section below.
- The GRACE-1 Brouwer mean orbital elements on April 1, 2007 00:00:00 are as follows:

  A [m] = 6840995.588
  E [-] = 0.001675
  I [°] = 89.006573

  The satellites separation was 216 km on March 30, 2007 with a rate of 0.28 km/d. Next orbit maintenance maneuver won't be needed for some months.

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

GRACE-1 Housekeeping:	99.5 %
GRACE-1 Science:	100.0 %
GRACE-2 Housekeeping:	99.9 %
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 2007-02-26 new software was uploaded to the GRACE-B IPU, which requires a reduction in the number of GPS satellites tracked from 10 to 8. Therefore the formal clock error cutoff was raised to 15 cm from 10 cm in order to recover all KBR1B data. The GRACE-B IPU software upload was completed on 2007-02-27.
  - On 2007-03-05 the GRACE-A on board computer was rebooted which resulted in a data outage in ACC1B around 15:55 followed by a significant amount of thrusting. This may complicate orbit integration through this event

- 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_2007-02-16_X_01.dat	24.0	17260	1.51	-4.3	4.4	1
KBR1B_2007-02-17_X_01.dat	24.0	17260	1.53	-4.5	4.7	1
KBR1B_2007-02-18_X_01.dat	24.0	17260	1.26	-3.0	3.6	1
KBR1B_2007-02-19_X_01.dat	23.9	17111	1.54	-4.2	4.1	2
KBR1B_2007-02-20_X_01.dat	23.7	17065	1.39	-4.0	6.0	2

KBR1B_2007-02-21_X_01.dat	24.0	17260	1.63	-5.0	4.9	1
KBR1B_2007-02-22_X_01.dat	24.0	17232	1.58	-4.5	4.8	1
KBR1B_2007-02-23_X_01.dat	24.0	17260	1.39	-3.1	3.8	1
KBR1B_2007-02-24_X_01.dat	23.9	17243	1.54	-4.6	4.2	3
KBR1B_2007-02-25_X_01.dat	24.0	17260	1.48	-4.0	6.2	1
KBR1B_2007-02-26_X_01.dat	23.8	17087	2.05	-8.4	5.2	4
KBR1B_2007-02-27_X_01.dat	23.6	16989	1.48	-3.8	3.3	3
KBR1B_2007-02-28_X_01.dat	23.8	17145	1.54	-3.9	3.6	2
KBR1B_2007-03-01_X_01.dat	24.0	17260	1.60	-4.9	3.5	1
KBR1B_2007-03-02_X_01.dat	23.6	17010	1.72	-4.2	4.3	3
KBR1B_2007-03-03_X_01.dat	24.0	17280	1.71	-4.5	7.3	1
KBR1B_2007-03-04_X_01.dat	24.0	17260	1.36	-5.0	3.5	1
KBR1B_2007-03-05_X_01.dat	24.0	17252	1.82	-5.6	4.6	1
KBR1B_2007-03-06_X_01.dat	24.0	17260	1.68	-4.6	5.2	1
KBR1B_2007-03-07_X_01.dat	24.0	17220	1.65	-4.7	4.4	2
KBR1B_2007-03-08_X_01.dat	23.9	17179	1.39	-3.5	3.1	3
KBR1B_2007-03-09_X_01.dat	23.9	17196	1.49	-4.2	3.8	2
KBR1B_2007-03-10_X_01.dat	24.0	17280	1.84	-4.1	4.4	1
KBR1B_2007-03-11_X_01.dat	24.0	17266	1.73	-5.6	4.2	2
KBR1B_2007-03-12_X_01.dat	23.9	17191	1.84	-5.2	5.7	3
KBR1B_2007-03-13_X_01.dat	24.0	17250	1.47	-3.6	4.0	1
KBR1B_2007-03-14_X_01.dat	24.0	17260	1.52	-4.0	3.9	1
KBR1B_2007-03-15_X_01.dat	24.0	17280	1.14	-3.0	3.2	1
KBR1B_2007-03-16_X_01.dat	24.0	17260	1.85	-6.9	6.5	1
KBR1B_2007-03-17_X_01.dat	24.0	17280	1.64	-4.2	4.9	1
KBR1B_2007-03-18_X_01.dat	24.0	17260	1.40	-4.4	4.1	1
KBR1B_2007-03-19_X_01.dat	23.9	17203	1.72	-6.5	4.3	2
KBR1B_2007-03-20_X_01.dat	24.0	17266	1.78	-4.3	4.2	2
KBR1B_2007-03-21_X_01.dat	24.0	17240	1.36	-3.3	4.6	2
KBR1B_2007-03-22_X_01.dat	24.0	17260	1.63	-4.4	4.7	1
KBR1B_2007-03-23_X_01.dat	24.0	17260	1.36	-3.8	3.5	1
KBR1B_2007-03-24_X_01.dat	24.0	17265	1.47	-3.6	3.4	2
KBR1B_2007-03-25_X_01.dat	23.9	17163	1.49	-3.9	3.6	3
KBR1B_2007-03-26_X_01.dat	24.0	17280	1.11	-4.0	3.3	1
KBR1B_2007-03-27_X_01.dat	24.0	17260	1.44	-3.7	3.9	1
KBR1B_2007-03-28_X_01.dat	24.0	17260	1.43	-5.0	3.5	1

```
KBR1B_2007-03-29_X_01.dat  24.0  17260  1.42    -3.0    5.0  1
KBR1B_2007-03-30_X_01.dat  24.0  17280  1.55    -3.4    6.8  1
KBR1B_2007-03-31_X_01.dat  24.0  17280  1.30    -3.2    3.7  1
```

- L1B De-aliasing Products Status
    - Release 01 Level-1B barotropic sea level products (OCN1B) and de-aliasing products (AOD1B) were calculated by GFZ until March 31, 2007 and archived at GRACE-ISDC.
    - Release 04 Level 1B de-aliasing products (AOD1B) based on improved OMCT, mass-conserving approach and harmonized land/water masks has been processed for January 2001 until March 2007 and made available to the SDS processing centers for L2 RL04 reprocessing.

Level-2 Data Processing:

- CSR and GFZ interrupted processing of operational release 01 (CSR) and release 03 (GFZ) products in order to accelerate release 04 reprocessing.
- TN05 containing C20 estimates derived from SLR is periodically updated (maybe used to substitute C20 values of CSR RL01 products).

GRACE Product Distribution:

Besides historical CSR RL01, GFZ RL03 and JPL RL02 time-series and more experimental releases which are only available to the GRACE Science Team the following RL04 L2 products are available to the public:

- GFZ RL04 L2 products: GSM solutions for August 2002 until February 2007. Missing months are September and December 2002, January and June 2003 and January 2004. 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.
- CSR RL04 L2 products: GSM solutions along with the GAC and GAD background model files and calibrated errors (GSM*.txt) are available for the period April 2002 until December 2006 (only June, July and December 2002 and June 2003 are missing due to accelerometer data problems). Details are listed in the CSR L2 Release Notes.
- JPL RL04 L2 products: GSM solutions along with the GAC and GAD background model

files and calibrated errors (GSM*.txt) are available for the period January 2003 until November 2006 except for June 2003. Details are listed in the JPL L2 Release Notes.

Miscellaneous:

- Next GRACE Science Team Meeting (in combination with the German Special Priority Program “Mass Transport and Mass Distribution in the Earth System”) will take place at GFZ Potsdam between October 15 and 17, 2007.
- 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”. This list will be regularly updated and maybe 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.