GRACE Science Data System Monthly Report
April 2004

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Reminder: The GRACE mission is still in validation phase. Therefore this newsletter, as well as the GRACE data products, are for the Science Team´s use only.

Note: Deadline for abstract submission for Joint CHAMP and GRACE Science Team Meeting is May 15!

Satellite Science Relevant Events:

- A partial KBR calibration maneuver was performed on April 5 to verify the key alignments. Analysis of the alignment results from this test are still pending.
- ICU proof-mass voltage (V_P) was out of range on April 9 between 03:00 and 14:20.
- Testing of B149 IPU (Instrument Processing Unit) software upgrade was completed. This update improves the reliability and simplifies operating procedures. Upload is planned for cw 20 (GRACE-2) and cw 22 (GRACE-1).
- On April 26 an orbit maintenance maneuver was performed on GRACE-2 in order to reverse the drift direction and to reduce the separation to about 170 km in about 90 days.
- The GRACE-1 Brower mean orbital elements on May 01, 2004 00:00:00 were as follows:
  A [m] = 471554.190
  E [-] = 0.001813
  I [^{o}] = 89.016148
  The satellites separation is 256 km (April 30) with a rate of -0.81 km/d. The next orbit maintenance maneuver will be necessary in about three 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:	99.5 %
GRACE-2 Science:	100.0 %

Level-1 Data Processing:

- Level-1B instrument data have been processed at JPL and archived at GRACE-ISDC and JPL PO.DAAC.

The following table gives a statistics of the available KBR1B products. The columns in the table are:

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_2004-03-27_X_00.dat	24.0	17280	2.12	-6.2	4.7	1
KBR1B_2004-03-28_X_00.dat	23.9	17197	1.94	-5.5	4.4	2
KBR1B_2004-03-29_X_00.dat	24.0	17280	1.92	-4.2	4.4	1
KBR1B_2004-03-30_X_00.dat	23.8	17125	1.94	-5.6	5.2	2
KBR1B_2004-03-31_X_00.dat	24.0	17260	2.25	-6.5	5.3	1
KBR1B_2004-04-01_X_00.dat	24.0	17280	1.83	-4.9	4.7	1
KBR1B_2004-04-02_X_00.dat	23.8	17125	1.94	-4.8	5.6	2
KBR1B_2004-04-03_X_00.dat	24.0	17260	2.12	-4.8	6.5	1
KBR1B_2004-04-04_X_00.dat	24.0	17260	2.39	-6.4	5.8	1
KBR1B_2004-04-05_X_00.dat	23.8	17093	2.29	-6.0	5.5	3
KBR1B_2004-04-06_X_00.dat	24.0	17260	2.39	-6.8	5.4	1
KBR1B_2004-04-07_X_00.dat	24.0	17245	2.35	-5.1	7.2	2
KBR1B_2004-04-08_X_00.dat	24.0	17260	2.20	-6.2	6.0	1
KBR1B_2004-04-09_X_00.dat	23.8	17125	2.44	-8.3	5.9	2
KBR1B_2004-04-10_X_00.dat	24.0	17260	2.20	-6.3	6.6	1
KBR1B_2004-04-11_X_00.dat	23.8	17125	2.32	-6.5	6.2	2
KBR1B_2004-04-12_X_00.dat	24.0	17260	2.32	-7.5	6.4	1
KBR1B_2004-04-13_X_00.dat	24.0	17260	2.31	-6.7	5.7	1
KBR1B_2004-04-14_X_00.dat	23.7	17045	2.47	-6.6	5.9	2
KBR1B_2004-04-15_X_00.dat	24.0	17260	1.85	-4.9	5.3	1
KBR1B_2004-04-16_X_00.dat	24.0	17260	2.37	-6.6	6.2	1
KBR1B_2004-04-17_X_00.dat	24.0	17240	2.17	-6.2	7.3	1
KBR1B_2004-04-18_X_00.dat	23.8	17145	2.32	-9.7	5.6	2
KBR1B_2004-04-19_X_00.dat	24.0	17280	2.03	-5.4	6.7	1
KBR1B_2004-04-20_X_00.dat	24.0	17280	2.68	-7.1	10.2	1
KBR1B_2004-04-21_X_00.dat	24.0	17280	2.11	-6.8	6.1	1
KBR1B_2004-04-22_X_00.dat	24.0	17280	2.43	-6.8	5.8	1
KBR1B_2004-04-23_X_00.dat	23.9	17197	2.22	-6.2	5.0	2
KBR1B_2004-04-24_X_00.dat	--- not yet processed ----					
…						
KBR1B_2004-04-30_X_00.dat	--- not yet processed ----					

Additionally all level-1B barotropic sea level products (OCN1B) and de-aliasing products (AOD1B) until April 30 have been calculated by GFZ and archived at GRACE-ISDC.

Level-2 Data Processing:

- All 3 L2 centers at CSR, JPL and GFZ concentrated on improvements in the gravity model product quality and catching up on the remaining monthly fields data processing.

GRACE Product Distribution:

- CSR has provided 4 additional monthly gravity field solutions (GSM-2*0001) for September 2002 (70x70 only), October 2002, November 2003 and December 2003. For each new product a file containing the calibrated error standard deviations for the geopotential coefficients has been provided too (GSM-2*_0001.txt). These error estimates are preliminary and calibrated using standard methods including sub-set and inter-month comparisons. Further details are given in the corresponding L2 release notes available at both archives.
- Reading software for binary OCN1B products is available at the two archives since April 15 (README, shell script, test data set).

Miscellaneous:

- GRACE mission status and scientific results have been presented at EGU 1st General Assembly (April 25-30) session G1 ("Global Water Cycle from Geodesy") and G9 ("Results of recently launched missions: CHAMP, ENVISAT, ICESAT, JASON-1 and GRACE").
- Hydrology user workshop (March 21, 2004) material is now available (since April 10) at http://www.ess.uci.edu/~famiglietti/grace.
- Joint CHAMP and GRACE Science Team Meeting is scheduled for July 6-8, 2004 at GFZ Potsdam with registration, poster mounting and ice breaker party on July 5, afternoon to evening.