GRACE Science Data System Monthly Report
March 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.

Satellite Science Relevant Events:

- In order to avoid an autonomous reboot of the onboard computer (OBDH) after approximately 280 days a warm-boot was commanded on GRACE-1 on March 16.
- Since March 28 the GRACE satellites are again experiencing eclipses.
- The GRACE-1 Brower mean orbital elements on April 01, 2004 00:00:00 were as follows:
  A [m] = 472241.685
  E [-] = 0.001654
  I [º] = 89.007811
  The satellites separation increased from 236 km at the beginning of March to 240 km at the end of March. The next orbit maintenance maneuver will be necessary beginning of June.

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

GRACE-1 Housekeeping:	99.44 %
GRACE-1 Science:	100.00 %
GRACE-2 Housekeeping:	99.99 %
GRACE-2 Science:	100.00 %

Level-1 Data Processing:

- Level-1B instrument data have been processed at JPL and archived at GRACE-ISDC and JPL PO.DAAC.
- An error in the GNV1B product related to the reported formal errors of the position and velocity was discovered. Further details are given in the corresponding L1 release notes available at the GRACE archives. Problem will be fixed with the next product release.

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_2004-02-21_X_00.dat	24.0	17247	1.93	-7.8	5.3	2
KBR1B_2004-02-22_X_00.dat	23.7	17053	1.78	-4.2	4.2	3
KBR1B_2004-02-23_X_00.dat	24.0	17280	1.57	-3.9	4.5	1
KBR1B_2004-02-24_X_00.dat	23.9	17175	1.48	-4.5	4.6	2
KBR1B_2004-02-25_X_00.dat	24.0	17258	1.55	-3.7	5.0	1
KBR1B_2004-02-26_X_00.dat	23.8	17125	1.69	-4.7	4.3	2
KBR1B_2004-02-27_X_00.dat	24.0	17260	1.57	-3.7	4.5	1
KBR1B_2004-02-28_X_00.dat	24.0	17280	1.74	-4.2	5.0	1
KBR1B_2004-02-29_X_00.dat	23.8	17103	1.76	-4.6	3.6	2
KBR1B_2004-03-01_X_00.dat	24.0	17260	1.44	-3.8	5.3	1
KBR1B_2004-03-02_X_00.dat	24.0	17280	1.43	-4.7	3.2	1
KBR1B_2004-03-03_X_00.dat	23.8	17125	1.51	-4.2	4.2	2
KBR1B_2004-03-04_X_00.dat	23.3	16716	2.19	-6.3	7.1	2
KBR1B_2004-03-05_X_00.dat	24.0	17280	1.48	-3.9	3.9	1
KBR1B_2004-03-06_X_00.dat	24.0	17280	2.01	-7.1	4.5	1
KBR1B_2004-03-07_X_00.dat	24.0	17280	1.58	-3.6	4.5	1
KBR1B_2004-03-08_X_00.dat	23.9	17205	1.80	-4.3	4.5	2
KBR1B_2004-03-09_X_00.dat	23.8	17145	1.58	-3.9	4.2	2
KBR1B_2004-03-10_X_00.dat	24.0	17280	2.37	-5.4	4.9	1
KBR1B_2004-03-11_X_00.dat	24.0	17280	1.53	-3.4	6.9	1
KBR1B_2004-03-12_X_00.dat	24.0	17280	1.62	-4.2	4.6	1
KBR1B_2004-03-13_X_00.dat	24.0	17280	1.79	-4.8	5.7	1
KBR1B_2004-03-14_X_00.dat	23.9	17122	1.66	-3.7	5.2	2
KBR1B_2004-03-15_X_00.dat	23.1	16628	2.13	-6.9	5.8	3
KBR1B_2004-03-16_X_00.dat	24.0	17260	1.80	-4.2	5.3	1
KBR1B_2004-03-17_X_00.dat	24.0	17260	1.91	-5.2	6.7	1
KBR1B_2004-03-18_X_00.dat	24.0	17240	2.11	-7.4	4.2	1
KBR1B_2004-03-19_X_00.dat	23.4	16841	2.09	-5.8	6.8	2
KBR1B_2004-03-20_X_00.dat	24.0	17280	1.75	-4.6	4.2	1
KBR1B_2004-03-21_X_00.dat	23.5	16889	2.01	-10.5	5.7	2
KBR1B_2004-03-22_X_00.dat	24.0	17261	2.09	-5.0	5.5	1
KBR1B_2004-03-23_X_00.dat	24.0	17280	1.74	-5.0	4.2	1
KBR1B_2004-03-24_X_00.dat	24.0	17280	2.00	-7.2	4.3	1
KBR1B_2004-03-25_X_00.dat	23.8	17145	2.03	-4.3	5.9	2
KBR1B_2004-03-26_X_00.dat	24.0	17280	2.17	-7.3	5.5	1
KBR1B_2004-03-27_X_00.dat	--- not yet processed ----					
…						
KBR1B_2004-03-31_X_00.dat	--- not yet processed ----					

Additionally all level-1B barotropic sea level products (OCN1B) and de-aliasing products (AOD1B) until March 31 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:

- The number of monthly and mean gravity fields available at ISDC and PO.DAAC has not changed (status see February newsletter)

- **For each CSR and GFZ monthly gravity field product released so far, a file containing the calibrated error standard deviations for the geopotential coefficients has been provided (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.

Miscellaneous:

- GRACE celebrated 2nd anniversary on March 17
- GRACE Hydrology users workshop was held in UC-Irvine March 21, 2004 in conjunction with the NASA Surface Water Working Group Meeting. The GRACE project status and latest SDS products were briefed to a large group of interested hydrologists.
- 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