GRACE Science Data System Monthly Report
January 2006

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Highlights:

- The Sequence Of Events file (SOE) has significantly been upgraded (TN-01, available from the Level-1B product section at PO.DAAC and the documentation section at ISDC). A TN-03 has been added which explains all the TN-01 SOE entries. New events now included in the SOE are: all orbit maneuvers; ICU power cycles & set-point changes; episodes of CM & KBR calibrations; and occultation on-off events.

Satellite Science Relevant Events:

- On January 11, when a maneuver has been performed on GRACE-2 in order to reduce the drift rate from approximately 3.1 to 0.5 km/d. Because GRACE-2 was yaw-turned, no KBR data are available between 10:35 and 16:15.
- On January 12 14:52 a one-month test of radio occultation measurements has started on GRACE-1 after switching on the RF2 occultation antenna. The activated parameters are the same as during last test on GRACE-2 (September 2005).
- In order to avoid an autonomous reboot of the onboard computer (OBDH) after approximately 280 days a (warm) boot has been commanded on January 18 at 13:51 for GRACE-2 and on January 19 at 13:21 for GRACE-1. The reboot made the satellite flying a few seconds in Coarse Pointing Mode (CICPM) with active Inertial Measurement Unit (IMU) on GRACE-2. At 15:25 the IMU has been switched off after filling the cleared time tag buffer and resuming nominal operations. The next OBDH boots will be required in October 2006.
- On January 26 center of mass (CoM) calibration maneuvers were executed simultaneously on both satellites. Therefore a switch from Science Mode (SM) to Attitude Hold Mode (AHM) has been executed at 03:10. In order to minimize accelerometer twang effects the wiggles were performed in the sunlight, at about 50 resp. 80 deg N. The times were 05:12 (roll), 06:51

(pitch), 08:25 (yaw), 09:54 (roll), 11:28 (pitch), 13:07 (yaw). The calibrations ended by the switch from AHM to SM at 14:06. Analysis of the maneuvers is still pending.

- As it has turned out that GPS PRN 17 had still been disabled to be tracked by the IPU on GRACE-2 (only) due to earlier IPU operations, on January 26 at 01:51 the IPU has been commanded to enable tracking to PRN 17.
- The GRACE-1 Brouwer mean orbital elements on February 01, 2006 00:00:00 are as follows:

  A [m] = 6843296.808
  E [-] = 0.001600
  I [º] = 89.036356

  The satellites separation was 188 km on February 1, 2006 with a rate of 0.8 km/d. Next maintenance maneuver is needed in about 3 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 2006-01-11 GRACE-B performed an orbital maintenance maneuver OTM3. Approximately 6 hours of KBR1B data was lost because GRACE-B was turned 180 degrees in yaw for the maneuver.
  - On 2006-01-26 GRACE-A and GRACE-B performed simultaneous Center of Mass calibrations. The spacecraft were in non-science mode from 03:10 till 14:06. Caution should be used when using the data during the maneuver period.

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_2005-12-23_X_01.dat	24.0	17280	1.24	-3.9	3.0	1
KBR1B_2005-12-24_X_01.dat	23.8	17142	1.43	-5.7	2.9	2
KBR1B_2005-12-25_X_01.dat	23.8	17145	1.07	-2.8	2.6	2
KBR1B_2005-12-26_X_01.dat	24.0	17280	1.24	-3.8	2.9	1
KBR1B_2005-12-27_X_01.dat	24.0	17266	1.20	-3.0	3.0	2
KBR1B_2005-12-28_X_01.dat	24.0	17258	1.30	-3.0	3.6	2
KBR1B_2005-12-29_X_01.dat	24.0	17266	1.51	-4.7	3.4	2
KBR1B_2005-12-30_X_01.dat	23.8	17158	1.42	-4.1	3.4	4
KBR1B_2005-12-31_X_01.dat	23.8	17123	1.64	-5.1	4.1	3
KBR1B_2006-01-01_X_01.dat	24.0	17226	1.47	-8.6	3.0	3
KBR1B_2006-01-02_X_01.dat	24.0	17256	1.32	-3.6	3.2	2
KBR1B_2006-01-03_X_01.dat	24.0	17280	1.31	-3.3	5.6	1
KBR1B_2006-01-04_X_01.dat	24.0	17280	1.49	-5.7	4.0	1
KBR1B_2006-01-05_X_01.dat	23.7	17070	1.09	-2.5	2.9	3
KBR1B_2006-01-06_X_01.dat	24.0	17280	1.13	-3.9	2.8	1
KBR1B_2006-01-07_X_01.dat	24.0	17280	1.30	-3.4	3.5	1
KBR1B_2006-01-08_X_01.dat	24.0	17280	1.22	-3.3	2.5	1
KBR1B_2006-01-09_X_01.dat	24.0	17280	1.37	-3.3	3.2	1
KBR1B_2006-01-10_X_01.dat	24.0	17280	1.42	-4.8	3.3	1
KBR1B_2006-01-11_X_01.dat	18.4	13262	1.15	-3.0	3.3	4
KBR1B_2006-01-12_X_01.dat	24.0	17280	1.55	-4.5	4.0	1
KBR1B_2006-01-13_X_01.dat	24.0	17280	1.41	-3.3	3.6	1
KBR1B_2006-01-14_X_01.dat	24.0	17266	1.59	-4.0	4.1	2
KBR1B_2006-01-15_X_01.dat	23.9	17187	1.48	-3.2	4.1	3
KBR1B_2006-01-16_X_01.dat	24.0	17258	1.33	-3.9	3.2	2
KBR1B_2006-01-17_X_01.dat	24.0	17262	1.43	-4.7	3.3	2
KBR1B_2006-01-18_X_01.dat	23.8	17160	1.70	-4.0	5.0	4
KBR1B_2006-01-19_X_01.dat	23.8	17126	1.49	-7.1	3.3	3
KBR1B_2006-01-20_X_01.dat	24.0	17280	1.38	-5.7	2.7	1
KBR1B_2006-01-21_X_01.dat	24.0	17280	1.43	-4.7	3.3	1
KBR1B_2006-01-22_X_01.dat	24.0	17280	1.48	-4.7	3.7	1

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KBR1B_2006-01-23_X_01.dat  23.8  17142  1.93    -7.3    4.2  2
KBR1B_2006-01-24_X_01.dat  24.0  17266  1.86    -5.4    5.2  2
KBR1B_2006-01-25_X_01.dat  23.9  17183  1.69    -5.1    4.5  3
KBR1B_2006-01-26_X_01.dat  23.9  17205  1.26    -2.8    4.2  2
KBR1B_2006-01-27_X_01.dat  not yet distributed
…
KBR1B_2006-01-31_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 January 31, 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 January 2006 not yet generated.

Level-2 Data Processing:

- All 3 L2 centers at CSR, JPL and GFZ continued reprocessing of release 02 (CSR, JPL) and 03 (GFZ) based on new standards, background models and processing strategies.
- Investigations ongoing, if and how slopes over land, which are due to the non-mass-conserving OMCT model output in AOD1B RL03 (used in JPL and GFZ L2 products), can be corrected. A note will be prepared soon.

GRACE Product Distribution:

- Constrained field from UTCSR, and the associated Level-1B products, for November 2005 are now available to the GRACE Science Team at PO.DAAC and ISDC.

Miscellaneous:

- GRACE Science Team Meeting (GSTM) proceedings are available online (http://www.csr.utexas.edu/grace/GSTM).
- 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.