GRACE Science Data System Monthly Report
September 2005

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Highlights:

- Next GRACE Science Team Meeting (GSTM) will be held in Austin on October 13/14, 2005 (see http://www.csr.utexas.edu/grace/GSTM).

Satellite Science Relevant Events:

- Nominal operation in Science Mode throughout the month. GRACE1 is in Science Mode for over 149 days with a total of 90.5%. For GRACE-2 we reached 110 days and a total of 89.7%. Simultaneous SM on both spacecraft is now 85.3% of the mission (status October 10).
- Between September 23 and September 29 occultation measurements were activated on GRACE-2. GFZ analysis shows that a) the number of daily occultations and also the data quality is comparable to CHAMP and b) the data quality in the lower troposphere seems to be improved (GRACE sounds on average deeper to the atmosphere).
- The GRACE-1 Brouwer mean orbital elements on October 01, 2005 00:00:00 are as follows:

  A [m] = 6844084.938
  E [-] = 0.001623
  I [°] = 89.041877

  The satellites separation was 200 km on September 1 with a rate of 0.14 km/d. Thus, the next orbit maintenance maneuver has to be performed in about 6 months.

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

GRACE-1 Housekeeping:	99.4 %
GRACE-1 Science:	100.0 %
GRACE-2 Housekeeping:	99.7 %
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 2005-08-31, approximately for 4 hours, GRACE-B only tracked 4 GPS satellites. This increased the formal error on the clock solution by a factor of 5. Therefore, the edit criteria for the clock solution was raised from 10 cm to 50 cm to let the 4 hours back into the solution. This interval lasted from approximately 2005-08-31 00:00:00 till 04:00:00.
- On 2005-09-05 the KBR-GPS is higher (2.96 cm) than normal. The main reason for this is that for approximately one orbit (~15:00 UTC) the GRACE orbits degraded. The clock solutions were found to be satisfactory, so no further action was taken.
- On 2005-09-19 and 2005-09-20 Build 150.2 IPU software was uploaded to GRACE-B. During this time the maximum number of GPS that can be tracked by the IPU was set to 8 instead of the nominal 10. The increased KBR-GPS RMS for 2005-09-19 may be due to the fact that two GPS satellites were not available in JPL's FLINN solution.

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_2005-08-19_X_01.dat	24.0	17260	1.41	-4.2	3.9	1
KBR1B_2005-08-20_X_01.dat	24.0	17260	1.82	-5.2	5.0	1
KBR1B_2005-08-21_X_01.dat	24.0	17260	1.74	-5.1	4.0	1
KBR1B_2005-08-22_X_01.dat	24.0	17232	1.49	-3.5	4.1	1
KBR1B_2005-08-23_X_01.dat	23.6	16998	1.80	-5.4	4.4	3
KBR1B_2005-08-24_X_01.dat	24.0	17266	1.58	-4.5	4.0	2
KBR1B_2005-08-25_X_01.dat	23.9	17232	1.41	-3.7	4.5	4
KBR1B_2005-08-26_X_01.dat	23.9	17204	1.65	-4.2	4.7	2
KBR1B_2005-08-27_X_01.dat	23.7	17069	1.83	-5.0	4.9	2
KBR1B_2005-08-28_X_01.dat	24.0	17280	1.48	-4.0	4.3	1
KBR1B_2005-08-29_X_01.dat	23.9	17205	1.74	-4.7	4.9	2
KBR1B_2005-08-30_X_01.dat	24.0	17280	1.58	-6.5	4.8	1
KBR1B_2005-08-31_X_01.dat	23.8	17145	2.08	-6.1	9.0	2
KBR1B_2005-09-01_X_01.dat	24.0	17280	1.88	-7.1	3.8	1
KBR1B_2005-09-02_X_01.dat	24.0	17251	1.32	-4.1	3.7	3
KBR1B_2005-09-03_X_01.dat	24.0	17280	1.66	-4.4	4.0	1
KBR1B_2005-09-04_X_01.dat	23.8	17145	1.94	-5.3	4.9	2
KBR1B_2005-09-05_X_01.dat	23.8	17125	2.96	-10.3	14.3	2
KBR1B_2005-09-06_X_01.dat	24.0	17260	1.67	-3.9	4.1	1
KBR1B_2005-09-07_X_01.dat	24.0	17260	1.77	-4.7	5.5	1
KBR1B_2005-09-08_X_01.dat	24.0	17260	1.94	-5.0	5.4	1
KBR1B_2005-09-09_X_01.dat	24.0	17260	2.00	-6.7	4.7	1
KBR1B_2005-09-10_X_01.dat	23.8	17130	1.97	-5.5	5.5	3
KBR1B_2005-09-11_X_01.dat	24.0	17266	2.11	-4.2	8.0	2
KBR1B_2005-09-12_X_01.dat	23.8	17124	1.70	-5.0	4.9	2
KBR1B_2005-09-13_X_01.dat	24.0	17280	1.52	-3.7	4.2	1
KBR1B_2005-09-14_X_01.dat	24.0	17280	1.82	-4.7	4.3	1
KBR1B_2005-09-15_X_01.dat	23.8	17141	1.67	-4.7	4.1	2
KBR1B_2005-09-16_X_01.dat	23.8	17111	2.19	-6.7	5.7	3
KBR1B_2005-09-17_X_01.dat	23.9	17209	2.00	-5.6	5.3	2
KBR1B_2005-09-18_X_01.dat	24.0	17260	1.48	-3.9	4.6	1
KBR1B_2005-09-19_X_01.dat	24.0	17260	2.37	-4.7	11.4	1
KBR1B_2005-09-20_X_01.dat	23.4	16885	1.71	-4.7	5.5	3
KBR1B_2005-09-21_X_01.dat	23.8	17145	1.56	-5.0	3.7	2

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KBR1B_2005-09-22_X_01.dat  24.0  17280  1.48    -4.0    4.0  1
KBR1B_2005-09-23_X_01.dat  24.0  17280  1.60    -5.2    4.9  1
KBR1B_2005-09-24_X_01.dat  23.8  17131  1.76    -4.6    4.3  3
KBR1B_2005-09-25_X_01.dat  23.9  17243  1.87    -4.9    6.3  3
KBR1B_2005-09-26_X_01.dat  24.0  17240  1.53    -4.1    3.7  2
KBR1B_2005-09-27_X_01.dat  24.0  17280  1.59    -4.9    4.3  1
KBR1B_2005-09-28_X_01.dat  23.5  16911  1.57    -5.0    6.0  4
KBR1B_2005-09-29_X_01.dat  23.8  17090  1.98    -4.2    9.3  2
KBR1B_2005-09-30_X_01.dat  not yet distributed
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- Release 01 Level-1B barotropic sea level products (OCN1B) and de-aliasing products (AOD1B) until September 30, 2005 were 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 field data processing.

GRACE Product Distribution:

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

Miscellaneous:

- Selected and reviewed presentations from the July 2004 Joint CHAMP/GRACE Science Meeting will be published in a special issue of EGU´s ´Advances of Geosciences´.
- 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.