GRACE Science Data System Monthly Report
March 2005

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Satellite Science Relevant Events:

- Nominal operation in Science Mode throughout the month except on
  - February 28-March 2: Upload of Build 150 IPU (Instrument Processing Unit) software to GRACE-1 caused L1B processing problems (see below). Important new software feature is the automatic recognition of unhealthy GPS satellites.
- The GRACE-1 Brouwer mean orbital elements on April 01, 2005 00:00:00 are as follows:

  A [m] = 6845774.018

  E [-] = 0.001624

  I [º] = 89.035438

  The satellites separation was 214 km on March 31 with a rate of -1.00 km/d. Next orbit maintenance maneuver will be needed in about 2 months.

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

GRACE-1 Housekeeping:	100.0 %
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 days 2005-02-28, 2005-03-01 and 2005-03-02 Build 150 IPU software was uploaded to GRACE-A, which requires many IPU reboots and the maximum number of GPS satellites tracked for OD was set to 6 (nominal = 10) during the upload. The lower number of GPS satellites tracked resulted in higher formal clock errors. The rejection criteria was raised to 20 cm (from 10 cm) to let 10 to 15 % of the KBR1B data back in. Extra vigilance is suggested when using the days mentioned above for science analysis.
- Starting with L1B distribution on March 5 an additional quality check will be used to catch problems like forgotten missed interrupt corrections.
- On day 2005-03-05 the rejection criteria for formal clock errors was raised to 20 cm (from 10 cm) on GRACE-B to bring back approximately 15 min of KBR1B data
- On day 2005-03-17 about 20 minutes of KBR1B data was lost due to three IPU reboots on GRACE-A of which two were 7 minutes apart.

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_2005-02-26_X_01.dat	24.0	17280	1.63	-5.2	3.7	1
KBR1B_2005-02-27_X_01.dat	24.0	17252	1.89	-4.1	5.5	3
KBR1B_2005-02-28_X_01.dat	23.3	16801	2.60	-6.7	6.1	6
KBR1B_2005-03-01_X_01.dat	23.5	16873	3.40	-7.3	9.1	6
KBR1B_2005-03-02_X_01.dat	23.5	16849	2.24	-4.9	9.5	4

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KBR1B_2005-03-03_X_01.dat  24.0  17260  1.66    -4.5    6.9  1
KBR1B_2005-03-04_X_01.dat  24.0  17260  1.78    -4.7    4.1  1
KBR1B_2005-03-05_X_01.dat  23.8  17125  1.94    -5.6    6.3  2
KBR1B_2005-03-06_X_01.dat  24.0  17280  1.57    -4.4    4.2  1
KBR1B_2005-03-07_X_01.dat  23.9  17194  1.64    -4.6    3.6  2
KBR1B_2005-03-08_X_01.dat  24.0  17280  1.63    -4.2    4.4  1
KBR1B_2005-03-09_X_01.dat  23.8  17140  1.79    -5.0    4.9  2
KBR1B_2005-03-10_X_01.dat  24.0  17280  1.32    -5.2    3.1  1
KBR1B_2005-03-11_X_01.dat  24.0  17280  1.76    -4.0    5.0  1
KBR1B_2005-03-12_X_01.dat  23.9  17205  1.72    -4.7    5.8  2
KBR1B_2005-03-13_X_01.dat  24.0  17251  1.73    -5.5    4.8  3
KBR1B_2005-03-14_X_01.dat  24.0  17280  2.04    -4.8    6.7  1
KBR1B_2005-03-15_X_01.dat  23.8  17145  2.01    -4.9    5.0  2
KBR1B_2005-03-16_X_01.dat  24.0  17265  2.16    -5.7    5.0  2
KBR1B_2005-03-17_X_01.dat  23.6  16997  1.70    -4.4    5.1  3
KBR1B_2005-03-18_X_01.dat  24.0  17260  1.86    -7.8    5.6  1
KBR1B_2005-03-19_X_01.dat  24.0  17280  1.48    -4.6    3.9  1
KBR1B_2005-03-20_X_01.dat  23.8  17125  1.57    -5.0    3.8  2
KBR1B_2005-03-21_X_01.dat  24.0  17266  1.87    -5.8    5.7  2
KBR1B_2005-03-22_X_01.dat  24.0  17260  1.87    -4.6    5.0  1
KBR1B_2005-03-23_X_01.dat  23.8  17106  1.90    -5.7    4.9  3
KBR1B_2005-03-24_X_01.dat  24.0  17246  1.75    -4.7    4.3  2
KBR1B_2005-03-25_X_01.dat  not yet processed
…
KBR1B_2005-03-31_X_01.dat  not yet processed
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- Level-1B barotropic sea level products (OCN1B) and de-aliasing products (AOD1B) until March 31 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 fields data processing.
- Experiments started to investigate the influence of different non-tidal ocean models on gravity field model quality.

GRACE Product Distribution:

- No Level-2 products have been delivered to the archives.

Miscellaneous:

- On March 17, the third anniversary of the GRACE launch was celebrated.
- 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.