

The GRACE AOD product release 05

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AOD1B RL05 Changes wrt. OMCT Configuration

- Spatial discretization:
 - **RL05**: 1° regular grid, 20 vertical levels
 - **RL04**: 1.875° regular grid, 13 vertical levels
- Time-step:
 - **RL05**: 20 min
 - **RL04**: 30 min
- Parametrizations adjusted in **RL05**:
 - horizontal eddy viscosity reduced
 - bottom friction reduced
 - changes in vertical momentum transfer
- Spin-Up **RL05**:
 - initial state based on observed (t,s) distributions (WOA2001)
 - climatological run over 10 years
 - ERA Interim atmospheric forcing (1989 – 2000)
 - operational ECMWF forcing (2001 – 2010, and ongoing)

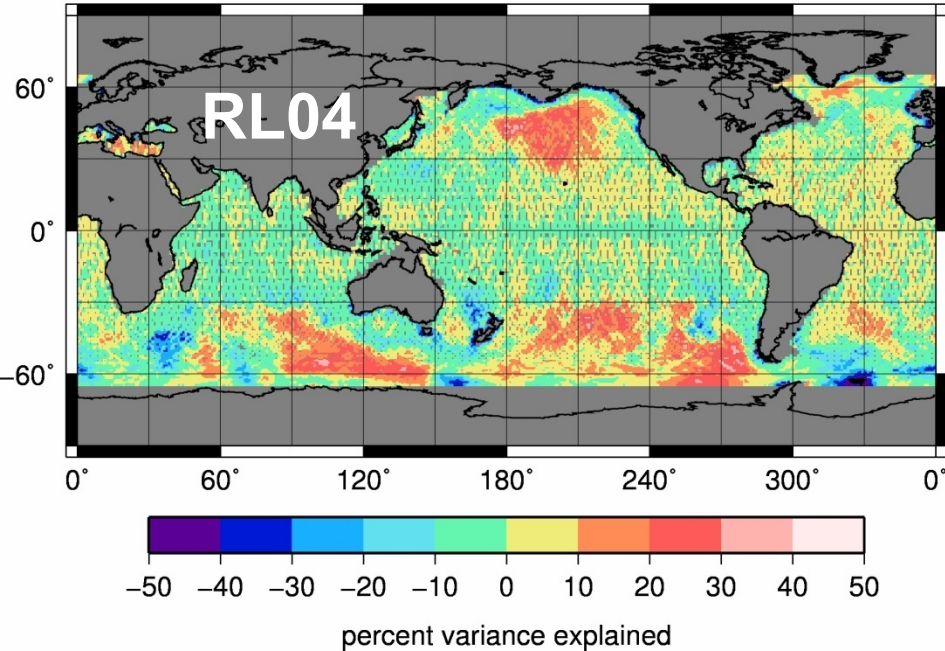
Note: The atmospheric part of AOD has not changed from RL04 to RL05!

AOD1B RL05 Availability

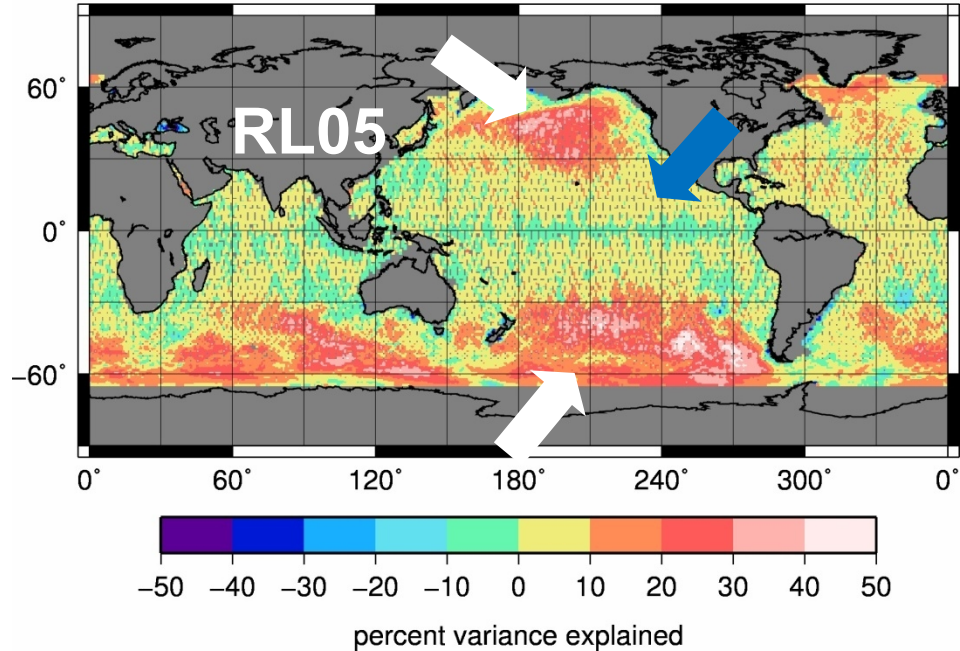
- RL04 available at GFZ's Information System and Data Centre (ISDC, isd.c.gfz-potsdam.de) for 1.1.1976 - 6.4.2012
- RL05 available at ISDC for 1.1.2001 – 31.12.2011
- RL05 for 2012 will follow after EGU and will substitute RL04 within the next months (see future SDS newsletters)
- Extension back to 1976 for SLR analysis will be done in summer
- See GFZ's Scientific Technical Report STR08/12 for details

Explained Variance by Altimetry 2004-2011

aod04VSalt.HF_G47-23.pervar_ex



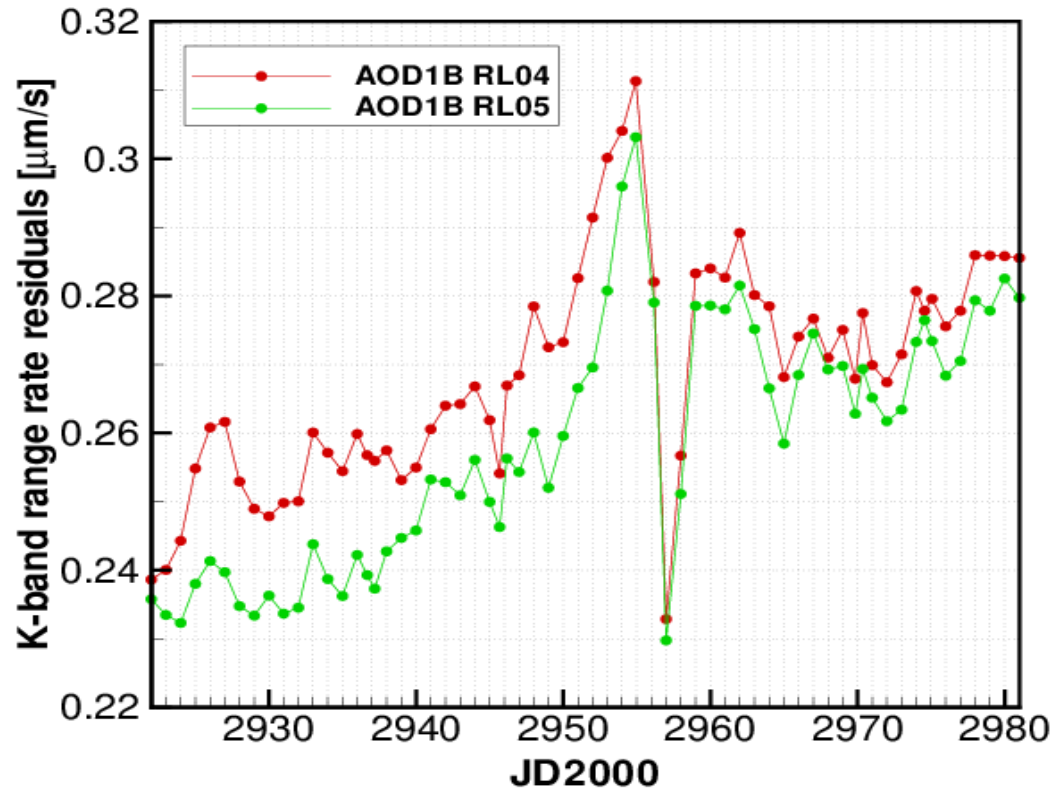
aod05VSalt.HF_G47-23.pervar_ex



- Much higher percentage of the altimetry signal is explained by RL05, especially in the southern ocean and north Pacific (see white arrow, red areas).
- Even in places with little signal, such as nearer to the equator (yellow areas), the RL05 explains slightly more of altimetry's variance than RL04 did (blue arrow).

Courtesy: Jenni Bolin

Impact on Gravity Field



January 2008
Bad month in RL04

February 2008
Typical month in RL04

Further Information

Oral Programme G5.2: Determination of Mass Transport and Distribution in the Earth System

Tuesday, 11:45–12:00 (EGU2012-10195)

OMCT - New time-series for oceanic mass, angular momentum and sea level variability

H. Dobslaw, M. Thomas, I. Bergmann, S. Esselborn, F. Flechtner, and L. Zenner

Atmospheric loading

R. König, J.-C. Raimondo

Site Displacements due to Atmospheric Pressure Loading

- Software originated from GRGS in 1997
- Theory: FARRELL, W.E., 1972
- Input: ECMWF surface pressure data from AOD processing
 - Subtracted is a 2-year mean (2001-2002) as with GRACE AOD RL05
- Sites considered are according to the DOMES numbers in ITRF2008
 - No consideration of different occupations
- Yearly files of site displacements (appr. 20 MB)
- Updated on a monthly basis
- Available from GFZ's Information System and Data Centre (ISDC, isdg.gfz-potsdam.de)

Expected Reliability

**Vertical Displacement due to Atmospheric Loading
Petrov (NCEP) vs GFZ-AOD (ECMWF) 2001-2006
at Maidanak**

