

# AIUB-RL02 monthly gravity field solutions from GRACE kinematic orbits and range- rates

Ulrich Meyer, Adrian Jäggi

*Astronomical Institute, University of Bern, Switzerland*

GSTM

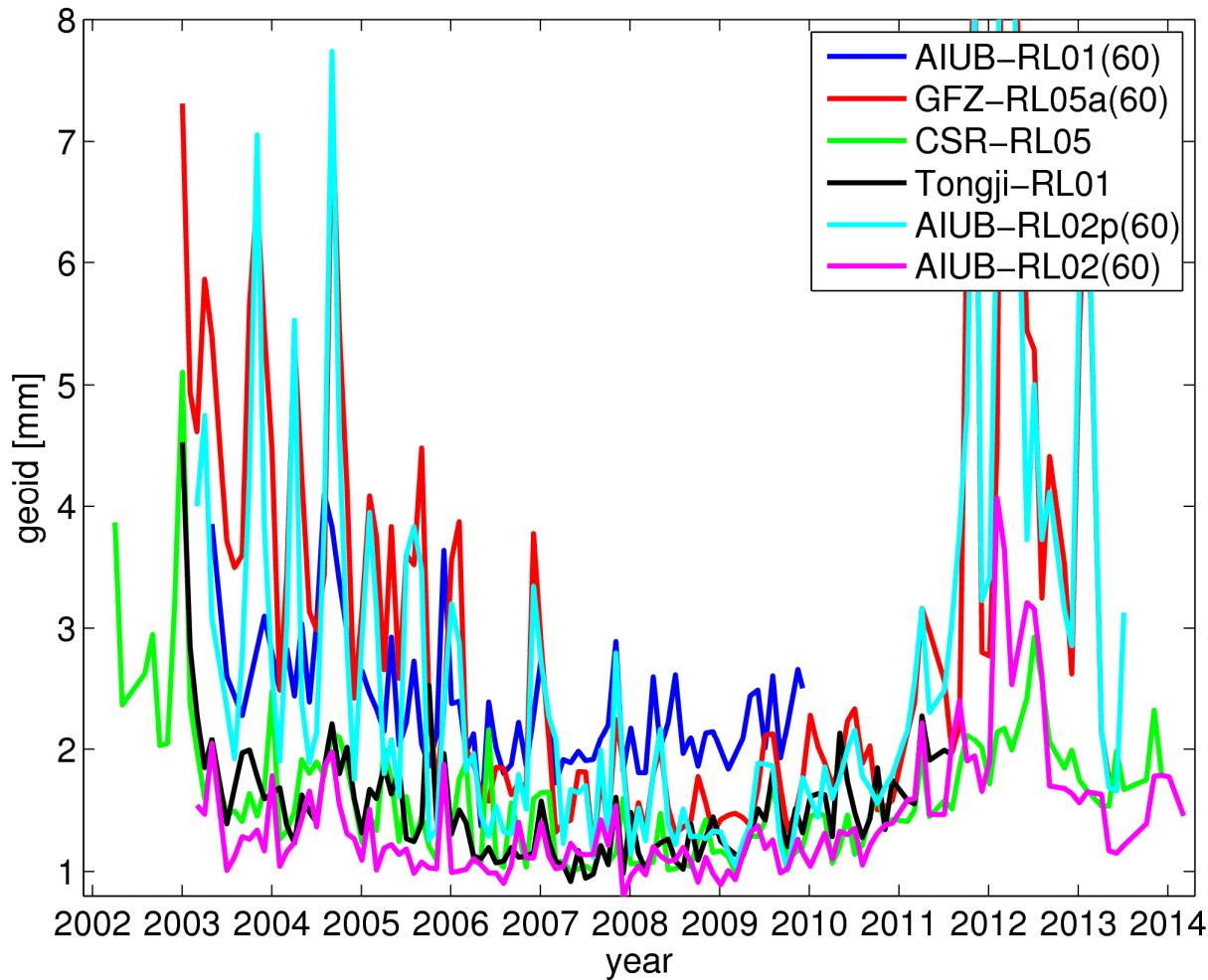
29. September 2014, Potsdam

# AIUB-RL02 monthly gravity models

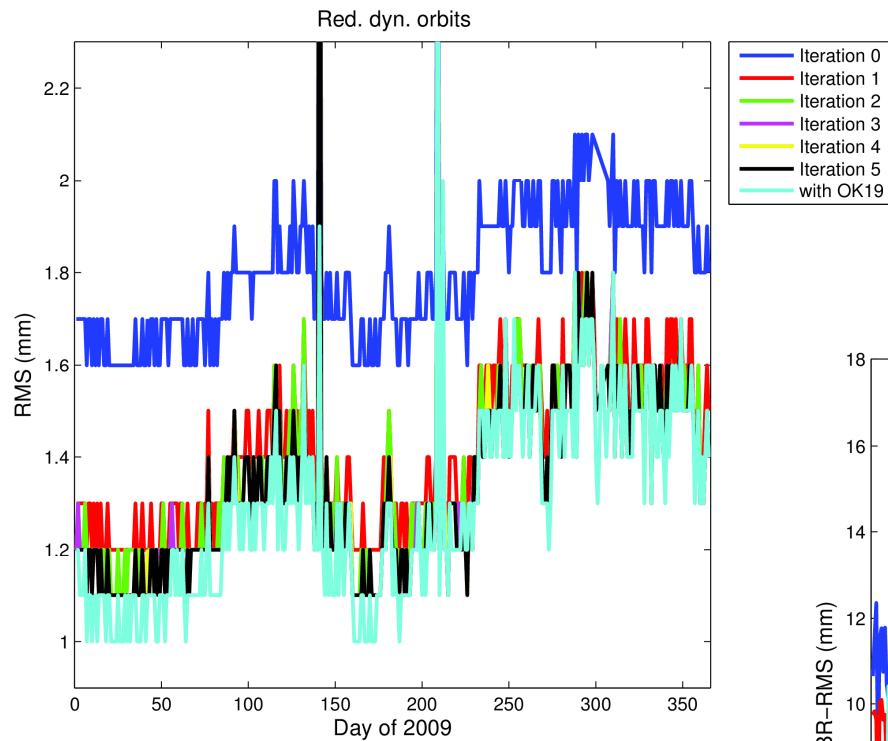
---

- IERS conventions 2010 (IGS08; igs08.atx)
  - estimation of new phase center variations
  - reprocessing of kinematic orbits
- L1B-RL02 data
- Atmosphere/Ocean-dealiasing AOD1B-RL05
- Ocean tide modell: EOT11a
  - inclusion of secondary waves (admittances)
- K-Band attitude correction
- ACC scale factors

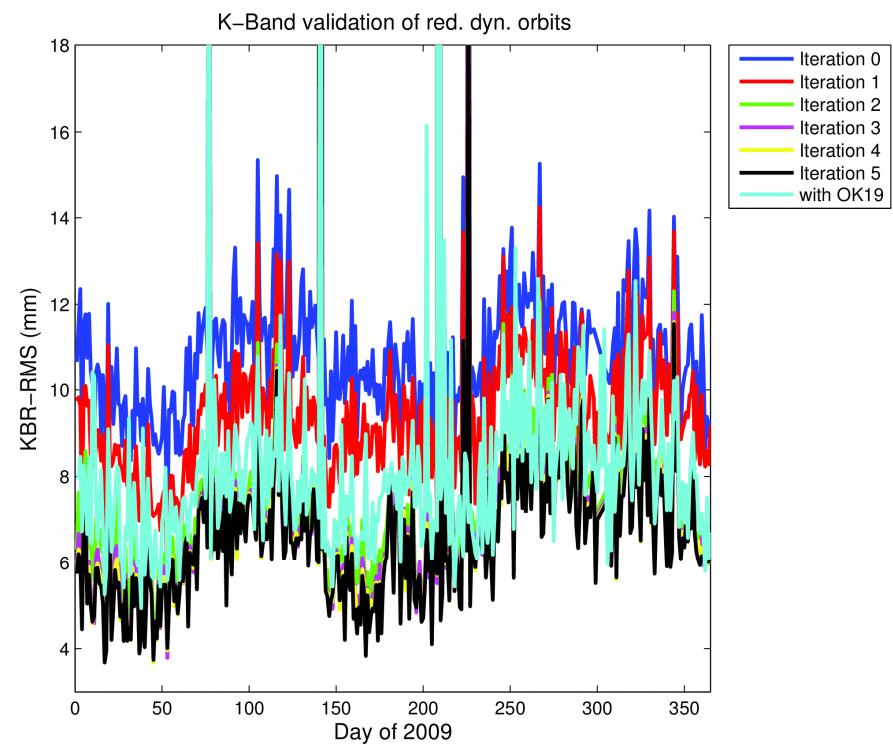
# Noise (wSTD over oceans)



# IERS (2010): new phase center variations



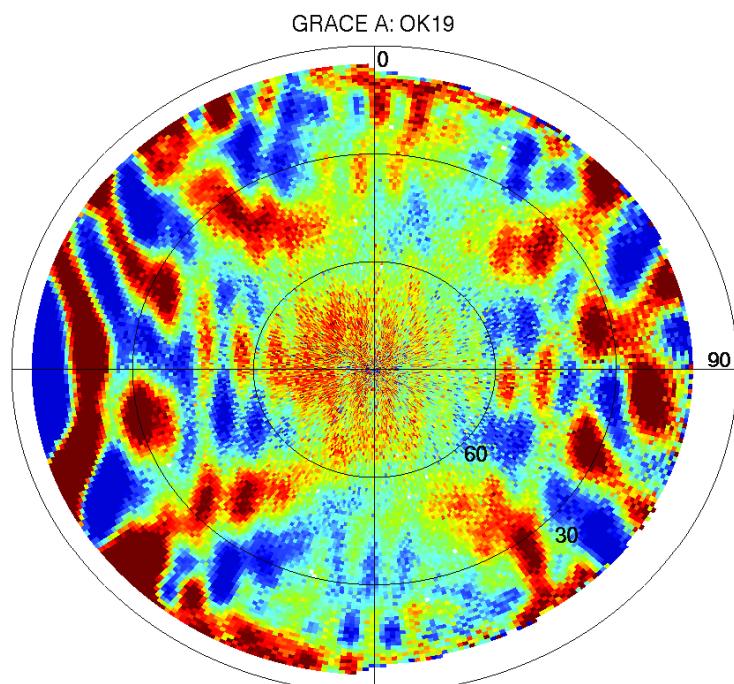
Consistency of old orbits was better (9 iterations) ...



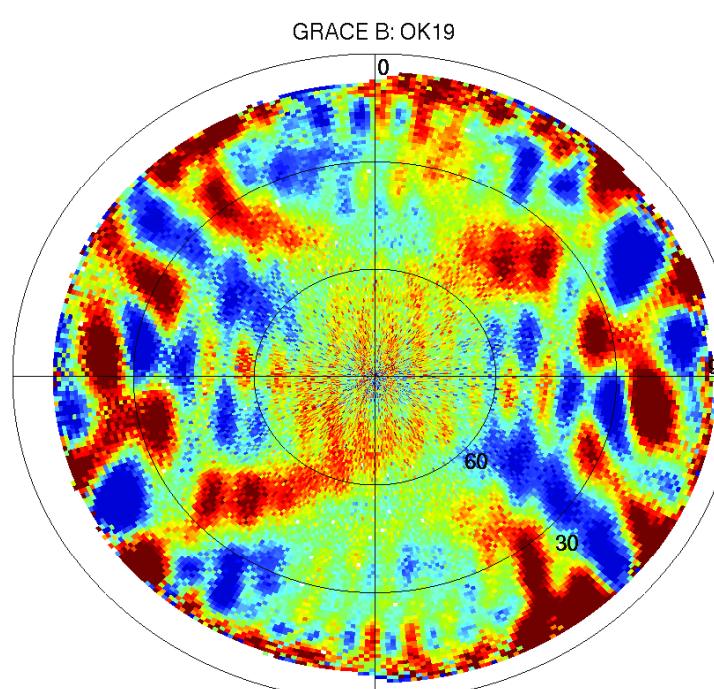
... but quality of new orbits is higher!

# Old phase center variations: IERS 2003

GRACE A (RL01)



GRACE B (RL01)

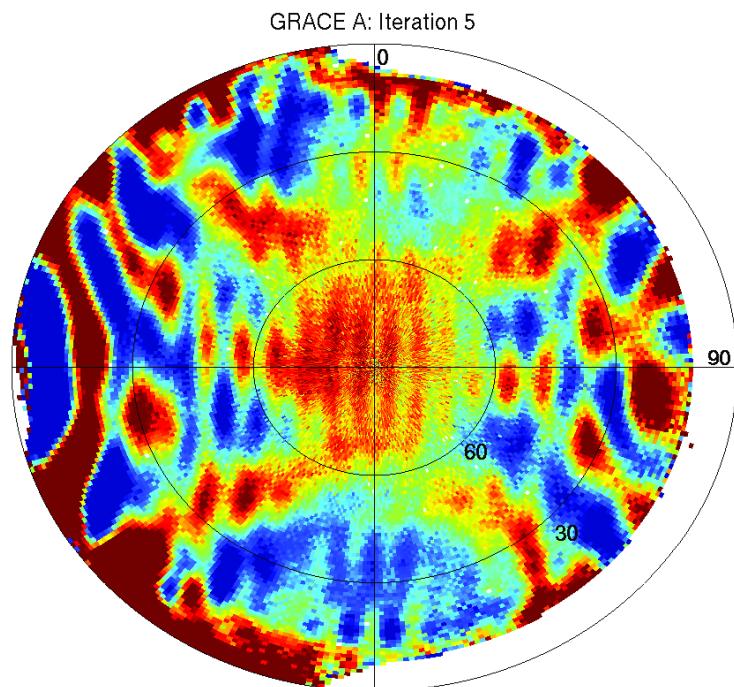


Ulrich Meyer: AIUB-RL02 monthly gravity field models  
GSTM 2014

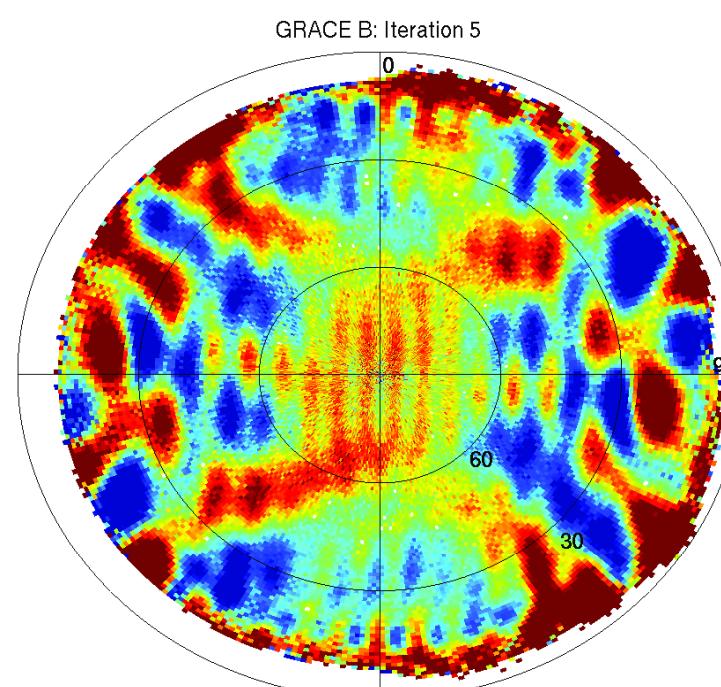
Elevation cut-off 5°

# New phase center variations: IERS 2010

GRACE A (RL02)



GRACE B (RL02)



Elevation cut-off 0°

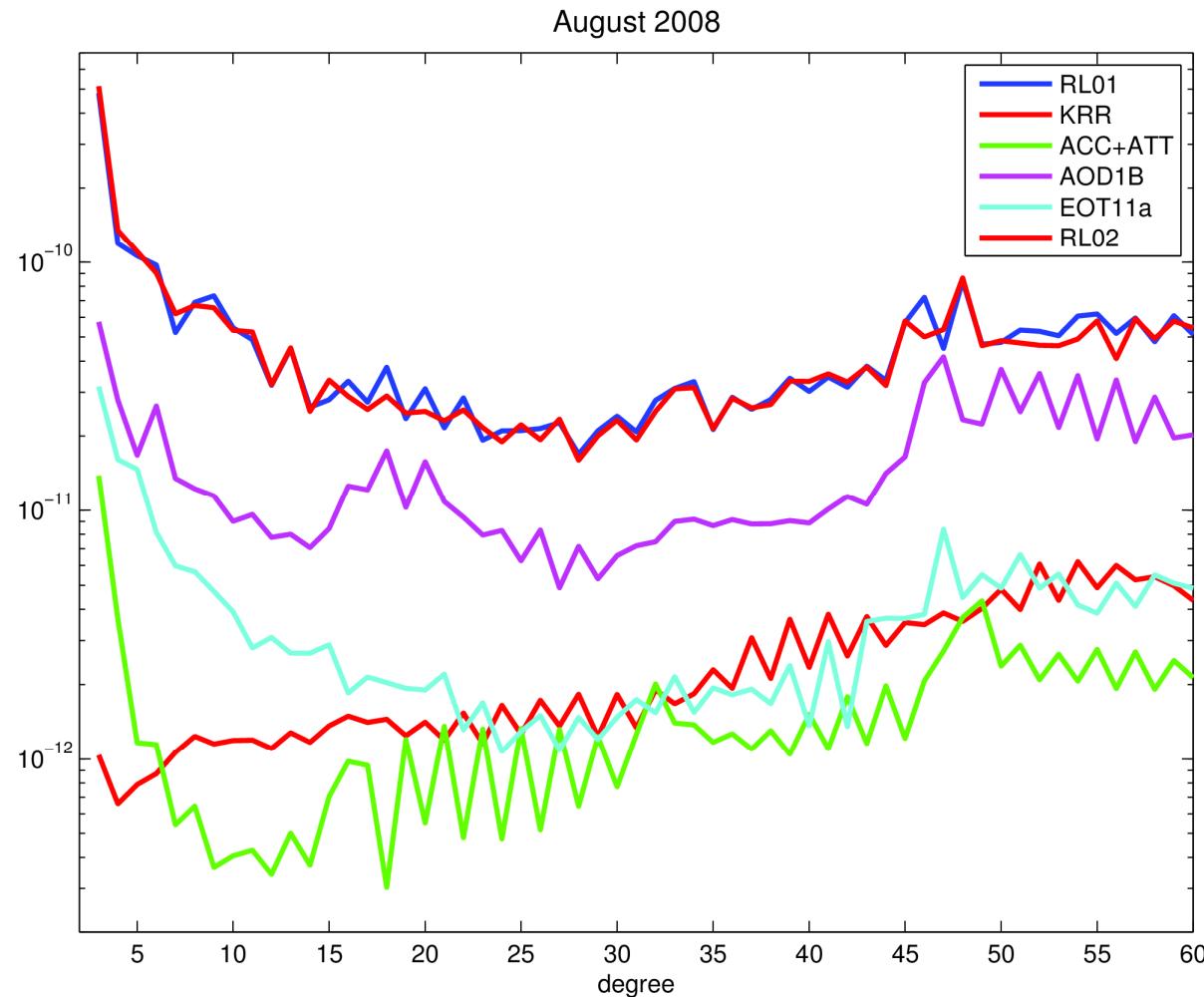
# Effect of new kinematic orbits on gravity field:

---

... negligible

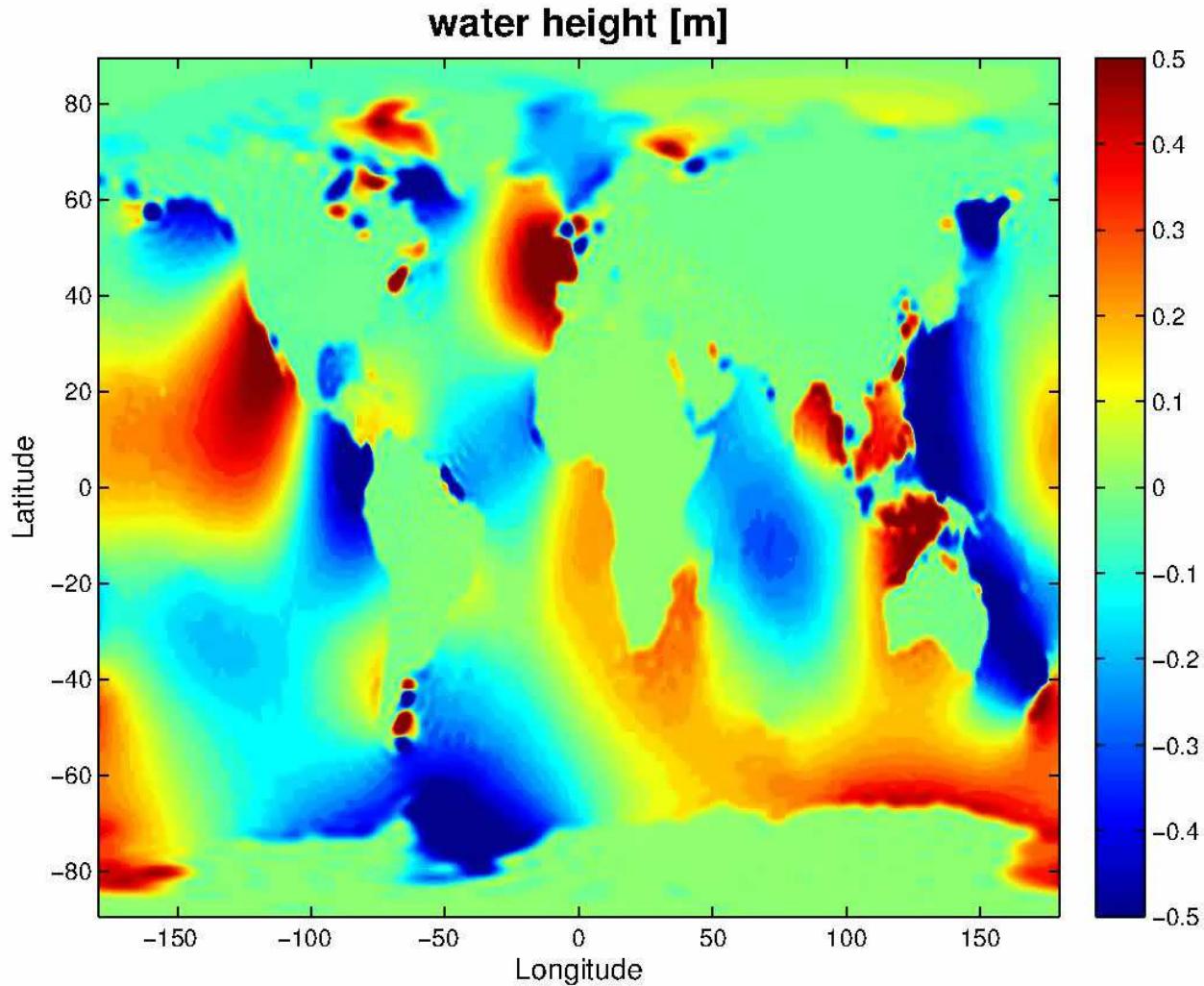
# Effect of L1B-RL02 and model updates

Ulrich Meyer: AIUB-RL02 monthly gravity field models  
GSTM 2014

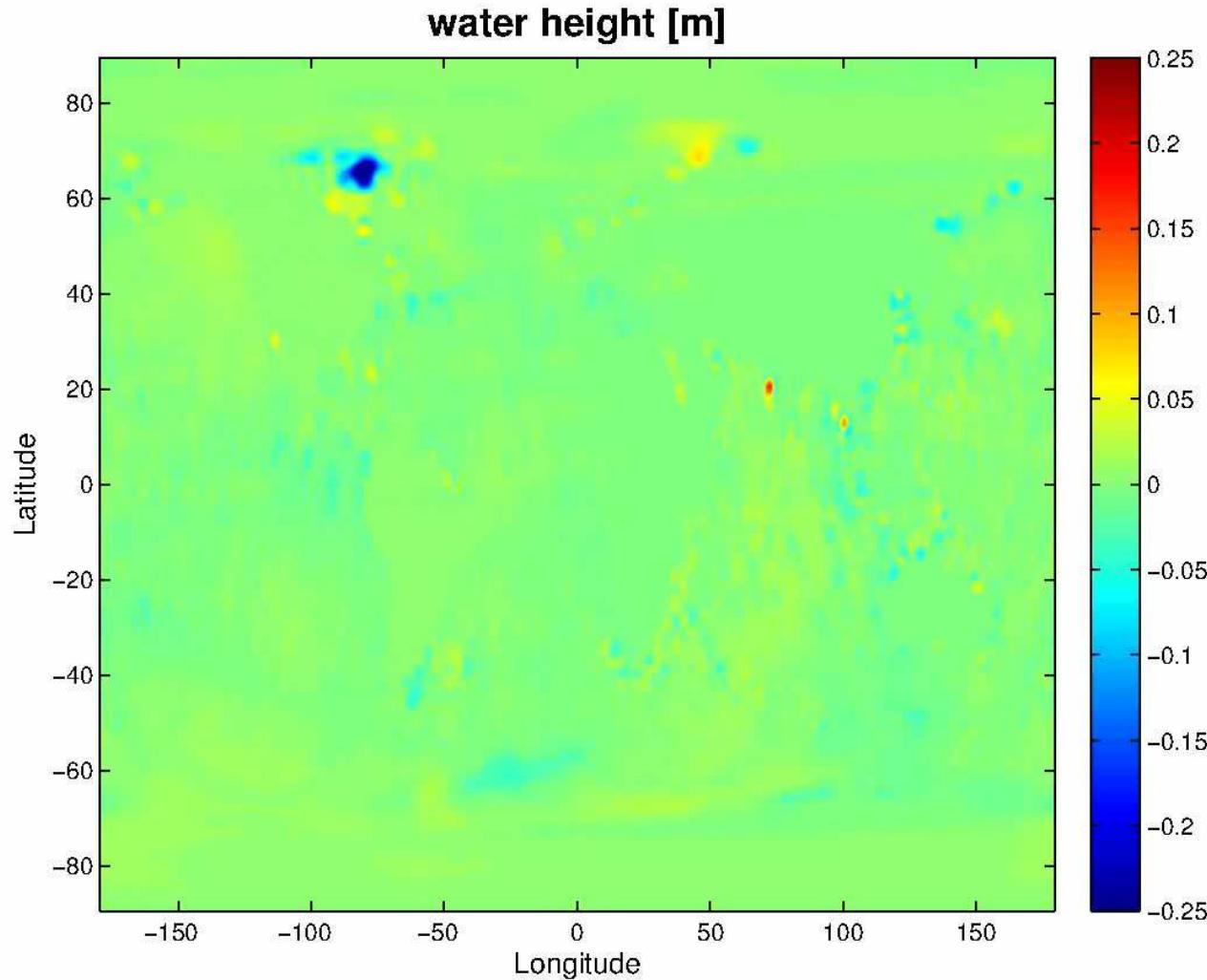


None of the data or model updates causes a significant gain in consistency.

# Ocean tide model: EOT11a - main tides

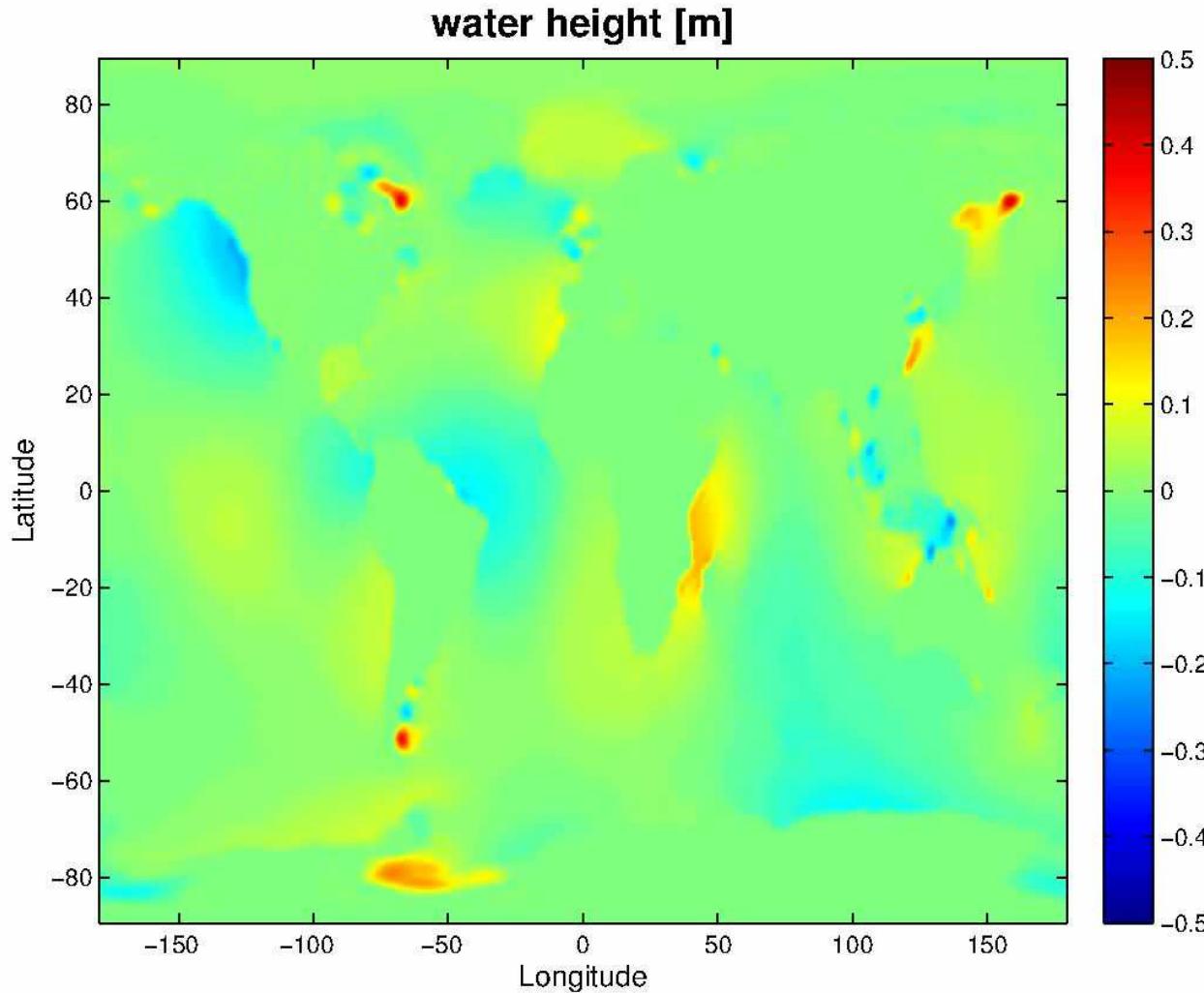


# Ocean tide model: EOT08a – EOT11a

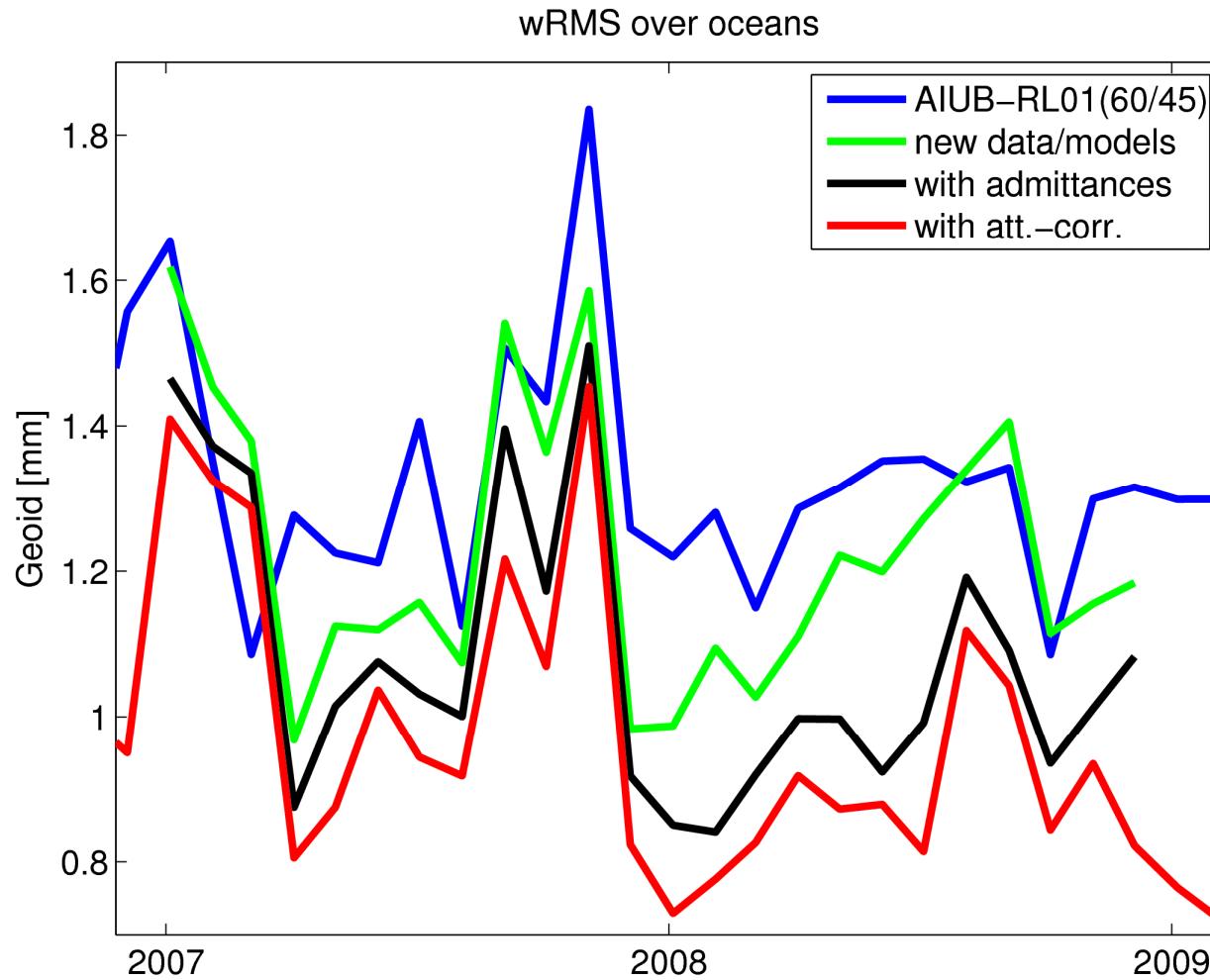


# Ocean tide model: EOT11A – secondary tides

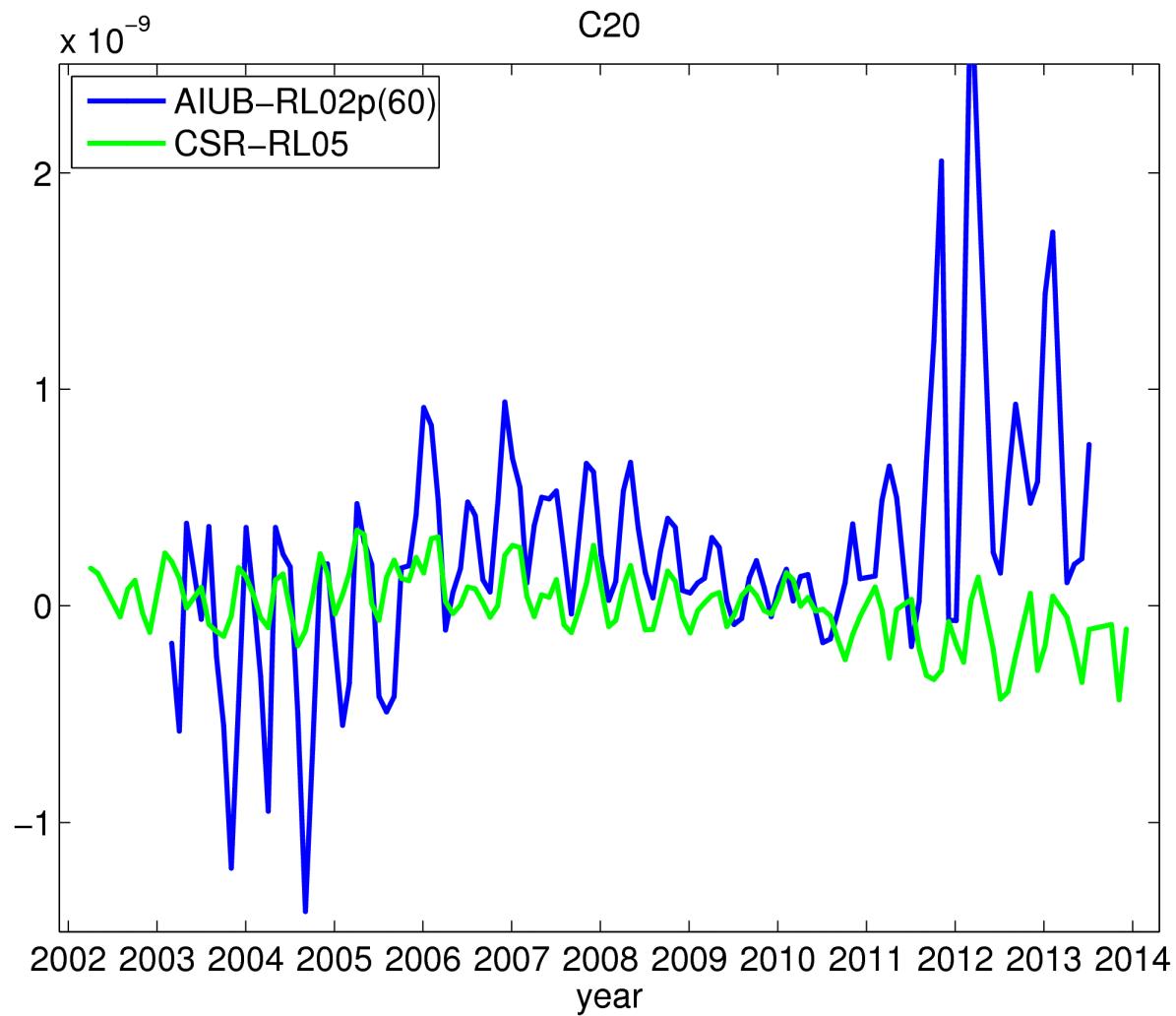
Ulrich Meyer: AIUB-RL02 monthly gravity field models  
GSTM 2014



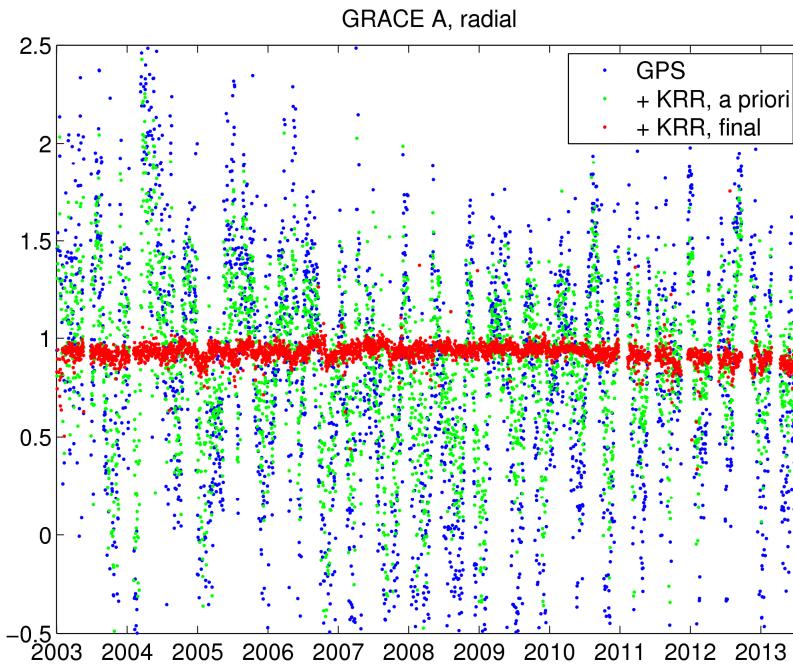
# Intermediate result AIUB-RL02p



# Problem: C20

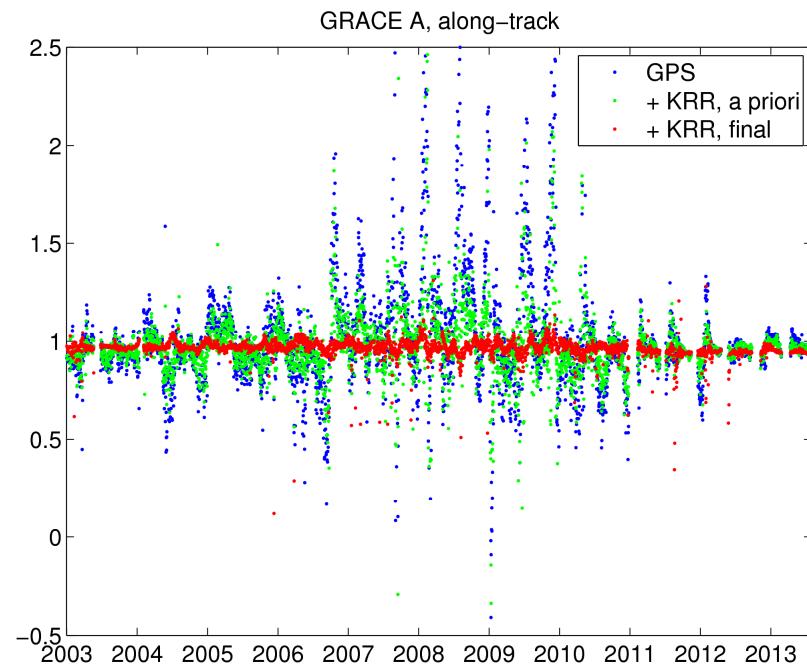


# Daily ACC scale-factors

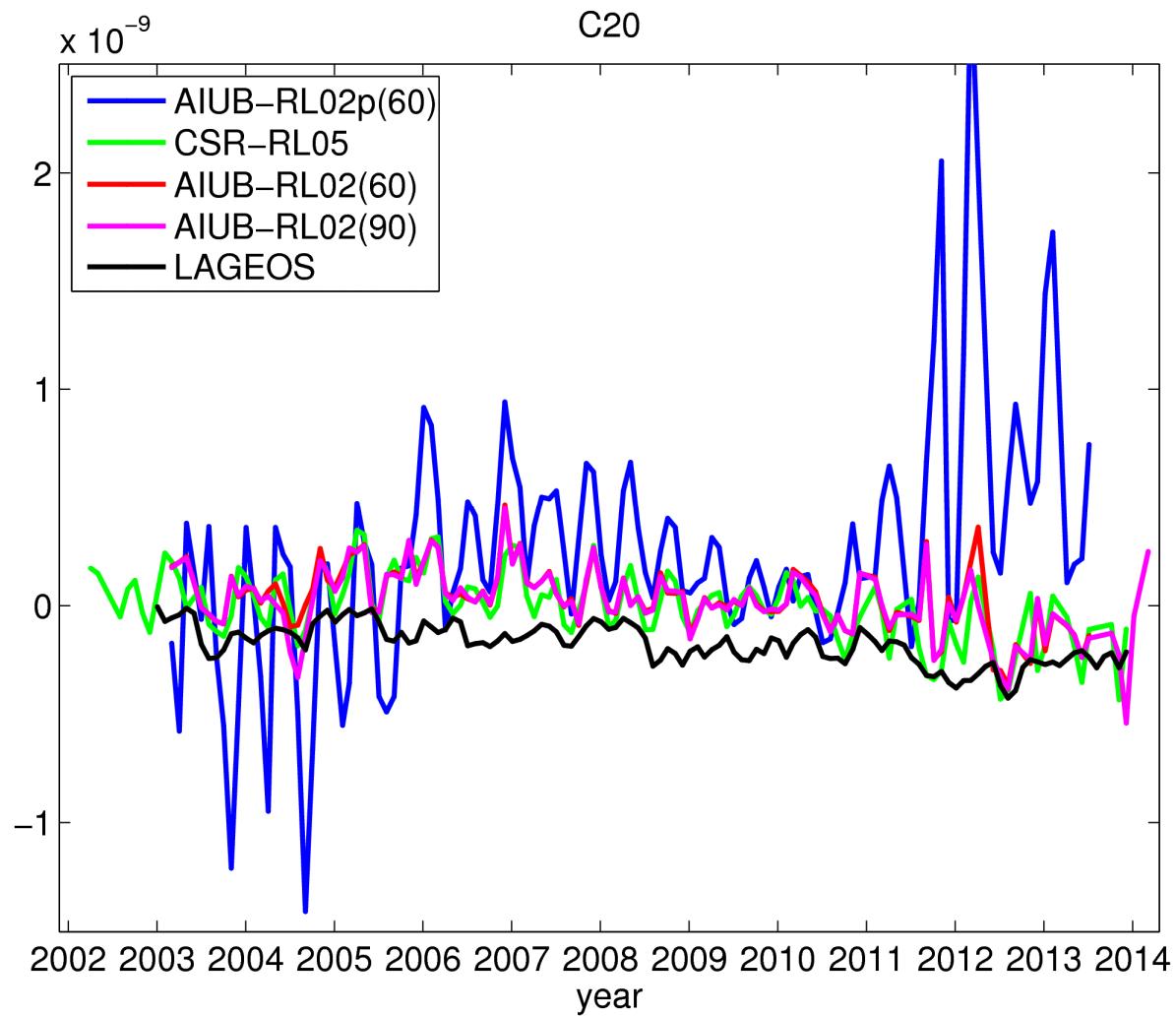


The along-track ACC scale-factors are estimated more stable during times of high solar activity.

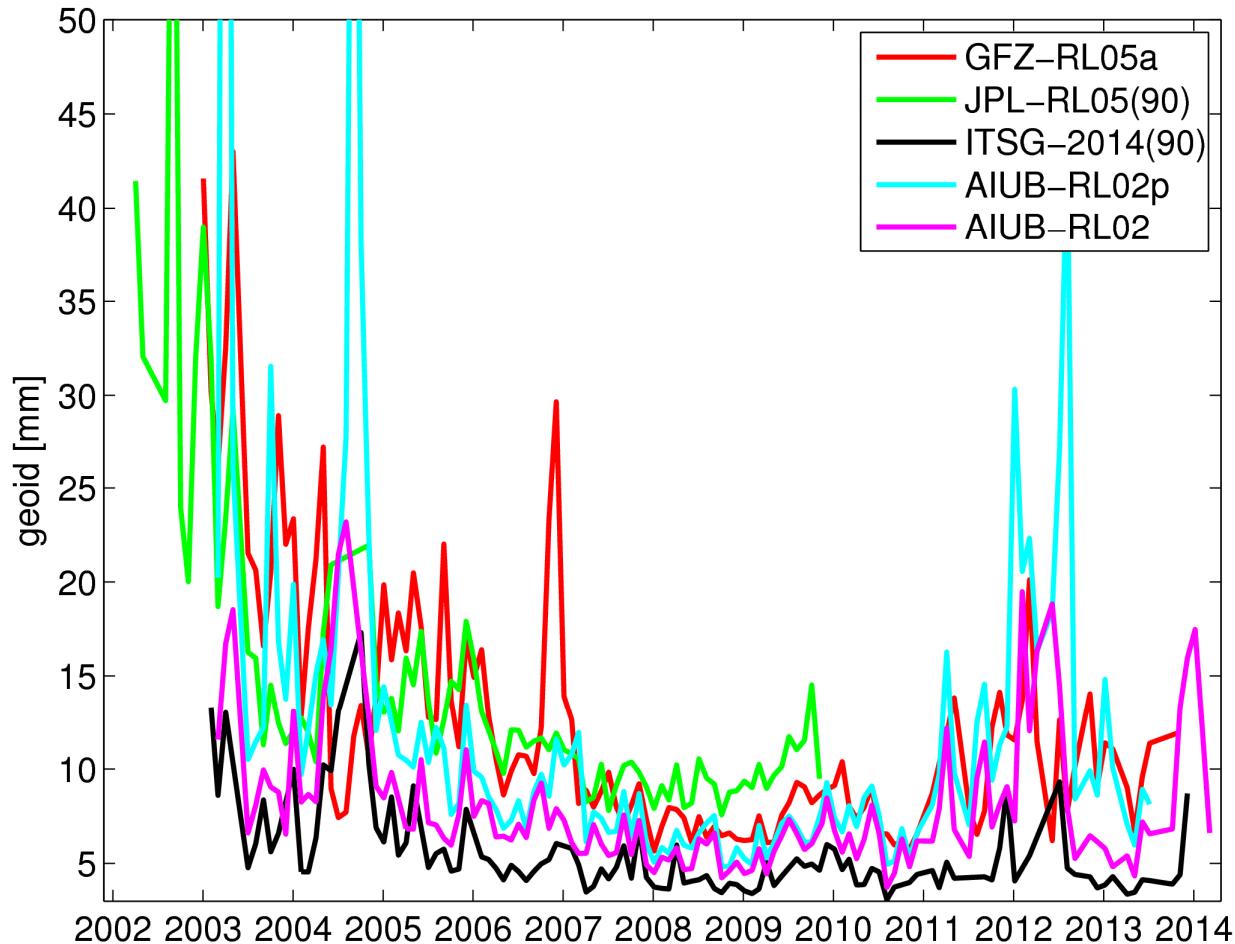
KRR enables a stable estimation of ACC scale-factors in radial and along-track.



# C20 without /with daily ACC-Scales



# Noise (wSTD over oceans)



# Max. degree 60 versus 90

