

GRACE satellite gravimetry to assess global hydrology and ice melt

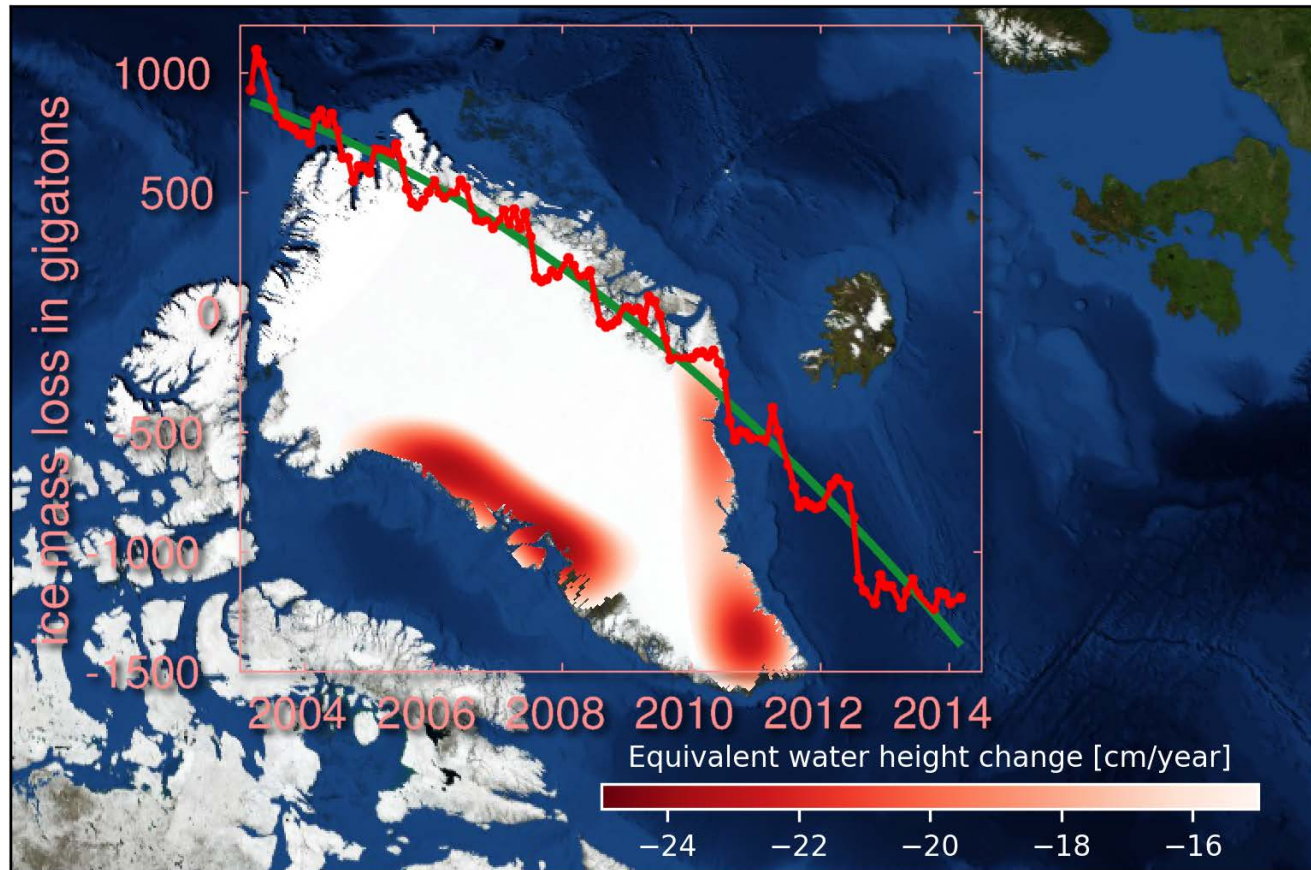
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Yoomin Jean, Adrian Jäggi

15th Swiss Geoscience Meeting, Davos 2017

EGSIEM project partners:



Satellite Gravimetry



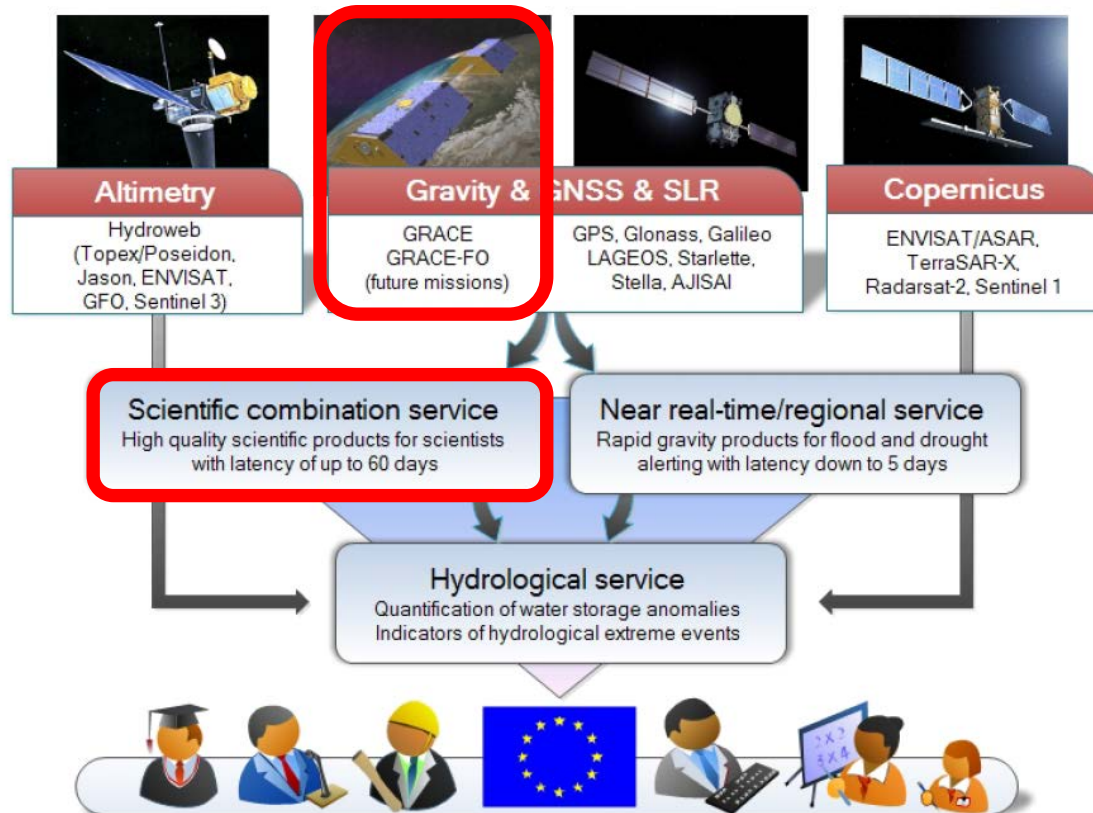
GRACE satellite gravimetry allows to monitor mass transport in the system Earth at spatial scales down to a few 100 km.

Contents

- **The EGSIM project**
- **Gravity field combination service**
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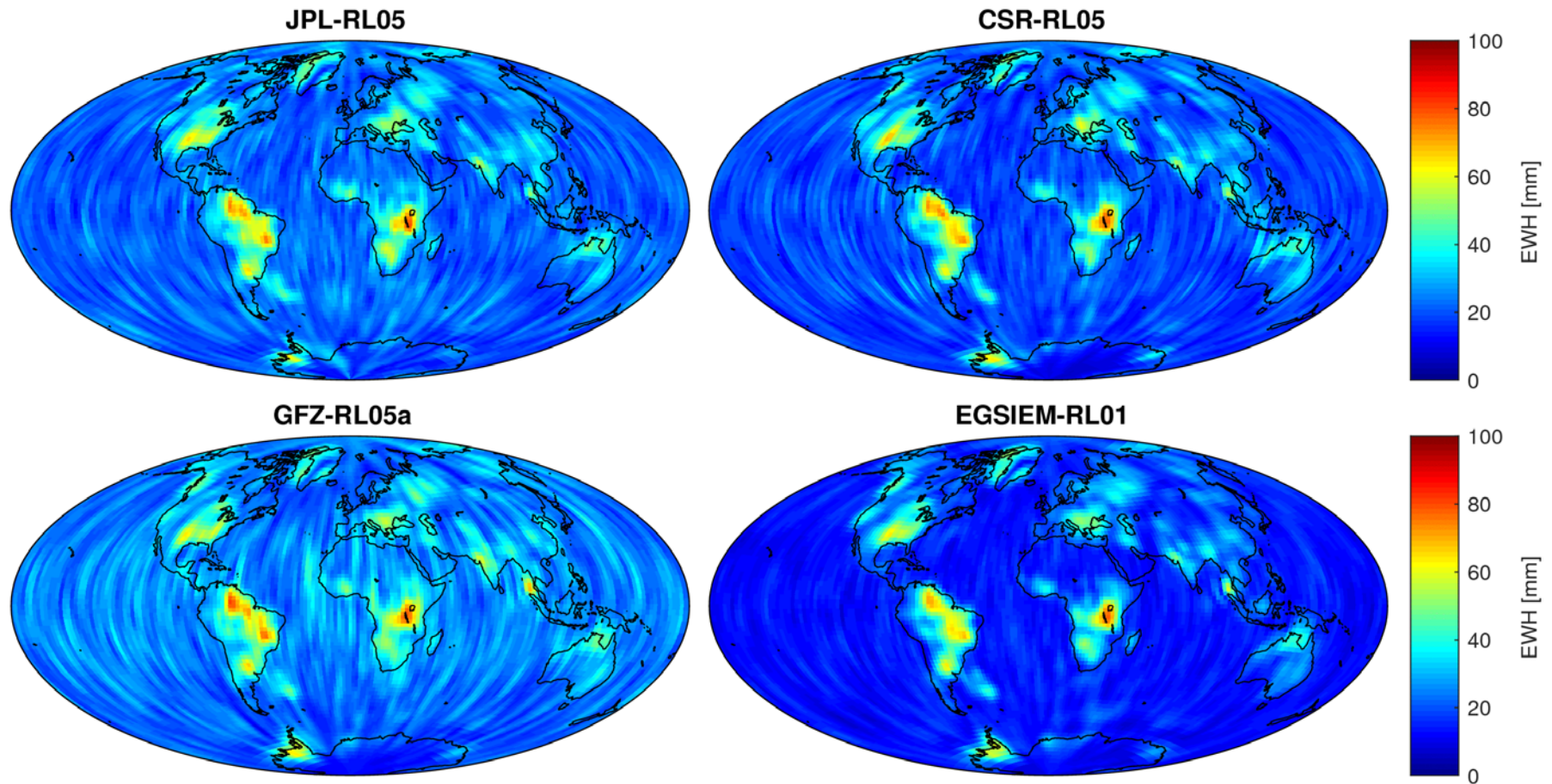
The EGSiEM project

European Gravity Service for Improved Emergency Management



The services are tailored to the needs of governments, scientists, decision makers, stakeholders and engineers. Special visualization tools are used to inform, update, and attract also the large public.

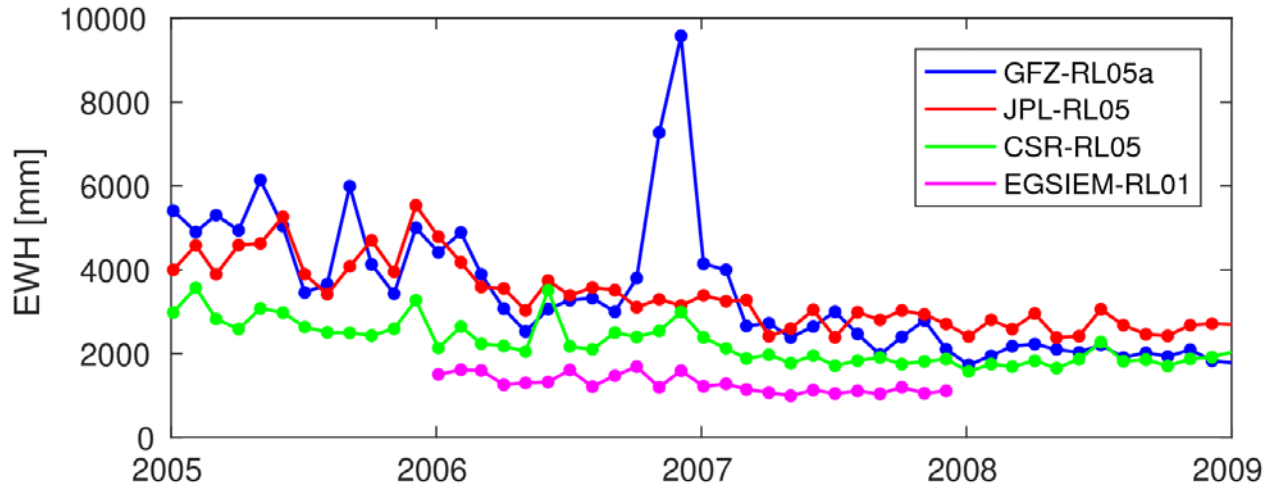
Mass variations: quality assessment



Non-seasonal, non-secular variability (RMS) of equivalent water height (EWH) over the oceans is an indicator for noise in the monthly gravity fields.

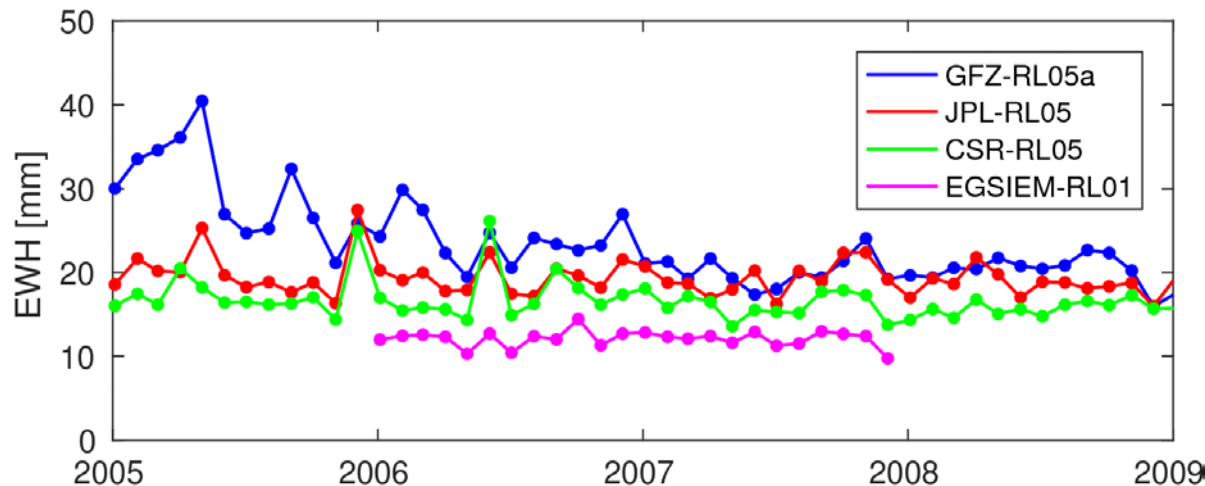
Monthly EWH variability over the oceans

not filtered



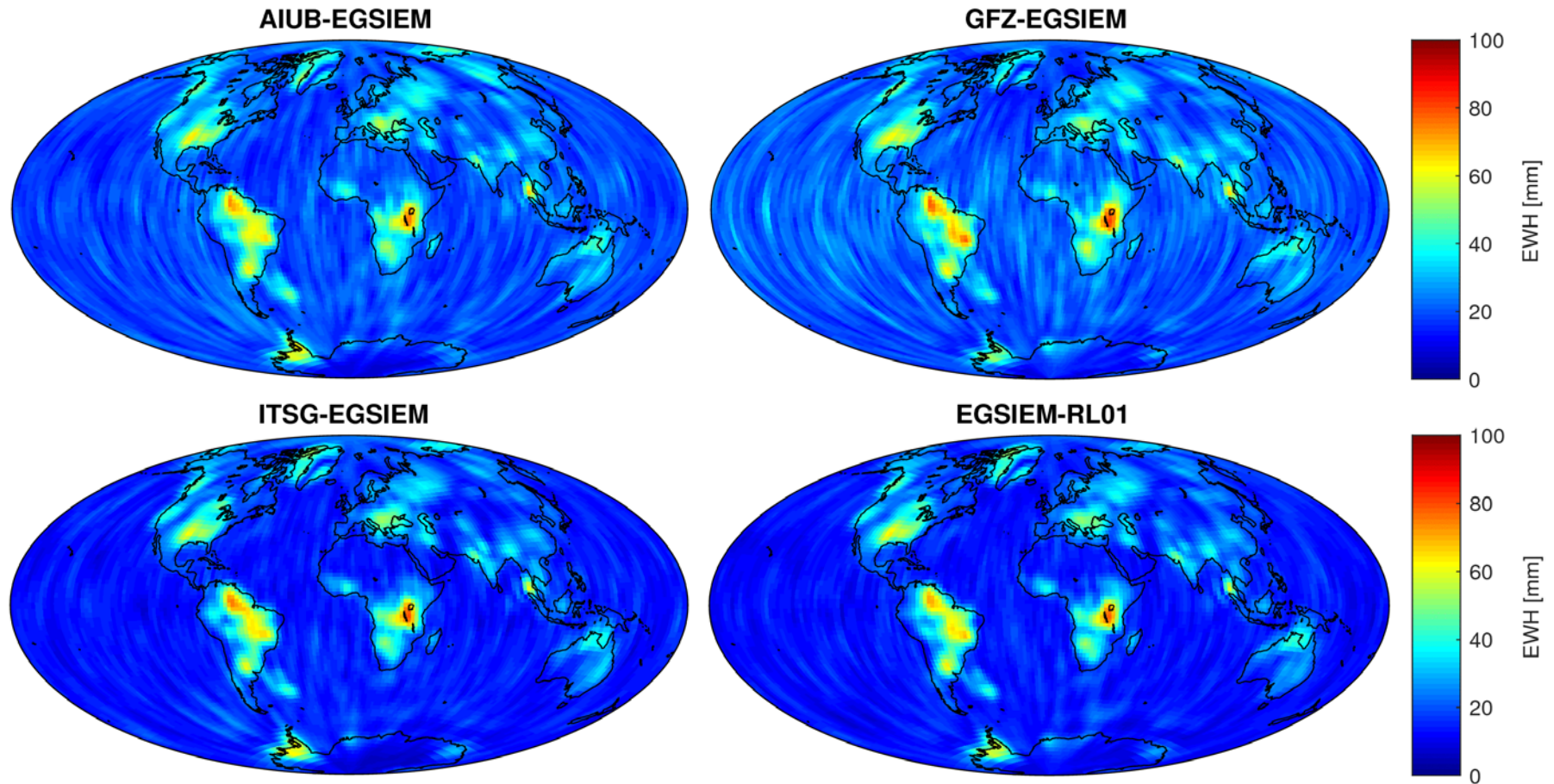
The RMS of the non-seasonal variability over the oceans is used as a quality indicator of the monthly gravity fields.

filtered with 400 km Gauss



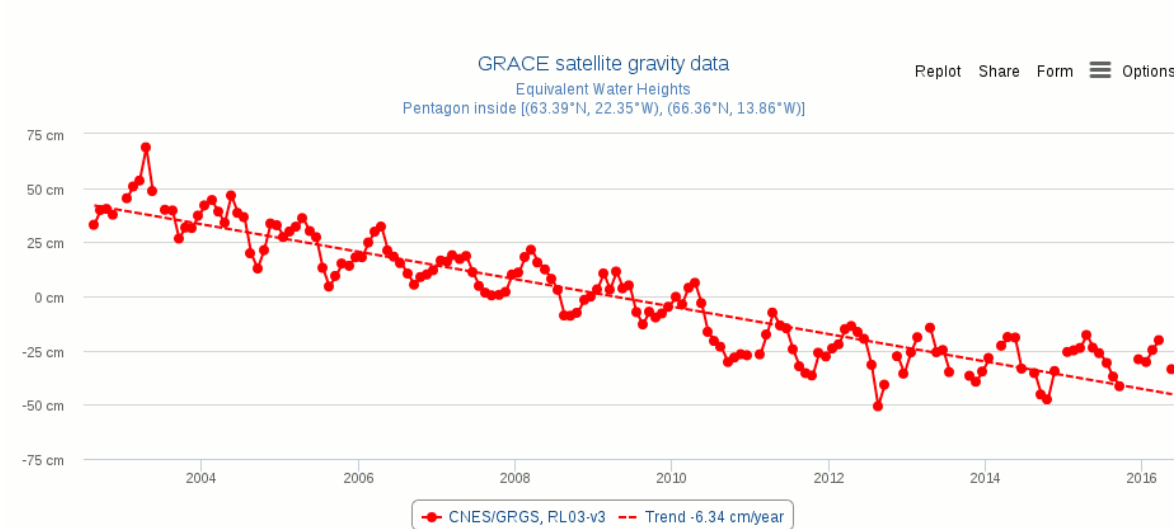
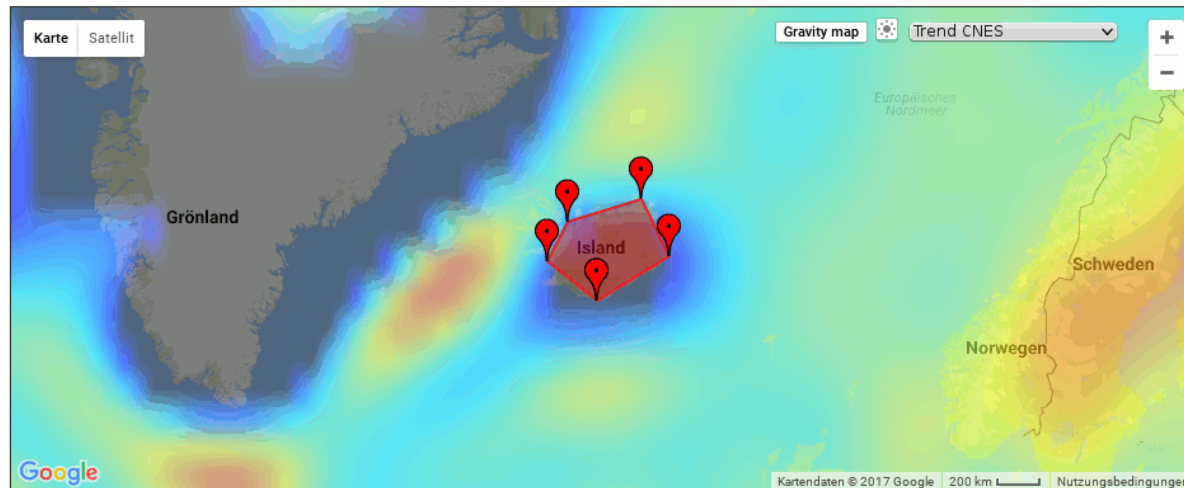
Even when filtered to suppress small scale noise, the combined EGSIM monthly gravity fields outperform the official GRACE SDS products.

EGSIEM individual contributions

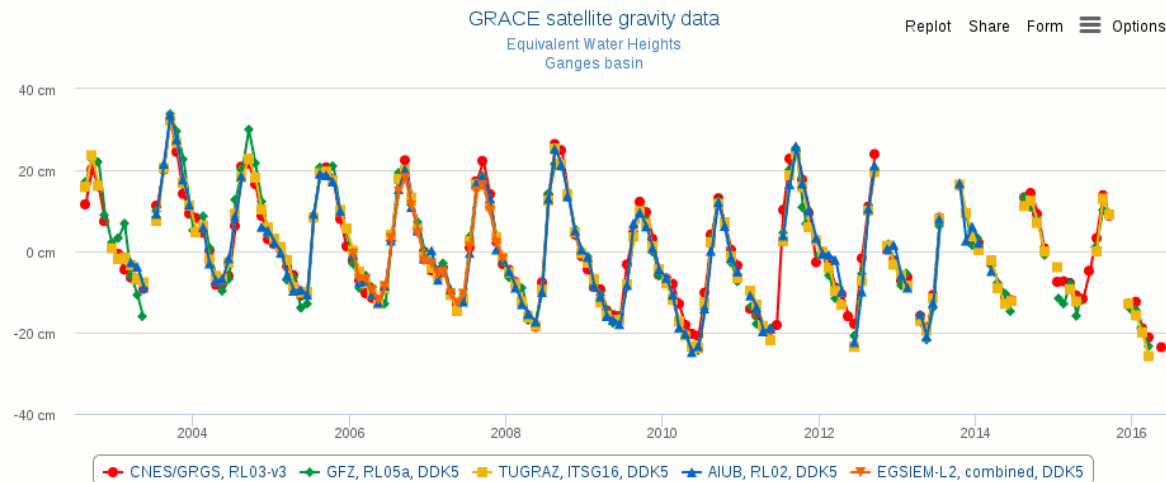
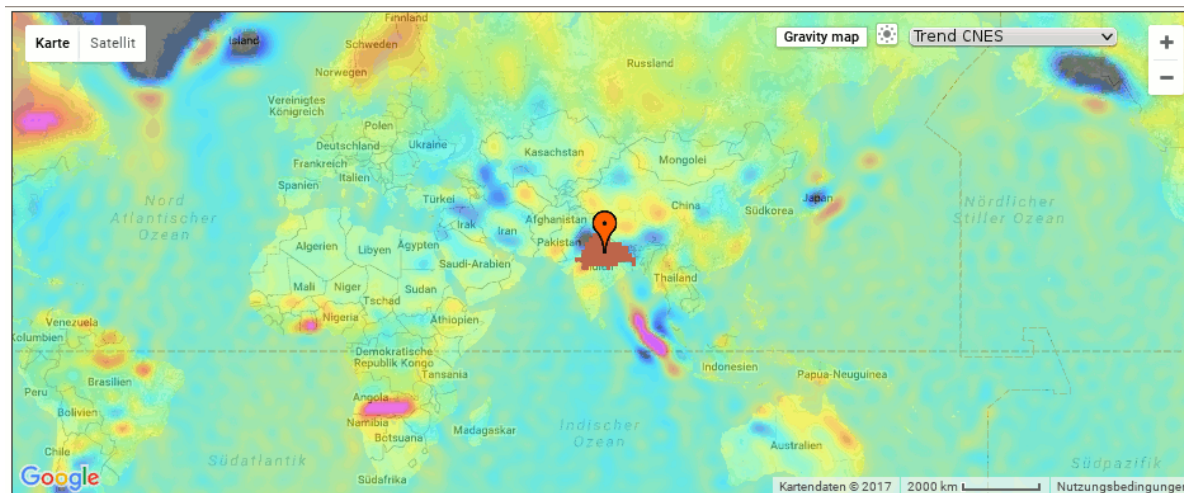


Individual contributions of associated Analysis Centers (ACs) were reprocessed in the frame of EGSIM using common standards.

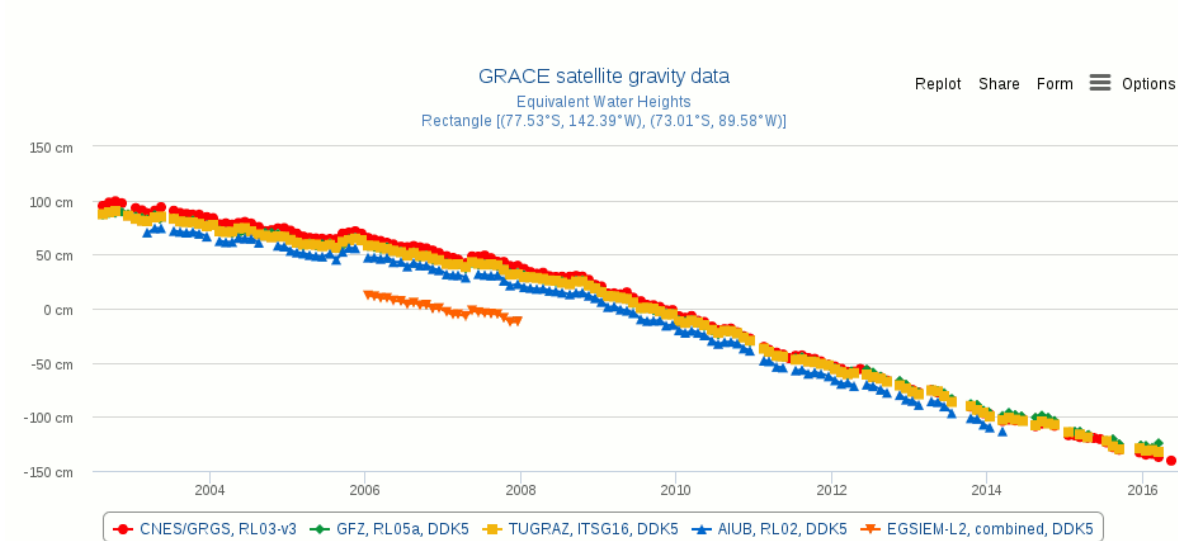
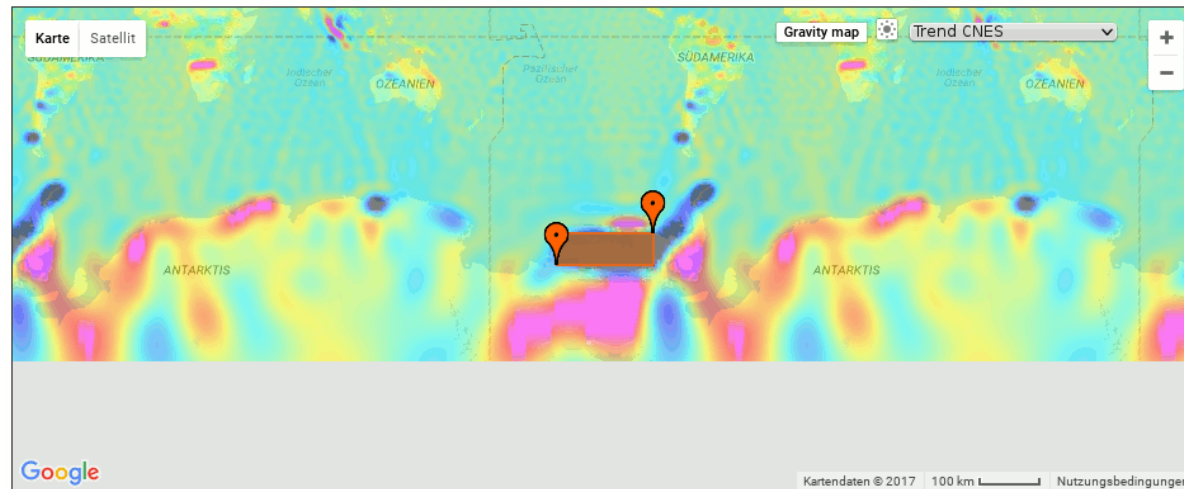
Visualization: EGSiEM-Plotter (plot.egsiem.eu)



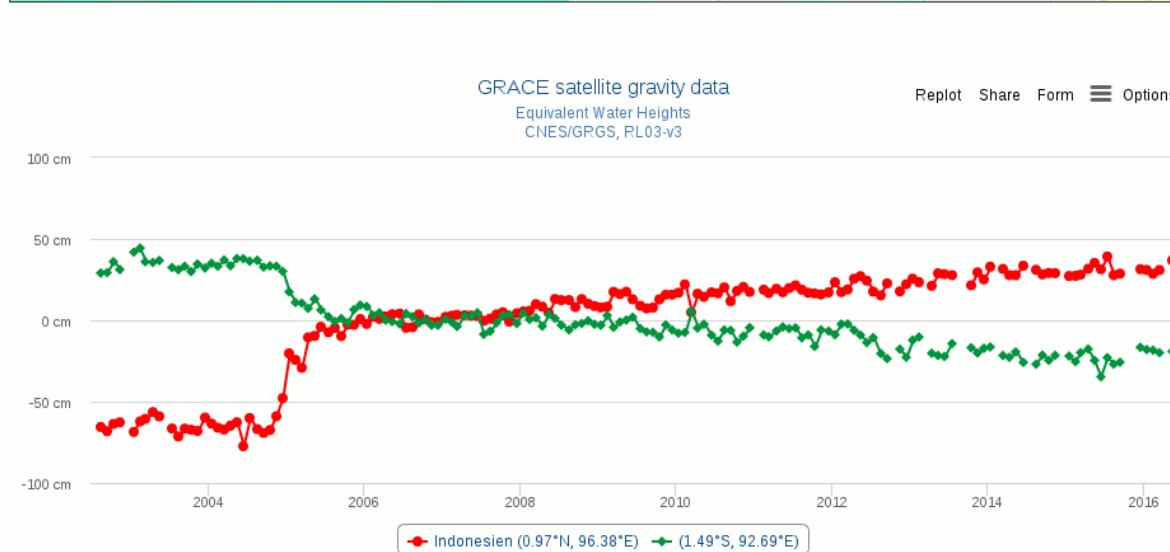
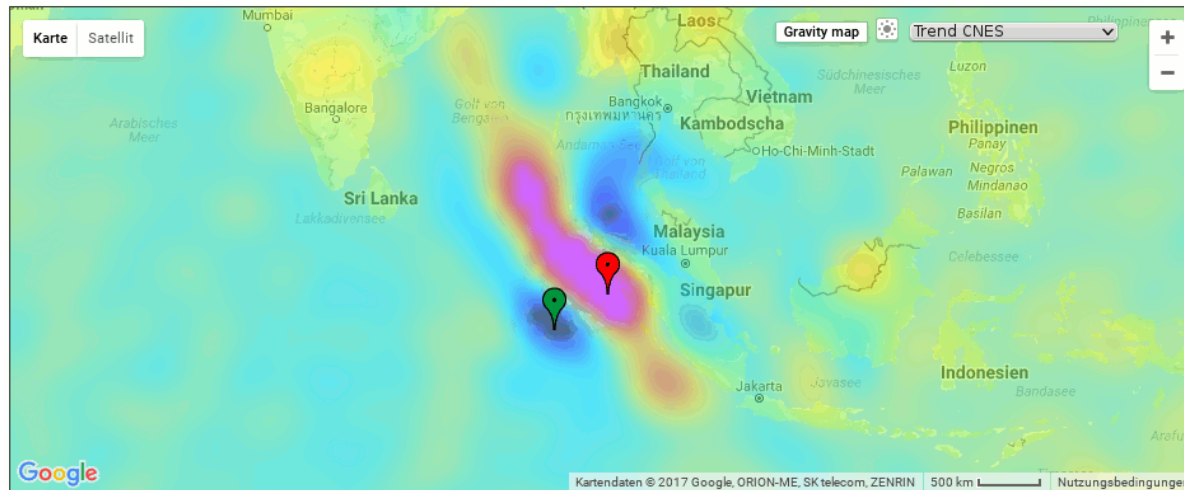
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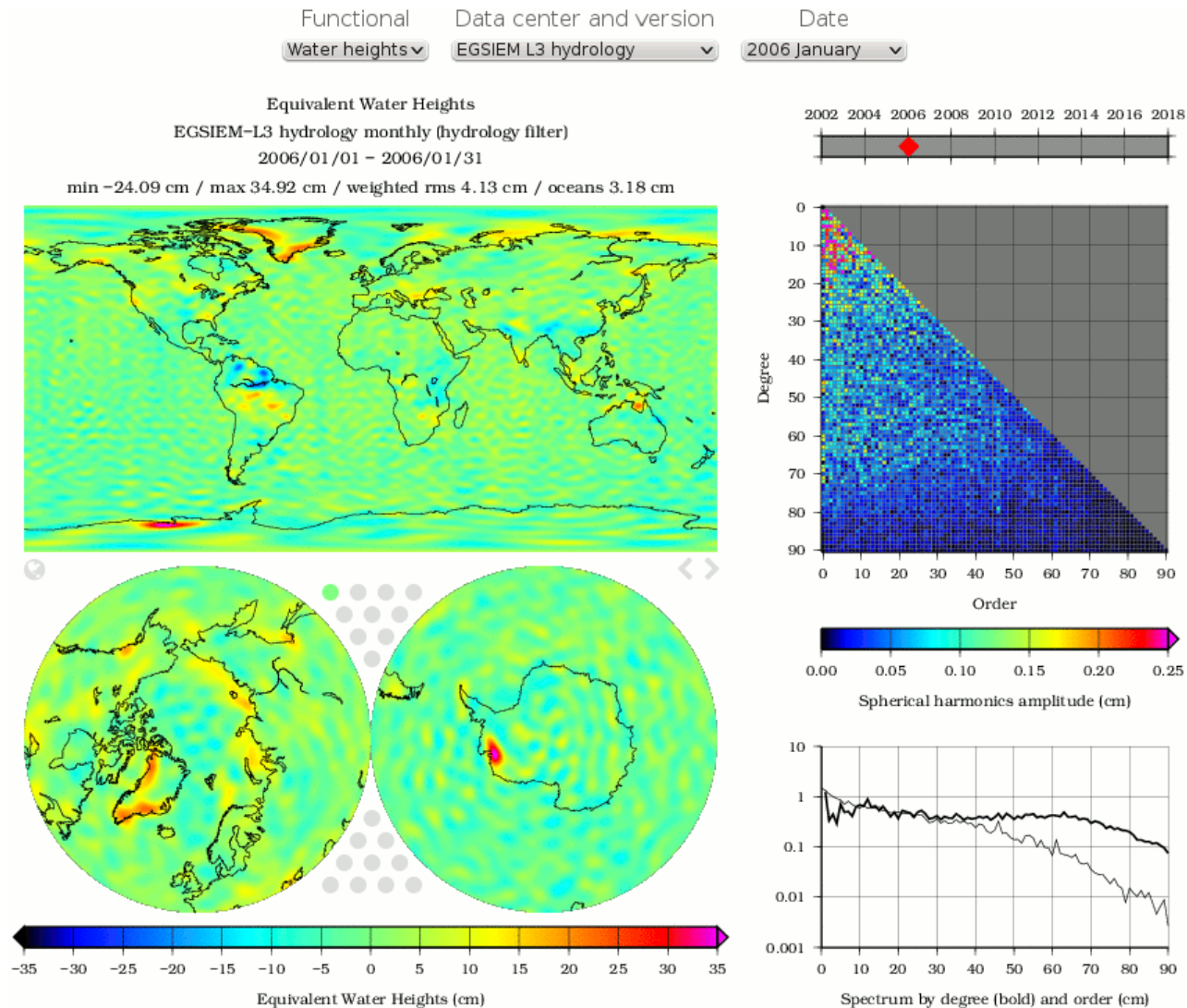
Visualization: EGSiEM-Plotter (plot.egsiem.eu)



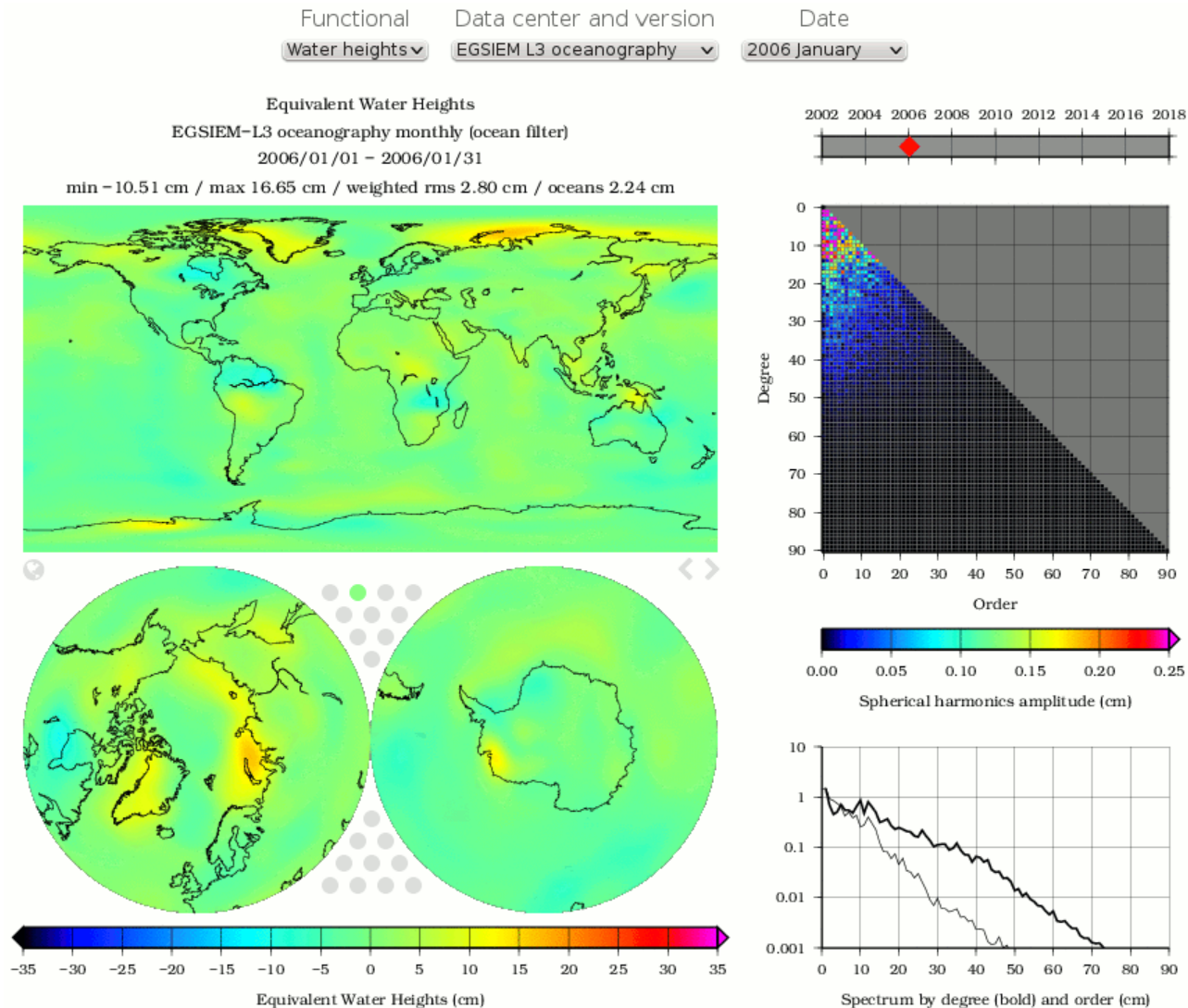
Visualization: EGSiem-Plotter (plot.egsiem.eu)



Gridded L3-products: pre-filtered for hydrology appl.



Gridded L3-products: pre-filtered for ocean applications



EGSIEM current status and future

- The products of the EGSIM combination service are available at:
 - SH-coefficients (Level-2): www.icgem.de
 - grids and de-aliasing (Level-3): www.egsiem.eu
- The combination service will be continued as a Combination Center (COST-G) under the umbrella of the International Gravity Field Service (IGFS) of the International Association of Geodesy (IAG).