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Using ECMWF ERA-Interim data instead of ECMWF operational data for the computation of the atmospheric de-aliasing product

Lieselotte Zenner and Thomas Gruber
Technische Universität München, Institut für Astronomische und Physikalische Geodäsie, Germany (zenner@bv.tum.de)

Non-tidal short-term atmospheric and oceanic mass variations are modelled and 'removed' from the GRACE measurements (de-aliasing process) in order to avoid aliasing. Any error or change in the computation of the atmospheric and oceanic models used for de-aliasing fully propagates into the final gravity field time series.
As these time series provide estimates for the integrated mass transport in the Earth system, like the global water cycle and solid Earth geophysical processes, any increase of accuracy as well as any change in the computation of the de-aliasing models, will impact the geophysical interpretations derived from GRACE gravity fields.

Currently, for the determination of the official AOD1B de-aliasing product, data from ECMWF's operational (OPER) atmospheric model is used. However, these operational data sets are not consistent, as they are subject to model changes from time to time, leading to significant jumps in the OPER data, due to an increase of the vertical and/or horizontal resolution of the model. Within this work, we used ECMWF's re-analysis data ERA-Interim. These data products should ensure consistency as they are reprocessed with the same (software) settings. The impact of using ERA-Interim instead of the operational data on the de-aliasing product, GRACE K-band range-rate residuals, and GRACE monthly gravity solutions will be discussed.