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At the Institute of Geodesy we produce state of the art monthly gravity fields in terms of spherical harmonic coefficients. Recent developments in our software have improved our solutions while preserving computational efficiencies. In particular we improved our noise models and treatments of error sources. With these improvements we produced an entirely new LRI-only as well as a combined KBR/LRI time series of gravity field coefficients, which will be the basis of this contribution. After gravity field recovery we estimate the so called post-fit residuals and analyze them. Furthermore we investigated the effects shown in duwe et al (2024), especially the panel effects which occurs when the satellite body panel starts or stop being illuminated by the sun and cross validating the effect with other sensors than LRI (in particular with
the ACC). The analysis combines different levels of sensor data as well as Level 2 data and post-fit residuals. It shows that the
investigation of post-fit residuals is not only useful for quality assessments it also allows us to identify effects of other sensory
origins as well as effects of processing algorithms. The result may also improve our understanding of the whole satellite platform
system and its interaction with its environment. The second part of this contribution will investigate ocean tide signatures in post-fit residuals, first introduced by Koch et al (2024).

References:
[1] Duwe, Mathias, Igor Koch, and Jakob Flury. "Residual Patterns in GRACE Follow-On Laser Ranging Interferometry Post-Fit Range Rate Residuals." Advances in Space Research 73.12 (2024): 5769-5782.
[2] Koch, Igor, Mathias Duwe, and Jakob Flury. "Residual and unmodeled ocean tide signal from 20+ years of GRACE and GRACE-FO global gravity field models." Journal of Geophysical Research: Solid Earth 129.9 (2024): e2024JB029345.
Presentation file
frye-mathias.pdf

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