

Interactive comment on “Instrument Data Simulations for GRACE Follow-on: Observation and Noise Models” by Neda Darbeheshti et al.

Anonymous Referee #2

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Review of ESSD-2017-45, GRACE Follow-On

General comments: Very useful and timely data set. Well described in this paper. Very good product for publication in ESSD.

Specific comments:

Page 2 line 6: Simulator data for period of one month. But, if Grace FO continues monthly summary data as per GRACE, don't we need at least a two-month simulation to identify month-to-month variance of the monthly summaries?

Page 3 line 6: Why do we start with Figure 11 instead of Figure 1. This numbering remains a residual of originally having two separate manuscripts?

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Page 3 line 9: Here we find actual resolution, daily at 5 seconds. Helpful to have this information earlier?

Page 4, line 8: Table 11 (and subsequently tables 21 and 31) instead of Table 1, 2, 3?

Comparing range, range rate and range acceleration noise predictions for KBR (Figure 17) and LRI (Figure 110) (AGAIN NOTE THE STRANGE NUMBERING SEQUENCE FOR FIGURES), (or likewise for time series in Figure 18 for KBR and Figure 112 for LRI) the authors suggest at least 2 order of magnitude lower noise, and in some cases perhaps better than 4 order of magnitude lower noise for the LRI. But this substantial improvement assumes, e.g. as described on page 5, that the laser ranging instrument pointing angle uncertainty - by engineering mechanism not yet solved - does not exceed some threshold which causes interferometry to fail (“falling out of lock”). The reader sees very hopeful numbers from this particular simulation but based on a very large assumption?

The two-orbit (roughly 3 hour) plots (Figure 14, Figure 19, Figure 114, 115, 117) provide the reader / user with highest resolution examples of specific per-orbit angles or jitter as reproduced by the simulations. But users applying Level-1B processing / formatting will not usually see or consider this level of detail?

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