Sampling the Earth from orbit leads to aliasing of high-frequency geophysical signals to lower frequencies and, eventually, into the recovered gravity field. Aliasing is a limiting factor for current gravity field missions and will remain a fundamental challenge to recovering time-variable gravitational signals for future missions. In addition, the presence of instrumentation noises affects the estimation of the gravity field. This effect even more complicates the improvement of the so-called dealiasing of the high frequency phenomena, as well as the separation of the geophysical signals in the final solutions.

In this contribution, we assess a simulated GRACE-like scenario with two different solutions strategies for the gravity field recovery, affected by white noise. One strategy makes use of the full repeat period of a repeat orbit scenario, the other only takes sub-cycles into account. We analyze whether the faster sub-cycle solutions support the dealiasing process. Both solutions are then compared to the input models through correlation analysis to investigate the aliasing behavior of different solution strategies, including the effect of white noise on the solutions. Moreover, corresponding filters for the added noises to the different solutions of the gravity field are designed.