

Comparing Swarm's Nominal Level1b Magnetic Data and ASM Vector Field Experimental Data: a Convenient Tool for Understanding Data Quality Issues.

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Abstract:

Swarm's Absolute Magnetometers (ASM) provide scalar measurements of the geomagnetic field with high accuracy and stability on the three satellites of the mission. These measurements are used to produce the (nominal 1 Hz) Level1b scalar data and calibrate the (nominal 1 Hz) Level1b vector data provided by the Vector Field Magnetometer (VFM, located some distance away along the boom on which both instruments are installed). The very same ASM instruments, however, can also provide independent vector field measurements, which can next be used for comparison with the nominal Level1b vector data for quality crosschecks, possible detection of undesired satellite signals, and assessment of the stability of the mechanical link between both instruments on each satellite. Here, we report on the lessons learnt from such comparisons, focusing on the issues raised by systematic time-varying differences observed in the nominal L1b data between the modulus of the vector data.