



Supplement of

Stratospheric gravity waves in three high-resolution models and AIRS satellite observations

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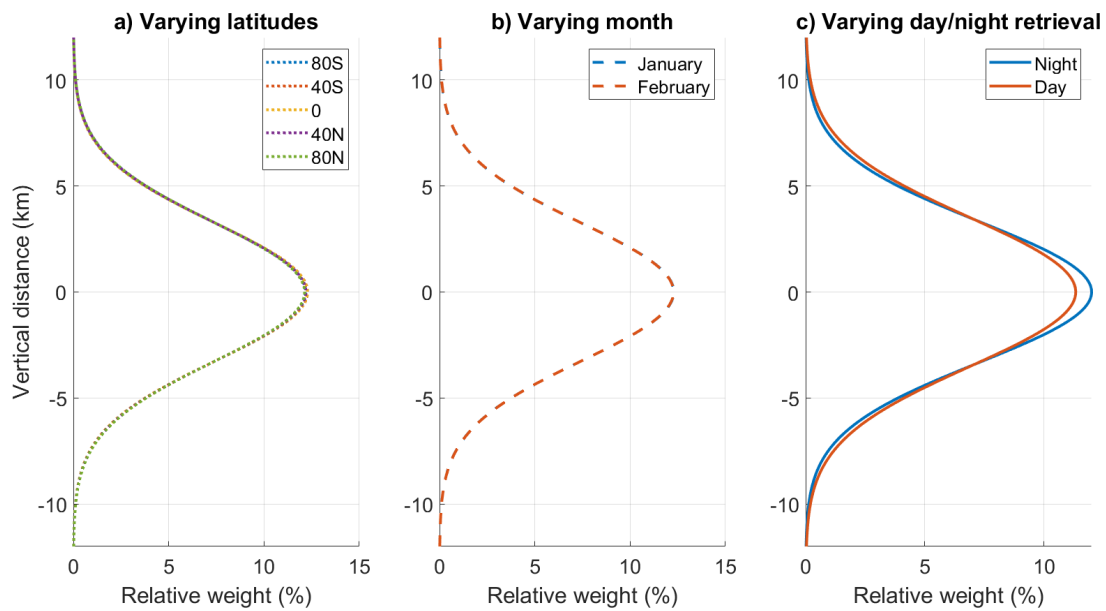


Figure S1. AIRS instrument vertical sensitivity functions (as a percentage). Panel a) shows various latitude bands for nighttime retrievals in January, panel b) shows January and February weightings for nighttime retrievals at the equator, panel c) shows nighttime and daytime weightings for January at the equator.

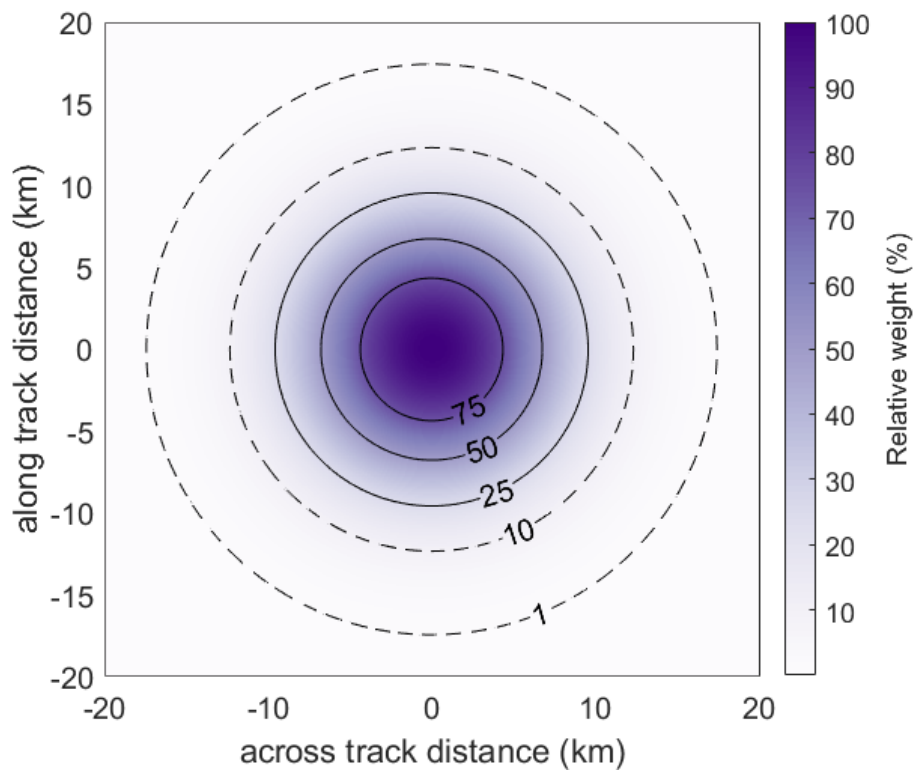


Figure S2. AIRS instrument horizontal sensitivity function (as a percentage) in the horizontal plane.

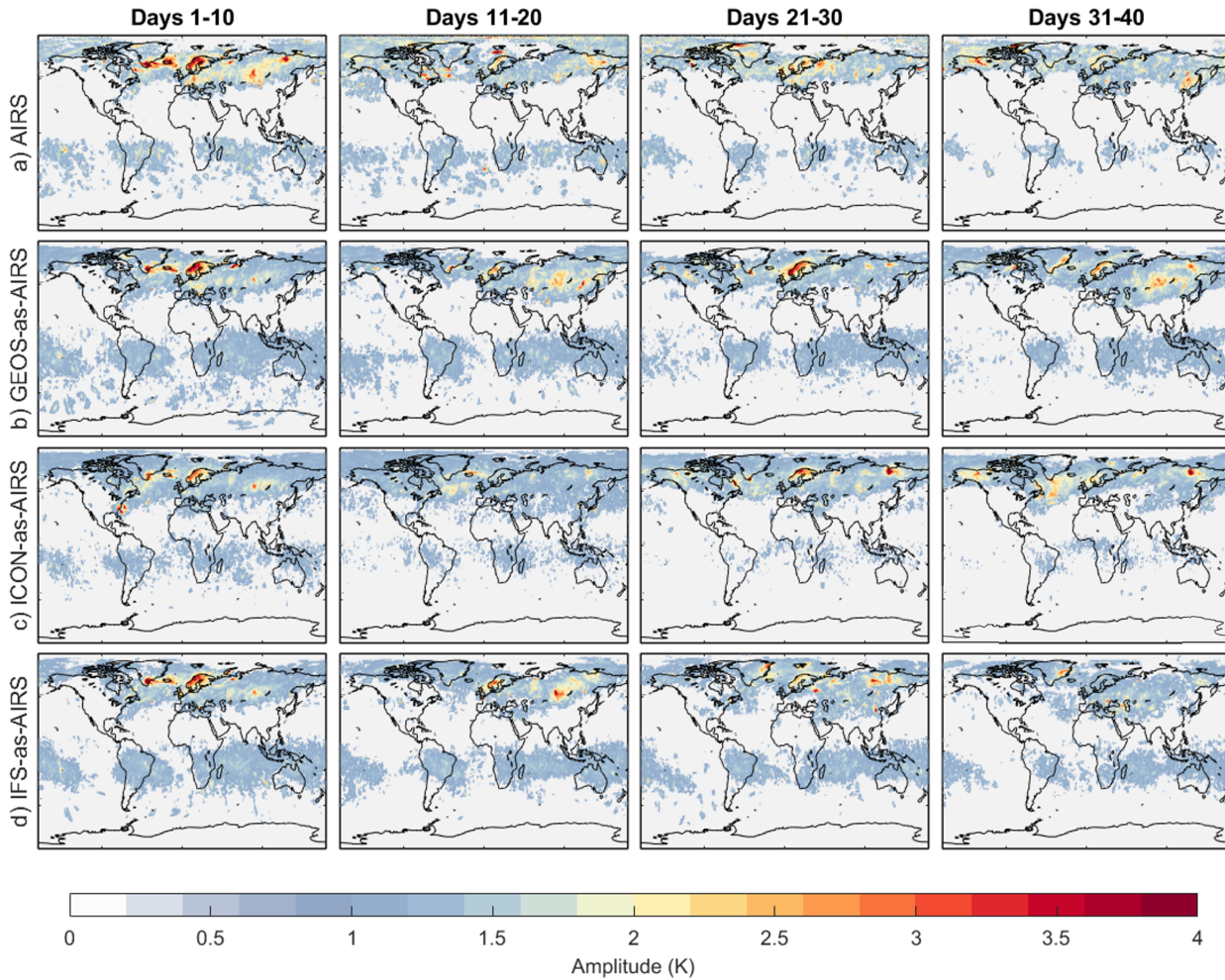


Figure S3. GW amplitudes (measured in K) 10-day conditional mean. First row AIRS observations, second row GEOS sampled as AIRS, third row ICON sampled as AIRS and bottom row IFS sampled as AIRS. Columns show average 10-day time periods since model initialisation on the 20th January 2020. Data is shown at 33 km altitude. Data is only averaged for instances where a wave is detected and that wave has an amplitude >1 K.

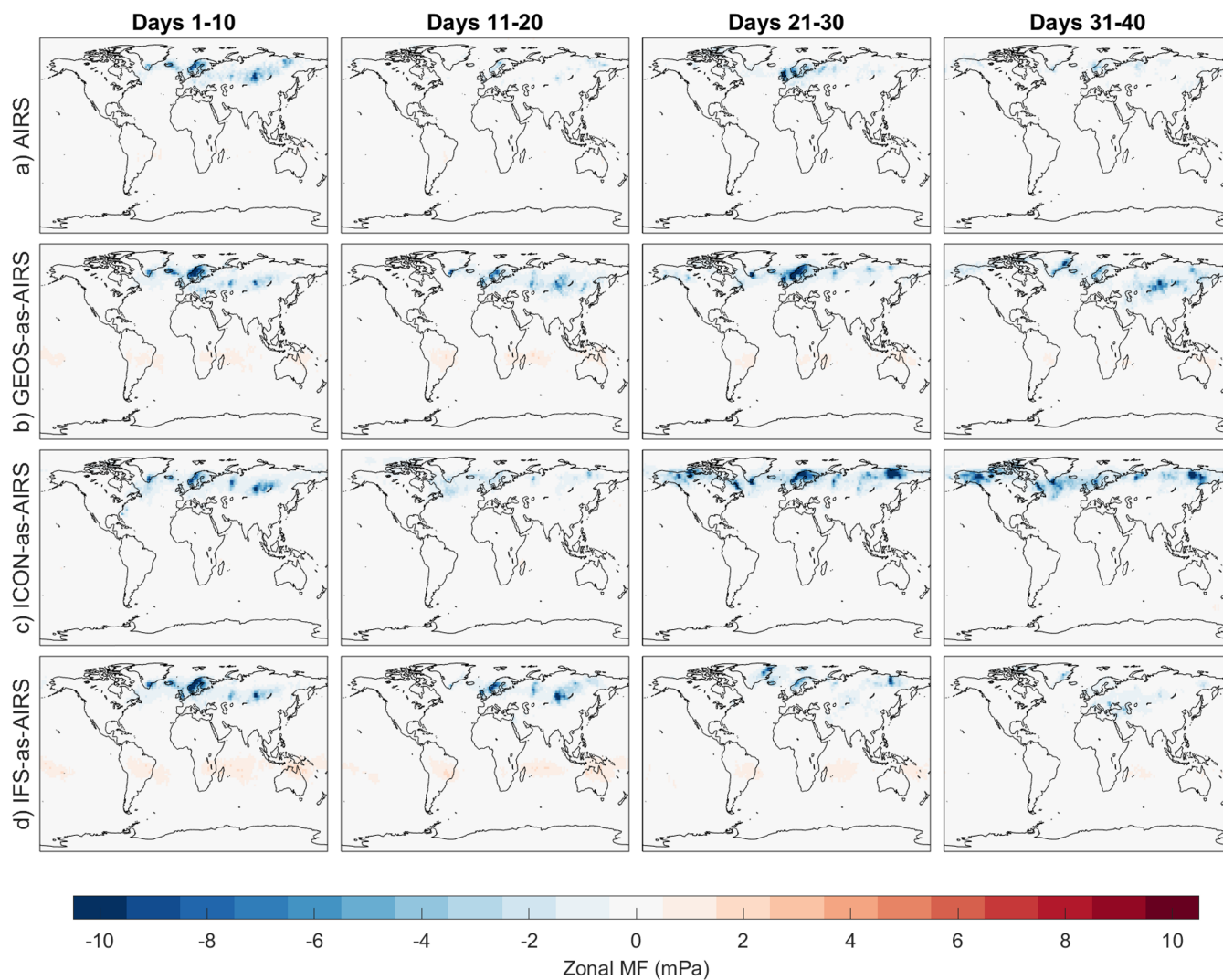


Figure S4. 10-day mean zonal momentum flux at 33km altitude for a) AIRS, b) GEOS sampled as AIRS, c) ICON sampled as AIRS, d) IFS sampled as AIRS. Day 1 the 20th January 2020 (model initialisation date).

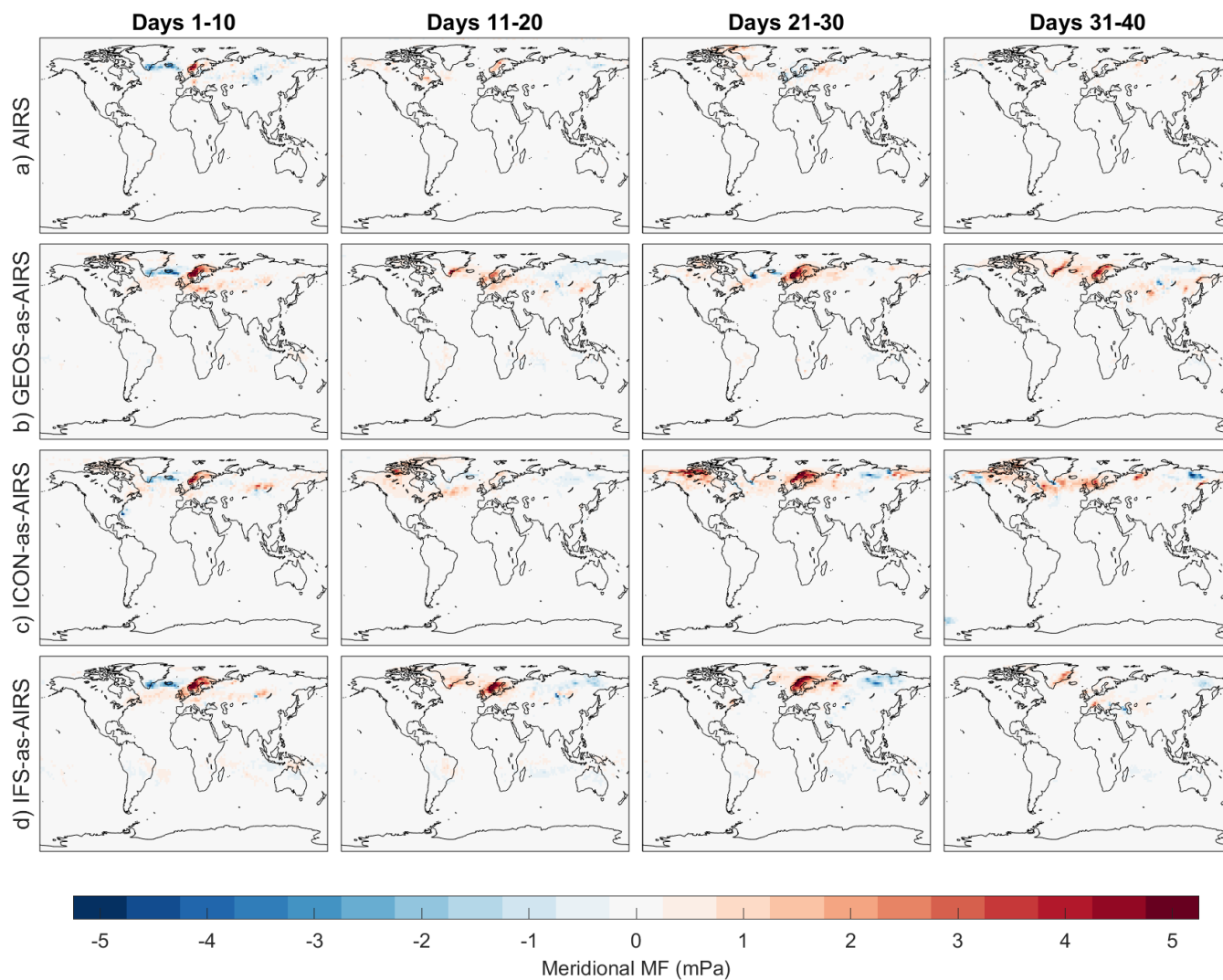


Figure S5. 10-day mean meridional momentum flux at 33km altitude for a) AIRS, b) GEOS sampled as AIRS, c) ICON sampled as AIRS, d) IFS sampled as AIRS. Day 1 the 20th January 2020 (model initialisation date).

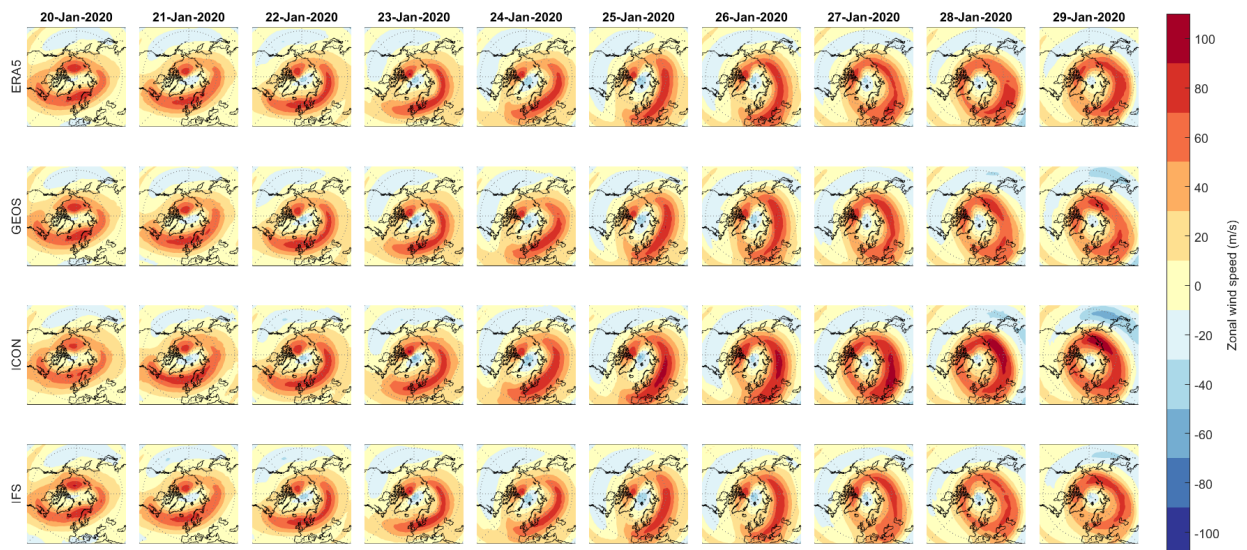


Figure S6. Daily-mean zonal wind at 33km altitude for: row 1 ERA5, row 2 GEOS, row 3 ICON, row 4 IFS. For the 20th-29th January 2020