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Supporting Information for

The role of the polar vortex jet in the generation of primary and higher-order gravity waves in the stratosphere, mesosphere and thermosphere during 11-14 January 2016

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Movie S1.

Movie S1: Latitude-altitude slices of T' $\exp(-[z-40]/7)^{0.12}$ (colors, in K) for GWs from the HIAMCM with horizontal wavelengths < 2001 km on 11-14 January 2016 at 15.7° E. Green and pink lines show +-100 m/s contours for U and V, respectively, with solid (dash) lines denoting positive (negative) values.

Movie S2.

Movie S2: Same as Movie S1, but at 20.2° W.

Movie S3.

Movie S3: Hourly temperature perturbation from the HIAMCM, T' (colors, in K) for GWs with horizontal wavelengths < 2001 km on 11-14 January 2016 at z=40 km in the northern hemisphere. The background horizontal wind, (U,V), is shown at z=40 km (vectors, in m/s). The downward red arrow in the lower left-hand corner shows V=-150 m/s. The maximum and minimum values of T' and the maximum value of U_H=sqrt(U^2+V^2) are listed at the top.

Movie S4.

Movie S4: Same as Movie S3 but at z=70 km. The downward red arrow shows V=-120 m/s.

Movie S5.

Movie S5: Same as Movie S3 but at z=95 km. The downward red arrow shows V=-200 m/s.

Movie S6.

Movie S6: Same as Movie S3 but at z=120 km. The downward red arrow shows V=-250 m/s.

Movie S7.

Movie S7: Same as Movie S3 but at z=200 km. The downward red arrow shows V=-250 m/s.

Movie S8.

Movie S8: T' (colors, in K) ffrom the HIAMCM for GWs with horizontal wavelengths < 2001 km every 10 minutes during 11-14 January 2016 at z=200 km over Europe/Atlantic Ocean. (U,V), is shown at z=200 km (vectors, in m/s). The downward red arrow shows V=-250 m/s. The maximum/ minimum values of T' and the maximum value of U_H are given.

Movie S9.

Movie S9: Same as Movie S8 but over the CONUS. The downward red arrow shows V=-170 m/s.

Movie S10.

Movie S10: Same as Movie S7 but for GWs with horizontal wavelengths of 2001-4447 km. The downward red arrow shows V=-250 m/s.

Movie S11.

Movie S11: Same as Movie S10 but at z=80 km. The downward red arrow shows V=-130 m/s.

Movie S12.

Movie S12: Local body forces (vectors, in m/s/h) on 11-14 January 2016 at z=110 km. The momentum fluxes are calculated from the HIAMCM for GWs with horizontal wavelengths of <2001 km and are averaged over 800 km x 800 km and Delta z=3 km. Green lines show LBF magnitudes of 10 and 20m/s/h. The downward red arrows in the lower left-hand corners show -50 m/s/h. T' (colors, in K) at z=124 km at the same time for GWs with horizontal wavelengths of 2001- 4447 km from the HIAMCM.