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Supplement of

On the origin of the mesospheric quasi-stationary planetary waves in the unusual Arctic winter 2015/2016

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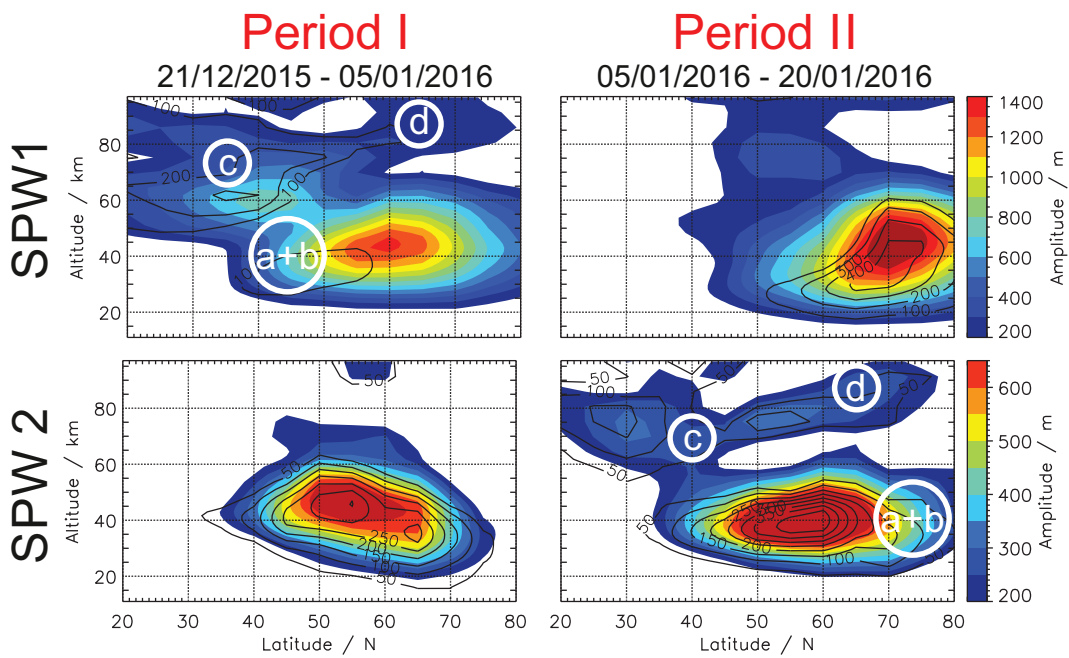


Figure S 1: Latitude-altitude cross-section of the SPW 1 and 2 derived from MLS GPH data. The amplitude as it occurred in the Arctic winter 2015/16 is color coded, the deviation from the 12-year mean is presented in contour lines for the respective time period from MLS GPH data. The first half of the time period investigated here is called hereafter Period I and the second half Period II.

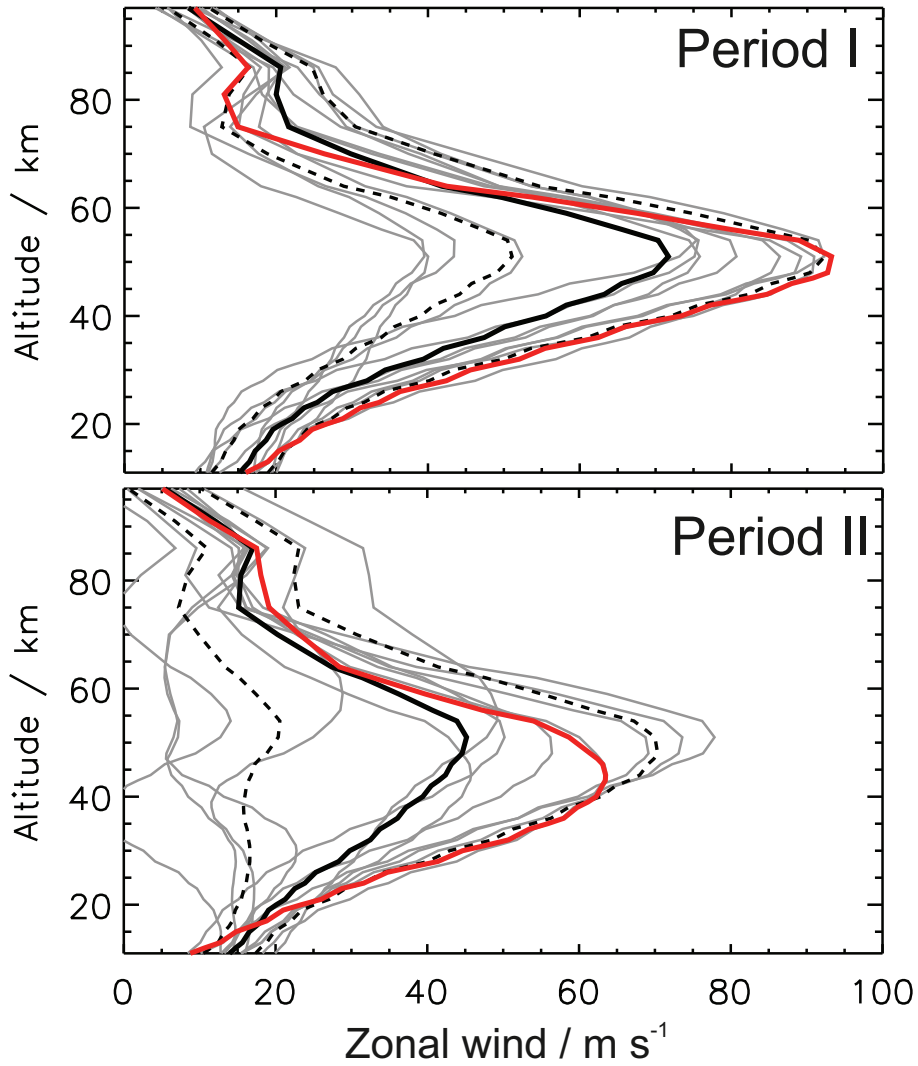


Figure S 2: Vertical profile of the zonal mean zonal geostrophic wind averaged between 50 and 60°N for Period I (top) and II (bottom). Data are derived from MLS GPH data.

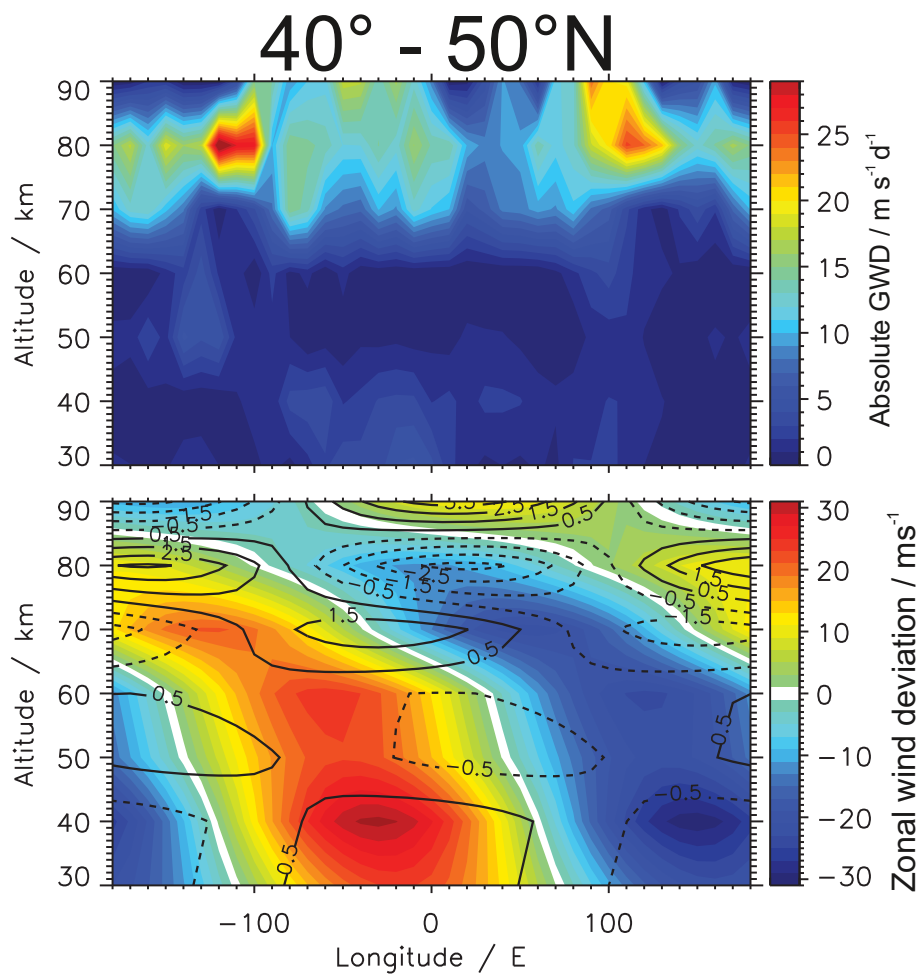


Figure S 3: Top: Longitude-altitude cross-section of the absolute GW drag in Period I. Bottom: Longitude-altitude cross-section of the geostrophic zonal wind amplitude (colored contour) and the absolute GW drag amplitude in m/s/d (contour lines) in Period I. The plot shows the deviation from the zonal mean of the wavenumber 1 filtered atmospheric wind component and GW drag. Data are derived from SABER. Note that this is the northernmost latitude band available from SABER in Period I.

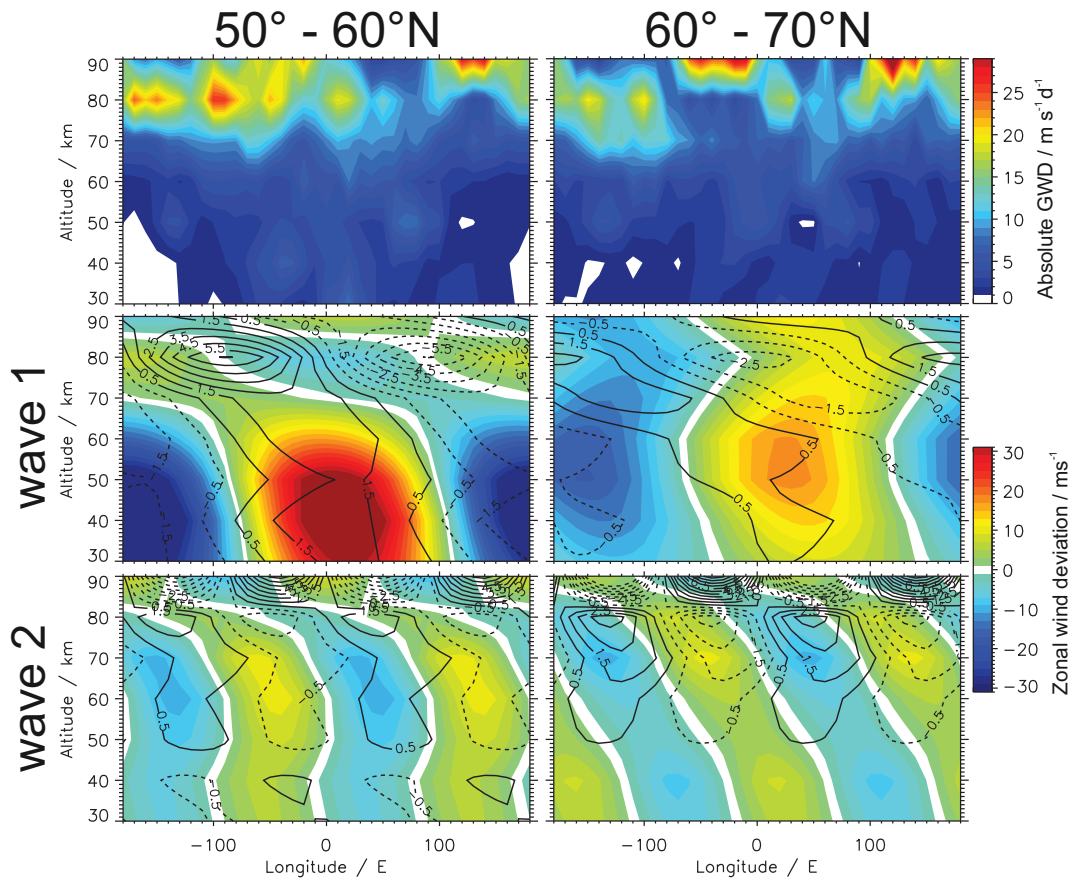


Figure S 4: Top: Longitude-altitude cross-section of the absolute GW drag in Period II. Middle and bottom: Longitude-altitude cross-section of the geostrophic zonal wind amplitude (colored contour) and the absolute GW drag amplitude in m/s/d (contour lines) in Period II. The plots show the deviation from the zonal mean of the wavenumber 1 and 2 filtered atmospheric wind component and GW drag. Data are derived from SABER.