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Supplement of

Tropopause-level planetary wave source and its role in two-way troposphere–stratosphere coupling

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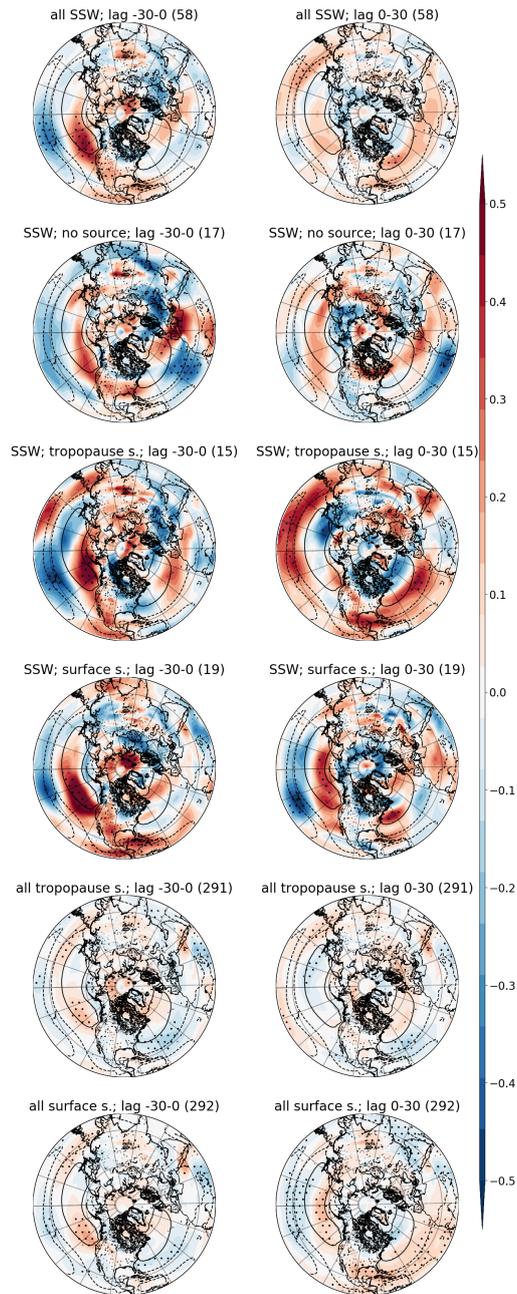


Figure S1. Map-composite analysis of downward impact in zonal wind at 950 hPa (U950) averaged between the lags -30 and 0 days (left column), and 0 and +30 days (right column) around SSW events: (top row) all SSWs, (second row) SSW events not preceded by a wave source, (third row) SSWs preceded by tropopause wave source, (fourth row) SSWs preceded by surface wave source. The bottom two rows show the same but for all wave source events around the central wave source date: (fifth row) all tropopause wave source events, (bottom row) all surface wave source events. The figure shows standardised U950 anomalies (shading) and U950 climatology (contours; contour interval is 4 m s^{-1} with 0^{th} contour omitted for clarity, i.e. ..., -8, -4, 4, 8, ...). Stippling denotes values that are significant at 95% level. Numbers in brackets denote number of events in each composite. Data are from the ERA-20C.

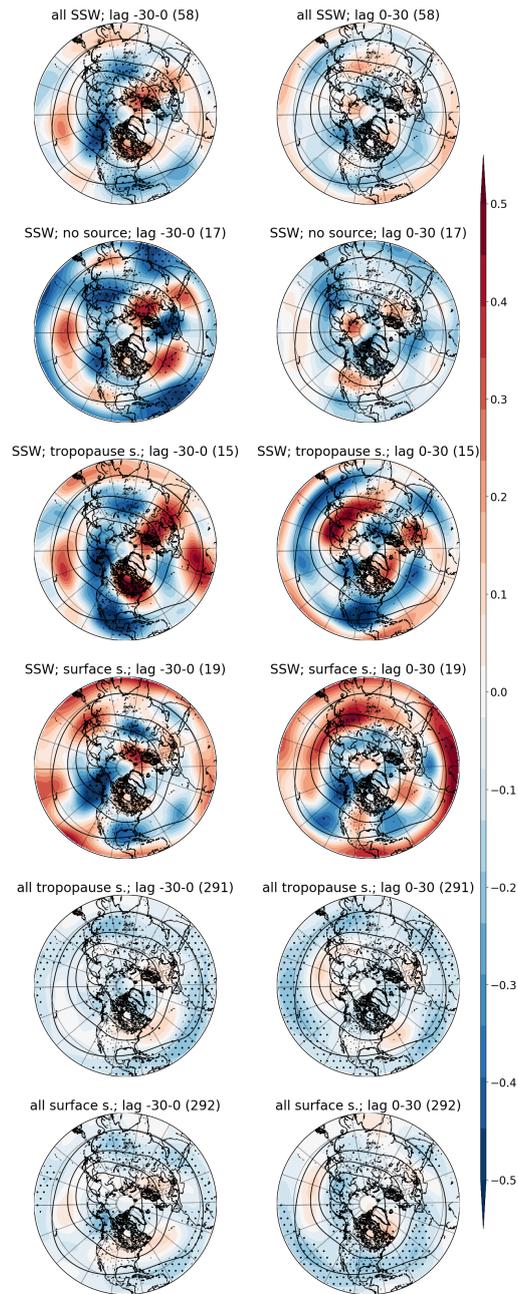


Figure S2. As in Fig. S1, but for geopotential height at 500 hPa (Z500). Here the figure shows standardised Z500 anomalies (shading) and Z500 climatology (contours; contour interval is 200 m, i.e. ...,4800, 5000, 5200,...).