



Supplement of

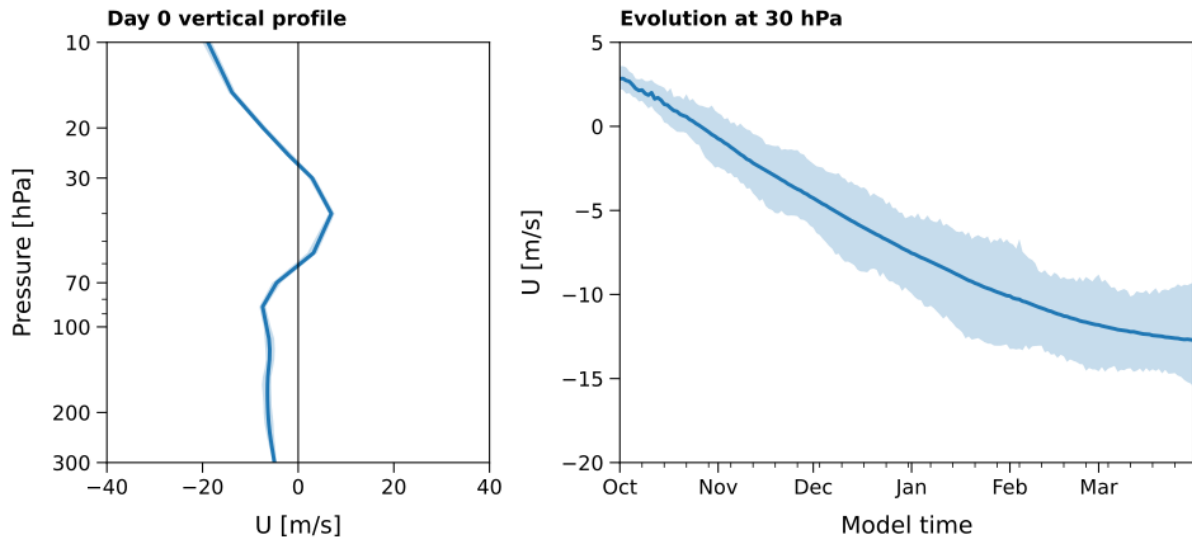
Quantifying the tropospheric response to individual sudden stratospheric warmings revealed by an ensemble simulation strategy

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EGE composite zonal-mean zonal wind (10°S – 10°N)



Spin-off composite zonal-mean zonal wind (10°S – 10°N)

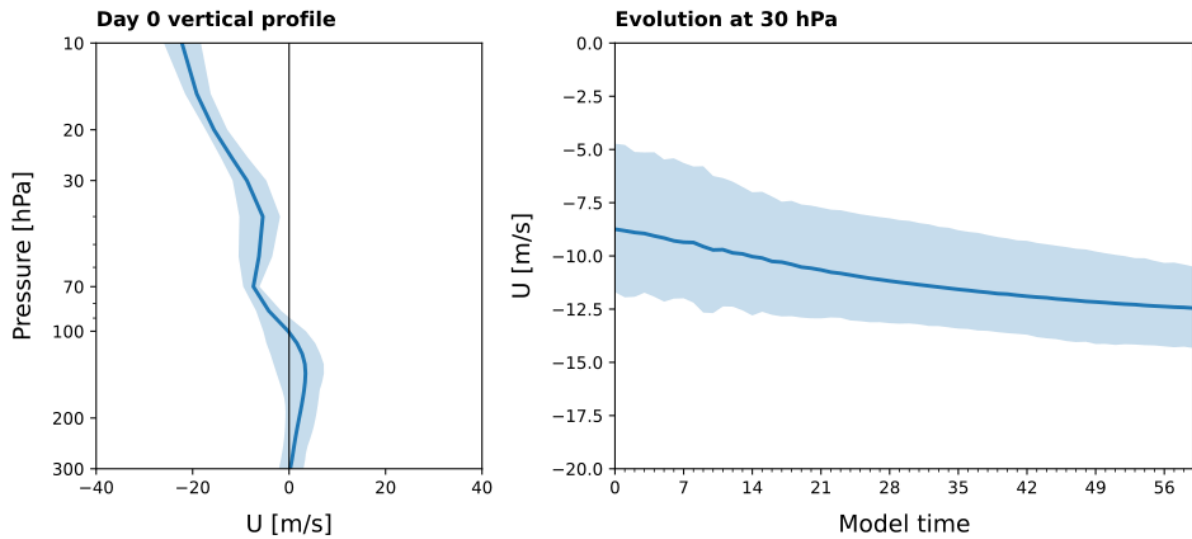


Figure S 1. Top panel: EGE composite of zonal-mean zonal wind averaged over 10°S – 10°N . Left: Vertical profile at day 0. Right: Time evolution at 30 hPa. The blue line shows the ensemble mean, and shading indicates the ensemble range (minimum–maximum). Bottom panel: As in the top panel, but for the spin-off composite.

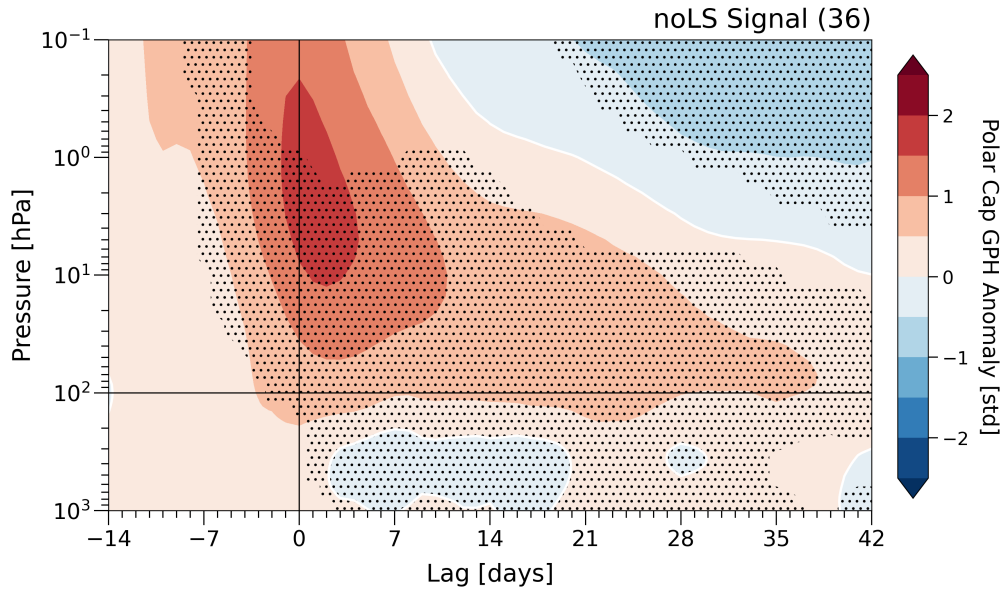


Figure S 2. Event-based composite of standardised GPH anomalies for SSWs identified in the EGE without a lower stratospheric signal (noLS). Stippling indicates regions where cluster-mean differences between events with and without a lower-stratospheric signal are significant at the 95 % confidence level. Thin black vertical and horizontal lines mark the SSW onset and the 100 hPa level, respectively. Numbers in panel headers indicate sample size.

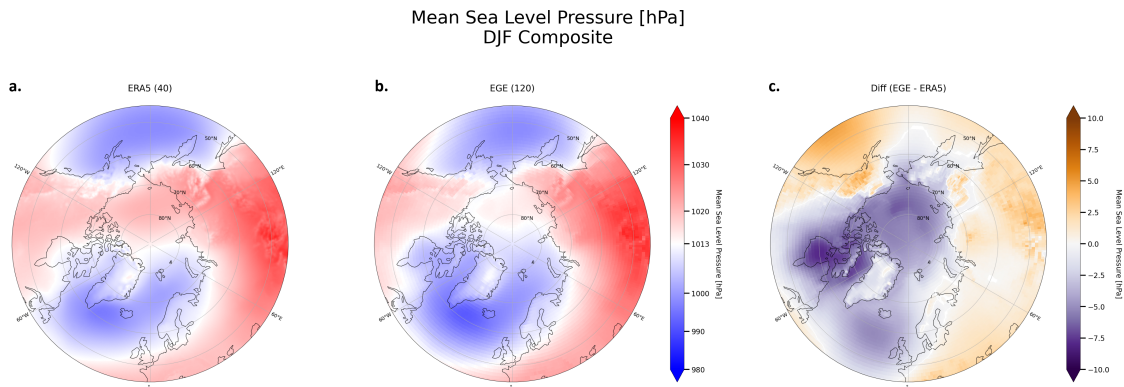


Figure S 3. Mean sea level pressure climatology over DJF of (a.) ERA5 for the years 1980-2019, (b.) EGE, and the difference (EGE–ERA5) (c.). Stereographic projection shows latitudes north of 45 °N, centred on 90 °N with 10 °graticule.

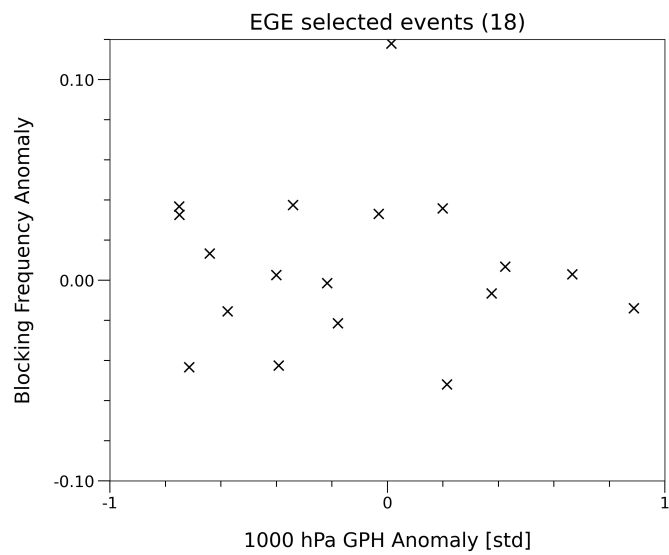


Figure S 4. Scatter plot showing the correlation between ensemble member mean 1000 hPa GPH anomalies and total number of blocking days for the 18 selected events from the EGE ensemble over the region 60-75 °N, -90-30 °E.