

Supplement of

The sensitivity of atmospheric blocking to changes in upstream latent heating - numerical experiments

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1 Synoptic overview for cases Canada, Cold spell and Russia

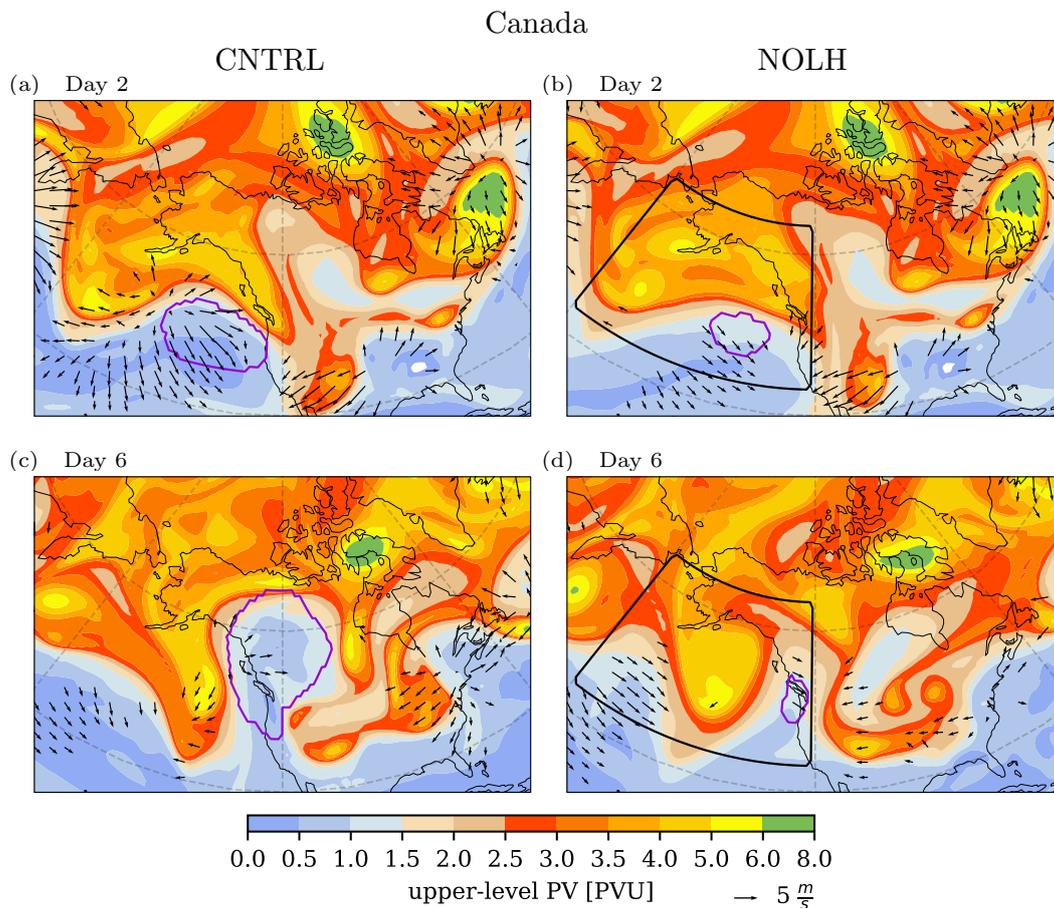


Figure S1. Upper-level PV (in pvu, shaded), upper-level divergent wind (black vectors according to reference vector, only shown for wind speed larger than 2 m s^{-1}), and blocking region (magenta contour for PV anomaly of -1 pvu) in (left) CNTRL and (right) NOLH simulation at (a,b) 18 UTC 29 April 2016 (day 2) and (c,d) 15 UTC 2 May 2016 (day 6). Black box in NOLH indicates region where LH is turned off.

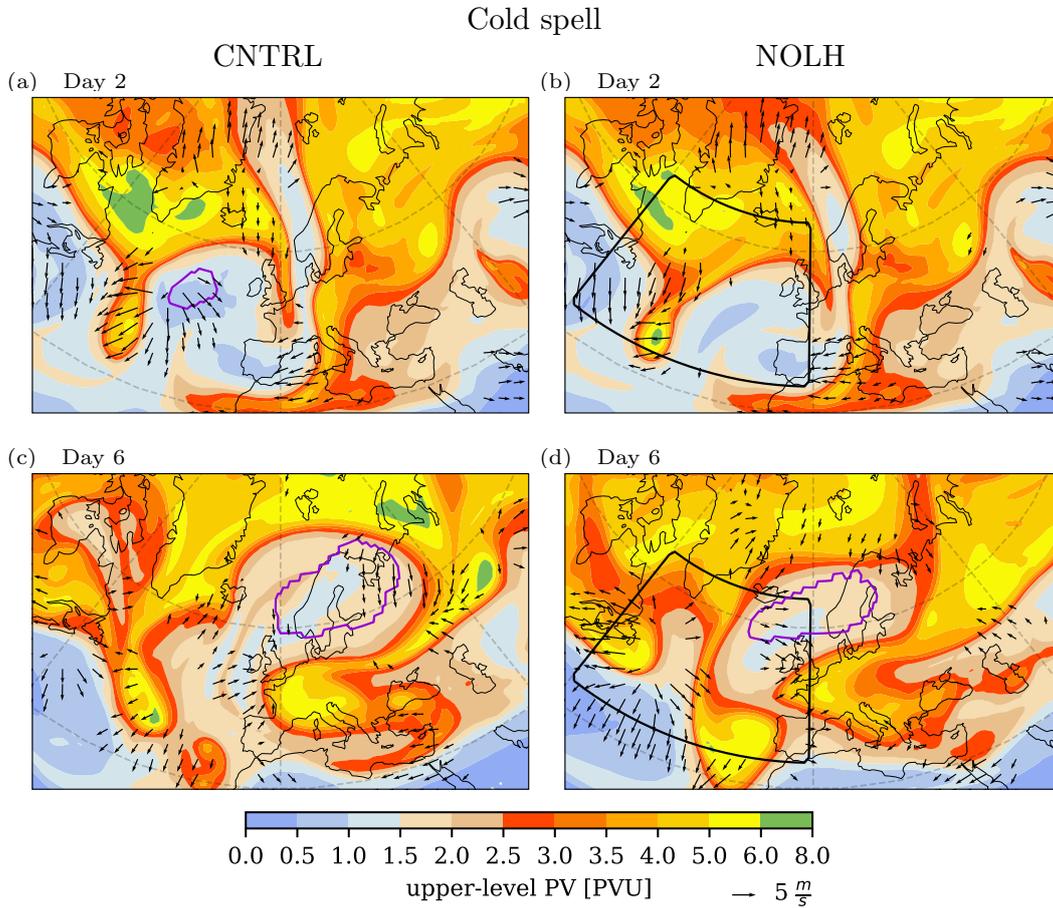


Figure S2. Upper-level PV (in pvu, shaded), upper-level divergent wind (black vectors according to reference vector, only shown for wind speed larger than 2 m s^{-1}), and blocking region (magenta contour for PV anomaly of -1 pvu) in (left) CNTRL and (right) NOLH simulation at (a,b) 15 UTC 20 February 2018 (day 2) and (c,d) 21 UTC 24 February 2018 (day 6). Black box in NOLH indicates region where LH is turned off.

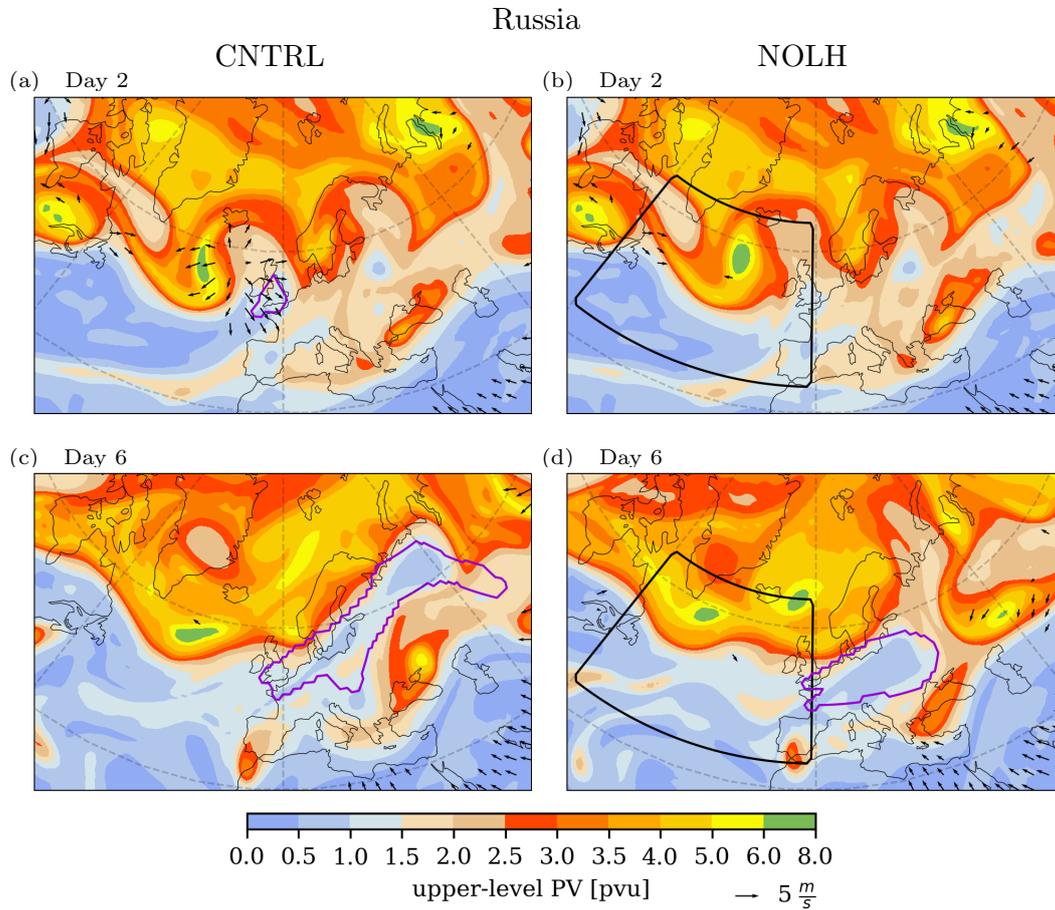


Figure S3. Upper-level PV (in pvu, shaded), upper-level divergent wind (black vectors according to reference vector, only shown for wind speed larger than 2 m s^{-1}), and blocking region (magenta contour for PV anomaly of -1 pvu) in (left) CNTRL and (right) NOLH simulation at (a,b) 21 UTC 30 June 2010 (day 2) and (c,d) 00 UTC 5 July 2010 (day 6). Black box in NOLH indicates region where LH is turned off.

2 PV advection by divergent and rotational wind

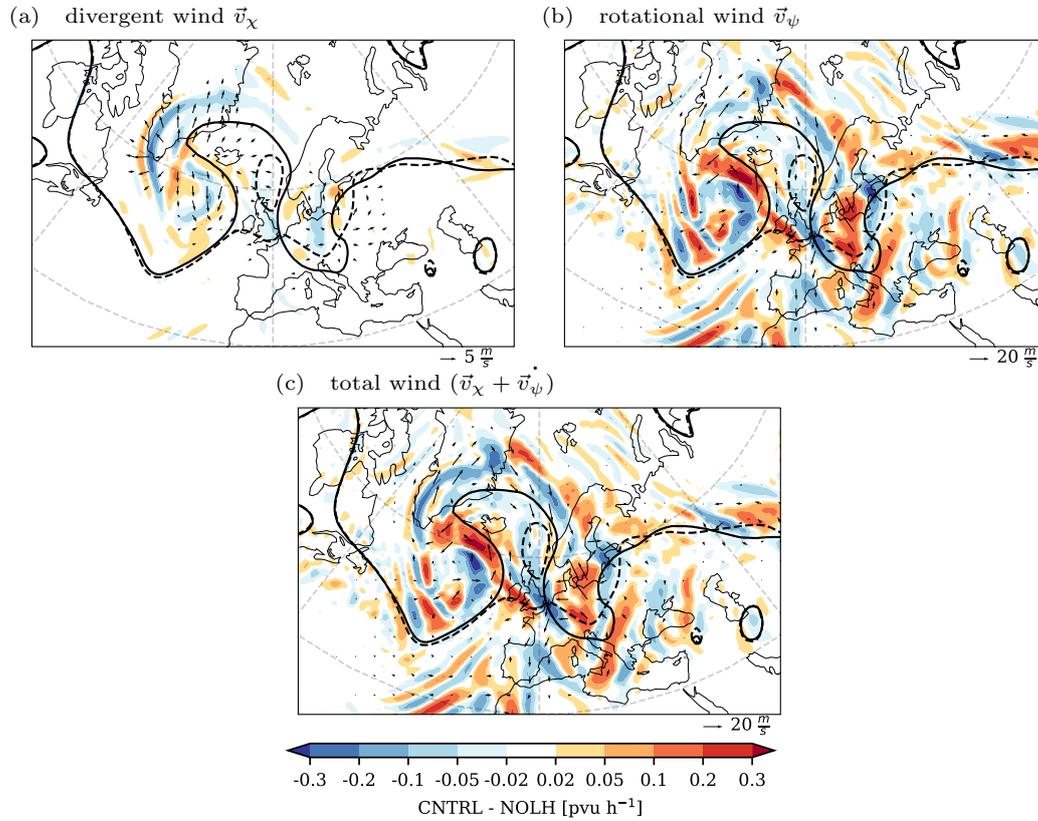


Figure S4. Difference (CNTRL - NOLH) in upper-level PV advection (in pvu h^{-1} , shaded) by (a) divergent (irrotational) wind, (b) the rotational wind, and (c) the total wind after 3 day model simulation for Thor onset. Note the different wind speed magnitude of the reference vector. Only wind speed difference larger than 1 m s^{-1} is shown. Dynamical Tropopause (upper-level 2 pvu contour) is shown in black solid (CNTRL) and dashed (NOLH) contour.