



Supplement of

Analytical and adaptable initial conditions for dry and moist baroclinic waves in the global hydrostatic model OpenIFS (CY43R3)

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Supplementary material:

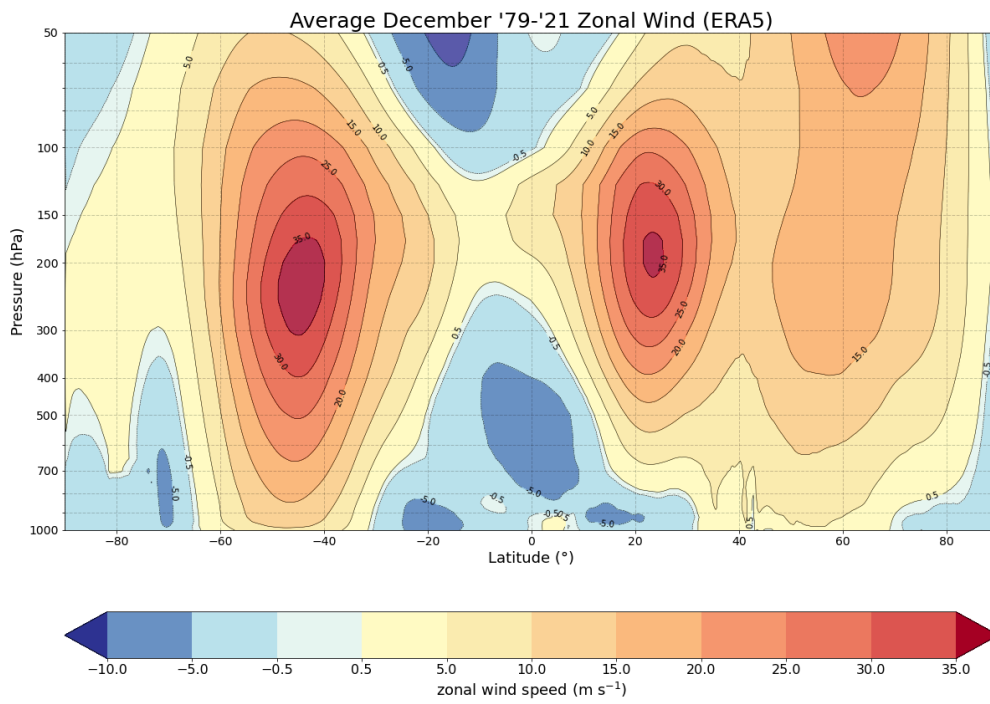


Figure S1: Cross-section of the average zonal wind speed of the ERA5 December between 1979 and 2021.

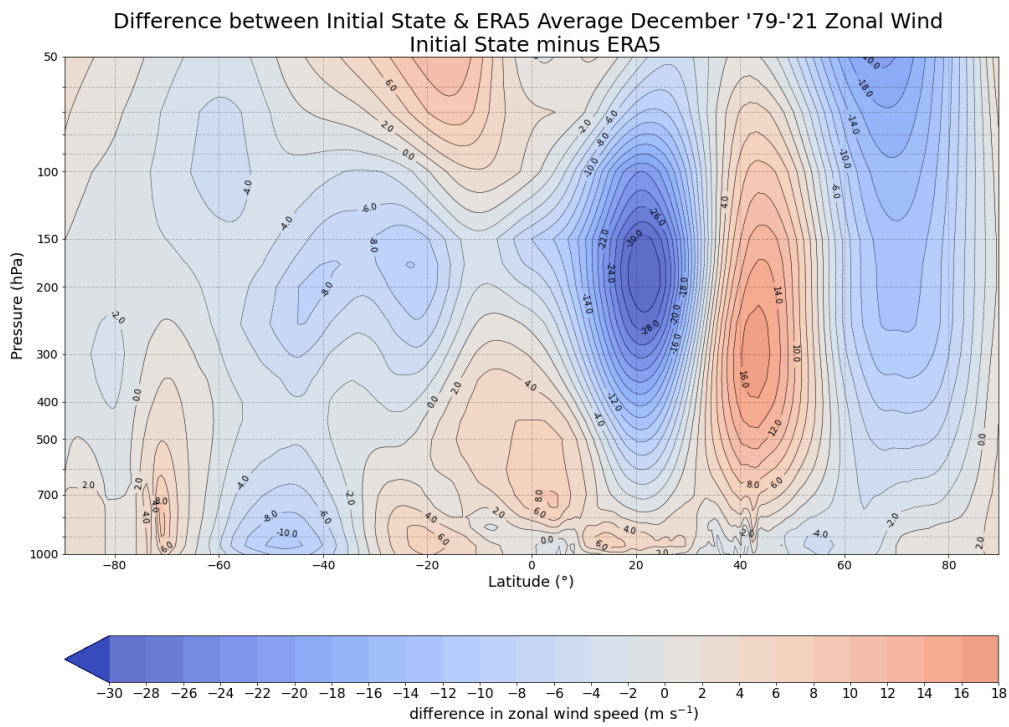


Figure S2: Cross-section of the difference between average zonal wind speed pictured Figure 1S and the analytical jet generated with $n=3$ and $b=2.0$.

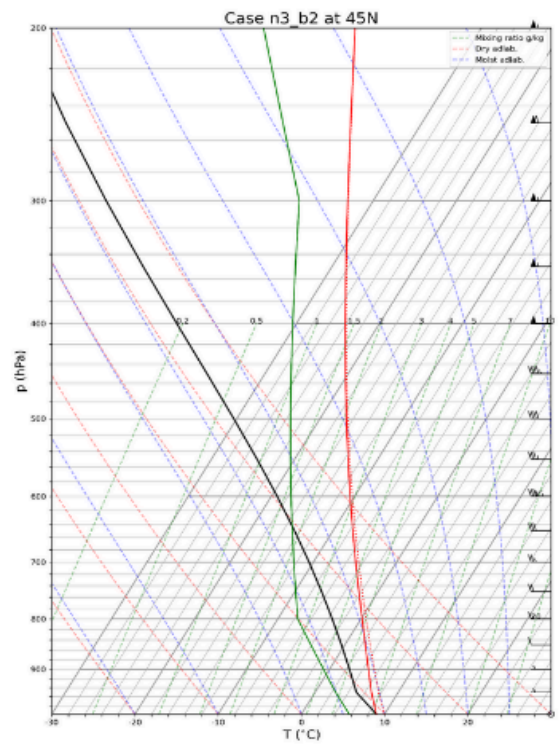
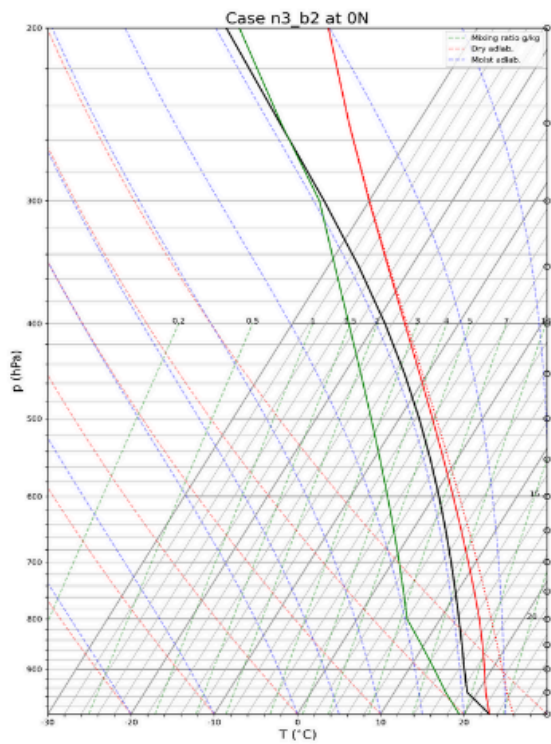
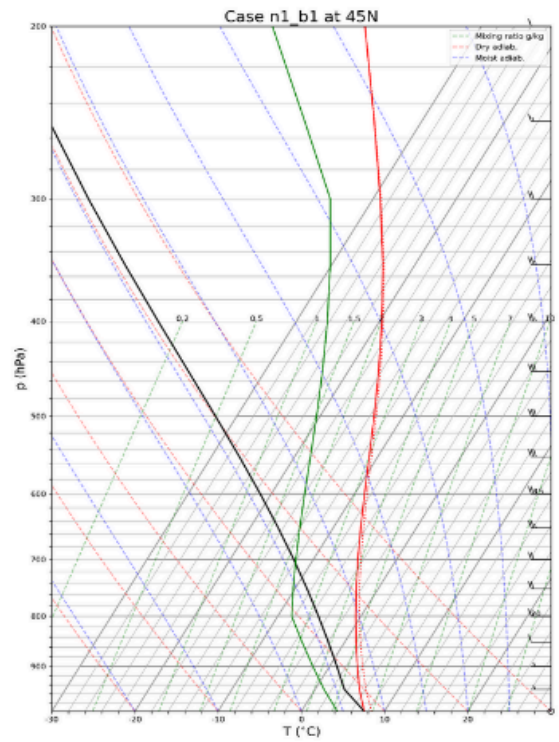
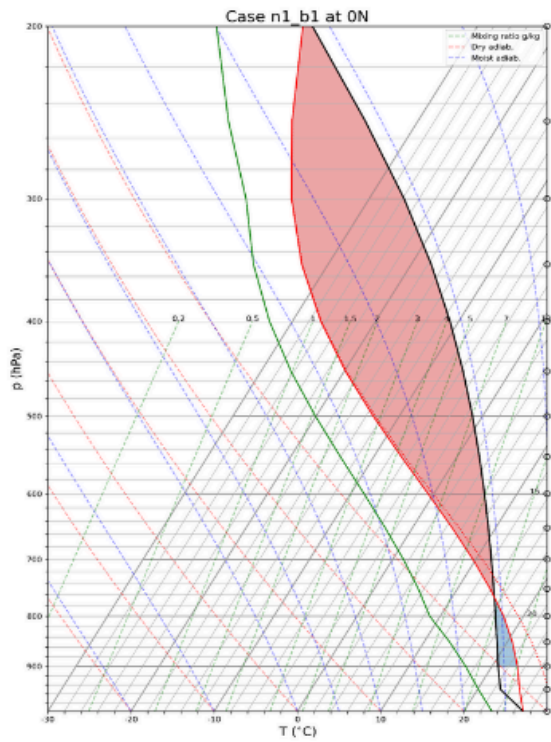


Figure S3: Sounding for two cases ($n=3$ and $b=2.0$, $n=1$ and $b=1.0$) for two latitudes (0° and 45°N). The solid green line represents the dew point, the solid red line the real temperature of the moist case, the solid black line the ideal parcel profile from the surface temperature and the dashed red line the temperature of the dry case (added for reference). The red area represents the convective available potential energy and the blue area the convective inhibition.

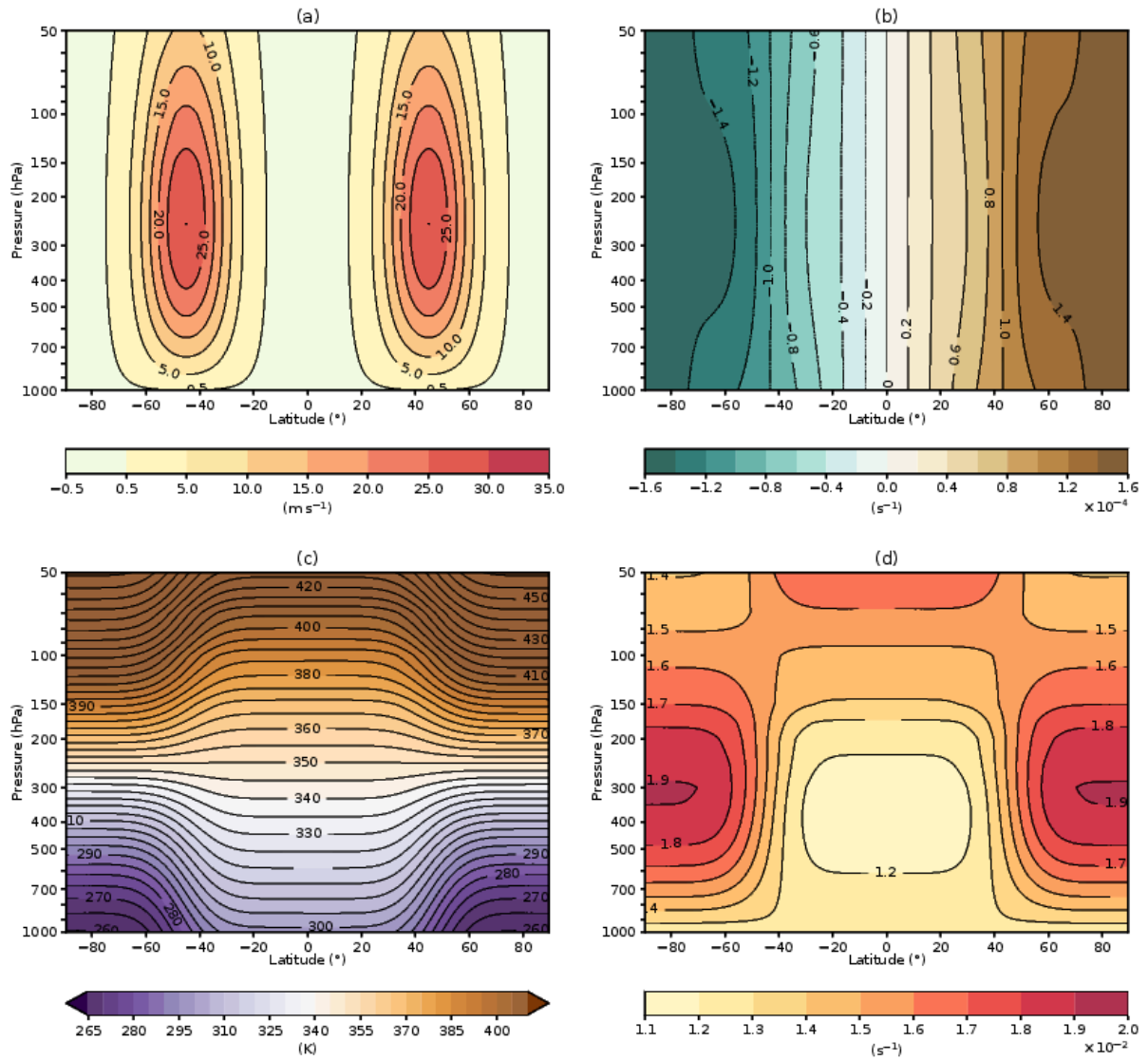


Figure S4: Cross sections of the default dry initial background state ($n=3$ and $b=2.0$) for: (a) wind speed, (b) absolute vorticity, (c) potential temperature, (d) Brunt-Väisälä frequency.

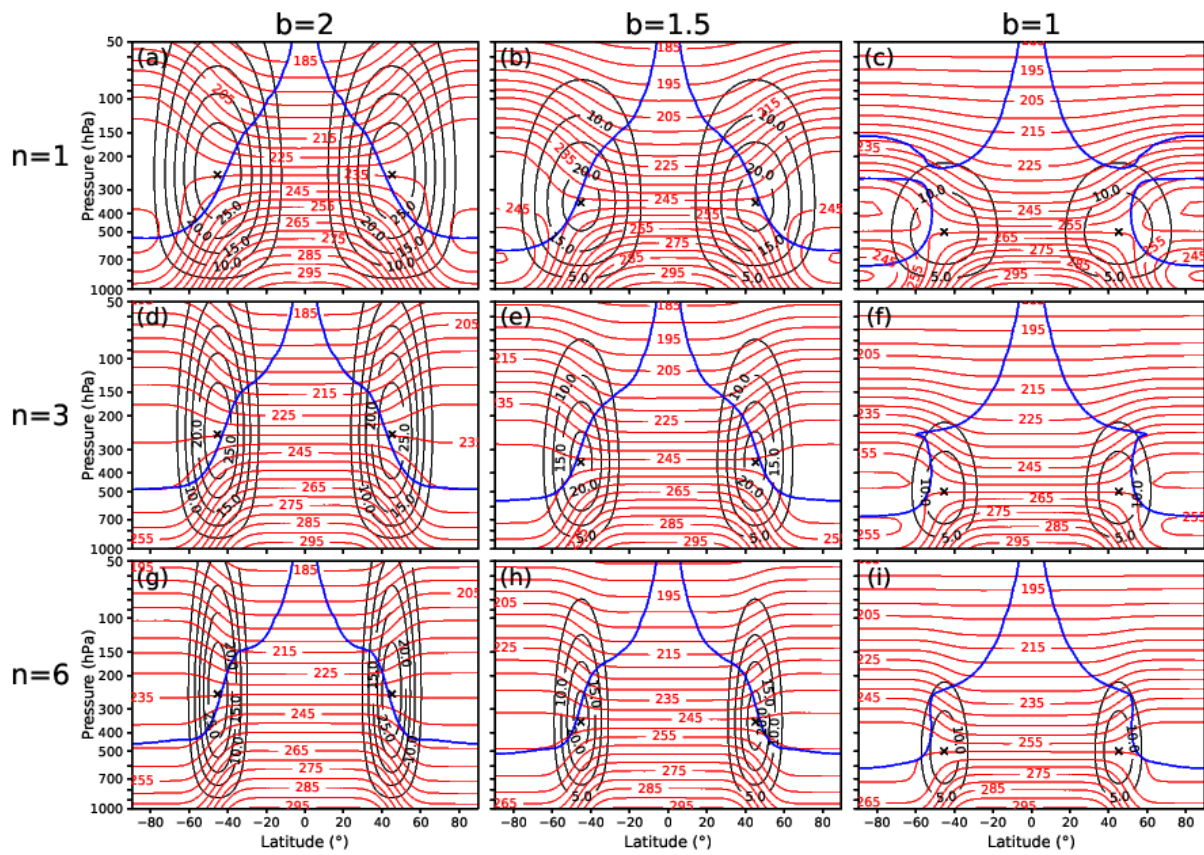


Figure S5: The zonal wind speed in $\text{m}\cdot\text{s}^{-1}$ (black contours), temperature in K (red contours) and dynamical tropopause at 2 PVU (blue contours) fields of the dry initial state for different values of n and b .