



## **Study of the onset dynamics of Eurasian summer blocking events**

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Summer blocking events in three different Eurasian areas are investigated using the ERA-Interim reanalysis to better understand their characteristics and formation mechanisms. This is motivated by the underestimation of Eurasian blocking frequencies in many climate models. These three areas correspond to: 1) the area with the maximum number of blocked days over Eurasia in JJA (“max” area), 2) the area where the blocking event associated with the August 2003 heatwave occurred (“western” area) and 3) to the area where blocking events associated with the 2010 heatwave occurred (“eastern” area). Blocking events are identified using a 2D blocking index based on meridional overturning of the 500hPa-geopotential gradient.

Blocking events in the “eastern” area are associated with a low-frequency wave train originating in the North Pacific, although there does not appear to be a strong link to ENSO variability. “Western” and “max” events appear to be triggered more locally, which could be explained by the fact that they are closer to the Atlantic storm track. A decomposition into high-frequency and low-frequency components of the potential vorticity fluxes showed that the low-frequency flux of potential vorticity plays a dominant role in the formation of the blocking events in all three areas, even though blocking events in the “western” and “max” areas are not associated with a low-frequency wave train. Other characteristics of the events in the three regions have also been investigated, such as their persistence, spatial pattern and frequency.