

## A dynamical adjustment perspective on extreme event attribution

### Response to comments

**Reply to Editor** (T. Birner):

In the following the editor comments appear in black with the author responses in blue. All the references mentioned in the text are given at the end.

#### Minor Comments

Based on your responses to the reviewer comments (both had suggested minor revisions) and my own assessment I'm happy to accept your manuscript subject to addressing a couple of further minor comments by myself:

1. Kathrin Wehrli asked about interannual variability, but I couldn't find any related modifications to the text: please clarify if this was intentional (if so, why?) or apply a related addition to the text (1-2 sentences would be fine)
2. Tim Woolings point about role of other processes, other than advection, to RES\_FRC: please clarify whether "adiabatic heating" is meant to refer to radiatively-driven subsidence (I'm asking because advection by itself also represents adiabatic heating/cooling)? Perhaps simply clarify that you're referring to vertical advection at these places?

I thank the editor for his careful reading and suggestions. About the first point, I agree with the suggestion and I have added a short discussion in section 4.1:

“The dynamic contribution to the WA summer  $TXx$  trend magnitude can also be quantified with regard to year-to-year variability of the dynamic component that is quite similar (in both spatial pattern and amplitude) to the dynamic component daily variability during the Russian heatwave period. In WA regions with the largest trend magnitude (north of the Black and Caspian Seas), the 40-yr  $TXx$  changes are comparable with the summer  $TXx$  interannual standard deviation in term of localization and magnitude (not shown).”

About the second point, the editor's point is indeed correct and I agree with the suggestion. I have replaced “adiabatic heating” by “vertical advection” in the text. The word “adiabatic” is now only used once in Section 3.2 where I discuss blocking in general terms:

“These blocking circulation patterns are often associated with surface temperature warm anomalies due to enhanced subsidence and adiabatic compression ...”

Note that I have also added “horizontal” in front of advection in a few places to avoid any further confusion.