



## **India heat wave attribution considering effects of anthropogenic aerosols.**

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Extreme weather event attribution, now a well-established field within the Detection and Attribution community, slowly incorporates all regions of the globe. Here we present heat wave results for India in 2015, using pre-conditioned (SST driven) large ensemble RCM simulations provided by weather@home. Apart from the presentation of a thoroughly validated set of hydrometeorological model variables for the South Asian region, the novelty in this study is that we include a GHG-only ensemble in our analysis. Rather than relying on actual and counterfactual data for 2015 to investigate the event-specific dynamic contribution, we make also use of an ensemble where the SST forcing corresponds to a world in which anthropogenic aerosols have been removed (AA).

Since AAs have far-reaching implications for the Asian monsoon system (e.g. Bollasina et al. 2011; Li et al 2016), the changing risk of certain extreme weather events occurring due to a variable load of AAs can potentially be attributed for the first time. Since we are now in the possession a fully consistent 30 year climatology (200 ensemble member per year) for actual, counterfactual and GHG only conditions as well, we can try and answer the question whether circulation changes or trends due to anthropogenic climate change are detectable already. In addition, we demonstrate how these results can be used in our fast track attribution framework, including evidence for the robustness of the analogue method utilised to determine event-specific dynamic contributions.