

Thermodynamics vs Dynamics? a holistic approach to extreme event attribution

Friederike Otto, ...

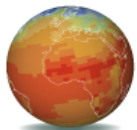
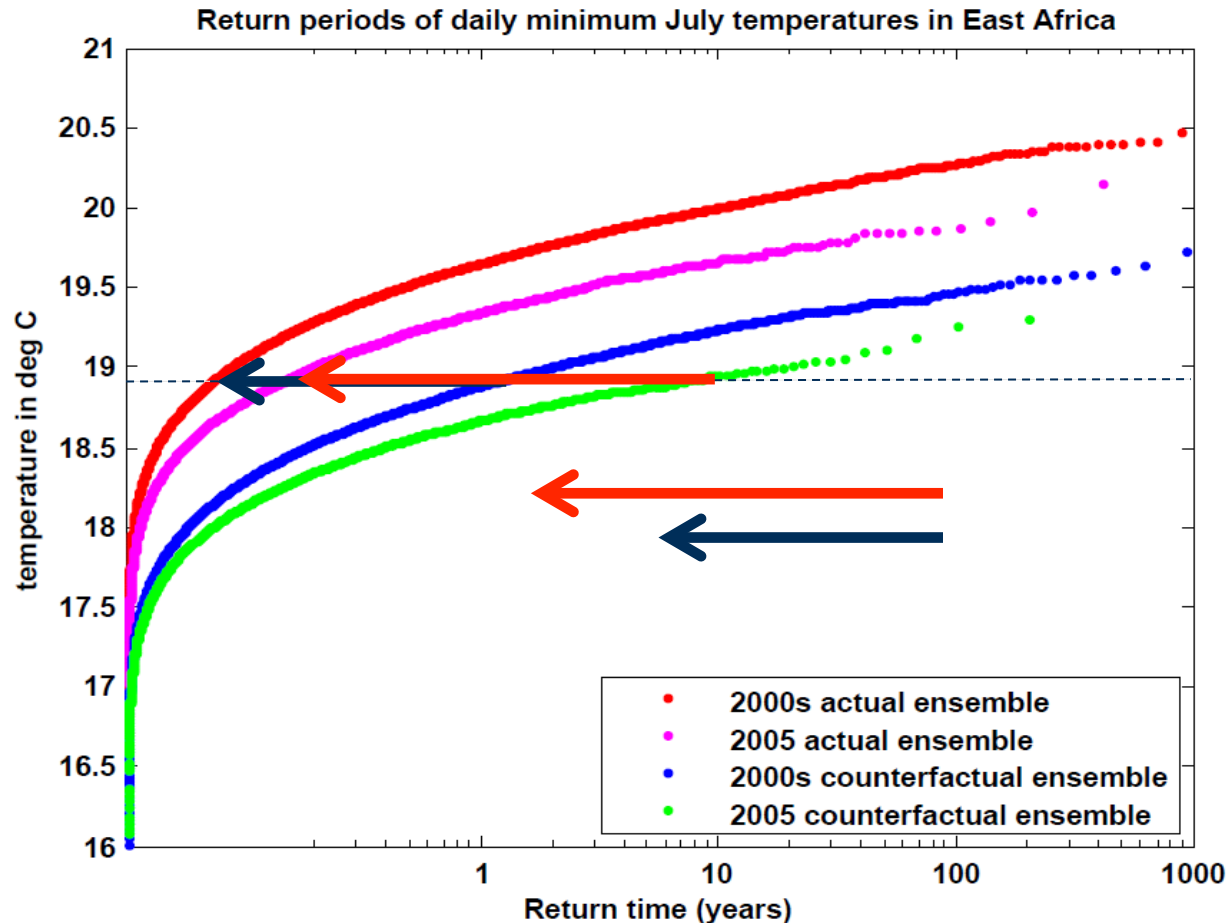
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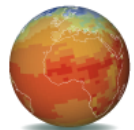
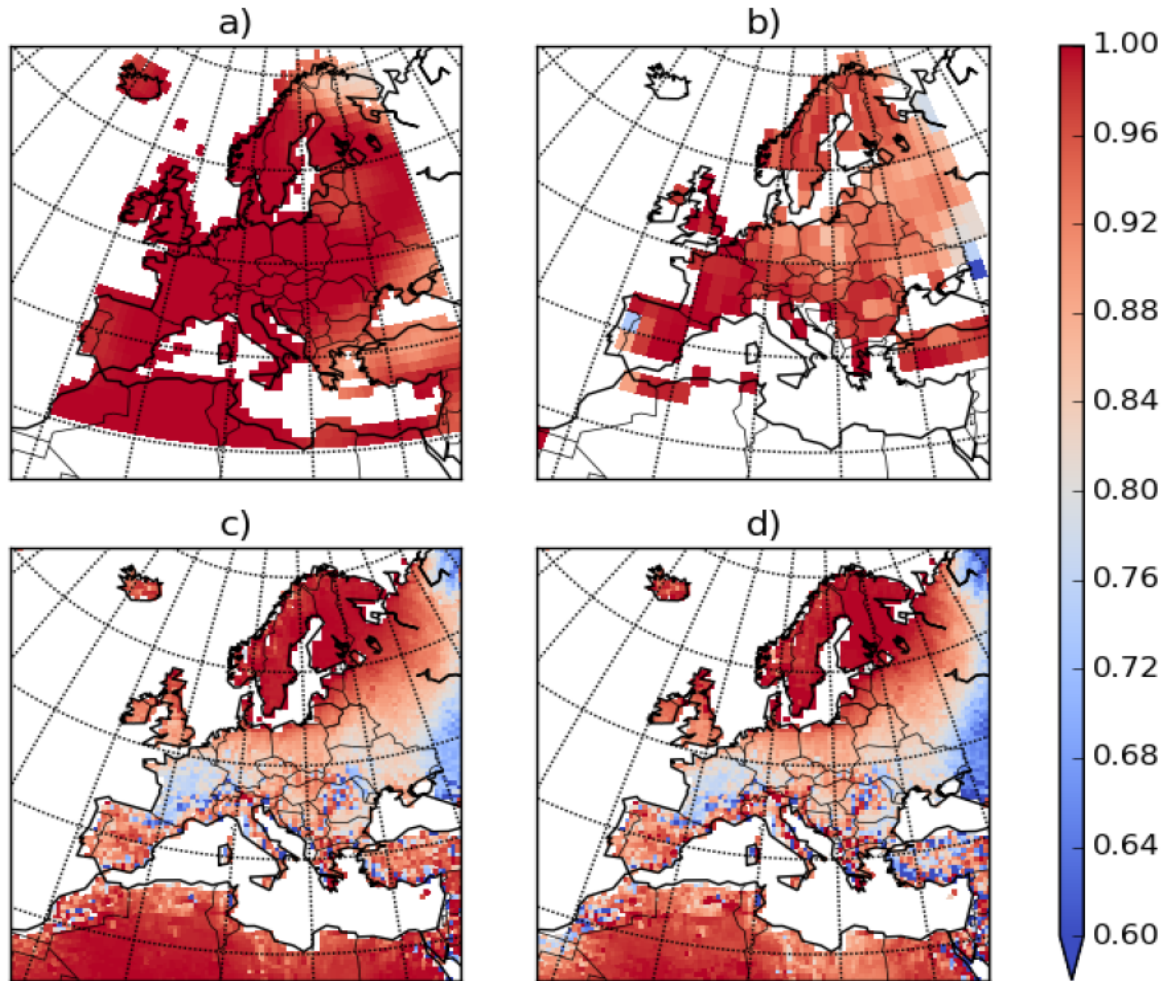
University of Oxford

Framing the attribution question

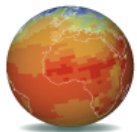
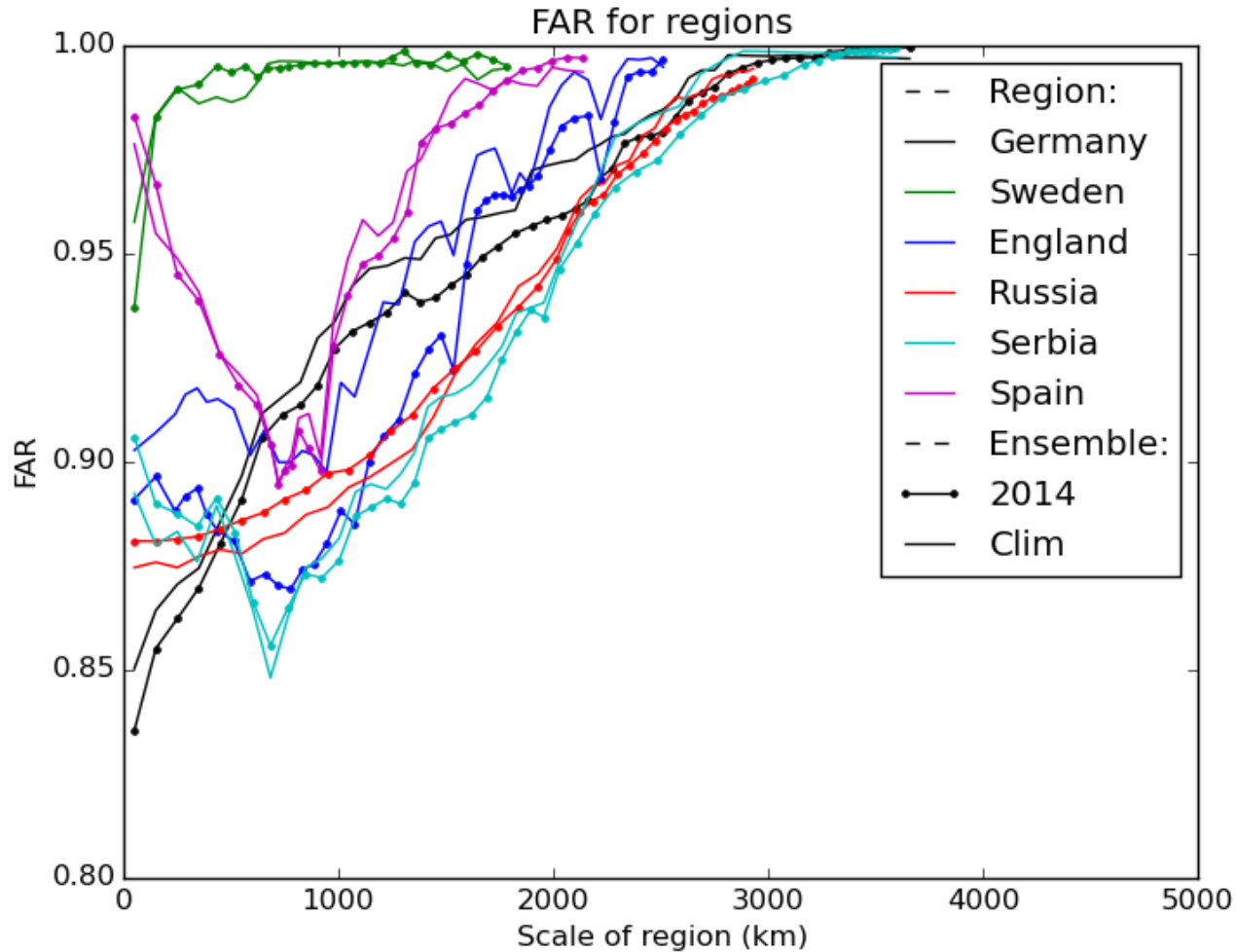
The 2 historic approaches used in weather@home



FAR comparing different methods

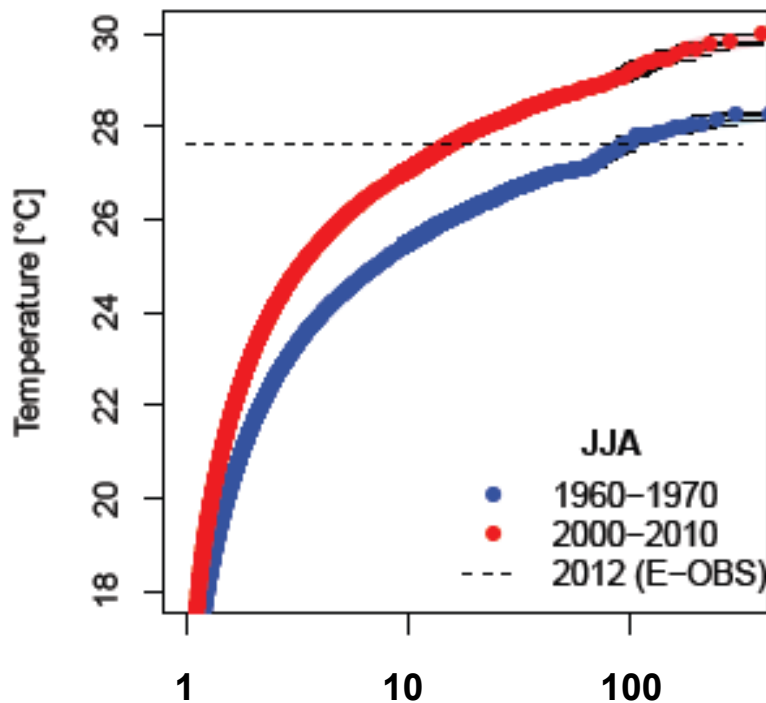


FAR dependence from region size

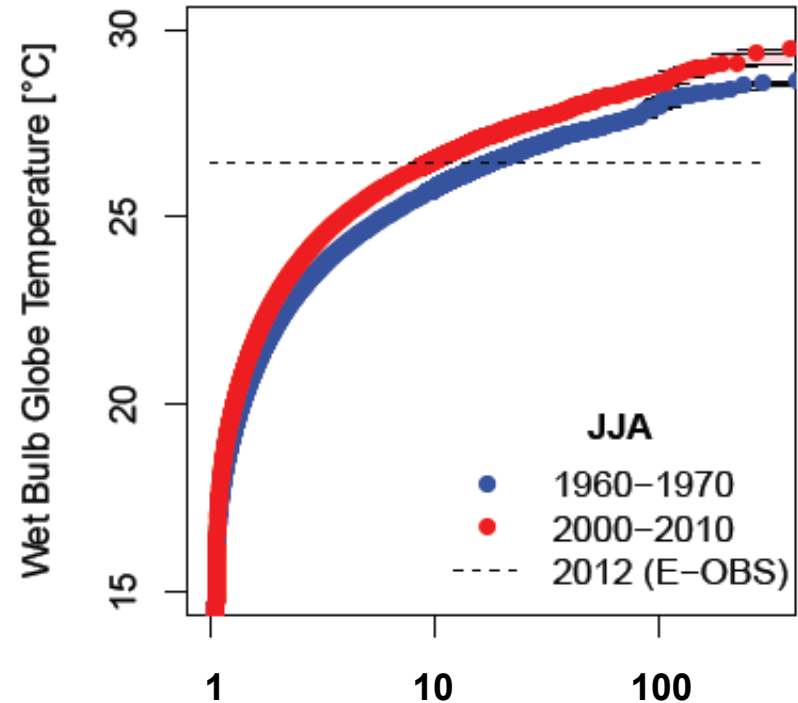


What is an event? - Heat wave in Serbia 2012

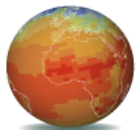
Heat



Heat stress



Sippel and Otto, 2014



climateprediction.net

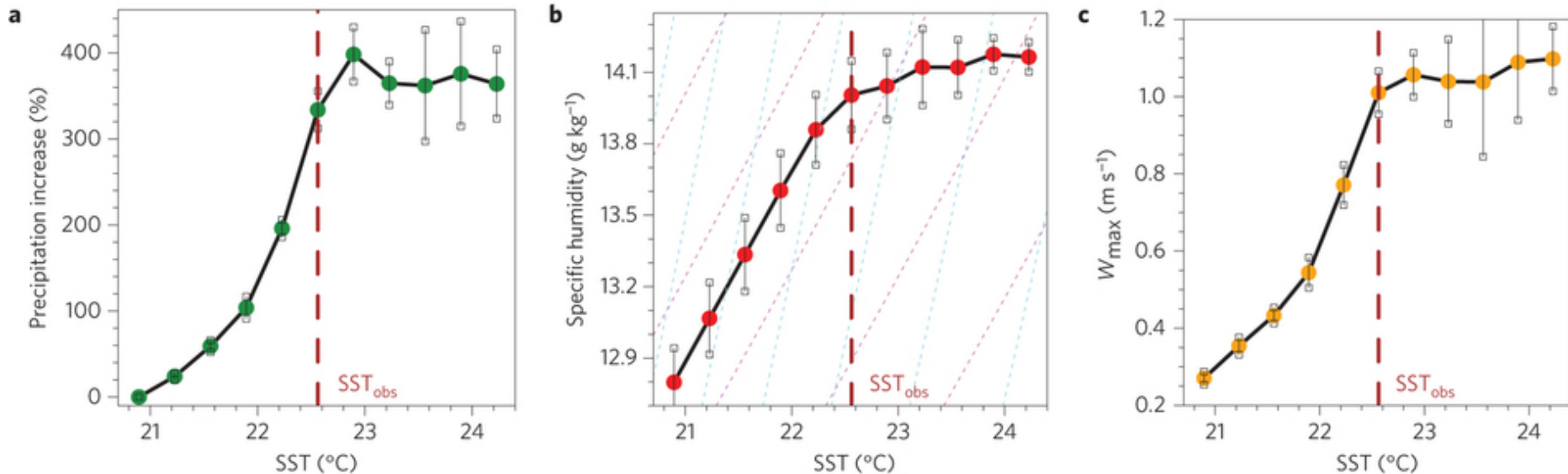
the world's largest climate forecasting experiment for the 21st century

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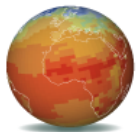


Thermodynamics - conditional attribution

Given the weather pattern, how were the temperatures, precipitation and associated impacts influenced by climate change?
(Trenberth et al.2015)



Meredith et al. 2015



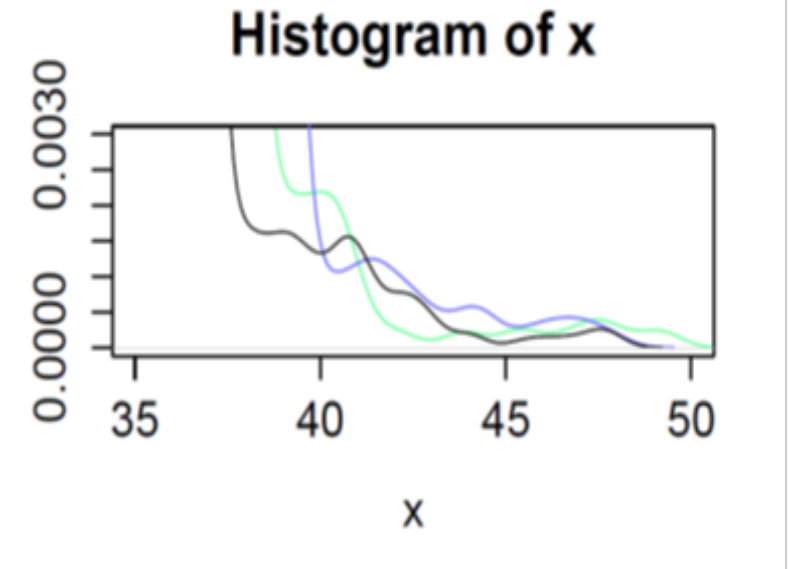
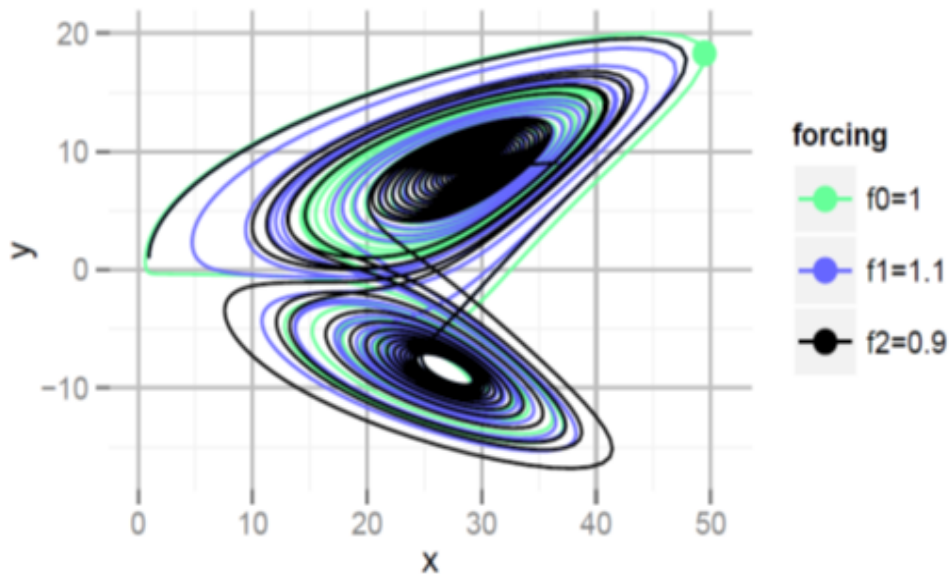
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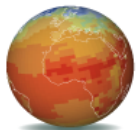
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Example: simple chaotic system



Otto et al., submitted



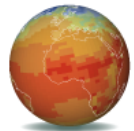
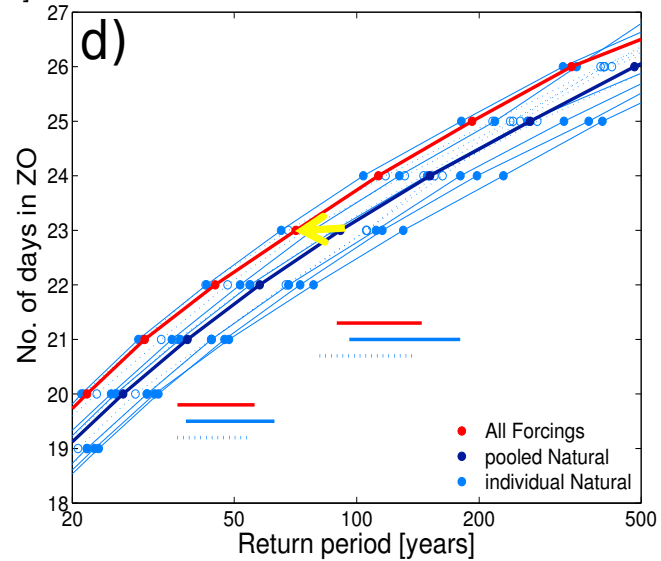
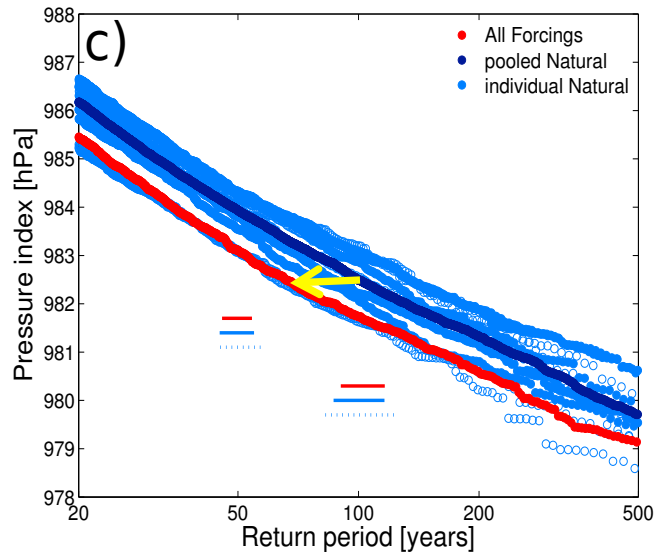
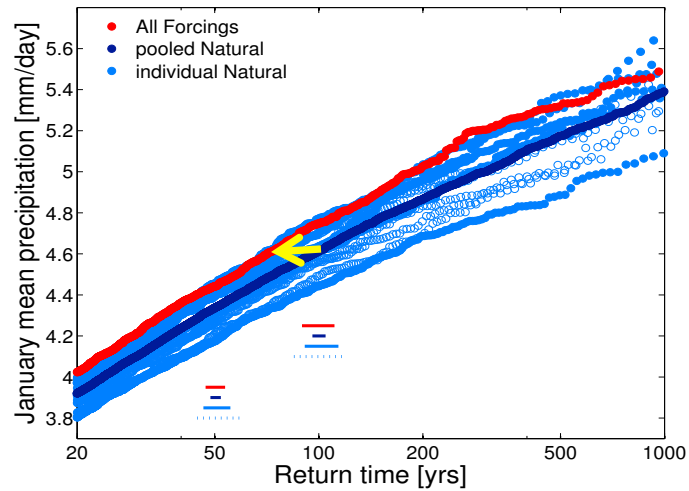
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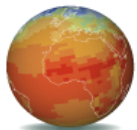
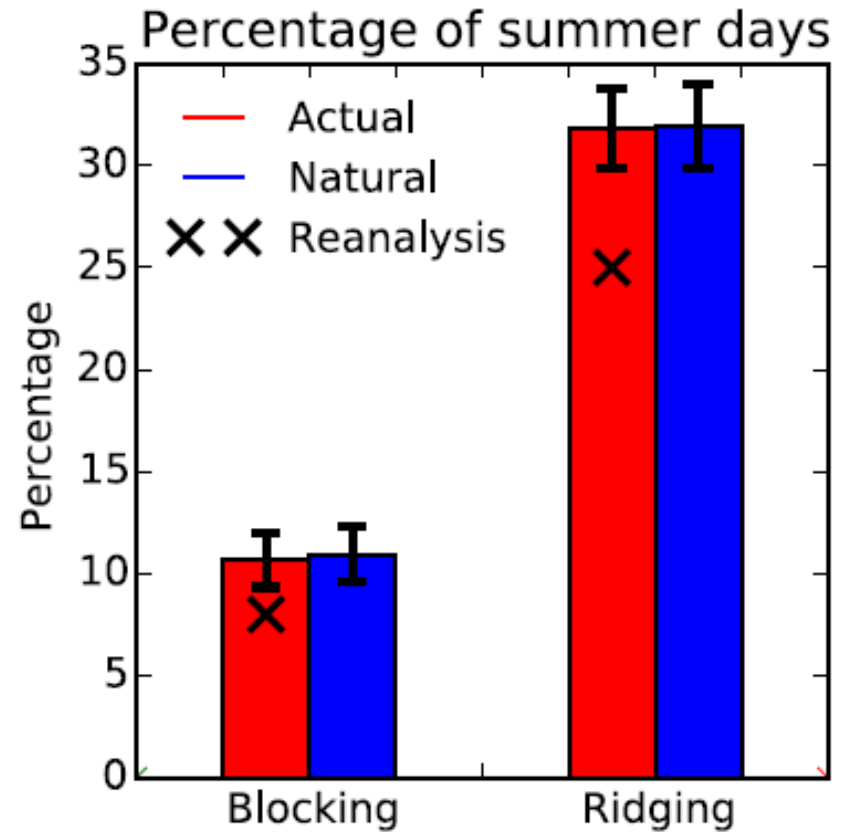
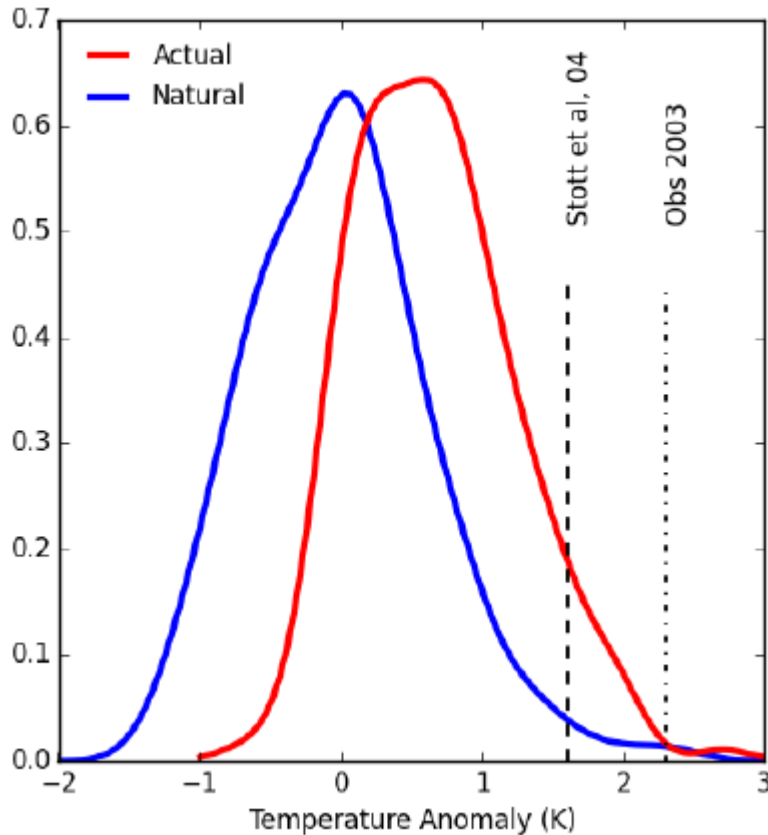
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Record UK precipitation January 2014

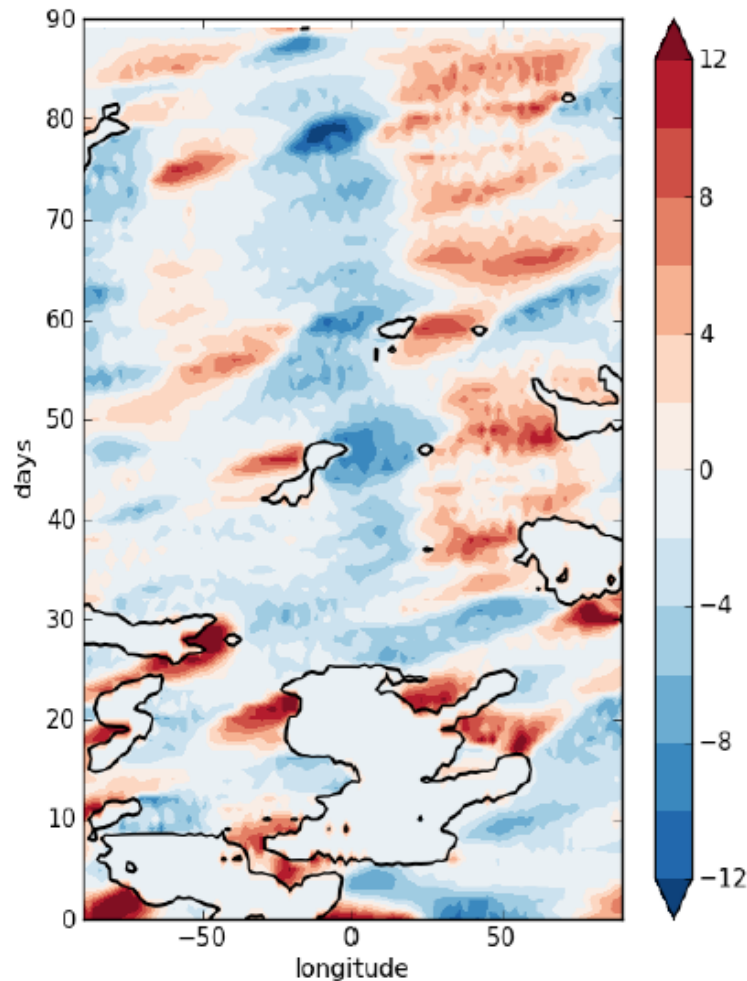


The European heat wave of 2003

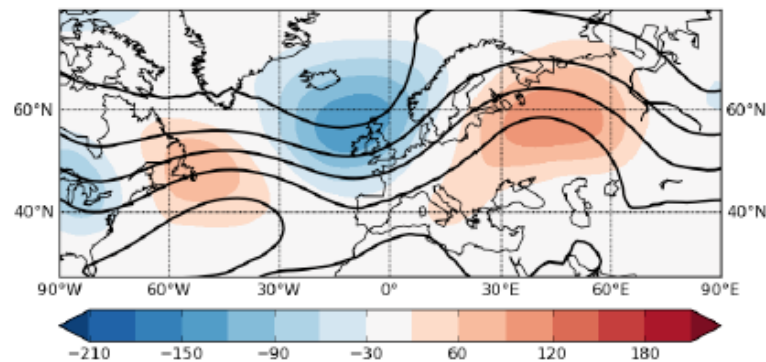


Is the model any good?

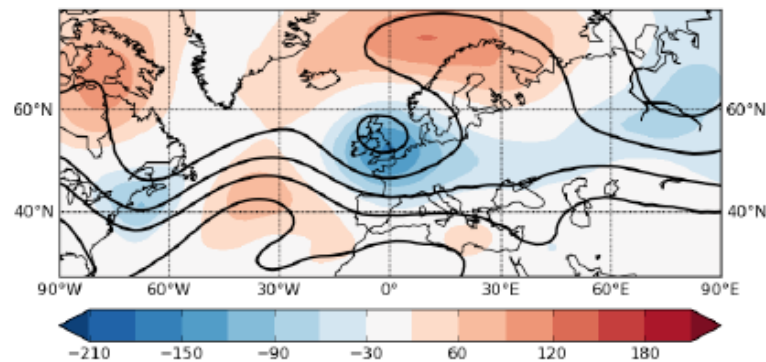
A 2003-like example



Days 60-90



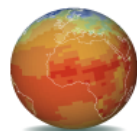
Days 10-25



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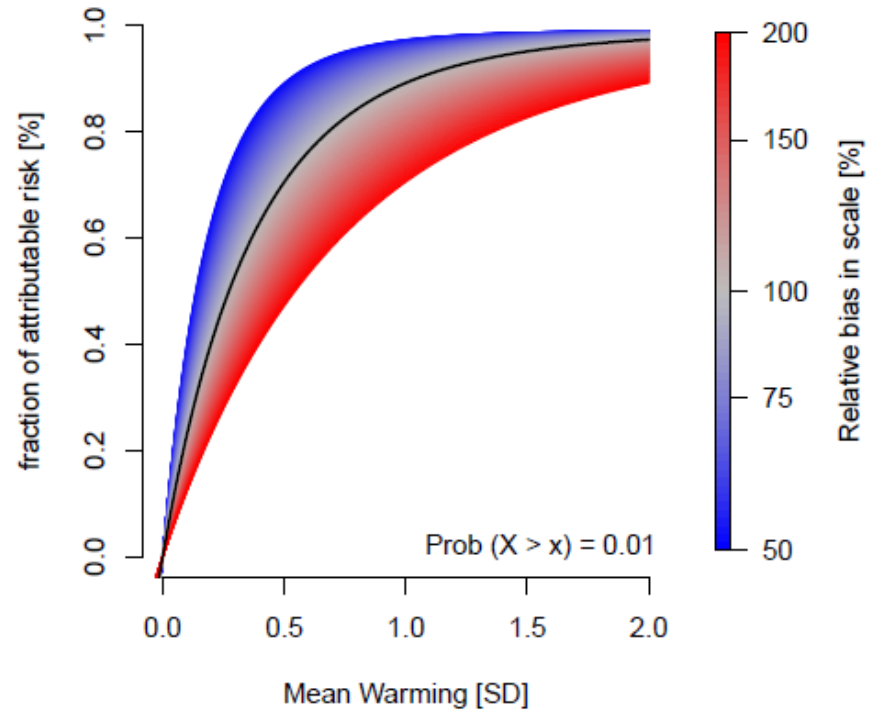
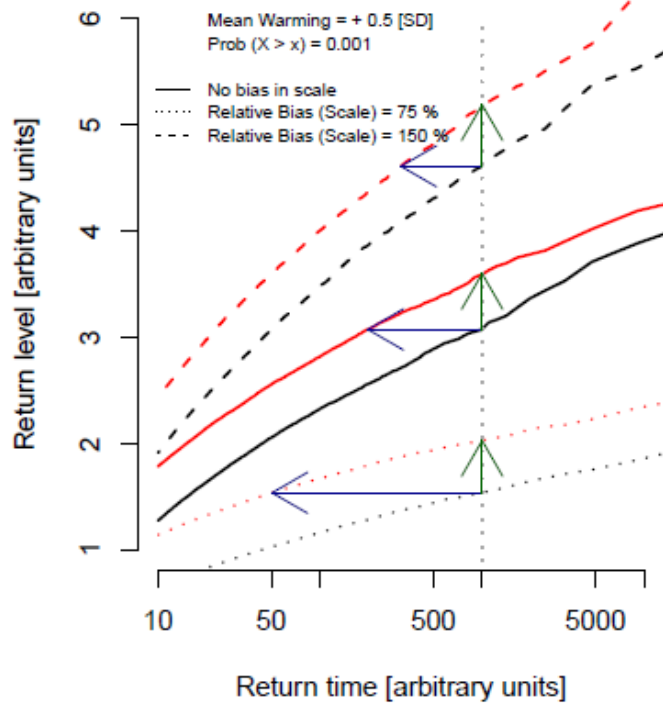
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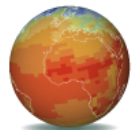
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A systematic look at biases



Sippel et al.submitted.



References

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