University of BRISTOL

Opposite trends in summer daytime and night-time urban heat island intensity changes in England

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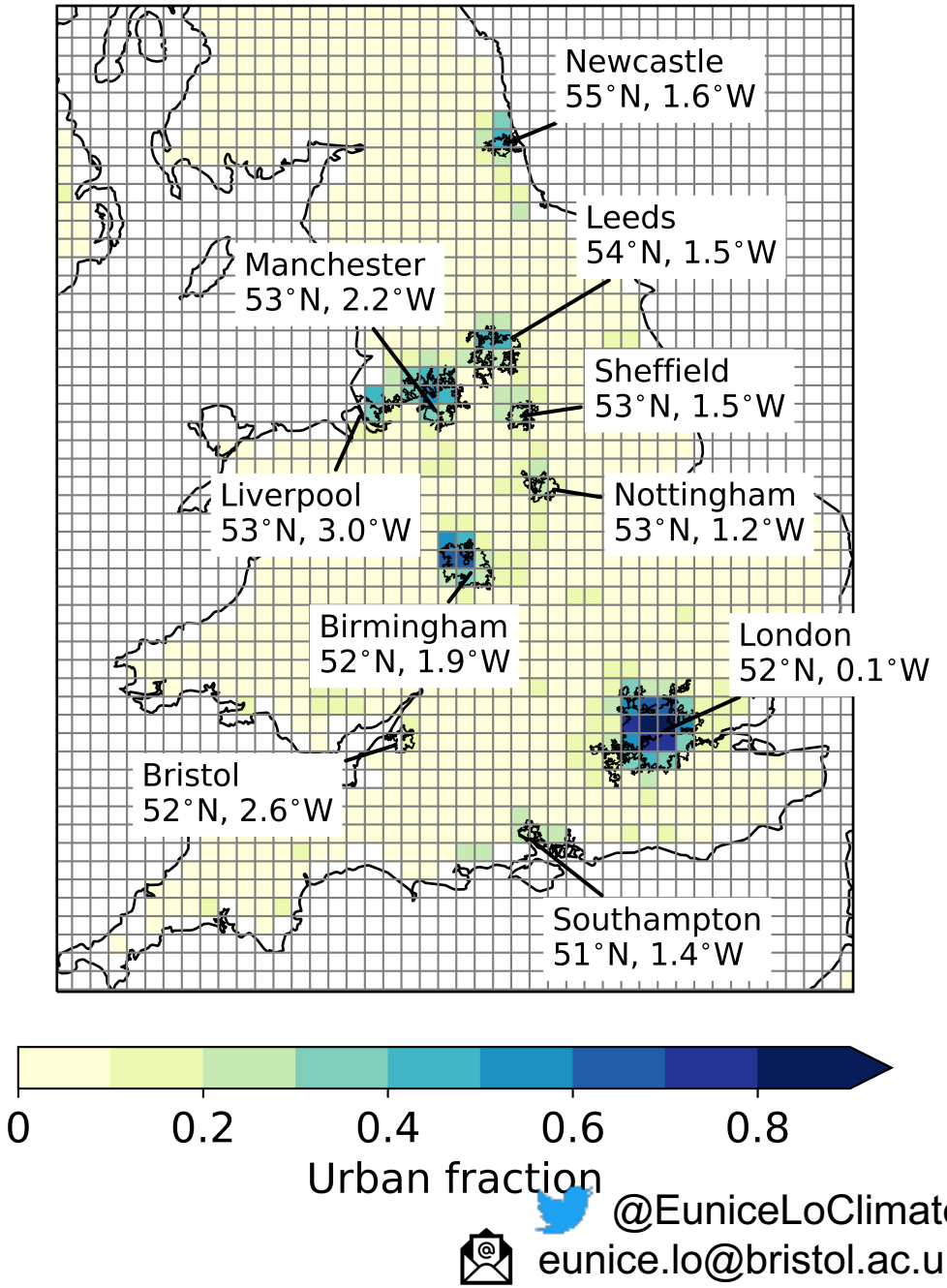
UKCP18-regional

- New set of UK climate projections following UKCP09
- High resolution (12km) regional simulations for RCP8.5
- 12 regional simulations for 1980-2080
- Urban effects are represented as 1 of 9 land surface tiles

(Lo et al., Journal of Climate 2020, under review)



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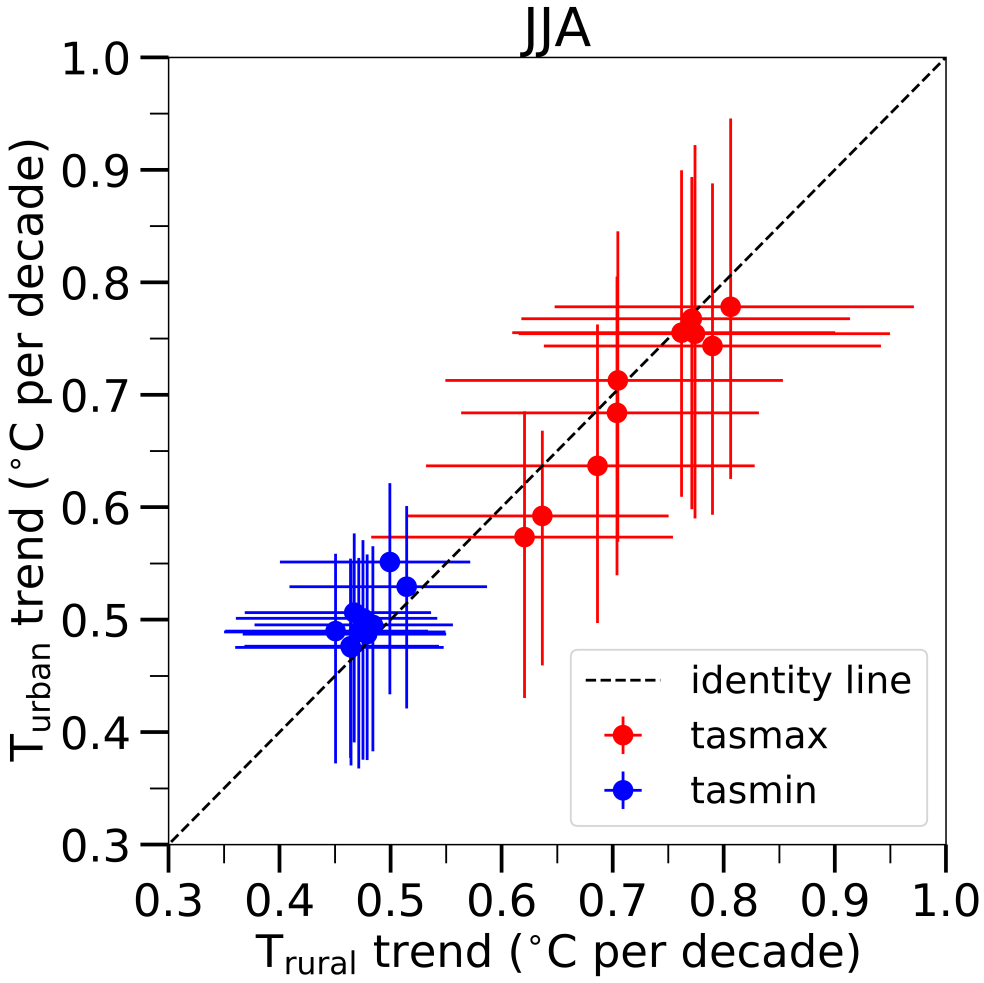
Urban & rural T trends *(Lo et al., Journal of Climate 2020, under review)*

- Urban and rural temperatures are all expected to increase in the 21st century
- In the daytime, urban temperatures are expected to rise slower than rural temperatures
- At night, urban temperatures are expected to rise faster than rural temperatures
- These differential warming rates cause changes to UHI over time…



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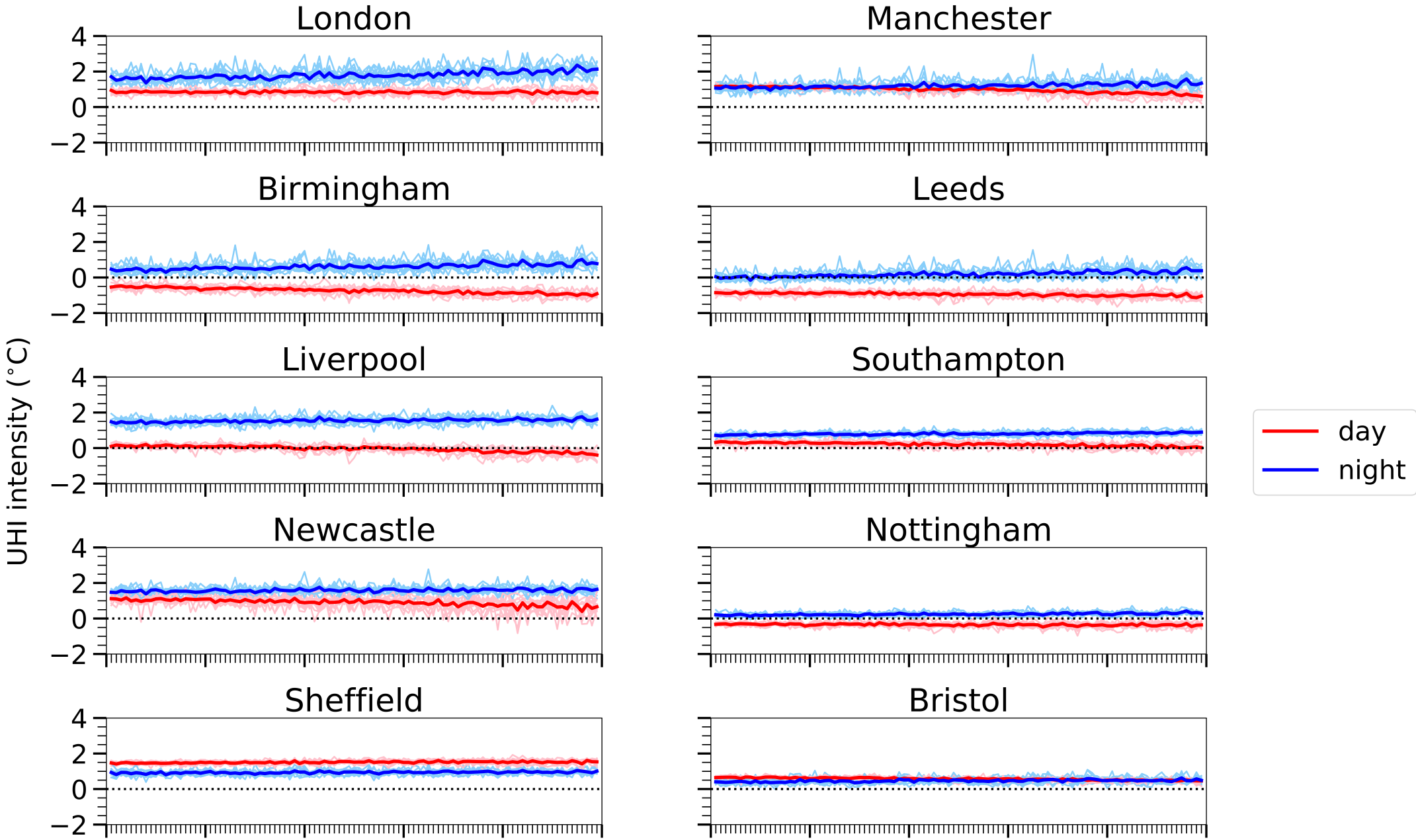

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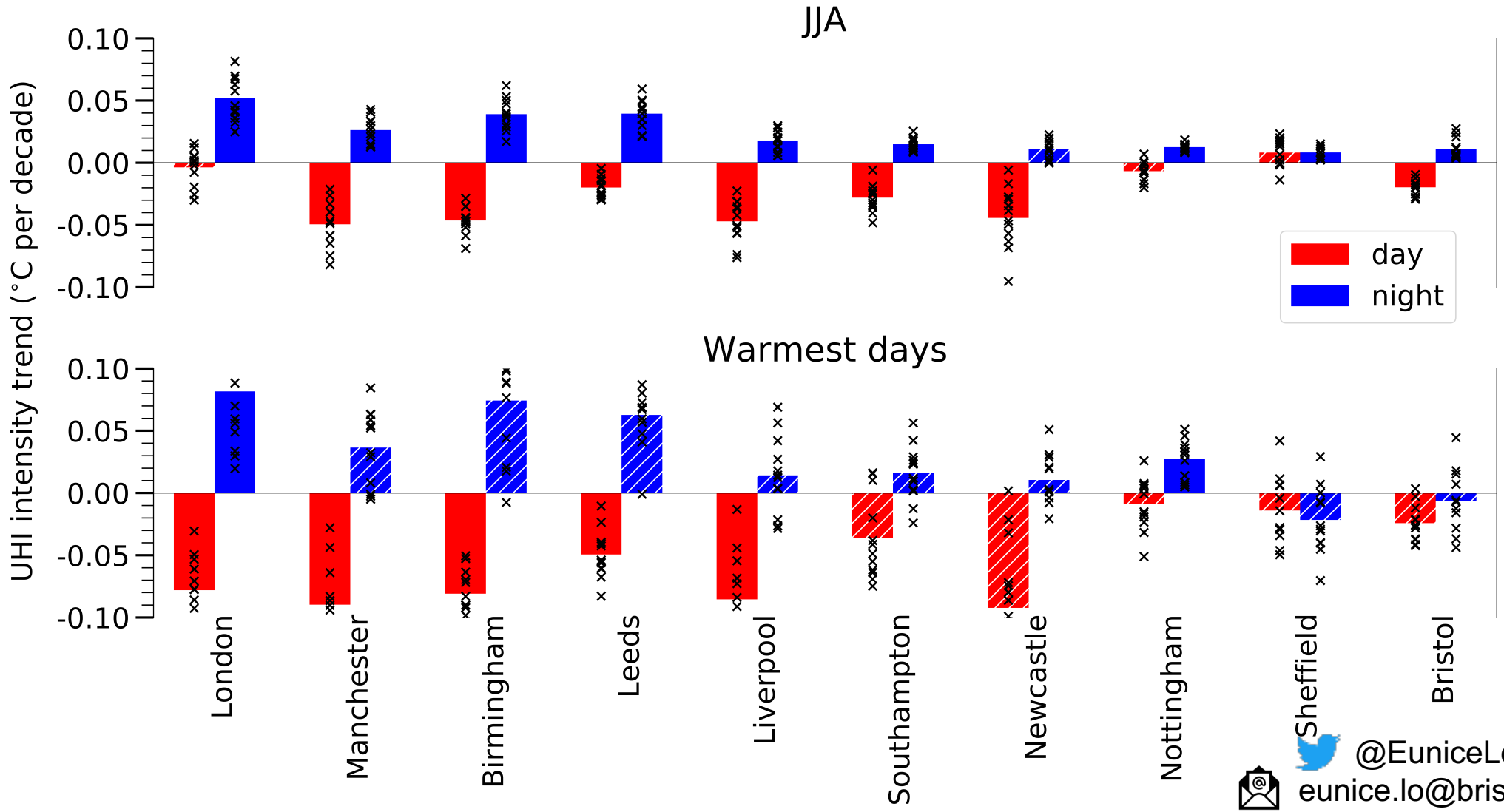
(Lo et al., Journal of Climate 2020, under review)

UHI intensity trends

(Lo et al., Journal of Climate 2020, under review)



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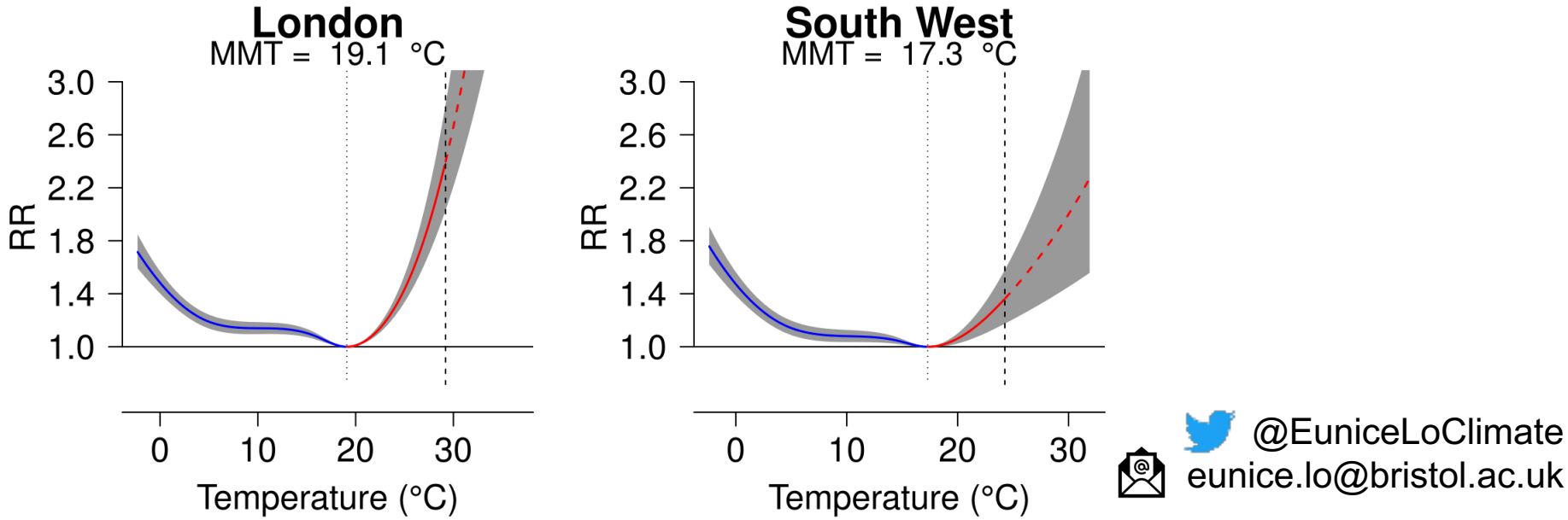
Health implications

- Night-time recovery is crucial for heat relief - elevated temperatures during day *and* the night was most strongly associated with mortality during the 2003 heatwave *(Grize et al., 2005)*
- UHI contributed ~50% of the total heat-related mortality during the 2003 heatwave in the West Midlands *(Heaviside et al., 2016)*



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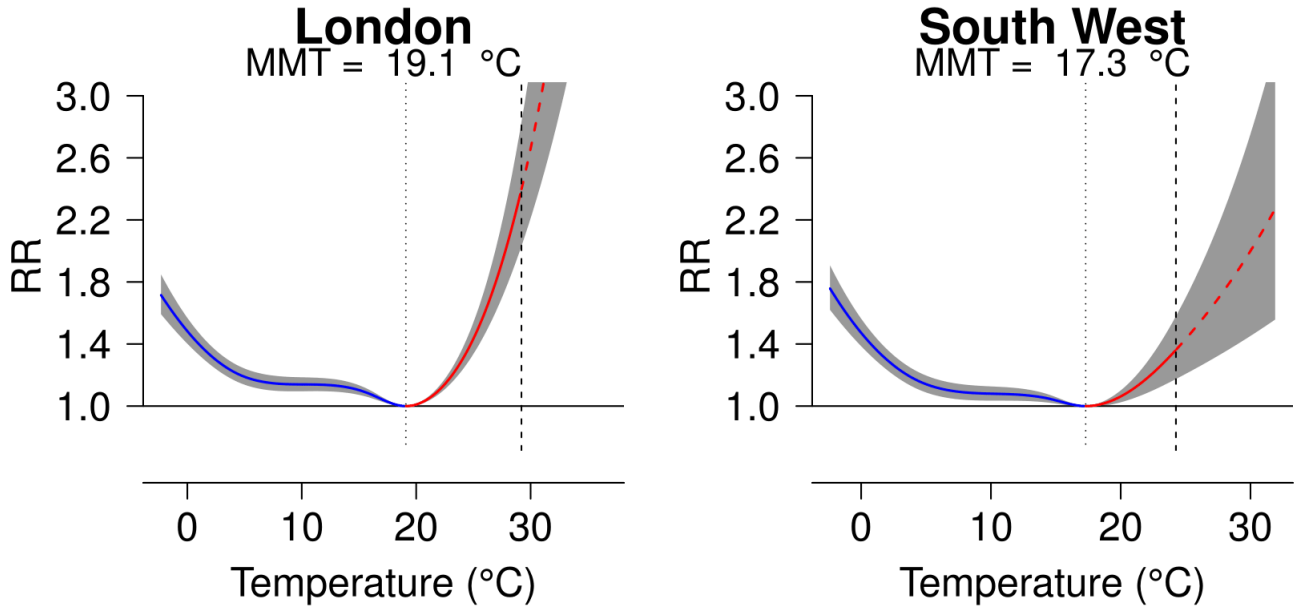
Thank You

Please see my other presentation in Session NH1.32 for my work about elevated temperatures and heat-related mortality



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