Heat and Health: Knowns and Unknowns

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Workshop on the Development of Climate Information Systems for Heat Health Early Warning, Chicago 2015

Roadmap

- Salient findings from the literature on health impacts from extreme heat
- Information sharing between the public health and meteorological agencies
- Future collaborations for discussion during the meeting

Relation between Elevated Ambient Temperature and Mortality: A Review of the Epidemiologic Evidence

Rupa Basu and Jonathan M. Samet

Epidemiologic Reviews, 2002

Ambient Temperature and Morbidity: A Review of Epidemiological Evidence

Xiaofang Ye,[1] Rodney Wolff,[2] Weiwei Yu,[1] Pavla Vaneckova,[1] Xiaochuan Pan,[3] and Shilu Tong[1]

Environmental Health Perspective, 2012

Projecting Future Heat-Related Mortality under Climate Change Scenarios: A Systematic Review

Cunrui Huang,[1] Adrian Gerard Barnett,[1] Xiaoming Wang,[2] Pavla Vaneckova,[1] Gerard FitzGerald,[1] and Shilu Tong[1]

Environmental Health Perspective, 2011

Impact of diurnal temperature range on human health: a systematic review

Jian Cheng, Zhiwei Xu, Rui Zhu, Xu Wang, Liu Jin, Jian Song, Hong Su

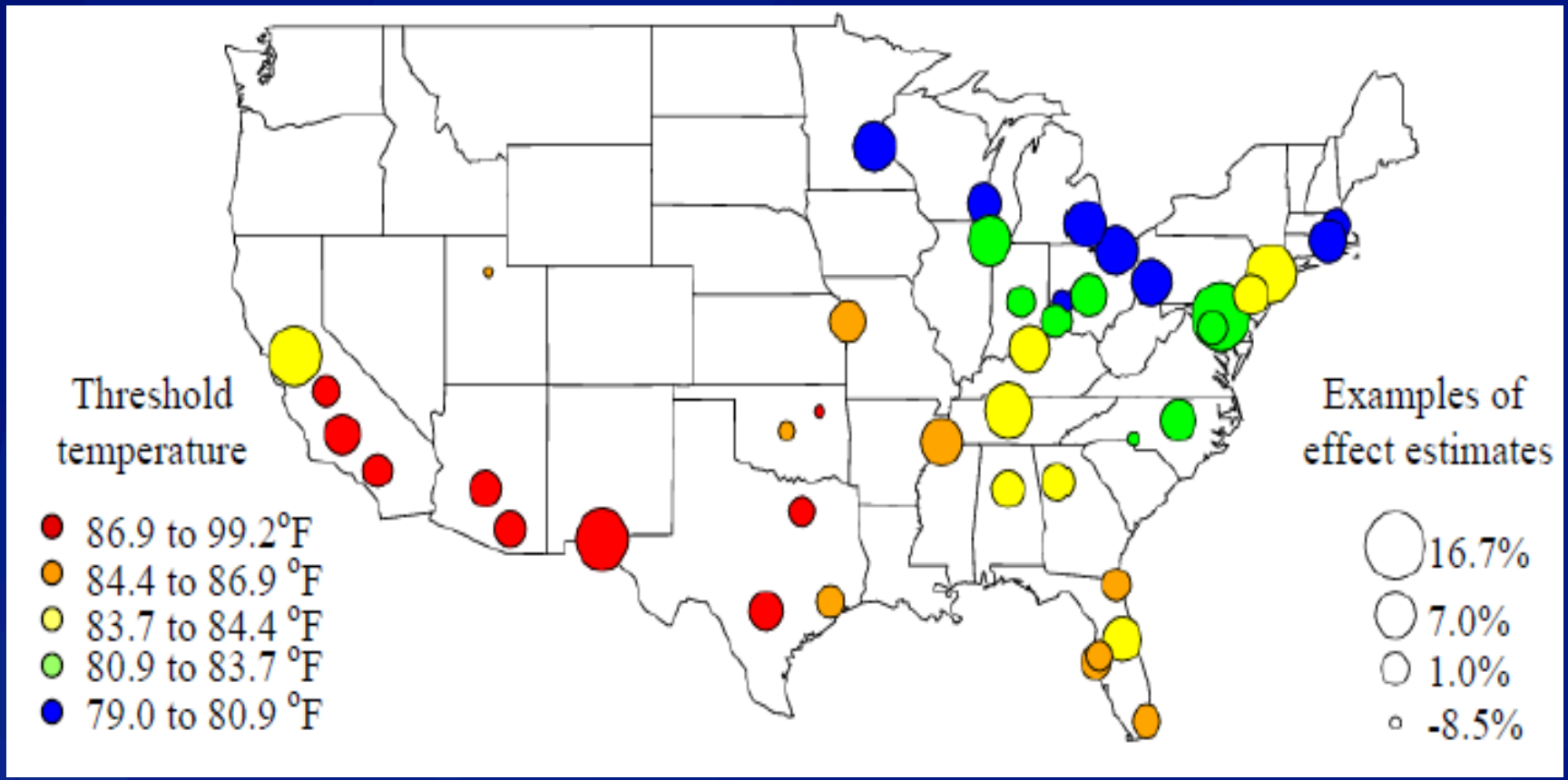
International Journal of Biometeorology, 2014

The SSC: a decade of climate–health research and future directions

D. M. Hondula, J. K. Vanos, S. N. Gosling

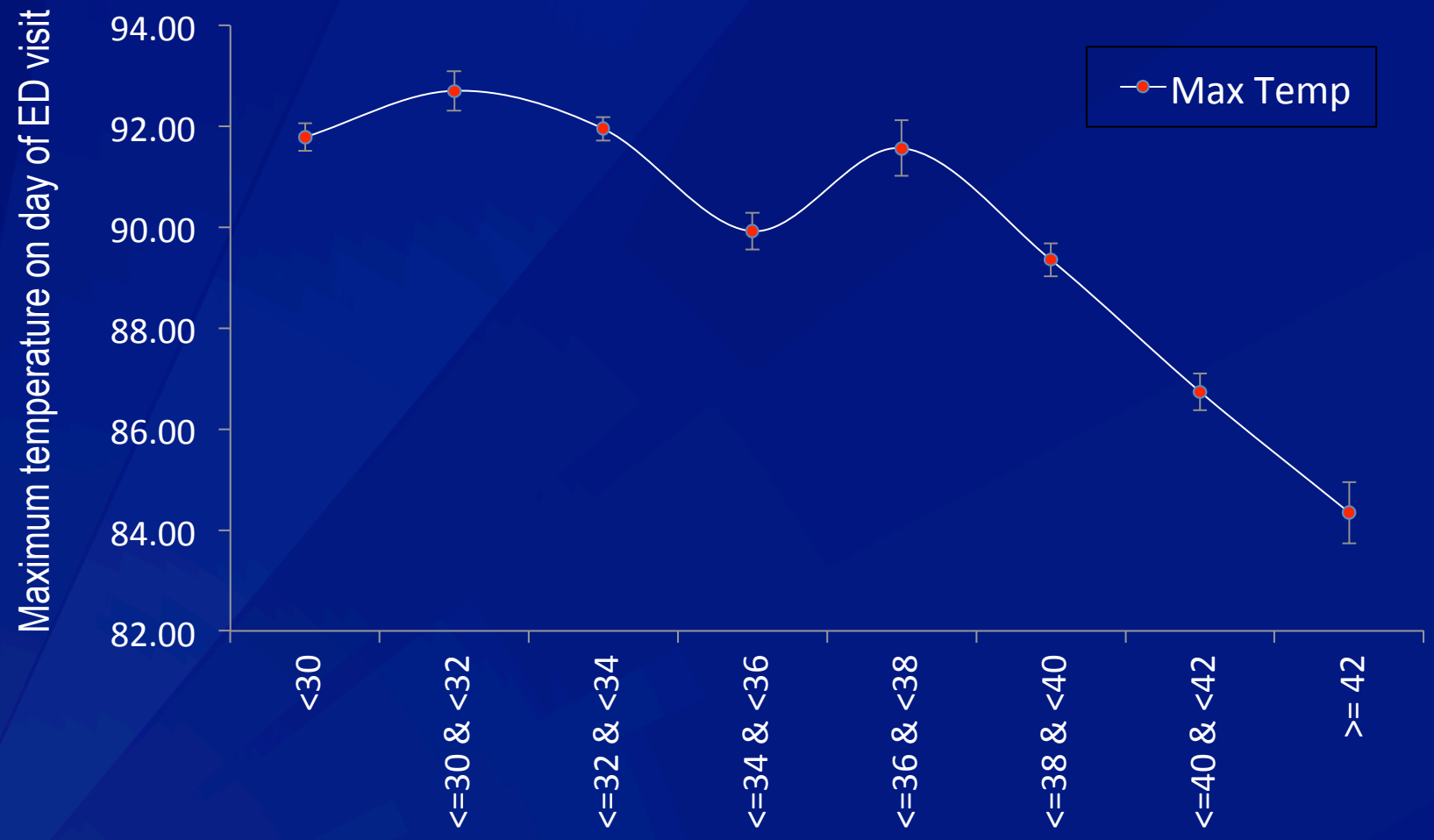
International Journal of Biometeorology, 2013

Mortality risk from heat waves



Andersen and Bell, EHP 2011

Temperature profile on ED visit days change by place



Sahe et al., 2015
Environmental Health

Relevant findings from the literature review

Absolute or relative thresholds

Duration of heat waves

Lagged exposure effects

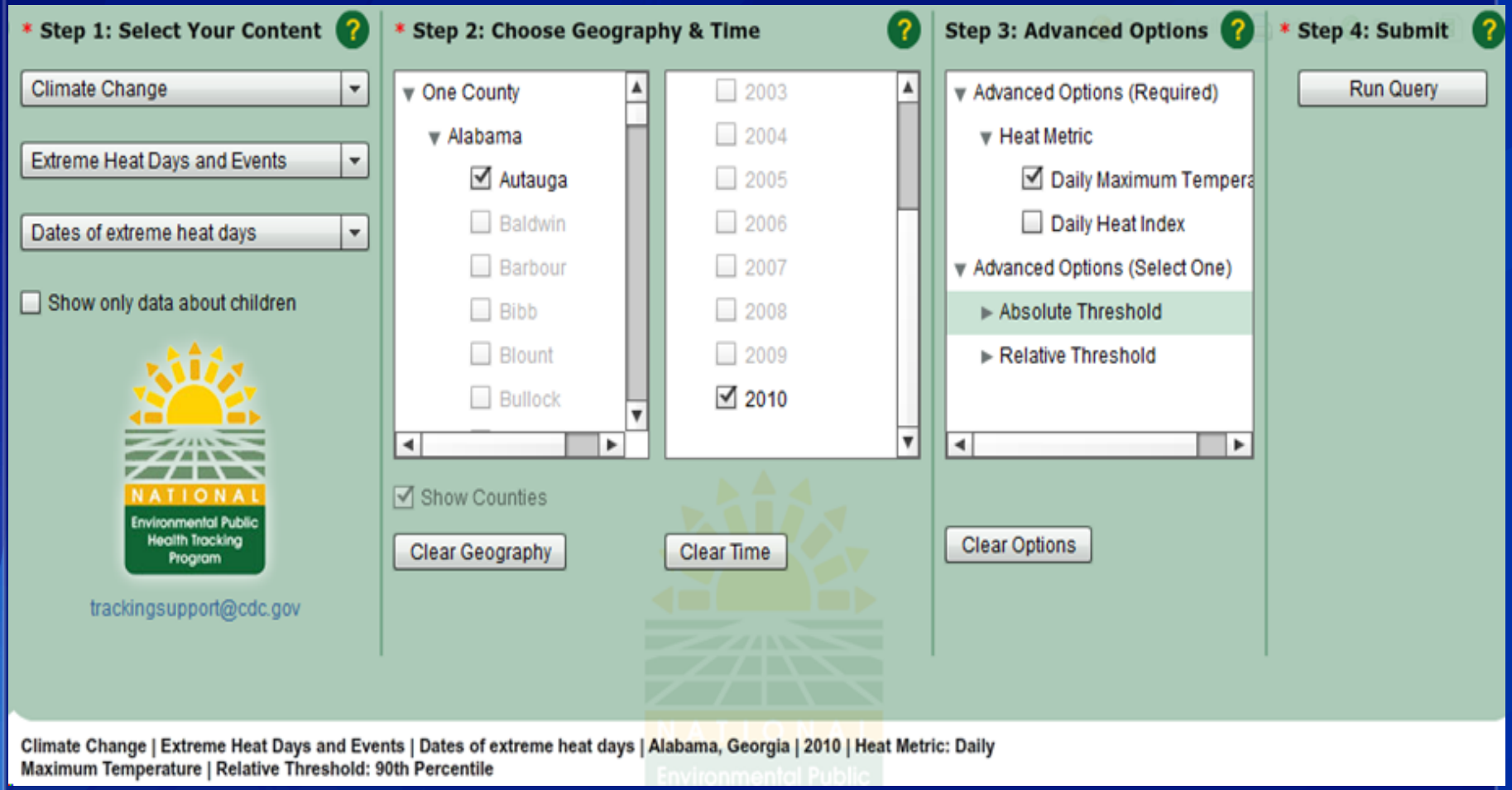
Temperature metric – daily maximum, diurnal difference, heat index, synoptic classification

Comparing 'hot day' classification using Maximum Temperature and Spatial Synoptic Classification

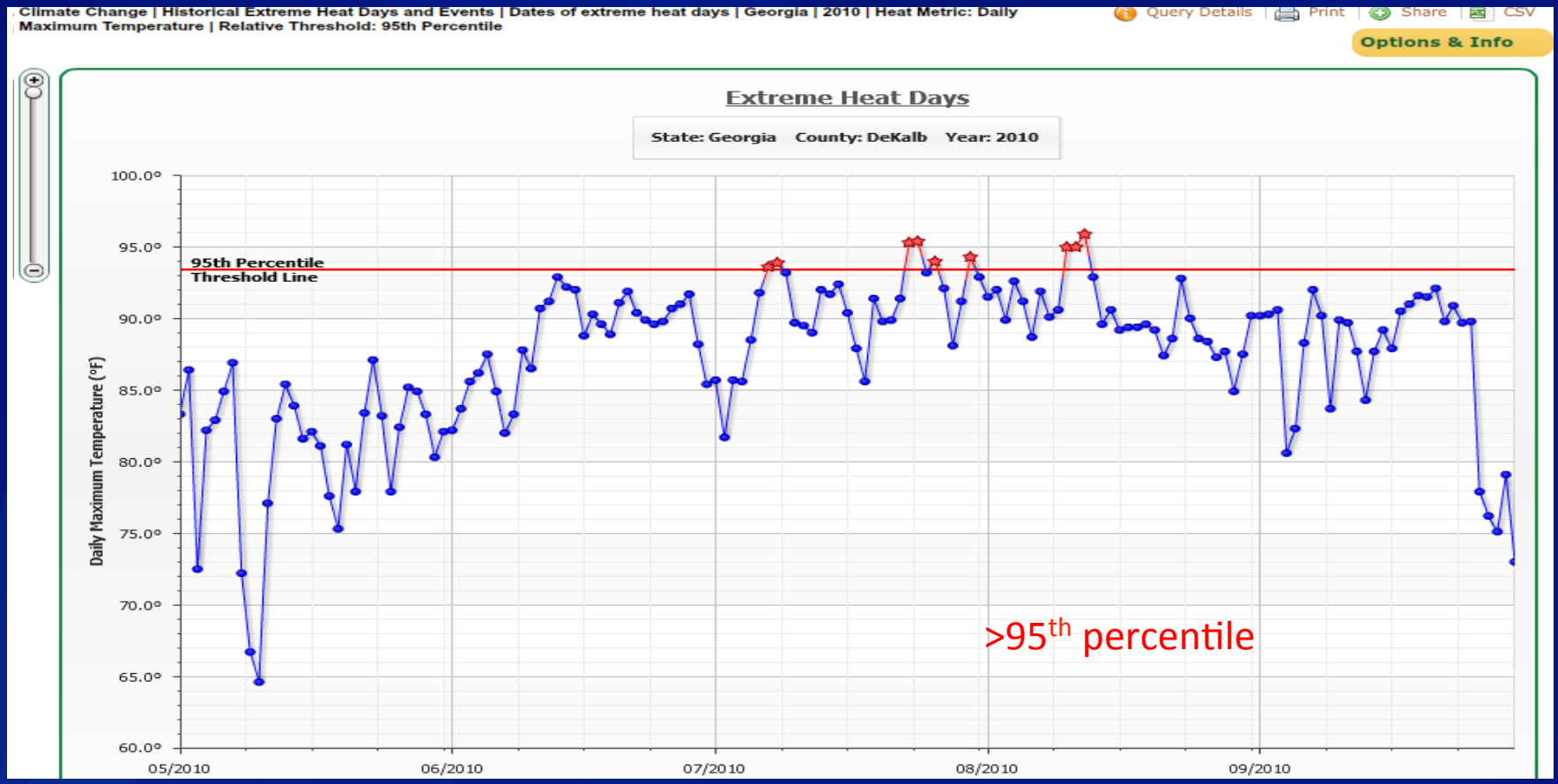
		May-Sep	May	June	July	Aug	Sep
Maximum temperature	<80F	5	7	0	0	0	3
	80-90F	45	53	35	41	48	51
	90-95F	67	33	62	65	73	82
	95-100F	73	_	68	63	80	90
	>100F	73	_	100	67	70	_

Spatial synoptic classification – http://sheridan.geog.kent.edu/ssc.html
Maximum temperature – GHCN Daily Summary , National Climatic Data Center

CDC Environmental Public Health Tracking Portal

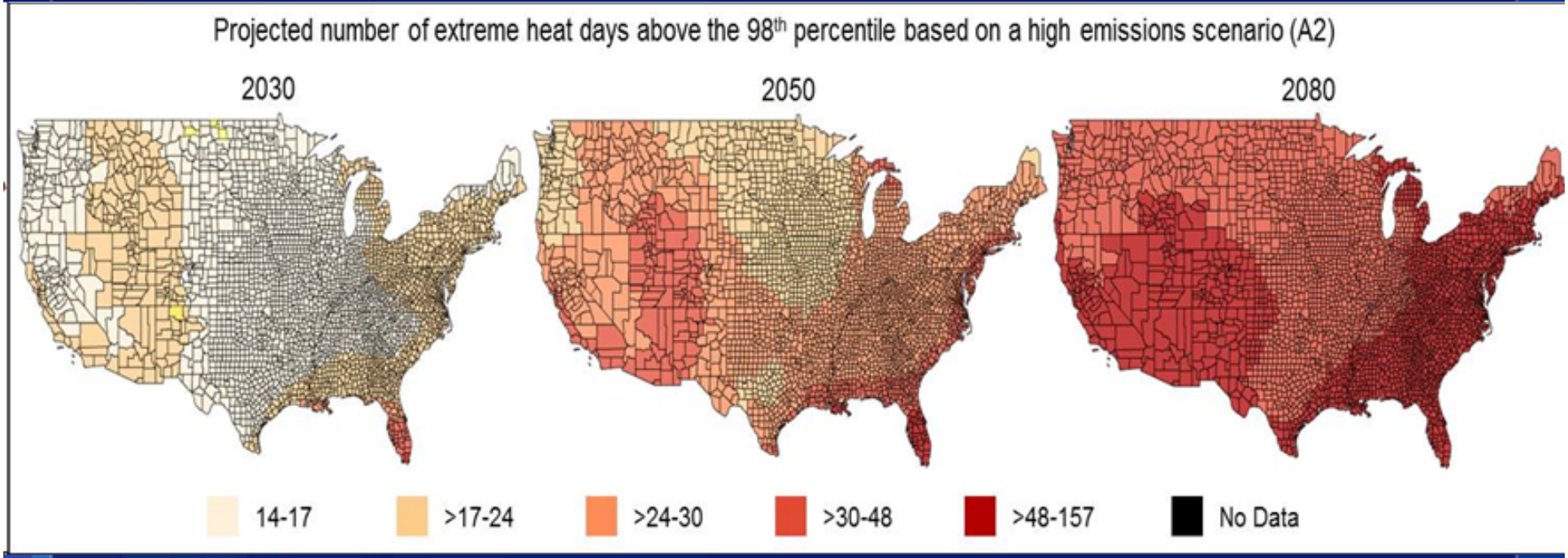


The definition of a 'hot' day

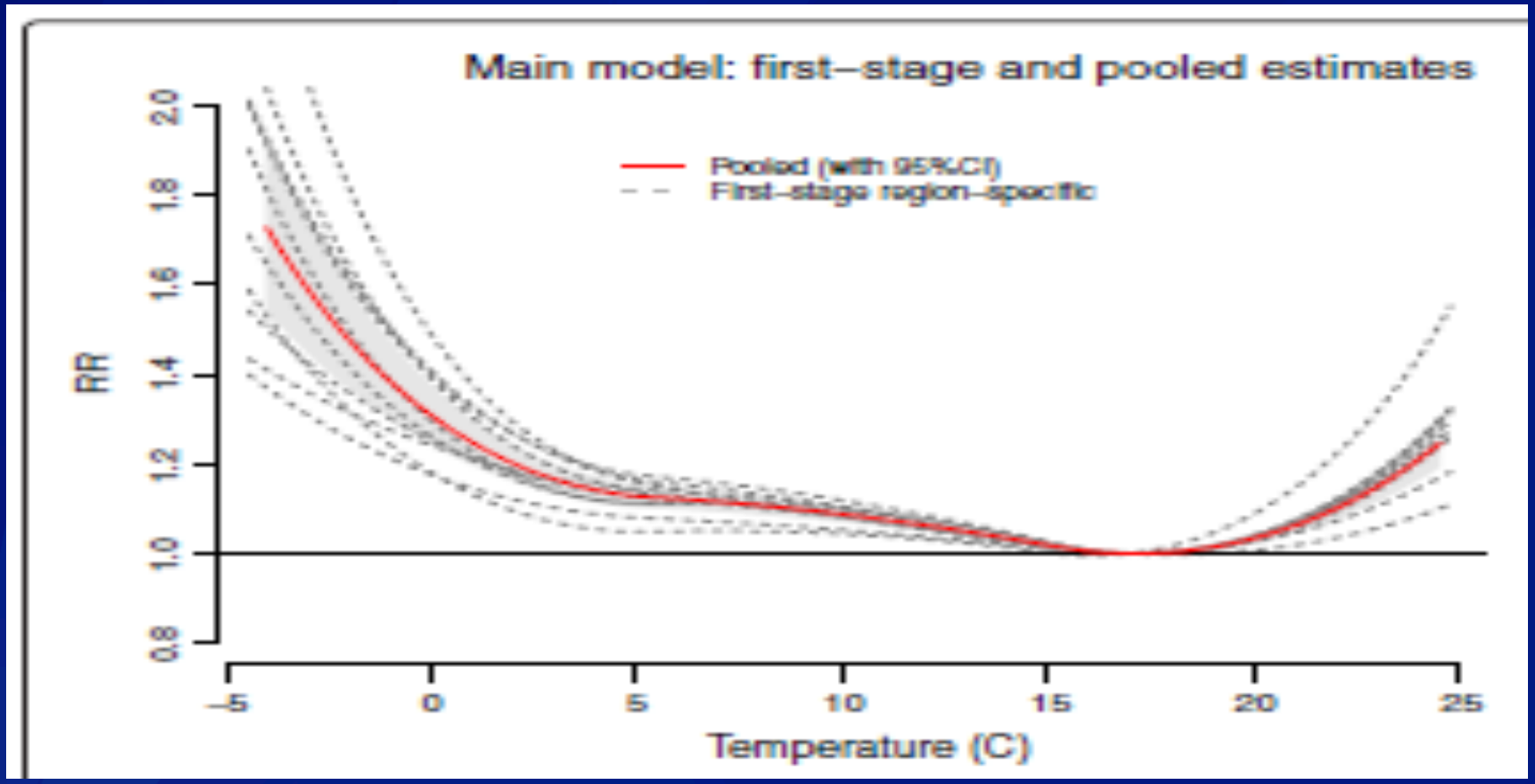


Environmental Public Health Tracking: http://www.cdc.gov/nceh/tracking/

Projections of extreme heat, National Climate Assessment 2014



Changing health risk with temperature increase



Reducing and meta-analysing estimates from distributed lag non-linear models

Antonio Gasparrini[1*] and Ben Armstrong[2]

Future work

- The search for the right temperature metric
- Heat warnings – the missing link?
- Different temperature thresholds for different health outcomes – the precautionary principle
- Regional vs local analyses – statistical power or spatial resolution

Thank you

"The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official view of Centers for Disease Control and Prevention

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