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By Catherine Cloutier

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With Boston in the midst of [another heat spell this week](#), the [Metropolitan Area Planning Council](#) has released a study that confirms that the reading on the thermometer doesn't always tell the whole story.

The research looked at land surface temperatures, rather than air temperatures, across Greater Boston, confirming what many people probably already intuit: The amount of pavement or trees in a community can affect residents' comfort levels.

Data came from LANDSAT satellite images and was analyzed using a tool kit from Polish researchers, said Eliza Wallace, a data analyst at the planning council.

Generally, the Boston suburbs felt much cooler, sometimes even cooler than the air temperature.

But on a hot day in parts of the city, surface temperatures reached up to 140 degrees.

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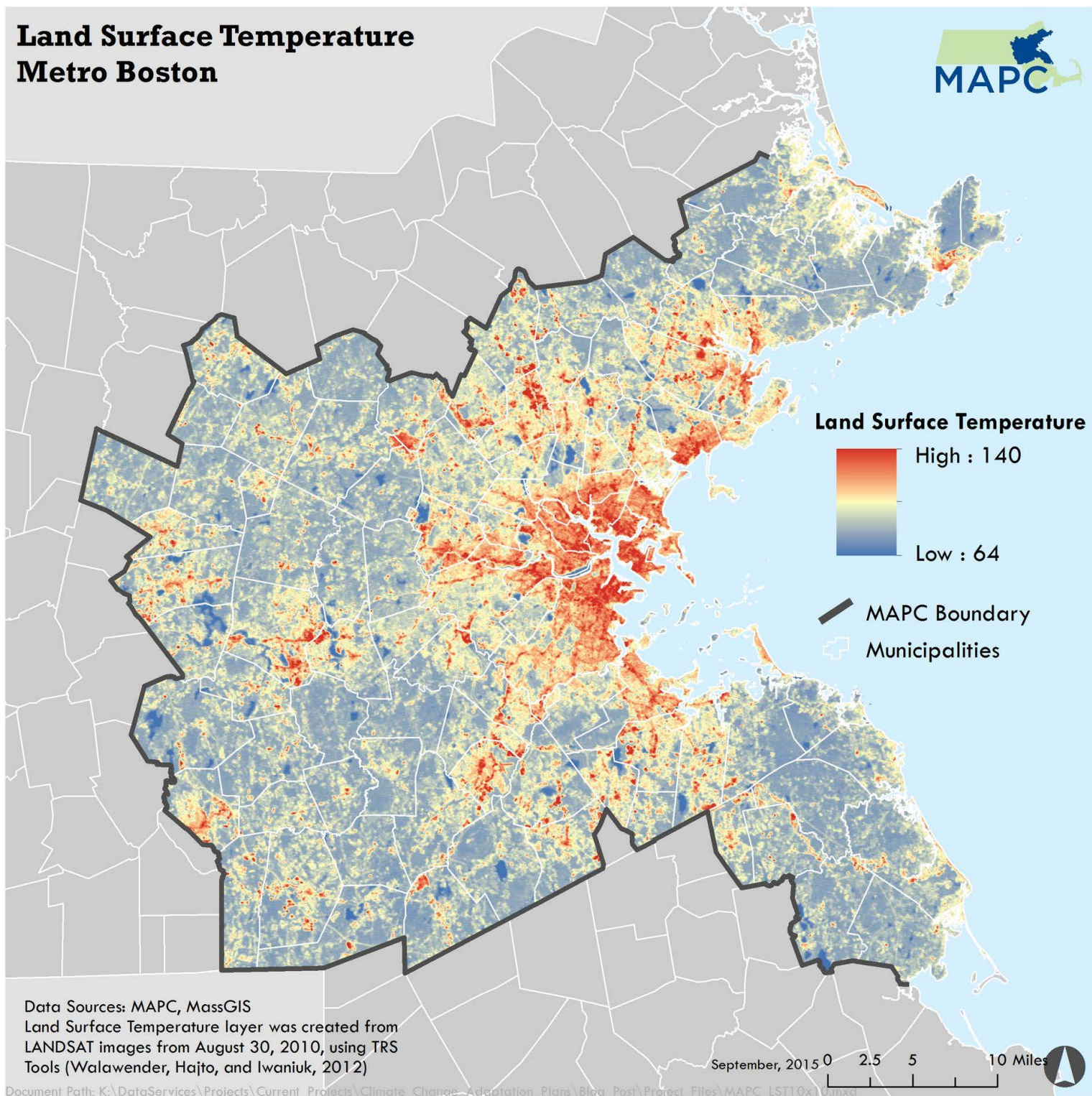
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Land Surface Temperature Metro Boston



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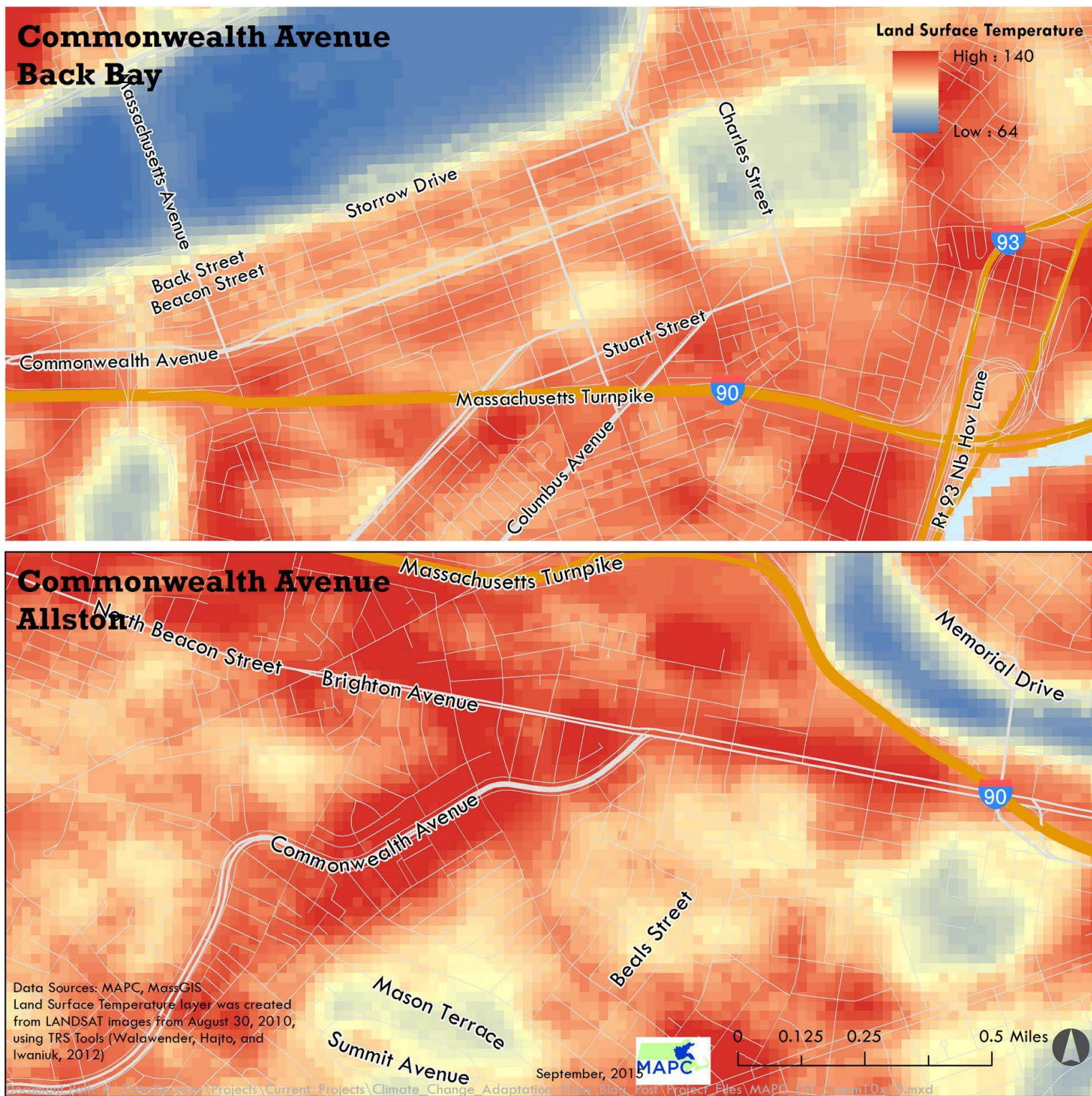
Surface and air temperature are different metrics, but they do affect each other, said Wallace. In urban areas with hot surface temperatures, the air temperature stays higher, even at night.

Black rooftops and paved surfaces absorb heat. That's why, for example, the temperature gauge in a car parked on pavement might deliver a greater number than the forecasted high, Wallace said.

Trees, bodies of water, and green infrastructure — such as green or white roofs — have the opposite effect, cooling the surrounding area.

“Incorporating parks and green spaces into the urban environment will only become more important as our region grows hotter,” the researchers wrote.

The difference vegetation makes when it comes to surface temperatures can be seen on Commonwealth Avenue. Back Bay’s stretch of the thoroughfare has a park running through its median, leading to more moderate temperatures. But as the pavement becomes denser and the trees sparser heading west, the heat levels rise significantly.



MAPC

The organization's concerns are underlined by a report from the National Oceanic and Atmospheric Administration released Thursday that found July was the warmest month worldwide since records started being collected in 1880.

This year's average temperature of 61.86 degrees globally surpassed the previous record set in July

1998 by more than a tenth of a degree.

August was also a hot month here in Massachusetts. With an average temperature of 74.7 degrees, it was the fourth warmest August on record for Boston, according to the National Weather Service in Taunton.

Temperatures at Boston's Logan International Airport reached 90 degrees Monday, the 10th day they have hit that level since the beginning of June and the sixth during the month of August. After a respite Tuesday, the mercury is expected to climb to the high 80s Wednesday, then moderate to the mid-80s on Thursday.

Matt Rocheleau of Globe Staff contributed to this report. Catherine Cloutier can be reached at catherine.cloutier@globe.com. Follow her on Twitter at [@cmcloutier](https://twitter.com/cmcloutier).

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