

Washington D.C. Weather and Climate: Trends and Projections



Salwan Georges

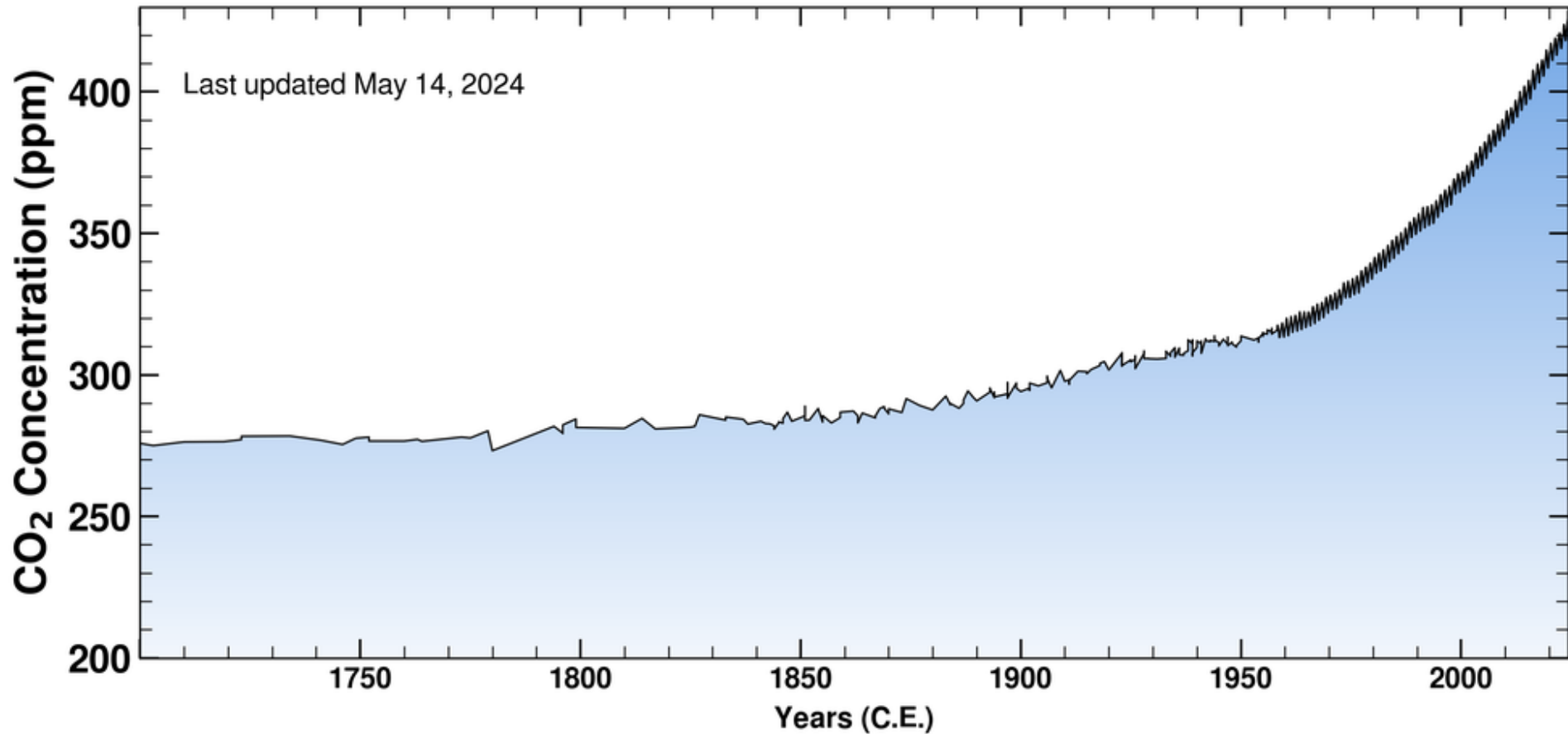
Jason Samenow
May 16, 2024

The Washington Post



**WHAT'S
HAPPENING
NOW**

Atmospheric carbon dioxide has risen 50 percent



(SCRIPPS)

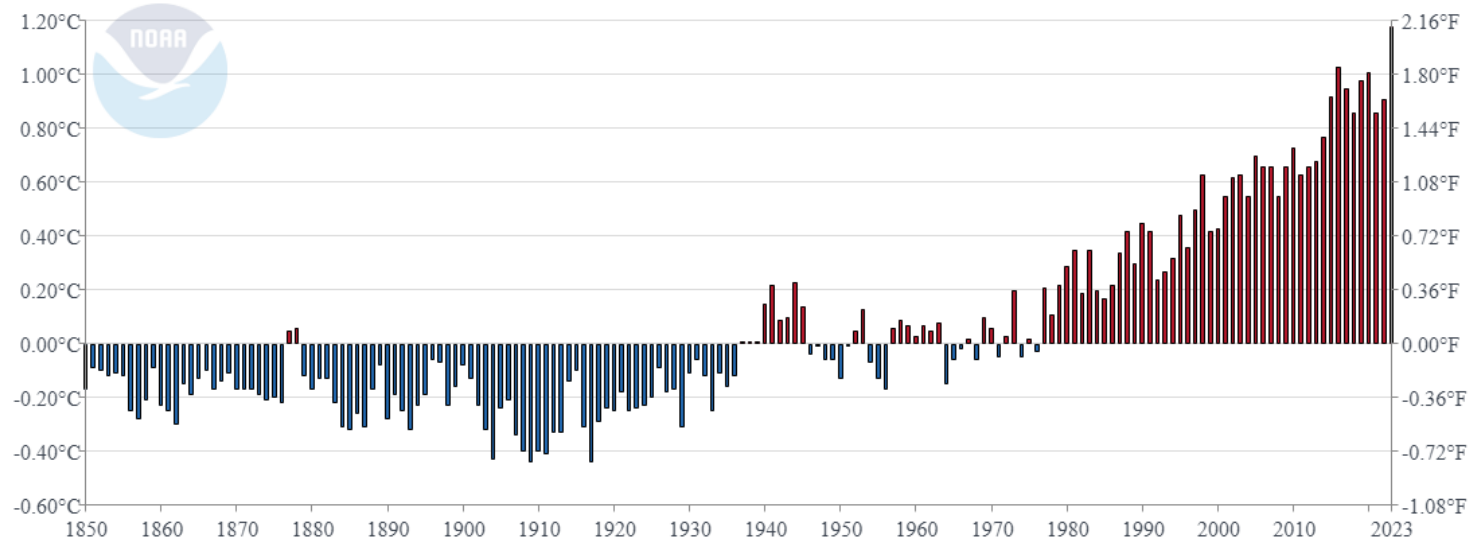
Global temperatures are rising

10 warmest years in last decade

47 straight years warmer than 20th century average

Global Land and Ocean

January-December Temperature Anomalies

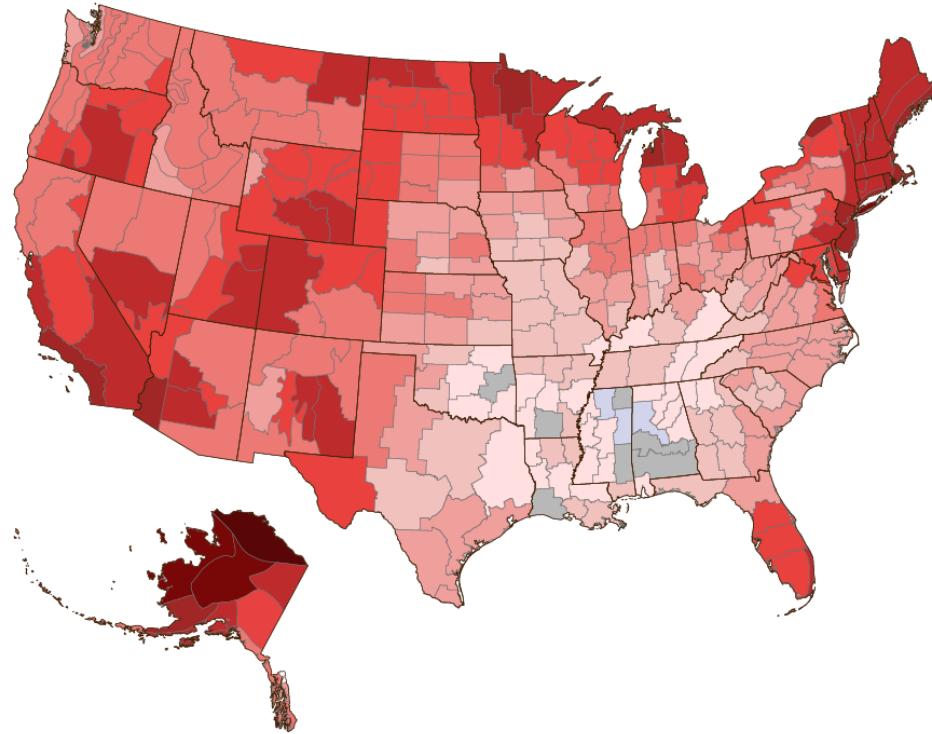


(NOAA, 2024)

U.S. temperatures are rising

2023: 5th warmest
on record

26 straight years
above normal
temps



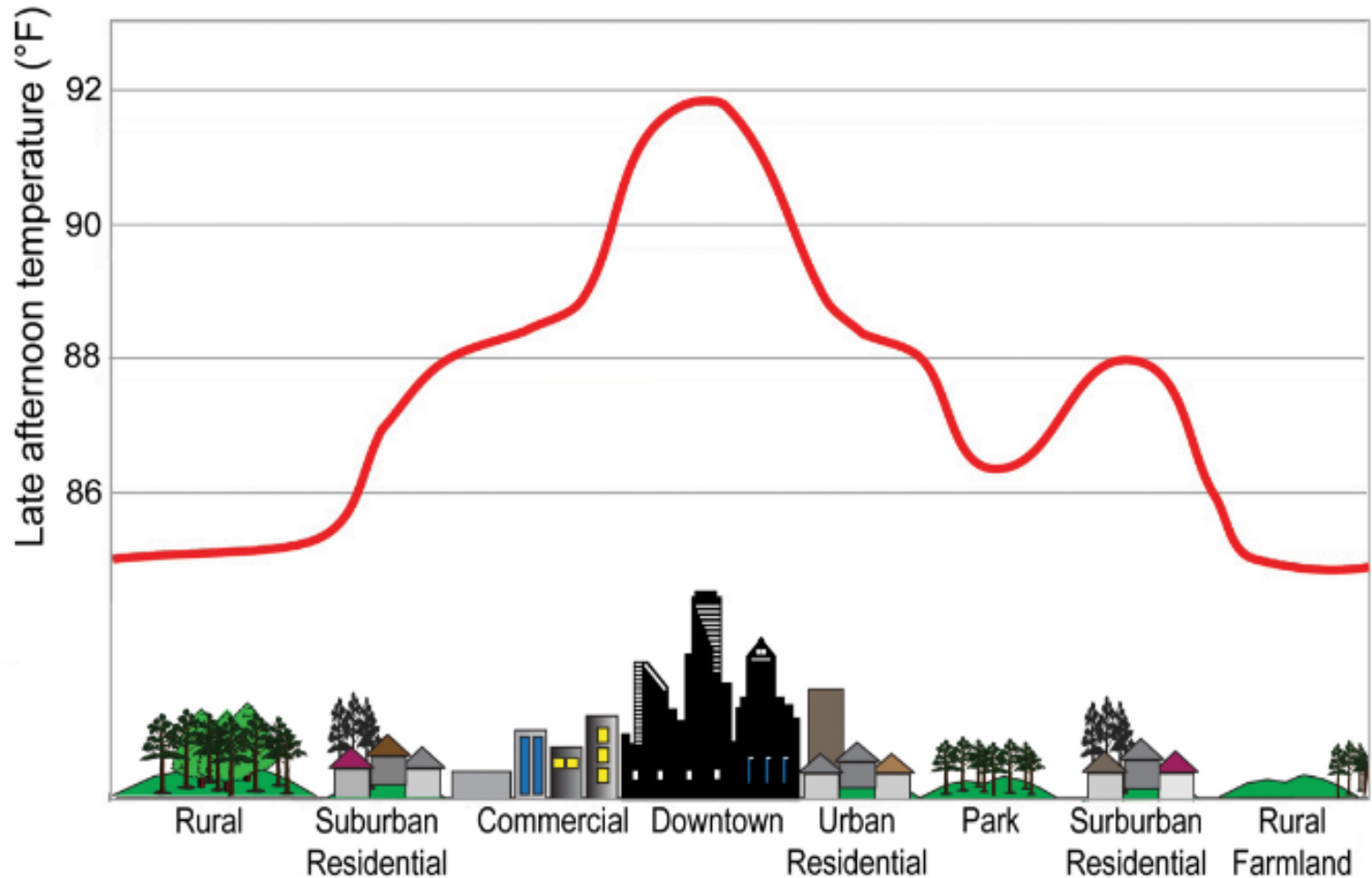
Rate of temperature change (°F per century):



Gray interval: -0.1 to 0.1°F

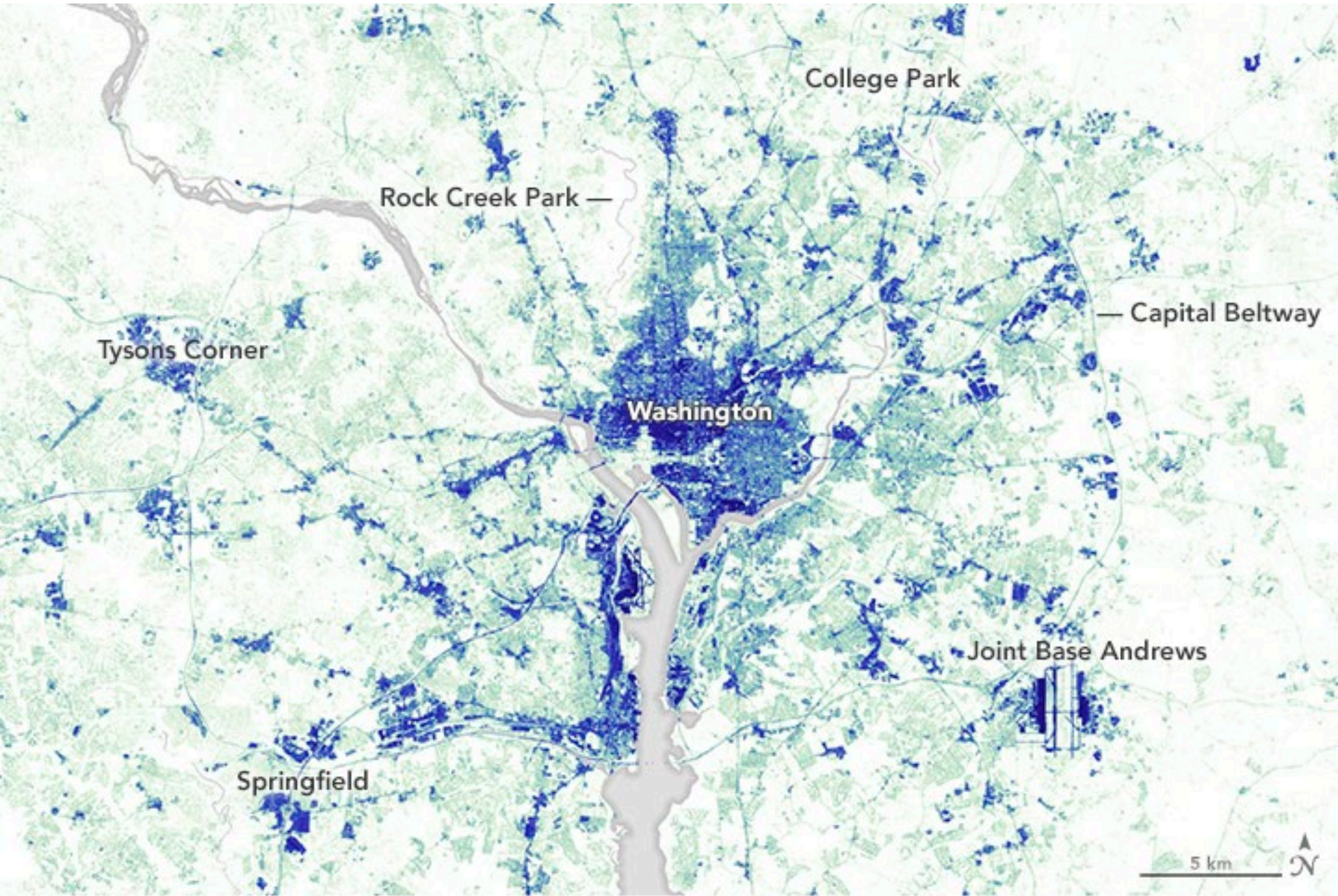
(US EPA, 2022)

Growing urban heat islands



Lemmen and Warren²⁸⁵

(Via US EPA)

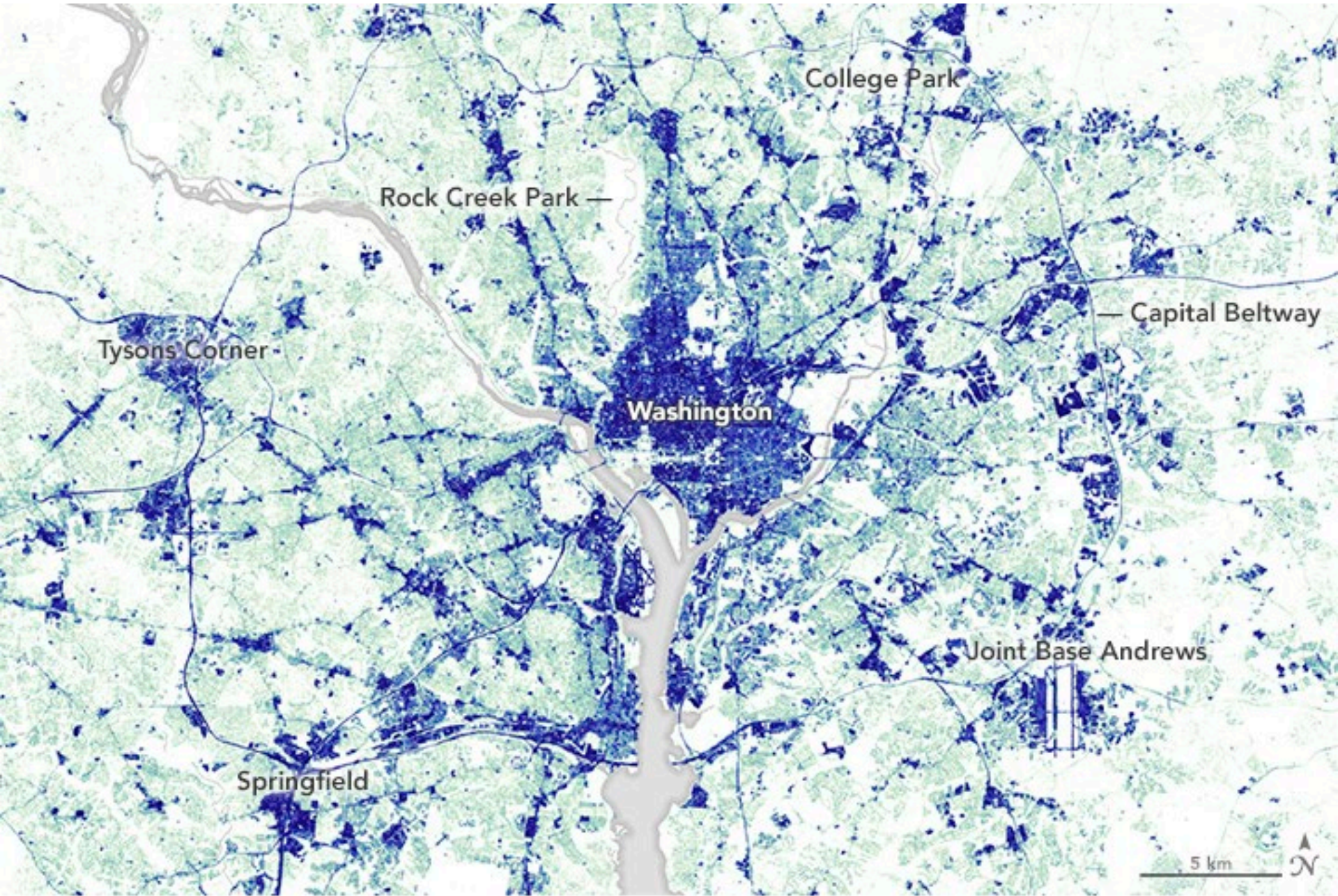


Impervious Surface Area (%)



1984

(NASA)



Impervious Surface Area (%)



2010

(NASA)

Washington's temperatures on the rise

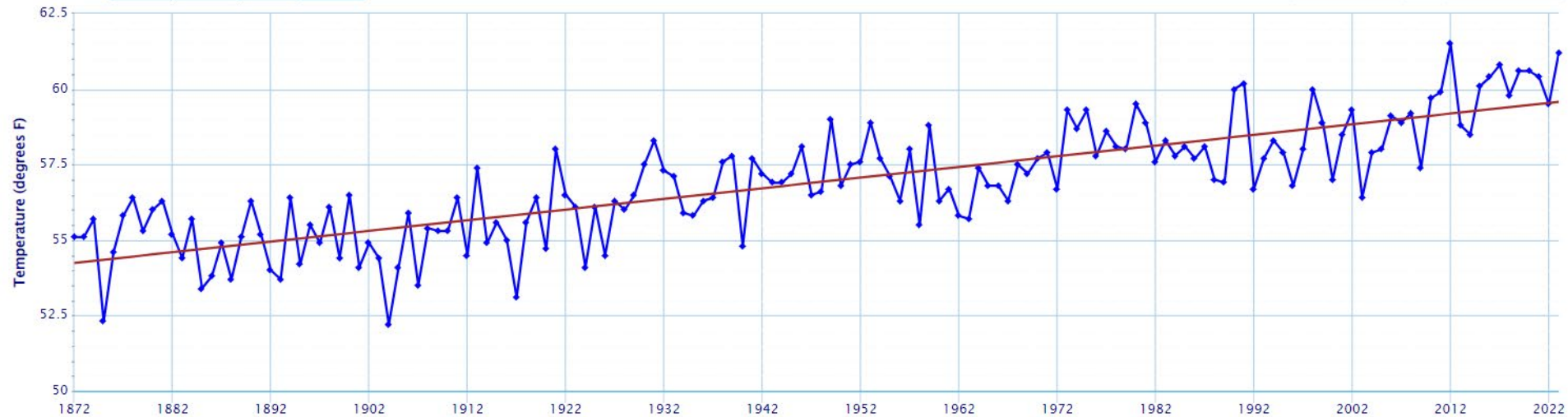
Mean Avg Temperature - Washington Area, DC (ThreadEx)

Use navigation tools above and below chart to change displayed range



Zoom

From To



Hot days are increasing

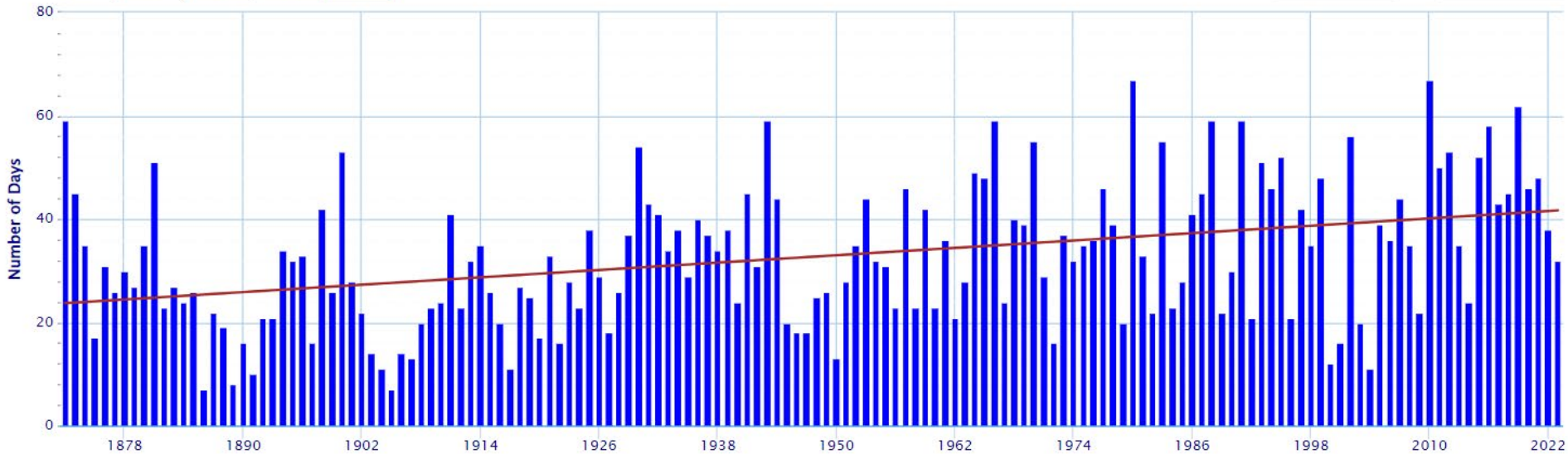
Number of Days Max Temperature ≥ 90 - Jan through Dec - Washington Area, DC (ThreadEx)

Use navigation tools above and below chart to change displayed range



Zoom

From To



Extremely warm nights are increasing dramatically

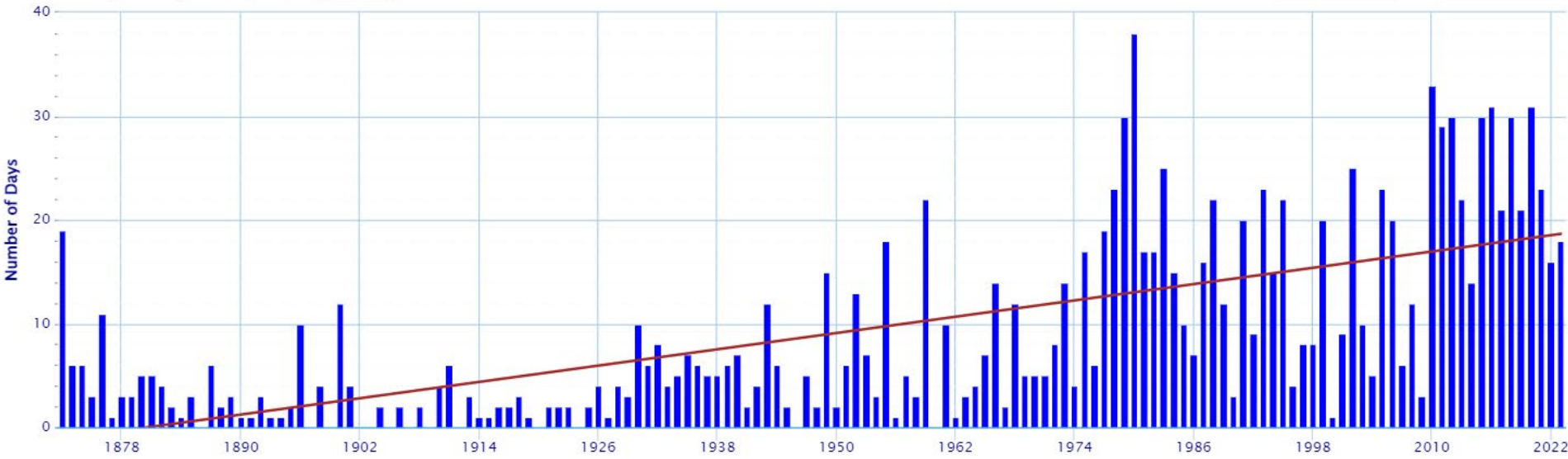
Number of Days Min Temperature ≥ 75 - Jan through Dec - Washington Area, DC (ThreadEx)

Use navigation tools above and below chart to change displayed range



Zoom

From To



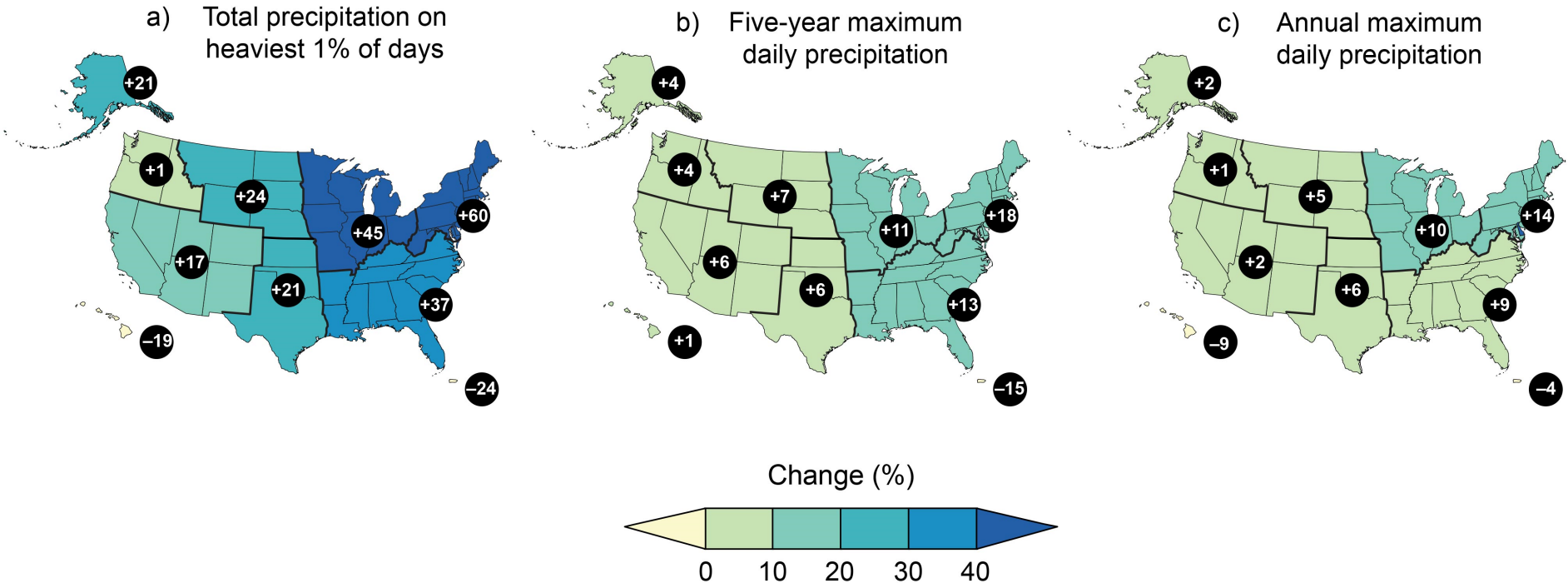
Average snowfall is declining

Snowfall average by 30-year climate period in Washington



Precipitation is intensifying

Observed Changes in the Frequency and Severity of Heavy Precipitation Events



(National Climate Assessment, 2023)

- 2018, wettest on record, included record 24 days with at least an inch of rain.
- In 2019: 3.3" of rain in one hour on July 7
- In 2020: record 7 days with at least 2 inches of rain. 7th wettest year.
- Exceptional floods in Ellicott City in 2016 and 2018

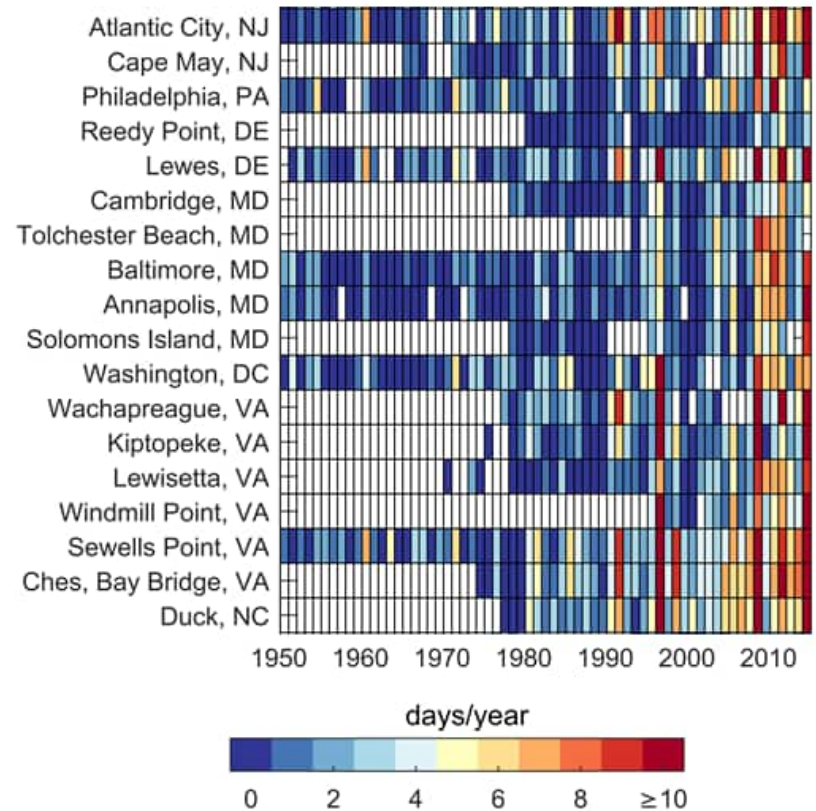
Coastal flooding

300% increase in the incidence of nuisance or sunny day flooding in the District in the last 90 years



Salwan Georges

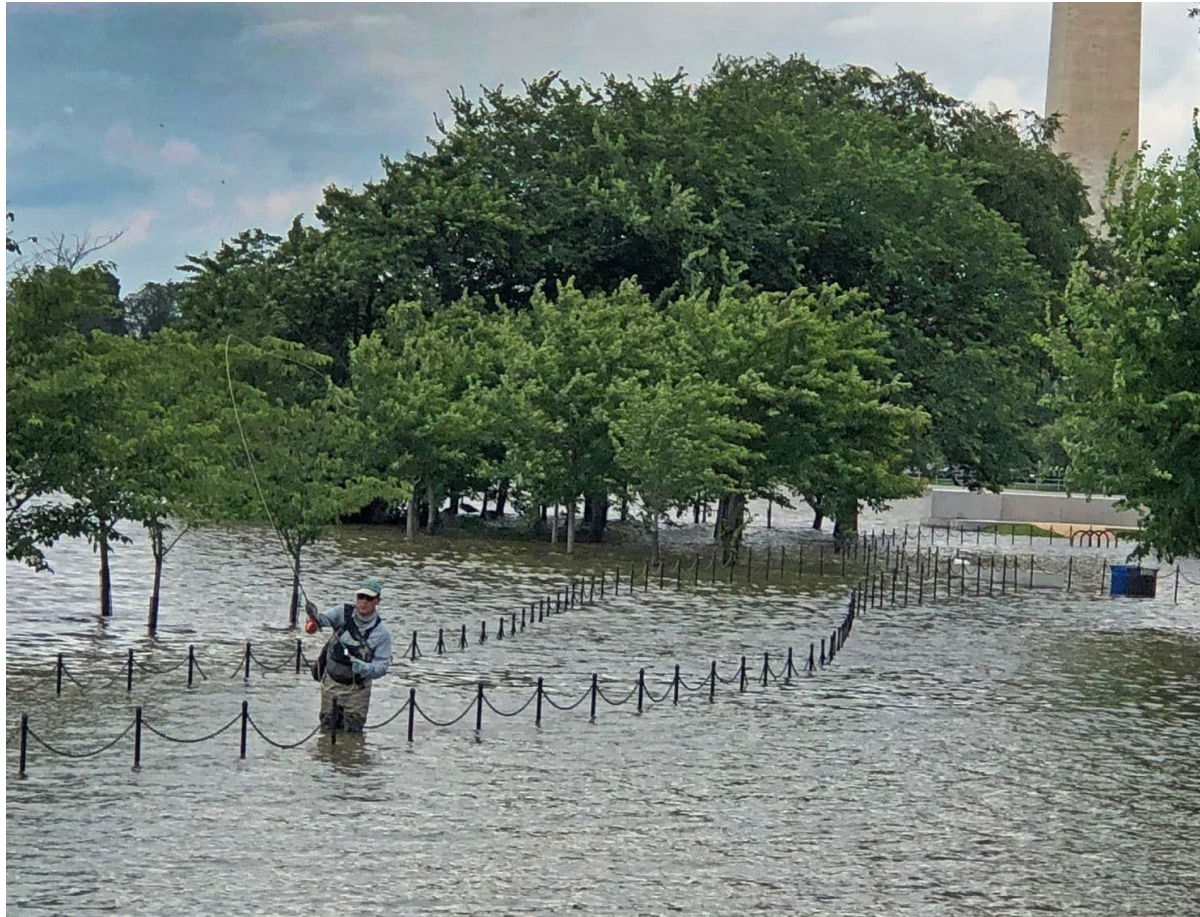
Annual number of high tide floods (days per year) at NOAA tide gauge locations.



(NOAA, 2018)

NOAA: “Decadal trends in annual flood frequencies are accelerating.”

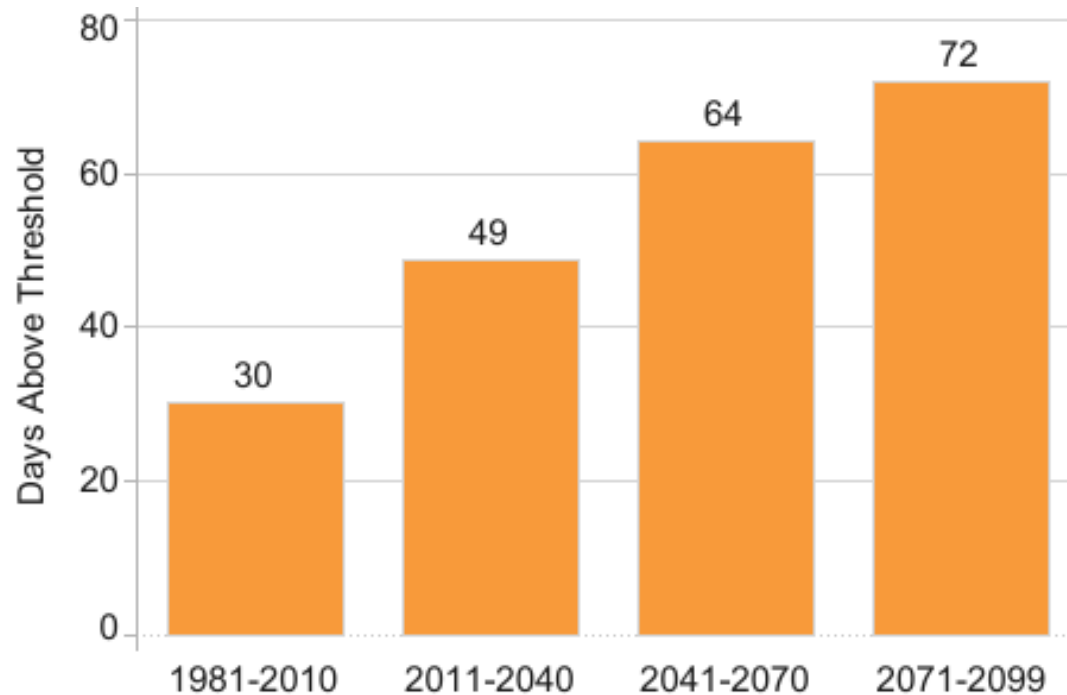
THE FUTURE



Loic Pritchett, June 5, 2018

MORE HEAT

Days above 90 degrees in Washington



Mid-Atlantic RISA
Low emissions scenario

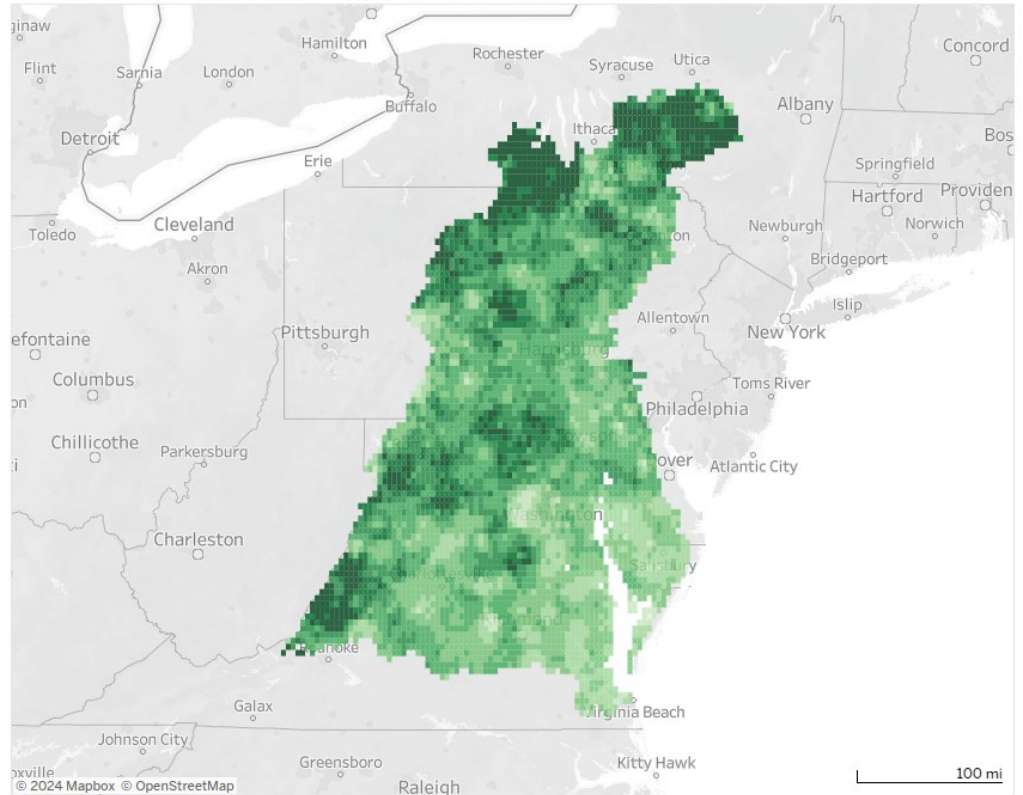
HEAVIER RAIN

Increase in no. of days with >2" of rain by 2100 Moderate emissions

Figure 3b. Projected change in the average annual number of days with precipitation above 2" (2066-2095: Moderate Emissions (RCP 4.5))

For Washington, D.C. by 2100:

- 33% increase in the number of days with 1"+ rain for low emissions and 51% increase for high emissions
- 53% increase in the number of days with 2"+ rain for low emissions and 81% increase for high emissions



Percent change compared to 1976-2005 average



Some conclusions

- D.C. area weather is becoming warmer and wetter, with less snow and higher tides.
- These trends will continue for decades.
- We will need to plan for and adapt to changes.
 - Heat island reduction
 - Stormwater management
- Reducing emissions of greenhouse gases will lower risk of the worst, unwelcome changes.

Thank you!

Contact

Jason Samenow, Weather Editor - Washington Post

Email: samenowj@washpost.com

Phone: 202.334.9937

On Twitter: @capitalweather, @jsamenow

On Facebook: www.facebook.com/capitalweather

On the web: <http://www.washingtonpost.com/capitalweathergang>

Twitter: @capitalweather

Facebook: <http://www.facebook.com/capitalweather>





Capital Weather Gang

About · Meet the Gang · Contact · Weather Wall

- Washington Post's weather team
- Content spans web, social media, print, radio (WAMU 88.5) & video
- Broad mix of content
 - DC forecasts
 - Weather science and history
 - National weather
 - International weather
 - Climate change
- **Emphasis: Reader engagement, communicating uncertainty**

[Washington Post Website](#)