

NASA HAQAST Team Meeting

SATELLITE DATA UNCOVER NATIONWIDE AIR POLLUTION IMPACTS FROM WAREHOUSING



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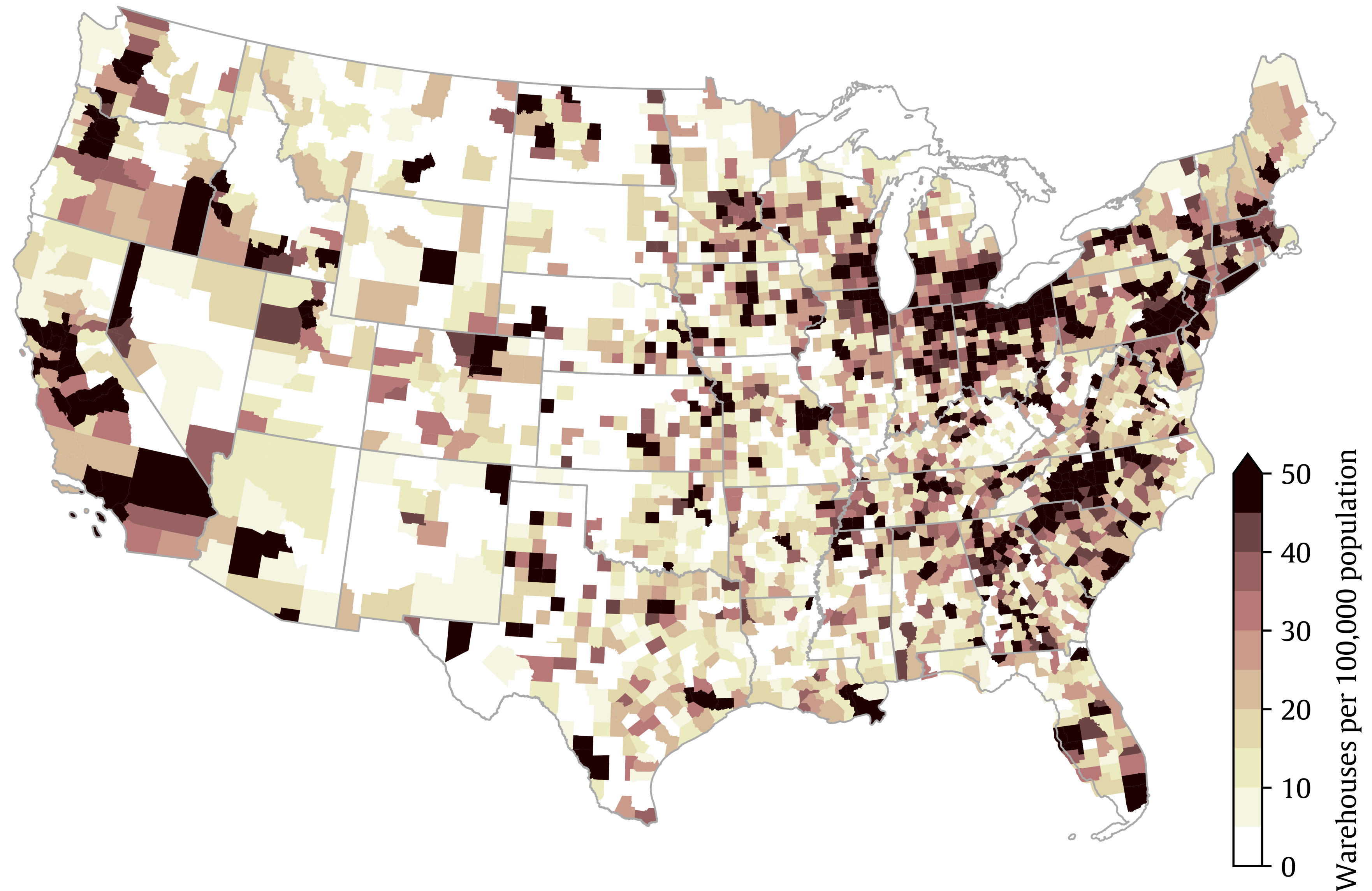


JOSH MILLER
INTERNATIONAL COUNCIL ON
CLEAN TRANSPORTATION

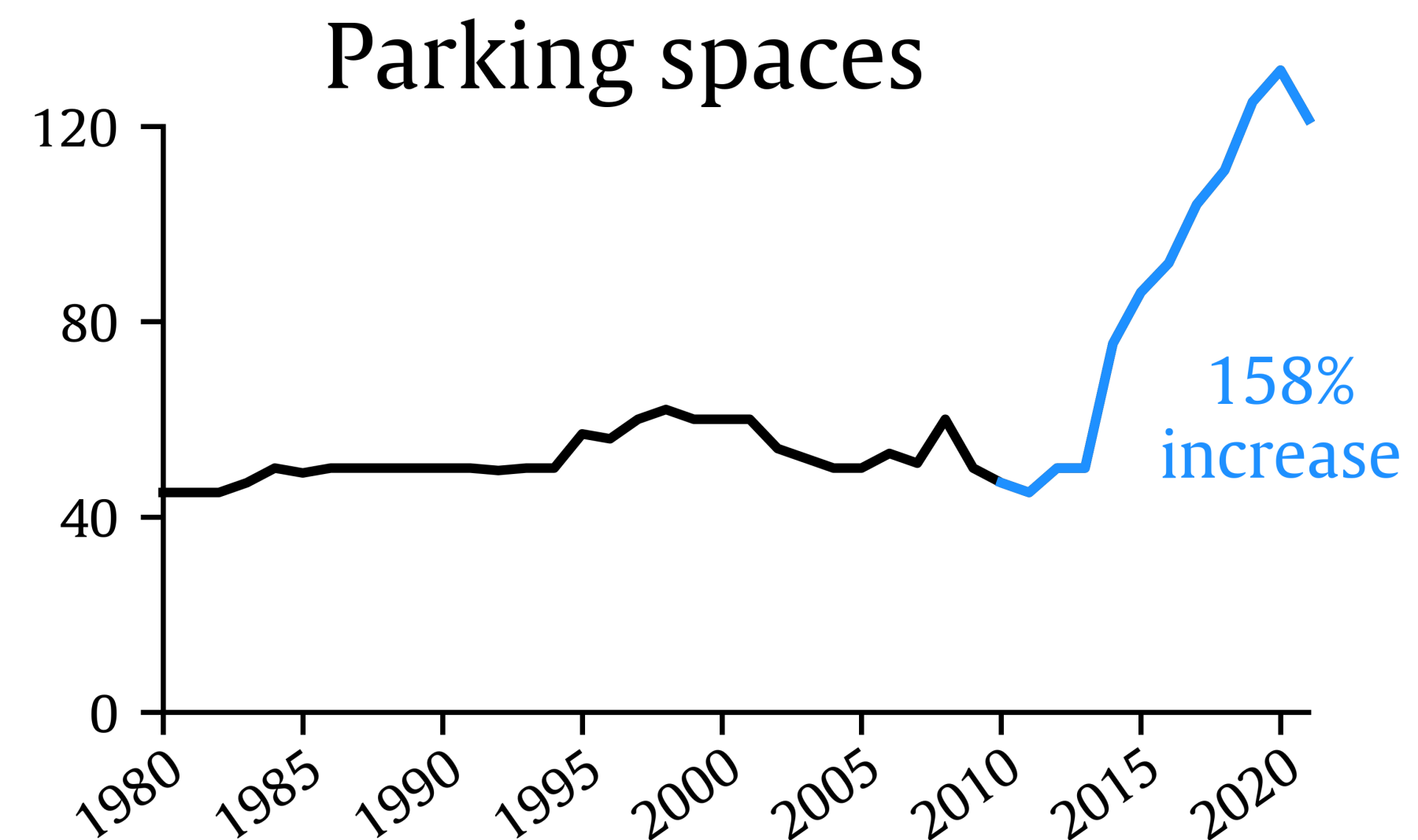
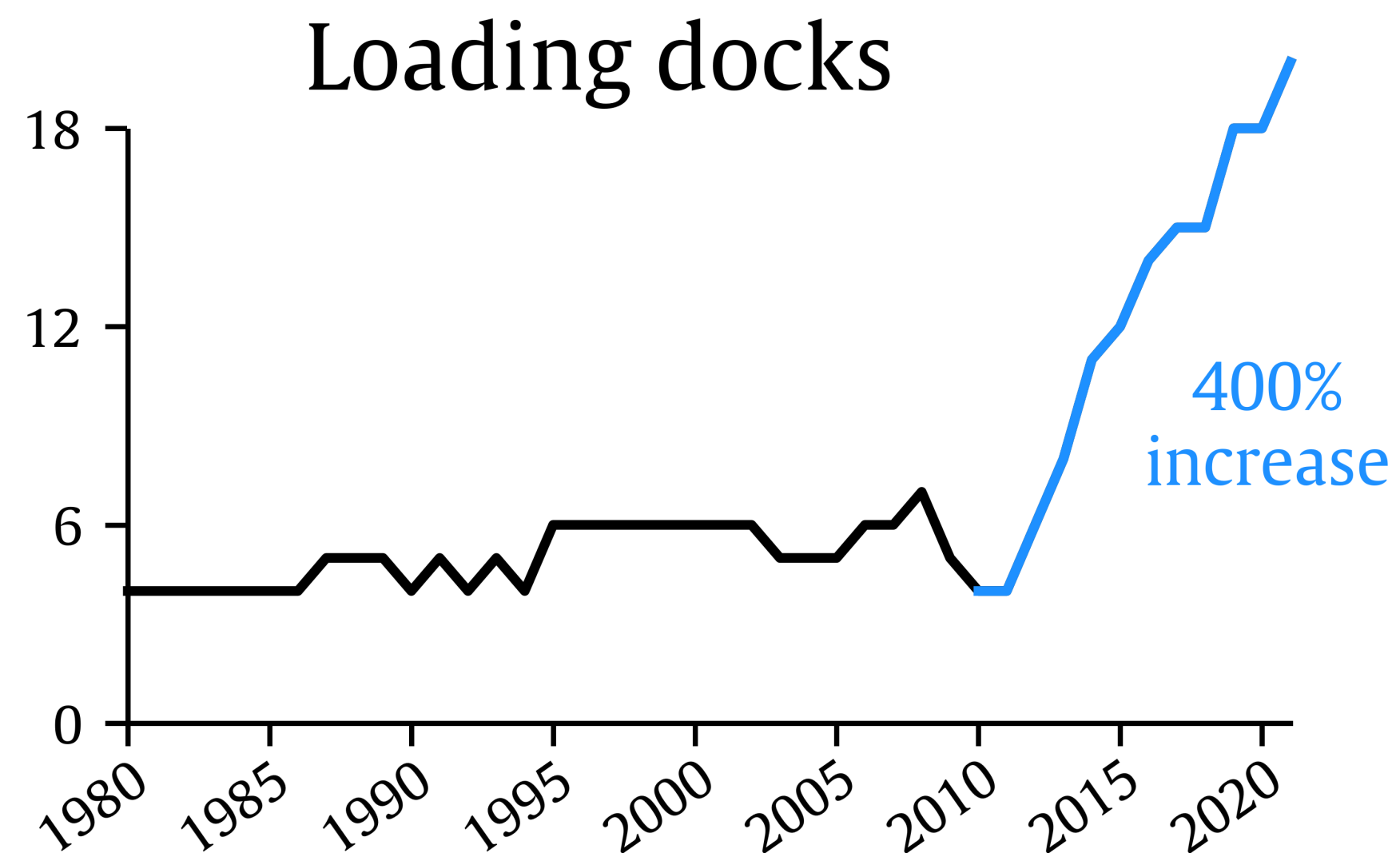
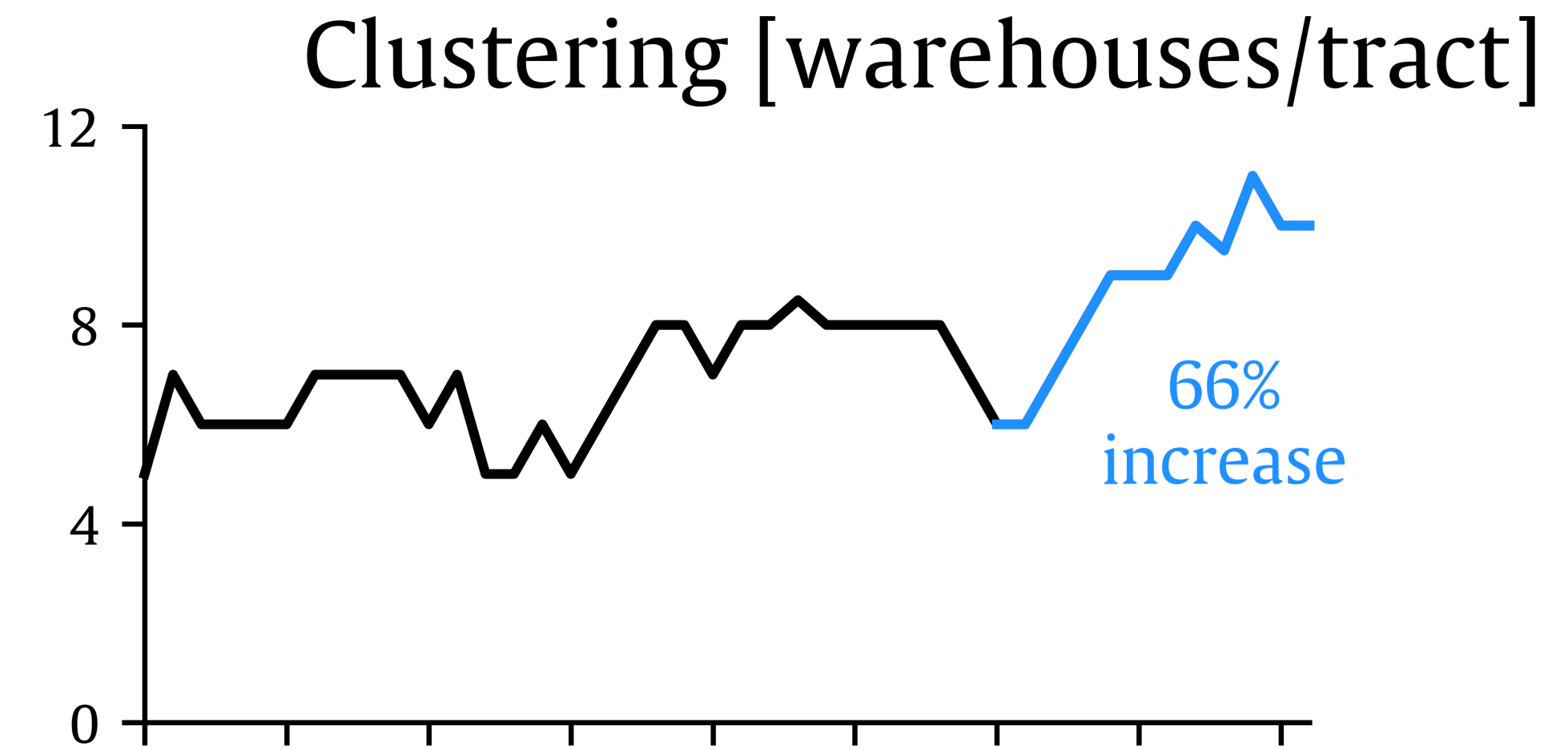
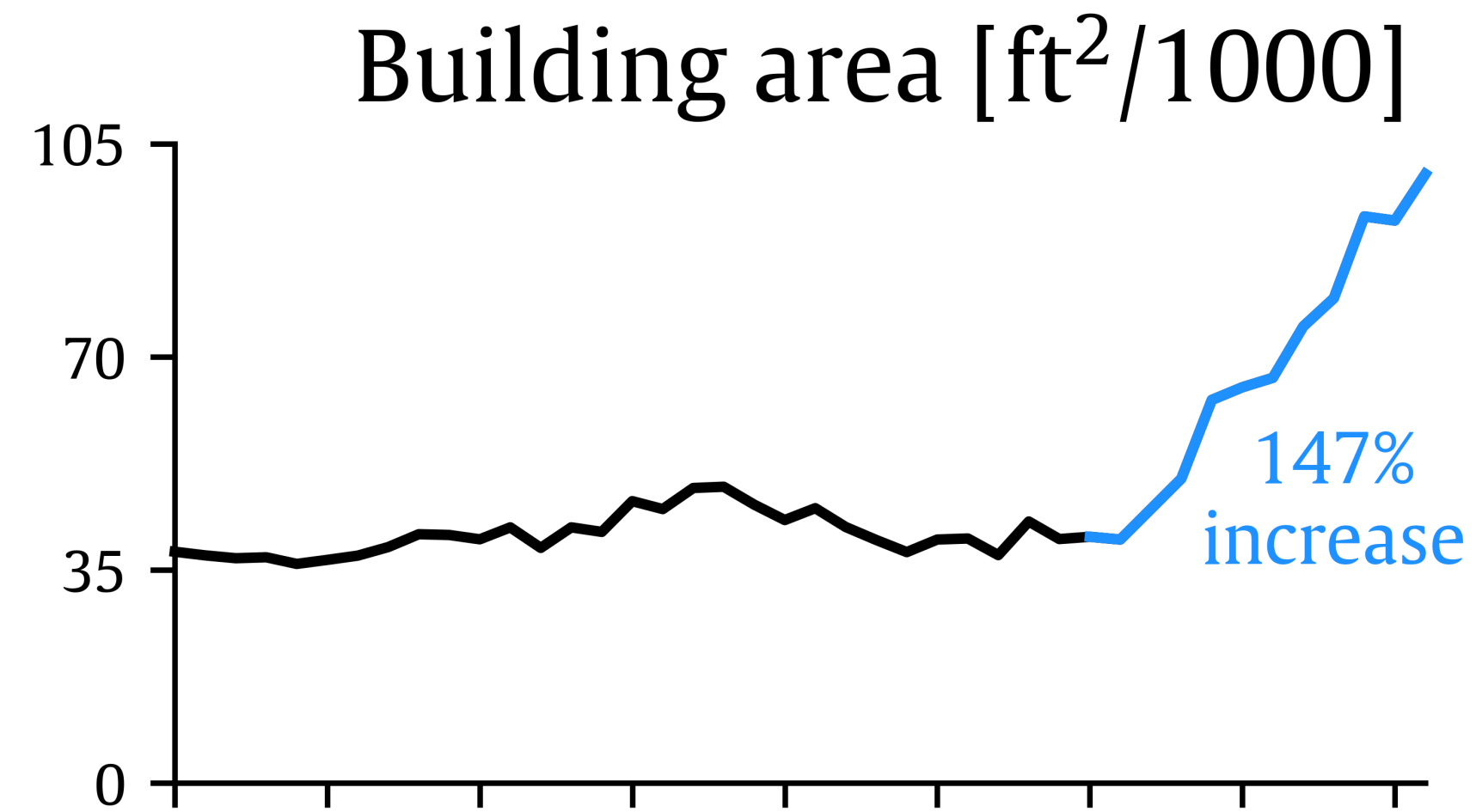


Warehouses are omnipresent across the U.S.

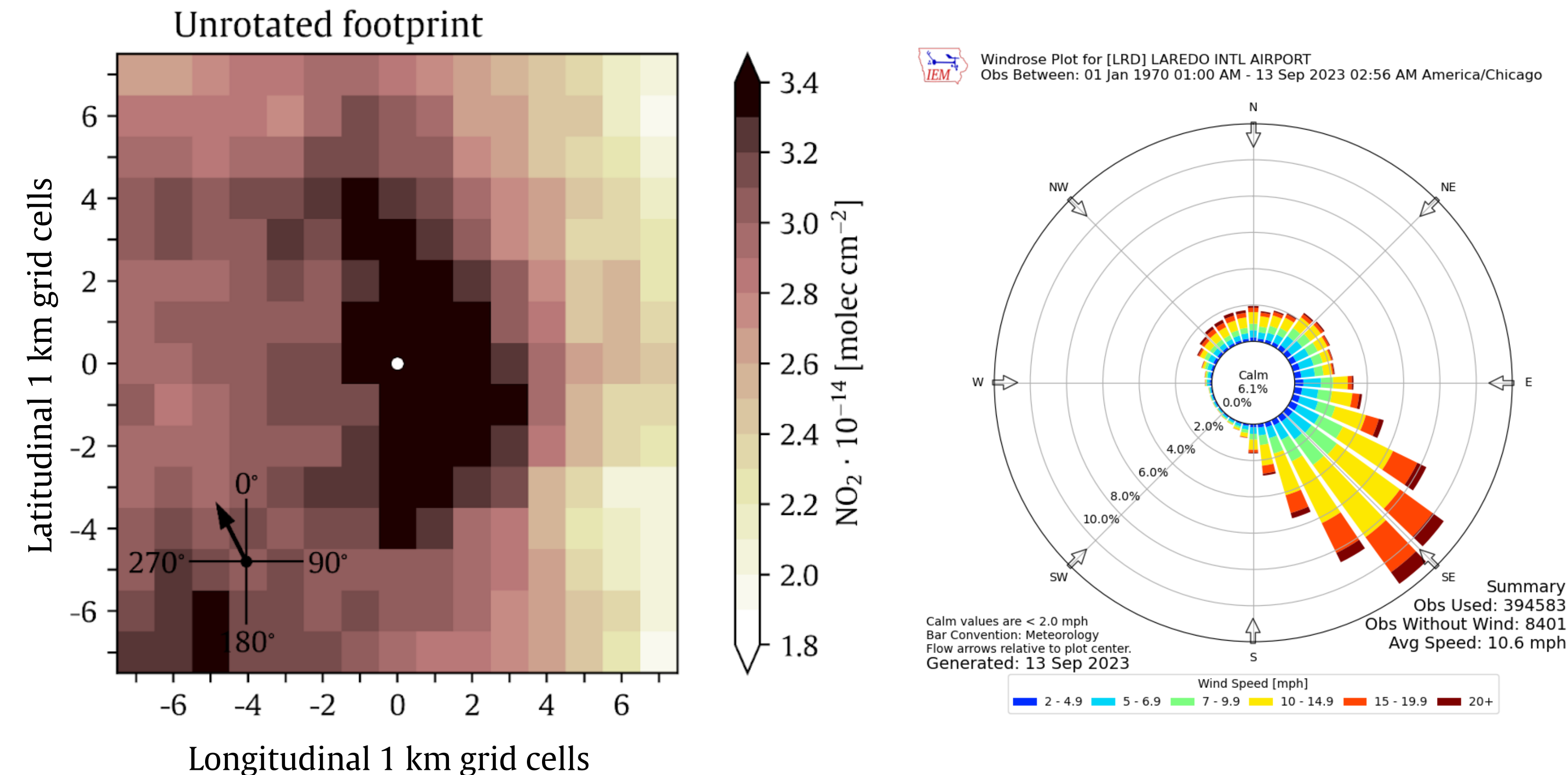
- As of 2021, there were 149,075 warehouses $\geq 20,000$ ft² in the contiguous U.S.
- Nearly one-fifth of these warehouses are located in just ten (0.3%) counties, including Los Angeles County, CA; Harris County, TX, and Cook County, IL.



New warehouses built during the 2010s were larger and had a greater ability to handle traffic

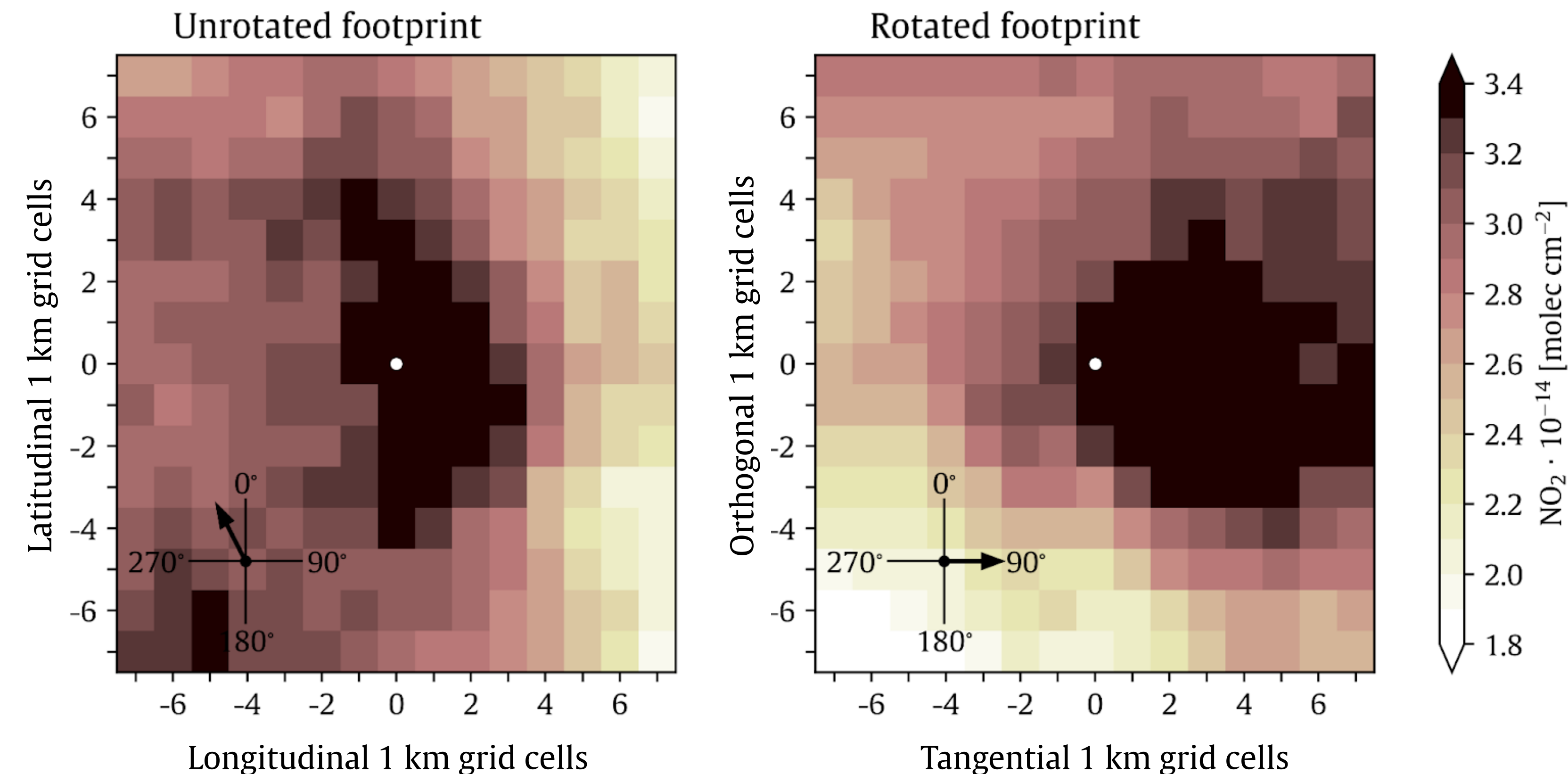


TROPOMI measurements are used to characterize NO₂ enhancements near warehouses



- (Left) We obtain daily TROPOMI NO₂ measurements and 100-meter wind direction estimates near (± 7 km) each warehouse.
- (Right) NO₂ measurements are artificially rotated in the direction of the prevailing wind such that downwind is to the right of the figure
- Daily wind direction-rotated NO₂ measurements are averaged over all days with valid measurements in 2021.

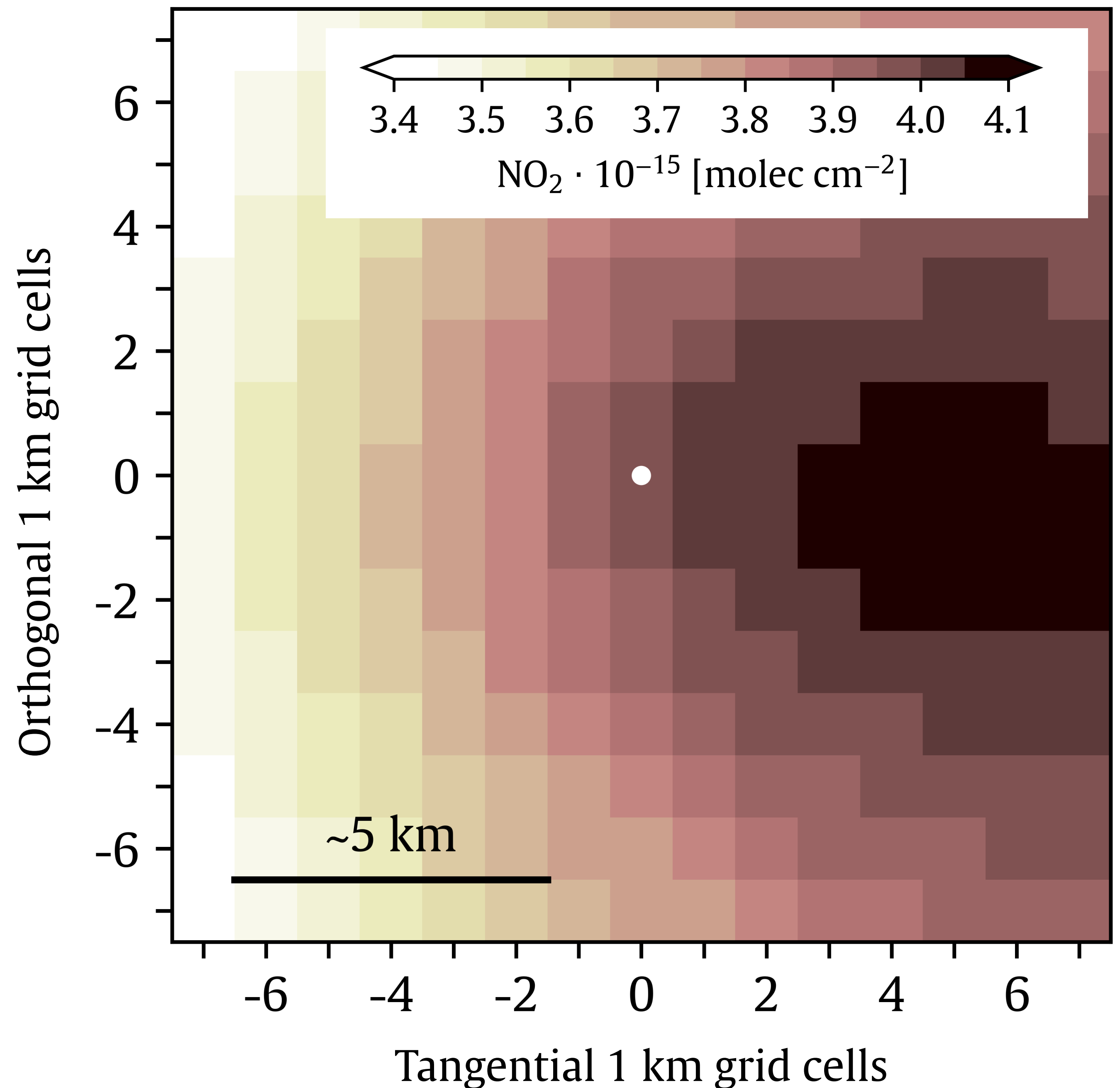
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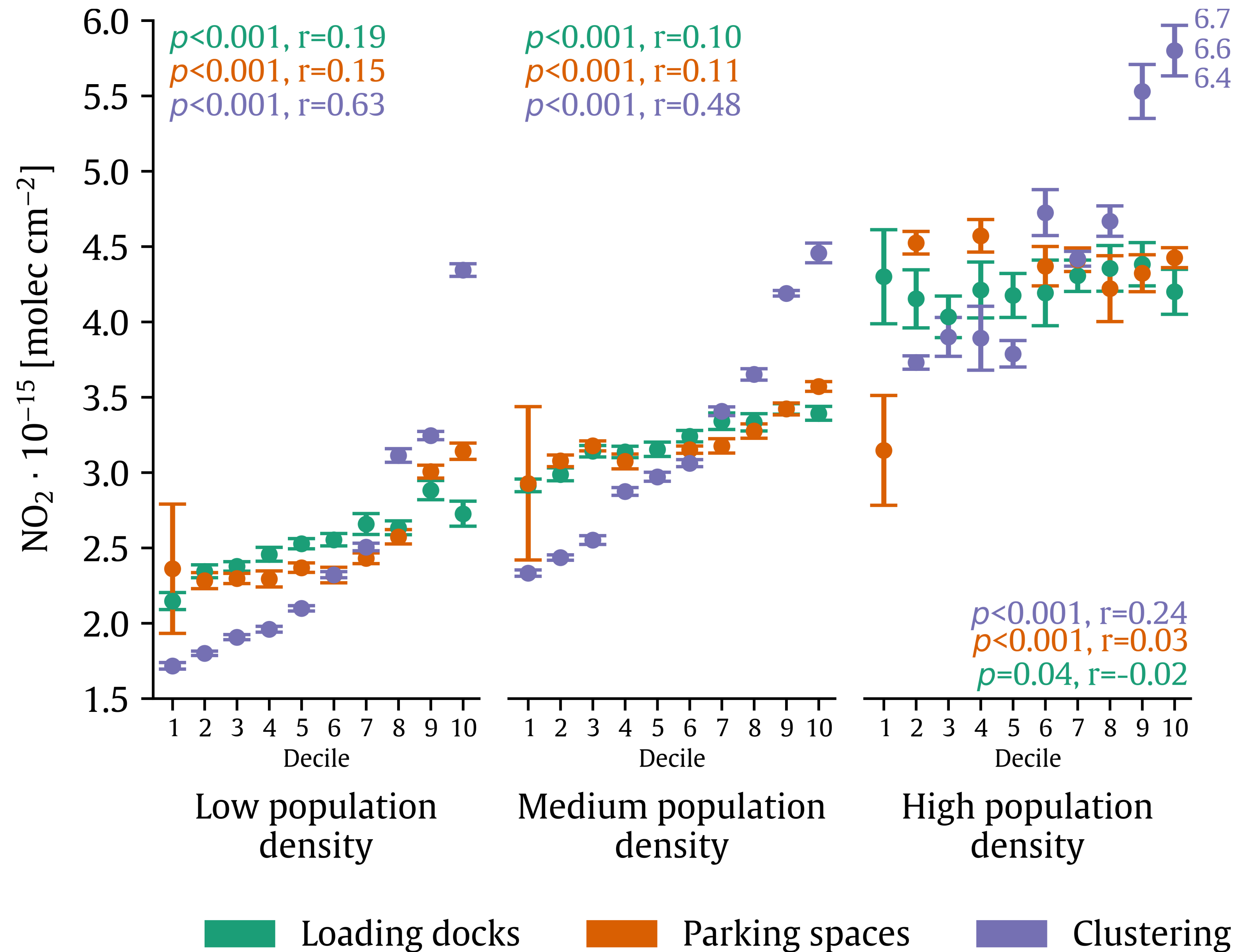
Satellite remote sensing from the TROPOMI instrument reveals a 20% increase in NO₂ near warehouses

- Spatial displacement warehouse and peak NO_x likely stems from most NO_x (90-95%) being emitted as NO and thereafter oxidizing to form NO₂.

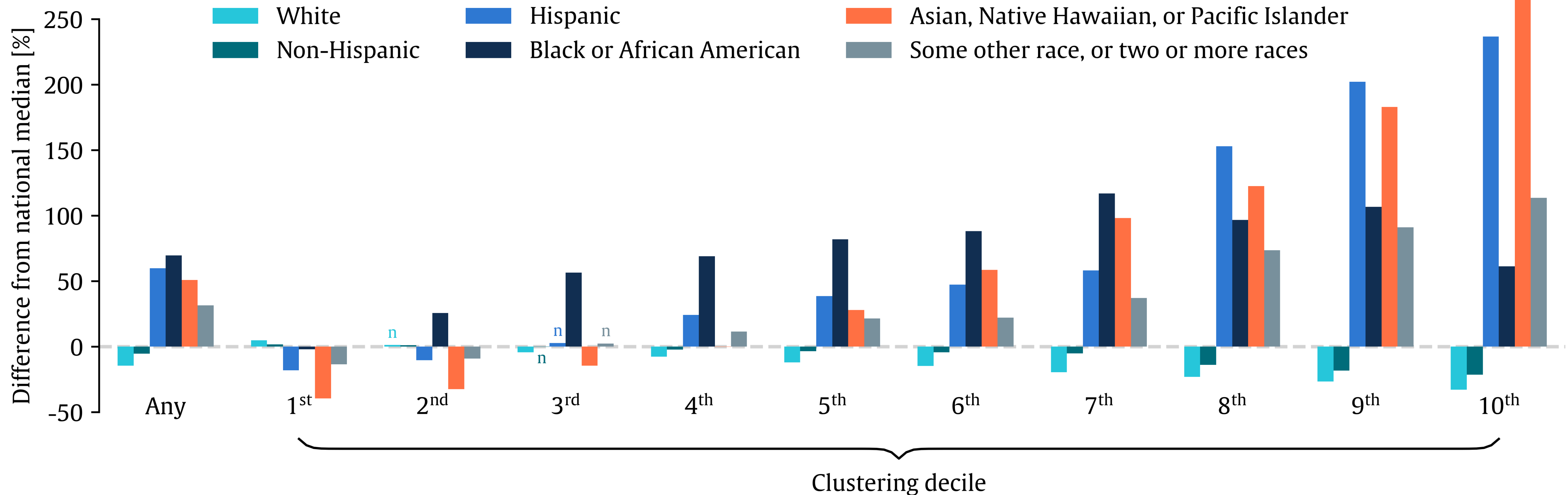


Proxies for NO_x emissions are linked with increases in satellite-derived NO₂ near warehouses

- Clustering—the number of warehouses within a given census tract—exhibits the strongest association with NO₂, explaining nearly 40% of the variance near warehouses sited in low population density environments.



Communities with warehousing facilities have more residents identifying as ethnoracial minorities



- In the top ten percent of tracts with the most warehouses, the proportion of the Hispanic population was 240% higher and the Asian population nearly 290% higher than U.S. median values.

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Final EPA Standards for Heavy-Duty Vehicles to Slash Dangerous Pollution and Take Key Step Toward Accelerating Zero-Emissions Future

Beginning in Model Year 2027, EPA's Clean Trucks Plan will safeguard clean air for millions in communities overburdened by dangerous pollution

December 20, 2022

Contact Information
EPA Press Office (press@epa.gov)

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) finalized the strongest-ever national clean air standards to cut smog- and soot-forming emissions from heavy-duty trucks beginning with model year 2027. The new standards, which is the first update to clean air standards for heavy-duty trucks in

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Air Plan Approval; California; South Coast Air Quality Management District

A Proposed Rule by the [Environmental Protection Agency](#) on 10/12/2023

This document has a comment period that ends in 32 days. (11/13/2023)

[SUBMIT A FORMAL COMMENT](#)

PUBLISHED DOCUMENT

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AGENCY:

Environmental Protection Agency (EPA).

ACTION:

Proposed rule.

SUMMARY:

The Environmental Protection Agency (EPA) is proposing to approve a revision to the South Coast Air Quality Management District (SCAQMD or “the District”) portion of the California State Implementation Plan (SIP) as SIP strengthening. This revision concerns emissions of oxides of nitrogen (NO_x) and particulate matter (PM) from indirect sources associated with warehouses. The EPA is proposing to approve SCAQMD Rule 2305, “Warehouse Indirect Source Rule—Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program,” to regulate these emission sources under the Clean Air Act (CAA or the Act). The EPA is taking comments on this proposal and

DOCUMENT DETAILS

Printed version:
[PDF](#)

Publication Date:
[10/12/2023](#)

Agency:
[Environmental Protection Agency](#)

Dates:
Comments must be received on or before November 13, 2023.

Comments Close:
11/13/2023

Document Type:
Proposed Rule

Document Citation:
88 FR 70616

Page:
[70616-70625](#) (10 pages)

CFR:
40 CFR 52

Agency/Docket Numbers:
EPA-R09-OAR-2023-0494
FRL-11442-01-R9

Document Number:
[2023-22518](#)

DOCUMENT DETAILS

DOCUMENT STATISTICS

Page views:

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Summary

- Warehousing worsens local traffic-related air pollution with an average near-warehouse NO_2 enhancement of nearly 20%.
- Facilities with more loading docks and parking spaces—typical of warehouses built during the 2010s—attract the most truck traffic and are associated with the highest NO_2 levels.
- Warehouses are disproportionately located in communities with above-average shares of Black, Hispanic, and other non-white residents.



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