



31 Geospatial Papers You Shouldn't Miss

A scannable, plain-English digest of this month's most notable work in GIS, remote sensing, urban analytics, and climate — one clear takeaway per paper.

CURATED BY MILAN JANOSOV • SUMMARIZED BY JEFF FRANZEN • JUNE 2026

This month spans foundation models for land cover, hyperspectral, and ecological remote sensing; urban research on street networks, mobility, and 15-minute cities; and climate work on heat, drought, wildfire, storm surge, hail, and national-scale damages — rounded out by crop forecasting, water resources, and Europe's land take. Below, each paper is reduced to the single thing worth knowing, grouped into five themes so you can skim to what matters.

31

PAPERS

5

THEMES

11

FREE TO READ

5

PDFS IN FOLDER

START HERE — FIVE WORTH YOUR TIME

- **#22 Europe's land take** — satellite data shows Europe paves over twice as much land as previously thought.
PDF INCLUDED
- **#15 UK climate damages** — warming already costs ~2% of GDP, half of it from catastrophic and overlooked risks.
- **#6 Street networks for every city** — open, global street-network models for 10,351 urban areas.
- **#17 Mines & forests** — mine infrastructure destroys 34× more forest than the mines themselves.
- **#1 LandSegmenter & #25 FLORO** — the new wave of geospatial foundation models. PDFS INCLUDED

THEME 1 Foundation Models & Remote Sensing

1 LandSegmenter: a flexible foundation model for land-use/land-cover mapping

ISPRS J. / ARXIV

PDF INCLUDED

A foundation model that maps land use & land cover and transfers zero-shot to unseen datasets using cheap weak labels.

8 Composite2Change (C2C) on Google Earth Engine

REMOTE SENSING OF ENVIRONMENT

PAYWALLED

A GEE tool that uses the Landsat archive to detect, date, and measure forest disturbance and recovery over large areas.

9 From pixels to planning: Earth AI for nature restoration

GOOGLE RESEARCH

FREE TO READ

Google's deep-learning model maps tiny woody features — hedgerows, walls, copses — across England's farmland for restoration planning.

12 HySens: sensor-agnostic foundation models for hyperspectral data

IEEE

PAYWALLED

One pretrained model handles many hyperspectral sensors with different bands — no retraining per sensor.

25 FLORO: a multimodal geospatial foundation model for ecology

ARXIV (ICME 2026)

PDF INCLUDED

An ecological remote-sensing model that adapts to whatever sensors and bands happen to be available.

THEME 2 Cities, Mobility & the 15-Minute City

6 Street-network models & indicators for every city on Earth

ENVIRONMENT & PLANNING B

FREE TO READ

Updated open street-network models for 10,351 urban areas in 189 countries — every city, freely downloadable.

7 Inferring urban functions from Google Maps reviews

COMPUTERS, ENV. & URBAN SYSTEMS PAYWALLED

Uses the text and photos in Maps reviews to infer what city places actually do — beyond fixed POI categories.

10 Fine-grained urban mobility from static data + large models

IEEE PAYWALLED

Predicts hourly, block-level mobility using only static geodata (imagery, buildings, POIs) plus vision-language models.

13 Summer heatwaves and travel-behaviour adaptation

APPLIED GEOGRAPHY PAYWALLED

Looks at how people in temperate climates change how they travel when heatwaves hit as a shock.

18 Why people still drive in 'high-accessibility' neighborhoods

SUSTAINABLE CITIES & SOCIETY PAYWALLED

Even in walkable Chicago areas residents still drive — safety, habits, and social ties limit the 15-minute-city ideal.

19 A longitudinal dataset of micro-businesses in Mexico City

ENVIRONMENT & PLANNING B PAYWALLED

Method + open code to track businesses over time from Mexico's directory (84% match accuracy), reusable elsewhere.

21 Estimating traffic (AADT) on local roads with ML + spatial stats

J. OF TRANSPORT GEOGRAPHY PAYWALLED

Estimates traffic volumes on data-poor local roads across England & Wales, with spatial statistics pushing R^2 to 0.79.

THEME 3 Climate, Heat & Extreme Hazards

3 Multi-year droughts in CMIP6 large ensembles

ENV. RESEARCH COMMUNICATIONS

OPEN ACCESS

Big climate ensembles reproduce rare multi-year droughts well; gaps vs. observations are mostly natural variability.

5 Wildfires in 2025

NATURE REVIEWS EARTH & ENV.

PAYWALLED

Record-low global burned area, yet catastrophic deadly fires — the LA fires alone cost ~\$140B.

11 Land-cover configuration and climate

ENV. RESEARCH: CLIMATE

OPEN ACCESS

Shows the spatial arrangement of land cover — not just how much there is — measurably affects regional climate.

14 Climate modes driving Indo-Pacific storm surge

OCEAN ENGINEERING

PAYWALLED

ENSO, IOD, and PNA seasonally amplify or suppress extreme storm surges across densely populated Indo-Pacific coasts.

15 A fuller national climate-damage assessment (UK)

NATURE CLIMATE CHANGE

PAYWALLED

Warming already costs the UK ~2% of GDP, rising to ~10% by 2100 — and half the damage comes from catastrophic/'missing' risks.

23 Greening guidelines for cooling temperate neighborhoods

SUSTAINABLE CITIES & SOCIETY

PAYWALLED

Spreading out small green spaces cools temperate neighborhoods by ~1.3°C — distribution matters more than size.

24 Shifting hail hazard under global warming

NATURE CLIMATE CHANGE **PAYWALLED**

Hail-prone conditions move poleward as the climate warms, relocating where crops face hail risk.

THEME 4 Land, Water, Forests & Ecosystems

4 CY-Bench: a benchmark for sub-national crop-yield forecasting

EARTH SYSTEM SCIENCE DATA **PDF INCLUDED**

An open, standardized dataset for in-season crop-yield forecasting across 38 countries — built for reproducible ML.

17 Mine infrastructure destroys 34× more forest than the mines

PHYS.ORG (ON NATURE) **FREE TO READ**

Roads and settlements around African mines clear ~34 ha of forest per ha of mine; cobalt and copper are the worst.

20 Water quality reshapes global water allocation

EARTH'S FUTURE (AGU) **OPEN ACCESS**

Accounting for water quality cuts modeled global surface-water use ~17% and pushes demand toward groundwater.

22 Europe's land take: paving over nature and cropland

NATURE COMMUNICATIONS **PDF INCLUDED**

Satellite analysis finds Europe paves ~1,548 km²/yr — double prior estimates — mostly eating nature and cropland.

27 Spotting plastic litter in water with high-res radar (SAR)

REMOTE SENSING OF ENVIRONMENT **PAYWALLED**

Tests day/night, all-weather radar to detect floating plastic where optical sensors struggle.

28 Eco-hydrological drivers of Himalayan forest carbon

ECOLOGICAL INDICATORS PAYWALLED

Machine learning ranks the water and climate drivers of carbon exchange in two contrasting Himalayan forest types.

29 Children's access to urban green space: a review

URBAN FORESTRY & URBAN GREENING PAYWALLED

Reviews 638 studies and proposes a framework covering physical, perceived, and sensory access for kids.

THEME 5 Urban Health, Vulnerability & Methods

2 UB-SEM: building compactness for cooling-energy demand

SUSTAINABLE CITIES & SOCIETY PAYWALLED

A new shadow-exposure metric of how tightly buildings pack together, used to predict cooling energy needs.

16 Degree of spatial interpretability (DSI)

INT. J. OF GISCIENCE PAYWALLED

A new metric showing accurate spatial models aren't always spatially meaningful — useful for picking models.

26 Interactive physical data cubes for Earth-system data

EARTH SYSTEM DYNAMICS PDF INCLUDED

A tangible cube exhibit that lets anyone explore huge environmental datasets by hand — science communication.

30 'One city, two heats': LLMs read heat perception in Beijing

SUSTAINABLE CITIES & SOCIETY PAYWALLED

An LLM mines social media to show that how hot people feel can diverge sharply from measured temperature.

31 Mapping urban air-pollution vulnerability (1,000 Iranian cities)

SOURCE UNCONFIRMED

UNVERIFIED

A geospatial framework ranking air-pollution vulnerability nationwide (source could not be confirmed).

How to use this folder

The **PDFs/** subfolder holds the 5 open-access papers as full PDFs. Three more (#3, #11, #20) are open access but blocked by publisher bot-protection — their one-click links are in **00_INDEX_All_31_Papers.md**, which also has the longer per-paper summaries. Paywalled items show abstract-based takeaways here and link to the publisher.

☒ PDF INCLUDED ☐ OPEN / FREE TO READ ☐ PAYWALLED