



CENTER FOR GEOGRAPHIC ANALYSIS NEWSLETTER

A Bi-Monthly Publication of the CGA at Harvard University | **March - April 2024**

HIGHLIGHTS

- **Application Deadline Extended for Summer GIS Institute**
- Harvard and 7 Universities Propose New Center for Digital Twin Research
- CGA Annual Conference May 16-17: Evaluating the Science of Geospatial AI
- CGA Develops Geospatial Infrastructure on New England Research Cloud
- Submit a Map for Fisher Prize for GIS Excellence
- Colloquium: Advancements and Applications of Foundation Models in Remote Sensing
- Symposium on Spatiotemporal Data Science: GeoAI for Social Sciences
- Workflow-Based GeoAI Analysis with No/Low-Code Visual Programming
- Digital Networks of Conspiracy
- The impact of Early-life Access to Oral Polio Vaccines on Disability: Evidence from India
- An Ensemble Framework for Explainable Geospatial Machine Learning Models
- Climateverse for South Asia
- Global Flourishing Study Releases Wave One Open Research Data
- Methane Sensors are Finding Dangerous Pollutants in Poor Neighborhoods
- Mighty Earth Geospatial Data Internship
- Training on Hyperspectral and Thermal Remote Sensing for Environmental Justice
- NOAA Satellite + AI/Machine Learning Hackathon
- Is Antarctic Sea Ice Experiencing a State Change?
- Cloud-Native Geo Pioneers in Earth Science: Honoring the 2024 Leading Women
- In Gaza, Satellites Show 157,200 Damaged or Destroyed Buildings
- Spy Satellite Images Offer Insights into Historical Ecosystem Changes
- Segment Anything Model: a new AI model from Meta AI
- Artificial Intelligence and the Smart City
- Google Green Light
- One for all: Toward unified Foundation Models for Earth vision
- Cities Save Lives by Mapping Communities Most at Risk from Extreme Heat
- Latest Improvements to ArcGIS Online
- OGC Training Data Markup Language for Artificial Intelligence
- Let Geography Die: The Rise, Fall, and “Unfinished Business” of Geography at Harvard

CGA NEWS

Application Deadline Extended for Summer GIS Institute

The Institute is designed for Harvard graduate students, post-doctoral fellows, faculty, and staff, as well as external researchers who want to integrate spatial thinking, incorporate GIS methods, learn spatial analysis tools, and communicate using maps. The next session will be May 28th to June 7th. The application deadline has been extended to March 22nd. [More Details](#). [To Apply](#).

Harvard CGA and 7 Universities Jointly Propose a New Industry/University Cooperative Research Center Focused on Digital Twin Research

After 10 years of the successful operation of the Spatiotemporal Innovation Center ([STC](#)) under the NSF [IUCRC](#) program, Harvard's Center for Geographic Analysis ([CGA](#)), together with seven partner universities led by George Mason University, is proposing a new IUCRC, a Center for Digital Twin Research, Innovation, and Collaboration Hub (DT-RICH).

The CGA will host a [planning meeting for DT-RICH](#) on May 15-16 on Harvard campus, and is inviting interested industry representatives from companies, government agencies and NGOs to participate in brainstorming research ideas for the new center.

We hope the new center, as the current STC center has done, will attract industry partners to co-sponsor projects by way of membership fees (\$50,000/year). Members choose research projects that suit their interests to apply their funds to. The university overhead is limited to 10%, much lower than the standard 69% for federal grants.

Representatives from the member organizations form the Industry Advisory Board (IAB), which meets twice a year to evaluate activities of, and provide strategic guidance to, the Center. Some of the reasons organizations join:

- Use the university research sites as a flexible extension to their organizational R&D
- Network with other organizations with similar interests and needs
- Selectively cultivate research ideas and young talent in the field
- Pool resources to tackle hard problems that one organization may not be able to solve alone
- Shape the development of the nation's Digital Twin research infrastructure

For more information please email Dr. Wendy Guan ([wguan <at> cga.harvard.edu](mailto:wguan@cga.harvard.edu)).

CGA Annual Conference May 16-17: Evaluating the Science of Geospatial AI

AI amplifies the role of predictability in science just as it alters longstanding notions of explanation, replicability, reproducibility, falsification, understanding, analysis, and interpretation. How do we account for these shifts in the wake of AI? Join us in answering these and other questions, May 16-17 in Cambridge. [Click here for all conference details](#). Registered participants are welcome to submit a poster or story map to be included in the poster exhibit. Please send submissions to Jeff Blossom ([jblossom <at> cga.harvard.edu](mailto:jblossom@cga.harvard.edu)) for review and posting before May 1st, 2024.

Call for REU Applications

The NSF Spatiotemporal Innovation Center (STC) is seeking undergraduate research assistants to serve as NSF REU Fellows from May to August 2024. This hands-on opportunity, based at either George Mason University or Harvard University, offers experience in spatiotemporal research alongside graduate students and faculty.

REU fellows will work in a team with graduate students, postdocs, research staff, and faculty at one of the center sites, conducting research related to spatiotemporal issues. They will also attend a professional conference to present their research results.

Applicants should be undergraduate students currently enrolled and U.S. citizens or permanent residents. To apply, submit your application to the STC via [this form](#). The review of applications will start in March of 2024, and end until the positions are filled. [Details.](#)

CGA Develops Geospatial Infrastructure on New England Research Cloud

Funded by the Office of Vice Provost for Research, the goal of this project is to empower researchers by enabling scaled up analytic capabilities for geospatial big data, and also support CGA service projects which require these capabilities. [Details.](#)

Climate Resilience Resources for Cultural Heritage Toolkit Released March 13

This [NEH](#)-funded climate-hazard assessment and planning tool was released to the public March 13. The tool is designed to provide organizations tasked with managing cultural heritage resources, with a way to identify the most important hazards for a site, to support resiliency planning. The tool may be accessed [here](#).

Harvard GIS Software Possible Downtime

These license servers are scheduled to undergo maintenance in late April. License services may (or may not) become unstable during this time. This may impact the following products:

1. ArcGIS Desktop (ArcMap) concurrent use (single use license will not be affected)
2. ArcGIS Pro concurrent use (AGOL named user license and single use license will not be affected)
3. City Engine concurrent use (AGOL named user license and single use license will not be affected)
4. ENVI + IDL
5. ERDAS Imagine
6. FME Desktop
7. TerrSet
8. Global Mapper
9. Geographic Calculator
10. eCognition Developer

If you have work which requires items 4-10, we recommend you schedule that work to avoid the second half of April. If you have questions or concerns, please contact the CGA via <https://gis.harvard.edu/contactus> before the end of March.

In addition, we **strongly** recommend users now discontinue use of ArcMap (it is being retired

by Esri), and use AGOL named user licenses for ArcGIS Pro and City Engine (login to <https://harvard-cga.maps.arcgis.com> with your HarvardKey).

Original WorldMap URL to be Retired

If you have URLs which refer to “worldmap.harvard.edu” please change them to “worldmap.maps.arcgis.com” before December 1, 2024. After that date redirection will be retired.

ANNUAL STUDENT AWARDS

Submit a Map to Fisher Prize for GIS Excellence Competition

This award is given to one Harvard graduate and one Harvard undergraduate student. Group projects are allowed - submit as one entry. The Prize is cash awards of \$500 each given to the top undergraduate and graduate entries. The deadline for submissions is Sunday May 12, 2024. [Read more and register for the award competition.](#) [View previous award winners.](#)

UPCOMING WORKSHOPS

Symposium on Spatiotemporal Data Science: GeoAI for Social Sciences – July 23-24, Arlington, VA

The symposium aims to promote replicable and expandable spatiotemporal data science with new methodologies. The symposium will discuss open data sources, advanced methodologies, and cutting-edge technology, with a focus on GeoAI for the social sciences. [Registration and details.](#)

Summer Workshop on Spatiotemporal Innovation – July 16-19.

Sponsored by the Spatial Data Lab, this hands-on workshop is to promote replicable and expandable spatiotemporal science. Deadline for registration April 1. [Details and Registration.](#)

Cartography Workshop - April 19th

This full-day workshop focuses on the visual representation of geographic information. [Details.](#)

Workflow-Based GeoAI Analysis with No/Low-Code Visual Programming – ODSC Boston – April 23-25

This training session, will explore the utilization of low-code/no-code visual programming platforms to effectively integrate geospatial analysis with a variety of AI algorithms, including machine learning, deep learning, and Explainable AI. [Details and Registration.](#)

GenAI Learnathon: Enrich Data Analytics with GenAI – April 26

This hands-on workshop will explore the low-code [KNIME Analytics Platform](#), techniques for fraud detection, and the use of GenAI via the [KNIME AI Extension \(Labs\)](#). [Details and registration.](#)

RECENT PUBLICATIONS by CGA STAFF and AFFILIATES

[Prevalence of Children Aged 6 to 23 Months Who Did Not Consume Animal Milk, Formula, or Solid or Semisolid Food During the Last 24 Hours Across Low- and Middle-Income Countries](#) – Rockli Kim, S.V. Subramanian, et al.

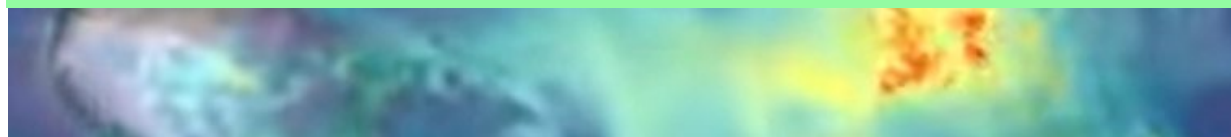
[The impact of early-life access to oral polio vaccines on disability: evidence from India](#) – S.V. Subramanian et al.

[An Ensemble Framework for Explainable Geospatial Machine Learning Models](#) [Code](#) - Lingbo Liu

[Mapping the landscape and roadmap of geospatial artificial intelligence \(GeoAI\) in quantitative human geography: An extensive systematic review](#) – Lingbo Liu, Xiaokang Fu, Tia Tian, et al.

[Digital Networks of Conspiracy - approach to visualizing human networks](#) - StoryMap developed by the Geo-social Analytics Lab and iDEAS:lab, University of Salzburg.

HARVARD GEOSPATIAL NEWS



Climateverse for South Asia

Developed by CrisisReady and the Lakshmi Mittal Family South Asia Institute, Climateverse aims to address challenges in data procurement, processing, and analysis, and aims to build a regional data ecosystem essential for evidence-based policy-making. By incorporating diverse data types, this ecosystem provides an all-encompassing view of regional issues, enhancing the decision-making process. The project draws on the extensive research conducted by the CrisisReady team at Harvard University. [Details.](#)

Workforce Almanac Data Portal: Mapping the workforce development sector

This first iteration of the Workforce Almanac developed at the Harvard Kennedy School Project on Workforce, has mapped 17,000 providers of workforce training, defined as short-term (lasting less than two years), post-high school training opportunities in which learners gain work-relevant skills to help them find a job. Use the portal to see how workforce training providers are distributed geographically across the US, and view their names, addresses, and types. [Data Portal.](#) [Project Details.](#)

MethaneSAT, A Cutting-Edge Methane Monitor Launched

A collaboration between the Harvard John A. Paulson School of Engineering and Applied Sciences, Harvard-Smithsonian Center for Astrophysics, the Environmental Defense Fund and other partners, MethaneSAT will be capable of spotting methane emissions from space, producing data from high-resolution images that can cover hundreds of square kilometers at a time. [Details.](#)

Methane Sensors are Finding Dangerous Pollutants in Poor Neighborhoods

A reduction in methane emissions is not only vital to preventing the worst effects of climate change. In many communities around the world, this greenhouse gas signals the presence of other toxins far more dangerous to residents' health.

[Details.](#)

Global Flourishing Study Releases Wave One Open Research Data

The Global Flourishing Study(GFS), a partnership among researchers at Baylor University and Harvard University, Gallup, and the Center for Open Science (COS), is a \$43.4 million, five-year study of more than 200,000 individuals in over 20 countries. The GFS measures global human flourishing in six areas: happiness and life satisfaction, mental and physical health, meaning and purpose, character and virtue, close social relationships, material and financial stability.

[Details.](#)

Generative AI Resources at Harvard

Generative AI (GenAI) technologies offer new opportunities to advance research and scholarship. This resource page aims to provide Harvard researchers and scholars with basic guidance, information on available resources, and contacts.

[Details.](#)

HDSI/Salata Institute Climate Science Seminar

Nadja Popovich is a graphics editor at The New York Times, where she covers climate science, energy policy and the real-world impacts of our warming world. She is particularly interested in using interactivity and personalization to help readers more viscerally relate to the effects of climate change through data. March 21st 3-4pm. [Register](#)

CAFÉ Climate & Health Data Drive

Monday, March 25th 2-5pm EST. During this virtual, drop-in event, members of the CAFÉ Data Management team will be available to provide guidance for the process of uploading data to the [CAFÉ Dataverse](#). 10 attendees will be selected at random for the opportunity to have a dataset featured through our newsletter, social media, and website. [Register.](#)

Visualizing Boston's Urban Spaces Using Open Data

For eight weeks, 22 students from across Harvard University and the MADE program will re-envision how urban data can provide people with safe, helpful, and inspiring experiences as they move through, work in, and reside in the city of Boston. This program marks the first time a Berkman Klein Center research sprint has focused on concerns local to the Boston

community, and the issues at the heart of the program have implications for urban residents worldwide. [Details](#).

CONFERENCES, EVENTS, CALLS, JOBS

2024 CONFERENCES/EVENTS

- [International Association of Chinese Professionals in Geographic Information Science \(CPGIS\) Educational Webinar Series](#) - GIS & Energy/Environment. The weekly series will be held from March 15 to May 2.
- [9th ISDE International Lectures. Theme: Scientific Model Sharing for the Digital Earth](#) – March 27th.
- [Climate Change and Human Migration: An Earth Systems Science Perspective](#) – Workshop - March 18th-19th, Washington D.C.
- [Geospatial Water Technology Conference](#) - March 25-27, Orlando, Florida.
- [OGC Geo-BIM Summit](#) – March 27th, The Netherlands
- [BARI Conference 2024](#) - Boston Area Research Initiative Insight-to-Impact Summit, April 12th, Cambridge, Massachusetts.
- [AAG 2024](#) – American Association of Geographers – April 16-20, Honolulu, Hawaii.
- [13th International Conference on Climate Informatics](#), London, UK, April 22–24.
- [ODSC 2024](#) – Open Data Science Conference – April 23-25, Boston, Massachusetts.
- [IGRSM 2024](#) - International Conference and Exhibition on Geospatial & Remote Sensing. April 29-30, Kuala Lumpur, Malaysia.
- [GISTAM 2024](#) - International Conference on Geographical Information Systems Theory, Applications and Management. May 2-4. Angers, France.
- [GEOINT 2024](#) - United States Geospatial Intelligence Foundation Conference – May 5-8, Kissimmee, Florida.
- [Geospatial World Forum 2024](#) - May 13–16, Rotterdam, Netherlands.
- [Big Data for Environmental Resilience and Adaptation](#). May 14th-16th. Boulder, Colorado.
- [State of the Map US 2024](#) – Open Street Map Conference – June 6-8, Salt Lake City, Utah.
- [IEEE/CVF Conference on Computer Vision and Pattern Recognition 2024](#) - June 17-21, Seattle, Washington.
- [IGARSS 2024](#) - International Geoscience and Remote Sensing Symposium – July 7-12, Athens, Greece.
- [Esri User Conference](#) - July 15-19, San Diego, California.

- [Geoinformatics 2024](#) - 31st International Conference on Geoinformatics (the official conference of the International Association of Chinese Professionals in Geographic Information Sciences) – Aug 14-16, Toronto, Canada.
- [State of the Map 2024](#) - Open Street Map Conference – September 6-8, Nairobi, Kenya.
- [URISA 2024](#) - Urban and Regional Information Systems Association – October 7-10, Portland, Maine.
- [FOSS4G 2024 International](#) – Free and Open Source for GIS Conference – December 1-8, Belem, Brazil.

CALLS FOR JOBS/INTERNSHIPS/HACKATHONS

[Mighty Earth Geospatial Data Internship](#) - Call for Internship Applications. Deadline March 22.

[Hyperspectral and Thermal Remote Sensing for Environmental Justice](#) - Call for students to join NASA and ESIL this summer for HYR-SENSE. Apply [here](#) by March 24th. Boulder, Colorado.

[The Cartography and Geographic Information Society \(CaGIS\)](#) - Call for scholarship applications. Deadline March 31st.

NOAA Satellite + AI/Machine Learning Hackathon – NOAA CoastWatch is seeking interested students to join their team for an upcoming hackathon organized by NVIDIA, OpenACC, and Princeton University. June 4-14. For details contact Drs. Rebecca Trinh (rebecca.trinh <at> noaa.gov), Guangming Zheng (guangming.zheng <at> noaa.gov), or (Megan Coffey; megan.coffey <at> noaa.gov). Participation can be virtual.

CALLS FOR PAPERS

[Exploring Recent trends and research trajectories in Digital Twins technology for monitoring of Sustainable Development Goals](#) - [Author Instructions](#) – Deadline September 30th.

CALL FOR SURVEYS

Esri Innovation Program (EIP) Survey

The goal of [this survey](#) is to assess the state of Modern GIS at your institution, gauge how well the fundamentals are covered in GIS courses, and to let us know what resources we can help with. The Survey is anonymous, and many people from the same institution can fill it out. Our goal is to make the results visible to everyone with a final report (public Dashboard), without specific names/institutions.

NEWS ON GIS RESEARCH & SERVICES



[Is Antarctic Sea Ice Experiencing a State Change?](#) (PBS Terra video)

[Cloud-Native Geo Pioneers in Earth Science: Honoring the 2024 Leading Women](#) (Radiant Earth)

[In Gaza, Satellites Show 157,200 Damaged or Destroyed Buildings](#) (Undark.org)

[Clay is like ChatGPT for Earth](#) (Madewithclay.org)

[A generalist AI agent for 3D virtual environments](#) (Google Deepmind)

[Meet 'Smaug-72B': The new king of open-source AI](#) (Venturebeat)

[Geospatial Frontiers: Navigating the Future with Generative AI and Foundational Models](#) (Webinar video - UN AI for Good)

[Mapping the Future of Spatial Computing](#) (Esri Blog)

[Argonne National Labs, FEMA, and AT&T team up to create ClimRR, downscaled projections for the United States.](#) (Argonne National Labs)

[Researchers use AI to predict how agricultural land suitability may change by 2050](#) (PHYS.ORG)

[Spy satellite images offer insights into historical ecosystem changes](#) (PHYS.ORG)

[What did the earth look like 750 million years ago?](#) (PALEOMAP project)

[Open Source in Short: Retracing a UK Street 100 Years On](#) (Bellingcat)

[Segment Anything Model \(SAM\): a new AI model from Meta AI that can "cut out" any object, in any image, with a single click](#) (Meta AI)

[UV-SAM: Adapting Segment Anything Model for Urban Village Identification](#) [Code](#) (arXiv)

[Segment Anything in ArcGIS](#) (ESRI)

[MIT researchers remotely map crops, field by field](#) (MIT News)

[Massachusetts Bolsters Resilience with Accessible Climate Data and Tools](#) (Esri News)

[Artificial Intelligence and the Smart City](#) (Ethical Geo Blog)

[Google Green Light – Using AI to Reduce Traffic Emissions](#) (Google Research)

[Climate Pulse, C3S's new tool to monitor the state of our climate at a glance](#) (European Commission)

[Crowdsourcing Geospatial Data for Earth and Human Observations: A Review](#) (Journal of

Remote Sensing)

[Mapping groundwater potential zone in the subarnarekha basin, India, using a novel hybrid multi-criteria approach in Google earth Engine](#) (Science Direct)

[Estimating physical climate heat risk with NASA Global Daily Downscaled Projections on Amazon Sustainability Data Initiative](#) (AWS Blog)

[New Climate Change Initiative: High Resolution Land Cover Map from the European Space Agency](#) (Webinar video – UN AI for Good)

[One for all: Toward unified Foundation Models for Earth vision](#) (arXiv)

[Scaling transformer neural networks for skillful and reliable medium-range weather forecasting](#) (arXiv)

[Voyager: exploratory single-cell genomics data analysis with geospatial statistics](#) (bioRxiv.org)

[SemCity: Semantic Scene Generation with Triplane Diffusion](#) (IEEE / CVF Computer Vision and Pattern Recognition Conference)

[Cities Save Lives by Mapping Communities Most at Risk from Extreme Heat](#) (Esri)

[The Geography of Buildings - A Map of Every Building in America](#) (NYT)

[Open-Source Tools and Cloud-Native Geo Innovation](#) (Cloud Native Geospatial Foundation)

[CORDEX: Coordinated Regional Climate Downscaling Experiment](#) (World Climate Research Program)

[GeoAI Solutions for Sustainable Development: The Handbook of Geospatial Artificial Intelligence](#) (Webinar video - UN AI for Good)

[2024 Report from the Humanitarian Data Exchange](#) (HDX)

[USAID Geospatial Strategy 2024-2028](#) (USAID)

[Latest Improvements to ArcGIS Online](#) (Esri)

[Fathom flood data access for 16 climate vulnerable countries](#) (Fathom Global)

[New First Street Air Quality Model - Report](#) (First Street Foundation)

[Videos from 2023 the FOSS4G conference in Kosovo](#) are now available (FOSS4G)

[OGC Training Data Markup Language for Artificial Intelligence](#) (OGC)

[Irish Diaspora of the United States](#) (American Geographical Society)

[Let Geography Die: The Rise, Fall, and “Unfinished Business” of Geography at Harvard](#) (Taylor and Francis)

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