PHEER RAPID RESEARCH AWARD

Utilizing Hyperspectral Data to Assess Health Exposures:
A Use Case on the Los Angeles Wildfires (2025)

Background

The January 2025 Southern California wildfires burned from January 7, 2025 to January 31, 2025, impacting people in San Diego and Los Angeles Counties. Two specific fires, Palisades and Eaton, killed at least 28 people and destroyed more than 16,000 structures.[1] More than 150,000 individuals evacuated after the first week alone, and millions of individuals lost power due to fire damage and public safety power shutoffs.[2] The Palisades and Eaton fires alone caused the most material damage by an extreme weather event in US history, suggesting that the human health impacts will be significant and persistent.

In response to the 2025 Southern California wildfires, the Public Health Extreme Events Research network (PHEER) mobilized to serve as a coordinating platform for the public health disaster research community of practice. The PHEER network had two main objectives:

1. Develop an environmental exposure web map that is freely available to the research, practice, and policy communities. The map is designed to illustrate the location and type of environmental assessments conducted by public and academic research teams and to curate the data collected by researchers where possible.
2. Partner with the **NHERI Natural Hazards Reconnaissance (RAPID) Facility to collect perishable data on the wildfires using a hyperspectral sensor.** These data were collected March 2025 by a drone-mounted camera flying at approximately 150 feet above 24 sampled census blocks, representing about 1,000 households as well as institutional settings and public spaces. RAPID collected data using the Headwall VNIR-SWIR sensor, and the spatial resolution of each pixel is 2-3 centimeters.

PHEER will fund one Rapid Research Grant, totaling $5,000 in costs, to conduct analyses of environmental exposures using the hyperspectral data. The successful awardee will be invited to present their work to PHEER members and other teams researching environmental exposures that resulted from the wildfires. Funding for these rapid grants has been made available to PHEER by the CONVERGE network. This funding will be made directly to the investigator and will not be processed through an institutional grants office. As such, there will be no facilities and administrative costs associated with the grant.

Research Goals

PHEER is seeking a researcher skilled in hyperspectral and remote sensing data analysis, and who is interested in promoting the use of such novel environmental assessment data for health impact studies. The selected researcher will be tasked with completing the following objectives:

1. Process the hyperspectral dataset to classify pixels or clusters with the following elements or chemicals, at a minimum:
    a. Arsenic, cadmium, lead, PAHs, PFAs, PCBs, Phthalates, Pesticides, Brominated flame retardants, OPEs, VOCs, Dioxins, Microplastics*;

   i. *This list is subject to change
2. Create a tabular and spatial dataset that includes an average of each pollutant by census block;
3. Validate some of the modeled spectral data using directly collected samples. PHEER will facilitate access to ground-sampled data collected by other research teams;
4. Produce a white paper that describes the datasets and creation process;
5. Produce a journal article based on one or more of the following research questions:
   a. Are certain toxins and contaminants more prevalent the closer they are to significantly burned areas?
   b. Is there a relationship between population social vulnerability and the presence of toxins?
   c. Are specific toxins and contaminants the residual products of burned electric vehicles (EVs)?
   d. What is the prevalence of toxins and contaminants at schools/playgrounds/green spaces?

Process

1. PHEER will disseminate this request to potentially interested investigators.
2. Investigators will submit an application following the protocol below by June 25th to pheernetwork@gmail.com.
3. The award will be made directly to the investigator, and will not go through their academic institutions. The maximum award for the grant is $5,000. New investigators and post-docs are encouraged to apply.
4. The PHEER grantmaking will be a partnership of the PHEER network, the NHERI RAPID Facility, and the CONVERGE facility at the Natural Hazards Center at the University of Colorado, Boulder.

Principles of the PHEER Rapid Research Grants

1. To the greatest extent possible, data analyses and reports supported by PHEER should serve a “dual use,” in that they are responsive to the needs and interests of practice and policy making communities as well as advancing the field of public health disaster research.
2. Barring any data limitations regarding privacy or proprietary use, all data assembled for these projects will be made available for the public health disaster research community through DesignSafe (https://www.designsafe-ci.org/) at the conclusion of the project. DesignSafe is a federally-sponsored data depository that has been used extensively by other disaster and scientific research communities.
3. Since one of PHEER’s guiding principles is to advance public health disaster science, the data and findings from these Rapid Research Grants should be regarded as building blocks for later research efforts. The PHEER leadership and Steering Committee is eager to have the scientific community of practice benefit widely from these research efforts, as methodological innovations, introductions to new data possibilities, the cultivation of new knowledge, and as the empirical basis for assessing the effectiveness of public health efforts.

4. Unfunded applicants and other PHEER members will have equal access to the public data sets made available for the funded research projects, and may be invited to present their findings to practice, policy, or research communities as well.
5. Among PHEER's goals are to strengthen the application of research data to the immediate needs of practice, policy and funding communities, and to expand the depth and breadth of public health disaster science. As such, reports back to all of these stakeholder communities are integral to the Rapid Research projects.
6. These activities are intended to deepen collaboration among disaster scientists and to stimulate the collective learning within the field. These should also be regarded as important opportunities for new scholars and students to participate in such Rapid Research efforts.

Funding Timeline

- June 4, 2025: Release of the Rapid Research Grants Request for Proposals
- June 25, 2025: Rapid Research grant applications due
- July 9, 2025: Awardees notified
- October 3, 2025: Deliverables due (final due date to be determined in collaboration with PHEER)

For questions or further information, contact: pheernetwork@gmail.com

PHEER Rapid Research Grants: Proposal Submission Guidelines

Program Eligibility

The lead researcher must be from an academic institution based in a U.S. state, territory, or tribal nation. Other research co-leads, research assistants, or local collaborators do not have to be affiliated with a university or located in a U.S. state, territory, or tribal nation—they cannot, however, serve as the project research lead and primary award recipient.

Proposal Submission

Please follow all of the instructions below before submitting. The deadline for submissions is June 25, 2025.

Please include the following information in your submission:

- Investigator Names and Affiliations
- Investigator CVs
    - Required for all proposals. Applicants may use NSF or NIH-style biosketches or a standard Curriculum Vita (CV); a biosketch or CV is required for each funded investigator on the team.
- Letter of Interest (2 pages max) addressing the following questions:

    - What experience do you have with hyperspectral data? What is your level of expertise with applications and software programs that manage and analyze hyperspectral datasets of this magnitude?
    - What is your experience with environmental assessments, exposure research, or health impact studies?
- Supporting Documents for Students
    - Required only for those proposals whose lead investigators are students.
    - Master's and PhD students are welcome to apply for this special call for funding. If a student is listed as the lead investigator they will need to submit:
        - A brief one-paragraph statement of support from an academic advisor, indicating that they approve of the project and support the student's application for funding.
- At least one sample of your work that reflects both data analysis and data visualization techniques you have employed regarding hyperspectral data
- References Optional. The list of references should be complete and consistently formatted in APA 7th edition style. There is no page limit for the reference list.
- Budget and Budget Justification
    - Required for all proposals. The budget and budget justification should be no longer than 500 words in length and provide a breakdown of anticipated expenditures.
    - Funding should be used for expenses associated with the proposed project. Funds may be dedicated to fieldwork expenses, the purchase of research equipment or datasets; payments to data collectors, methodologists, statisticians, translators, other collaborators, or team members; and/or dissemination activities including for conference travel, registration expenses, or article publication fees. In terms of budget needs for field equipment, please consider exploring options available through NSF-supported RAPID facility before making requests.
    - Please carefully read the Funding Agreement, as it provides details for how many investigators can be included in the budget, the tax ramifications associated with receiving award money, and how and when the award funds will be issued.

Funding Agreement

Award recipients must carefully read and agree to the following funding criteria:

- The lead investigator, as designated in the proposal, must be from an academic institution based in a U.S. state or territory or a U.S tribal nation. Other co-leads, project assistants, or local collaborators do not have to be affiliated with a university or located in a U.S. state, tribal region, or territory—these individuals cannot, however, serve as the project lead and primary award recipient.
- Award payments can be distributed across team members as designated by the lead investigator (for example, 50% of the award sent to the lead, 25% to the co-lead, and 25% to a local collaborator). No more than three recipients can be designated for any one award.

- Payments will be sent directly to the award recipients as designated in the budget to cover project-related expenses or time dedicated to data collection, analysis efforts, or the dissemination of results.
- This award funding can NOT be sent directly to a university or other institutions, and there are no overhead or indirect costs associated with these funds.
- Expenses may need to be paid out of pocket if fieldwork begins prior to receiving payment. Due dates will not be extended due to delays in payment processing.
- Individual recipients of these awards will be solely responsible for all tax reporting and ramifications. Neither the Natural Hazards Center nor the directors of PHEER can provide tax advice. Awardees are allowed to include estimated taxes in their budget justification.
- Per tax compliance requirements, the University of Colorado Boulder will report payments to taxing jurisdictions when required. Individual payees will be issued any applicable tax forms directly from the University. Payees are responsible for any and all tax consequences related to payments they have received.
- If you or one of your team members are a University of Colorado employee, please reach out to Candace Evans at candace.evans@colorado.edu prior to submitting a proposal, as the funding distribution has different requirements, including additional fringe and payroll tax considerations.
- For award recipients who are neither U.S. citizens nor permanent residents, the payment process may take longer and will require additional paperwork. All payments made to visa holders are submitted through the International Tax Office at the University of Colorado Boulder.

Award funding will be processed after proposals are accepted and awards are announced. To receive the award funding, the designated recipients will need to return:

- One copy of a completed and signed funding agreement, to be issued upon approval to designated recipients of the award funds. The information for payees will be filled out on the form.
- A W-9 or W-8BEN for all payment recipients (W-9 is for U.S. citizens or permanent residents; W-8BEN is for non-U.S. persons).
- A letter of approval or exemption from a university based Institutional Review Board, if applicable.

Once the award has been activated and the award agreement, tax forms, and IRB approval have been submitted to PHEER and to the Natural Hazards Center, researchers may begin fieldwork.

Formal Acknowledgments

Prior to submitting a proposal, applicants will be required to affirm the following:

I have read and understand the PHEER Rapid Research Proposal Guidelines and any additional special call criteria. I understand that all funding will be paid directly to award recipients and not their universities, and that the award recipients are responsible for all tax

ramifications. I agree to fulfill all requirements outlined in the Proposal Guidelines if chosen for this research award.

Send your final application to pheernetwork@gmail.com by June 25, 2025.

Assistance

We are here to support you and your team in developing and submitting your proposal. Please send any questions by email to pheernetwork@gmail.com

References

1. Phillips S. The Palisades and Eaton Fires: Neighborhood Data and Potential Housing Market Effects. Published online February 12, 2025. Accessed May 8, 2025. https://escholarship.org/uc/item/1kg4v5v1

2. Benmarhnia T, Errett NA, Casey JA. Beneath the smoke: Understanding the public health impacts of the Los Angeles urban wildfires. *Environ Epidemiol*. 2025;9(3):e388.