



DESIGNSAFE-CI

A NATURAL HAZARDS
ENGINEERING COMMUNITY



Trust, Accountability, and Community: the DesignSafe Data Depot Repository Trajectory

Maria Esteva

Workshop on Open Data and Reuse in Social Science
Weather Research

UC Boulder April 10-12 2023



DESIGNSAFE-CI 
NHERI: NATURAL HAZARDS ENGINEERING RESEARCH INFRASTRUCTURE



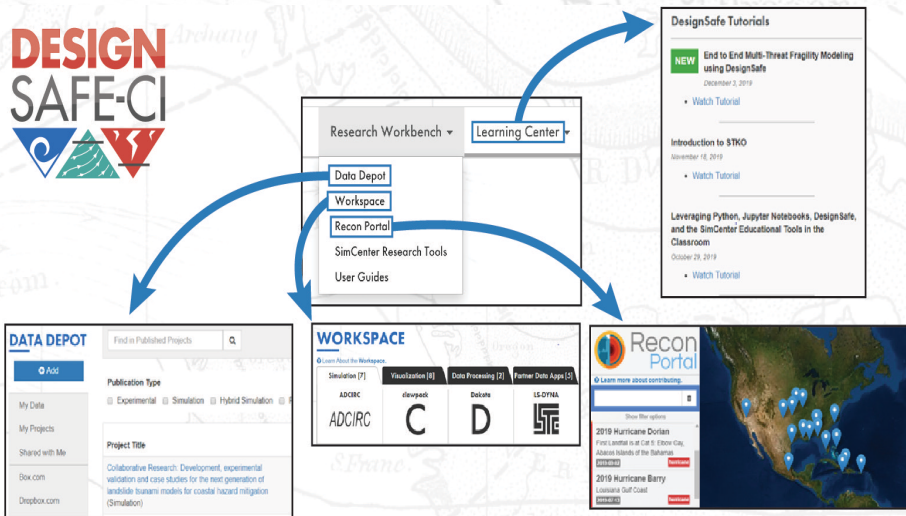
UCLA

TACC

RICE

Florida Tech

An End to End Natural Hazards Engineering and Social Science Research Platform



- Data Depot Repository:
 - Engineering datasets since 2016
 - Social Science and Interdisciplinary datasets since 2020.
 - 1128 published datasets
 - 96 Terabytes of data.

Data, Tools, HPC, Training, Information, Assistance



Trust: The Data Depot is a Certified Trusted Data Repository



- Through 2026
- Complies with standards in:
 - Organizational Infrastructure
 - Digital Object Management
 - FAIR data
 - Technology



A Natural Hazards Repository

RAPID: STRUCTURAL WIND ENGINEERING RECONNAISSANCE OF HURRICANE HARVEY
 A Supplement to Collaborative Research: Geotechnical Extreme Events Reconnaissance (GEER) Association: Turning Disaster into Knowledge
 DATA REPORT



(right to left) Kennedy, Kijewski-Correa, Tallantidis, Zheng and Sun at Bayshore, TX (left to right) Wood, Peterman, Liao at Aransas County Airport



Wojkiewski, Hu, Leite, Ji, Xian, Zhou, Gong, Feng, Yu at Holiday Beach, TX Liang, Dao, Allen, Moser, Cai, Womble at Rockport, TX

Prepared by Tracy Kijewski-Correa (Lead Investigator) in collaboration with Team Leads: Jie Gong, Andrew Kennedy, J. Am Womble and Team Members Steve Cai, John Clancy, Thang Dao, Fernanda Leite, Daan Liang, Kara Peterman, Chao Sun, Aleksandros Tallantidis and Richard L. Wood

Funded through a subcontract to the University of Notre Dame from the University of California Berkeley as part of an NSF supplement to [Geotechnical Extreme Events Reconnaissance \(GEER\)](#) (PI: Jonathan Bray) under award CMMI 12-56416. The team gratefully acknowledges Richard Fragaszy and Joy Pauschke for their support.

This report provides a detailed summary of the data collected and ultimately curated in the NHERI DesignSafe platform.

File Preview: 19-0140 Flyer_Spanish_MV.docx

DOCUMENTANDO LA HISTORIA INDOCUENTADA: PARTICIPE EN UNA INVESTIGACION

Eligibilidad:

- ¿Usted es un activo organizacional en Houston que asiste a la población de inmigrantes Mexicanos con su recuperación de viviendas después de desastres?
- ¿A Investigado en esta organización por lo menos de tres meses?

Investigadores de la Universidad de Colorado, Boulder están haciendo una investigación para aprender más sobre la recuperación de viviendas después del Huracán Harvey de los Inmigrantes Mexicanos.

Participación incluye una entrevista confidencial de una hora sobre los factores

File Preview: Business-Disruption-and-Recover-Post-Hurricane-Harvey-in-Southeast-Texas.pdf

File Metadata

Download

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Business Disruption and Recover Post Hurricane Harvey in Southeast Texas (SETX)

PREPARED BY: Michael J. Ceresa, Ph.D., Director, Natural Hazard Reduction Texas A&M University, May 11, 2023

RESEARCH REPORT: Natural Hazard Reduction Texas A&M University, May 11, 2023

Close



Different engineering and social science data types published about Hurricane Harvey in the DDR 2018 - 2023. (3,4,6,7)

- Community input.
- Interdisciplinary data model:
 - Interactive curation.
 - Data Documentation Initiative metadata.
 - Natural Hazard events and types and data types.
 - Representation of large and ongoing research projects.
 - Social Science and Engineering datasets that complement each other.
 - Extreme weather, fire, wind, earthquakes, health, evacuation, economics, food, COVID, disaster announcements, resilience, response, debris, etc.

DESIGNSAFE

Workspace Learning Center NHERI Facilities NHERI Community News

Other: Earthquake Extreme Temperatures Fire Hurricane/Tropical Storm Landslide Tornado Tsunami Thunderstorm Storm Surge Pandemic Wind

Natural Hazard Type: All Types

Field Research: All Types

Engineering: All Types

Field Experiment: All Types

Geosciences: All Types

Interdisciplinary: All Types

Longitudinal Study: All Types

Reconnaissance: All Types

Social Sciences: All Types

Field Research: All Types

Field Research Type: All Types

Natural Hazard Year: All Types

Other: All Types

Hybrid Simulation: All Types

White Paper: Other

DATA DEPOSIT

My Data

My Projects

Shared with Me

Blueprint

Clipboard

Guides Drive

Published

Published FEES

Community Data

imp+

Investigating the behavior of nonconforming HC steel moment-resisting frames in east and south buildings Experiment

Community Disaster Preparedness to Earthquake (PDR) Research

Social Science Extreme Events Research (SEER) Network Data, Survey Instrument, and Archive Central Field Research

PAK, Lori

AKIRA MICHIGAL, MEXICO SEPTEMBER 18, 2022, MAY 16 EARTHQUAKE (Field Research)

Mirella, Eduardo

Coastal Hazards Planning in the Evolution of Coastal Subduction Zone Seismicity (Field Research)

Yohan

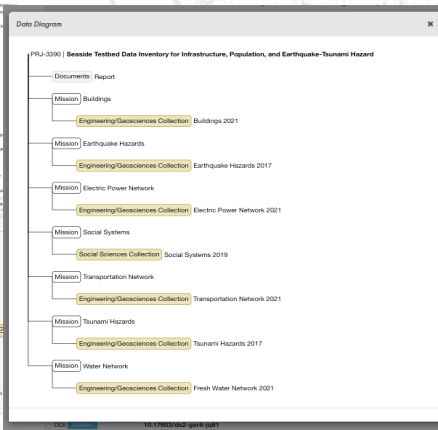


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 NHERI: NATURAL HAZARDS ENGINEERING RESEARCH INFRASTRUCTURE



Natural Hazards Data: Urgency and Sensitivity

The screenshot shows a search results page for 'Earthquake Hazards'. It includes a search bar, a list of results with columns for title, date, and location, and a detailed view of a specific record. The detailed view shows metadata such as author, date of mission, site location, and data release information.

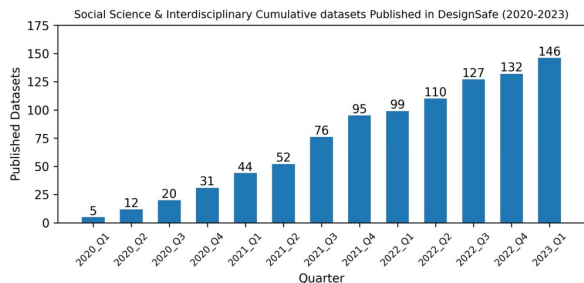


(1) Interdisciplinary Dataset showing engineering and social science collections.

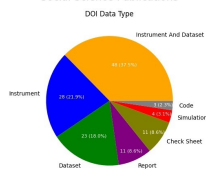
- Fast publication of post-event reports.
- Stand alone publication of reports, instruments, protocols and IRB documents.
- Subsequent publication of curated data.
- Policies, assistance, and infrastructure for protected data.



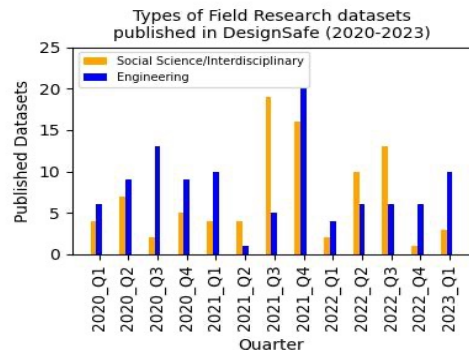
Accountability: Publications and Usage



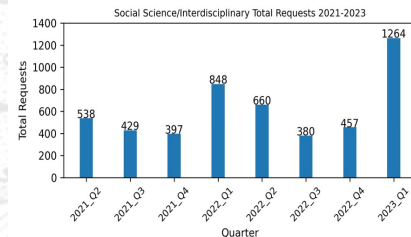
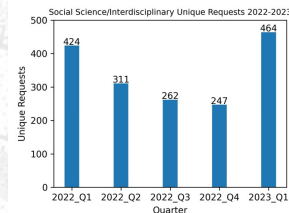
Social Science Publications



SS/I publications since 2020



A comparison between SS/I and only Engineering field research publications since 2020



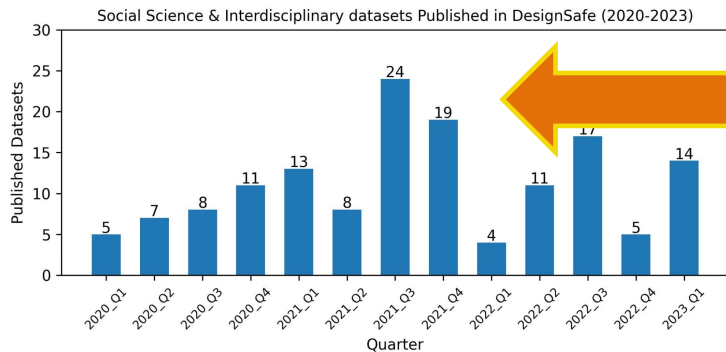
SS/I unique and total requests using Make your Data Count Standard since 2020 and 2021

Year	Platform citation	Original data citation	Reuse citation	Total
2021	2	7	1	10
2022	1	13	3	17
2023 3 months	-	9	2	11

SS/I citations since 2021



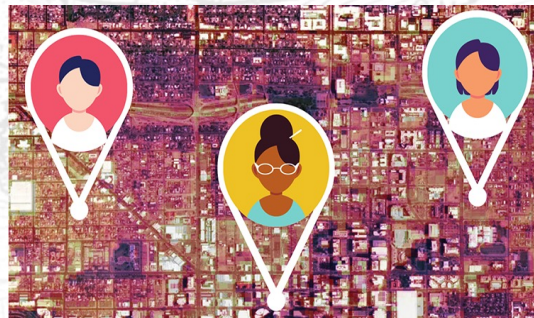
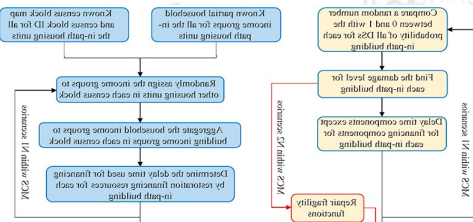
Building Community Through Data



- Data Ambassadors
- Publish your data events
- Office hours.
- Deadlines

• Annual Dataset Awards

• Data Reuse Stories



(6) Watkins, L. Wright, M. Chokalian, P. Kurtz, E. Hondula, D. (2021) "Hygrochron Temperature and Humidity Buffer and Time Activity Diary - Wave 1", in Personal Heat Exposure. DesignSafe-CI. <https://doi.org/10.17603/ds2-cs2-cs192> v1

(5) Wanting (Lisa) Wang and John W. van de Lindt, (2021) "Quantitative modeling of residential building disaster recovery and effects of pre- and post-event policies", International Journal of Disaster Risk Reduction, 59, 102259. <https://doi.org/10.1016/j.ijdrr.2021.102259>



Conclusions

DATA DEPOT

Find in this Dataset

PRJ-3175 | City of Phoenix Cool Pavement Evaluation (COPE)

PI [Middel, Ariane](#)

Co-PIs [Hondula, David](#)

Project Type [Field Research | Interdisciplinary](#)

Natural Hazard Type [Extreme Heat](#)

Event [Phoenix Cool Pavement Pilot Program | Phoenix | 07-15-2020 – 07-14-2021 | Lat 33.446376 Long -112.074036](#)

Awards [Intergovernmental Agreement With City Of Phoenix | 151121-0](#)
[CONVERGE Data Ambassadors Program Supported By NSF | 1841338](#)

Keywords [Urban Climate; Heat Mitigation; Pavement; Albedo; Urban Heat Island](#)

DOIs in Project [10.17603/ds2-71a1-n812](#)
[10.17603/ds2-41nj-z717](#)
[10.17603/ds2-3fp-4y17](#)

Version

Description | Many cities around the world, including the City of Phoenix, are experiencing elevated temperatures due to the built environment that is exacerbated by climate change. Paved surfaces with impervious materials, such as asphalt concrete (roads, sidewalks, parking lots, etc.), absorb and store heat during the day and release this heat overnight creating higher temperatures than surrounding rural areas. This phenomenon is known as the Urban Heat Island (UHI) effect. With paved surfaces comprising about 45% of the urban land area in Phoenix, they are often considered one of the... [Show More](#)

PRJ-3175v2

Mission | Phoenix Cool Pavement Heat Exposure Metrics

Author(s) [Schneider, Florian A.; Cordova Ortiz, Johnny; Middel, Ariane; Yanos, Jennifer; Sallor, David; Hondula, David; Wright, Mary; Koltun, Kamily; Medina, Jose; Campbell, Bill; Epel, Emr; Rice, Brendan; Garcia, Ruth](#)

Date of Mission [08-18-2020 – 09-20-2020](#)

Site Location [Phoenix, AZ | Lat 33.446376 Long -112.074036](#)

Date of Publication [02-02-2023](#)

DOI [10.17603/ds2-71a1-n812](#)

License(s)

Data Reuse

This mission includes datasets of heat exposure metric fieldwork days as part of the City of Phoenix Cool Pavement Evaluation project in 2020-2021 to evaluate the different heat metrics (air, surface, and mean radiant temperature) of a reflective pavement coating that was applied to the streets of eight residential neighborhoods. Two mobile measurement types were used to gather the data. A mobile biomeometeorological cart, MaRTy, which measures air, surface, and mean radiant temperature as well as relative humidity, wind speed, and the geolocation. The MaRTy cart can measure at specific locations and move between locations within a given time. Additionally, a vehicle was equipped with I-type thermocouples and an infrared radiometer to measure 2m air temperature and the surface temperature of the road within the whole neighborhood measuring both reflective pavement and regular asphalt concrete roads.

[Engineering/Geosciences Collection | City of Phoenix Cool Pavement Evaluation Heat Exposure Metrics](#)

Mission | Phoenix Cool Pavement Surface Reflectivity

Mission | Phoenix Cool Pavement Resident Survey

- Improve quality of data publications.
- Incentivize data publication.
- Deconstruct concerns about publishing data.
- Incentivize data reuse.
- Train on data citation.
- 3 • More sophisticated stats on data reuse.
- Better automated ways of tracking citations.
- Learn about weather-related datasets.
- Challenge of sustaining data publication infrastructure.



Referenced Datasets

1. Cox, D., A. Barbosa, M. Alam, M. Amini, S. Kameshwar, H. Park, D. Sanderson. (2022) "Report", in *Seaside Testbed Data Inventory for Infrastructure, Population, and Earthquake-Tsunami Hazard*. DesignSafe-CI. <https://doi.org/10.17603/ds2-sp99-xv89> v1
2. Roueche, D. B., Lombardo, F. T., Krupar III, Richard J., & Smith, D. J. (2018). *Collection of Perishable Data on Wind- and Surge-Induced Residential Building Damage During Hurricane Harvey (TX)* [Data set]. Designsafe-CI. <https://doi.org/10.17603/DS2DX22Rosenheim>, Nathanael (2021) "Detailed Household and Housing Unit Characteristics: Data and Replication Code." DesignSafe-CI. <https://doi.org/10.17603/ds2-iwf6-s535>.
3. Schneider, F., J. Cordova Ortiz, D. Hondula, M. Wright, K. Turner, J. Vanos, A. Middel, D. Sailor, K. Kaloush, J. Medina, B. Campbell, E. Epel, B. Rice, R. Garcia. (2021) "Phoenix Cool Pavement Surface Reflectivity", in *City of Phoenix Cool Pavement Evaluation (COPE)*. DesignSafe-CI. <https://doi.org/10.17603/ds2-a1nj-z717> v2
4. Villarreal, M. (2022) "Part 3: Planning Documents for Semi-Structured Interviews with Mexican Immigrant Women", in *Documenting the Undocumented: How Mexican Immigrant Women Navigate Long-Term Post-Disaster Housing Recovery and Cumulative Disaster Impacts*. DesignSafe-CI. <https://doi.org/10.17603/ds2-5bmi-y393> v1
5. Wanting (Lisa) Wang and John W. van de Lindt, (2021) "Quantitative modeling of residential building disaster recovery and effects of pre- and post-event policies", *International Journal of Disaster Risk Reduction*, 59, 102259, <https://doi.org/10.1016/j.ijdr.2021.102259>.
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7. Womble, A., R. Wood, R. DeOtte, P. Hughes, M. Mohammadi, Y. Liao. (2020) "Hurricane Harvey Damage to Steel and Masonry Structures", in *Damage to Steel and Masonry Structures Following 2017 Hurricane Harvey in Texas*. DesignSafe-CI. <https://doi.org/10.17603/ds2-mx4b-nq61> v1

