

## A Cyberinfrastructure for Natural **Hazards Research**



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# What is DesignSafe?

A web-based research platform that enables transformative research to protect human life and reduce damage during natural hazard events

## DesignSafe Vision

- A cyberinfrastructure (CI) that is an integral part of research discovery
  - Provide a platform for data sharing/publishing
  - Enable research workflows and access to high performance computing (HPC)
  - Deliver cloud-based tools that support the analysis, visualization, and integration of diverse data types
- Amplify and link the capabilities of natural hazards researchers in the US and abroad













### www.designsafe-ci.org

Research Workbench -

Learning Center -

NHERI Facilities -

NHERI Community -

Help +

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Data Depot Workspace

Recon Portal SimCenter Research Tools User Guides

ased research etwork that nal tools needed to nderstand critical research.



Learn how to Start Usina DesianSafe



Browse the Data Depot's **Published Data Sets** 



Join the conversation in DesignSafe's Slack Channel



Learn more about NHERI, the NCO & DesignSafe



MILE MAN

HERI Five-Year Science Plan 2nd Edition



The second edition of the Five-Year Science Plan, spearheaded by NSF's Natural Hazards Engineering Research Infrastructure (NHERI), calls researchers across disciplines to solve the pressing problems that natural hazards present to communities in the U.S. and around the world

FIND MORE NEWS IN THE NEWSROOM











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## DesignSafe Research Workbench

- **Data Depot Data Repository**
- Private space (My Data)
  - Collaboration space (My Projects) for data sharing and ultimate publishing
  - Publicly accessible space (Published) for curated data from My Projects
  - Publicly accessible space (Community Data) for uncurated data
  - Discovery Workspace
    - Apps/tools for computational simulation, data analysis, visualization, etc. with access to files in Data Depot
  - Reconnaissance Portal: discover published field data associated with natural hazard events





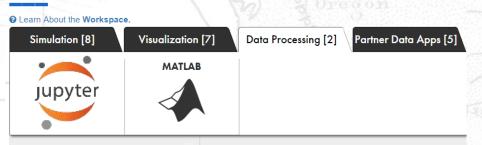




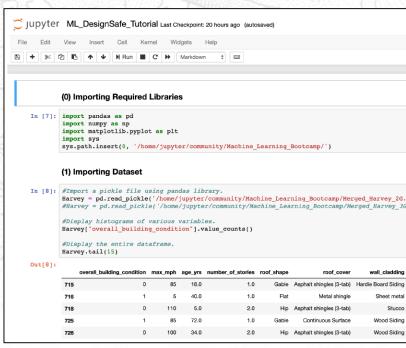


## **Discovery Workspace**

### **WORKSPACE**



- Cloud-based tools and HPC enabled simulation codes and resources
- JupyterHub for Python and R scripts
  - Can be used for data analysis/viewing, AI/ML models, access to HPC, etc.













### **Reconnaissance Portal**

Identifying Archived Datasets from Recon Events





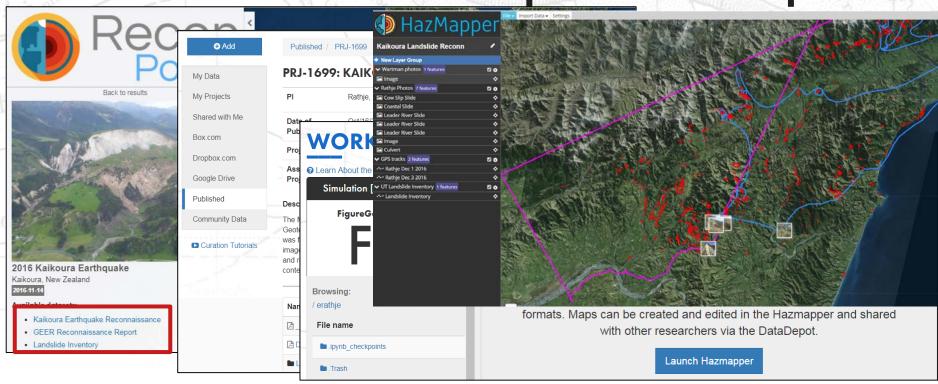








### Recon Portal → Data Depot → Workspace













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### DATA DEPOT



<b>⊕</b> Add
My Data
My Projects
Shared with Me
Box.com
Dropbox.com
Google Drive
Published

Project ID	Project Title	PI	Last Modified
PRJ-2440	Ridgecrest, CA earthquake, July 4, 2019	Scott Brandenberg	9/11/19 8:56 AM
PRJ-2531	TxDoT - Seismic Vulnerability and Post-Event Actions	Patricia Clayton	8/29/19 1:36 PM
PRJ-1716	NHERI TallWood Project_Task 4a	Shiling Pei	8/29/19 9:31 AM
PRJ-1437	Simulation Test Project	Ellen Rathje	8/28/19 2:31 PM
RJ-2466	DesignSafe-QuakeCoRE Cyberinfrastructure Workshop	Ellen Rathje	8/27/19 2:53 AM
PRJ-1729	NHERI@UTexas Nonintrusive Sinkhole 3D-Imaging Workshop	Kenneth Stokoe	8/21/19 10:34 AM
PRJ-2504	Vorticity-Advection-RODSEX experiment	Steve Elgar	8/19/19 1:27 PM

### My Projects: A space to share files/data/results with collaborators and to eventually publish for public use



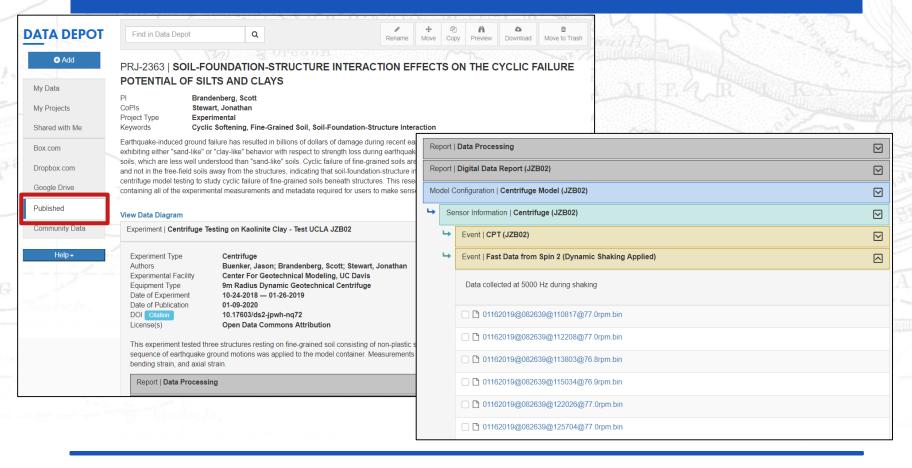








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## DesignSafe Data Models



Structured, yet *flexible*, data models for different types of research



#### **Experimental Project**

For physical work, typically done at an experimental facility or in the field.



#### Simulation Project

For numerical and/or analytical work, done with software.



#### **Hybrid Simulation Project**

For work using both physical and numerical components.



#### Field Research Project

For work done by observation in areas affected by a natural hazard.



#### Other Project

For work other than the project types above.













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#### **DATA DEPOT**

Find in Published Projects







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Published

#### PRJ-2769 | Food Access Impact Survey for Southeast and Harris County, Texas after Hurricane Harvey in 2017

Download Dataset

Rosenheim, Nathanael Project Type Field Research

Hurricane Harvey | Southeast Texas | 08-25-2017 — 08-31-2017 | Lat 30.049840 Long -94.077210 Event

10.17603/ds2-aq2k-dv92 DOI(s) in Dataset

Kevwords Field Research Planning, Food Access, Survey Instruments, Sample Frame

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Food insecurity is a chronic problem in the U.S. and annually affects over 40 million people under normal conditions. This reality dramatically worsens after disasters. Such events can disrupt both the supply and demand sides of food systems, restricting food distribution precisely when households are in heightened need of food assistance. Often, retailers and food banks must react quickly to meet local needs under post-disaster circumstances. Residents of Southeast Texas and Harris County experienced this problem when Hurricane Harvey made landfall on the Texas Gulf Coast in August 2017. The primary data collected by this project relate specifically to food access and infrastructure disruption after Hurricane Harvey. Two types of food suppliers were included in the research, food aid agencies and food retailers. First, the research team examined food aid agencies in Southeast Texas. Data collection methods included a focus group with eight food aid agency representatives, followed by an online survey that was completed by 53 representatives. The second population studied was food retailers. The in-person survey was conducted in three Texas counties, Jefferson, Orange, and Harris. In total, the food retail sample frame consisted of 3,425 food retailers, of which 568 food retailers were randomly sampled. Data were collected five to eight months after the event, which helped to increase the reliability and validity of the data. The perishable nature of natural hazards research requires that teams can quickly organize their efforts before entering the field. This archive is designed to help future research teams with example documents that may help reduce the amount of time needed to invest in project development. This archive does not contain Personally Identifiable Information.

Our first published Field Research dataset with social sciences data!

View Data Diagram

Documents | Food Retail Survey Instrument







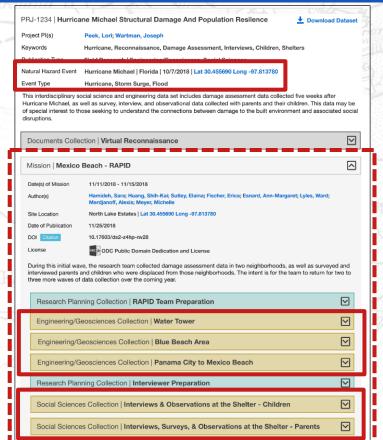






### Supporting integrated interdisciplinary datasets

Craig and Mahyar will explain how to curate your data to look like this!



### **Organizational Structure**

**Mission:** A group of data collections that are associated with a common goal, location, or time

**Collection:** Data grouped together based on a shared purpose in a project or mission.











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