

Panorama de Repositorios de Datos Académicos

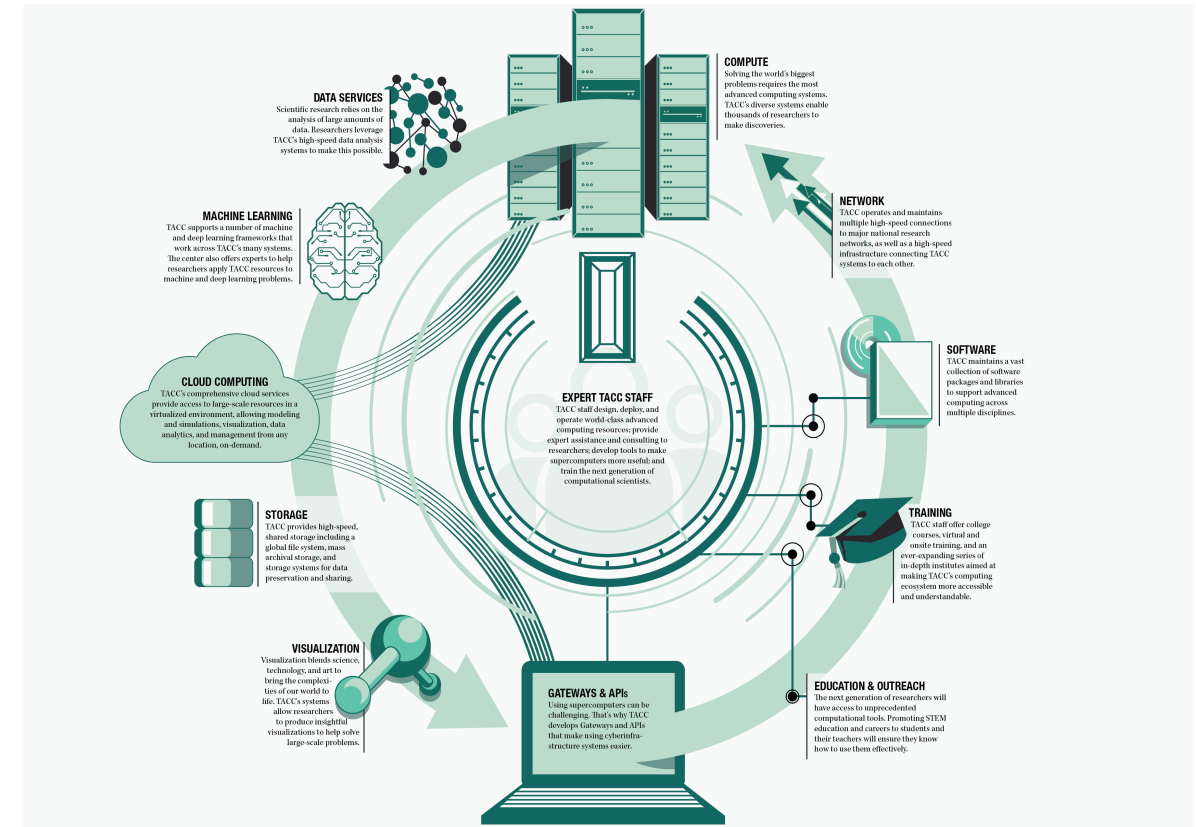
Maria Esteva

1 de Noviembre de 2022

RDA-UNR

Datos y avance científico

- A comienzos del 2000 se da la tormenta perfecta:
 - Digitalización, Internet, datos digitales, licencias abiertas, acceso abierto, repositorios institucionales, etc.
- Visión sobre el potencial de la ciencia basada en datos.
- Infraestructura para la investigación.
- 2010 National Science Fundación comienza a exigir planes de gestión de datos.
 - Transparencia, evidencia, validez, reutilización.



TACC, Texas Advanced
Computing Center
Universidad de Texas en Austin

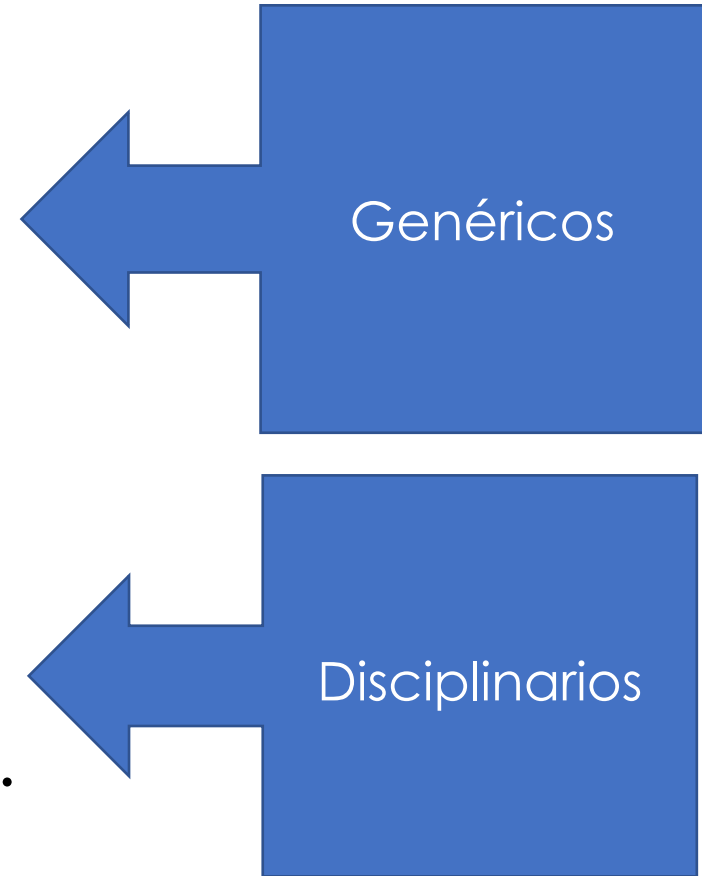
Repositorios de datos abiertos

- Componente de la infraestructura para investigación.
- Las bibliotecas académicas aceptaron el desafío.
- Plataforma para datos:
 - Software de repositorio.
 - Mayoría de código abierto.
 - Almacenamiento.
- Gobernanca
 - Compromiso institucional.
 - Staff especializado.
- Estándares y buenas practicas.
- Distribución global de datasets.
- Preservación indefinida de los datos.

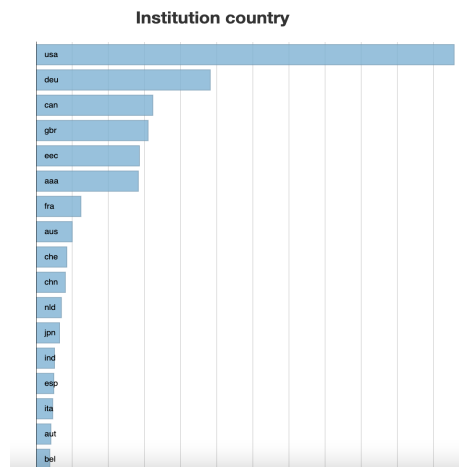
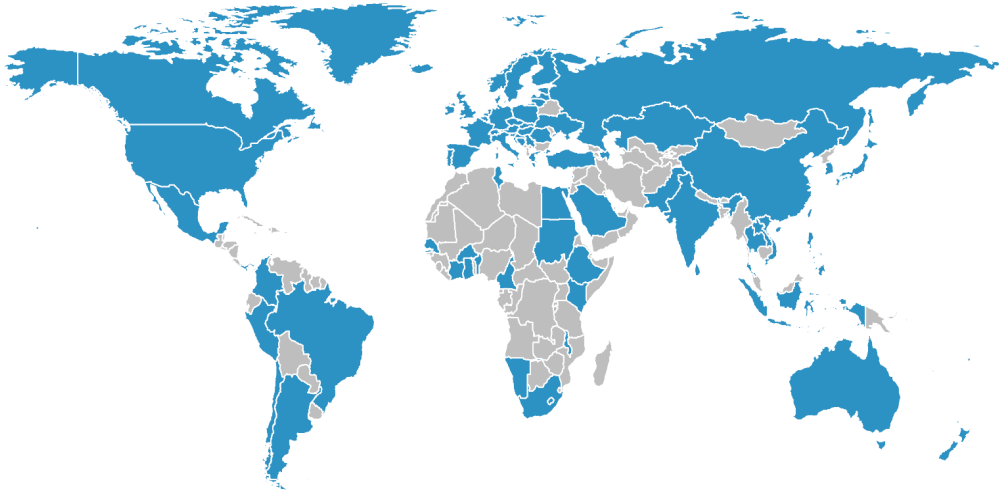


Repositorios de datos abiertos

- Implementación de repositorios de datos.
 - Bibliotecas académicas
 - Repositorios institucionales.
 - Servicios y curadores
 - Modelo de auto-publicación con guía.
- Agencias/entidades gubernamentales publican sus datos.
- Financiamiento para colecciones de datos.



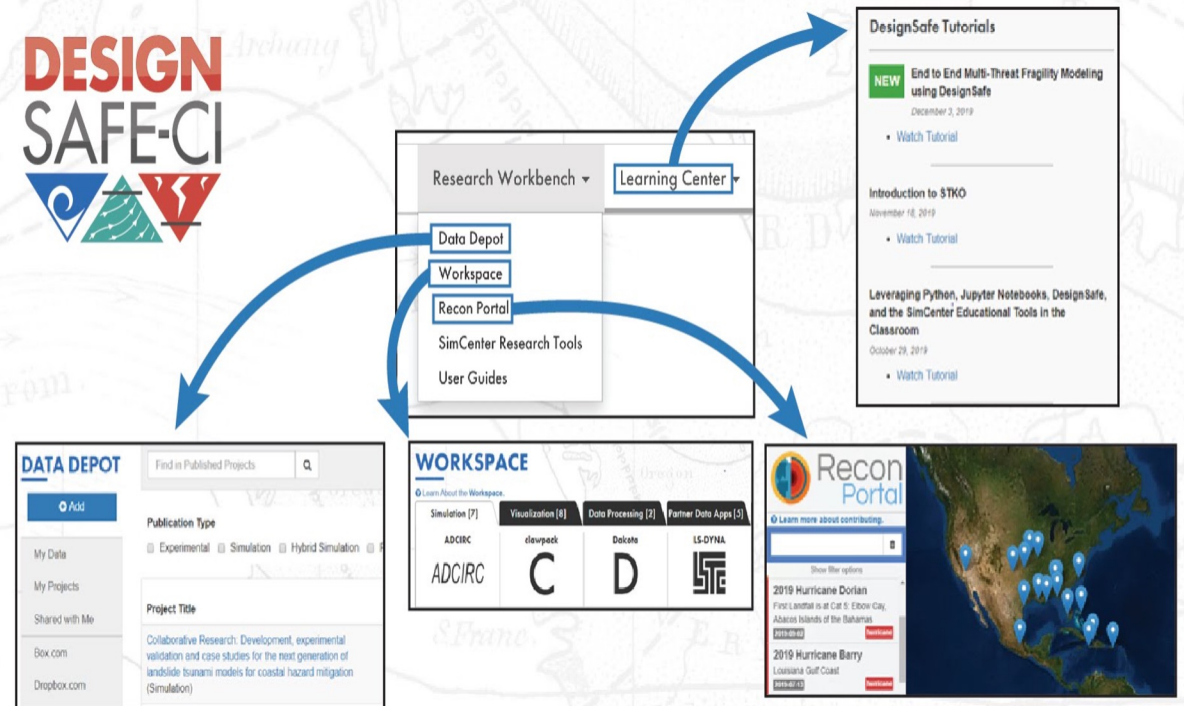
Panorama mundial de repositorios de datos



Fuente: RE3data.org

Repositorio disciplinario: DesignSafe-CI

- Ingeniería y Ciencias Sociales en Desastres Naturales.
- Financiamiento federal (NSF).
- Sirve a una red de centros de investigación.
- Publicación y análisis de datos
- Nacionales e internacionales



Curación y publicación

PRJ-2560 | Hurricane ISIAI Data from Wireless Pressure Sensor Network and LIDAR [Edit Project](#)

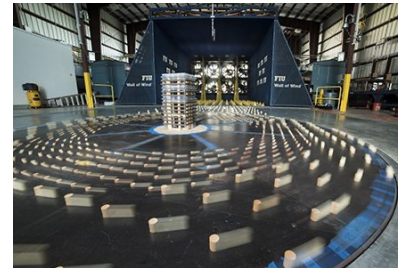
My Data	Pi	Subramanian, Chelakara
My Projects	CoPIs	Pinelli, Jean-Paul; Lazarus, Steven
Shared with Me	Project Type	Experimental View Overview
Box.com	Natural Hazard Type	Hurricane
Dropbox.com	Awards	Wireless Sensor Network (WSN) system and Lidar experiments for the characterization of strong wind loads on non-structural components and near-surface wind profiles - NIST 70NANB19H088 Hurricane WILMA Data from Wireless Pressure Sensor Network Lab Tests with Wireless Sensor Network (WSN) system for the characterization of strong wind loads on non-structural components Hurricane MATTHEW Data from Wireless Pressure Sensor Network and LIDAR Hurricane DORIAN Data from Wireless Pressure Sensor Network and LIDAR
Google Drive	Related Work	Field Deployment, Measurements, Wireless Sensor Network System, LIDAR, Hurricanes, Building Envelope, Wind Pressure, Wind Speed, Wind Direction, Wind Profiles
Published	Keywords	
Published (NEES)		
Community Data		

FIT WSNS (Florida Tech's Wireless Sensor Network System) and FIT Lidar measured and recorded pressure, temperature and wind data during the passage of tropical storm Isaias on 2 August 2020. The FIT WSNS consists of pressure and temperature sensors, and R.M.Young anemometers; deployed on a residential house roof in Satellite Beach, Florida (GPS LOC: 28°10'33.5"N 80°35'41.8"W). Data from WSNS was collected from 2020/8/2 to 2020/8/4. FIT Lidar, a conically scanning ZephIR Z300 LIDAR had an open fetch with respect to the onshore flow (GPS LOC: 28.177°N, -80.590°W) and 0.36km apart from WSNS deployment. Its wind data was sampled at 20-sec intervals at 10 vertical range gates (11m to 150m, above ground level). Data from Lidar was collected on 2020/8/2 for 11 hours. The different anemometry used in the WSNS and Lidar deployments during Isaias were useful to study wind changes as it moves inland to a residential area. FIT WSNS deployment had 2 systems – old WSNS and new WSNS. The system has an improved data collection software, compact aerodynamic casing and does not need routers, when compared to the old system. The new WSNS consisted of 2 pressure sensors with sampling rate(SR) = 10Hz, 1 reference pressure with SR = 10Hz and 1 anemometer with SR = 10Hz. The old WSNS consisted of 16 pressure sensors with sampling rate = 10Hz and 1 anemometer sampled at 6-sec intervals. The goal of Isaias Deployment is to 1) Measure actual near-surface wind profiles for different wind speeds and directions; 2) Compare and validate the new WS against the old one; 3) Analyze wind pressures on the residential house roof and wind data from different anemometry, with Jupyter notebook field data to validate and improve current wind loads recommendations and models for pressure distributions on building components, wind and terrain roughness characterization.

Working Directory Curation Directory Publication Preview 1 Add Experiments 2 Add Categories 3 Relate Data

PRJ-2560

File Name	Type	Size	Date
CALIBRATED_New WSNS_ISA_AUG20	New WSNS Data	Calibrated	-- 6/8/21 2:18 PM
CALIBRATED_Old WSNS_ISA_AUG20	Old WSNS Data	Calibrated	-- 6/8/21 2:50 PM
DeploymentLayout.png	Old WSNS	400.6 kB	5/28/21 7:27 AM
Sensor Drawing	New WSNS	Sensor Drawing	



PVL-2008 | BIER - Maritime Lease

- Assess
 - Field Assessment Structural Teams: FAST-1, FAST-2, FAST-3
 - Engineering Geosciences Collection
 - Structural Assessments
 - Engineering Geosciences Collection
 - Shallow Level Panoramic Imaging
 - Engineering Geosciences Collection
 - Unmanned Aerial System
 - Engineering Geosciences Collection
 - GPS Data
 - Engineering Geosciences Collection
 - Other Ground-Based Observations
 - Engineering Geosciences Collection
 - Daily Summaries
 - Research Planning Collection
 - Planning Documents
- Documents
 - Initial Preliminary Initial Reconnaissance Report-Early Access Reconnaissance Report (PVPF-EAPR)

[illegible]

DesignSafe Data Depot

- Curación especializada.
- Aporte de la comunidad científica.
- Modelos de datos para: simulaciones, experimentos y trabajo de campo.

Promoción y reutilización

<https://www.designsafe-ci.org/rw/impact-of-data-reuse/>

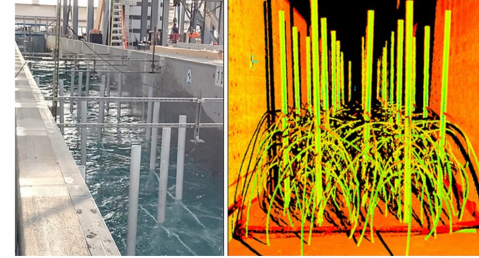
Datos
premiados

Year	DesignSafe Citation	Primary Data Use	Subsequent Data Reuse	Totals
2022	38	42	54	134
2021	42	89	60	191
2020	52	74	61	187
2019	21	25	30	76
2018	26	31	13	70

Estadísticas

Historias de
reutilización

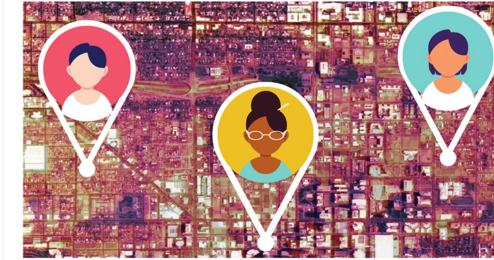
Experimental Investigation of Wave, Surge, and Tsunami Transformation over Natural Shorelines



The dataset examines the potential of mangroves to attenuate wave heights and reduce loads on sheltered structures through a prototype-scale physical model. The tests were performed at the NHERI Experimental Facility at Oregon State University. Their experiment considers six different model layouts that consider the effectiveness of combining three levels of mangrove density with the presence or absence of a structural barrier.

Authors: Kiernan Kelly, Tori Tomiczek, Daniel Cox, and Pedro Lomonaco

Personal Heat Exposure



Feeling the Heat

Personal heat exposure wins 2022 DesignSafe Dataset Award

The dataset assesses the health impact of a simultaneous city-wide power outage and heatwave in the cities of Phoenix, Arizona; Detroit, Michigan; and Atlanta, Georgia. The data includes both quantitative data in the form of temperature and humidity measurements made with sensors provided to each human participant as well as qualitative data in the form of participant-completed time-activity diaries that document their experiences. This dataset represents one of the first published social science datasets in DesignSafe.

Authors: Lance Watkins, Mary Wright, Paul Chakalian, Elizabeth Kurtz, and David Hondula

Data Reuse Case Studies

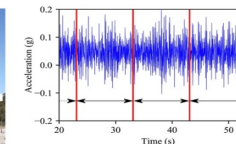
Data reuse can take many forms: expanding work on established lines of research, validating numerical models, testing new hypotheses, and more. To learn more about the motivations for data reuse we interview DesignSafe data consumers and develop Data Reuse Stories. The researchers interviewed give us insight into not only the variety of data available from DesignSafe that has been reused, but also the distinct ways those data can be reused across different fields within the NHERI community. Furthermore, these researchers demonstrate that DesignSafe can act as an invaluable platform for collaboration across institutions and fields of interests within natural hazards research, facilitated by easy access to published datasets and works-in-progress in the Data Depot. These research groups valued the overall completeness of the datasets and the metadata offered with the Data Depot platform.

AI AND MACHINE LEARNING

Structural Health Monitoring Framework (Sajedi and Liang 2019)



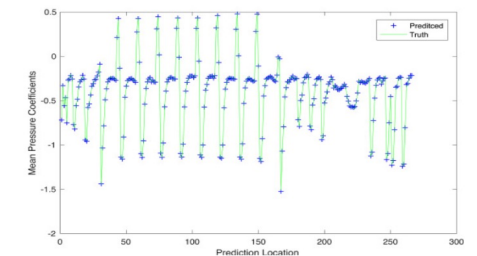
(a) 3-story frame specimen after 250% EI Centro (image taken from [53])



(b) Example of window feature extraction (from sensor AICINEX in trial 39)

Recent work by researchers from the University of Buffalo has shown the value of continuing to preserve and provide access to legacy data from NEES through the DesignSafe Data Depot. Seyed Omid Sajedi and Xiao Liang (2019) repurposed shake table experimental data from "Seismic Performance Assessment and Retrofit of Non-Ductile RC Frames with Infill Walls" (Shing et. al. 2007) to evaluate the effectiveness of a structural health monitoring framework they developed. This framework identifies the existence, probable location, and severity of damage in a structure following an earthquake, and has the potential to provide information about building damage accurately, dependably, and quickly for the affected communities. [Read more >>](#)

Predicting Wind Pressure Coefficients (Tian et al. 2020)



DesignSafe resources, especially the Data Depot publication pipeline, have proven invaluable to wind researchers. Scholars out of the University of Florida and Clarkson University (Tian et al. 2020) were able to reuse experimental data from "Upwind Terrain Effects on Low-Rise Building Pressure Loading Observed in the Boundary Layer Wind Tunnel" (Fernández-Cabán and Masters 2018) that was published in the Data Depot. [Read more >>](#)

Porque?

- Significancia para la investigación, la educación y la practica profesional.
- Registro científico.
- Evidencia.
- Antecedentes académicos.
- Citas de datos.
- Servicio publico.
- Economía de recursos.

