StEER
STRUCTURAL EXTREME EVENTS RECONNAISSANCE

Best Practices to Enhance the Quality, Discoverability and Re-Use Potential for Post-Event Reconnaissiance Data

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StEER Director
University of Notre Dame

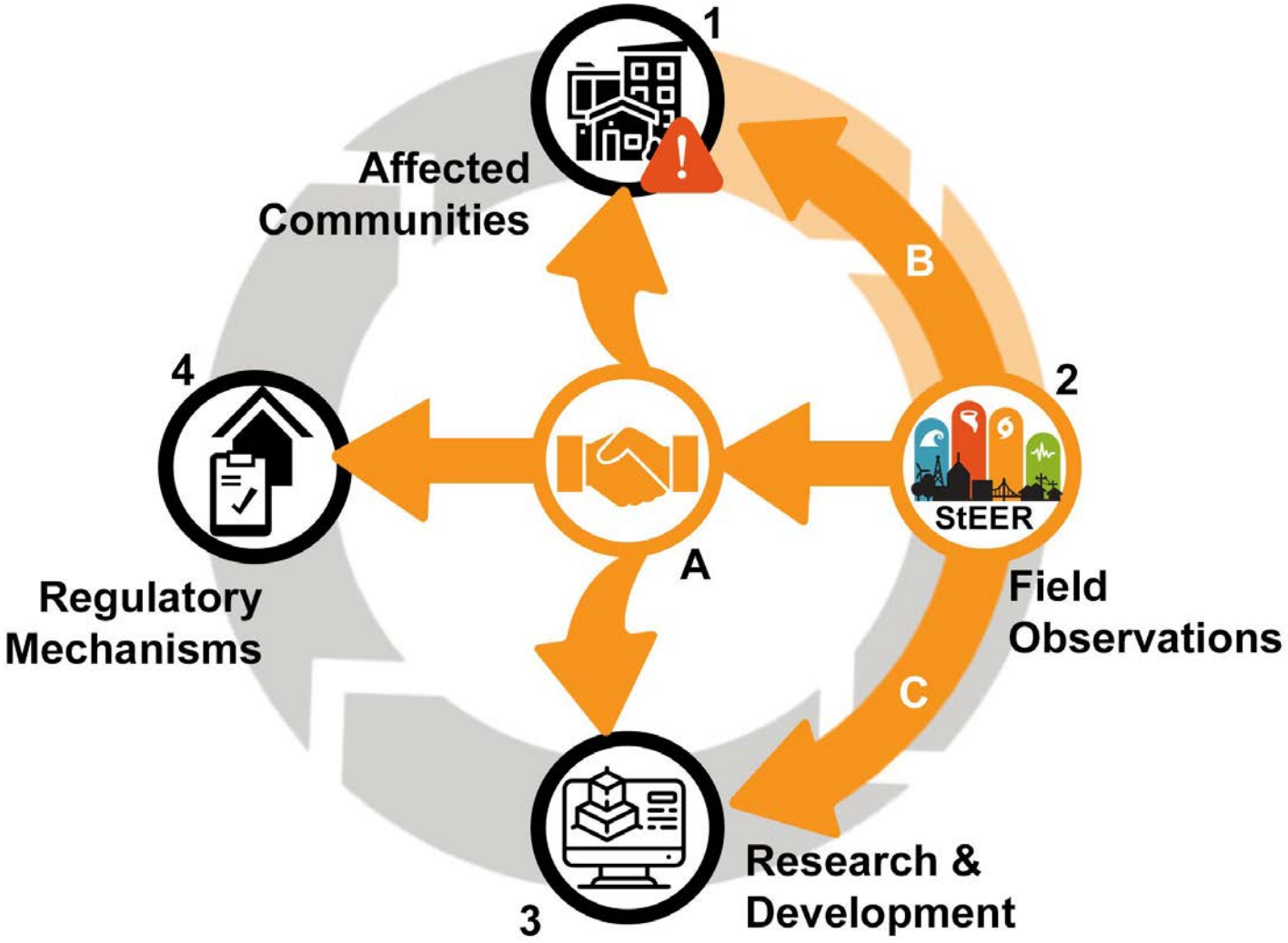
NSF | DESIGNSAFE-CI
NHERI: NATURAL HAZARDS ENGINEERING RESEARCH INFRASTRUCTURE

WEBINAR LEARNING OBJECTIVES

Through this webinar you will learn:

- Best practices for ensuring **high-quality and reliable reconnaissance data**
- Guidance for **documenting reconnaissance data** to ensure the data is discoverable and reusable
- Recommendations for engaging the **Field Research Data Model** in your projects
- **Progressive curation** of field research products

DATA-TO-KNOWLEDGE LIFE CYCLE



APPROACH

StEER
STRUCTURAL EXTREME EVENTS RECONNAISSANCE

CAPACITY	COORDINATION	COLLABORATION
promoting **community-driven standards**, best practices, and training for field reconnaissance	coordinating early, efficient and impactful event responses	broadly engaging communities of research, practice and policy to accelerate learning from disasters

PRIMARY OUTCOMES:

- **High-quality communal datasets** documenting performance of built environment, intended for broad re-uses
- Synthesis of collective knowledge disseminated to wide audiences

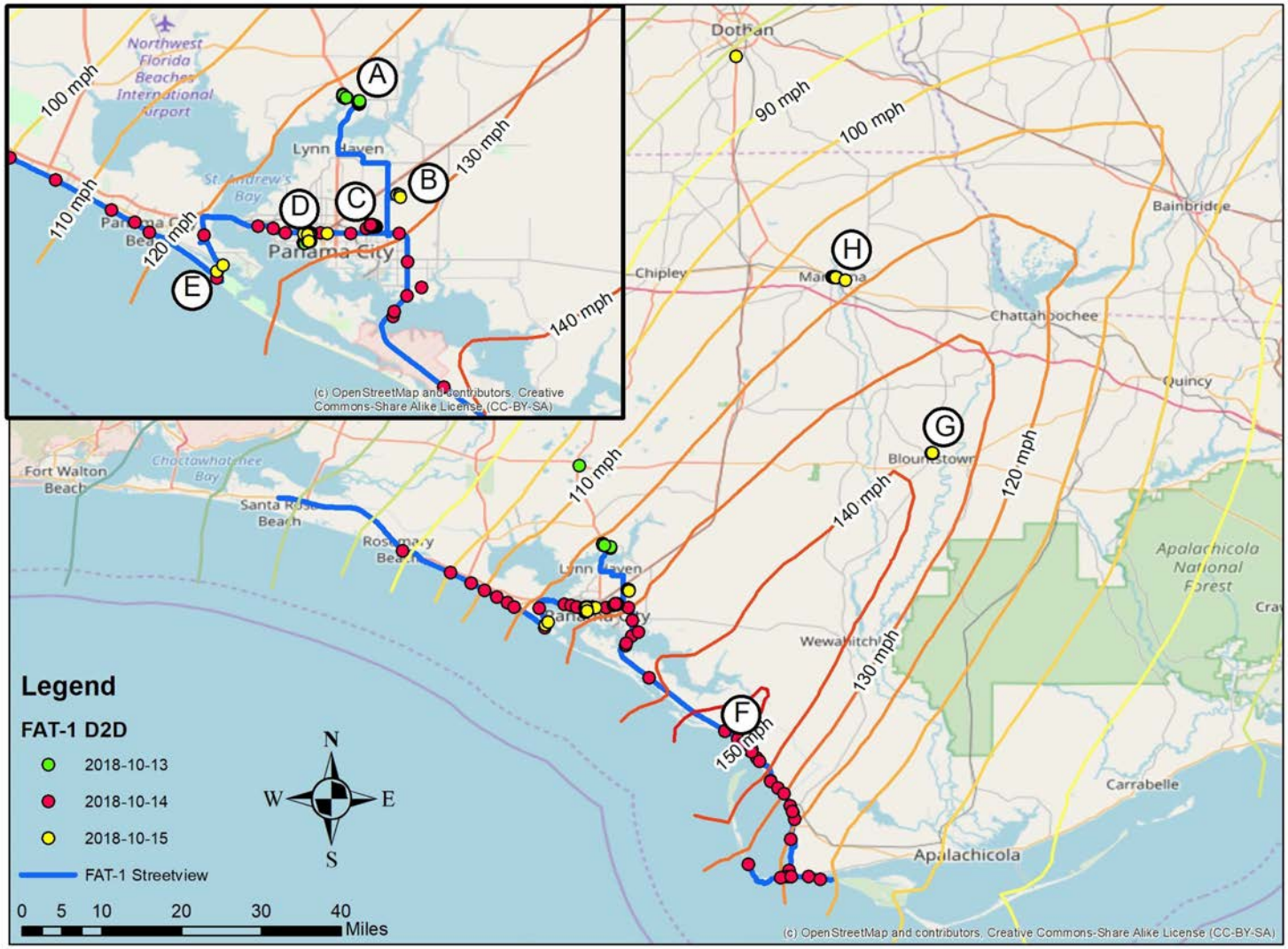
Hurricanes

Tornadoes

Earthquakes

Storm Surge and Tsunami

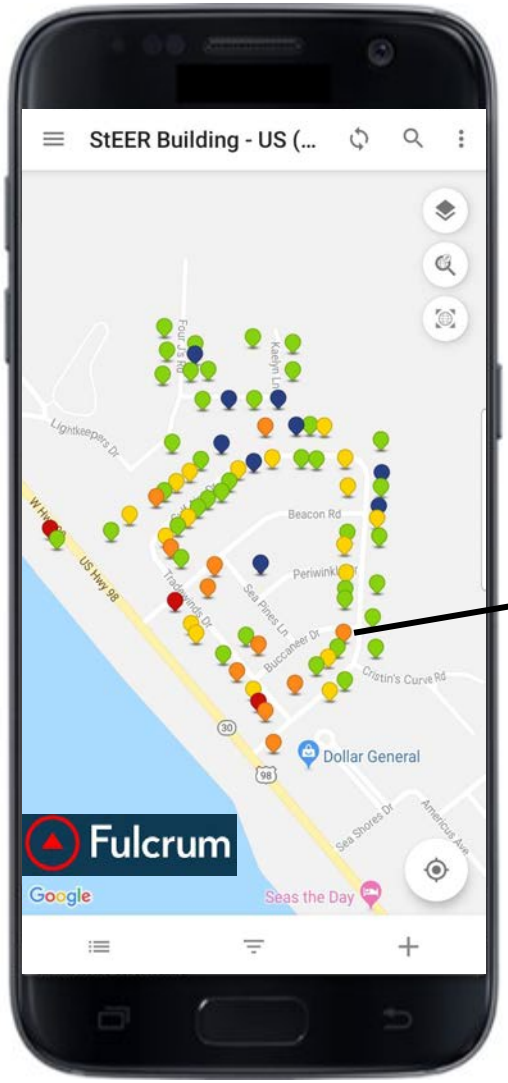
RUNNING CASE STUDY: HURRICANE MICHAEL



Accessible on DesignSafe: PRJ-2113 | https://doi.org/10.17603/ds2-5aej-e227

Fulcrum
StEER Building - US (Windstorm)
JSM, 104 ST FRANCES ST Mexico Beach FL 32456 US
Search your data...
Download Data
Filter Data
Record Updated
All
Today 08/28/2019
Yesterday 08/27/2019
Last 7 days 08/21/2019 - 08/28/2019
Last 30 days 07/29/2019 - 08/28/2019
This Month 08/01/2019 - 08/31/2019
Last Month 07/01/2019 - 07/31/2019
Specific Range
Start date...
End date...
From
To
Status
Destroyed
Severe
Moderate
Minor
Undamaged
Unassigned
Projects
Search places
Parker Pkwy
Fred Fioto
Nannook Rd
Charles Corner
Ocean Plantation Cir
St Frances St
St Charles St
St Christopher St
Sleepy Hollow
15th St
Hatley Dr
Kim Cove
Google
Map data ©2019 INEGI
50 m
Terms of Use
Report a map error
Metadata
Created (device)
1/8/2019, 3:29:49 PM 8 months ago by Jennifer Mitchell
Updated (device)
8/27/2019, 5:32:54 PM 21 hours ago by Kevin Ambrose
Created (web)
1/8/2019, 3:40:47 PM 8 months ago by Jennifer Mitchell
Updated (web)
8/27/2019, 5:32:55 PM 21 hours ago by Kevin Ambrose
Duration
9 minutes, 24 seconds (Total Time)
8 minutes, 35 seconds (Most Recent Update)
43 seconds (First Creation)
Damage State
Moderate
Updated By
Name of Investigator
Kevin Ambrose
JSM
Kevin Ambrose
JSM
Kevin Ambrose
David Prevatt
Paul Pinelli
ENSURING
HIGH-QUALITY DATA

LEVERAGING MOBILE APPS IN DISASTER RECONNAISSANCE



Photographs

Audio

Free-form Text

Upper story soffits gone
Garage door gone
Siding failure on right and left wall
Right wall window damaged

Standardized Data Fields

- Investigation Notes
- Building Attributes
- Structural Attributes
- Walls and Foundation
- Fenestration
- Roof Structure
- Wind-induced Damage
- Surge-induced Damage

CURRENT StEER APP LIBRARY

	Name and Description	Availability
	StEER Building - US (Windstorm) *D2D assessment form for coastal and inland buildings affected by severe windstorms such as hurricanes and tornadoes.*	In-use
	StEER Non-Building (Windstorm) *General assessment form for non-building structures - such as towers, bridges, and dams - affected by severe windstorms.*	In-use
	StEER Earthquake Rapid Evaluation Form *D2D assessment form loosely based on the ATC-20 Rapid Evaluation Safety Assessment form, modified to include basic capabilities for non-building structures to be assessed.*	In-use
	StEER Earthquake Detailed Evaluation Form *Detailed D2D assessment form for buildings and possibly non-buildings, responsively developed to meet the needs of the structural earthquake engineering community.*	Coming soon
	StEER Tsunami *Assessment form for documenting performance of buildings and other structures impacted by tsunami-induced hazards*	Coming soon

ESTABLISH ASSESSMENT STANDARDS

StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

Field Assessment Structural Team (FAST) Handbook
Version 1.2

Released August 27, 2019

Authored by:

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David Roueche, Auburn University, Associate Director for Data Standards

Note that StEER is responding to events while its policies, protocols and membership are still in active development. All policies, procedures and protocols in this handbook should be considered preliminary and will be refined with community input as part of StEER's operationalization throughout 2019.

Table 2. Wind damage states, primarily applicable to residential structures, from Vickery et al. (2006)

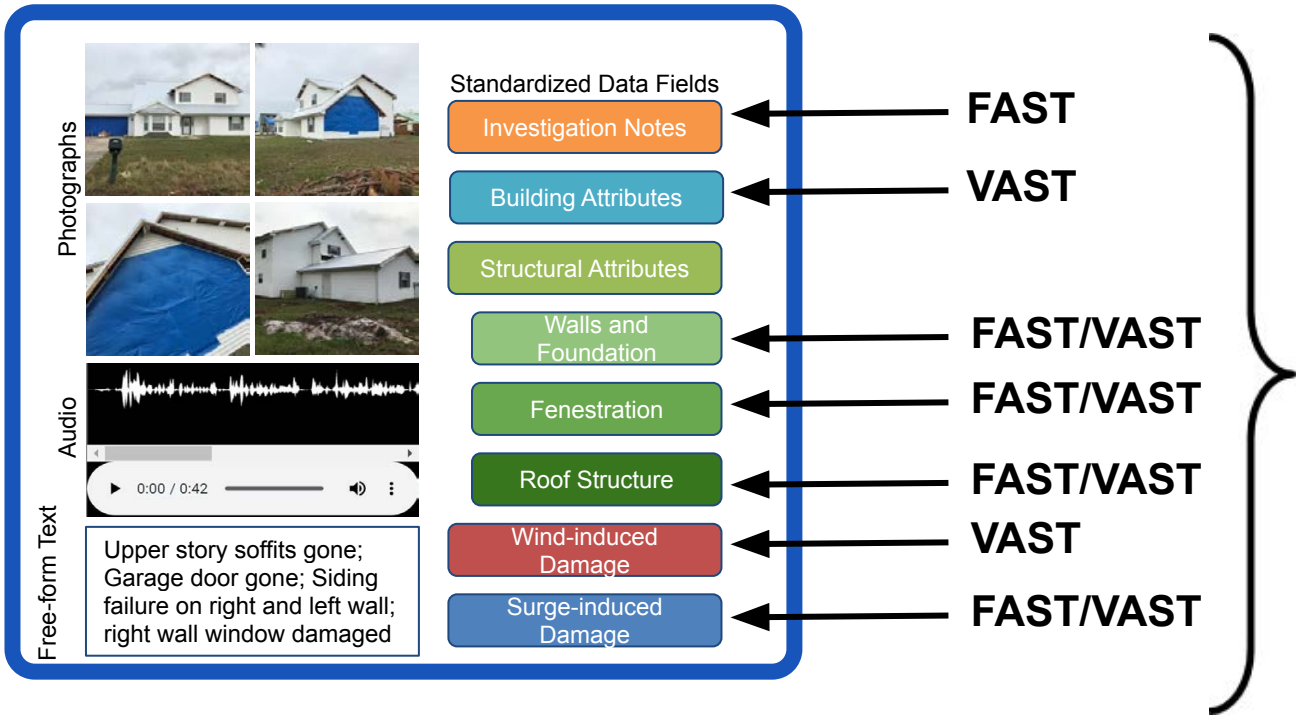
			Presence or Extent of Failure in:				
Damage State [1]	Short Description	Illustrative Example	Roof or Wall cover	Window or door	Roof or Wall sub-strate	Roof struct.	Wall struct. [2]
0 No damage or very minor damage	*No visible exterior damage*		0%	No	No	No	No
1 Minor damage	*Damage confined to envelope*		> 2% and ≤ 15%	1	No	No	No
2 Moderate damage	*Load path preserved, but significant repairs required*		> 15% and < 50%	> 1 and ≤ the larger of 3 and 20%	1 to 3 panels	No	No
3 Severe Damage	*Major impacts to structural load path*		> 50%	> the larger of 3 and 20% and ≤ 50%	> 3 and ≤ 25%	≤ 15%	No
4 Destroyed	*Total loss. Structural load path compromised beyond repair.*		> 50%	> 50%	> 25%	> 15%	Yes

Notes:
[1] A building is considered to be in the damage state if any of the shaded damage indicators in the corresponding row are observed.
[2] Wall structure refers to walls in living area only. The ground floor of elevated structures often have breakaway walls that can be easily damaged by storm surge. This damage should be ignored in assigning the overall damage rating.

Accessible at:
https://www.steer.network/resources

DEQC: DATA ENRICHMENT AND QUALITY CONTROL

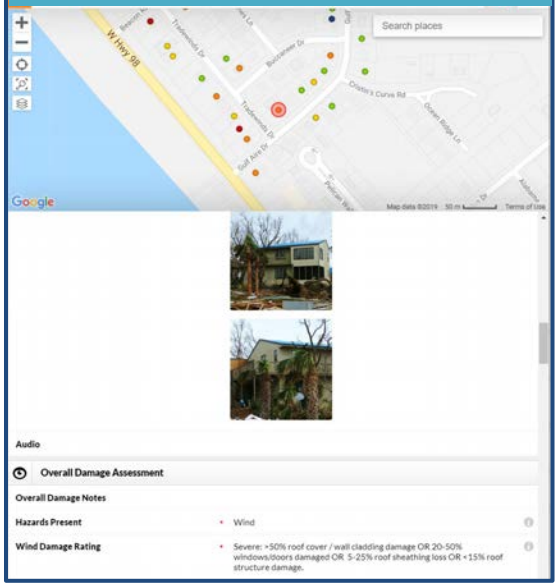
Field Priority: Field Assessment Structural Team (FAST)
Subsequent Enrichment: Virtual Assessment Structural Team (VAST)



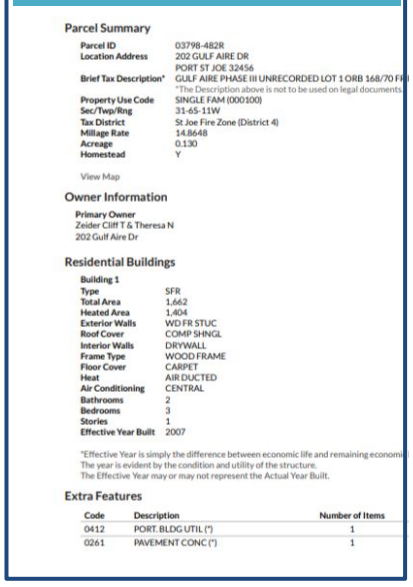
After all data is collected, VAST perform a rigorous Quality Control process on all data to ensure consistency, accuracy, and validity of the data.

SUPPLEMENTAL DATA SOURCES FOR DEQC

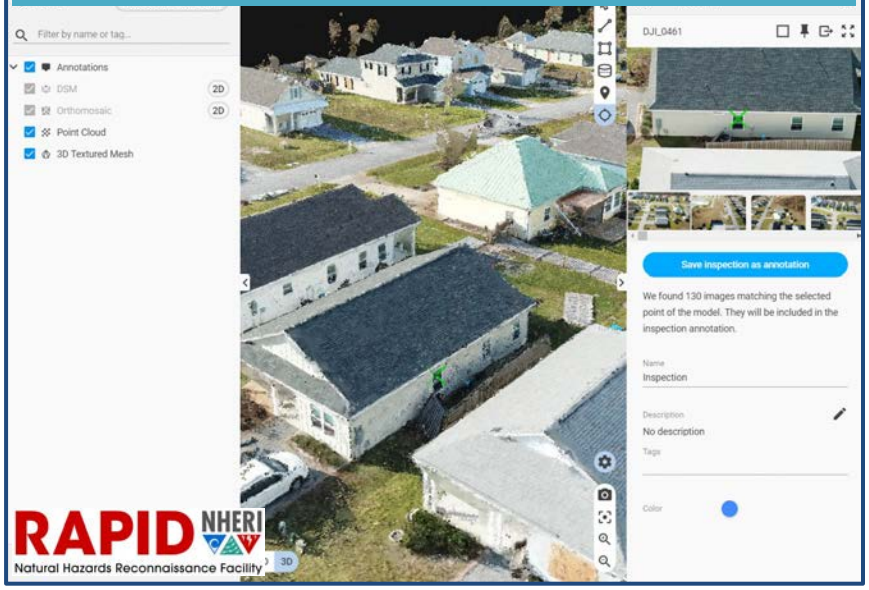
Fulcrum



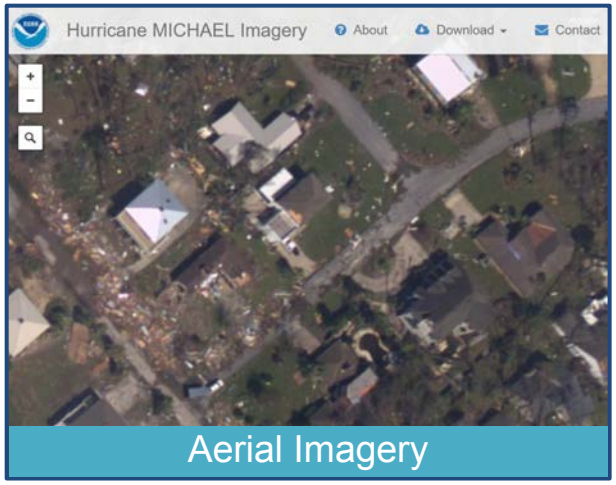
County Records



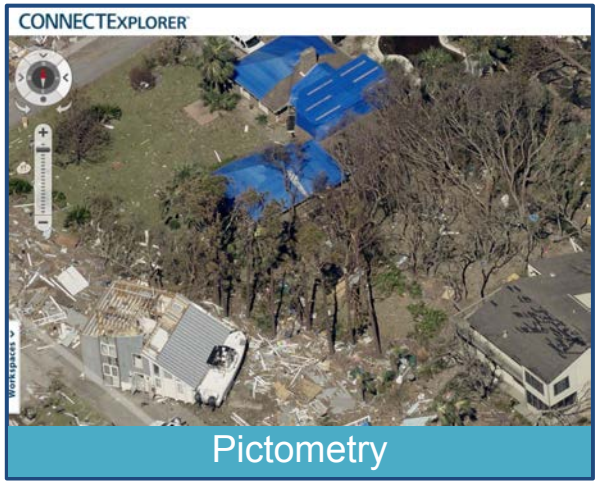
SfM Models / Point Clouds



Aerial Imagery



Pictometry



Street-level 360 Panoramas

DOCUMENTATION

StEER DATA REPORT

StEER
STRUCTURAL EXTREME EVENTS RECONNAISSANCE

HURRICANE MICHAEL
October 10, 2018
Released: February 1, 2020
DesignSafe Project ID: PRJ-2113

DATA REPORT

Members of FAST (photo on right courtesy of UAV)

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Christian Brown, Auburn University
Joseph Palmer, Auburn University
Mohammadtaghi Moravej, Walker Consultants

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Jake Dafni, University of Washington
Sean Yeung, University of Washington

RAPID EF Data Processors:
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Parker Johnson, University of Washington
Dominic Grasso, Cornell University
Emily Mongold, University of Delaware
Andrew Lyda, University of Washington

- 1.0 Event Summary and Team Configuration
- 2.0 Data Collection Methodology
- 3.0 Chronology & Geospatial Distribution of Data Collection
- 4.0 Data Processing
- 5.0 Archived Data Products
- 6.0 Contacts
- Appendices: App Fields

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1.0 Event Summary and Team Configuration

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PURPOSE: Introduction to event (date, location, magnitude), response strategy, team members

technologies including unmanned aerial vehicles, laser scanners and applied streetview technologies. This self-funded initiative generated an additional dataset that complements the data collected by StEER and is thus curated jointly in this project. The individuals forming this second RAPID EF Team are listed in Table 1.3.

Table 1.1: Members of StEER FAST and RAPID EF Team

Team Member	Affiliation	Team Assignment
David Roueche (Lead)	Auburn University	StEER D2D Assessment Team, UAS Operator
John Cleary	University of South Alabama	StEER Advance Scout Team
Kurt Gurley	University of Florida	StEER D2D Assessment Team
Justin Marshall	Auburn University	StEER D2D Assessment Team
Jean-Paul Pinelli	Florida Institute of Technology	StEER D2D Assessment Team
David Prevatt	University of Florida	StEER D2D Assessment Team
Daniel Smith	James Cook University (Australia) and University of Florida	StEER Advance Scout Team
Jeffrey Berman	University of Washington	RAPID EF Team
Jake Dafni	University of Washington	RAPID EF Team
Sean Yeung	University of Washington	RAPID EF Team

Table 1.2: StEER Data Librarians

Name	Affiliation	QC ID
Kevin Ambrose	Auburn University	KMA
Madeline Rihner	Auburn University	MR
Hadiah Rawajfih	Auburn University	HZR
Christian Brown	Auburn University	CVB
Joseph Palmer	Auburn University	JP

2.0 Data Collection Methodology

StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

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Meanwhile, records of damage to non-building structures were collected in the *StEER Non-Building (Windstorm)* Fulcrum App. Appendix B lists the fields acquired by this Fulcrum Application.

In the process of conducting D2D assessments, FAST members also gathered forensic evidence of hazard intensity using a separate Fulcrum mobile smartphone app: *StEER Hazard Indicator*. Appendix C lists the fields acquired by this Fulcrum Application.

2.2 Applied StreetView Technology
IMPLEMENTATION: FAST Advance Scout Team, RAPID EF Team
PUBLIC ACCESS POINT: RAPID EF Temporary Server and Google Street View

The Advance Scout Team gathered temporally significant 360-degree panoramas, or StreetViews, capturing the damage from both wind and storm surge using the Applied StreetView (ASV) system from the University of Washington NHERI RAPID Experimental Facility (NHERI RAPID EF). The system consists of six cameras mounted together to gather a 360 x 160 degree field of view. Each camera has a resolution of 5 MP, sensor size of 2560 x 1920, and uses fisheye lenses with fixed focus and focal length of 2.8. GNSS-tracking allows for ~2 m image location accuracy. The ASV system used in this investigation records six photographs (one forward, two oblique forward, two oblique backwards, and one upwards) every five meters along the driving route. Maximum resolution for panoramas can reach 8192 x 4096 pixels. The camera module and GNSS receiver were mounted on a car roof and the system was controlled by users inside the vehicle.

Under this configuration, FAST captured near-continuous coverage of exterior building performance while driving along routes in a broad area from Southport and Lynn Haven to the north of Panama City, Seaside to the west of Panama City Beach, and Port St. Joe along the coast to the east (see Fig. 2.1). The subteam drove primary routes as well as neighborhoods that were targeted for D2D assessment. The team cataloged over 302,000 individual photographs using the ASV system, traveling over 130 miles. See Table 2.3 for details of the specific ASV routes.

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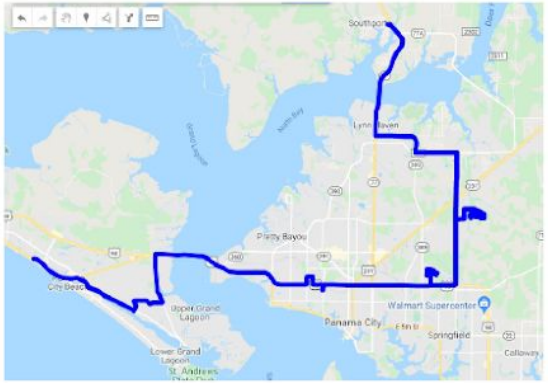
2.2).

12

October 15, 2018	
18_10_15_Michael_PC_1 (Panama City, FL)	

PURPOSE: Data collection parameters, by technology, including hardware used, resolutions/settings/sampling rates

INFRASTRUCTURE

StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

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PURPOSE: Dates with locations and technologies employed

3.0 Chronology & Geospatial Distribution of Data Collection

b. SR77 to Alt-98 through Tyndall Air Force Base
c. Mexico Beach
d. Cedar's Crossing
e. Panama City (center)

14 October 2018

1. **StEER Advance Scout Team:** Panama City down through Tyndall Air Force Base to Mexico Beach, Beacon Hill, Port St. Joe, Apalachicola, and the St. Joseph barrier islands
2. **StEER D2D Assessment (with UAS):** Cedar Crossing, Area surrounding Florida Coastal Monitoring Program (FCMP) Tower 2 (T2)
3. **StEER D2D Assessment Team:** Beacon Hill (along US-98)

15 October 2018

1. **StEER - Advance Scout Team:** Panama City interior and suburbs, including Magnolia Hills and Cedar Crossing
2. **StEER D2D Assessment (with UAS):** Pirates Cove Marina, commercial and institutional district in interior Panama City, Blountstown, FL and Marianna, FL.

7 November 2018

RAPID EF Team:
1. Gulf Aire Drive Neighborhood in Port St. Joe, FL
2. Water Tower in Mexico Beach, FL
3. Oceanside Village in Mexico Beach, FL
4. Driving Route: Around Panama City, FL

8 November 2018

RAPID EF Team:
1. Under the Palms in Mexico Beach, FL
2. Waterfront Apartments in Port St. Joe, FL
3. Driving Route: Panama City to Mexico Beach, FL

4.0 Data Processing

StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

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PURPOSE: Post-processing parameters, by technology, including quality control/quality assurance measures, software packages employed

	completed, but lack of data (e.g., only 2 sides of the structure are visible) or other circumstances adds high levels of uncertainty.		

4.2 Applied StreetView Technologies

Individual images from the ASV capture system were processed into seamless panoramas and panorama tiles using the ASV Creator 3 software. Images were filtered using a duplicate remover so that no panorama was within 5 meters of another horizontally or vertically. Images were also leveled and some minor manual cleaning applied. Objects in the images were not blurred during processing. Panoramas are created and uploaded to Google through the G-Publisher option of ASV. The final resolution of the processed panoramas is 8192x4096. The ASV Creator 3 software also generates a set of tiled imagery and a web player that allows any user to set up a virtual streetview server. Images are processed under the web player option and lower resolution StreetView tiles are created for the web player instead of panoramas. The web player requires a server (WAMP/MAMP/LAMP) and is run through a SQL database. Tiles are organized and displayed using the server and software output by Creator 3. Further information and directions for setting this option up can be obtained from NHERI RAPID or ASV. Tile and web player outputs also have the option of incorporating logos and web links for attribution purposes.

The DJI Osmo+ collected JPG images and MOV video files along driving routes around Panama City and between Panama City and Mexico Beach. All files were exported directly from the device via internal micro SD card. The only processing applied to the data was the removal of audio from the video files.

4.3 Unmanned Aerial Surveys

In cases where imagery from a UAS was acquired sufficient to generate other data products, the geolocated dataset is ingested into a standard UAS-compatible photogrammetry desktop application, in this case Pix4DMapper Pro (licensing provided through the NHERI RAPID Experimental Facility at the University of Washington), which:

1. Checks the photo dataset for its integrity and positional accuracy based on the geolocation coordinated in the metadata of each image.
2. Establishes desired coordinate system (ie. WGS 1984 or others) and units of measurement.
3. Establishes options for processing quality, processing speed, data outputs, and other related parameters.

5.0 Archived Data Products

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PURPOSE: Explanation of how data is organized in DesignSafe, Directory structure, file types and naming conventions, file counts

Directory D1.2 Non-Building Damage Assessments - StEER
FORMATS = CSV, GeoJSON, JPG

The folder **D2D Non-Building Assessment Data** contains the final quality controlled dataset (as CSV and GeoJSON) with all the response fields in Appendix B. Not all response fields have values, due to lack of available information, and certain fields only being applicable to specific non-building assessment types. Each media file (e.g., photograph, audio file) is linked to a specific record by a unique alpha-numeric string. This unique string is both the filename of the media file, and also listed in the corresponding data field (e.g., photos, audio) for the record it is associated with in the CSV or GeoJSON database. The folder also contains the photo log which provides all available photo metadata for each photograph.

Directory D1.3 Hazard Indicators - StEER
FORMATS = CSV, GeoJSON, JPG

The folder **D2D Hazard Indicator Data** contains the final quality controlled dataset (as CSV and GeoJSON) with all the response fields in Appendix C. Not all response fields have values, due to lack of available information, and certain fields only being applicable to specific hazard indicator assessment types. Each media file (e.g., photograph, audio file) is linked to a specific record by a unique alpha-numeric string. This unique string is both the filename of the media file, and also listed in the corresponding data field (e.g., photos, audio) for the record it is associated with in the CSV or GeoJSON database. The folder also contains the photo log which provides all available photo metadata for each photograph.

Directory D2.1 Applied Streetview - StEER
FORMAT = JPG, CSV, ANPP (Processed files: SQL, PHP, XML)

This directory contains files organized in folders by route, equivalent to new projects started in the field, each containing different amounts of data. These routes were previously introduced in Table 2.3. Route folders are named using the following format:

YY_MM_DD_Event_XXX_#

corresponding to the Year (YY), Month (MM), Day (DD) of the acquired data for Event=Michael and XXX designates the locale of the route (98=US Route 98, MB=Mexico Beach, FL, PC=Panama City, FL, and PSJ=Port St. Joe, FL) with # as a sequential number used to distinguish multiple routes collected in the same locale on the same day. Within these route folders, there may be one or more folders named:

camera-YYYYYMMDD-HHMMSS

5.0 Archived Data Products

StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

HURRICANE MICHAEL

October 10, 2018

Released: February 1, 2020
DesignSafe Project ID: PRJ-2113

DATA REPORT

Members of FAST (photo on right courtesy of UAV)

StEER Field Assessment Structural Team (FAST) Lead: David B. Roueche, Auburn University

StEER FAST Members: (in alphabetical order)
John Cleary, University of South Alabama
Kurt Gurley, University of Florida
Justin Marshall, Auburn University
Jean-Paul Pinelli, Florida Institute of Technology
David O. Prevatt, University of Florida
Daniel Smith, James Cook University (Australia) and University of Florida

StEER Data Librarians:
Kevin Ambrose, Auburn University
Madeline Rihner, Auburn University
Hadiah Rawajfih, Auburn University
Christian Brown, Auburn University
Joseph Palmer, Auburn University
Mohammadtaghi Moravej, Walker Consultants

StEER Event Coordinator: Tracy Kijewski-Correa, University of Notre Dame
StEER DE/QC Coordinator: David Roueche, Auburn University

RAPID EF Team:
Jeffrey Berman, University of Washington
Jake Dafni, University of Washington
Sean Yeung, University of Washington

RAPID EF Data Processors:
Jake Dafni, University of Washington
Parker Johnson, University of Washington
Dominic Grasso, Cornell University
Emily Mongold, University of Delaware
Andrew Lyda, University of Washington

PURPOSE: Explanation of how data is organized in DesignSafe, Directory structure, file types and naming conventions, file counts

DIRECTORY	UAS FILES	DESCRIPTION
01_Gulf Aire Drive Neighborhood_ 20181107		
Raw Data	494	Small neighborhood around Gulf Aire Drive, between Mexico Beach and Port St Joe, FL (29.914112 N, 85.374297 W). One flight of raw JPG images. Full processing dataset.
Processed Data		
02_Water Tower_20181107		
Raw Data	352	Water tower and utility area behind Mexico Beach City Hall. Three flights of raw JPG images. No densified point cloud or 3D mesh. (29.945902 N, 85.409833 W)
Processed Data		
03_Oceanside Village_20181107		
Raw Data	1019	On and off beach housing in the Oceanside Village neighborhood of Mexico Beach. Two flights of raw JPG images. No densified point cloud or 3D mesh.(29.950403 N, 85.424442 W)
Processed Data		
05_Under The Palms_MexicoBeach_20181108		
Raw Data	2370	Large area of Mexico Beach, FL extends from the beach, over Under The Palms city park, to 1 km inland. Four flights of raw JPG images. Two product folders, the second has a full processing dataset. (29.937463 N, 85.396619 W)
Processed Data		
06_Waterfront Appartments_20181108		
Raw Data	387	Waterfront apartments between Mexico Beach and Port St Joe, FL. One flight of raw JPG images from Matrice 210. Three product folders, one for rapid orthomosaic, one full processing dataset, and one full dataset incorporating ground imagery from Canon camera. (29.910371 N, 85.373834 W)
Processed Data		

6.0 Contacts

StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

HURRICANE MICHAEL

October 10, 2018

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Emily Mongold, University of Delaware
Andrew Lyda, University of Washington

PURPOSE: Points of contact for specific assessment technologies, mission phases

↳ Scene	174	Scene capture images for
06_Waterfront Apartments_20181108		
↳ Canon Photos	734	All site photos

Directory D7 GPS Data - RAPID EF
FORMAT = M00, PDF, X00

This directory contains GPS information gathered by the RAPID EF team at the Oceanside Village and Under The Palms sites (see Table 2.2). Data was collected using Leica GS18 GNSS in a base rover setup over targets laid out across the collection sites. Subdirectory folders for each site reflect this with folders for Base data and Rover data. Base folders contain M00 files of the base collection and PDF files of the OPUS solution for that base location. Rover folders contain M00 files of the rover collection and project folders from the rover collection. All data is considered raw with no processing beyond the OPUS results for the base stations.

Directory D8. Daily Summaries - StEER
FORMAT = PDF

This directory contains daily summaries (2 in total) capturing key observations and illustrative examples of the damage documented by the FAST, using a StEER standard template.

6.0 Contacts

For inquiries on specific sets of data, please contact the following individuals:

D2D Damage Assessments - StEER	Unmanned Aerial Surveys - StEER
David Roueche dbr0011@auburn.edu	David Roueche dbr0011@auburn.edu
All Other Data Types	**General Inquiries**
Andrew Lyda awlyda@uw.edu	Tracy Kijewski-Correa tkijewsk@nd.edu

Appendices: App Fields

StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

HURRICANE MICHAEL

October 10, 2018

Released: February 1, 2020
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Emily Mongold, University of Delaware
Andrew Lyda, University of Washington

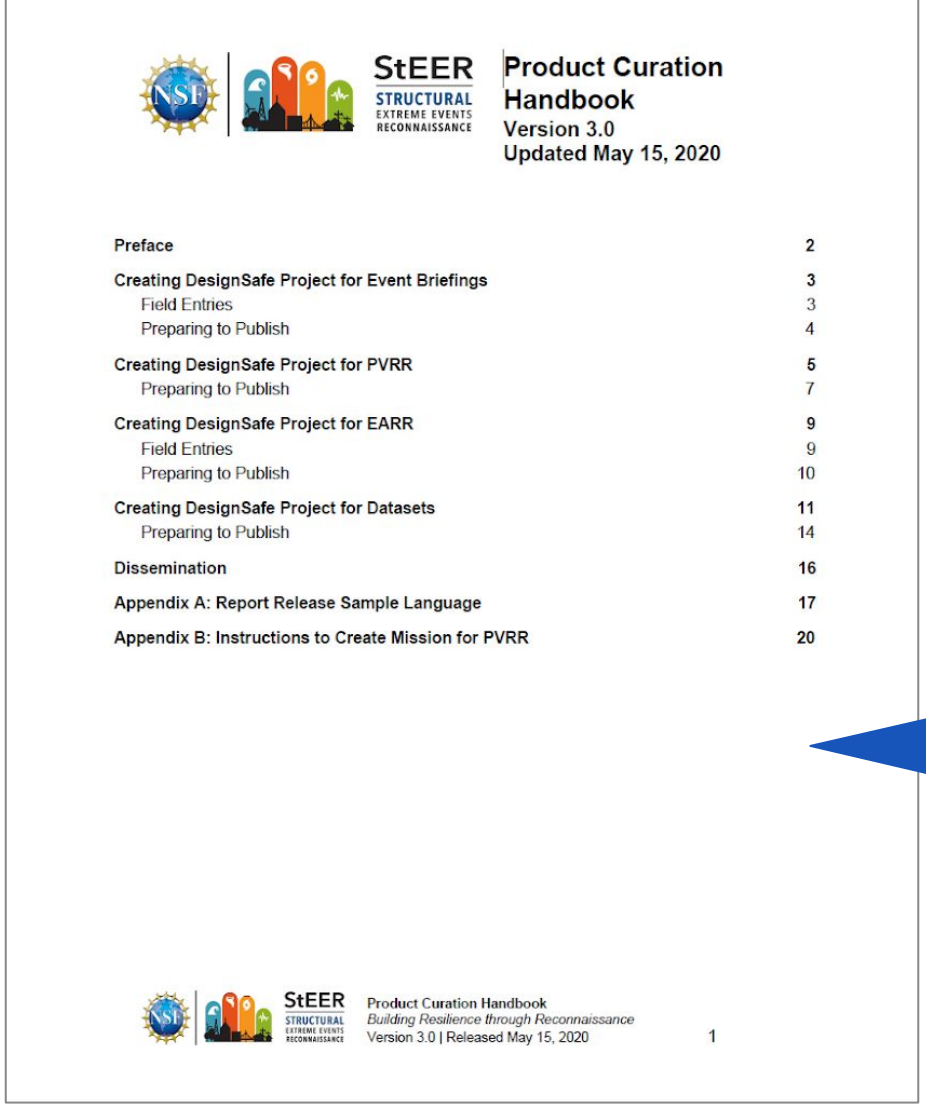
PURPOSE: Points of contact for specific assessment technologies, mission phases

Appendix B. Non-Buildings - Windstorm App Fields

Column		Column Header	Field	Format	Response Choices/ *Description*	Percentage Filled
A	1	fulcrum_id	Record ID	Text	Auto-populated	100%
B	2	project	Project	Text	Hurricane Michael (2018)	100%
C	3	latitude	Latitude	Decimal	Auto-populated	100%
D	4	longitude	Longitude	Decimal	Auto-populated	100%
E	5	date_of_survey	Date of Survey	MM/DD/YYYY	Auto-populated	100%
F	6	photos	Photos	Comma separated values	*Photos associated with record*	100%
G	7	nb_assessment_type	Assessment Type	Single Choice	Power Infrastructure Bridge Dam Road Other	100%
H	8	nb_damage	Damage	Binary	Yes No	100%
I	9	damage_level	Damage Level	Single Choice	Undamaged Minor Moderate Severe Destruction	100%
J	10	damage_source	Damage Source	Multiple Choice (Comma separated text)	Flood Flood-borne debris Landslide Surge Wind Wind-borne debris Other	80%
K	11	general_notes	General	Text	*General notes by surveyor*	60%

ENGAGING THE
eld data research model

StEER PRODUCT CURATION HANDBOOK



StEER STRUCTURAL EXTREME EVENTS RECONNAISSANCE

Product Curation Handbook
Version 3.0
Updated May 15, 2020

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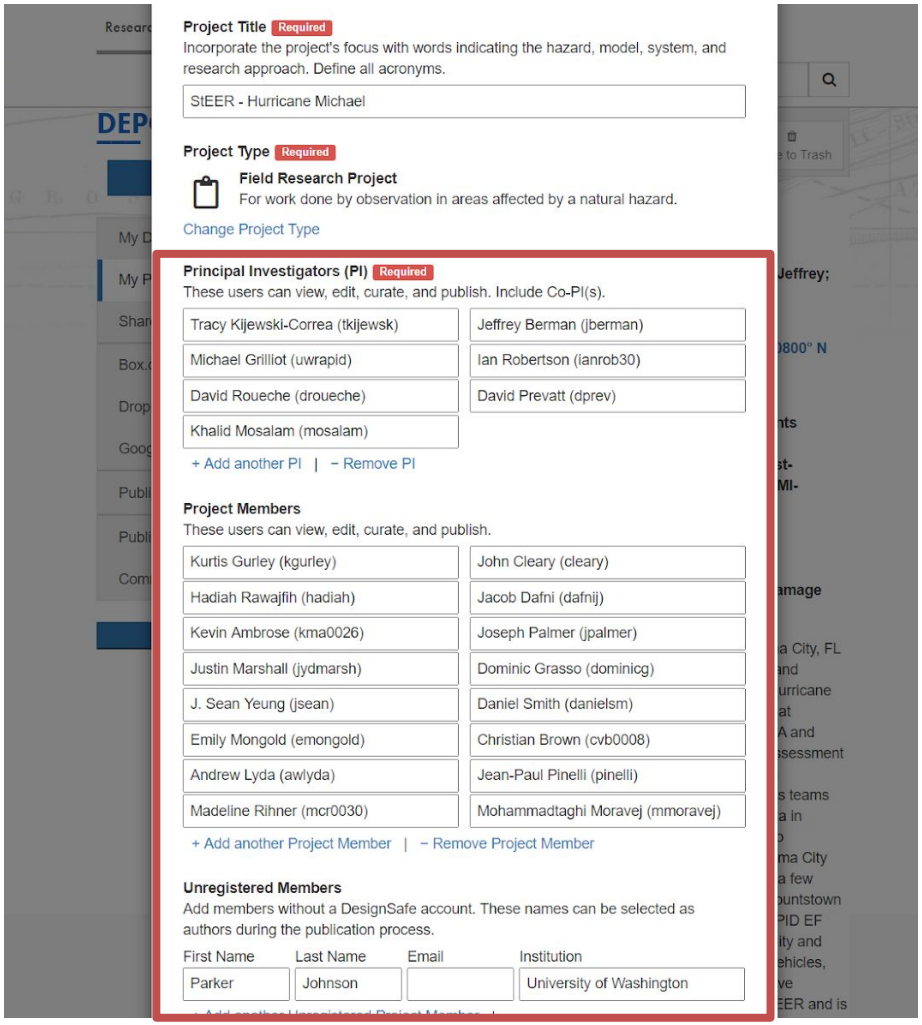
Briefings

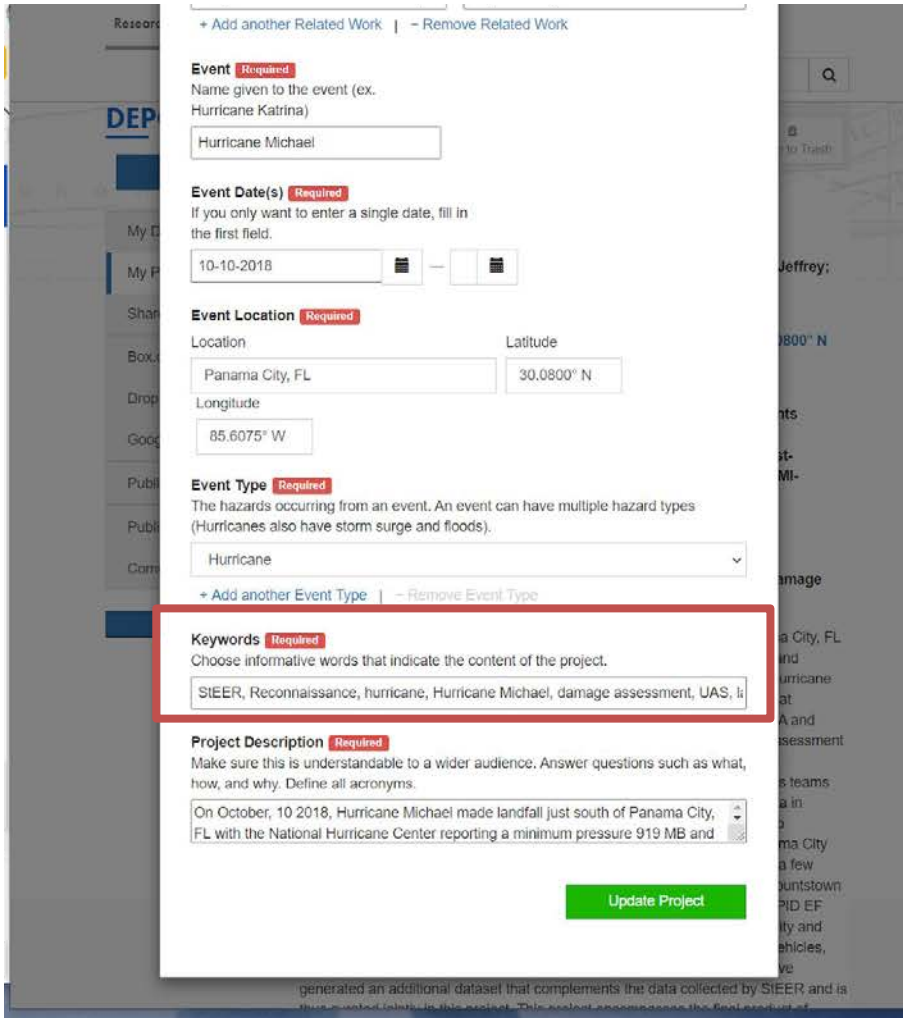
Reports

Datasets

Accessible at:
https://www.steer.network/resources

PROJECT HEADER





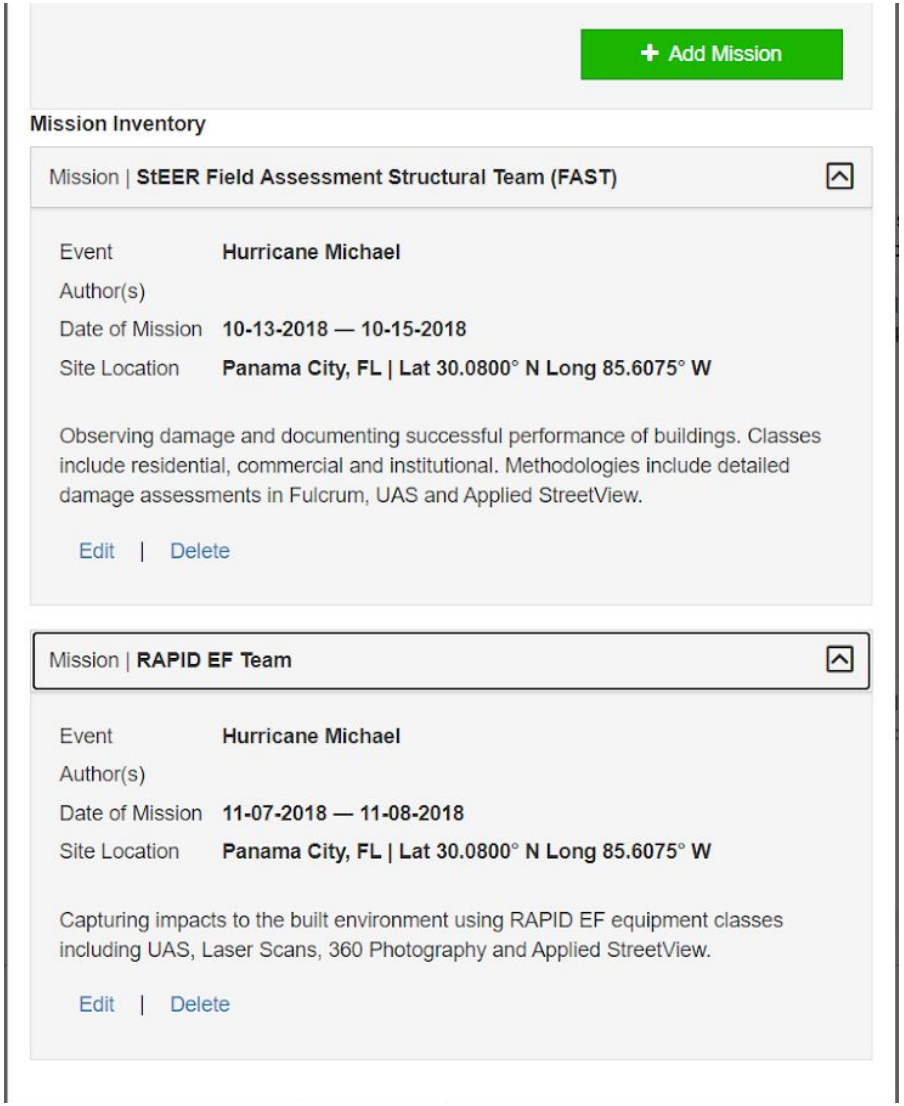
TIP: Keywords: reconnaissance, [Event type: tornado, earthquake, etc], [Event name and/or location(s)], [Assessment types: damage assessment, coastal survey, streetview, UAS, laser scan]

☐	**D0. Planning Documents**	StEER	*Pre-deployment briefing*
☐	**D1.1 Building Damage Assessments**	StEER	*Damage assessments from Fulcrum*
☐	**D1.2 Non-Building Damage Assessments**	StEER	
☐	**D1.3 Hazard Indicators**	StEER	
☐	**D2.1 Applied Streetview**	StEER	*Streetview panoramas*
☐	**D2.2 OSMO Camera Imagery**	RAPID EF	
☐	**D3.1 Unmanned Aerial Vehicle**	StEER	*Unmanned aerial systems (UAS)*
☐	**D3.2 Unmanned Aerial Vehicle**	RAPID EF	
☐	**D4. Laser Scans**	RAPID EF	*Terrestrial laser scans*
☐	**D5. 360 Camera**	RAPID EF	*Handheld 360 camera*
☐	**D6.1 Other Ground-Based Imagery**	StEER	*Site photos, other photos captured outside of Fulcrum*
☐	**D6.2 Other Ground-Based Imagery**	RAPID EF	
☐	**D7.1 GPS Data**	StEER	*Positioning data supporting UAS*
☐	**D7.2 GPS Data**	RAPID EF	
☐	**D8. Daily Summaries**	StEER	*Nightly briefings*
	Data Report	StEER	*Detailed overview of data*

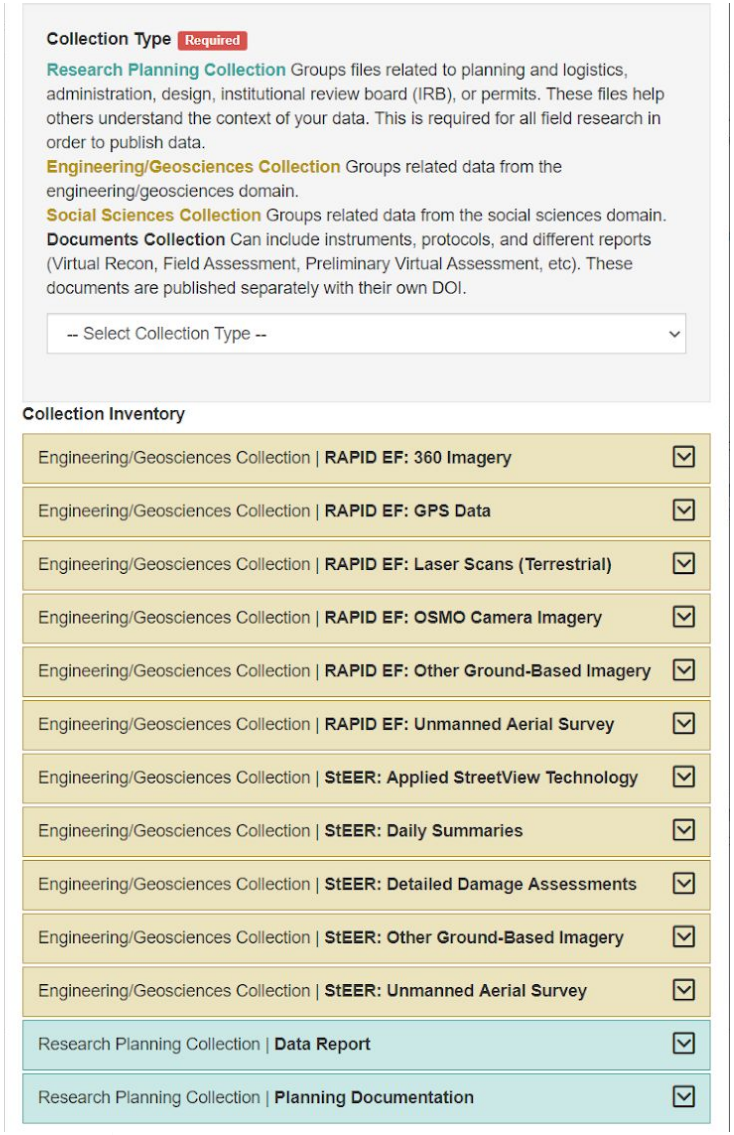
1. DEFINE MISSIONS

StEER GUIDANCE

- **Mission Title:** [Subteam Name]
- **Event:** [event name]
- **Dates of Mission:** [Data Collection Start and End Dates]
- **Authorship:** [check all members of subteam (includes field and support team)]
- **Mission Site Location:** [City and coordinates]
- **Mission Description:** [Describe subteam objectives, methodologies, adapted from Sections 1-2 of Data Report]



2. DEFINE COLLECTIONS



- Each mission requires:
  - **Research Planning Collection:** Pre-Deployment Briefing, Data Report
  - **Engineering/Geosciences Collection:** each methodology or data class

2. DEFINE COLLECTIONS

StEER GUIDANCE

- **Collection Title:** [Unique to data type]
- **Observation Type(s):** (Drop Down)
- **Date(s) of Collection (in Dash FORMAT):** [Start and end dates]
- **Data Collectors:** [Check the names of persons acquiring that data or authoring that document]
- **Collection Site Location:** [enter location with lat/long]
- **Equipment:** (Drop Down)
- **Referenced Data Title:** (Generally Leave Blank)
- **Collection Description:** [Adapted from Section 2 of Data Report]

Data Collector(s) Required

Who, specifically, collected this data? You can order the data collectors later when you publish.

☐ Kijewski-Correa, Tracy	☐ Berman, Jeffrey
☐ Prevatt, David	☐ Robertson, Ian
☐ Mosalam, Khalid	☐ Grilliot, Michael
☐ Roueche, David	☐ Pinelli, Jean-Paul
☐ Mongold, Emily	☐ Rawajfih, Hadiah
☐ Rihner, Madeline	☐ Yeung, J. Sean
☐ Gurley, Kurtis	☐ Smith, Daniel
☐ Dafni, Jacob	☐ Moravej, Mohammadtaghi
☐ Grasso, Dominic	☐ Lyda, Andrew
☐ Ambrose, Kevin	☐ Marshall, Justin
☐ Brown, Christian	☐ Palmer, Joseph
☐ Cleary, John	☐ Johnson, Parker

Collection Inventory

- Engineering/Geosciences Collection | **RAPID EF: 360 Imagery**
- Engineering/Geosciences Collection | **RAPID EF: GPS Data**
- Engineering/Geosciences Collection | **RAPID EF: Laser Scans (Terrestrial)**
- Engineering/Geosciences Collection | **RAPID EF: OSMO Camera Imagery**
- Engineering/Geosciences Collection | **RAPID EF: Other Ground-Based Imagery**
- Engineering/Geosciences Collection | **RAPID EF: Unmanned Aerial Survey**
- Engineering/Geosciences Collection | **StEER: Applied StreetView Technology**

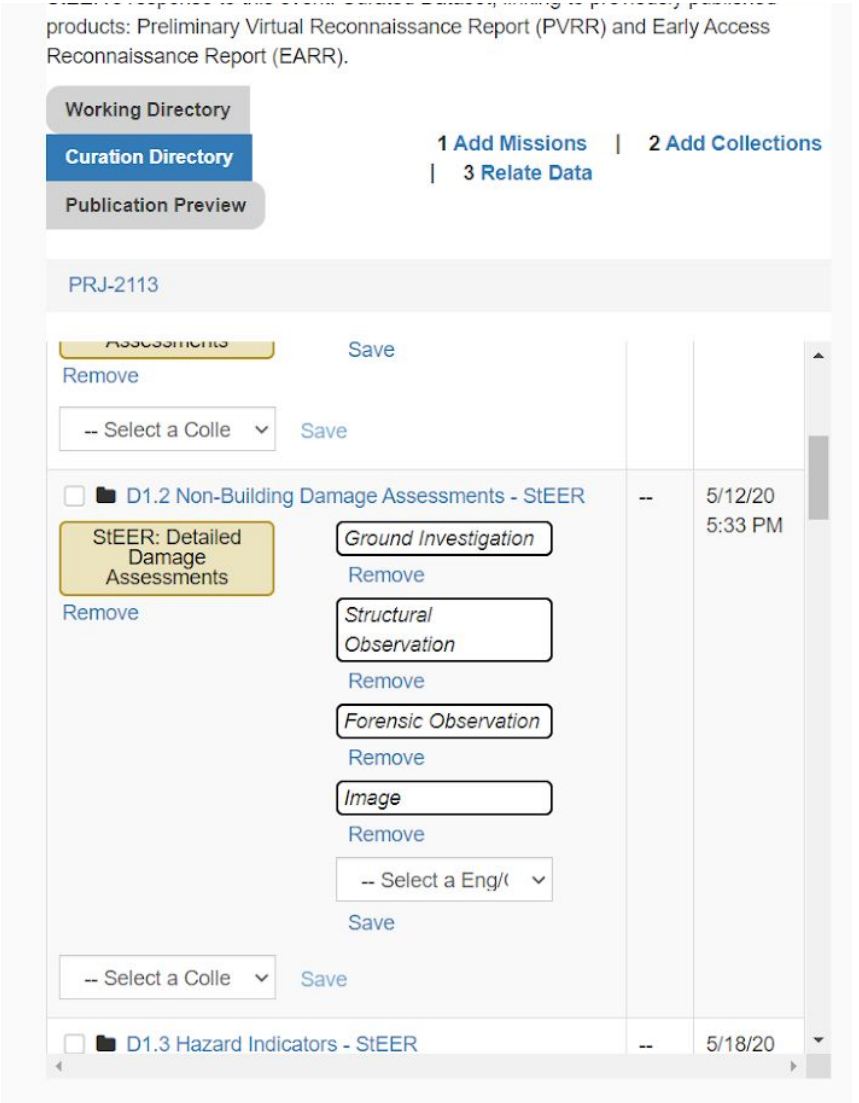
Observation Type(s)	**Wind** **Structural** **Storm Surge / Coastal**
Date(s) of Collection	**10-14-2018 — 10-15-2018**
Data Collector(s)	**Smith, Daniel** **Cleary, John**
Site Location	**Panama City, FL | Lat 30.0800° N Long 85.6075° W**
Equipment	**Car Camera System | Applied Streetview 360 degree panorama GPS camera system**

Advance Scout Team surveyed larger areas for rapid assessment of damage using Applied StreetView (ASV) technology. The Advance Scout Team also recorded spot D2D Assessments of representative performance and identified areas for follow-up assessment based on damage and accessibility

Edit | Delete

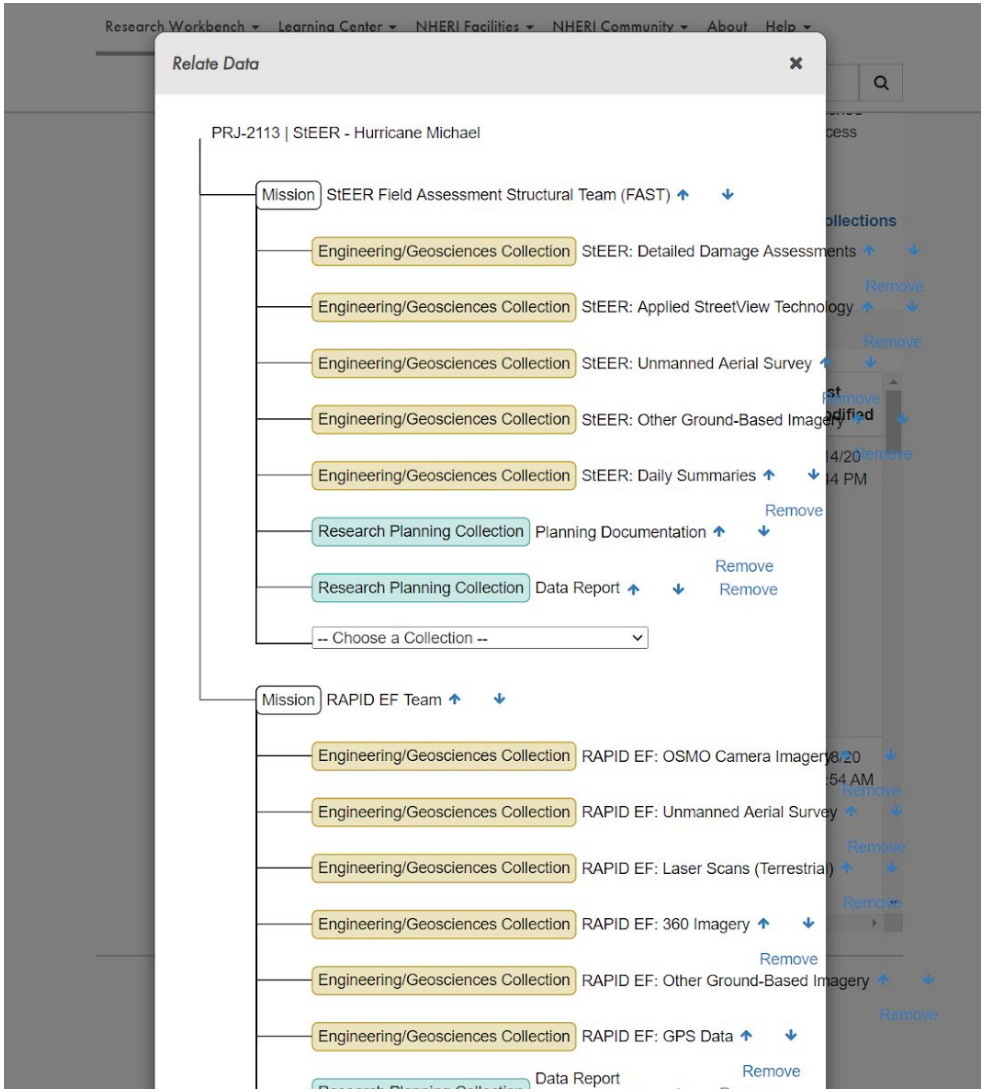
3. RELATING DATA: ASSIGNING TAGS

- For each file/folder, assign a collection
- Then each folder/file can also be tagged
- More than one tag can be assigned from list of pre-defined tags
- Or use **Other** to define custom tags
- Example: Damage Assessments:
  - Structural Observation
  - Forensic Observation
  - Ground Investigation
  - Image



3. RELATING DATA: ORDERING

- **Associate collections with respective Missions:** all collections must eventually be assigned to one or more of the missions using the drop down list
- Use arrows to **order them** (recommend same order as in Data Report)
- Some collections may be associated with **multiple missions**, e.g., Data Report

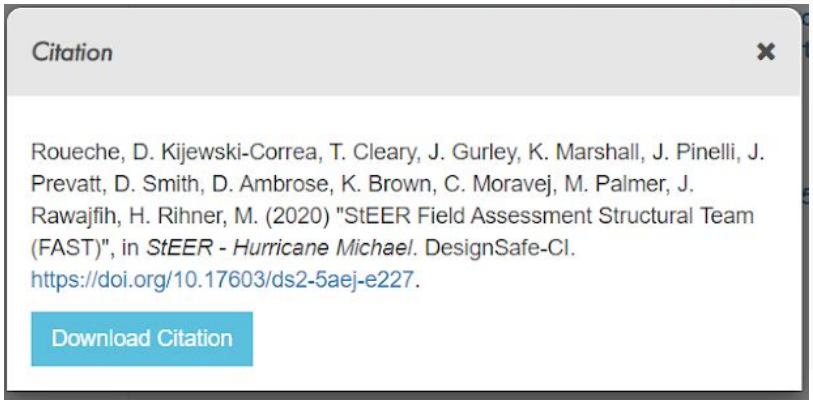


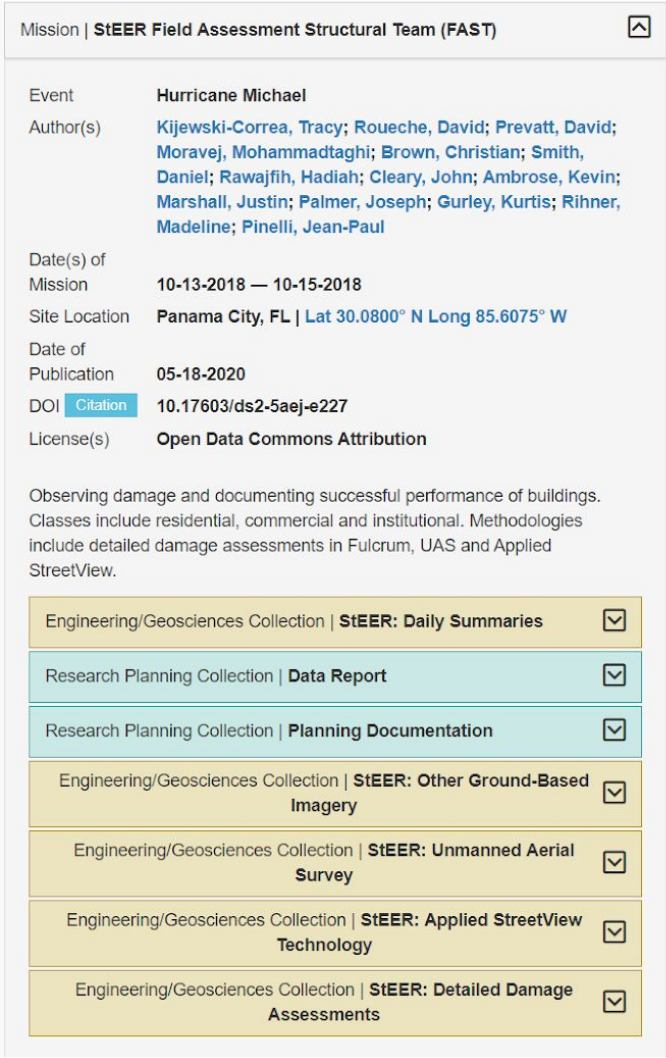
PUBLISHING TIP

StEER GUIDANCE

Consider Rationale for Authors: (order can be adjusted in publishing workflow)

a. FAST Lead(s)
b. Data Standards Lead (if applicable)
c. Mission Coordinator (if applicable)
d. remaining FAST members in alphabetical order
e. Data Librarians/VAST (lead following by others in alphabetical order)
f. Data Report Lead (if applicable)





PROGRESSIVE CURATION

PROGRESSIVE CURATION

1 WEEK
PVRR Released

2 WEEKS
EARR Released

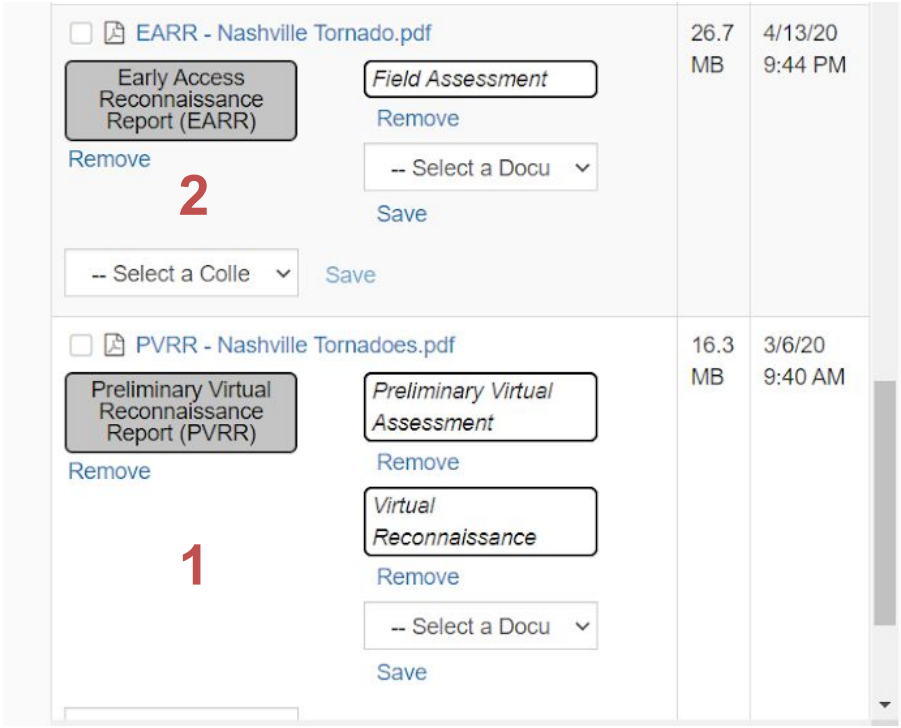
3 MONTHS
Dataset Curated

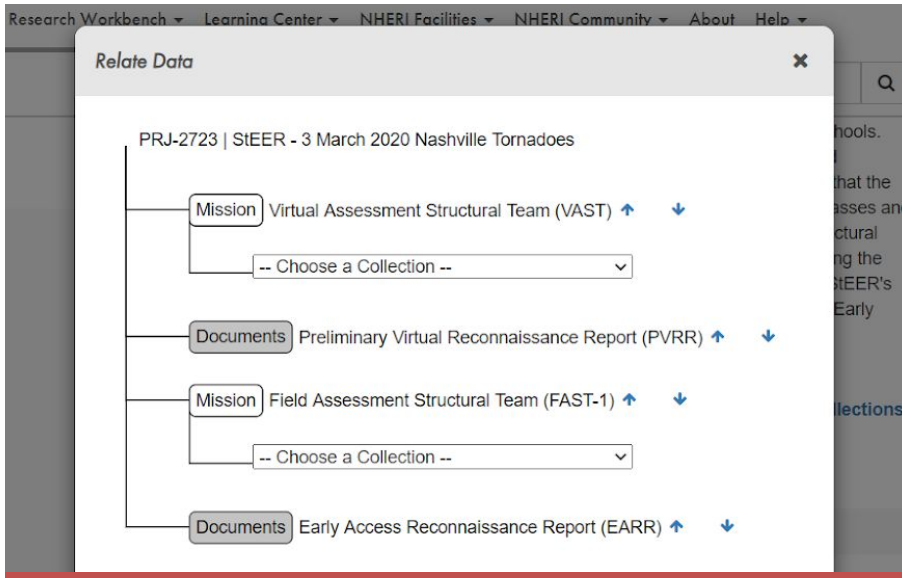
EVENT

VAST: Compile Preliminary Data Author PVRR

FAST: Deploys
VAST: Screen Data and Author EARR

Data Librarians: Data Enrichment & Quality Control (DEQC)





Accessible at: DesignSafe PRJ-2723
https://doi.org/10.17603/ds2-d0z8-0z73,
https://doi.org/10.17603/ds2-2zs2-r990

Progressive Curation

1

Documents | **Preliminary Virtual Reconnaissance Report (PVRR)**

Author(s) **Roueche, David; Ambrose, Kevin; Kijewski-Correa, Tracy; Micheli, Laura; Rawajfih, Hadiah; Rihner, Madeline; Prevatt, David; Robertson, Ian**

Date of Publication **05-08-2020**

DOI Citation **10.17603/ds2-d0z8-0z73**

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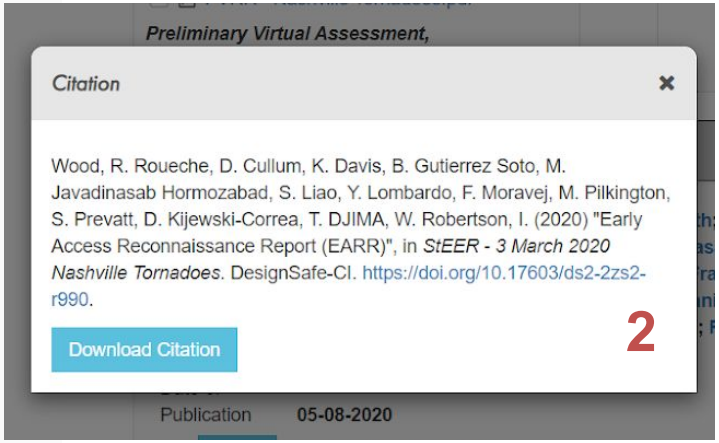
The first product of StEER's effort to learn from the Nashville Tornadoes of 3 March 2020 is this Preliminary Virtual Reconnaissance Report (PVRR), which is intended to: (1) provide an overview of the tornado sequence, particularly relating to the impact of strong winds and wind-borne debris on the built environment, (2) overview the regulatory environment and construction practices in the affected area, (3) summarize the preliminary reports of damage to residential and commercial construction, as well as critical facilities such as schools, airports and power infrastructure, (4) establish current conditions in the affected area with respect to access and services, (5) outline recommendations to inform the continued study of this event by the engineering reconnaissance community, including interdisciplinary teams focusing on sheltering choices and decision making. As the product of entirely virtual reconnaissance, the PVRR is not based upon detailed field investigations by StEER.

Name	Size	Last modified
PVRR - Nashville Tornadoes.pdf ***Preliminary Virtual Assessment, Virtual Reconnaissance***	-	--

2

Documents | **Early Access Reconnaissance Report (EARR)**

Accessible at: DesignSafe PRJ-2723
https://doi.org/10.17603/ds2-d0z8-0z73,
https://doi.org/10.17603/ds2-2zs2-r990



OUR DISTINCTIVE APPROACH

EARLY	EFFICIENT	IMPACTFUL
Centralized event response with strategic mission objectives	Leveraging virtual reconnaissance	Enriched, standardized and quality controlled data suitable for diverse re-uses

VALUING PUBLISHED DATA

- Always **cite published datasets in the references** using full data citation and DOI in https format (https://doi.org/xxxxx)
- If a dataset was described in a Data Paper, **cite both the data paper and the dataset**
- In technical presentations, **discuss availability of the enabling datasets** (including the DOI)
- Acknowledge your data publications as **scholarly contributions** (always including the DOI):
  - list them in your CV
  - include them in any online presence you have (e.g., faculty pages, research center pages)
  - promote them using social media

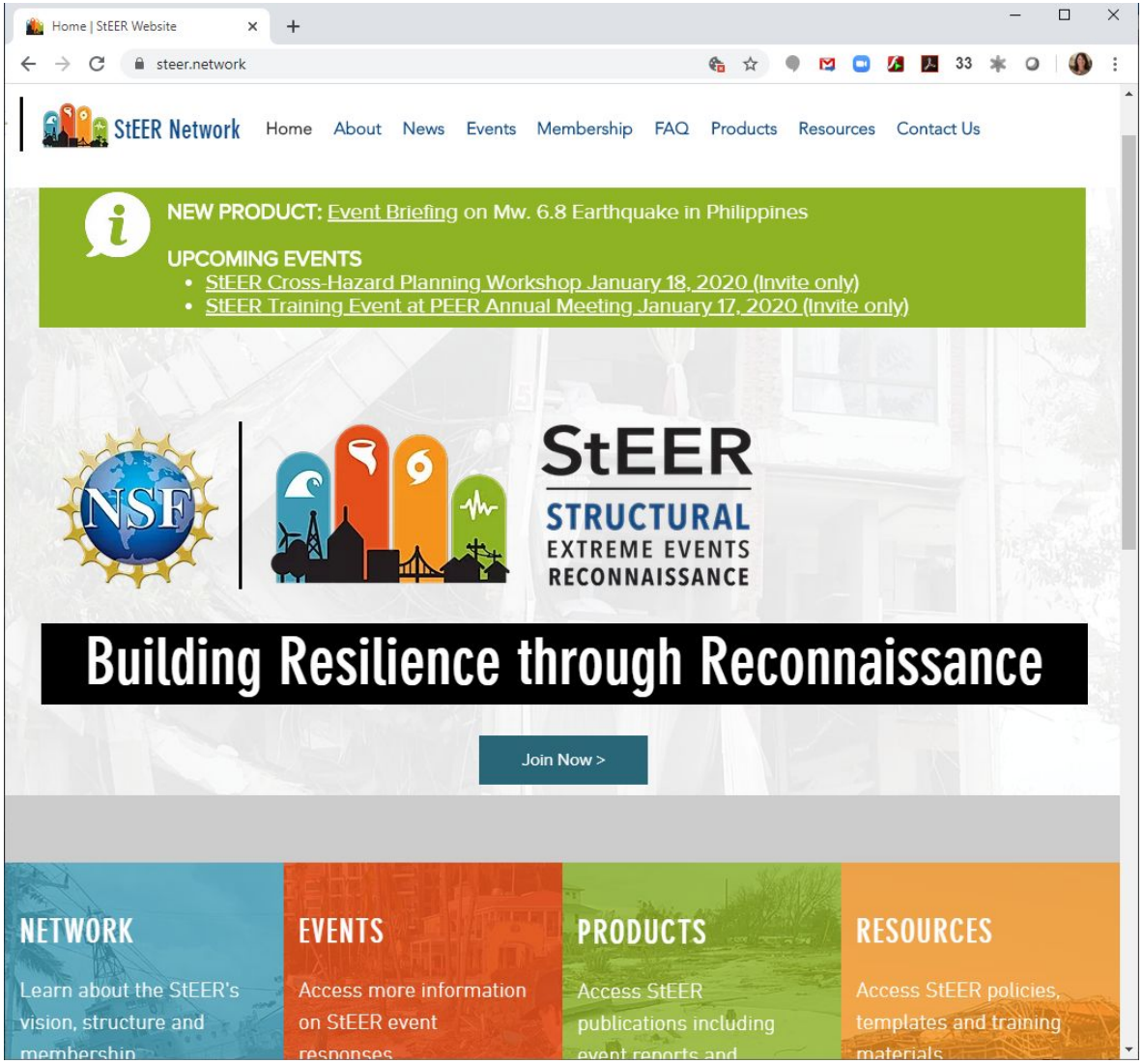
ACKNOWLEDGEMENTS

- **StEER is funded by the US NSF (Award No. CMMI 18-41667)**
  Any opinions, findings, and conclusions or recommendations expressed are those of the author(s) and do not necessarily reflect the views of the National Science Foundation
- **CONVERGE node and wider Extreme Events consortium:**
  - Geotechnical Extreme Events Reconnaissance (GEER)
  - Nearshore Extreme Event Reconnaissance (NEER)
  - Interdisciplinary Science and Engineering Extreme Events Research (ISEEER)
  - Operations and Systems Engineering Extreme Events Research (OSEER)
  - Social Science Extreme Events Research (SSEER)
  - Sustainable Material Management Extreme Events Research (SUMMEER)
  - NHERI RAPID equipment facility
  - **NHERI DesignSafe CI**
  - NHERI Network Coordination Office (NCO)
- **Spatial Networks Inc.** (Fulcrum Community)
- **Our members and their institutions**

JOIN OUR EFFORTS

➢ Learn more at **www.StEER.network**

➢ See **Resources** Tab

➢ Become a member:
- Complete membership form at **www.StEER.network**
- Access Fulcrum App library

➢ Monitor #steer channel on Slack, email announcements