



Natural Hazards Engineering Research Infrastructure (NHERI) Program
of the National Science Foundation (NSF)

RAPID NHERI

The NHERI logo consists of three triangles: a blue triangle with a white location pin, a green triangle with white arrows pointing up, and a red triangle with white lightning bolts.

Natural Hazards Reconnaissance Facility

**AGENDA, LIST OF ATTENDIES, AND WORKSHOP
PRESENTATION SLIDES**

**Natural Hazards Reconnaissance Facility
Equipment Training Workshop**

**Tuesday, July 24 through Friday, July, 27, 2018
University of Washington
Seattle, WA 98195**

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Natural Hazards Reconnaissance Facility Workshop Equipment Training Workshop

Workshop Agenda: Version 2.0
Tuesday, July 24 through Friday, July, 27, 2018

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Seattle, WA 98195

Schedule at a Glance

	Tuesday (7/24)	Wednesday (7/25)	Thursday (7/26)				Friday (7/27)		
9:00	Day 1 Presentations (HUB 250)	Day 2 Presentations (Parrington Commons)	Point cloud processing, registration, and visualization (via the CAVE) (Wilcox Computer Lab, RAPID HQ More 116) (Mike, Jake)				Seismic MASW (More 110, Atmospheric Sciences) (Jake, Ryan)	Long Range Scanning (Red Square, Wilcox Computer Lab) (Mike, Joe)	Streetview (Mueller Parking Lot, RAPID HQ) (Jeff, Carolyn)
9:30									
10:00									
10:30									
11:00									
11:30									
12:00	LUNCH (12PM to 1PM)								
12:30									
13:00	BLK360 Scanning (HUB 250 to Mueller Courtyard) (Jake, Sean)	SfM (Mueller Courtyard to Wilcox Computer Lab) (Joe, Jakob, Natalie)	Advanced Surveying GNSS, Total Stations (Mueller Courtyard, RAPID HQ) (Mike, Sean Ezra)	Seismic: Seismometers (RAPID HQ, Rainier Vista) (Jake, Nick and Ian from Nanometrics, Clint Wood)	Emotiv (More 110) (Scott, Ann, Parker)	Coastal Z-Boat (More 218, WAC) (Jen, Vitad from Teledyne)	RApp and DesignSafe (Potree, GIS) (Wilcox Computer Lab) (Tim from DesignSafe, Troy)		
13:30									
14:00	Drone Demo SfM (More 116 to IMA Field 4) (Jake, Joe)						END OF SESSION @ 4PM		
14:30									
15:00									
15:30									
16:00									
16:30									
17:00	END OF SESSIONS @ 5PM								

Tuesday 7/24 Dinner: Agua Verde (6-9PM)

Wednesday 7/25 Dinner: UW Club BBQ (Only if you previously RSVP'd) (5PM Social Hour, 6PM Dinner)



Details

Tuesday 7/24 Morning: Presentations (HUB 250)

- 9:00 to 9:30: Welcome and workshop overview [J. Wartman]
- 9:30 - 9:45 Self-introductions to facilitate networking (name, affiliation, research areas) [A. Bostrom]
- 9:45 - 10:00: Break
- 10:00-10:30: Welcome from NSF [R. Fragaszy, NSF]
- 10:30-11:00: Intro to the RAPID: history or recon., mission, vision [G. Hsuan]
- 11:00 - 11:30: Practicalities, how to access/use the RAPID, policies, insurance, scheduling [J. Berman]
- 11:30 - 11:45: RAPID science plan [J. Berman]
- 11:45 - 12:00: Overview of DesignSafe [J. Berman]

Tuesday 7/24 Afternoon: Activities

1:00 to 3:00 - BLK 360 [J. Dafni and S. Yeung]

- Introduction to scanner and features
- Field exercise with groups planning and then scanning inside and outside of buildings
- Collection of GPS and total station for control points
- Auto registration process using Recap App (in field)

3:00 to 5:00 - Drone demo [J. Dafni and J. Wartman]

- Flight demo with Matrice 210
- Pre-programed flights with Pix4d App
- Introduction of fleet of drones, including lidar drone
- Creation of orthomosaic



Wednesday 7/25 Morning: Presentations (Parrington Commons, Parrington Hall, Room 308)

- 9:00-9:30: Detailed example of a start-to-finish reconnaissance (GEER Oso mission and follow-on) [J. Wartman]
- 9:30-10:05: Demonstration of other field instrumentation not otherwise covered in the workshop [J. Dafni and T. Tanner]
- 10:05-10:20: Break
- 10:20-10:45: Overview of Data Curation on DesignSafe [M. Estava]
- 10:45 - 10:55: Elements of a successful proposal [S. Miles]
- 10:55-11:10: Health and Safety: field safety, health, and emotional well-being; guide to resources [J. Wartman]
- 11:10-11:25: Interdisciplinary reconnaissance and the EERs [Haorui Wu]
- 11:25 - 12:00: Human subjects and ethics (facilitated discussion) [S. Miles]

Wednesday 7/25 Afternoon: Activities

Structure from Motion [J. Wartman]

- What is SfM? Practical aspects and theory
- Photo acquisition workflow
- Pix4D workflow
- SfM vs. lidar
- Case study: Alaska (O'Banion et al.)
- SfM hands-on project
- Pix4D processing

Thursday 7/26 Morning: Activities

Point cloud processing [M. Olsen, J. Dafni]:

- Registration of BLK360 data in Register 360 or Cyclone with quality control checks.
- Overview of Cloud Compare.
- Cloud Compare Activity: Compare baseline scans from Tuesday's data. Extract planes and objects.
- Viewing of BLK360 data in CAVE (3D visualization system).



Thursday 7/26 Afternoon: Modules

- Module 1: Advanced surveying [M. Olsen, E. Che, S. Yeung]
 - Digital level profile
 - Total Station
 - GPS (RS/RTK mode)
 - Data download and processing with Leica Infinity software
- Module 2: Nanometrics Seismometers [J. Dafni, C. Wood, Nanometrics (I. Pritchard, N. Pelyk)]
 - Lecture: Seismometer case studies
 - Introduction to Trillium compact seismometers and Centaur digitizer
 - Field Activity: Best practices and setup; everyone sets up seismometers and collects their own data
 - Centaur features and retrieval of data
 - Nanometrics (vendor for seismometers) on hand for training
- Module 3: Obtaining Coastal Bathymetry with the Z-Boat [J. Irish, Teledyne (V. Pradith)]
 - Lecture: Applications of bathymetry acquisition from the literature
 - Demonstration of Z-Boat: Route planning, launching, data acquisition, preliminary data processing
 - Teledyne (vendor for Z-Boat) on hand for training.
- Module 4: Emotiv Headsets for Portable EEG Acquisition [A. Bostrom, S. Miles]
 - Lecture: Applications of EEG's in Hazards Research
 - Hands-on Emotiv EEG setup and use
 - Preliminary data processing

Friday 7/27 Morning: Modules

- Module 5: MASW [J. Dafni, R. Rasanen]
 - Lecture: Applications of MASW for site characterization and best practices for use of the wireless ATOM seismic data acquisition system
 - Field Activity: Data collection using passive and active methods
 - Data retrieval and preliminary processing
- Module 6: Long-Range lidar Scanning [M. Olsen]
 - Data collection using Maptek scanners and GPS
 - Point cloud registration using Maptek I-Site software
 - Editing of data using Maptek I-Site
 - Creation of a topographic TIN
 - Preliminary data processing
 - Extraction of contours



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- Module 7: Applied Streetview [J. Berman]
 - Applications of Streetview in hazards research
 - Setting up the Applied Streetview System
 - Route planning
 - Data processing in Creator 2 (Demo)

Friday 7/27 Afternoon: Activities

RApp demonstration (RAPID mobile application under development for field data collection)

Use of the Reconnaissance Features of DesignSafe: Hands-on learning

- Setting up reconnaissance projects in the Reconnaissance Portal
- Using HazMapper
- Viewing point clouds in Potree on the DesignSafe Workbench
- Importing and using reconnaissance data in QGIS on the DesignSafe Workbench