FIU | Wall of Wind

NHERI Experimental Facility

NHERI Wall of Wind Experimental Facility Data Management Plan

Table of Contents

Revision History

Version	Date	Author	Comments
V1.0		Arindam Chowdhury	Original document
V2.0	October 28, 2016	Raphael Greenbaum	Formatting and content changes
V2.1	December, 8, 2016	Raphael Greenbaum	Minor corrections

1. Introduction

This Data Management Plan describes the general policy for generation, descriptions, access, redistribution, and retention of data created in the use of the NHERI Wall of Wind (WOW) Experimental Facility (EF) for NSF funded projects.

2. Types of Data

2.1. Raw Experimental Data

The NHERI WOW EF has the capacity to generate the following types of raw experimental data for any proposed project during experiments performed under wind (and wind driven rain, if needed):

2.1.1.   Sensor data (e.g., displacement, strain, load, acceleration) acquired via NI compactRIO (cRIO) data acquisition (DAQ) devices.

2.1.2.   Pressure data acquired via a Scanivalve electronic pressure scanner system.

2.1.3.   Dynamic air pressure data acquired with Turbulent Flow Instrumentation Cobra Probes.

The collected data will consist of raw (unprocessed/uncorrected) sensor data and sensor calibrations in binary and ASCII comma separated values (.CSV) files.

2.2. Processed Data and Images

The processed data will consist of observations from tests, analyses, logs, drawings and sketches of models and instrument locations, data converted to engineering units and, if applicable, processed and/or corrected data in tabular or graphical format (e.g., tables or plots of aerodynamic coefficients obtained using codes developed at the EF). In the context of a DMP, code is also considered data and can be licensed and publicly shared. The MATLAB codes that may be used are related to tubing transfer function, partial turbulence simulation, and peak coefficients prediction.

The data package will also contain high resolution photographs and high definition videos of the experiments capturing wind-induced vibrations, wind damage initiation and propagation, mechanisms of wind driven rainwater ingress through components (if applicable), and flow visualization aided by smoke generators and other methods (if needed).

3. Data and Metadata Standards

The data need to be adequately described so it can be retrieved and reused by the project team and by others. DesignSafe will have built-in support for descriptive tagging and automatic extraction of technical metadata about the project files. All experimental data related to the project will be identified by standardized metadata and data formats according to the CI's data curation guidelines. The *metadata* will identify the data according to the description of the experiments, test specimens, experimental environment and parameters (e.g. model scale; wind speed, direction, and turbulence characteristics; terrain category; rain intensity, if applicable), date, and time of capture. The project and the metadata will be organized based on the hierarchy below:

Project: Representing an overall research project, which includes one or more experiments.

Experiment: Representing a physical test (aerodynamic/aeroelastic, failure mode, wind-driven-rain).

Trial: Associated with an experiment; multiple trials may be applied to the same experimental set up.

Repetition: Associated with a trial; repeated tests for same trial without changing trial parameters.

In collaboration with the DesignSafe CI, the PIs will deposit data in the DesignSafe Data Repository, called the Data Depot. In this way the dataset will be described and published with all the information required for others to reuse it. It will also use the DataCite metadata schema for data citation purposes.

4. Policies for Access and Sharing

The DesignSafe CI is an end-to-end data management, analysis and publication platform. All data collected and generated during the project will be deposited in the DesignSafe Data Depot from the inception of the research project. Experiment planning documentation and data incoming from the experiments will be shared with the researchers through the CI. While the PIs are actively working on the research project they will be able to share the data with their team members and any other user to which PIs give authorization. The research team will be responsible for curating its data progressively using tools and facilities provided by the CI for the purpose of keeping track, describing, and organizing the data while conducting analysis using the DesignSafe Discovery Workspace. Data in the DesignSafe Data Depot will be version controlled, and it will be possible to gather and input provenance information throughout data analysis.

The DesignSafe CI includes a public data repository that supports searching, browsing, sharing, downloading and reusing free and unrestricted (beyond citation requirements) data and supporting documents. After data is curated and ready to be published, it will receive a DOI for persistent identification, citation, and sharing.

5. Policies for Reuse and Redistribution

Within the DesignSafe CI, the PIs will choose a license for their material. Because the DesignSafe Data Depot is an open repository, the following licenses are offered:

For datasets: ODC-PDDL and ODC-BY

For copyrightable materials (for example, documents, workflows, designs, etc.): CC0 and CC-BY

For code: any open, non-commercial license (for example, GPL)

The PIs will select appropriate licenses for their data after researching which license best fit their needs and institutional standards.

6. Plans for Archiving and Preservation

Depositing the data and associated materials in the DesignSafe Data Depot meet NSF requirements for preservation. It is to be noted in this data management plan that the CI will persistently maintain all uploaded data on storage resources at the Texas Advanced Computing Center, and these resources are redundant and geographically replicated. Features will be in place to ensure the authenticity, integrity, security and persistence of the datasets for open access. The DesignSafe CI has stated its commitment towards the continuity of data preservation and has ensured preservation beyond the conclusion of the DesignSafe project.