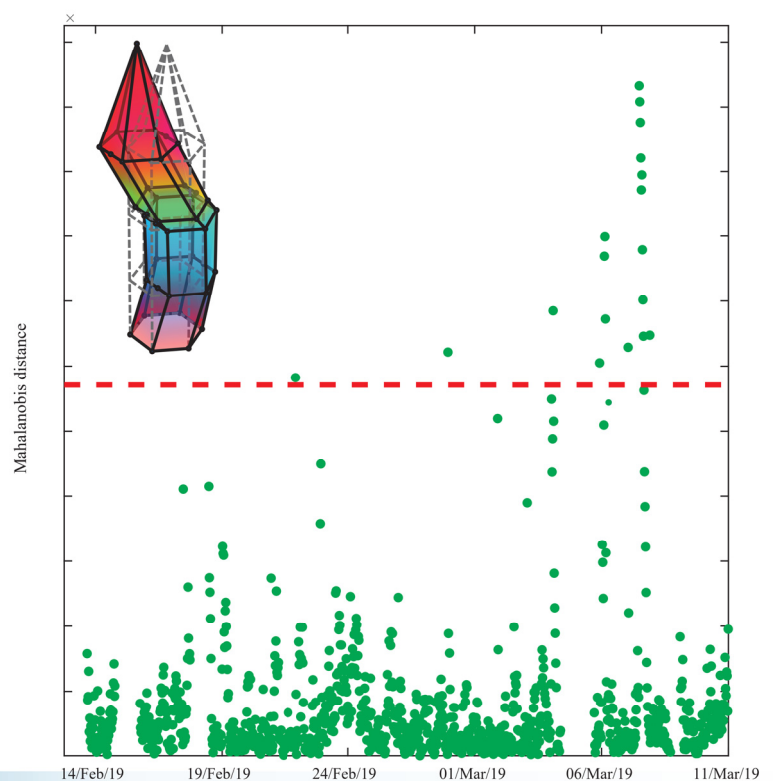
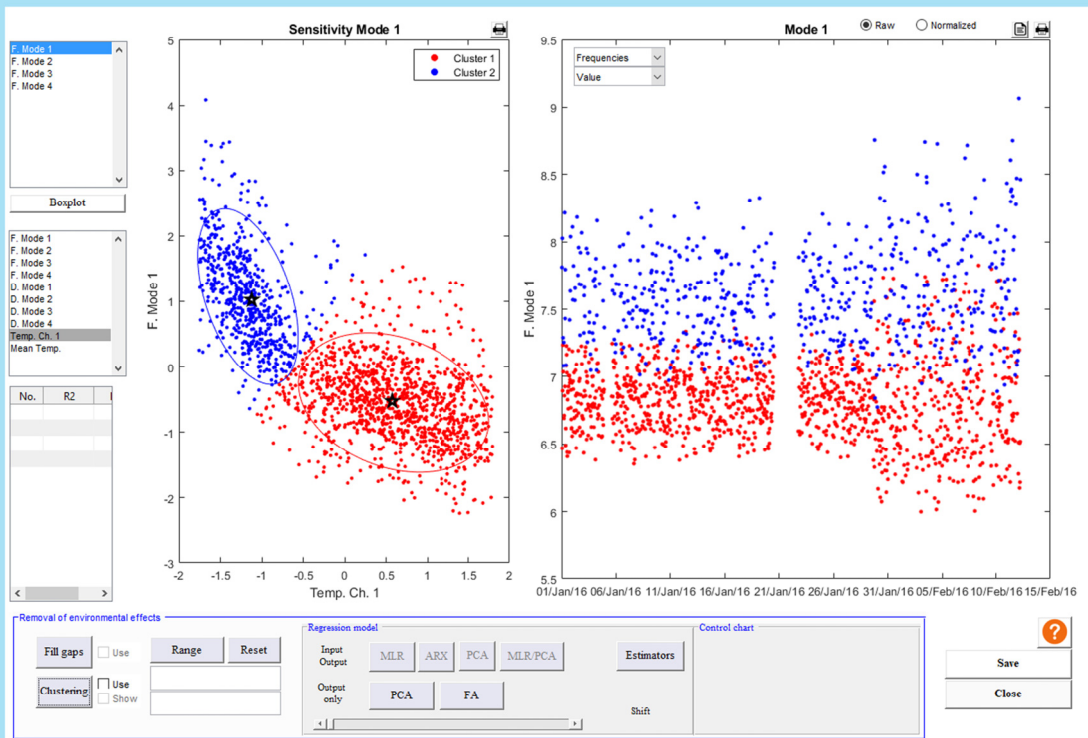


MOSS is a comprehensive software for Structural Health Monitoring of structures based on Operational Modal Analysis. The software comprises all the aspects of the monitoring since the management of vibration records, monitoring of environmental conditions, signal processing, system identification, damage detection, and surrogate modeling. Coded into MATLAB environment, the software includes seven different modules: Geometry module; Signal processing; System identification; Frequency tracking; Multivariate Statistical Analysis; Surrogate modeling; and Damage detection.

Through an intuitive graphical user interface, the software allows the continuous modal identification and damage identification of structures.





### AVAILABLE ALGORITHMS

The software includes a complete Multivariate Statistical Analysis tool, comprising diverse Input-Output and Output-only algorithms. These include:

- Multi-Linear Regression
- Exogeneous Autoregressive Modeling
- Principal Components Analysis
- Factor Analysis

The software also counts on additional tools to optimize the damage detection, including:

- Clustering analysis for the detection of freezing/deicing conditions
- Filling of missing measurements
- Outliers filtering

### DAMAGE IDENTIFICATION

Damage detection is performed through novelty analysis of the modal features, including diverse damage-sensitive metrics such as the Residuals, Mahalanobis distance, or Hotelling's T-square. The software implements an automatic control chart which analyzes in real-time the acceleration records of a monitoring system, and includes alarms via e-mail when potential damage is found in the structure.

Additionally, damage identification (detection, localization and quantification) can be performed through the surrogate modeling module. The software implements different techniques to obtain a training population for the surrogate model, and includes a model updating approach for the continuous tracking of the model parameters.

