Developing a Database for the Fragile Geologic Features at Trona Pinnacles National Monument

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Abstract

- Fragile geologic features (FGFs) can be used to constrain ground motions from large earthquakes in places where recording instruments are not available.
- This database will be made available to researchers working on ground motion estimates and serve as a reference to monitor future damage.

Data Collection

Our data that will be used for the final products includes the following:
- Geotagged field photographs taken post-Ridgecrest, with related EXIF data extracted from said photographs.
- Several point clouds of the focus area in Trona Pinnacles.
- Tensile strength data on a subset of spires.
- Pre-Ridgecrest photographs from the web.

Aggregation Methodology

Our data aggregation methodology includes the following steps:
- Developing a framework using MATLAB to collect data and aggregate it in a database that includes images of each spire taken soon after Ridgecrest, precise coordinates and elevation for each spire, as well tensile as strength measurements and links to pre-Ridgecrest images.
- Assigning identification numbers to each spire based on photographs.
- Populating a spreadsheet with data about the features, using visual recognition from field photographs as well as the point cloud sent in.
- Cataloging pre-event photographs of the spires.
- The database will be delivered via web tools.

Database Products

- The final products will be the following:
  - A populated spreadsheet with data about each photograph.
  - A database discoverable via web tools.

References


Brune, J. (2019) Figure 1 photo from 2001 (pers. comm.)