Distinguishing Earthquakes from Anthropogenic Events in Madagascar
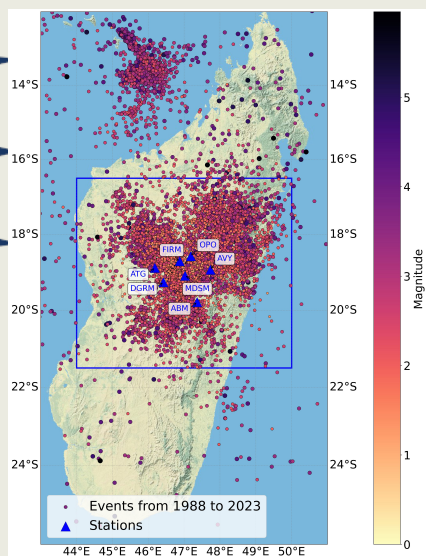
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- **Motivation:** Earthquake catalogue is contaminated by anthropogenic events

- **Objective:** to discriminate between human-made and natural earthquake using convolutional neural network

- **Why it is important :** A contaminated catalogue could bias the hazard assessment, as these phenomena have different physical processes, and it is important for mining control

- **Development steps:**

  - (1) Generating spectrograms from waveforms

  - (2) Learning process using known events (historical quarry activities, blast signatures)

  - (3) Prediction of uncategorized events

- **Results**

  - CNN model is able to identify the nature of the events with accuracy of 97.5% (only 2.5% of the events were misclassified).

  - the prediction results indicate that the model effectively identifies the nature of events even in regions that were not included in the training phase.
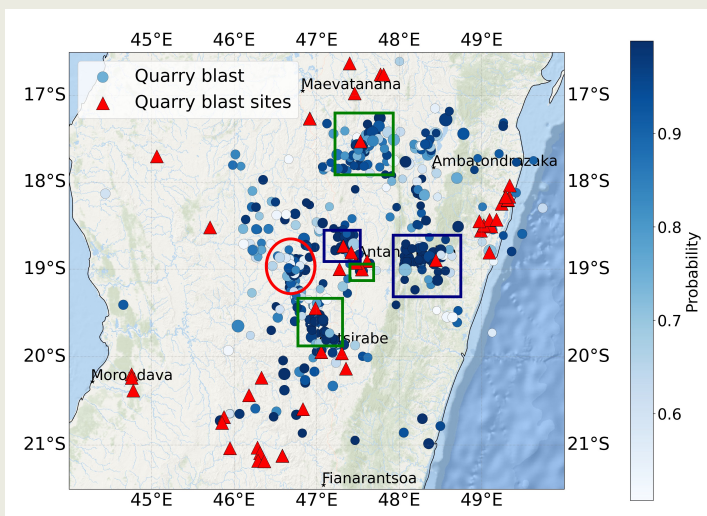
Used in the training

Not Used in the training