PyCSEP provides software tools to help earthquake forecast model developers build and evaluate their forecasts.

About PyCSEP

- CSEP has released a software toolkit to standard distribution channels such as PyPI and conda-forge.

- PyCSEP supports evaluating both gridded and catalog-based earthquake forecasts.

- Includes new evaluations for catalog-based earthquake forecasts.

- Modular design allows users to develop complex workflows associated with forecast development and testing.

- PyCSEP is open-source to ensure transparency and provide wide-spread availability.

Example 2: Evaluate a UCERF3-ETAS forecast using data from ComCat

- Catalog-based Forecast Evaluation
  - This example shows how to evaluate a catalog-based forecasting using the UCERF3-ETAS method.

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Example 1: Visualize time-independent RELM forecast

- RELM forecast visualization.

About PyCSEP

Overview

PyCSEP is a Python package that contains the following modules: (1) earthquake catalog access and processing, (2) routines for working with earthquake forecasts, (3) statistical tests for evaluating earthquake forecasts, and (4) visualization routines. PyCSEP can evaluate forecasts expressed as expected rates in space-magnitude bins, and models that can simulate thousands of synthetic earthquake catalogs, including those that are candidates for Operational Earthquake Forecasting. Most importantly, PyCSEP contains community-endorsed implementations of statistical tests to evaluate earthquake forecasts. These software tools give users the ability to access the same routines that are used to implement experiments in CSEP testing centers. Our intention is that providing useful tools to model developers will broaden the CSEP community and promote earthquake forecasting research by helping researchers implement the workflows associated with forecast development and testing.

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Getting Started with PyCSEP

Try it out: Installing PyCSEP is as simple as:

```
conda install --channel conda-forge pycsep
```

In-depth instructions can be found at [https://cseptesting.org/getting_started/installing.html](https://cseptesting.org/getting_started/installing.html)

Documentation: Read the documentation at [https://cseptesting.org](https://cseptesting.org)

Report any issues: [https://github.com/SCECcode/pycsep/issues](https://github.com/SCECcode/pycsep/issues)

Help contribute to the project: [https://github.com/SCECcode/pycsep](https://github.com/SCECcode/pycsep)

What’s next for PyCSEP

- Incorporate earthquake declustering algorithms
- Accomodate more complex region geometries including arbitrary polygons and variable grid sizes
- Develop diagnostic utilities to understand forecast evaluations
- Provide tools for fundamental catalog analysis eg., completeness