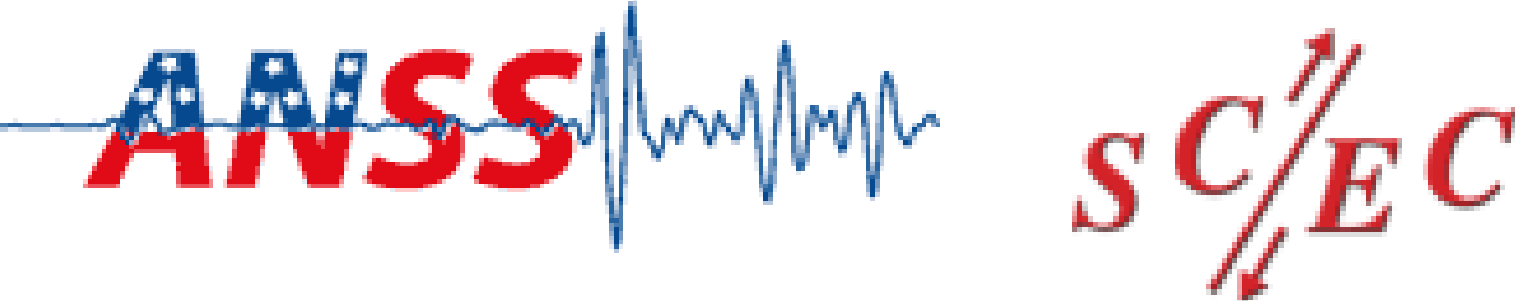




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<https://scedc.caltech.edu> doi: 10.7909/C3WD3xH1
<https://www.scsn.org> doi: 10.7914/SN/CI

southern california

earthquake data center



Using Southern California Earthquake Data Center and the Southern California Seismic Network Products for Earthquake Research

Ellen Yu, Prabha Acharya, Aparna Bhaskaran, Shang-Lin Chen, Jennifer Andrews, Valerie Thomas, Zachary Ross, Allen Husker, Egill Hauksson and Robert Clayton

SCEC 2021 Annual Meeting; poster 200

The Southern California Seismic Network is **one of the largest regional seismic networks in the United States**. The **Southern California Earthquake Data Center is the SCSN data archive**. SCSN/SCEDC operations generate products vital to emergency response and earthquake research such as event catalogs, focal mechanisms, moment tensors, ShakeMaps and Recent Earthquake Maps.

Cloud Computing/Big Data

Southern California Earthquake Data in AWS Cloud



s3://scedc-pds
us-west-2

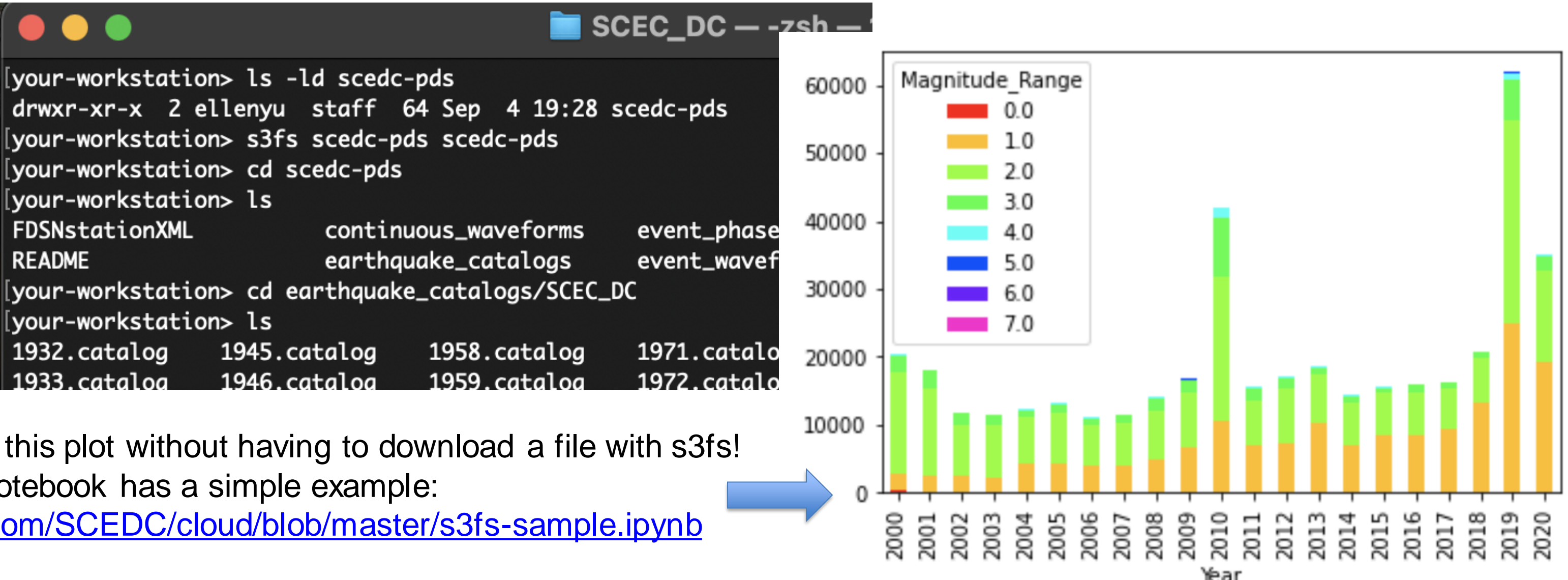
In addition to its on-premises holdings, The SCEDC participates in the AWS Open Data program and has the archive hosted at **s3://scedc-pds**. Downloads of the data are free of charge to the user.

For more information about our cloud archive, please see <https://scedc.caltech.edu/data/cloud.html>



Use S3FS to Mount the Data Center AWS Dataset as Drive on your Own Workstation

While the s3 API has a lot of equivalent file system commands, you can use a utility like [s3fs](#) to use standard Unix commands to access the public dataset. This maybe a preferable option in cases where you are working with legacy code that you cannot easily port to the s3 API.



You can make this plot without having to download a file with s3fs! This Jupyter notebook has a simple example: <https://github.com/SCEDC/cloud/blob/master/s3fs-sample.ipynb>



Create Your Own Processing Pipeline

<https://github.com/SCEDC/cloud/tree/master/pds-lambda-apis>

Data analysis of large datasets like the SCEDC archive may require several processing steps. Cloud services like **Amazon API Gateway and Lambda functions** allow you to create highly modular, scalable, and sharable processing components that you can customize to your research problem.

Click on the above link to a script in the SCEDC Github cloud repo that creates time window segments in mSEED or SAC as an example of what these services can do for your data intensive processing.

Hover over any graphic for additional captions

Data Access Tools

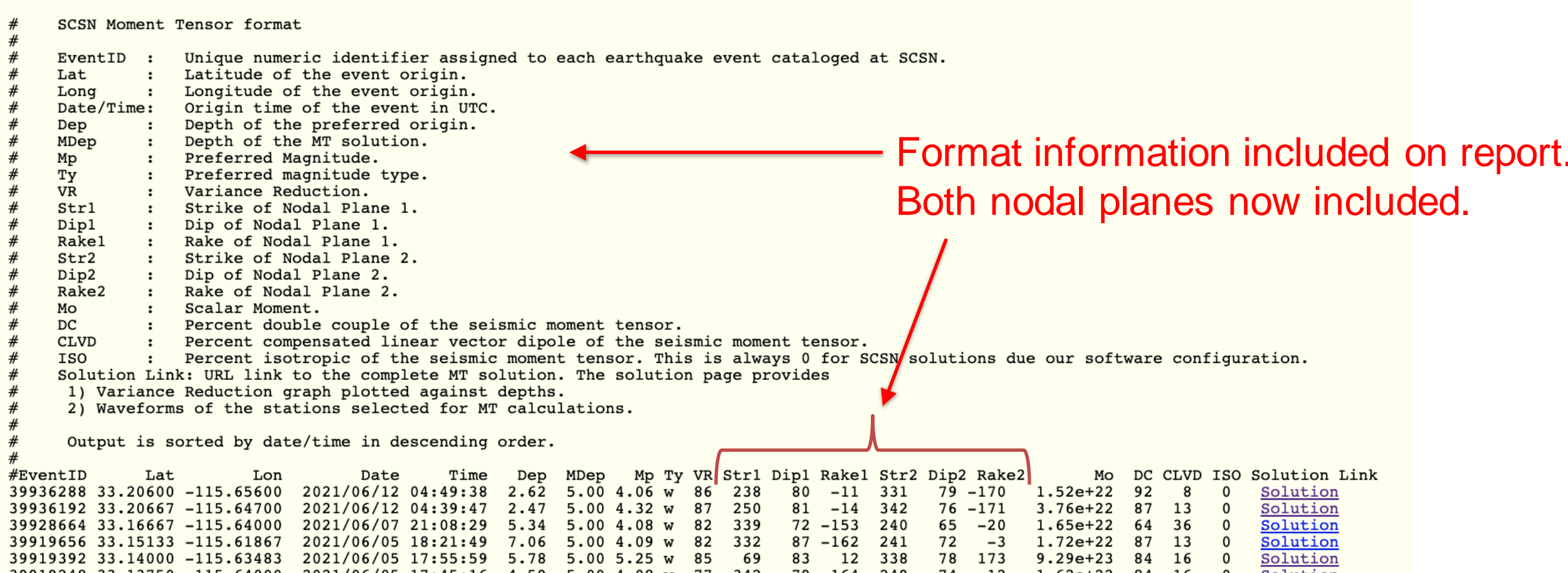
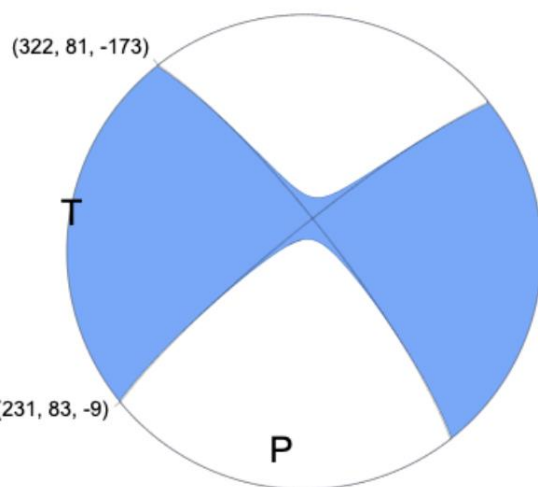
FDSN Web Services
<https://service.scedc.caltech.edu/>

Catalog Search Pages
https://service.scedc.caltech.edu/eq-catalogs/date_mag_loc.php

STP Client
<https://scedc.caltech.edu/data/stp/index.html>

Improved Moment Tensor Solution Access

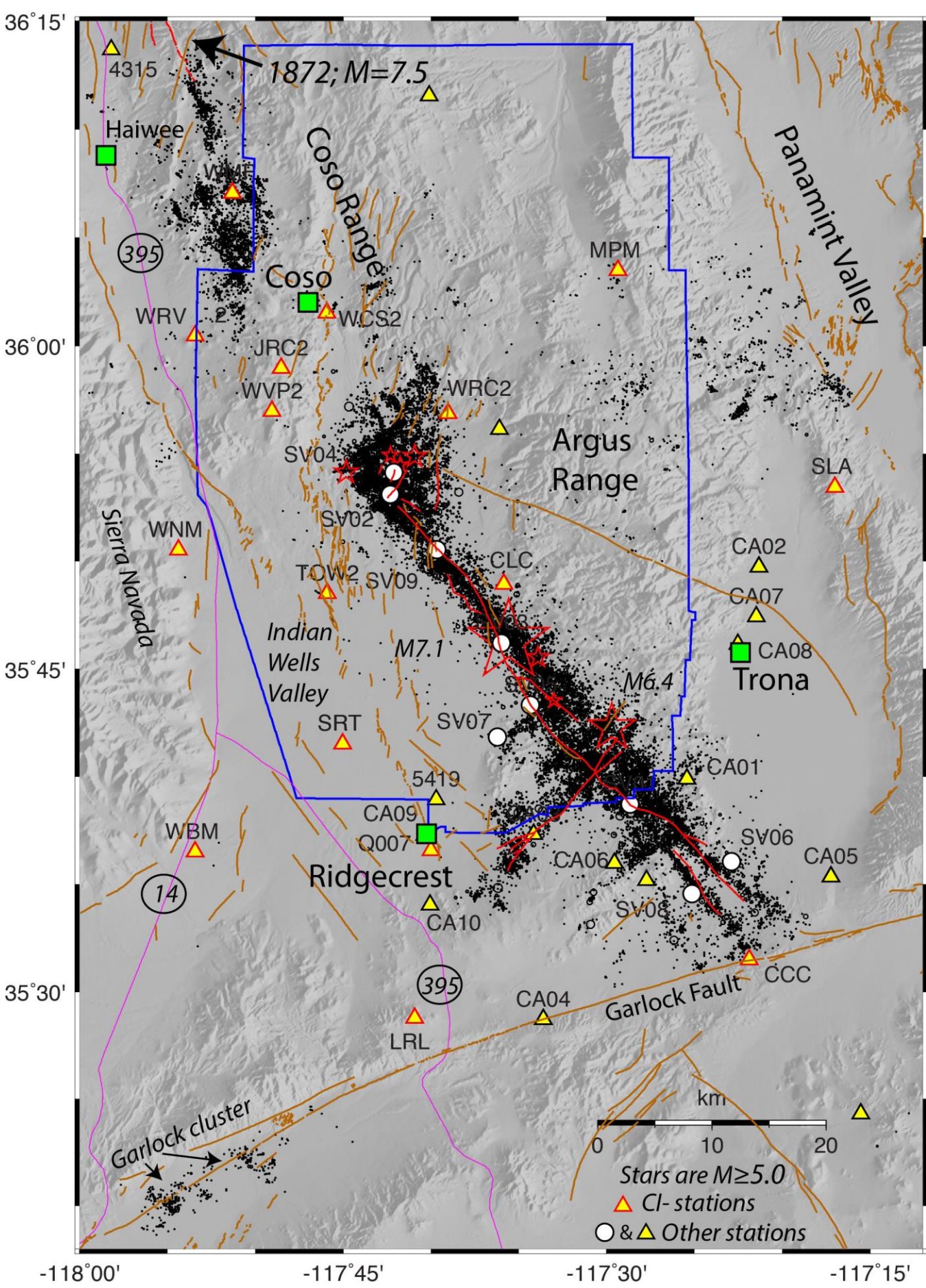
In response to user feedback, the SCEDC has enhanced its reporting of its Moment Tensor Catalog. Both nodal planes are included in its ascii report, which can be downloaded as a file. Output in quakeML is also available, and the event webservice will also distribute this information if the *includemechanisms* query parameter = true.



Researcher Datasets

Ridgecrest Stress Drop Community Exercise
<https://scedc.caltech.edu/data/stressdrop-ridgecrest.html>

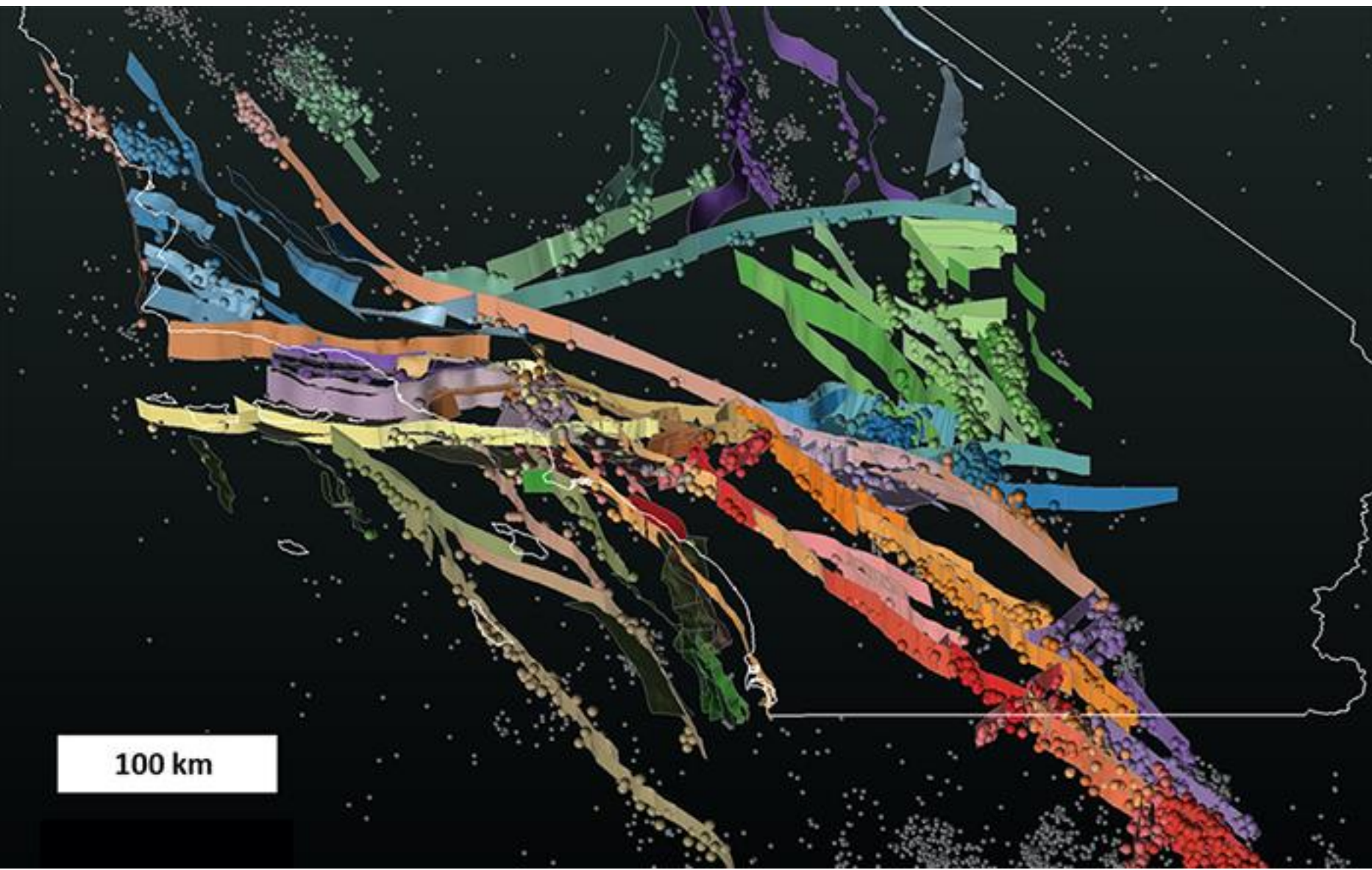
The SCEDC is hosting datasets for the Ridgecrest Stress Drop Community Exercise. For more information on participating, please see “Introduction to the SCEC Community Stress Drop Validation Study TAG” at poster 195.



Hover over map for caption

Event Association Probabilities with CFM Faults
<https://service.scedc.caltech.edu/ftp/SCEC/CFM/>
<https://www.scec.org/article/619>

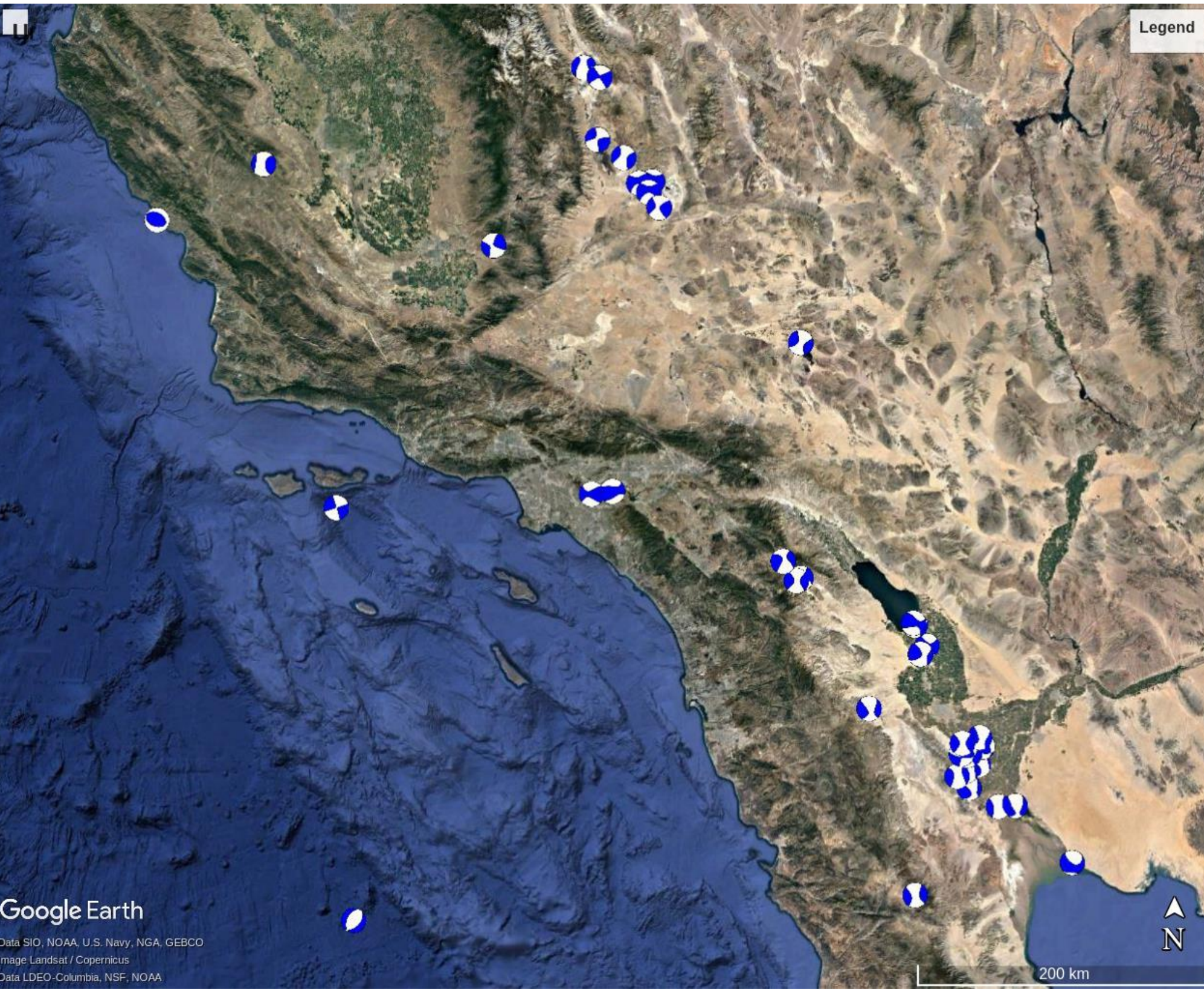
As part of its routine processing, the SCSN calculates the probability an event $M \geq 3.0$ is associated with faults in the SCEC CFM 5.2. The calculation uses an algorithm developed at Harvard. The SCEDC hosts a catalog of these association probabilities for SCSN events ($M \geq 3.0$) using CFM (5.2). For each earthquake in the catalog, the code outputs the five highest probabilities of association with a CFM fault, as well as the probability that the earthquake is not associated with any source within the fault model. For more information about the SCEC CFM, see “Updates to the SCEC Community Fault Model (CFM), and to web-based tools, and plans for its peer review and version 6.0” poster 005



Hover over map for caption

Southern California W Phase Catalog
<https://scedc.caltech.edu/data/wphase.html>

The SCEDC is hosting a catalog of W phase moment tensor solutions for SCSN CA events $M \geq 5$ for years 2000-2021.



Hover over map for caption

Acknowledgements

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SCSN is supported by the USGS/ANSS and California Office of Emergency Services (Cal OES)

Citing the Data

Please cite SCEDC doi:10.7909/C3WD3xH1 and SCSN doi:10.7914/SN/CI when using SCSN data downloaded from the SCEDC and s3://scedc-pds