Gempa SeisComPRO



SeisComPro in a nutshell

SeisComPro provides gempa's extension modules to SeisComP for fulfilling the requirements of an enhanced real-time analysis of natural local earthquakes and for induced microseismicity.

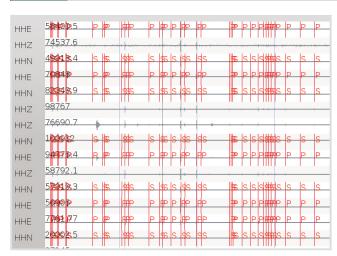
The SeisComPro modules are especially tailored to monitoring high-rate seismicity at a wide range of magnitudes during earthquake swarms, mining or volcano activity, geothermal energy production or extraction of crude oil or natural gas.

- ccloc detects microseismicity and classifies earthquakes, explosions or blasts by crosscorrelating waveforms with master templates
- **scanloc** clusters and associates phase picks ensuring that earthquake monitoring in high-rate seismicity areas delivers reliable hypocentres
- sceval evaluates detections to identify fakes
- GAPS allows earthquake analysis from anywhere
- Recommended extensions: npeval, scqceval



ccloc

Cross-correlation detection with templates

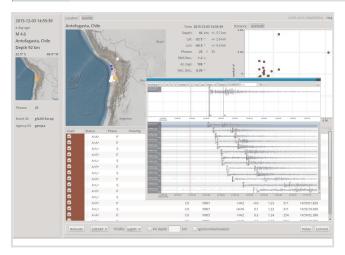


ccloc detects earthquakes and other seismic events at very low to large magnitudes by matching waveform templates from known master events to real-time or archived data.

Monitoring applications:

- High-rate natural seismicity including earhquake swarms
- Micro-seismicity
- Induced seismicity at geothermal power plants, in mines or near oil and gas production wells
- Nuclear explosions
- Discrimination of earthquakes from other seismic sources such as explosions

GAPS / WebApps Web-based earthquake analysis



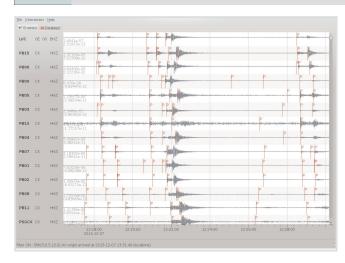
GAPS is an interactive Web module perfectly complementing a locally installed SeisComP. It provides remote access to earthquake and sensor information and interactive processing from anywhere through a Web browser. GAP simplifies the fast supply of information to stakeholders and to the public. GAP's 4 Web apps provide access to:

- Earthquake activity in customized source regions and magnitudes: EQView
- Network state and activity: StationView
- Real-time seismogram plots: TraceView
- Interactive seismic analysis: **OriginLocatorView** Visit: **https://demo.gempa.de/gaps**/.



scanloc

Clustering and association of detections

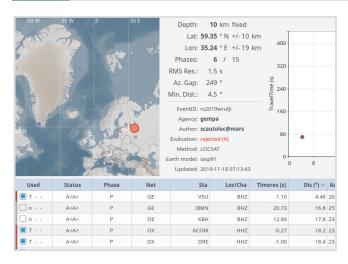


scanloc is a clustering and association tool to detect and to locate local to regional earthquakes using the cluster search algorithm DBSCAN. The cluster search in scanloc identifies phase picks from a cloud of possible picks reliably associating them to earthquakes. It also associates additionally incoming P- and S-phases to already existing internal or external hypocentre solutions.

In high-seismcity areas scanloc ensures reliability of earthquake hypocentres at a wide range of magnitudes. It is just perfect for monitoring local earthquakes, geothermal sites, mines or carbonhydrate production.



sceval Realtime event evaluation



sceval evaluates origins received from the SeisComP messaging system.

Due to noisy data or unfavourable coincidences of automatic detections of seismic phases from different earthquakes or picks at wrong times earthquake locations may be unreasonable or even fake events. Such outliers are tagged as rejected by sceval and prevented from being mistaken as a real earthquake. Real seiscmic events are recognised and confirmed. In this way, operators and stakeholders are provided with the correct information on earthquakes avoiding unnecessary work load or excitation.