Automatic picking for induced seismicity in Iceland using an EAT (Empirically Aggregated Template) methodology

Laure Duboeuf, Volker Oye, Inga Berre, Eirik Keilegavlen, Ben Dando
Norsar, Gunnar Randers vei 15, Kjeller, Norway, laure@norsar.no - Universitetet i Bergen, Norway

1. Key areas in the Reykjanes Geothermal field
2. Challenges with this method is to find optimum parameters...
3. One of the big challenges is to find optimum parameters...
4. P- & S-mapped events... The EAT represents a cluster of Master Events...
5. The automatic picking algorithm...
6. Example of automatic P- and S-picks for a child event...
7. P- & S-phases of the child event...
8. The best EAT for each child event is selected based on the highest cross-correlation coefficient...
9. The EAT can only be used to pick P- and S-phases...
10. Parameter adjustment: a challenging purpose...

Conclusion
This method will be used to automatically pick seismic events from the Reykjanes geothermal field.

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AUTOMATIC PICKING

EAT: Empirically Aggregated Template

In Iceland and location of the Reykjanes Geothermal field

Step for Testing & Improving methods

The best EAT for each child event is selected based on the cross-correlation coefficient when it is greater than a defined threshold.

Clustering Examples of Master Events with a lack of seismic traces

Gather all sensors: EAT.

For each sensor and event, compare the SNR.

For each sensor and event, keep the trace for each sensor with the best SNR.

For each sensor and event, gather all sensors: EAT.

The EAT represents a cluster of Master Events...

The EAT is not a physical event!

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To go further...

The automatic picking algorithm...

Examples of Master Events...

Identification of events...

Parameter adjustment...