WP4: Seismic activity: Time and space analysis

People involved

- Jana, Josef, Hanka, Diana, Veronika, Alena
- Egill, Tobba
- Tomáš

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Deliverables

- D1 – 04/22: presentations at EGU
- D2 – 12/22: map of the brittle-ductile boundary
- D3 – 04/23: presentations at EGU
- D4 – 11/23: paper

Results we’re envolved in

- Maps of earthquake hypocentres on the Reykjanes Peninsula (4/24)
- Maps of the seismic velocities (6/23)
- Open access database of earthquake parameters (4/24)
- Time and space distribution of hypocentres, imaging of faults (6/22)
- Source mechanisms and local stress analyses (6/23)
- Interpretation of seismic and other geophysical data (4/24)

Current state

- Processing of the Fagradalsfjall seismicity (02-03/21)
- Two individual lines
  - precise manual processing of stronger events
  - automatic processing of as much events as possible

Manual readings

- Based on IMO catalog
- P- and S-wave onsets and amplitudes
- Classification (clear/complicated), local magnitude (using formula Jakoubková et al., 2018) and NLLoc location (SIL model)
- Now complete down to ML ~3.0, around 500 events

Automatic locations

- Based on Pepin algorithm
- Improved by jacknife test -> leaving out the worst pick
- Stronger events (being often complex, multiple and hard to interpret even manually) supplied from the manual catalog
- Only the “good” events selected (enough stations, good location residual)
- Results in ~8500 events

Automatic locations

- Located by NLLoc in SIL model
- Relocated by HypoDD
- Details in poster by Tomáš

Next steps

- Contribute to Fagradalsfjall seismic activity paper of the NASPMON team
- Continue in the same way to get homogeneous catalogs
- Finalize and provide the dataset as a starting point for other WPs