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NASPMON : STATE OF WP3

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NASPMON 1st in-person meeting, Reykjavík

September 8th, 2021



TIMELINE



Years		2021												2022												2023												2024				
Months		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
WP1	Project management				M1																		M2																M3			M4
WP2	Data acquisition and data archiving		M1		M2																																					
WP3	Automatic data processing		M1	M2	M3			M4		M5		D1	D2					M6												D3											D4	
WP4	Seismic activity: Time and space analysis																	D1																							D4	
WP5	Earthquake Source Mechanisms and stress analysis																																								D4	
WP6	Upper crustal seismic models												D1																												D5	
WP7	Ground Motion Model																																								D1	
WP8	Multi-disciplinary interpretation																																								D1	

WP3: MILESTONES AND DELIVERABLES

- **M1:** *Set up QuakeMigrate test and tune by February 2021 – already set up but needs further tuning*
- **M2:** *Set up Seiscomp for REYKJANET by March 2021 - already achieved*
- **M3:** *Tune Seiscomp for REYKJANET by April 2021 – will be finalized by October 5th*
- **M4:** *Tuning of detection algorithms (Seiscomp, SLRNN, QuakeMigrate, comparison of their performance by July 2021 – complete earthquake catalogues needed as soon as possible -> needs to be discussed at the meeting*
- **M5:** *Implementation of the formula for routine local-magnitude estimation of by September 2021 – regarded as achieved for ÍSOR part – status of IG and CU?*
- **D1:** *Deliver phase picks from all earthquakes in WP2 of $ML > 1.25$ by October 2021 – needs to be discussed at the meeting: IG is doing manual picks: status?*
- **D2:** *Deliver earthquake locations from QM and Seiscomp, NLLC and hypoDD and their comparison with earthquake locations based on manual arrival-time readings by November 2021 -> possible? -> focus on a certain period?*

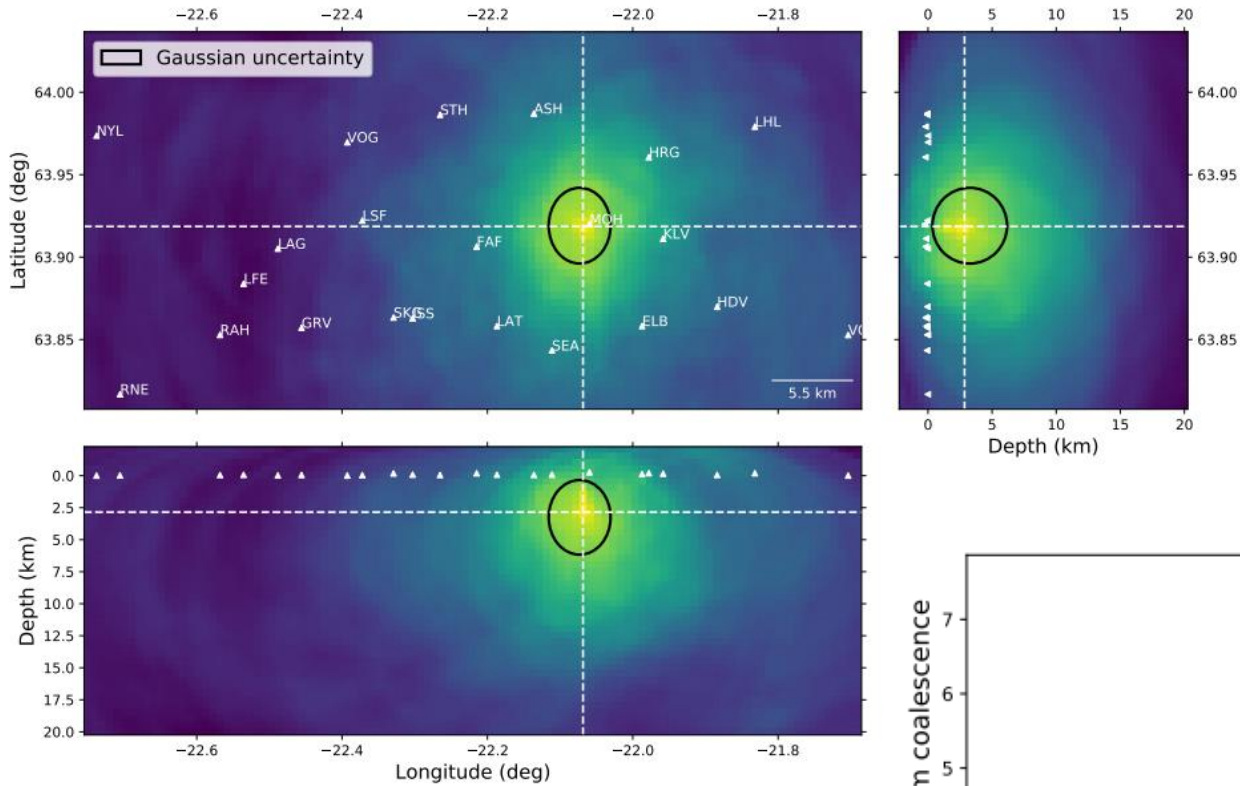
QUICK INTRO TO SEISCOMP – ÍSOR'S ROUTINE

- Multipipeline SeisComp system
- STA/LTA waveform picks
- scanloc based location
- Dedicated Reykjanesskagi pipeline; needs tuning
- A subset of events are manually reviewed
- No manual review for events in Reykjanesskagi -> hard to tune pipeline

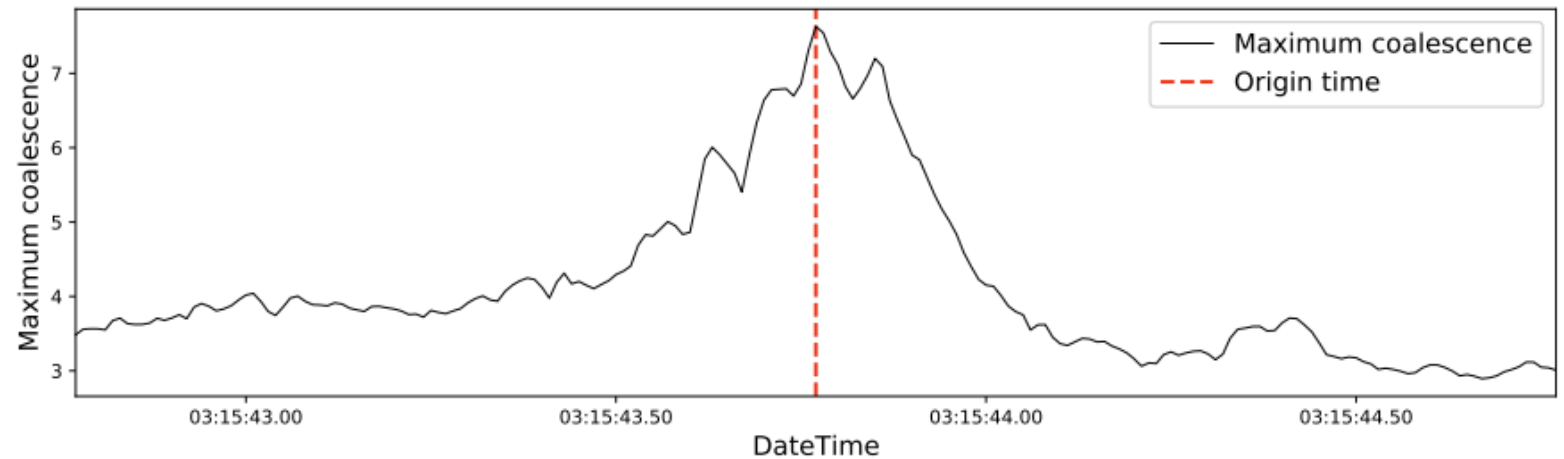
WP3: QuakeMigrate

Quick Test

QuakeMigrate method

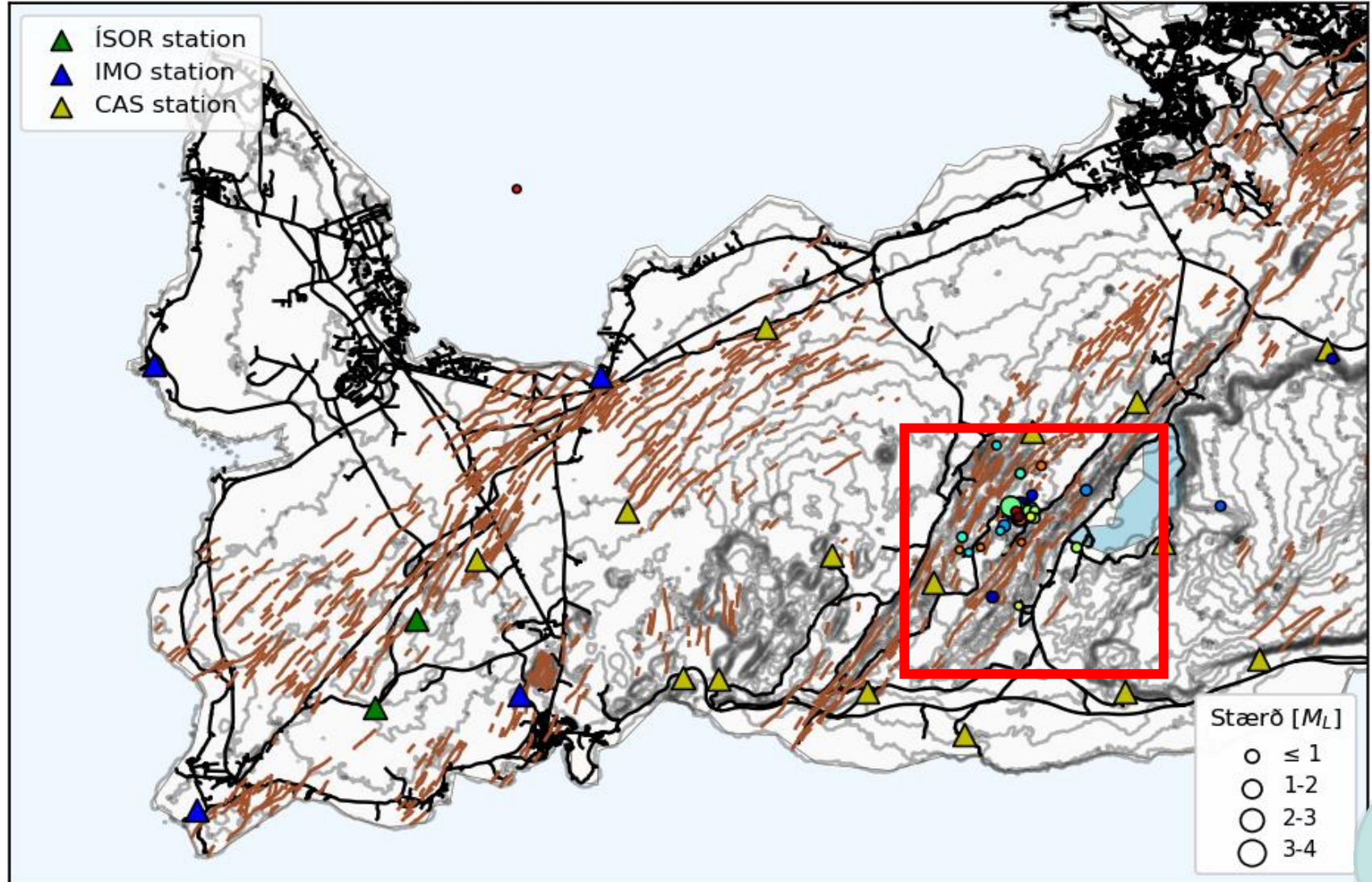


“QuakeMigrate is a Python package for automatic earthquake detection and location using waveform migration and stacking”



Evaluation data

Earthquake swarm at
2021-05-03
West of Kleifarvatn
shortly after 03:00



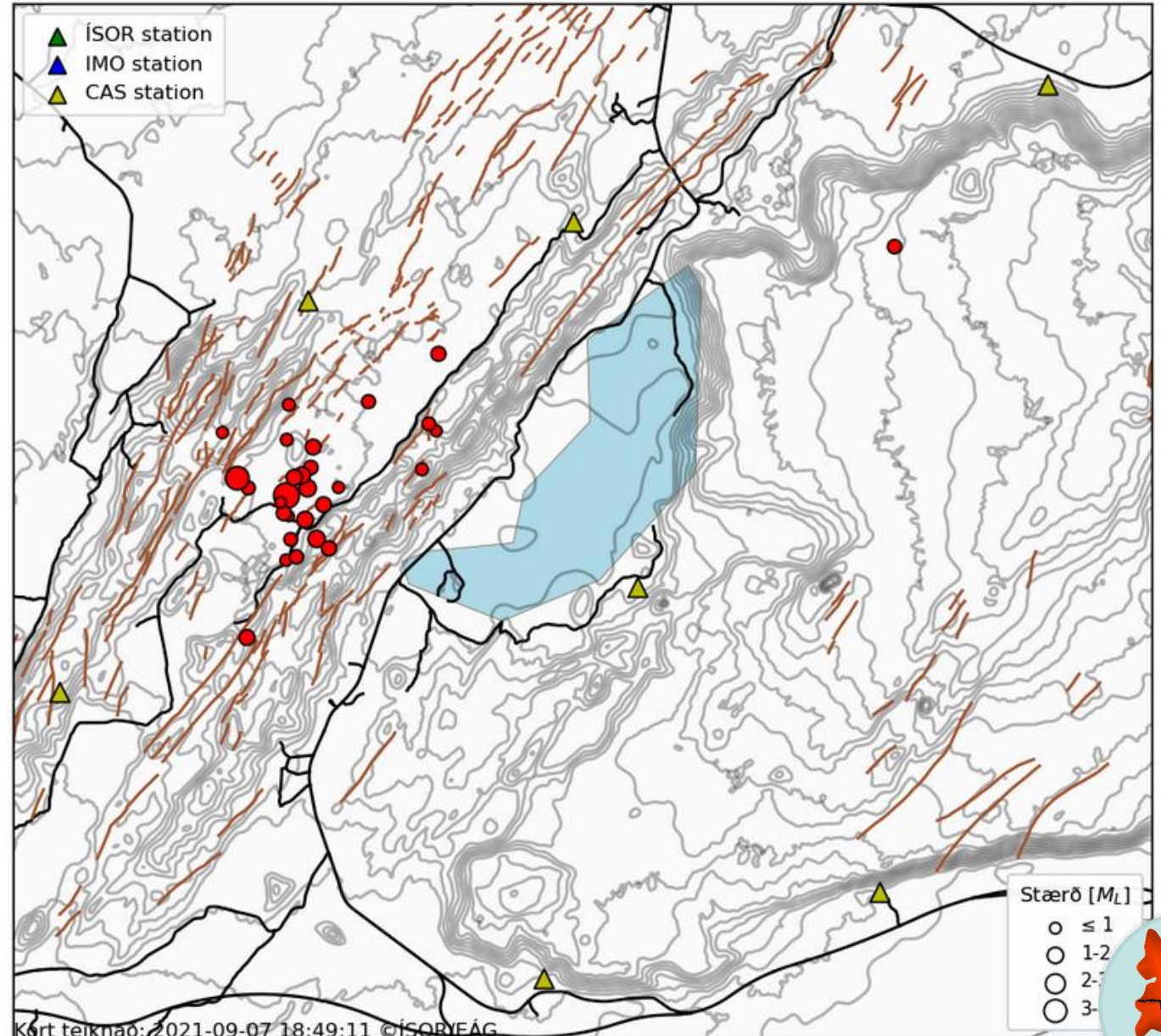
COMPARISON OF LOCATION METHODS

- Three catalogs:
 - ÍSOR SeisComp catalog (automatic)
 - Preliminary QuakeMigrate catalog (automatic)
 - IMO catalog (manual)

- Evaluated on one hour time period 2021-05-03
03:00:00 – 04:00:00

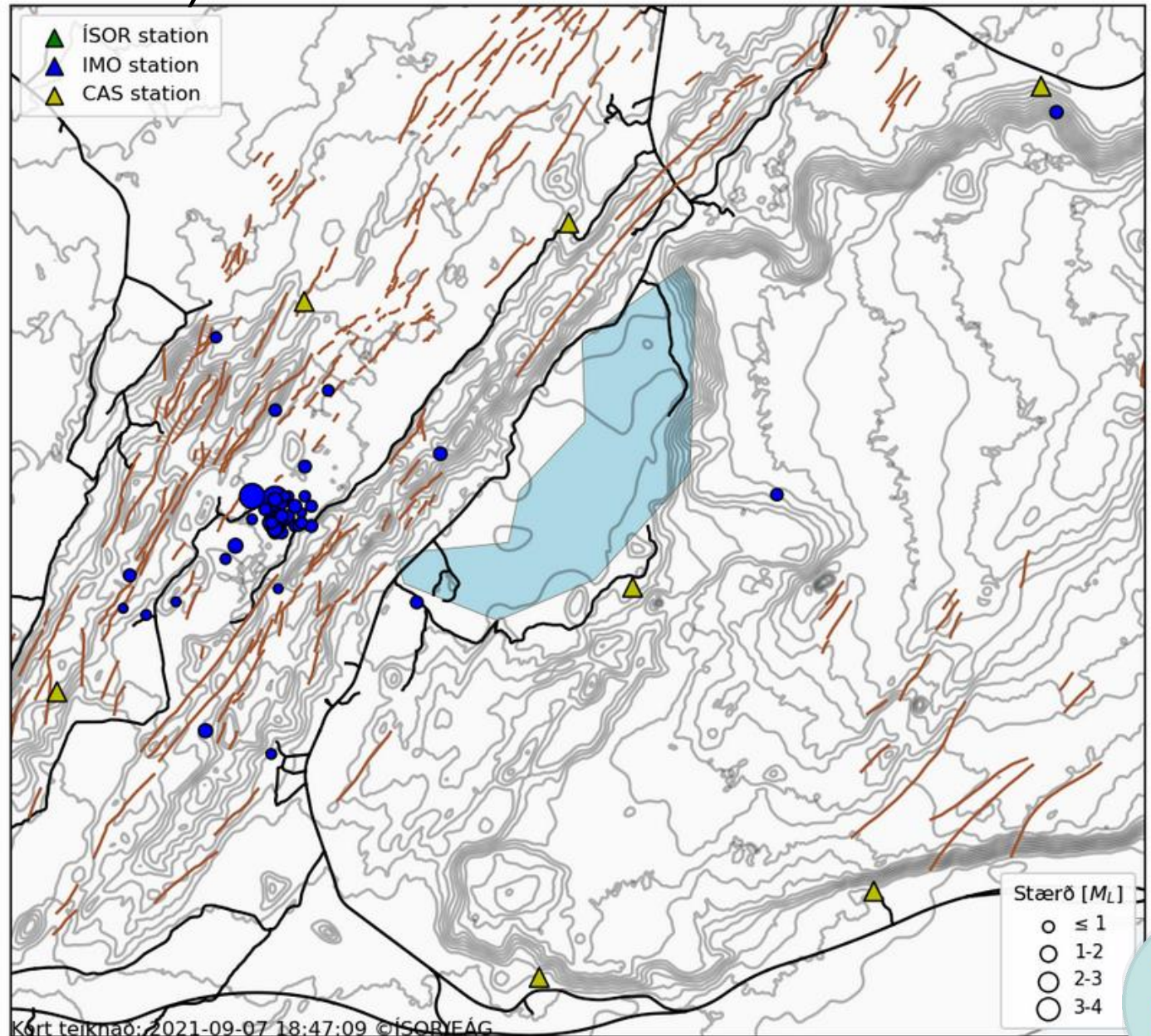
ISOR SeisComp catalog (automatic)

- Events are scattered
- Total of 29 events
- Of those 29, 6 are likely to be noise



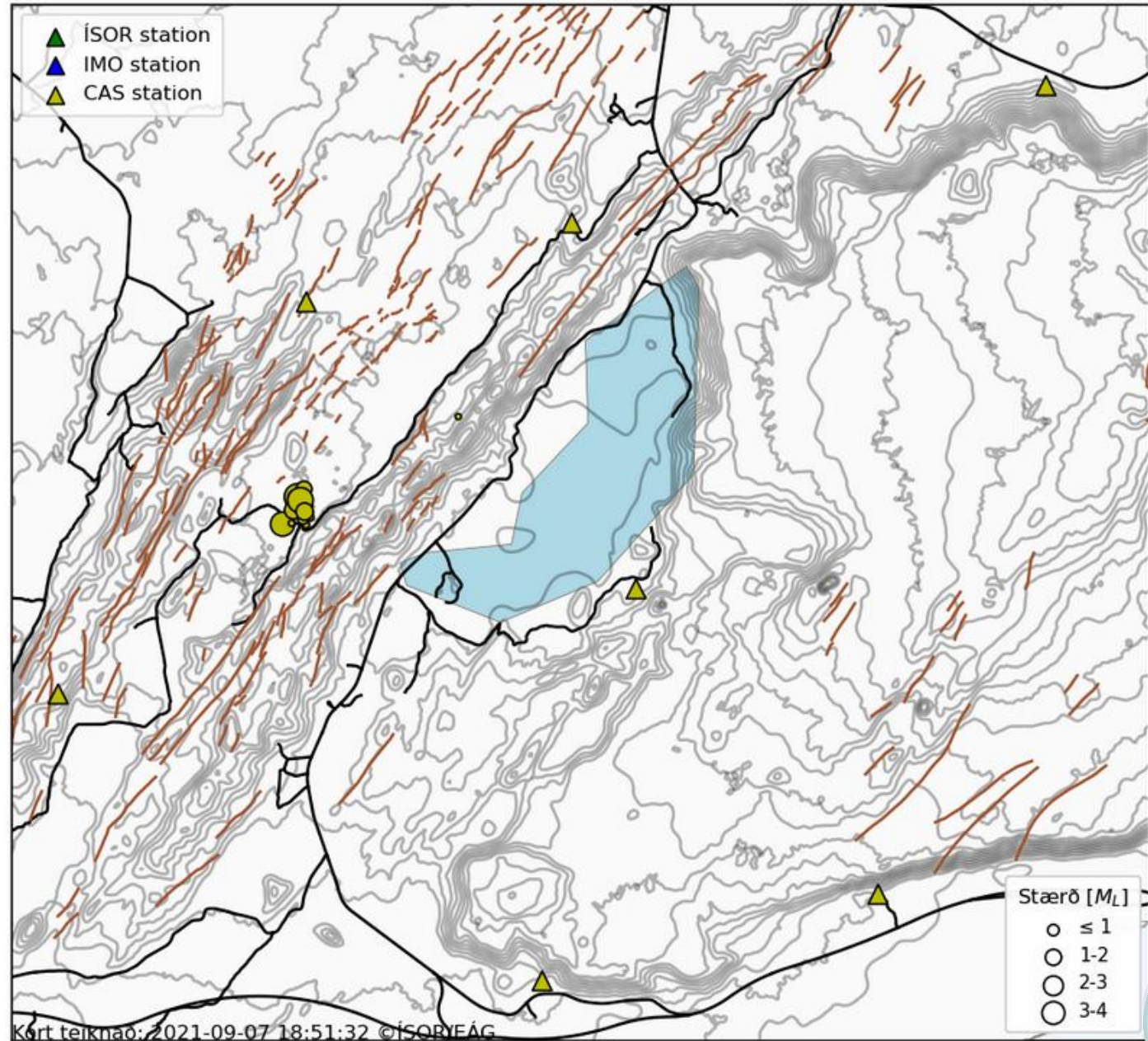
QuakeMigrate catalog (automatic)

- Events show better clustering
- Total of 53 events
- Very few fake events (~3)
- Events found using fairly strict parameters (to reduce number of noise events)

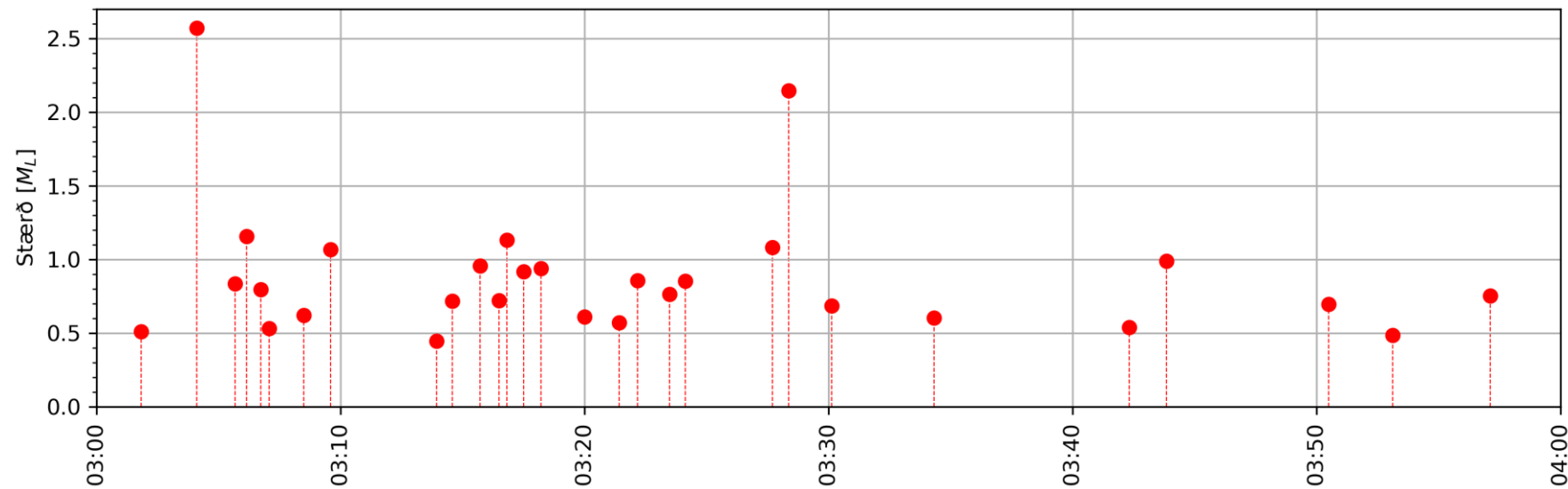


IMO catalogue (manual)

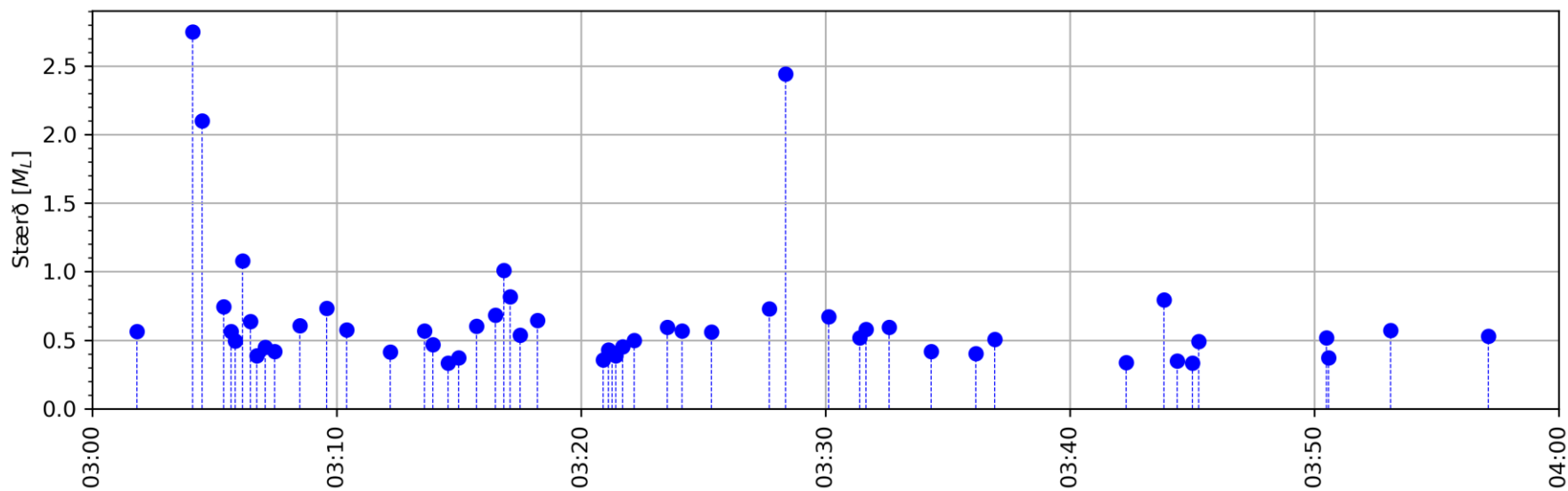
- IMO manually reviewed 24 events
- Very closely clustered, due to manual review



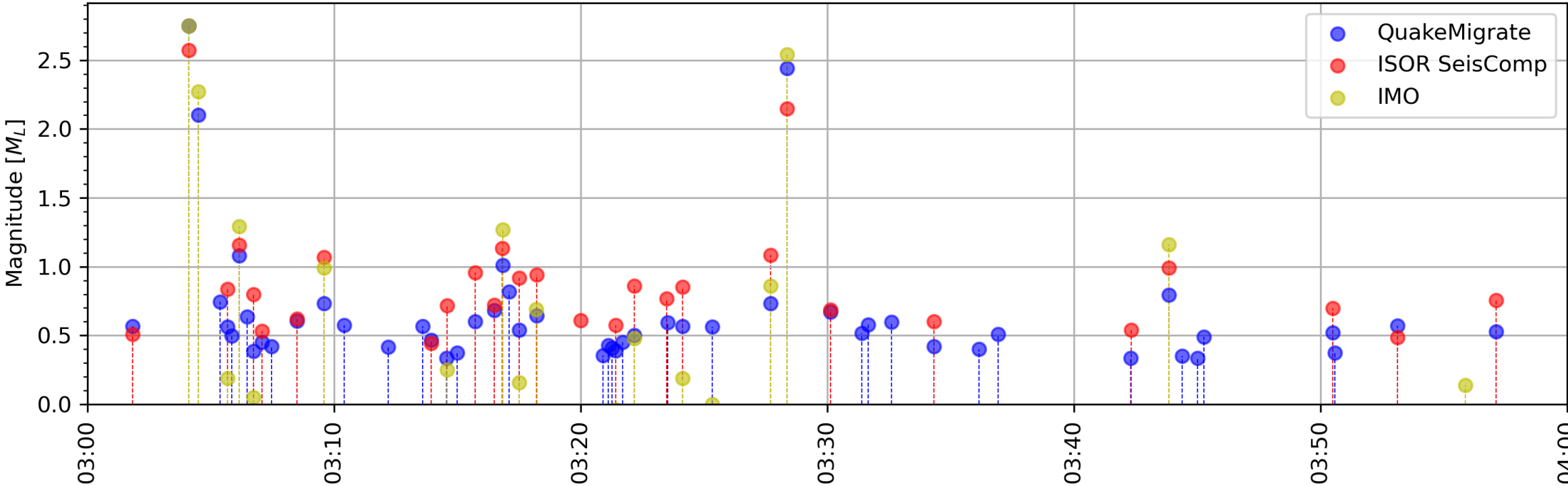
ÍSOR



QM



Comparison: Mag vs Time



Comparison: Depth vs Time

