Supplementary Material for the manuscript

“A high-quality Data Set for seismological studies in the East Anatolian Fault Zone, Türkiye”

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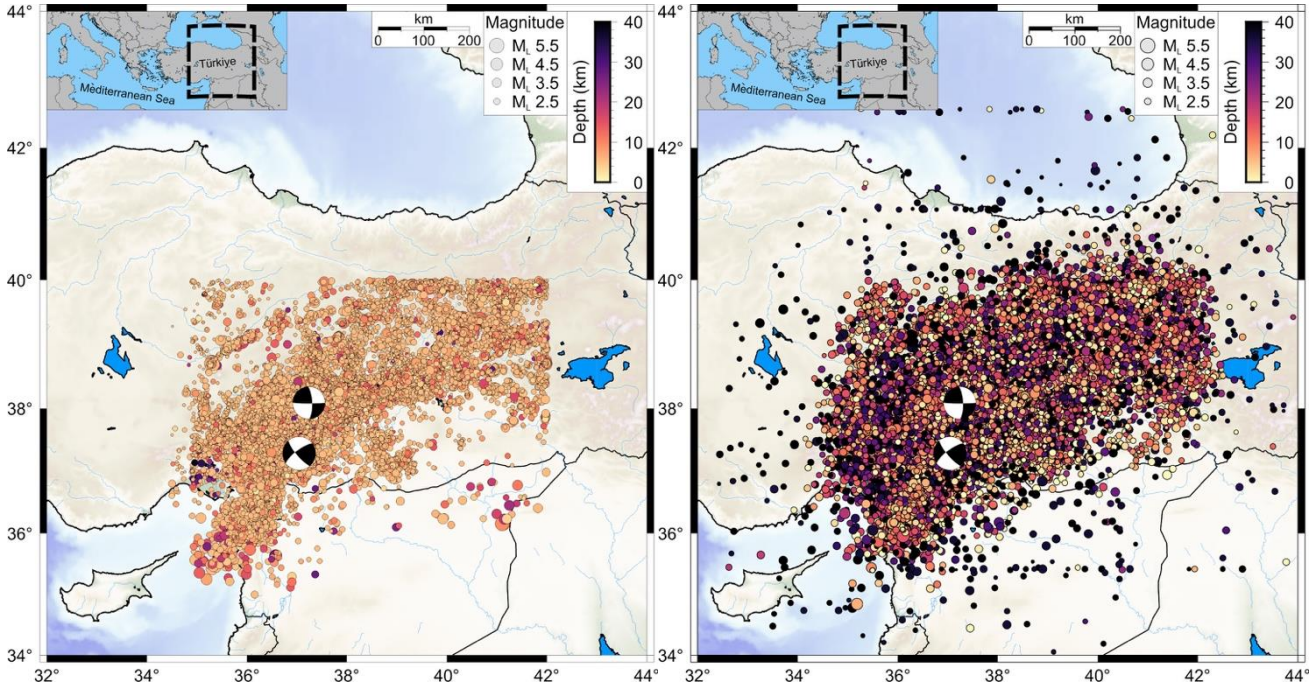
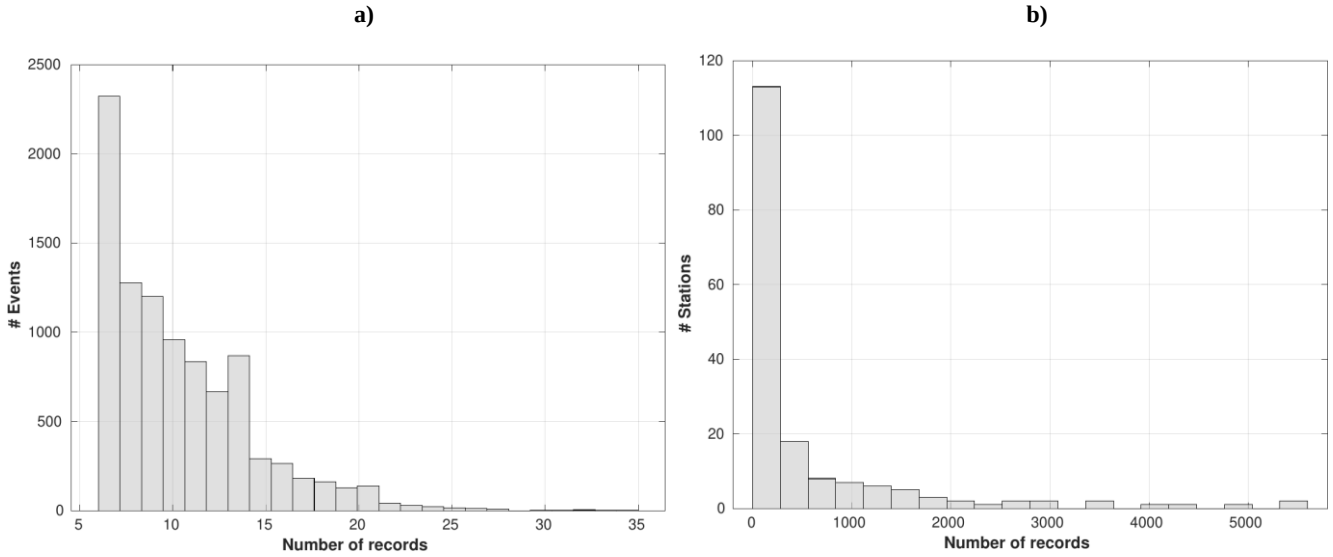
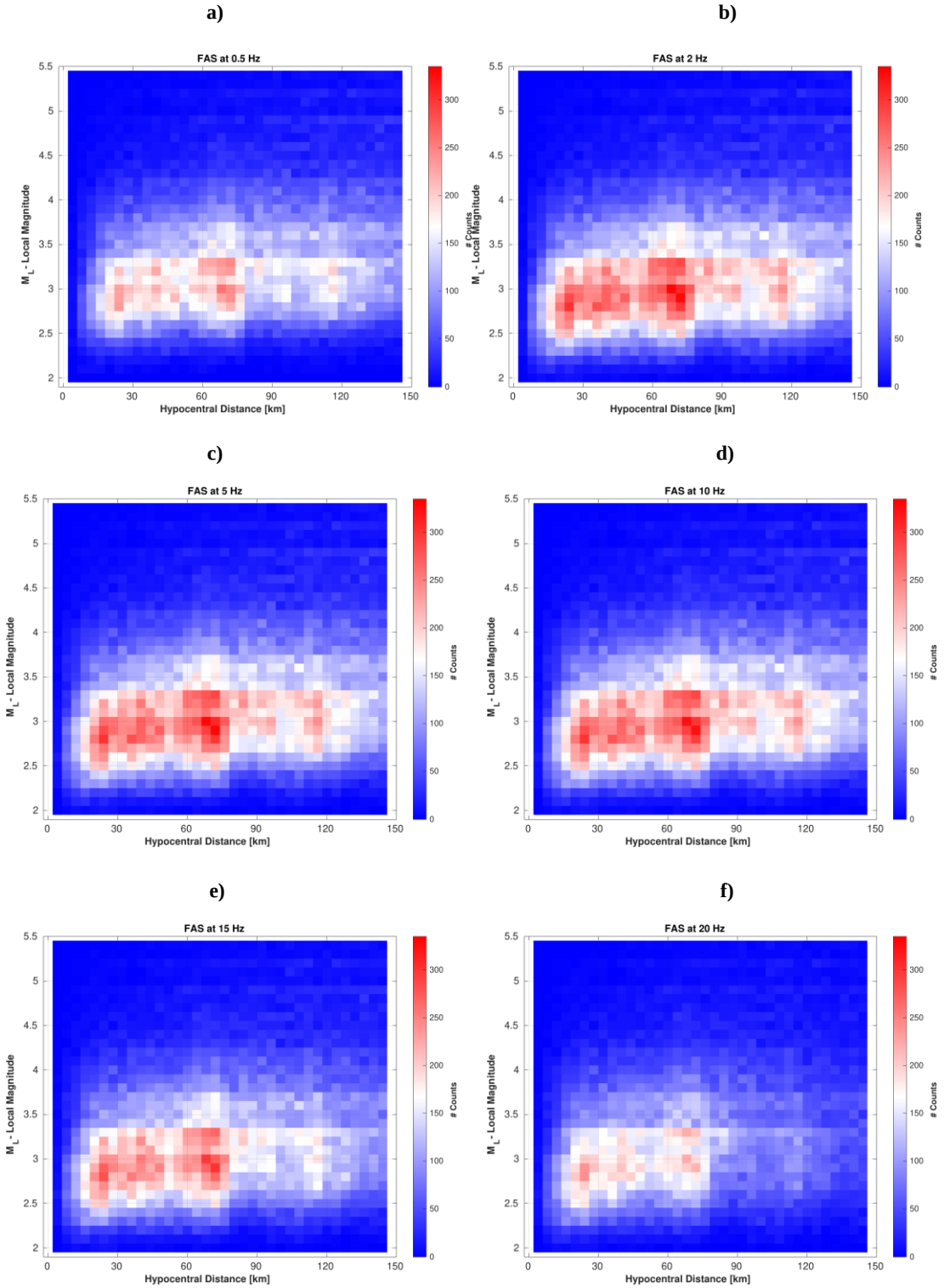


SM1: Selected events from the initial reference catalog with any value of magnitude in the time period from 01-01-2019 to 29-02-2024. On the left location given by AFAD, on the right location in this work. Size is proportional to the magnitude, color palette shows the event depth.

15



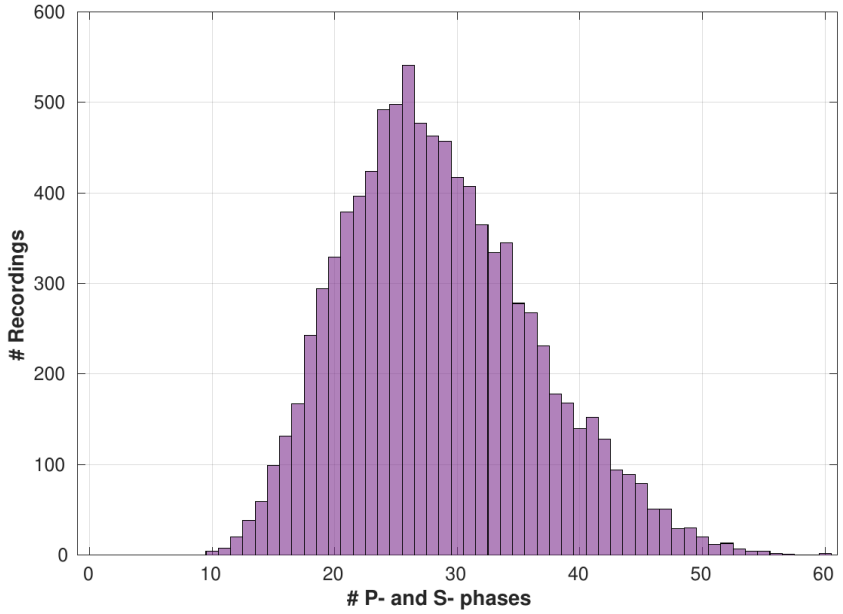
SM2: Number of records per event (a) and per stations (b) used in this product.



SM3: Hypocentral distance vs M_L at different frequencies for FAS at a) 0.5 Hz; b) 2 Hz; c) 5 Hz; d) 10 Hz; e) 15 Hz; f) 20 Hz.

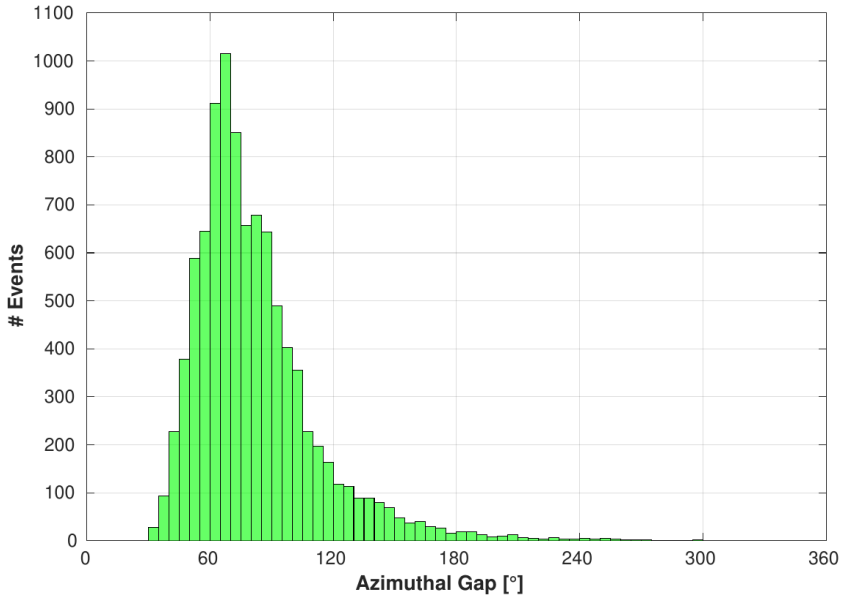
Top of layer (km)	P-wave velocity (km/s)
0	5.20
4	5.60
5	5.75
9	5.85
12	5.95
15	6.05
16	6.15
17	6.25
20	6.35
25	6.55
34	7.20
36	7.80

SM4: 1-D velocity model used by Güvercin (2023). Vp/Vs = 1.73; depth is relative to ground elevation (1500 m).

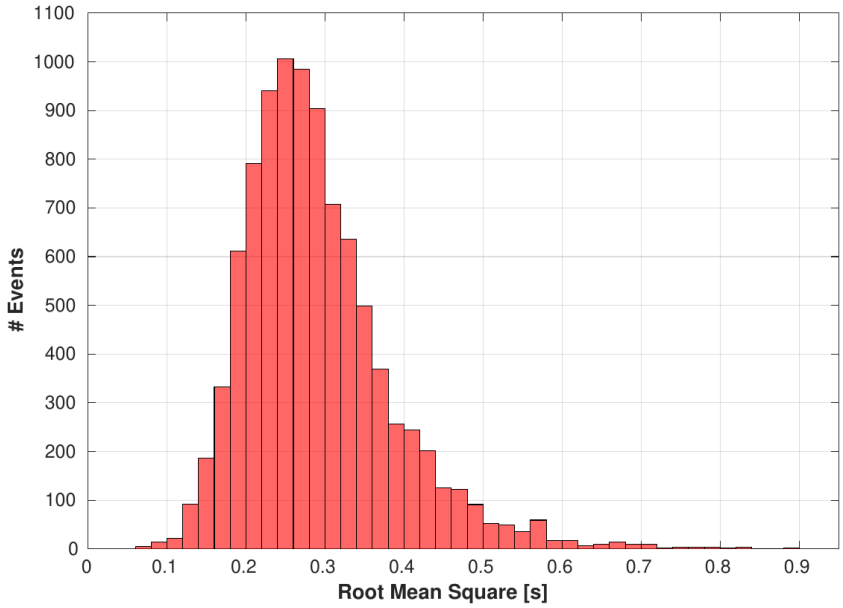


35

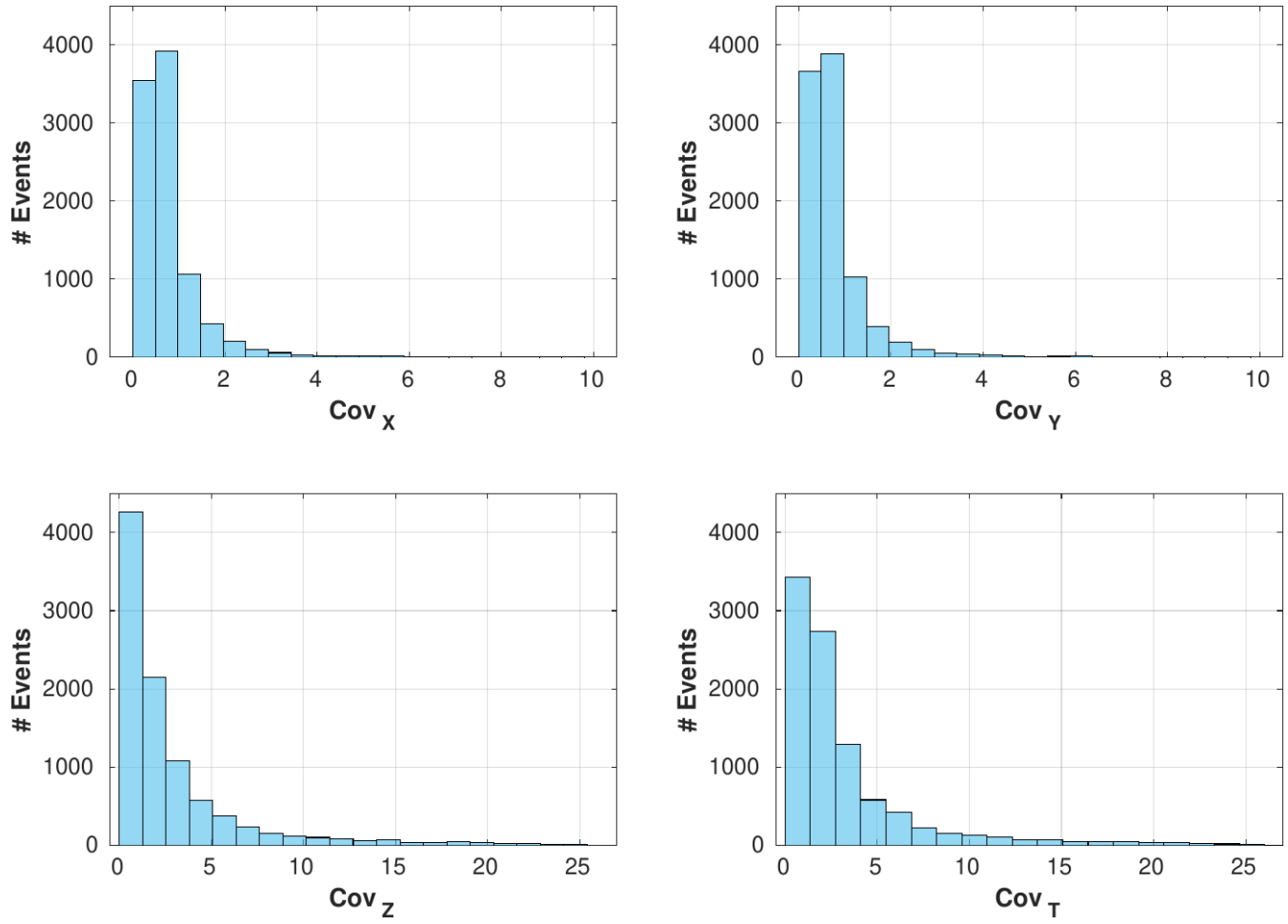
SM5: Histogram of number of total phases (P and S) picked by the Complete Automatic Seismic Processor procedure (CASP).



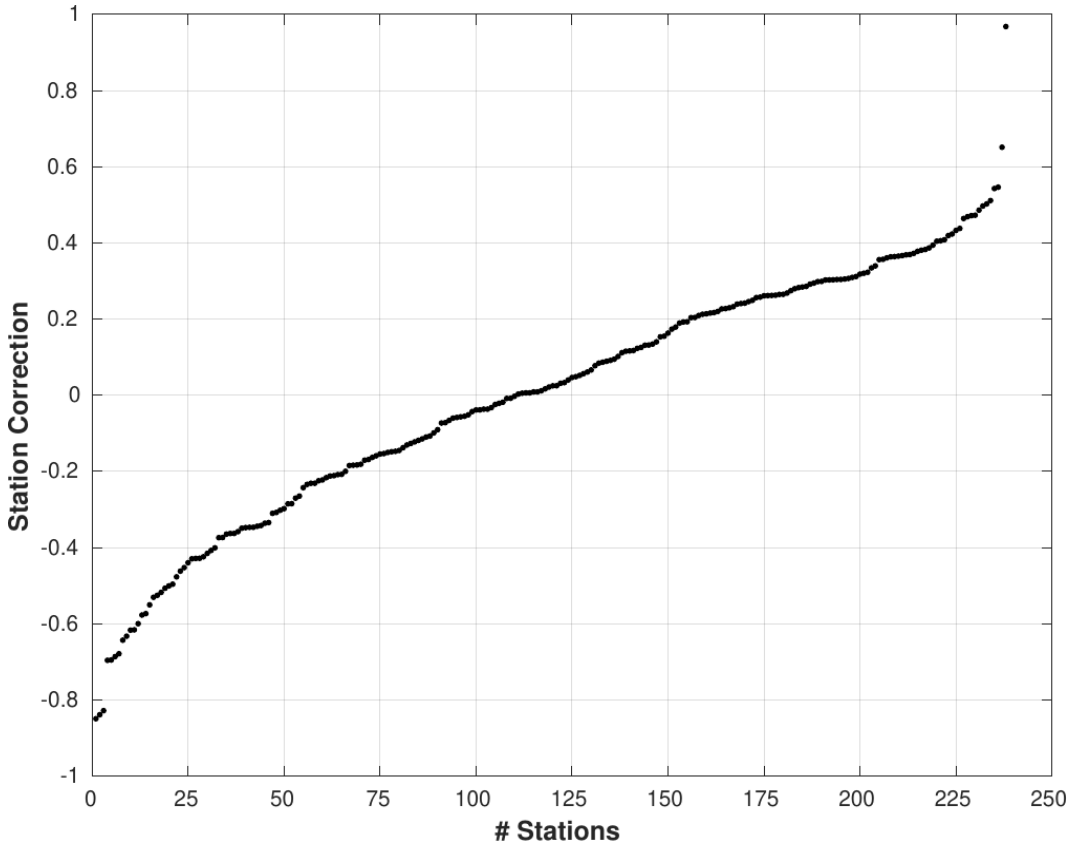
SM6: Histogram of azimuthal gap (in degrees) for each event of the data set.



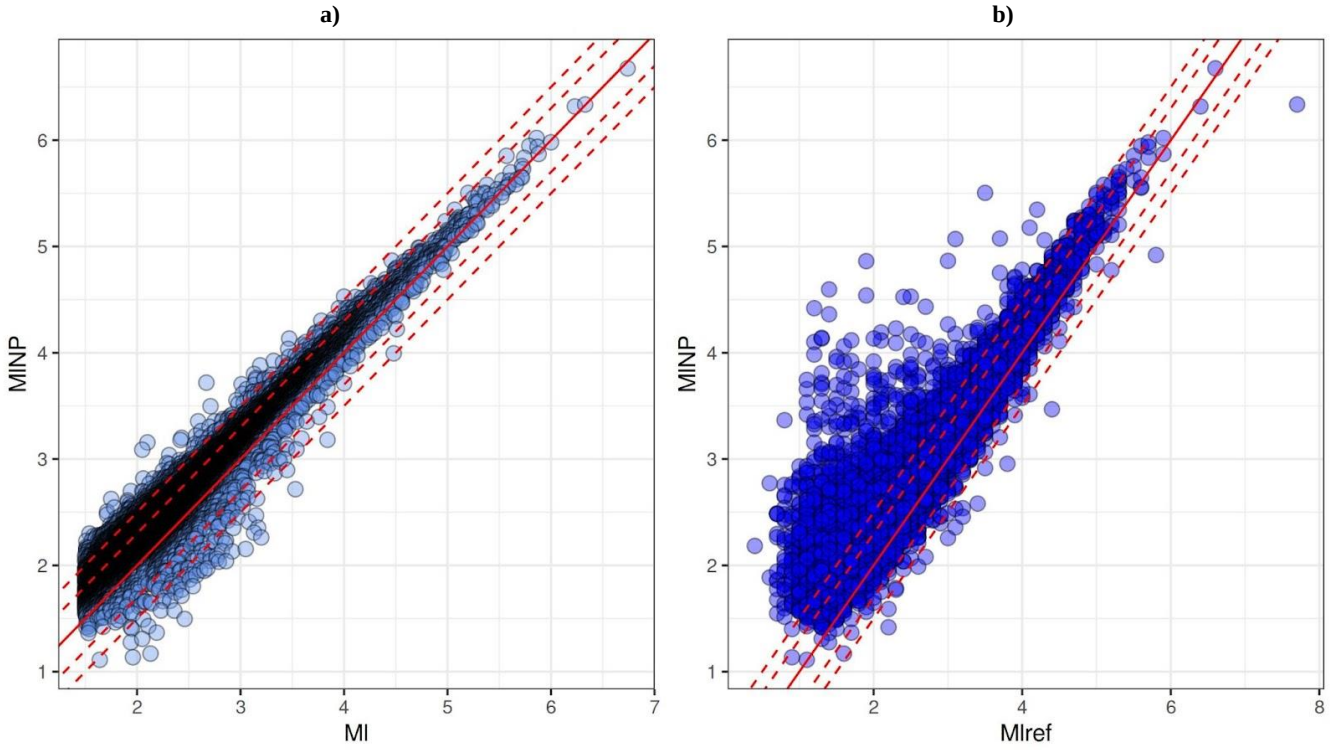
SM7: Histogram of root mean square error (in seconds) for each event of the data set.



SM8: Distribution of covariance matrices for the events analyzed in this dataset. Top left Cov_x, top right Cov_y, bottom left Cov_z and bottom right Cov_T.



SM9: Station corrections obtained in this study.

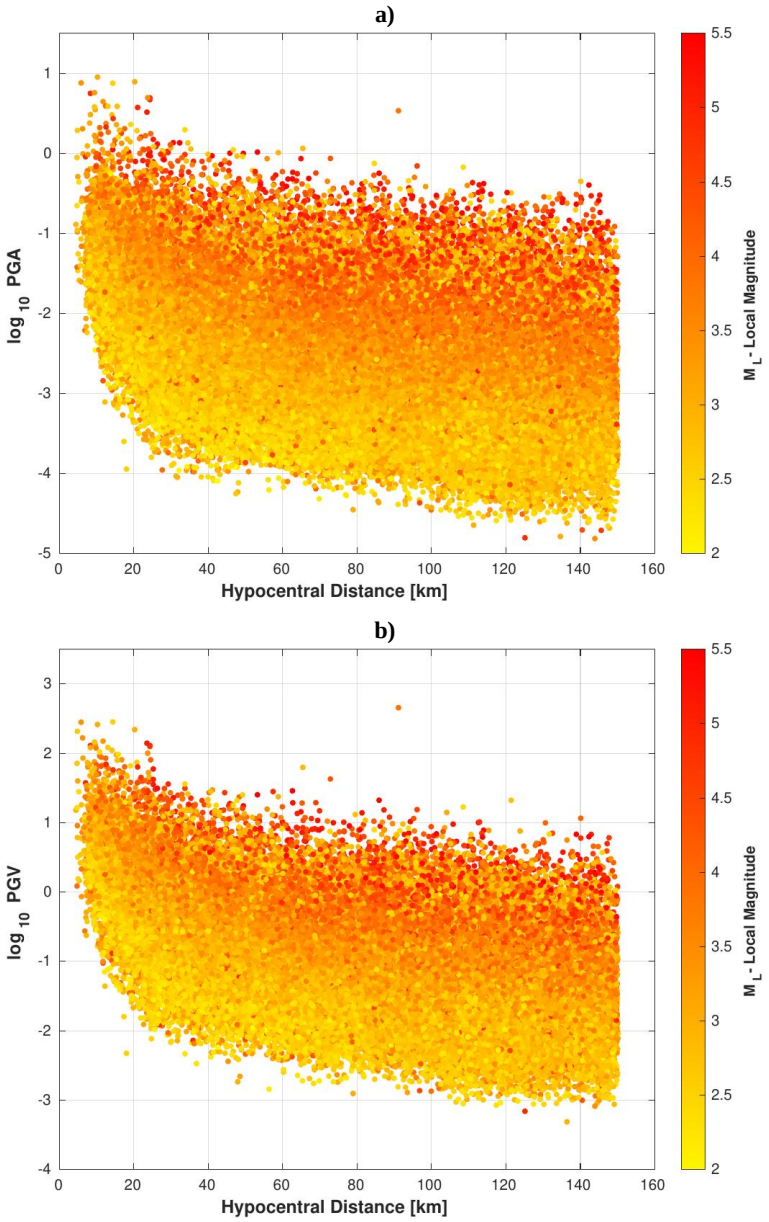


SM10: Comparison between non parametric magnitude (MNP) with recomputed local magnitude M_L (a) and local magnitude from AFAD catalogue (b). Red straight line represents the line 1:1, dashed red lines the standard deviations.

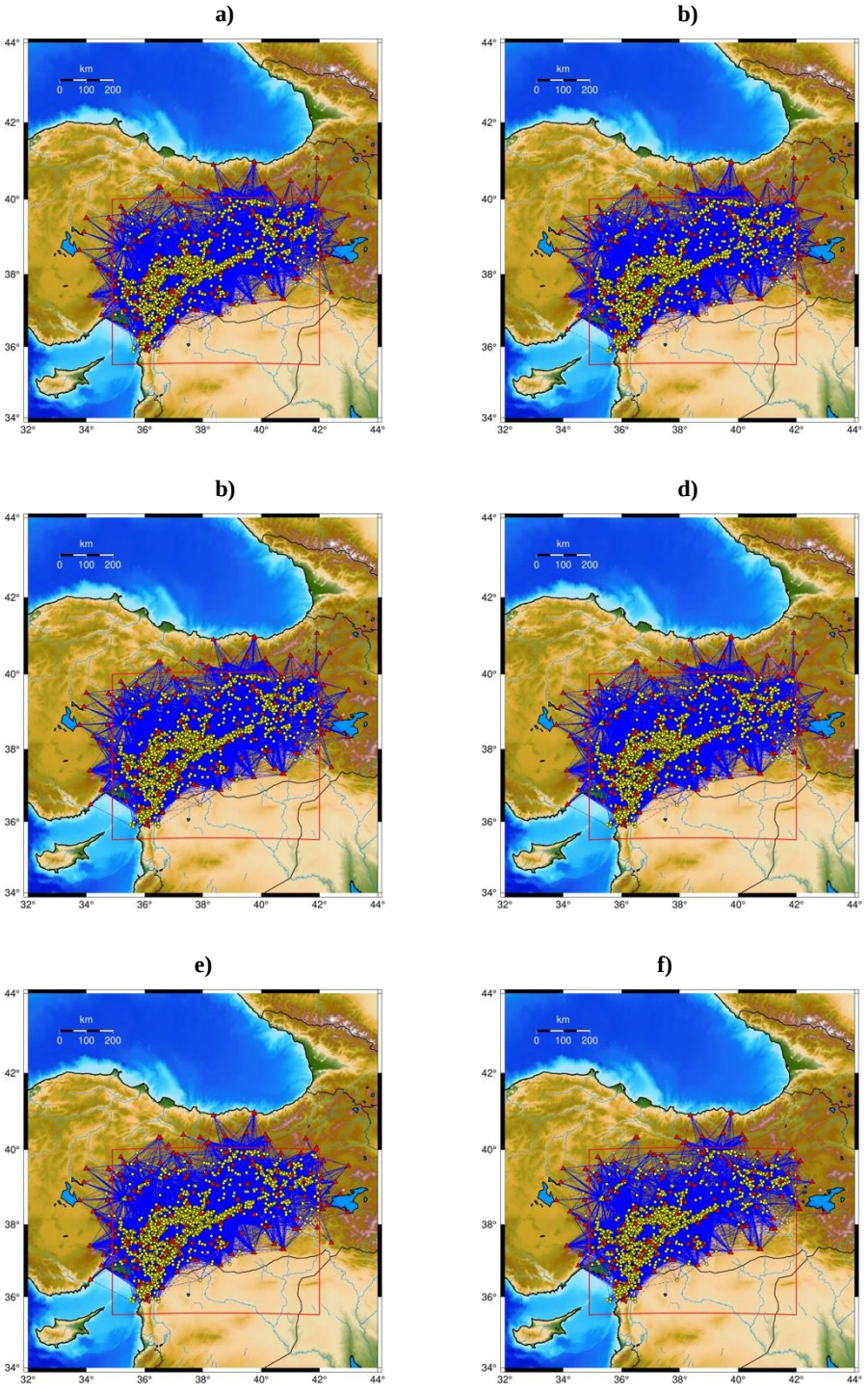
log(A_0) [mm]	Hypo. Dist. [km]
-1.07244174898789	1
-1.35966885608513	6
-1.7160981199827	12
-1.98892830272993	17
-2.13590773622714	21
-2.25363683689613	25
-2.35916366269252	29
-2.44766474104661	33
-2.53240943860632	37
-2.61021249040695	41
-2.66528693249829	45
-2.71432473016411	49
-2.76920664624866	53
-2.8191669249593	57
-2.86747402825801	61
-2.91830902407577	65
-2.94483049442765	69
-2.97215897437123	73
-2.99695095801442	77
-3.02269154981402	81
-3.05424871270596	85
-3.08327063753436	89
-3.09998195213348	93
-3.10103337983401	97

-3.1048308569975	101
-3.12338149725456	105
-3.14040055466825	109
-3.14893211133948	113
-3.16393664924174	117
-3.18257493288475	121
-3.19793731020898	125
-3.20847655774353	129
-3.22572956384246	133
-3.2403844942238	137
-3.25089747760466	141
-3.26015283312212	145
-3.27195727105306	150

SM11. Table with the values of $\log A_0$ versus hypocentral distance used for the calibration of local magnitude.

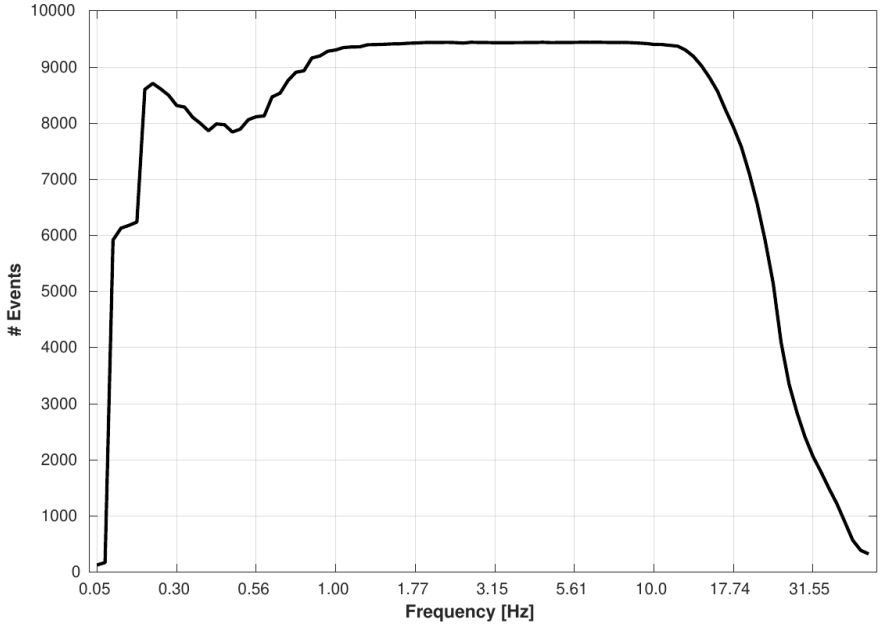


SM12: Distribution with hypocentral distance of the log10 PGA (a) and log10 PGV (b) over the S-wave time window. The color scale is proportional to the local magnitude M_L. PGA values are expressed in cm/s², PGV in cm/s.

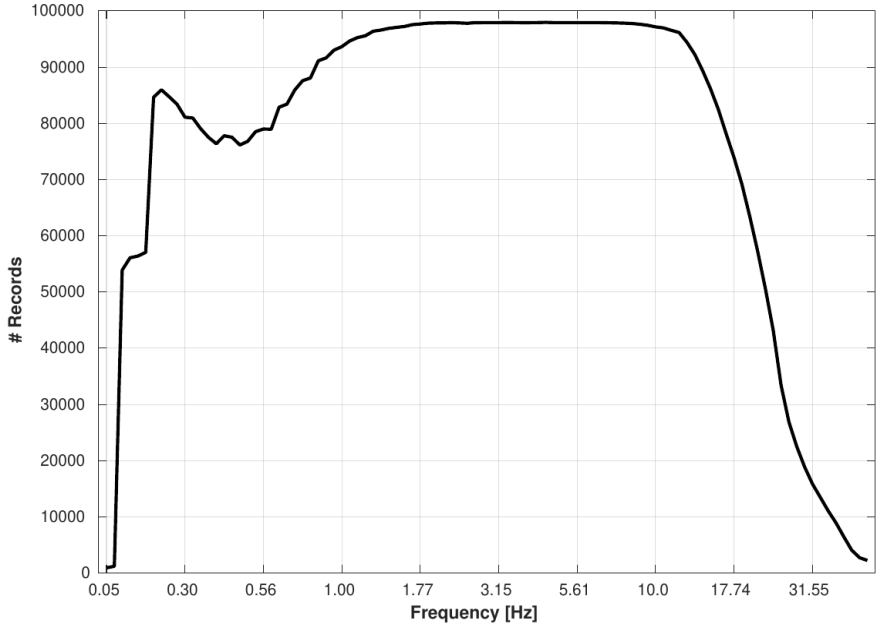


SM13: Ray coverage map at different frequencies: a) f=0.5 Hz; b) f=2 Hz; c) f=5 Hz; d) f=10 Hz; e) f=15 Hz; f=20 Hz. Events are shown by yellow dots, stations by red triangles and rays by blue lines.

a)

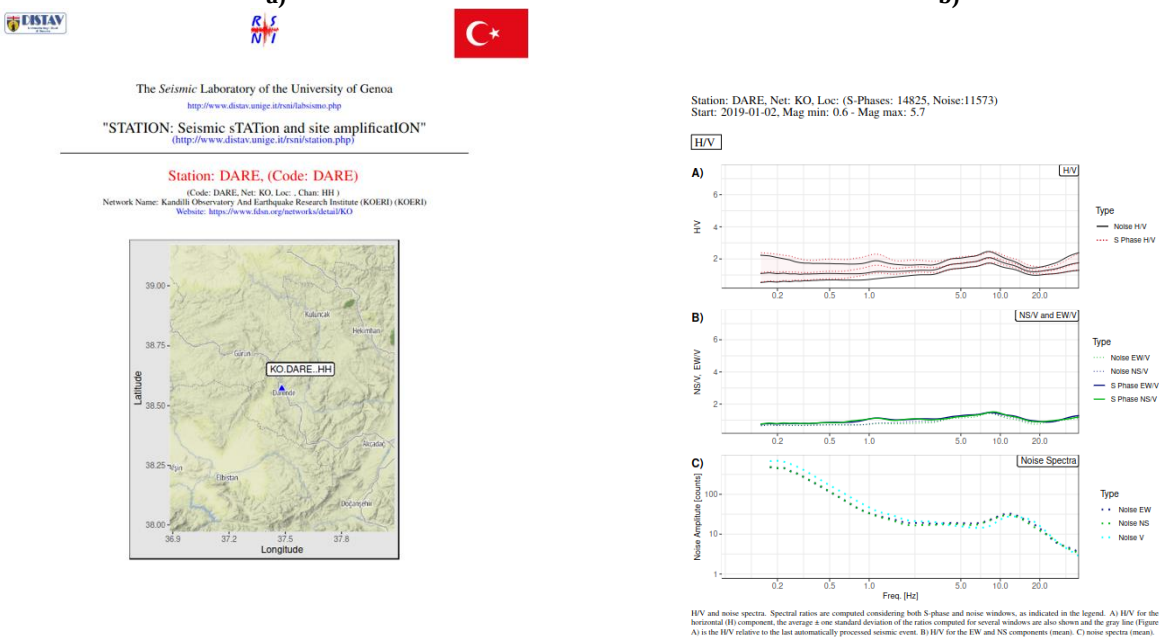


b)

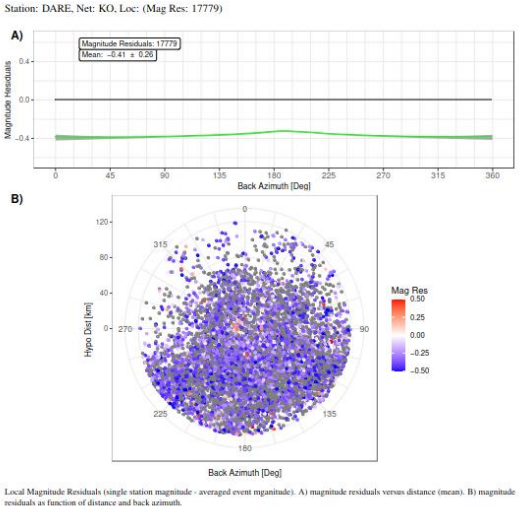


SM13: Number of events a) and records b) in function of frequency.

a) **b)**

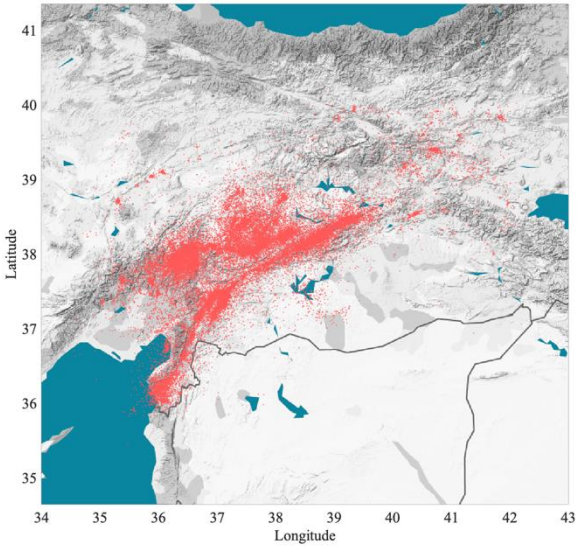


c)

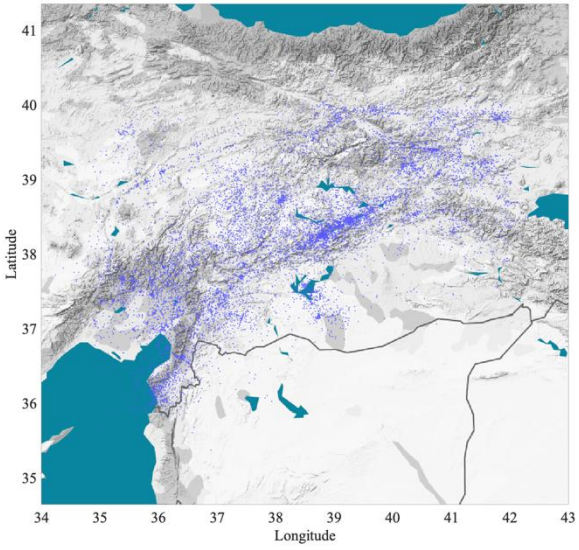


SM15: a) PDF document for the station DARE; b) HVSR measurements; c) Station Magnitude residuals and polar plot back-azimuth vs hypocentral distance.

a)



b)



SM16: Map of clustered events (in red) and background events (in blue) of the study area.