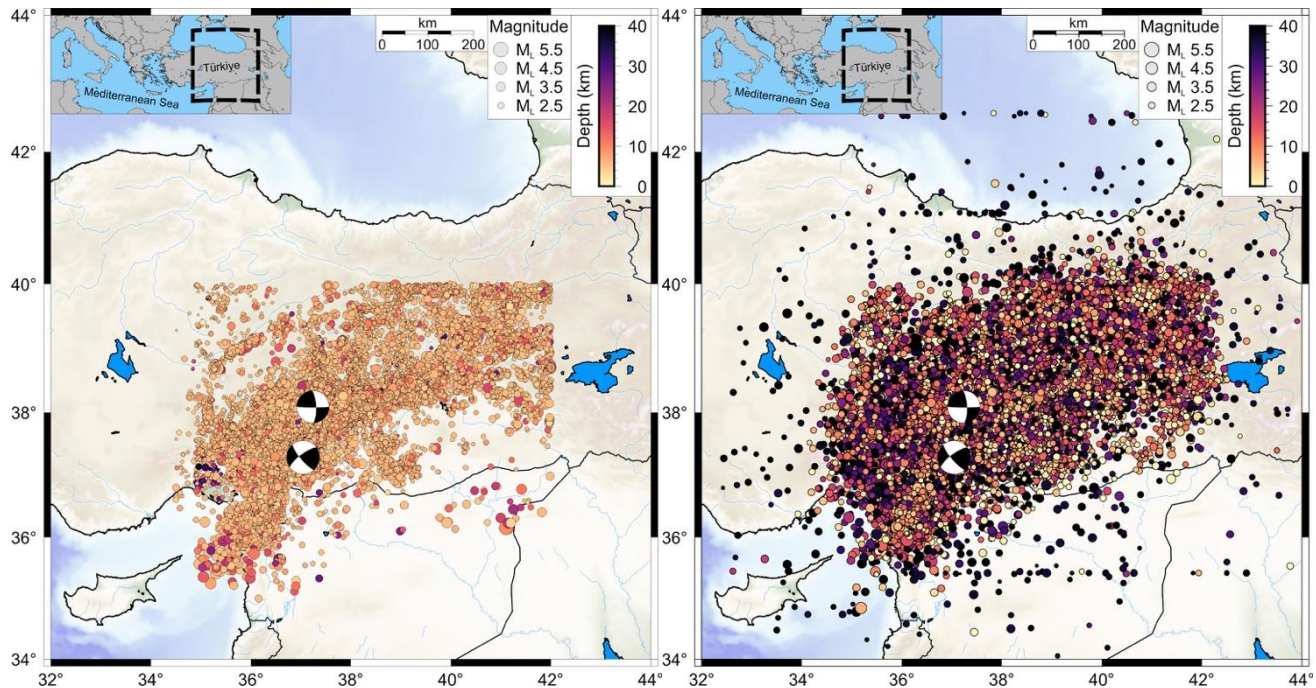


Supplementary Material for the manuscript “A high-quality Data Set for seismological studies in the East Anatolian Fault Zone, Türkiye”

by L. Colavitti, D. Bindi, G. Tarchini, D. Scafidi, M. Picozzi, D. Spallarossa

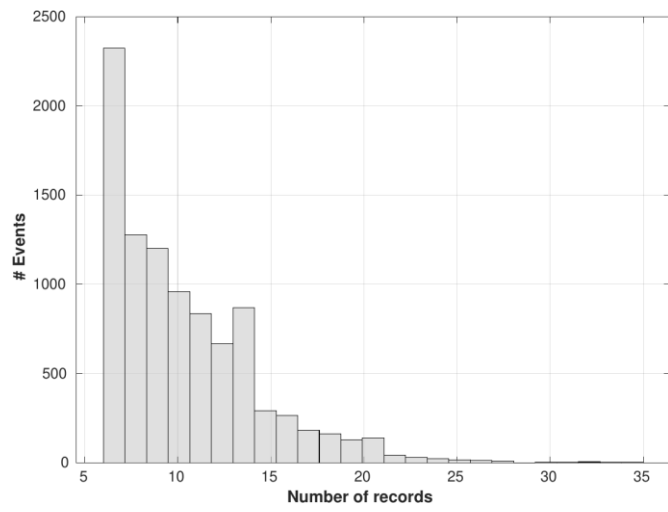
5

Correspondence to: Leonardo Colavitti (leonardo.colavitti@edu.unige.it)

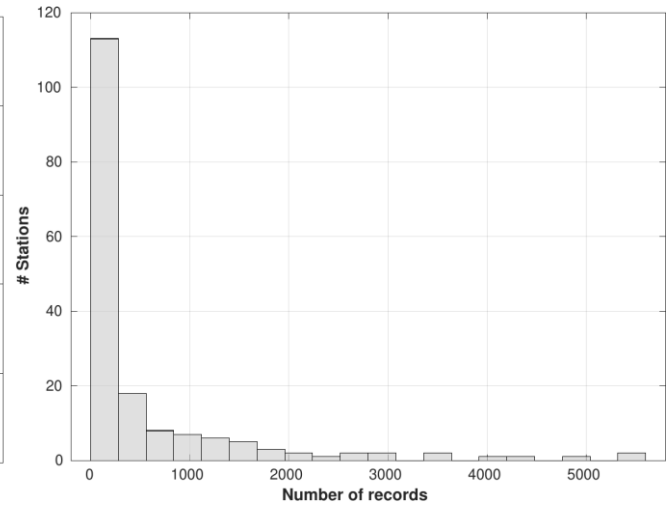


- 10 SM1: Selected events from the initial reference catalog with any value of magnitude in the time period from 01-01-2019 to 29-02-2024. On the left location given by AFAD, on the right location in this work. Size is proportional to the magnitude, color palette shows the event depth.

a)

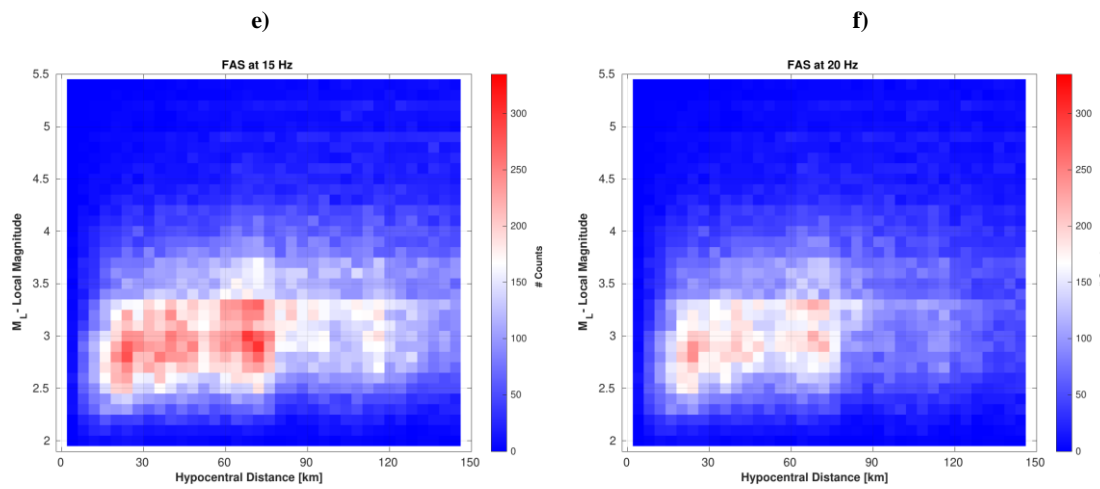
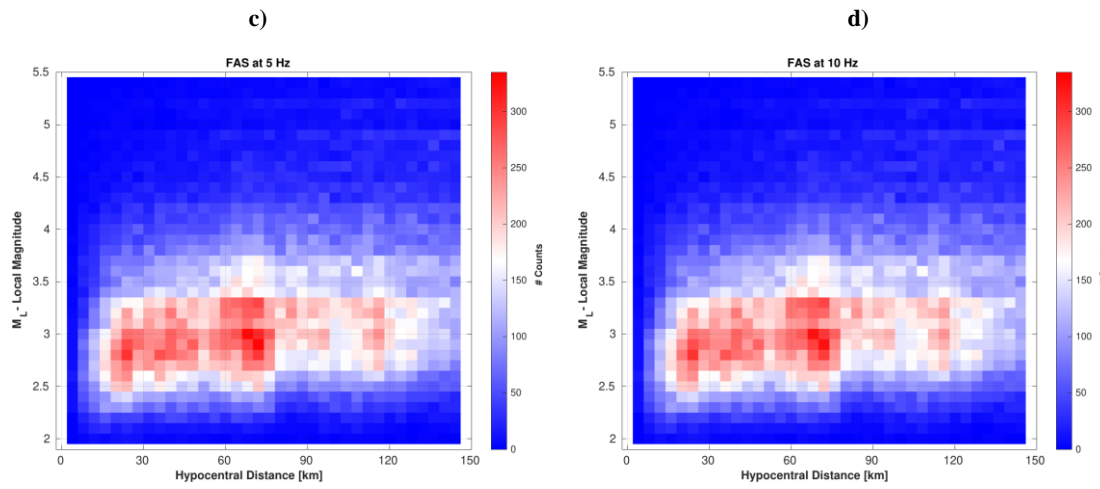
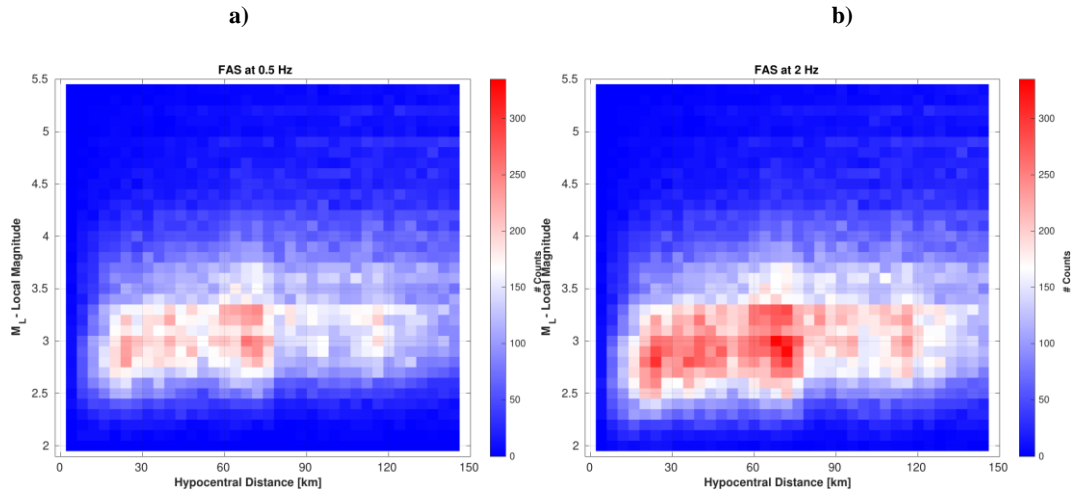


b)



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

20



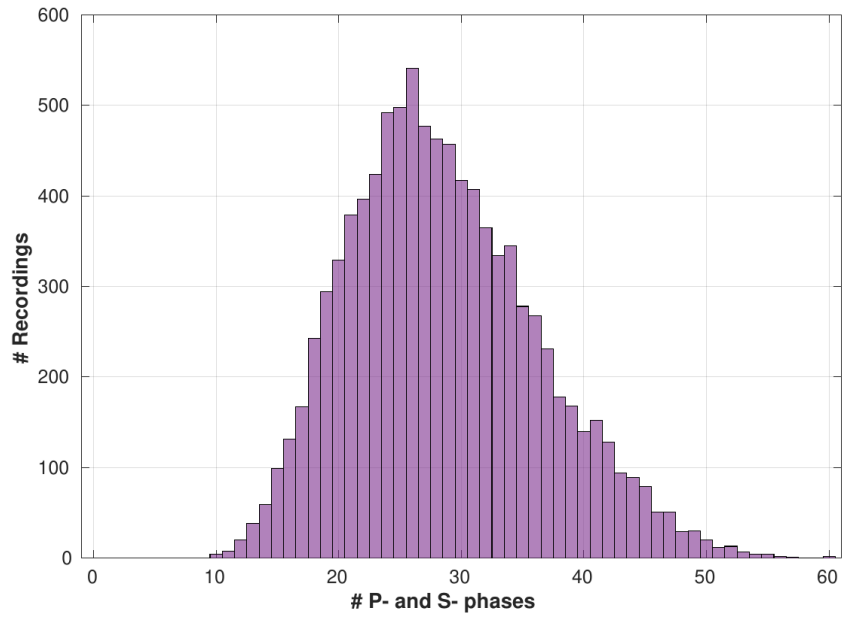
25

30 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.

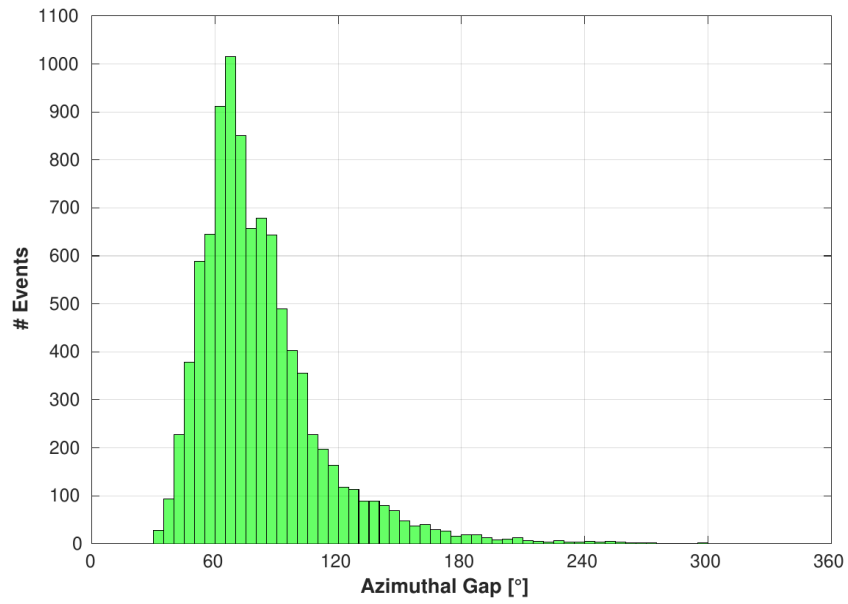
Top of layer (km)	P-wave velocity (km/s)
0	5.20
4	5.60
5	5.75
9	5.85
12	5.95
15	6.05
16	6.15
17	6.25
20	6.35
25	6.55
34	7.20
36	7.80

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

35

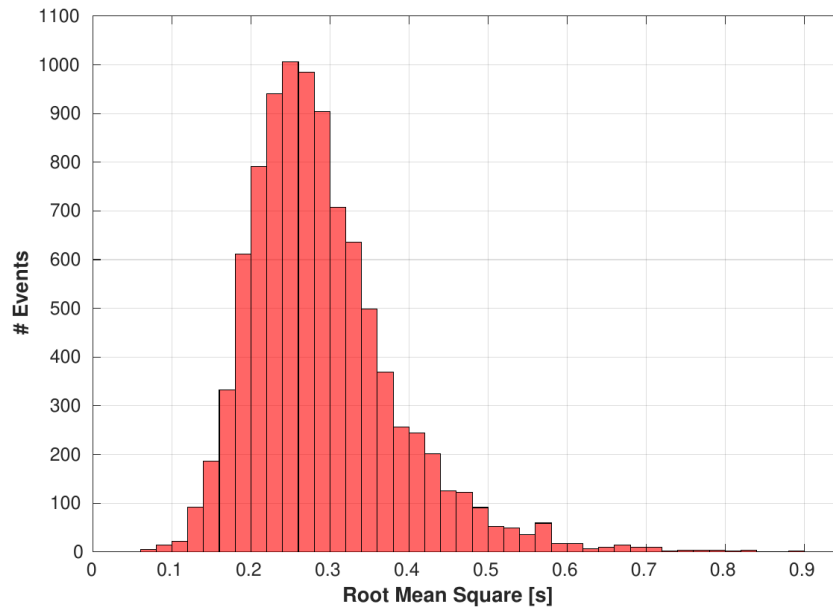


SM5: Histogram of number of total phases (P and S) picked by the Complete Automatic Seismic Processor procedure (CASP).



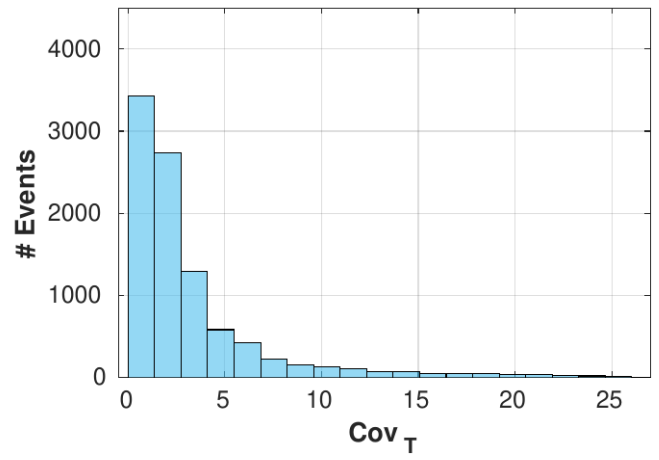
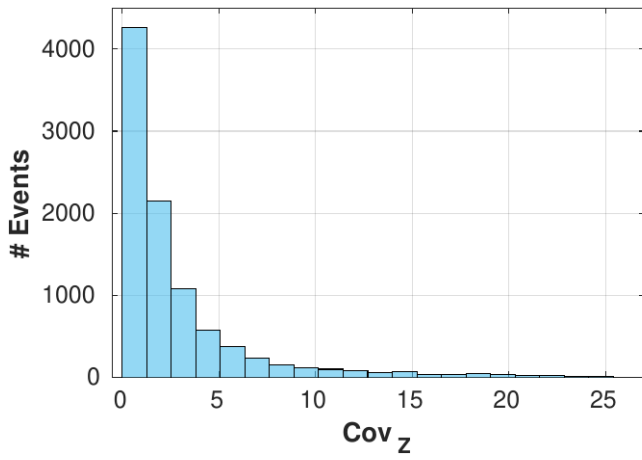
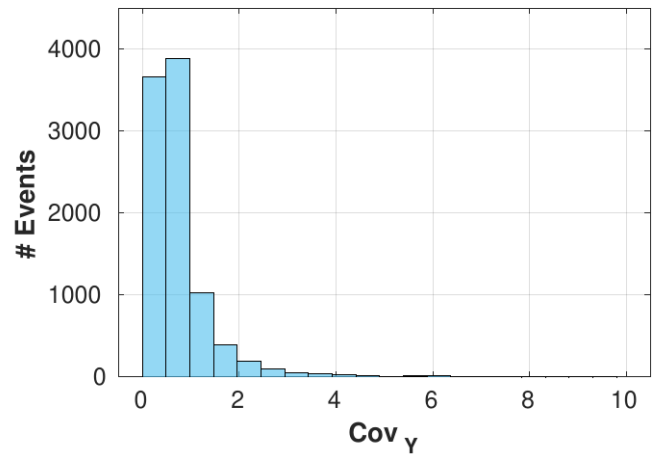
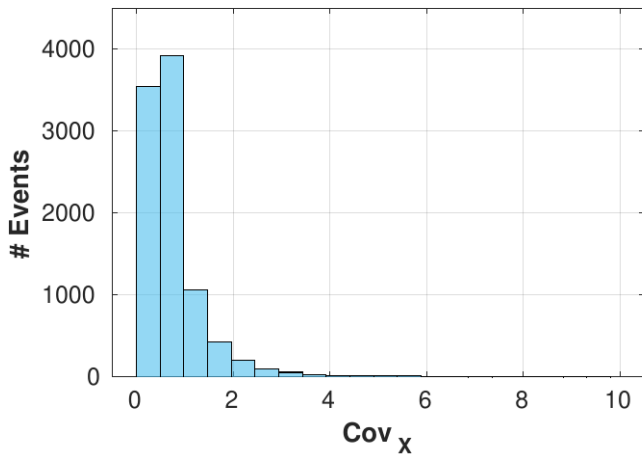
40

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

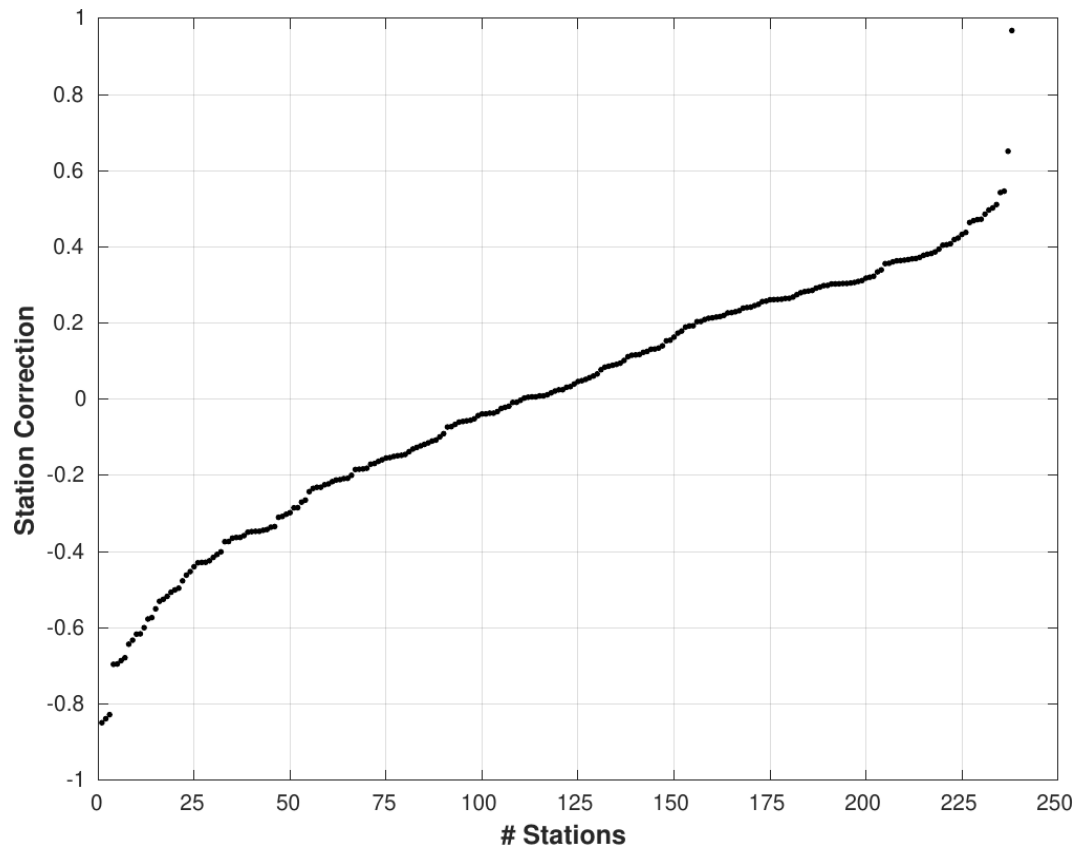


45

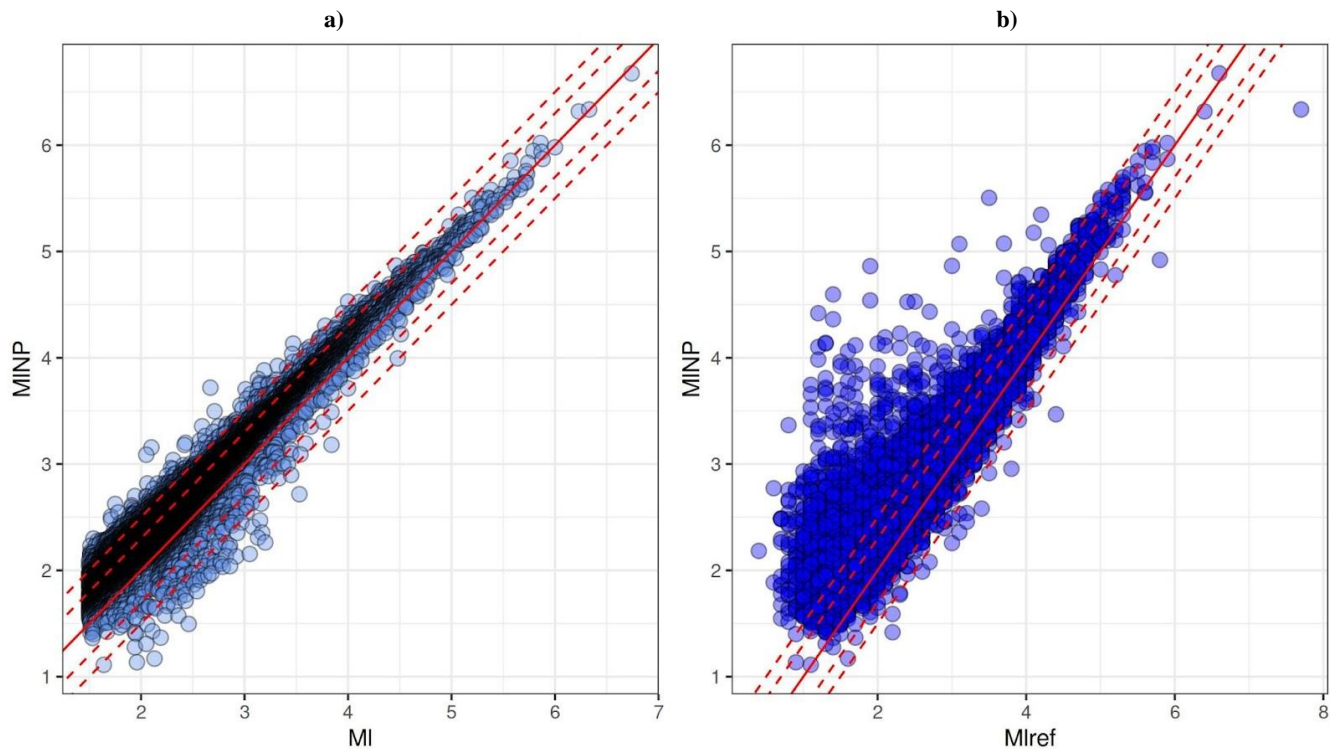
SM7: Histogram of root mean square error (in seconds) for each event of the data set.



50 **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 .**



55 SM9: Station corrections obtained in this study.

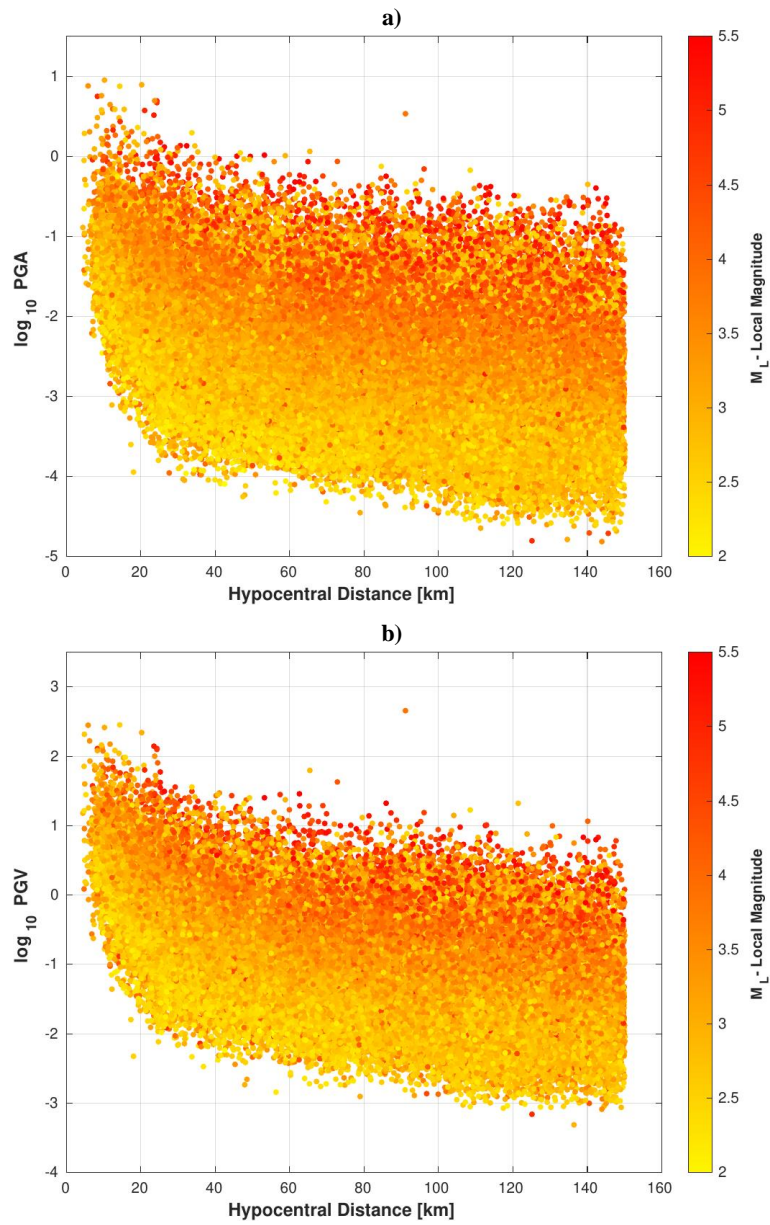


60 SM10: Comparison between non parametric magnitude (MNP) with recomputed local magnitude M_L (a) and local magnitude from AFAD catalogue (b). Red straight line represents the line 1:1, dashed red lines the standard deviations.

log(A₀) [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

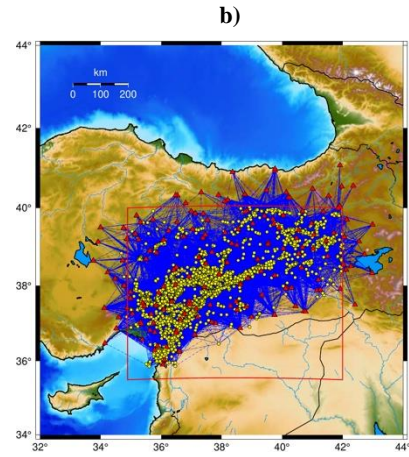
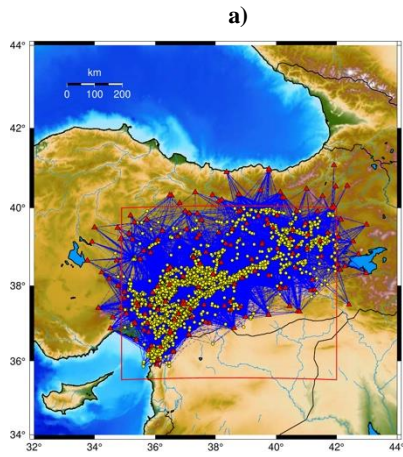
-3.1048308569975	101
-3.12338149725456	105
-3.14040055466825	109
-3.14893211133948	113
-3.16393664924174	117
-3.18257493288475	121
-3.19793731020898	125
-3.20847655774353	129
-3.22572956384246	133
-3.2403844942238	137
-3.25089747760466	141
-3.26015283312212	145
-3.27195727105306	150

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

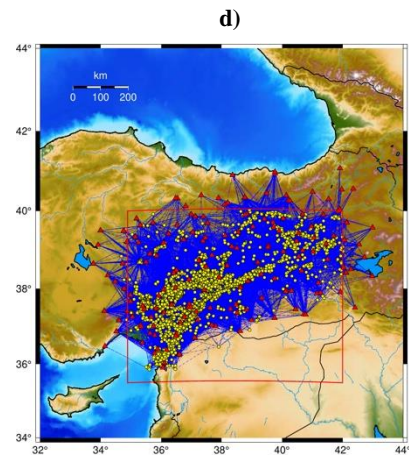
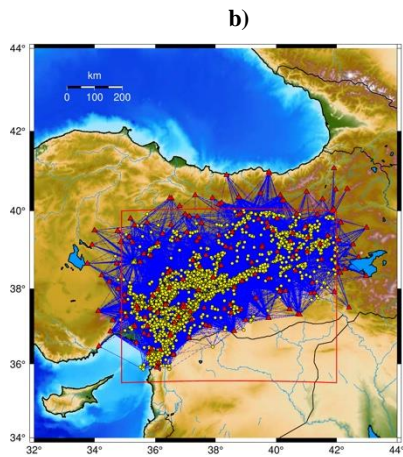


SM12: Distribution with hypocentral distance of the log₁₀ PGA (a) and log₁₀ PGV (b) over the S-wave time window. The color scale is proportional to the local magnitude M_L. PGA values are expressed in cm/s², PGV in cm/s.

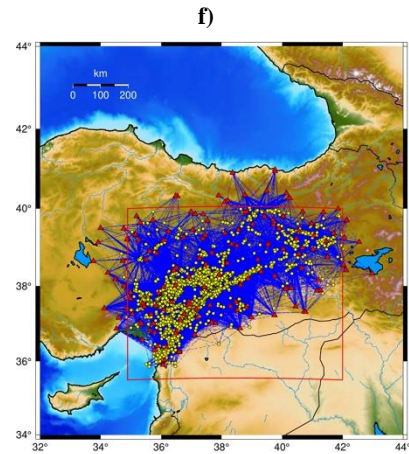
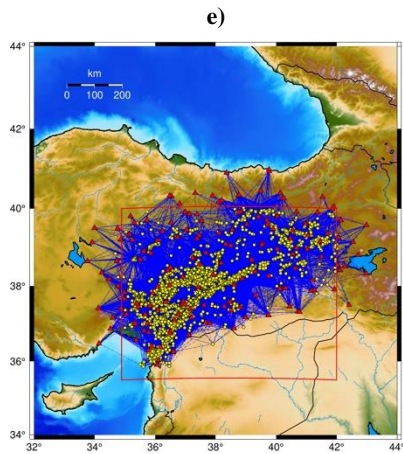
75



80

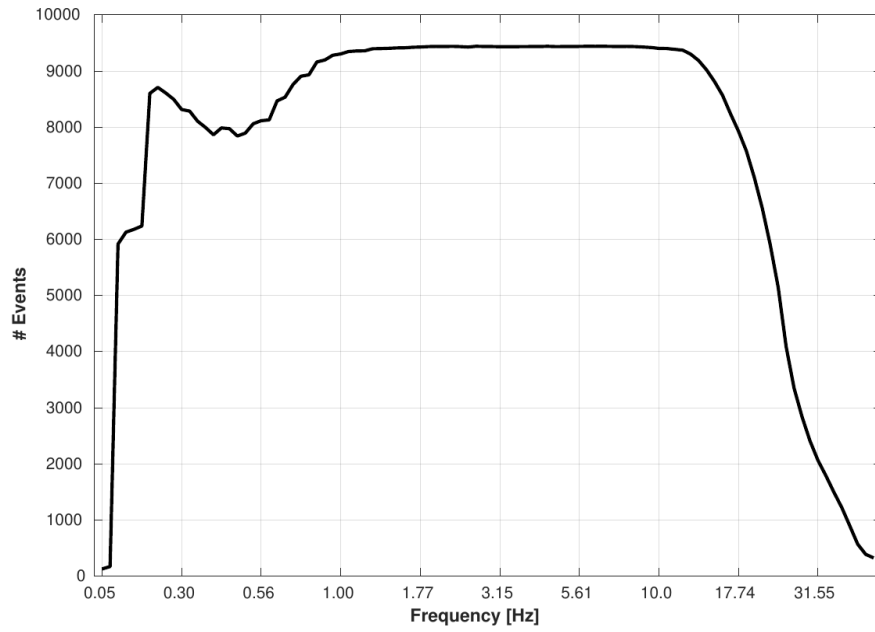


85

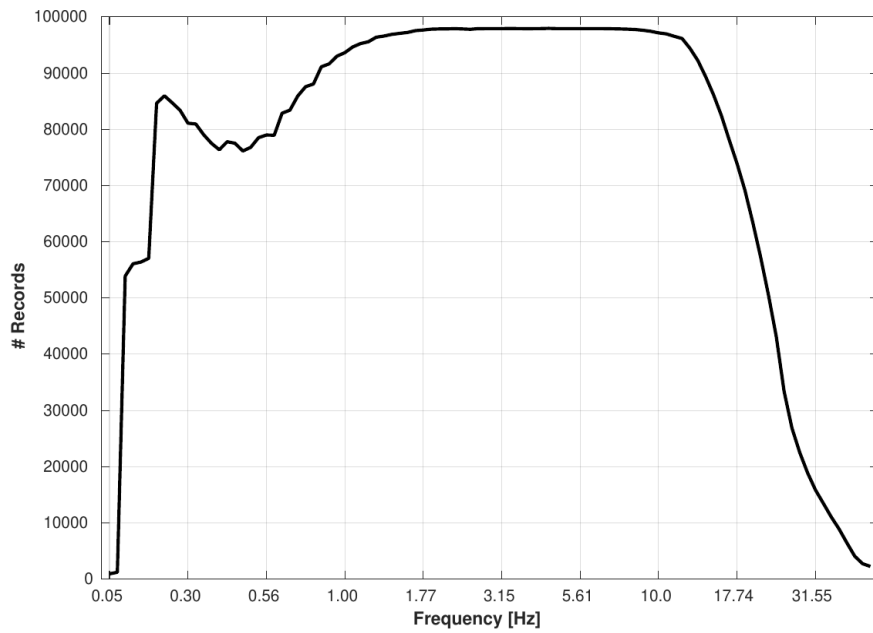


SM13: Ray coverage map at different frequencies: a) $f=0.5$ Hz; b) $f=2$ Hz; c) $f=5$ Hz; d) $f=10$ Hz; e) $f=15$ Hz; f) $f=20$ Hz. Events are shown by yellow dots, stations by red triangles and rays by blue lines.

a)



b)



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



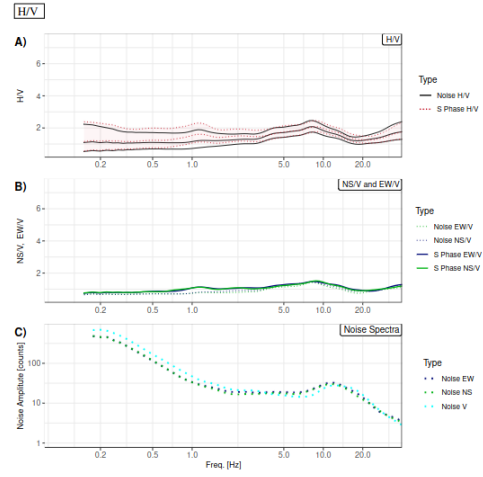
The Seismic Laboratory of the University of Genoa
<http://www.distav.unige.it/tsai/fabismo.php>
"STATION: Seismic STATION and site amplification"
<http://www.distav.unige.it/tsai/station.php>

Station: DARE, (Code: DARE)
 (Code: DARE, Net: KO, Loc: Chan: HH)
 Network Name: Kandilli Observatory And Earthquake Research Institute (KOERI) (KOERI)
 Website: <http://www.fdsn.org/network/detail/KO>



b)

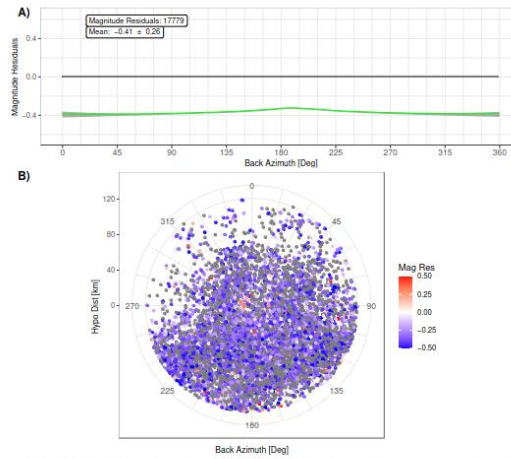
Station: DARE, Net: KO, Loc: (S-Phases: 14825, Noise:11573)
 Start: 2019-01-02, Mag min: 0.6 - Mag max: 5.7



HV and noise spectra. Spectral ratios are computed considering both S phase and noise windows, as indicated in the legend. A) HV for the horizontal (H) component, the average \pm one standard deviation of the ratios computed for several windows are also shown and the gray line (Figure A) is the HV relative to the last automatically processed seismic event. B) HV for the EW and NS components (mean). C) noise spectra (mean).

c)

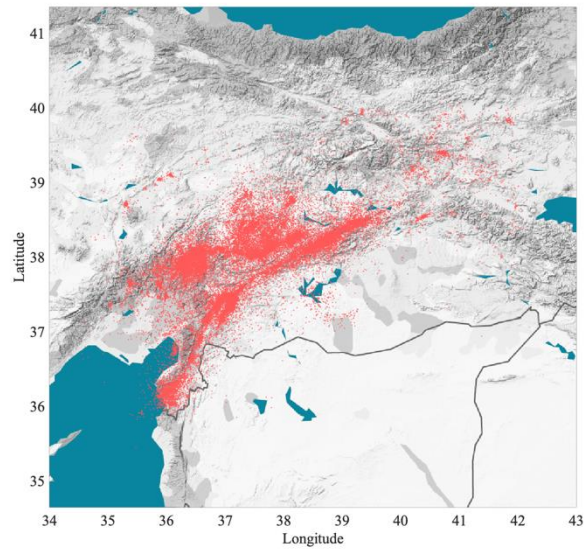
Station: DARE, Net: KO, Loc: (Mag Res: 17779)



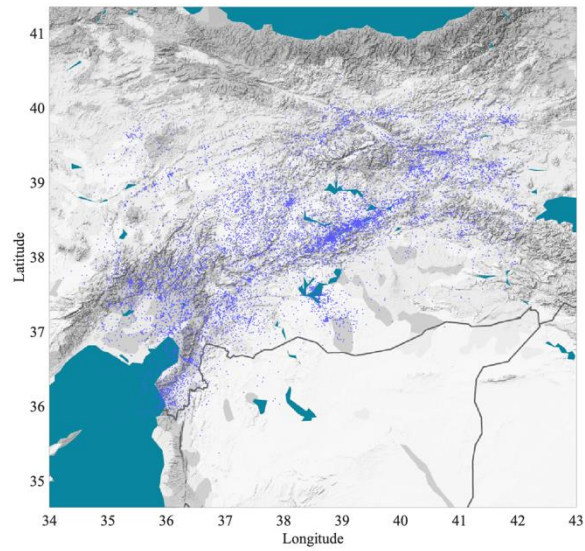
Local Magnitude Residuals (single station magnitude - averaged event magnitude). A) magnitude residuals versus distance (mean). B) magnitude residuals as function of distance and back azimuth.

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)



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