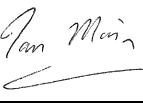


# Azimuthal dependence of seismic wave attenuation in Central Europe

*Work package 3 Ground motion*



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## Document history

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2020/04/08	1	<i>Final version of original manuscript (including revisions proposed by reviewers from the SIGMA-2 Scientific Committee)</i>

## Executive summary

The main goal is to describe azimuthal dependence of attenuation of seismic waves in the Bohemian Massif and its vicinity (Central Europe). Macroseismic studies of various historical earthquakes with epicenters in the Central Europe region have shown a significant elongation of isoseismal lines in some directions (Zátopek, 1948). Recently, this phenomenon was confirmed on the basis of instrumental records of two moderate-size earthquakes in the Vienna Basin (Málek et al., 2017). It has been found that the peak ground velocity amplitudes ( $PGV$ ) and peak ground acceleration amplitudes ( $PGA$ ) at comparable epicentral distances but different azimuths may vary by as much as one order of magnitude. An inspection of the individual seismograms suggests that the phenomenon is associated mainly with the propagation of high-frequency S waves. Significant differences in frequency content of the seismic waves radiated to different azimuths are also demonstrated.

Within the scope of SIGMA-2, we have investigated the azimuthal dependence for several moderate-size earthquakes in Central Europe with moment magnitudes between 2.3 and 3.8. We selected 9 earthquakes from 7 seismic epicentral zones from the years 2012 to 2018, which represent the strongest events in those zones for the last decade. The number of seismic stations in the region under investigation has been increasing (both permanent and temporary). It enables us to observe the attenuation of seismic waves directly from the measured seismograms. The results show that the  $PGV$  and  $PGA$  depends strongly on the azimuth of wave propagation for some earthquakes. The azimuthal dependence has not been considered yet in the evaluation of seismic hazard for the Temelín and Dukovany nuclear power plants which are situated in the Bohemian Massif.

Azimuthal dependence of amplitudes is not considered in the standard methodology of PSHA. We recommend its modification in order to estimate the truly site-specific seismic hazard.

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## Introduction

The Bohemian Massif in Central Europe represents an intraplate region with weak but not negligible seismicity. Two nuclear power plants (NPPs) are situated there and several other NPPs are in neighboring countries. Two reactors (each of 1055 MWe) are in operation at Temelín NPP and four reactors (each of 510 MWe) are in operation at Dukovany NPP. There are plans to extend one or both of these power plants in the near future. The last Probabilistic Seismic Hazard Assessment (PSHA) was performed by Málek et al., (2012) for Temelín NPP and by Málek and Prachař (2015) for Dukovany NPP. Since then, some specific features in the methodology have been identified and analyzed. One of the most important features is the fact that the most dangerous seismic source zones are situated at a relatively large distance from the sites of the nuclear power plants, more than 100 km. Therefore, the description of attenuation of seismic waves is one of the most important sources of epistemic uncertainty in PSHA for these sites. As the region reveals only weak seismicity, there are no instrumental records of strong ground motion, which could be used for site-specific assessment of seismic wave attenuation. In principle, there are two approaches to selecting the appropriate ground motion model (GMM) to describe the attenuation. The first one, which is a standard approach, is to adopt a GMM from some other region with stronger seismicity but similar geological and tectonic setting. For the Bohemian Massif, such region could be Central and East North America (CENA). For the CENA region, there are several GMMs; the most recent one is NGA-East model (Goulet et al., 2017).

The second approach is to use moderate-size instrumentally recorded earthquakes in the most important seismic zones of the region and to extrapolate the features of measured seismograms for larger magnitudes. This approach was selected in this study. The extrapolation to larger magnitudes can be done again with the help of the NGA-East model.

The advantage of the selected approach is straightforward. We can examine site-specific features of the seismic field. One of them is the azimuthal dependence of the GMM model. The azimuthal dependence has turned out to be very strong for seismic zones along the border of the Bohemian Massif. It has a strong impact on the seismic hazard of NPPs inside the Bohemian Massif. In future, it will enable us to perform truly site-specific seismic hazard computation, considering the individual GMMs for each of the seismic zones.

## 1. Selection of seismic events

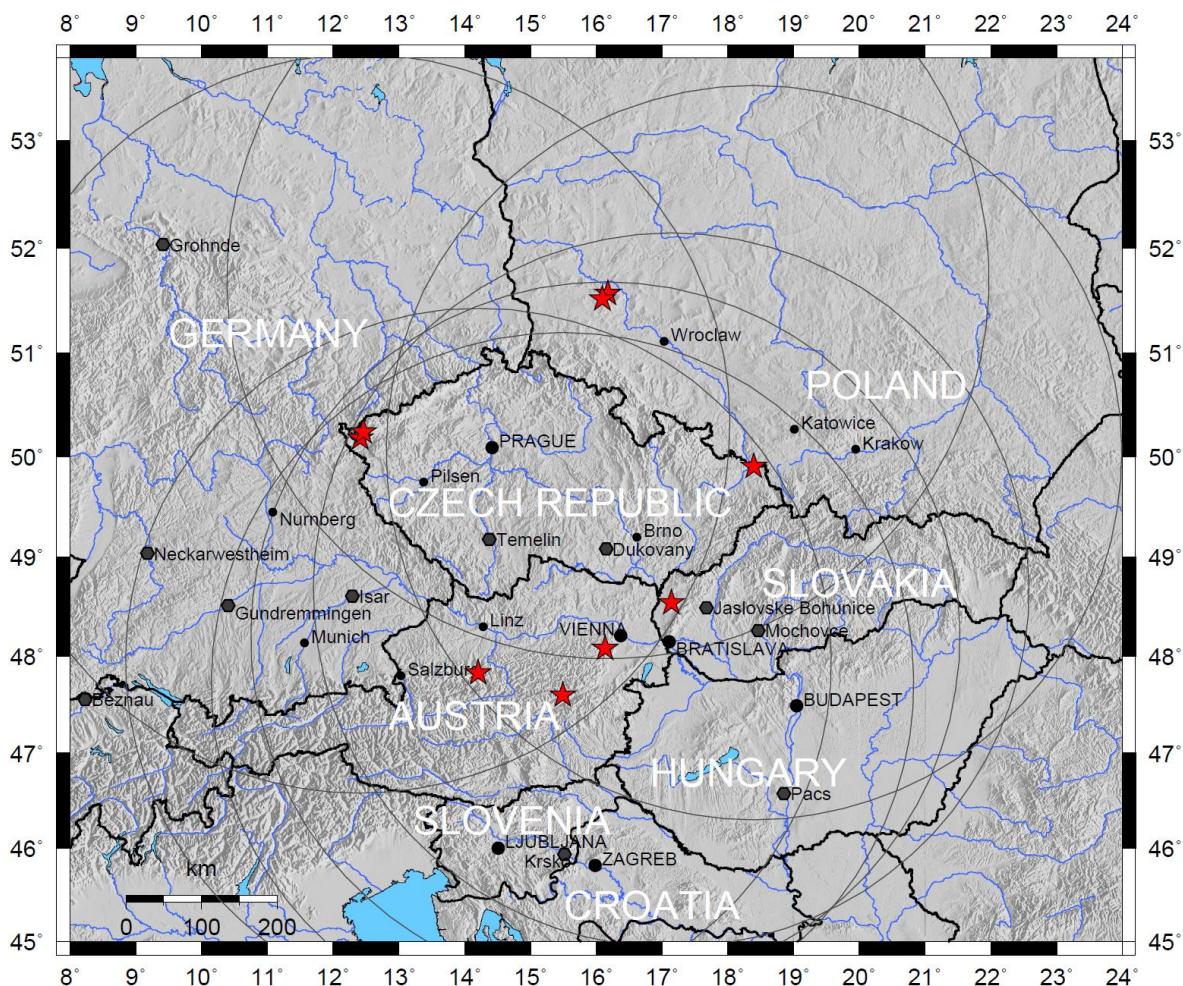
Earthquakes in the Bohemian Massif have been instrumentally recorded since November 28, 1908, when the first seismic station in Cheb was put into operation. Bulletins of seismic events (with onset times and maximal amplitudes) are available from January 1976. At that time, only 2 stations were included in the catalog, namely Průhonice (PRU) and Kašperské hory (KHC). This was the origin of the Czech Regional Seismic Network (CRSN). The number of seismic stations in the Czech Republic has increased up to 20 permanent seismic stations operated by CRSN and several tens of other stations in local networks. Comparable numbers of stations are also in the neighboring countries. However, the digital seismic data from most of the existing seismic stations are available only for the most recent years. This was the main reason why we decided to select only the earthquakes since 2012.

The nine used events (E1 – E9) from seven source zones are listed in Table 1. We have chosen pairs of events from West Bohemia (E4 and E8) and Lubin (E6 and E9) so that we can compare the stability of the results for different events from the same zone. The location errors are small for epicenters but the depth is not well delimited for events E1, E3 and E7. However, it is clear that all events are shallow, with depth less than 15 km. Three earthquakes represent induced seismic events from mining areas: Ostrava coal mines (E5) and the Lubin copper mine (E6 and E9). Two events (E4 and E8) are from West Bohemia which is well-known for the occurrence of seismic swarms. Two events are from different

parts of the Austrian Alps (E1 and E3) and one event is from the Vienna Basin (E7). Another event is from the Little Carpathians in Slovakia (E2).

ID	Date & time	Lat	Lon	Mw	Source zone	Stations
	UTC	N	E			
E1	2012-01-17 11:41:01.0	47.83	14.21	2.4	Kalkalpen, Austria	121
E2	2012-03-05 22:56:57.0	48.54	17.14	2.3	Malé Karpaty, Slovakia	66
E3	2014-04-17 14:59:17.0	47.60	15.49	2.9	Mürzsteger Alps, Austria	136
E4	2014-05-31 10:37:20.9	50.18	12.41	3.8	Nový Kostel, Czechia	157
E5	2014-11-14 10:44:18.4	49.90	18.40	2.3	Ostrava, Czechia	71
E6	2015-07-08 06:53:18.1	51.52	16.09	3.3	Lubin, Poland	119
E7	2016-04-25 10:28:22.9	48.08	16.14	3.4	Vienna, Austria	158
E8	2018-05-21 21:04:43.0	50.24	12.46	3.4	Nový Kostel, Czechia	151
E9	2018-07-20 03:31:30.7	51.57	16.18	3.3	Lubin, Poland	119

**Table 1:** Parameters of analyzed earthquakes.



**Figure 1:** Selected events and the respective investigated regions within the radius of 400 km.

Catalogues provide different types of magnitudes for selected events, mainly local magnitudes. Only for E5, the moment magnitude  $M_w = 3.8$  was published by Geofon (GFZ Potsdam). We used that value to

determine Mw for all the other events, using the vertical component of peak ground velocity (PGV-Z) in the epicentral distances from 50 to 400 km. In these epicentral distances, the effect of different hypocenter depths is small. Computed Mw magnitudes are given in Table 1. Although the estimation of Mw is very rough, it does not affect the results significantly because the method used in the present study is based on comparison of amplitudes from a single event at different stations. The selected events are shown in Fig.1. We analyzed the seismic waves up to the distance of 400 km. Although the standard radius of the investigated region around nuclear power plants is 300 km, in special cases of weak seismicity near NPPs it could be useful to extend it to 400 km. There are also several other NPPs in the investigated region: in Slovakia, Hungary and Germany.

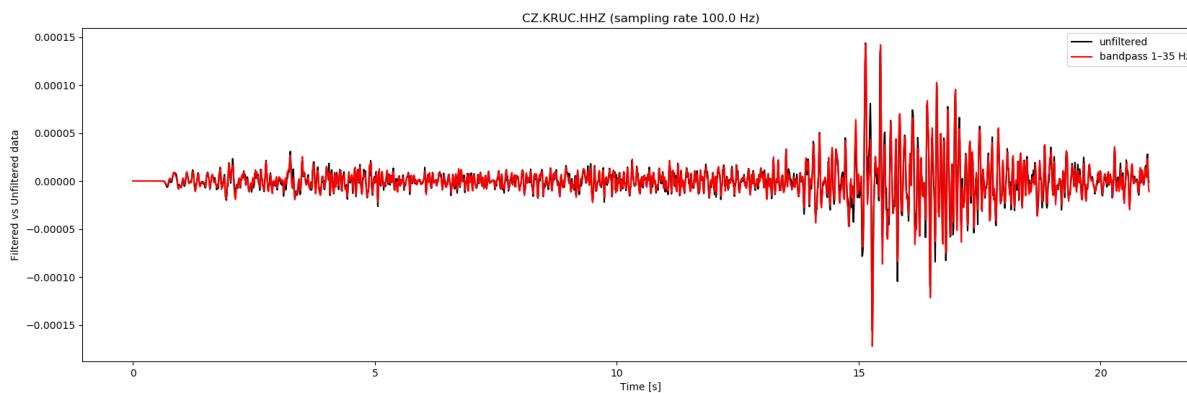
## 2. Seismic stations

The quality and instrumentation of seismic stations in the region vary greatly. On the one hand, there are permanent broadband stations that are intended mainly to detect distant earthquakes and are situated at sites with low seismic noise. Unfortunately, these stations are often sampled only at 20 Hz, so they register seismic motions only up to 8 Hz. On the other hand, there are stations from local networks, which are intended to register local earthquakes. They have a high sampling frequency (100 Hz or even 250 Hz) but the sensors are often short-period (they register only the frequencies over 1 Hz) and the seismic noise is higher (as a rule). Therefore, the frequency range covered by all stations is very narrow (from 1 to 8 Hz). This problem has been solved recently, when many of the permanent stations started to provide high-frequency channels (e.g. the CRSN stations) and the sensors at local networks have been replaced with broadband ones (e.g. the local network WEBNET in West Bohemia).

In our present study, we use stations with high sampling (more than 80 Hz), both broadband and short-period ones. It reduces considerably the number of useful stations but it makes it possible to extend the range of frequencies under investigation from 1 Hz to 35 Hz, which covers the most dangerous seismic motion for nuclear power plants. We selected seismic stations with epicentral distance up to 400 km for each of events E1-E9.

## 3. Seismograms

The seismograms at all selected stations were inspected by seismologists on the screen. The seismograms with high seismic noise or electronic disturbances were excluded. Only 3-component seismograms are used. The original seismograms (provided by the network operators) are records of the velocity of movement, which is affected by frequency response of the sensor and is recorded with different sampling frequencies. To obtain comparable data, we corrected all seismograms for frequency characteristics of the sensor and filtered them using band-pass filter 1–35 Hz. Then we performed digital derivative to obtain accelerograms, more common in seismic hazard computations. The filtration changes the values of *PGA* and *PGV*. However, in the more distant stations (more than 50 km), the difference caused by the low-pass filter is less than 10%. This is demonstrated at the KRUC station, Fig. 2. The effect of filtering is larger for stations near the epicenter. This was one of the reasons why we restricted our study to stations within epicentral distance of 50 km. There are few stations where *PGV* is connected with surface waves. In such case, *PGV* is affected strongly by the high-pass filter at 1 Hz. Surface waves were excluded from our analyses using the above mentioned filtering.



**Figure 2:** Seismogram at the KRUC station before (black line) and after filtering (red line)

The numbers of seismograms used for the selected earthquakes are in Tab.1. We have at least 66 selected seismograms for each earthquake. Altogether, we have at our disposal 1098 three-component accelerograms in epicentral distances up to 400 km. Out of that number, 1043 seismograms are in the interval of 50 – 400 km. The main parameters of the seismograms are listed in Appendix 1. For each seismogram, the name of the station, epicentral distance and azimuth from the epicenter to the station is given. Peak ground acceleration  $PGA$  and peak ground velocity  $PGV$  (after filtering) at vertical component and horizontal plane are also given. The amplitude in the horizontal plane is computed as  $\sqrt{N^2 + E^2}$ , N and E are the components to North and East. In the last column, there is the ratio:

$$F_M = \frac{PGA_Z}{2\pi PGV_Z} \quad (1)$$

which gives us rough information about the prevailing frequency at times of peak amplitudes at vertical component Z. This parameter will be used in the next chapters to characterize the differences of frequency contents.

## 4. Verification of the quality of input seismograms

In many seismological applications, only the time of seismic wave onsets is used. That is why many seismological observatories are not concerned about the correct determination of amplitude. In many seismological databases, there are many errors in the signal gain. We must carefully verify the gain and repair or exclude erroneous input data.

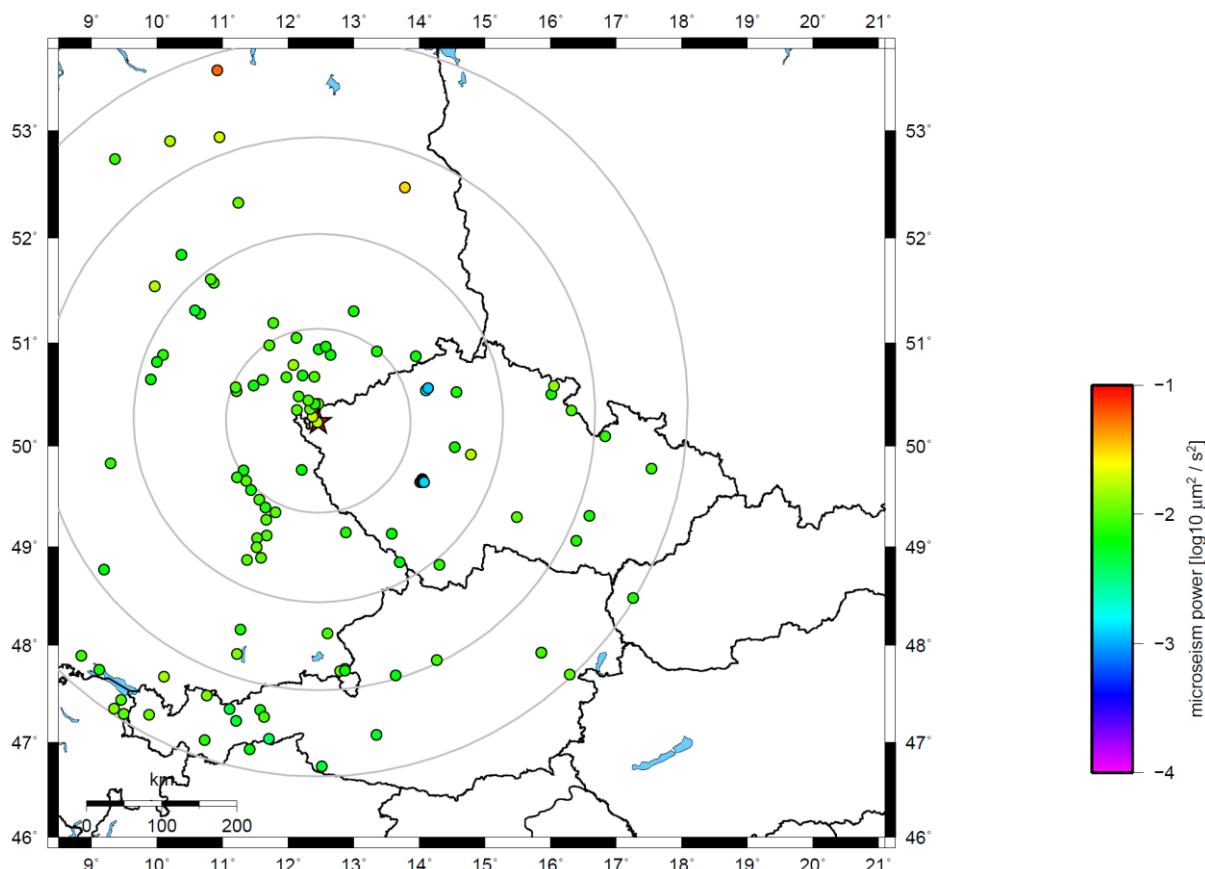
We performed three types of tests to find the errors. In the first test, we compared  $PGV_Z$  at close stations (the distance between the stations is less than 50 km). Only stations with epicentral distance exceeding 80 km were tested. We assume that  $PGV_Z$  at such pairs of stations is comparable, their ratio should be in the interval (0.1, 10). When we found a discrepancy, we tried to contact the owner of the station and asked for a correction of the gain. In some cases, we were not successful even after such communication, so we had to exclude the station from the data set.

The second test was performed only for broadband stations. They register microseisms with prevailing frequency of 6s. It could be assumed that the amplitude of these microseisms does not vary much in the predefined time interval of 10 minutes just before the event. Again, we compared it for close stations (in this case, the distance between the stations is less than 100 km). And again, we found some suspicious stations and discussed the correctness of the gains with their providers.

The third test was made with the help of six distant earthquakes, namely Mexico 20.3.2012, M=7.3; Chile 1.4.2014, M=8.1; Nepal 25.4.2015, M=7.8; Chile 16.9.2015, M=8.3; Ecuador 16.4.2016 M=7.8; Fiji 19.8.2018 M=8.2. The amplitudes of Z component of P waves and S waves should be comparable at close stations. The procedure was the same as in the case of microseisms. The same data were used to characterize local conditions at the stations, see Chapter 5.

Unfortunately, the above methods do not allow us to find errors in cases where the gain differs from the right value only slightly. However, we are sure that such small errors do not affect the results of our analysis significantly.

In Figure 3, microseisms registered at broadband stations are shown for E8, as an example. The amplitudes of the microseisms are characterized as the power spectrum integrated for the frequencies 0.1–0.5 Hz.



**Figure 3:** Amplitudes of microseisms at the broadband stations just before earthquake E8.

## 5. Compensation of local conditions

Ground motion at some stations can be increased by thick layers of sediments near the surface, by topography of the surface or by other local factors. These local conditions can superpose the effect of azimuthal dependence, which is the main aim of our study.

Local conditions influence all seismic waves from all seismic sources coming to the station. The amplification factor depends on the frequency of seismic waves, angle of incidence or type of the wave. We can compensate the impact of local conditions only partly. The simplest way to do it is to multiply the seismograms by constant factors that are determined for each station and for vertical and horizontal components.

To determine the factors, we can use records of P and S waves from distant earthquakes. These waves reach all stations with small incidence angles and the distance between the stations is small in comparison with epicentral distance. Therefore, their amplitude should be the same if the local conditions are the same for all stations. We can choose the reference value of amplitude at the station with hard bedrock. In our study, the station KHC was chosen as the reference station. The amplification factor is then computed as the ratio of the amplitude at the current station and at the reference station.

We have applied this method using 6 distant earthquakes (the same as in paragraph 4). For further analysis, we will use the compensated seismograms.

## 6. Attenuation of $PGV$ and $PGA$ with epicentral distance

The first step is the determination of mean decay of amplitudes with epicentral distance, (without considering azimuthal dependence) for each event. As the magnitudes of the events are not the same, we determine the parameters for the individual earthquakes.

We assume the dependence on the epicentral distance  $R$  in the form:

$$\begin{aligned} \log(PGA)(R) &= \log(PGA)(100) - 0.5 \log(R/100) - \alpha (R/100-1) \\ \log(PGV)(R) &= \log(PGV)(100) - 0.5 \log(R/100) - \beta (R/100-1) \end{aligned} \quad (2)$$

where  $PGA(100)$  and  $PGV(100)$  are the expected peak amplitudes for an earthquake in the epicentral distance of 100 km. The values are dependent on the magnitude, depth and other parameters of the particular earthquake. The second term in (2) characterizes the geometrical spreading of rays, and the third term represents material attenuation,  $\alpha, \beta$  are constants.

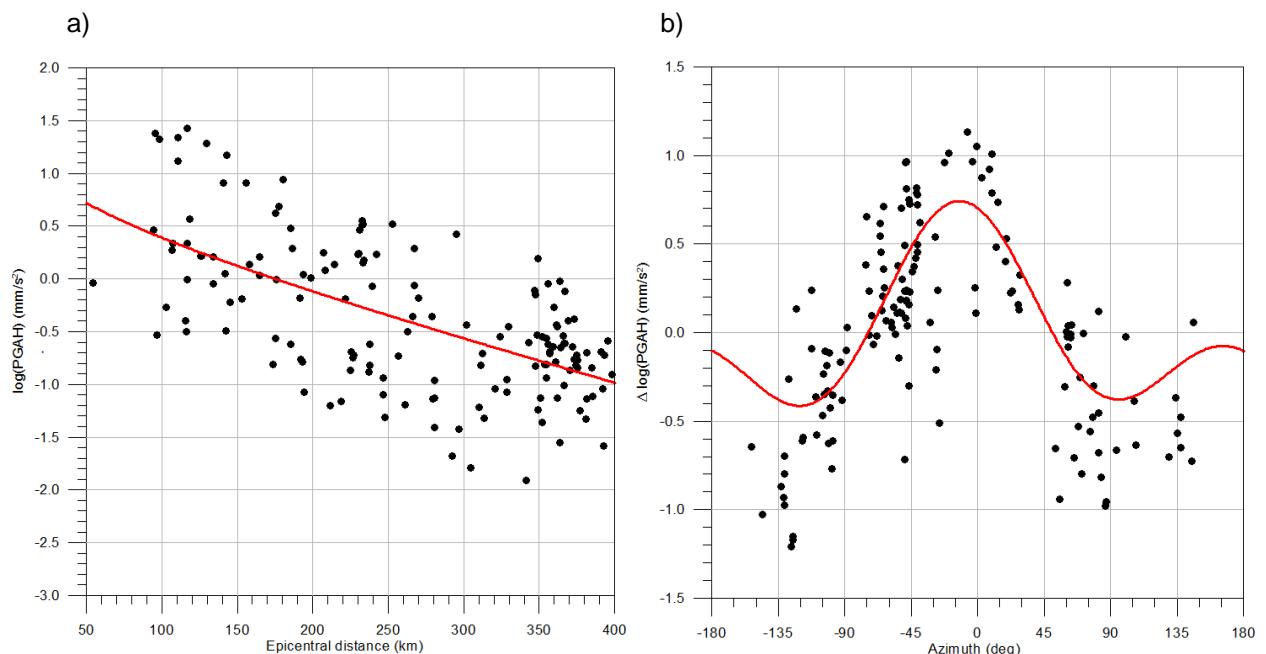
The equations do not cover the amplitudes in epicentral areas up to the epicentral distance of 50 km where the amplitudes of seismic waves are strongly affected by focal mechanisms and by hypocentral depth. Moreover,  $PGA$  in such small epicentral areas contains high frequencies that cause a significant difference between the original and the filtered seismogram. Constant 0.5 in the second term in (2) represents the geometrical spreading of the rays. It is characteristic for surface waves and also for waves Pg, Pn, Sg, Sn, for which most of the energy remains in the Earth's crust. The third term represents amplitude attenuation of the plane wave, which is caused by inelasticity of the rock massif. We determine the attenuation separately for seismic velocity and acceleration. We used optimization to find the parameters that are summarized in Table 2 for  $PGV$  and Table 3 for  $PGA$ . We identified models both for vertical and horizontal components. The example of attenuation model of  $PGA_H$  for Earthquake 7 is shown in Figure 4a. Attenuation of all earthquakes and  $PGV_Z$ ,  $PGV_H$ ,  $PGA_Z$ ,  $PGA_H$  are in Appendices 2 and 3.

ID	Date & time	$\log(PGV_Z)(100)$	$\log(PGV_H)(100)$	$\alpha_Z$	$\alpha_H$
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	UTC	$\mu\text{m/s}$	$\mu\text{m/s}$	$(100\text{km})^{-1}$	$(100\text{km})^{-1}$
E1	2012-01-17 11:41:01.0	0.672	0.986	0.175	0.223
E2	2012-03-05 22:56:57.0	0.471	0.699	0.116	0.130
E3	2014-04-17 14:59:17.0	1.096	1.368	0.140	0.140
E4	2014-05-31 10:37:20.9	2.147	2.432	0.347	0.354
E5	2014-11-14 10:44:18.4	0.583	0.741	0.194	0.172
E6	2015-07-08 06:53:18.1	1.533	1.701	0.213	0.204
E7	2016-04-25 10:28:22.9	1.624	1.900	0.250	0.249
E8	2018-05-21 21:04:43.0	1.649	1.962	0.306	0.330
E9	2018-07-20 03:31:30.7	1.400	1.638	0.172	0.174

**Table 2:** Parameters of attenuation of  $PGV$  for earthquakes E1 to E9.

ID	Date & time	Log( $PGA_Z$ )(100)	Log( $PGA_H$ )(100)	$\beta_z$	$\beta_h$
	UTC	$\text{mm/s}^2$	$\text{mm/s}^2$	$(100\text{km})^{-1}$	$(100\text{km})^{-1}$
E1	2012-01-17 11:41:01.0	-0.695	-0.461	0.234	0.320
E2	2012-03-05 22:56:57.0	-1.160	-0.944	0.132	0.165
E3	2014-04-17 14:59:17.0	-0.406	-0.287	0.181	0.164
E4	2014-05-31 10:37:20.9	0.790	0.996	0.487	0.512
E5	2014-11-14 10:44:18.4	-1.029	-1.067	0.208	0.194
E6	2015-07-08 06:53:18.1	-0.124	0.078	0.314	0.364
E7	2016-04-25 10:28:22.9	0.184	0.391	0.305	0.358
E8	2018-05-21 21:04:43.0	0.265	0.511	0.426	0.488
E9	2018-07-20 03:31:30.7	-0.284	-0.020	0.273	0.346

**Table 3:** Parameters of attenuation of  $PGA$  for earthquakes E1 to E9.

**Figure 4:** Attenuation of  $PGA_H$  for earthquakes E7, dependence a) on epicentral distance, b) on azimuth  
 $f(\varphi) = 0.41\cos(\varphi + 10^\circ) + 0.33\cos(2(\varphi - 13^\circ))$

## 7. Azimuthal dependence of PGA and PGV

Azimuthal dependence of PGV and PGA attenuation is the main topic of this study. It was confirmed recently for the source zone of the Vienna Basin by Málek and Brokešová (2017). Now, we analyze this phenomenon for more source zones in the vicinity of the Bohemian Massif.

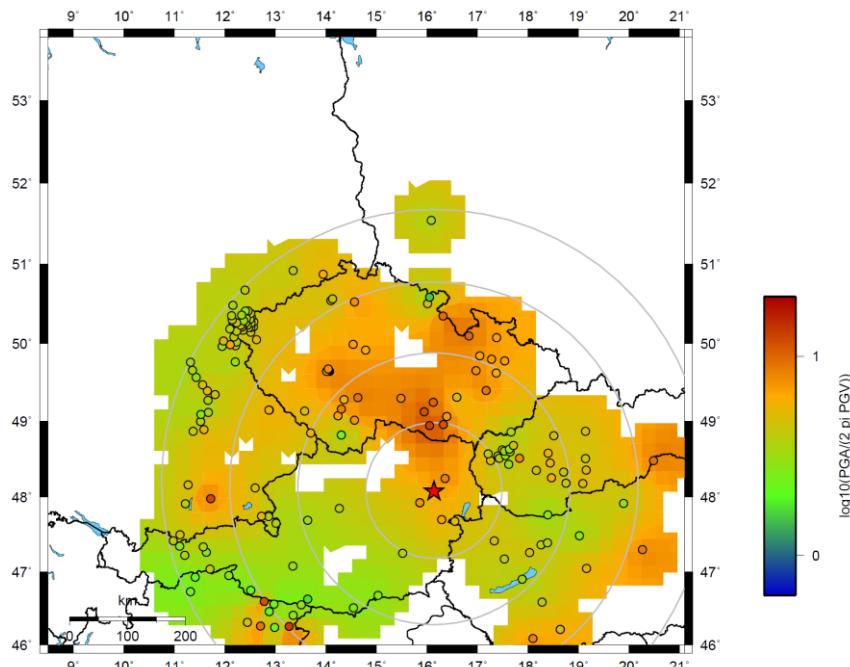
We consider the attenuation model (from Chap. 5 - dependent only on epicentral distance) as the mean model and analyze the differences (ratios of the peak amplitudes) from it. We compute the ratio of the measured value and the mean model and show it as a function of the azimuth (from the epicenter to the station). The example of azimuthal dependence of  $PGA_H$  for Earthquake 7 is shown in Figure 4b. The red line represents the best fit of the function:

$$f(\varphi) = A\cos(\varphi - \varphi_1) + B\cos(2(\varphi - \varphi_2))$$

Where  $\varphi$  is the azimuth and  $A, B, \varphi_1, \varphi_2$  are parameters determined by optimization.

Azimuthal dependence of all earthquakes and  $PGV_Z, PGV_H, PGA_Z, PGA_H$  are in Appendices 4 and 5. Their shape is different for different events. It is most pronounced for events E1, E2, E3 and E7. The azimuth of the strongest amplitude differs a little for these earthquakes, but generally it is to North. For earthquakes E4 and E8 (Nový Kostel, Czechia), no azimuthal dependence is observed. For other earthquakes (E5, E6, E9) (Minining rockburst at Lubin and Ostrava), the azimuthal distribution is not sufficient to make reliable conclusions.

The prevailing frequency of the maximum amplitudes  $F_M$  can be roughly estimated from the ratio of PGA and PGV, according formula (1). Its value is shown in map in Figures 5. The frequency does not correlate with epicentral distance and it is very different for various events (in the same epicentral distance). This indicates that in PSHA we cannot use the standard approach of universal spectra (dependent only on epicentral distance). To make a truly site-specific frequency model, we have to define the expected spectra for every source zone separately. Such task, however, requires more data. We have to wait for more future earthquakes that can be analyzed.



**Figure 5:** Frequency  $F_M$ . Circles denote epicentral distances of 100, 200, 300 and 400 km.

## 8. Discussion

The explanation of the observed azimuthal dependence of the peak amplitudes at the earthquakes E1, E2, E3 and E7 is not clear yet. It cannot be fully explained by radiation patterns of the earthquakes. For all of these earthquakes, we can see only one maximum and one minimum in the azimuth dependence, which does not fit the expected radiation pattern from a double-couple source (two maxima and two minima). The directivity of the source radiation cannot explain it either, because the maximum azimuth does not fit the strikes of the faults. The azimuth of the maximum amplitudes is approximately North for all of the earthquakes. Therefore, we prefer the hypotheses that the azimuthal dependence is mainly a consequence of the complex geological structure in the region, which can focus the seismic energy in North direction. The differences in prevailing frequency (Fig.5) and the differences of parameters  $\alpha$ ,  $\beta$ , (see Tables 3,4) seem to prove that also the material attenuation is very different for various geological structures in the region and that it has an important impact on the frequency content and the peak amplitudes.

The most significant problem during our study was the lack of data. There are not enough regional earthquakes recorded at a sufficient number of stations. There is a good chance that more data will be available in the near future. The number of stations installed in the Bohemian Massif is now much higher than in the past, so every new regional earthquake will improve our set of events used.

## 9. Conclusion

A truly site-specific PSHA requires GMMs derived with the help of seismograms measured in the same region for which the PSHA is performed. This principle is especially important in a situation where the controlling earthquakes (which are responsible for seismic hazard) are situated far away from the site. Such situation is typical for the nuclear power plants of Temelín and Dukovany in the Bohemian Massif. The disaggregation of seismic hazard has shown that the most important source zones are situated in the Alps and in West Bohemia, more than one hundred kilometers from the sites. The local seismicity near power plants is very weak. We used moderate-size earthquakes that occurred from 2012 to 2018 to show that in epicentral distances over 50 km, amplitudes of seismic waves from some earthquakes are strongly dependent on the azimuth of the wave propagation. The mean model (dependent only on epicentral distance) differs more than 10 times from the amplitudes measured at some stations. If we use only the mean model not taking into account the azimuth (which is a standard approach in PSHA), we have to introduce substantive uncertainties. The model that includes the azimuthal term is much more precise. Its incorporation into the PSHA requires a modification of the standard methodology, as we have to introduce an individual, azimuth-dependent attenuation model for each source zone.

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- A4 Graphs of dependence of PGV on epicentral azimuth ..... A4\_azimuth\_PGV.pdf
- A5 Graphs of dependence of PGA on epicentral azimuth ..... A5\_azimuth\_PGA.pdf
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- Response to reviewers ..... response\_to\_reviewers.pdf

Event: E1

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
kmdegum/sum/sum/s^2um/s^2111  
OE:MOA 4.7 63 570 928 28333 533817.911.121.17  
BW:BGLD 92.0 -102 7 18 307 7287.173.475.25  
BW:RMOA101.1 -94 5 8 287 3808.353.163.89  
BW:RNON101.1 -95 3 6 206 24110.783.243.80  
BW:RTBE104.3 -95 7 26 386 11258.201.912.95  
OE:KBA106.0 -142 3 4 84 1153.840.951.02  
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OE:CSNA123.8 84 8 15 289 6095.921.291.05  
OE:CONA124.0 84 6 8 186 2285.101.291.05  
T1:KLAU134.2 11 5 15 246 6747.160.781.00  
T1:PODE137.7 1 10 15 423 8226.660.830.79  
OE:MYKA140.2 -162 2 2 36 383.300.911.12  
T1:BILA147.6 3 7 15 340 7007.461.001.00  
OE:OBKA149.1 170 1 2 27 462.960.981.20  
NI:ACOM152.0 -159 2 5 68 1124.930.911.07  
CZ:KHC152.0 -18 6 14 310 4347.731.001.00  
T1:DOUB161.5 4 7 6 213 2355.121.050.87  
T1:VRCH166.9 11 4 7 226 4488.051.100.83  
IV:PTCC171.0 -157 2 2 43 464.350.791.41  
IV:FVI174.7 -141 3 4 133 1567.040.580.98  
OE:ABTA176.0 -133 2 2 42 523.120.850.76  
GR:WET176.2 -33 7 14 365 5048.090.951.10  
BW:WETR176.4 -34 5 17 271 9358.070.951.17  
HU:SOP176.7 95 2 3 37 643.340.851.10  
SI:RISI188.4 -121 6 17 215 3696.050.871.38  
NI:VINO189.1 -158 1 3 28 2274.090.501.07  
BW:DHFO194.1 -83 2 6 90 1296.230.812.09  
P1:PAL202.0 -3 3 6 139 2556.723.551.23  
P1:LES202.4 -4 4 10 172 3096.192.881.62  
P1:BUK202.6 -3 3 10 155 4567.863.471.26  
P1:KON203.0 -4 6 9 551 84715.820.851.26  
OE:WTTA203.7 -107 2 1 52 454.640.741.23  
P1:JES204.2 -3 6 11 241 5216.883.551.23  
P1:JER204.2 -3 3 11 177 4808.510.811.26  
P1:HAJ205.5 -3 5 10 174 4135.274.471.62  
IV:STAL208.4 -146 1 4 36 924.880.791.58  
CZ:KRUC211.9 49 2 5 86 1705.700.871.00  
D1:KRDU211.9 49 2 5 88 1826.331.480.78  
BW:BE3219.1 -88 2 6 84 1815.931.482.00  
GR:FUR222.0 -79 3 6 86 1715.491.262.04  
BW:FURT222.1 -79 2 5 98 1376.378.718.91  
BW:BE1223.8 -87 1 4 60 1087.261.352.04  
GR:GRC3227.4 -58 2 6 137 2649.150.911.26

SI:ROSI233.9 -114 2 4 63 865.971.172.24  
GR:GRB5235.4 -52 2 2 44 883.791.021.45  
CZ:GOPC235.6 10 5 5 156 1945.451.6214.45  
GR:GRC1237.5 -56 2 3 73 1386.150.911.23  
BW:ALTM237.6 -56 2 3 79 1346.862.402.14  
GR:GRC2239.7 -60 3 6 119 2346.920.871.35  
CZ:VRAC240.7 46 2 2 72 935.840.911.20  
CZ:PRU241.2 6 2 3 88 1666.060.911.10  
NI:AGOR242.0 -136 1 3 29 483.500.581.00  
GR:GRC4242.7 -54 2 3 59 1535.031.021.48  
GR:GRB2246.6 -49 2 2 57 965.530.911.48  
BW:ZUGS247.2 -100 2 3 77 2866.603.094.90  
SI:ABSI250.6 -118 2 5 44 824.010.951.38  
GR:GRB1256.3 -46 3 9 147 2607.590.931.51  
BW:ROTZ260.8 -34 2 2 52 724.520.911.12  
OE:RETA261.7 -97 1 1 21 333.351.101.12  
SI:KOSI263.1 -124 1 1 38 334.410.810.85  
GR:GRB4267.0 -46 2 6 100 2286.400.931.45  
IV:APPI271.5 -122 1 2 31 515.810.830.89  
OE:FETA277.6 -108 0 0 8 62.930.871.17  
IV:CTI277.9 -135 1 2 21 604.870.741.23  
BW:MGBB279.5 -31 2 2 32 473.222.191.78  
S9:JALS279.9 73 1 1 34 7410.653.026.76  
CZ:JAVC280.9 65 0 1 10 94.081.121.51  
GR:GRA4280.9 -46 2 4 65 964.350.981.48  
BW:MKON283.2 -30 2 3 47 864.741.861.78  
BW:NORI283.9 -68 2 4 63 946.112.752.14  
CZ:LUKA284.8 44 1 2 52 585.490.260.30  
BW:MANZ285.0 -32 2 2 75 976.960.951.26  
WB:KAC285.6 -25 2 6 50 2103.730.250.89  
BW:MROB291.4 -30 6 9 171 2204.702.294.27  
GR:GRA2291.8 -45 1 4 51 1537.121.001.51  
BW:MSBB294.6 -33 1 2 68 798.031.781.26  
CZ:NKC296.7 -25 2 4 44 914.480.981.66  
BW:OBER298.1 -98 1 2 79 15010.542.402.04  
WB:LBC301.0 -25 1 3 161 6618.830.150.30  
SX:ROHR301.0 -27 1 1 43 519.520.550.72  
CZ:PVCC301.2 5 5 8 156 2584.880.981.17  
GR:GRA1301.8 -46 1 3 36 635.301.121.58  
GR:GRA3302.1 -44 1 2 35 675.391.121.62  
BW:VIEL303.9 -30 1 1 33 454.091.071.15  
SX:WERN304.4 -25 1 3 50 615.431.051.38  
CZ:LIPI305.9 42 2 4 90 1497.720.780.87  
CZ:LOSO306.2 48 2 2 36 543.480.911.10  
SI:MOSI308.3 -115 1 2 18 324.260.951.10  
SX:GUNZ313.3 -25 1 2 28 443.041.021.48  
CZ:MUTK314.3 45 2 3 68 595.260.720.30  
CZ:MUTC314.5 45 1 3 85 13215.300.250.34  
SX:MULD315.9 -24 1 1 40 446.441.021.17  
CZ:KRLC316.9 36 0 1 9 133.410.951.20

CZ:DPC319.9 28 2 3 59 1234.800.931.05  
SX:WERD322.5 -25 1 1 19 463.771.051.00  
CZ:UPC325.4 23 2 5 52 914.401.001.38  
CZ:MORC326.7 47 1 2 24 343.661.070.98  
IV:BRMO327.6 -116 0 0 13 95.270.620.72  
CH:FUORN327.7 -113 0 0 9 93.950.870.85  
OE:DAVA331.4 -99 1 1 20 244.690.951.82  
CZ:CHVC334.9 23 1 3 26 622.941.121.51  
GR:BRG339.2 -3 1 2 27 343.891.051.20  
M1:ANAC340.7 42 1 2 30 473.441.551.48  
SX:SCHF342.9 -22 1 2 83 15913.420.981.20  
IV:MABI343.6 -124 0 0 9 115.510.710.69  
CH:DAVOX347.6 -108 1 1 21 124.460.781.66  
SX:FBE349.4 -10 1 1 13 143.510.760.87  
SK:VYHS351.9 76 0 0 6 64.620.831.07  
TH:HKWD362.2 -22 1 2 34 634.340.871.15  
TH:MLFH363.7 -24 1 1 39 496.921.021.32  
GR:MOX365.7 -30 1 1 16 223.061.051.15  
TH:HWTS366.2 -32 1 1 16 364.101.071.15  
CH:PLONS374.4 -102 0 0 18 106.700.781.00  
CH:VDL390.7 -111 0 0 10 76.310.661.41  
TH:TAUT394.6 -26 1 2 25 225.941.021.29  
GR:CLL396.5 -12 1 2 16 312.481.071.17

Event: E2

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
kmdegum/sum/sum/s^2um/s^2111  
S9:PODO 45.2 69 11 22 526 9037.441.451.86  
S9:JALS 51.2 93 6 24 311 7507.913.026.76  
CZ:JAVC 52.8 48 5 8 107 1513.411.121.51  
CZ:KRUC 79.8 -43 5 10 179 2515.440.871.00  
D1:KRDU 79.8 -43 7 10 190 2454.541.480.78  
CZ:VRAC 94.4 -25 7 10 165 1884.000.911.20  
HU:SOP105.0 -155 4 5 64 742.840.851.10  
OE:CONA116.8 -125 4 7 88 953.521.291.05  
OE:CSNA117.0 -125 5 7 102 1163.111.291.05  
CZ:LOSO121.5 8 2 3 52 593.890.911.10  
CZ:LUKA124.7 -7 1 2 54 586.480.260.30  
SK:VYHS125.4 92 2 3 30 512.450.831.07  
CZ:MUTK140.5 4 3 2 70 554.120.720.30  
GE:MORC140.6 12 2 2 33 473.281.101.00  
CZ:MUTC140.7 4 1 3 63 1038.260.250.34  
CZ:RUDA149.9 1 3 5 80 1064.371.291.35  
M1:ANAC171.5 6 2 3 29 512.881.551.48  
HU:BUD183.0 129 1 2 74 718.230.871.00  
SK:LANS183.8 67 0 0 6 93.341.001.86  
OE:ARSA187.5 -139 1 1 15 182.190.850.79  
T1:KLAU196.5 -73 2 4 52 1033.660.781.00  
T1:VRCH202.1 -64 2 2 35 473.291.100.83  
CZ:DPC209.9 -16 2 3 46 593.450.931.05

HU:PSZ215.9 108 1 1 23 355.150.931.23  
T1:BILA219.0 -71 2 3 40 753.211.001.00  
T1:DOUB219.7 -67 2 3 33 492.211.050.87  
T1:PODE220.9 -73 1 2 30 653.520.830.79  
OE:MOA227.0 -109 1 2 23 282.521.121.17  
CZ:GOPC229.6 -47 4 5 59 862.641.6214.45  
HU:BEHE231.7 -173 1 3 35 454.211.151.62  
CZ:UPC233.5 -20 3 7 44 812.231.001.38  
CZ:CHVC240.9 -19 2 5 33 1232.211.121.51  
CZ:PRU248.4 -49 2 3 35 542.610.911.10  
GR:GEC2255.4 -81 1 2 32 423.581.051.12  
P1:PAL255.5 -60 1 2 28 343.533.551.23  
P1:BUK256.4 -60 1 3 25 562.973.471.26  
P1:JES257.6 -60 2 4 35 813.253.551.23  
P1:KON258.1 -60 2 3 27 502.680.851.26  
P1:JER258.4 -60 2 4 30 843.100.811.26  
P1:HAJ258.5 -60 2 5 37 1122.614.471.62  
P1:LES259.4 -61 2 2 36 562.902.881.62  
CZ:KHC269.6 -75 1 2 27 313.491.001.00  
CZ:PVCC289.0 -39 3 9 59 1222.830.981.17  
OE:OBKA298.4 -138 0 1 4 171.680.981.20  
SK:STHS315.8 70 0 0 4 43.272.001.35  
GR:WET319.8 -76 2 2 24 342.470.951.10  
BW:WETR320.1 -76 2 0 20 02.020.951.17  
BW:BGLD322.8 -106 1 3 16 442.653.475.25  
OE:KBA327.4 -118 1 1 8 102.060.951.02  
BW:RN0N330.1 -104 1 1 22 434.443.243.80  
BW:RTBE333.1 -104 1 2 21 332.561.912.95  
BW:RJOB335.4 -104 1 2 34 275.571.151.66  
OE:MYKA338.1 -128 0 0 7 174.420.911.12  
BW:KW2338.4 -97 2 6 85 1258.961.102.75  
BW:RWMO339.9 -103 1 1 15 183.871.412.19  
GR:BRG347.0 -40 1 2 21 262.591.051.20  
NI:ACOM351.5 -128 0 1 8 113.330.911.07  
IV:PTCC370.9 -128 0 0 17 67.920.791.41  
SX:FBE380.2 -44 1 1 11 142.040.760.87  
BW:ROTZ384.8 -67 1 2 19 222.080.911.12  
NI:VINO386.8 -130 1 1 59 12613.080.501.07  
CZ:NKC389.1 -59 2 3 31 392.890.981.66  
IV:FVI392.7 -122 1 2 65 18411.460.580.98  
BW:MKON392.9 -63 1 2 25 322.861.861.78  
SX:WERN396.5 -59 1 2 19 252.041.051.38  
BW:MROB399.4 -63 3 6 61 1083.452.294.27  
BW:MANZ399.9 -64 1 1 46 345.980.951.26

Event: E3

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
kmdegum/sum/sum/s^2um/s^2111  
OE:ARSA 38.9 176 229 205 7314 72615.080.850.79  
OE:CSNA 45.8 37 63 114 2194 45195.541.291.05

OE:CONA 45.9 37 73 78 1894 23764.151.291.05  
HU:SOP 80.7 83 14 34 415 5914.600.851.10  
OE:MOA 95.9 -73 16 25 491 7514.901.121.17  
OE:OBKA140.8 -149 13 23 249 4523.140.981.20  
HU:BEHE159.1 142 18 40 683 9405.901.151.62  
S9:PLAV164.7 53 6 11 135 1893.670.761.23  
S9:LAKS167.9 49 6 10 209 1725.472.045.50  
T1:KLAU171.5 -23 23 73 1048 37517.110.781.00  
OE:KBA172.2 -109 11 12 195 2022.840.951.02  
D1:MYDU172.5 11 27 37 1187 17446.881.100.89  
CZ:KRUC175.9 22 19 34 618 10045.140.871.00  
S9:SMOL176.9 54 6 10 127 2383.170.761.12  
OE:MYKA176.9 -127 3 4 69 773.180.911.12  
BW:BGLD186.3 -87 20 50 611 11214.793.475.25  
S9:KATA186.4 55 7 11 178 2193.890.661.10  
T1:PODE187.7 -29 24 36 909 18876.070.830.79  
S9:HRAD187.7 52 2 4 44 703.020.711.02  
CZ:TREC188.5 -0 23 60 925 23056.330.891.32  
D1:NADU188.8 14 21 38 653 11644.950.950.98  
S9:DVOD189.0 53 5 12 123 2634.300.721.07  
NI:ACOM190.3 -127 4 9 97 1693.460.911.07  
GR:GEC2191.9 -43 14 26 598 11936.681.051.12  
T1:BILA193.9 -26 23 33 756 14725.221.001.00  
S9:LANC195.4 55 3 10 72 1743.290.711.12  
BW:RNON197.6 -84 12 17 261 4573.453.243.80  
BW:RMOA197.9 -84 12 25 265 5293.493.163.89  
T1:VRCH199.7 -18 10 20 476 6687.671.100.83  
BW:RTSA199.7 -84 12 25 314 8544.182.404.68  
BW:RTBE200.8 -84 14 59 445 16575.121.912.95  
S9:JALS201.9 59 4 9 164 2696.463.026.76  
BW:RJOB202.9 -85 15 30 333 5883.521.151.66  
T1:DOUB204.5 -24 11 18 397 7395.681.050.87  
CZ:VRAC206.8 23 13 19 457 7615.480.911.20  
BW:RWMO207.9 -85 7 15 227 6894.901.412.19  
IV:PTCC209.7 -128 3 5 40 892.070.791.41  
CZ:JAVC214.1 48 2 3 29 422.541.121.51  
CZ:KHC221.4 -39 12 13 388 4574.971.001.00  
S9:MLYN229.6 68 4 8 172 1936.663.245.89  
IV:FVI234.0 -117 4 7 116 1704.110.580.98  
CZ:SKAB235.4 31 3 5 89 1614.500.480.89  
S9:HOST239.6 66 2 4 40 814.141.552.88  
S9:KOLL242.7 62 2 6 64 1564.382.042.00  
OE:ABTA244.8 -112 3 4 45 542.220.850.76  
P1:PAL250.2 -24 7 11 259 3805.583.551.23  
P1:BUK251.0 -24 13 16 432 8375.483.471.26  
CZ:LUKA251.8 24 5 6 172 2695.970.260.30  
P1:KON252.0 -25 12 18 445 9696.090.851.26  
P1:LES252.2 -25 9 17 360 6186.172.881.62  
S9:BORY252.6 74 2 4 67 2426.062.245.13  
P1:JES252.6 -24 12 31 469 12686.383.551.23

P1:JER253.0 -24 12 34 376 13314.870.811.26  
S9:DEVI253.5 70 2 4 24 682.071.954.27  
P1:HAJ254.0 -24 13 22 437 7305.404.471.62  
GR:WET258.6 -47 14 15 596 7276.710.951.10  
IV:STAL258.8 -124 2 5 60 935.880.791.58  
BW:WETR258.9 -47 11 32 464 19156.620.951.17  
S9:DLZI262.1 58 1 2 25 494.131.622.40  
CZ:GOPC262.5 -11 12 19 371 4865.021.6214.45  
CZ:LOSO264.2 31 5 8 126 2093.670.911.10  
HU:BUD266.1 91 1 3 54 805.880.871.00  
SI:RISI268.1 -104 10 44 224 8273.460.871.38  
CZ:PRU274.6 -14 8 13 206 4114.020.911.10  
M1:LIPC274.6 24 11 24 368 8035.251.662.69  
M1:MUVIC277.8 28 4 7 111 2554.671.201.51  
CZ:RUDA283.6 26 8 10 200 3354.091.291.35  
HU:MORH285.3 121 1 1 18 184.341.511.35  
GE:MORC285.3 31 4 4 92 1393.501.101.00  
HM:PKSM285.4 122 1 1 27 225.710.790.93  
HM:PENC285.4 84 2 5 54 795.061.206.92  
S9:POLI286.4 72 1 1 16 212.791.861.70  
S9:MICH290.3 68 1 3 24 473.532.003.02  
BW:SCE292.6 -101 5 9 117 1843.791.072.45  
OE:WTTA293.1 -96 4 7 73 882.930.741.23  
CZ:KRLC294.6 19 9 12 167 2612.900.951.20  
OE:WATA296.5 -94 3 8 75 1374.341.051.62  
M1:PIVO297.9 15 6 8 272 3147.530.911.35  
IV:BRES301.9 -108 3 7 79 1774.252.697.59  
M1:ANAC308.0 26 5 7 111 1673.531.551.48  
CZ:DPC311.9 11 6 9 204 2985.150.931.05  
BW:BE3316.9 -83 4 12 103 2174.141.482.00  
SI:ROSI317.5 -102 4 14 56 2372.281.172.24  
BW:BE2318.9 -82 5 17 139 3904.331.952.04  
GR:FUR321.3 -77 6 13 167 2834.511.262.04  
BW:BE1321.9 -82 3 11 68 2273.361.352.04  
GR:GRC3323.5 -62 5 14 252 5187.650.911.26  
CZ:UPC325.6 7 6 16 147 2833.741.001.38  
OE:SQTA325.8 -96 4 5 70 932.841.351.26  
GR:GRB5328.8 -58 3 9 94 2404.731.021.45  
BW:PART329.6 -90 4 7 86 1753.822.513.39  
SI:ABSI330.6 -106 5 9 66 1412.300.951.38  
OE:MOTA331.8 -93 4 5 78 1133.301.381.15  
HU:PSZ332.0 82 1 2 109 15013.370.931.23  
CZ:PVCC332.5 -11 11 33 394 11265.890.981.17  
GR:GRC1332.8 -61 6 8 110 2372.840.911.23  
BW:ALTM332.9 -61 6 8 112 2342.832.402.14  
GR:GRB3334.3 -53 7 25 239 7195.390.981.48  
CZ:CHVC334.9 7 4 9 76 1502.701.121.51  
GR:GRC2336.5 -64 6 13 188 4125.400.871.35  
GR:GRC4337.1 -59 7 9 126 2972.841.021.48  
SI:KOSI337.1 -111 2 4 40 543.000.810.85

GR:GRB2338.2 -55 4 8 97 1944.070.911.48  
IV:CTI340.0 -119 1 3 25 623.000.741.23  
BW:ZUGS340.4 -92 5 6 97 1543.053.094.90  
BW:ROTZ341.3 -44 5 6 139 1694.250.911.12  
SK:LANS341.4 58 1 2 96 18714.541.001.86  
U1:RICC342.8 -17 8 7 160 2023.393.554.17  
U1:SKAC344.5 -16 13 41 308 9323.864.6810.72  
GR:GRB1346.5 -53 7 28 281 7156.470.931.51  
IV:APPI347.0 -109 2 4 31 783.220.830.89  
OE:RETA356.1 -90 4 5 54 832.331.101.12  
GR:GRB4356.8 -53 5 15 161 6545.660.931.45  
BW:MGBB357.0 -41 4 8 99 1764.112.191.78  
BW:MKON359.9 -40 5 7 131 1914.481.861.78  
BW:MANZ363.5 -42 4 8 437 26916.540.951.26  
OE:FETA365.6 -98 1 1 14 222.210.871.17  
BW:MROB367.8 -40 20 40 522 8094.112.294.27  
CZ:NKC368.0 -36 6 12 101 2952.930.981.66  
BW:MZEK369.8 -43 4 6 92 1713.952.001.58  
GR:GRA4370.4 -52 7 9 145 2493.430.981.48  
BW:MSBB373.9 -42 3 5 83 1504.341.781.26  
SX:ROHR373.9 -37 2 4 62 964.410.550.72  
SX:WERN375.9 -36 5 7 96 1763.161.051.38  
BW:VIEL379.9 -40 4 6 91 1723.821.071.15  
GR:GRA2380.6 -52 4 10 88 2773.201.001.51  
GR:BRG381.1 -17 4 5 100 1114.261.051.20  
BW:NORI382.7 -69 4 13 124 2654.512.752.14  
SX:TANN383.5 -34 10 18 274 4324.461.822.29  
SX:GUNZ384.5 -36 3 6 51 912.621.021.48  
SX:MULD385.6 -35 3 5 57 1052.911.021.17  
GR:GRA3390.0 -50 4 7 94 1433.901.121.62  
SI:MOSI390.5 -104 2 7 33 872.320.951.10  
GR:GRA1391.1 -52 3 6 80 1213.771.121.58  
BW:OBER392.0 -91 5 6 101 1112.932.402.04  
SX:TRIB392.2 -37 3 4 65 1013.011.021.35

Event: E4

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
kmdegum/sum/sum/s^2um/s^2111  
WB:KOPD 5.3 61 8246 1754064032990148412.360.892.29  
WB:PLED 6.1 -58 3218 95381738504875018.6010.2321.88  
WB:KAC 8.7 118 2761 107461271608972147.330.250.89  
WB:LBC 9.4 1 2352 122551208605576588.180.150.30  
WB:HOPD 11.4 -65 2237 474119738029064914.040.271.70  
WB:HRED 11.7 71 6431 172543203748497577.930.451.51  
WB:POLD 12.8 -102 1177 216512467521435416.850.451.26  
WB:KOC 15.7 -53 352 1087 26563 4294412.020.280.83  
WB:SNED 15.9 24 12386 23576909223114173811.682.637.08  
WB:LOUD 16.0 47 11006 13110853799102156612.350.180.37  
BW:MROB 19.7 -123 1068 1789 63317 641989.442.294.27  
SX:GUNZ 21.2 -15 973 1020 56508 408419.251.021.48

BW:MKON 21.9 -145 695 2772 306461135887.021.861.78  
BW:VIEL 22.0 -88 785 1390 63686 6285812.911.071.15  
WB:BUBD 23.6 18 4236 1575825276810506679.500.150.43  
SX:MULD 25.8 -1 1111 2130 43437 855536.231.021.17  
SX:TANN 26.4 8 3028 65041376003198257.231.822.29  
BW:MGBB 27.0 -149 476 964 28195 404149.432.191.78  
SX:TRIB 27.3 -45 727 1698 33805 570587.401.021.35  
BW:MANZ 30.5 -135 412 1172 47841 9339018.500.951.26  
BW:MSBB 35.4 -118 499 772 35514 4436211.331.781.26  
TH:PLN 38.4 -28 643 728 23113 294465.721.071.26  
BW:MZEK 41.0 -126 248 444 20779 3032213.322.001.58  
BW:ROTZ 48.2 -162 353 263 9596 208244.330.911.12  
SX:SCHF 55.3 -1 656 923 30780 376597.470.981.20  
TH:GRZ1 58.4 -13 244 339 19564 1621412.761.071.17  
TH:ZEU 62.6 -29 173 231 8107 75987.441.051.12  
TH:MLFH 71.7 -19 145 437 9487 2263510.381.021.32  
TH:HKWD 73.0 -8 277 427 15293 241918.780.871.15  
GR:MOX 76.6 -47 137 224 4756 87885.521.051.15  
TH:ANNA 80.0 12 161 468 10317 2359910.181.021.23  
TH:HWTS 80.9 -55 187 371 6532 99605.571.071.15  
TH:MODW 84.9 3 126 237 5050 94616.361.121.58  
TH:ABG1 88.4 8 435 801 20756 330147.601.051.38  
GR:GRA3 91.0 -120 300 393 14750 128777.831.121.62  
TH:WESF 94.0 -65 418 509 16455 248276.271.051.29  
GR:GRA2 95.4 -127 95 279 4089 97276.861.001.51  
TH:LEIB1 96.8 -62 298 418 11005 249165.881.001.05  
GR:GRA4 97.9 -134 83 189 2728 49255.240.981.48  
TH:ZEITZ 98.9 -12 391 1293 21257 459518.651.001.20  
GR:GRB4 99.9 -142 224 404 14332 2238810.190.931.45  
GR:GRA1101.1 -122 261 217 5520 82653.361.121.58  
TH:TAUT102.0 -29 276 341 9019 145725.211.021.29  
GR:GRB3102.7 -155 273 671 10921 185356.370.981.48  
GR:GRB1103.3 -148 290 760 14881 250158.180.931.51  
SX:FBE106.2 39 72 102 3979 49908.740.760.87  
GR:GRB2114.3 -152 157 429 5993 129976.090.911.48  
BW:WETR119.9 164 130 415 6269 221007.700.951.17  
GR:WET120.0 163 148 230 8979 161279.650.951.10  
SX:NEUB121.5 -22 296 517 14606 128687.851.201.48  
TH:CRUX124.3 -67 182 214 5094 56814.451.321.45  
U1:RICC126.7 71 89 152 2730 62074.883.554.17  
P1:LES129.5 117 72 155 3350 86327.412.881.62  
GR:GRB5130.0 -156 93 183 3933 86776.771.021.45  
U1:SKAC130.1 70 276 688 8012 231434.634.6810.72  
P1:HAJ130.4 115 126 233 5211 97006.584.471.62  
P1:JER130.5 116 86 303 4927 183549.090.811.26  
P1:KON130.8 116 82 234 4250 157138.290.851.26  
P1:JES131.4 115 121 296 6111 150418.023.551.23  
GR:CLL132.2 18 124 281 4136 85335.331.071.17  
P1:BUK132.5 116 78 250 5941 1488112.193.471.26  
P1:PAL133.4 116 87 112 3929 83877.223.551.23

GR:BRG133.6 54 133 407 5481 110606.561.051.20  
GR:GRC4137.3 -152 122 300 3536 150794.601.021.48  
CZ:KHC144.0 144 65 81 1893 35384.661.001.00  
GR:GRC1146.5 -154 116 166 3535 55154.840.911.23  
BW:ALTM146.7 -154 115 162 3494 55774.852.402.14  
CZ:PRU154.0 97 125 150 4026 71115.140.911.10  
GR:GRC3155.4 -157 100 204 6924 1031011.010.911.26  
CZ:PVCC158.5 75 150 354 6253 137966.640.981.17  
SX:WIMM162.2 -23 117 155 3679 44715.022.883.39  
GR:GRC2164.1 -152 88 203 3735 51606.760.871.35  
BW:HROE165.1 -75 124 275 2144 54182.754.794.57  
TH:POSS168.2 -40 156 367 5368 104355.481.261.29  
T1:DOUB172.7 125 41 104 2729 437310.481.050.87  
GR:GEC2175.5 147 71 93 2063 35224.631.051.12  
T1:BILA178.1 129 71 94 2481 45005.561.001.00  
T1:PODE181.1 132 57 152 2625 65367.390.830.79  
TH:VITZ182.2 -64 136 275 2550 88872.991.171.70  
GR:UBBA185.1 -66 48 91 1717 24045.701.231.05  
T1:VRCH187.8 120 60 66 2573 29166.841.100.83  
T1:KLAU202.7 129 48 96 1692 40155.600.781.00  
CZ:CKRC204.5 137 43 58 1206 15114.470.951.10  
BW:NORI207.6 -141 62 106 2254 26055.752.752.14  
GR:GTTG229.7 -48 82 274 2769 58135.371.412.14  
GR:CLZ233.7 -37 48 84 930 31473.081.051.48  
GR:FUR239.0 -159 40 118 821 16233.251.262.04  
BW:UH1240.1 -166 34 122 726 16713.434.908.51  
CZ:TREC242.7 113 56 90 1929 34305.450.891.32  
GR:ASSE248.6 -29 17 27 549 7225.221.001.91  
GE:FLT1252.9 -18 31 56 647 9233.371.321.74  
CZ:UPC259.0 81 26 71 552 15333.341.001.38  
CZ:CHVC263.1 79 13 40 372 7084.431.121.51  
BW:BE1266.9 -161 18 46 405 7633.551.352.04  
BW:RTSA270.1 173 17 44 312 11122.982.404.68  
BW:RMOA271.0 173 15 45 376 11304.073.163.89  
BW:RTSH271.7 173 20 101 422 13993.283.1611.48  
BW:RWMO271.9 175 15 20 386 4864.061.412.19  
BW:RTBE272.5 173 23 58 587 15394.061.912.95  
GE:RUE272.7 20 20 54 618 13244.891.451.41  
BW:RJOB273.1 174 29 52 564 8413.121.151.66  
BW:RNON273.4 173 21 33 302 5142.243.243.80  
CZ:DPC279.6 85 33 44 985 18544.700.931.05  
D1:MYDU281.4 113 46 70 1105 23273.841.100.89  
BW:BGLD284.5 171 17 43 488 11234.503.475.25  
D1:NADU287.5 110 60 88 1399 21823.710.950.98  
OE:MOA292.6 152 11 24 305 4544.511.121.17  
M1:PIVO295.4 88 20 21 495 8423.940.911.35  
GR:A055306.3 -35 42 79 1519 29265.811.553.47  
BW:PART313.1 -162 11 26 278 6163.882.513.39  
CZ:KRUC313.6 112 27 36 472 6742.830.871.00  
CZ:KRLC316.4 90 21 32 427 6323.210.951.20

CZ:VRAC316.7 106 26 34 555 7093.400.911.20  
OE:WATA322.2 -169 13 21 284 4933.401.051.62  
OE:RETA323.0 -157 9 25 172 2893.011.101.12  
GR:CLNZ323.5 -18 27 79 1663 12859.781.783.80  
BW:ZUGS324.8 -161 11 25 223 4063.203.094.90  
GR:UBR325.2 -148 13 48 233 7512.901.381.29  
OE:WTTA329.2 -170 12 19 193 2742.640.741.23  
OE:MOTA329.6 -163 18 22 275 3532.461.381.15  
CZ:LUKA329.9 99 19 22 434 7233.550.260.30  
M1:LIPC334.6 95 42 102 839 19973.181.662.69  
OE:SQTA340.8 -165 12 21 204 3882.731.351.26  
CZ:RUDA344.2 94 22 31 603 9164.291.291.35  
BW:OBER345.3 -152 21 20 349 5122.662.402.04  
M1:MUVC351.6 95 22 19 498 4983.661.201.51  
OE:KBA351.7 168 7 9 101 1322.310.951.02  
BW:SCE353.2 -171 13 11 260 2363.131.072.45  
CZ:SKAB353.8 102 10 15 180 3802.960.480.89  
OE:CSNA355.3 133 20 19 297 4532.411.291.05  
M1:ANAC355.4 90 18 19 335 3962.901.551.48  
OE:CONA355.4 133 15 17 349 3253.651.291.05  
SI:RISI360.2 -176 18 41 263 6612.310.871.38  
CH:WALHA361.6 -137 10 15 164 3962.721.121.48  
CZ:LOSO361.8 98 17 18 327 4333.130.911.10  
CH:EMING363.8 -133 8 23 160 4863.371.051.20  
SI:ROSI369.0 -168 11 38 205 4592.871.172.24  
CZ:MORC370.8 95 16 22 302 3832.961.070.98  
OE:DAVA371.6 -149 9 16 112 2052.030.951.82  
OE:FETA372.5 -160 4 7 70 942.700.871.17  
CH:SGT05373.8 -143 12 21 221 3932.851.351.55  
CH:SGT02376.5 -141 9 24 195 3423.361.781.38  
CH:SGT01380.7 -142 10 33 215 4743.591.741.66  
CH:STEIN381.1 -136 30 73 534 11332.854.173.72  
OE:ABTA381.8 179 7 19 78 1651.800.850.76  
CH:LIENZ385.9 -145 6 7 84 1412.131.231.86  
CH:SGT04387.0 -143 7 10 405 5589.561.171.45  
CH:WEIN387.3 -138 31 107 601 21763.064.373.98  
IV:BRES390.3 -172 8 12 166 2863.412.697.59  
CH:SGT03391.9 -142 6 14 127 1863.111.552.09  
S9:LAKS391.9 115 14 26 175 3702.062.045.50  
SI:ABSI392.2 -168 13 36 149 4111.770.951.38  
CH:TRULL392.2 -134 39 77 993 17134.013.553.98  
OE:ARSA398.2 144 7 12 122 1472.730.850.79  
IV:FVI399.4 176 8 15 142 3492.890.580.98  
S9:PLAV399.7 116 8 16 137 2952.790.761.23

Event: E5

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
kmdegum/sum/sum/s^2um/s^2111  
GE:MORC 63.2 -102 6 7 121 1743.351.101.00  
M1:ANAC 75.8 -75 3 6 80 1554.101.551.48

CZ:LOSO 80.3 -112 5 8 135 1524.350.911.10  
M1:MUVIC 81.4 -97 4 5 114 1804.571.201.51  
M1:LIPC 97.3 -93 5 10 197 3146.331.662.69  
CZ:SKAB104.8 -122 4 4 115 974.260.480.89  
CZ:LUKA109.3 -104 5 4 199 1096.660.260.30  
SK:LANS113.7 137 4 5 247 17311.061.001.86  
CZ:KRLC114.4 -78 7 5 85 1262.000.951.20  
S9:VALE126.8 155 4 4 77 852.971.411.86  
CZ:JAVC127.3 -155 3 7 48 672.511.121.51  
M1:PIVO136.5 -76 3 4 95 1195.170.911.35  
S9:PODO144.3 -159 1 2 23 412.971.451.86  
CZ:VRAC146.2 -116 5 7 81 1022.370.911.20  
S9:KOLL147.0 180 3 5 43 732.282.042.00  
S9:PVES151.4 -158 2 4 60 613.940.681.38  
S9:LANC154.8 -159 2 4 25 612.360.711.12  
S9:HRAD156.5 -155 2 2 25 302.570.711.02  
CZ:DPC156.8 -71 4 5 117 1634.510.931.05  
S9:DVOD157.0 -156 2 7 32 852.510.721.07  
SK:VYHS159.6 168 2 2 27 672.490.831.07  
S9:JALS159.8 -165 2 4 71 1075.873.026.76  
S9:HOST161.1 179 3 3 200 17810.071.552.88  
S9:KATA162.4 -157 3 5 48 642.640.661.10  
S9:MICH163.9 160 4 6 47 842.142.003.02  
S9:BUKO167.3 -154 2 3 44 543.730.661.00  
S9:SMOL169.5 -155 2 4 75 1195.080.761.12  
S9:LAKS171.0 -149 2 4 30 902.402.045.50  
CZ:KRUC172.6 -122 4 4 99 1063.990.871.00  
S9:STIT172.8 -174 1 4 31 493.991.452.19  
S9:MLYN175.4 -179 3 6 102 815.603.245.89  
S9:DEVI175.9 173 2 3 93 486.521.954.27  
S9:PLAV178.0 -152 3 3 33 391.710.761.23  
D1:NADU179.9 -113 2 4 39 902.560.950.98  
S9:POLI180.2 162 4 5 365 15015.251.861.70  
D1:SEDU183.1 -124 3 4 56 673.051.291.07  
CZ:UPC183.4 -67 4 7 58 802.391.001.38  
CZ:CHVC184.0 -65 3 8 59 923.381.121.51  
S9:BORY192.6 172 2 3 107 1548.212.245.13  
D1:MYDU197.4 -115 2 2 33 532.871.100.89  
S9:HRUS197.7 165 2 4 65 684.573.096.46  
D1:RUDU200.7 -121 3 4 71 983.831.321.07  
SK:KECS218.9 135 1 1 11 152.410.780.89  
CZ:TREC221.1 -107 3 5 120 1936.140.891.32  
HM:PENC243.3 164 1 4 42 1916.551.206.92  
HU:PSZ246.1 153 2 1 16 221.150.931.23  
SK:CRVS248.3 115 2 2 42 253.751.152.95  
PL:BEL273.2 37 3 5 92 1274.492.404.27  
CZ:PRU277.1 -86 1 2 15 282.510.911.10  
T1:VRCH279.9 -102 1 2 38 354.791.100.83  
HU:SOP281.5 -151 1 1 17 224.860.851.10  
T1:KLAU295.0 -108 2 2 48 345.010.781.00

T1:DOUB300.1 -102 1 2 26 383.471.050.87  
 T1:BILA307.7 -104 1 3 26 443.081.001.00  
 SK:PODL307.8 111 0 1 9 233.410.8530199.52  
 P1:PAL313.1 -94 1 1 24 523.813.551.23  
 P1:BUK313.7 -93 1 2 31 664.413.471.26  
 P1:JES314.0 -93 1 2 40 456.963.551.23  
 P1:HAJ314.3 -93 2 2 29 812.984.471.62  
 P1:JER315.0 -93 1 2 30 604.960.811.26  
 T1:PODE315.2 -105 1 2 30 426.130.830.79  
 U1:RICC315.2 -75 1 2 14 221.923.554.17  
 P1:KON315.5 -93 1 2 33 555.330.851.26  
 P1:LES317.3 -93 1 2 28 483.212.881.62  
 CZ:CKRC320.4 -110 2 2 19 221.850.951.10  
 GR:BRG334.7 -69 1 1 24 174.061.051.20  
 CZ:KHC359.4 -102 1 1 11 172.301.001.00  
 GR:GEC2360.8 -107 1 3 17 302.561.051.12  
 XT:AAE05362.1 -82 2 3 39 453.600.871.86  
 XT:AAE06370.0 -83 1 3 54 1097.710.851.35  
 SX:FBE376.1 -70 0 1 7 72.760.760.87

#### Event: E6

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
 kmdegum/sum/sum/s^2um/s^2111  
 CZ:CHVC103.7 -179 44 38 518 6981.881.121.51  
 CZ:UPC112.8 -177 42 92 906 15443.411.001.38  
 CZ:DPC131.2 173 22 28 577 10094.200.931.05  
 CZ:PVCC153.5 -135 45 133 1499 37825.260.981.17  
 GR:BRG166.1 -115 21 36 371 6212.851.051.20  
 U1:SKAC173.2 -127 40 142 720 24262.864.6810.72  
 U1:RICC177.0 -127 26 59 399 8432.463.554.17  
 M1:ANAC184.7 150 10 13 223 3533.501.551.48  
 GE:RUE191.0 -55 20 27 394 5743.101.451.41  
 M1:LIPC198.4 160 13 38 373 7944.451.662.69  
 SX:FBE202.4 -108 8 0 127 02.460.760.87  
 CZ:PRU202.4 -147 22 18 277 2391.980.911.10  
 M1:MUV208.9 156 11 14 218 3373.181.201.51  
 XT:AAE01212.2 -118 15 20 195 3632.041.381.07  
 GR:CLL216.1 -95 9 15 146 2442.571.071.17  
 CZ:LUKA216.1 164 9 7 187 2133.460.260.30  
 CZ:MORC219.4 152 9 12 154 2072.751.070.98  
 M1:LOSC229.9 156 10 16 144 1902.381.701.51  
 XT:AAE05237.8 -125 33 28 203 2620.970.871.86  
 CZ:SKAB248.3 162 4 6 71 1132.570.480.89  
 CZ:VRAC248.6 172 7 10 114 1272.600.911.20  
 P1:HAJ251.0 -144 9 19 159 3262.874.471.62  
 TH:ANNA251.0 -105 9 15 120 2132.141.021.23  
 CZ:TREC251.2 -170 10 21 182 4132.990.891.32  
 P1:JES251.8 -144 7 12 123 3562.883.551.23  
 P1:JER252.4 -144 9 13 188 3523.380.811.26  
 P1:BUK252.9 -145 8 10 118 2582.373.471.26

TH:ABG1252.9 -103 15 51 346 8343.651.051.38  
P1:PAL252.9 -145 10 7 154 1262.483.551.23  
D1:NADU253.2 179 7 12 118 2312.560.950.98  
GR:LNI2254.0 -29 17 53 247 5802.271.622.34  
P1:LES255.2 -144 7 8 112 1802.412.881.62  
TH:MODW261.0 -103 14 17 118 1991.341.121.58  
XT:AAE09262.0 -133 9 15 217 4773.970.931.00  
XT:AAE08263.8 -129 20 16 1947 76715.540.981.17  
D1:MYDU267.0 -178 9 10 124 1532.301.100.89  
T1:VRCH267.3 -157 6 6 108 1152.761.100.83  
13:B93F271.6 29 10 27 132 2252.111.452.14  
CZ:KRUC274.3 175 7 9 60 1101.410.871.00  
D1:KRD274.3 175 4 6 63 1082.441.480.78  
SX:SCHF274.7 -109 20 21 181 3251.460.981.20  
T1:DOUB278.0 -153 5 8 90 1262.711.050.87  
TH:HKWD278.1 -105 9 24 193 4223.250.871.15  
WB:BUBD281.4 -115 10 15 135 2172.080.150.43  
TH:ZEITZ281.4 -99 6 21 202 3205.091.001.20  
WB:LOUD283.3 -118 17 22 223 3342.080.180.37  
D1:SEDU285.6 176 5 9 83 1462.931.291.07  
WB:SNED285.9 -117 16 25 206 4202.052.637.08  
TH:GRZ1286.3 -107 24 30 218 3141.461.071.17  
SX:MULD286.8 -114 14 16 134 1791.501.021.17  
D1:RUDU286.9 -180 6 8 134 1633.341.321.07  
WB:HRED287.5 -119 10 17 135 2612.240.451.51  
SX:WERD291.1 -113 11 12 119 1701.781.051.00  
TH:MLFH292.0 -105 12 10 97 1321.321.021.32  
T1:BILA292.1 -154 7 8 130 1672.951.001.00  
CZ:NKC293.6 -118 17 20 223 3172.120.981.66  
WB:KOPD293.6 -119 20 15 255 3242.020.892.29  
WB:LBC294.1 -117 16 27 153 3151.490.150.30  
WB:KAC294.6 -120 13 0 193 02.400.250.89  
SX:WERN295.0 -116 14 23 135 3021.541.051.38  
TH:PLN299.0 -111 10 20 115 2211.811.071.26  
T1:KLAU299.3 -158 4 14 90 1633.280.781.00  
SX:ROHR301.6 -117 5 8 60 1031.810.550.72  
WB:PLED301.7 -117 9 28 128 3572.2110.2321.88  
T1:PODE302.9 -153 7 6 103 1612.330.830.79  
SX:NEUB302.9 -95 15 40 141 4341.481.201.48  
TH:ZEU303.2 -107 12 17 118 2281.551.051.12  
WB:KOC305.2 -116 14 13 173 2241.890.280.83  
WB:HOPD305.3 -117 7 15 366 3807.840.271.70  
SX:TRIB306.7 -114 10 26 102 2241.641.021.35  
WB:POLD311.0 -118 13 14 134 2241.700.451.26  
TH:TAUT311.5 -99 12 23 135 1601.781.021.29  
CZ:JAVC316.8 159 5 9 36 741.181.121.51  
BW:VIEL317.5 -116 9 9 120 1332.061.071.15  
BW:MROB318.7 -119 25 79 410 10052.582.294.27  
BW:MKON319.2 -120 8 19 133 3332.771.861.78  
CZ:KHC320.3 -145 5 8 59 811.961.001.00

BW:MGBB323.1 -121 8 11 66 1181.402.191.78  
CZ:CKRC326.1 -156 6 8 58 991.470.951.10  
PL:BEL326.8 82 9 16 127 1392.142.404.27  
GR:MOX328.2 -105 12 13 113 1681.441.051.15  
BW:MANZ328.7 -120 7 13 100 1732.310.951.26  
BW:MSBB334.2 -118 11 10 115 1231.591.781.26  
S9:PODO336.3 159 3 3 226 17011.591.451.86  
BW:ROTZ336.8 -124 8 7 92 891.930.911.12  
S9:HRAD337.5 162 3 6 26 411.360.711.02  
S9:LAKS337.6 166 4 12 59 1032.122.045.50  
TH:HWTS339.7 -106 7 12 104 1392.251.071.15  
BW:MZEK339.8 -119 8 12 92 1851.912.001.58  
S9:DVOD340.1 162 4 7 32 751.200.721.07  
GR:GEC2343.0 -149 6 9 66 1081.701.051.12  
S9:LANC343.6 160 3 10 57 872.870.711.12  
S9:BUKO344.3 164 5 6 36 551.120.661.00  
GE:FLT1345.7 -73 3 6 44 672.171.321.74  
S9:KATA346.6 162 5 10 45 821.550.661.10  
S9:DLZI347.7 149 2 5 21 491.691.622.40  
S9:PLAV347.9 166 5 8 79 2402.410.761.23  
GR:WET349.3 -138 7 7 82 841.760.951.10  
BW:WETR349.5 -138 8 7 89 1331.730.951.17  
SK:LANS356.7 136 2 4 67 3065.361.001.86  
S9:JALS357.0 159 2 4 50 1283.653.026.76  
TH:LEIB1358.7 -105 6 6 52 741.501.001.05  
TH:WESF359.1 -106 7 14 85 1411.921.051.29  
TH:NEUST362.5 -87 2 2 25 241.851.260.98  
TH:POSS363.8 -91 6 11 53 2801.451.261.29  
TH:CHRS365.6 -86 3 4 33 591.581.021.00  
S9:KOLL366.7 152 2 3 29 451.972.042.00  
GR:ASSE379.4 -78 2 3 17 231.221.001.91  
S9:HOST380.7 153 1 4 43 545.071.552.88  
GR:CLNZ384.9 -64 21 22 1609 43211.971.783.80  
TH:THWA388.0 -100 5 9 69 1232.021.071.12  
GR:GRB3388.8 -127 9 20 72 2051.280.981.48  
SK:VYHS389.9 149 2 2 11 160.940.831.07  
GR:GRA3390.0 -118 7 14 44 1150.941.121.62  
GR:GRA2393.9 -120 6 18 61 1731.491.001.51  
GR:GRB4394.0 -124 8 14 63 1351.320.931.45  
GR:GRB1394.1 -125 7 15 73 2161.670.931.51  
GR:GRA4395.0 -122 7 11 70 991.530.981.48  
GR:CLZ396.9 -83 3 6 39 651.951.051.48  
S9:MICH399.9 146 2 3 24 302.152.003.02

Event: E7

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
kmdegum/sum/sum/s^2um/s^2111  
OE:VIE 24.9 41 712 511 37561 118538.401.052.45  
OE:CONA 26.8 -129 128 171 2644 35853.301.291.05  
OE:CSNA 26.9 -129 189 212 8608 101607.251.291.05

OE:RONA 43.9 164 44 91 1826 51876.590.661.10  
HU:SOP 54.2 145 23 44 689 9954.780.851.10  
S9:PLAV 94.6 61 29 114 914 35774.980.761.23  
D1:RUDU 96.0 -4 218 342 17534 2563112.811.321.07  
S9:LAKS 96.7 55 28 91 716 16174.022.045.50  
D1:SEDU 98.5 8 153 288 10678 2235211.101.291.07  
OE:ARSA103.2 -153 22 19 436 4303.110.850.79  
S9:BUKO107.3 61 58 92 1528 18784.210.661.00  
S9:SMOL107.4 63 58 139 1323 24603.620.761.12  
CZ:KRUC110.8 10 163 221 7353 130827.180.871.00  
D1:KRDU110.8 10 175 217 8451 168907.681.480.78  
HU:EGYH115.9 129 23 51 664 9994.680.852.51  
D1:MYDU116.6 -7 118 287 8451 2377511.381.100.89  
S9:SPAC116.8 70 30 93 594 10923.100.893.47  
S9:KATA117.0 63 73 128 1351 24222.930.661.10  
S9:HRAD117.2 58 30 43 639 9923.410.711.02  
S9:DVOD118.8 60 71 145 1651 40153.710.721.07  
S9:LANC125.8 62 27 110 642 18753.740.711.12  
S9:PVES126.9 60 52 83 893 22722.760.681.38  
D1:NADU129.5 -0 117 195 7372 1853310.040.950.98  
S9:PODO134.4 60 29 78 844 30214.651.451.86  
S9:JALS134.5 68 54 154 2590 59807.673.026.76  
CZ:VRAC140.6 14 212 232 6337 98664.750.911.20  
OE:MOA142.3 -100 33 55 690 13053.341.121.17  
CZ:JAVC142.5 52 12 18 256 4923.461.121.51  
CZ:TREC143.4 -19 148 327 7397 194647.980.891.32  
HU:MPLH145.6 133 10 26 257 5443.930.680.91  
S9:STIT153.5 78 23 64 632 14004.391.452.19  
T1:KLAU155.9 -48 66 121 3010 81497.200.781.00  
CZ:CKRC158.4 -58 40 57 1125 15174.470.951.10  
M1:SUPC165.0 27 34 47 1858 28098.772.091.74  
SK:SRO165.0 100 24 64 770 23225.161.512.19  
S9:MOCH174.2 83 12 26 500 8966.372.955.75  
T1:VRCH175.4 -39 38 48 2096 34668.861.100.83  
S9:HOST175.8 76 10 33 344 7985.251.552.88  
S9:KOLL176.7 71 19 55 653 19435.502.042.00  
T1:PODE178.1 -51 35 79 1446 38736.650.830.79  
T1:BILA180.5 -48 55 119 2892 86788.341.001.00  
M1:LUKC185.5 19 39 63 1816 44867.381.781.48  
HU:TIH185.9 134 13 29 266 4253.290.981.78  
T1:DOUB186.9 -44 35 56 1254 17115.651.050.87  
OE:BIOA192.0 -102 59 55 1189 8693.211.071.32  
S9:DEVI192.8 81 10 27 247 7484.051.954.27  
S9:DLZI193.7 64 6 17 164 3864.551.622.40  
M1:LOSC193.8 27 23 36 858 16756.041.701.51  
S9:BORY194.9 86 10 16 263 4334.172.245.13  
GR:GEC2199.4 -64 18 38 595 11495.321.051.12  
M1:LIPC207.1 18 71 132 2928 47726.571.662.69  
M1:MUVC208.7 23 20 32 872 18206.951.201.51  
OE:OBKA212.1 -145 6 6 87 762.220.981.20

CZ:MORC214.9 28 18 24 793 13467.021.070.98  
S9:HRUS219.8 86 14 14 444 4485.103.096.46  
CZ:KHC222.1 -57 17 19 542 6455.011.001.00  
HU:BUD225.8 106 4 10 65 1362.830.871.00  
S9:POLI226.3 81 6 12 204 3445.291.861.70  
CZ:GOPC226.7 -25 45 60 1702 25565.981.6214.45  
S9:MICH227.8 77 16 22 423 5774.322.003.02  
CZ:KRLC229.9 12 20 32 1211 20239.770.951.20  
P1:PAL230.8 -40 17 41 751 21507.003.551.23  
P1:BUK231.7 -40 24 48 1559 359510.223.471.26  
P1:KON233.1 -41 29 62 2356 443612.990.851.26  
P1:JES233.2 -40 29 77 1887 396510.293.551.23  
P1:JER233.8 -40 23 74 1381 42059.700.811.26  
P1:LES233.9 -41 17 39 778 22837.292.881.62  
P1:HAJ234.5 -40 28 56 1279 24527.404.471.62  
OE:KBA237.9 -117 6 9 101 1342.750.951.02  
S9:VALE238.3 67 4 7 126 2824.561.411.86  
BW:BGLD238.8 -100 18 49 437 12513.783.475.25  
M1:ANAC239.5 22 20 31 825 12596.561.551.48  
CZ:PRU242.3 -28 22 33 916 18746.590.911.10  
BW:RMOA247.3 -97 10 20 175 4472.683.163.89  
BW:RNON247.5 -98 8 10 182 3023.853.243.80  
OE:MYKA248.2 -130 3 3 37 551.740.911.12  
CZ:DPC252.8 3 50 48 2905 34349.250.931.05  
BW:RWMO257.6 -97 5 9 153 4074.961.412.19  
OX:ACOM261.6 -130 5 8 85 1292.941.072.00  
BW:KW1263.9 -88 8 27 249 6764.680.912.14  
HU:KOVH266.8 145 2 9 118 6478.191.291.48  
GR:WET267.9 -63 16 19 725 9557.320.951.10  
BW:WETR268.2 -63 13 40 484 22665.910.951.17  
CZ:UPC270.1 -2 16 43 467 9024.611.001.38  
CZ:CHVC279.0 -1 14 32 272 6673.121.121.51  
HU:PSZ280.7 92 2 5 43 893.280.931.23  
HU:MORH281.1 137 3 2 178 998.291.511.35  
IV:PTCC281.1 -130 3 4 57 562.930.791.41  
HM:PKSM281.3 137 3 3 96 1034.730.790.93  
OX:ZOU2293.1 -124 2 4 31 422.390.892.04  
CZ:PVCC295.3 -22 43 90 1967 31237.370.981.17  
NI:VINO297.3 -132 3 2 214 4112.950.501.07  
IV:FVI302.7 -122 2 4 120 35511.580.580.98  
OX:CLUD305.5 -125 2 3 25 292.140.931.78  
OE:ABTA311.2 -117 3 4 35 462.000.850.76  
U1:RICC311.6 -28 14 21 395 6364.363.554.17  
U1:SKAC312.7 -27 42 73 1070 21074.054.6810.72  
OX:MPRI314.5 -129 2 6 36 1842.311.483.89  
HU:BSZH321.7 104 3 7 134 3458.370.813.80  
SK:KECS325.6 80 8 13 151 2533.120.780.89  
IV:STAL329.4 -127 2 5 106 1768.880.791.58  
BW:MGS04329.9 -90 4 16 289 30911.961.233.63  
SI:RISI330.7 -111 12 25 217 4932.830.871.38

OX:CIMO342.1 -124 2 1 46 274.610.722.19  
BW:ROTZ343.8 -55 7 10 133 2833.160.911.12  
GR:GRC3348.4 -73 9 29 292 9865.440.911.26  
GR:GRB3348.5 -65 12 44 342 10494.560.981.48  
GR:GRB5348.6 -69 6 9 142 2153.481.021.45  
GR:BRG349.1 -26 11 10 393 3565.851.051.20  
WB:KAC350.1 -48 11 33 316 13874.380.250.89  
OE:WTTA350.1 -103 2 5 40 702.780.741.23  
OE:WATA352.3 -102 3 6 63 1213.621.051.62  
WB:HRED352.6 -46 8 15 187 4253.740.451.51  
BW:SCE353.0 -108 3 5 78 1083.971.072.45  
GR:GRB2354.8 -66 6 12 138 2273.550.911.48  
BW:MGBB355.8 -52 6 14 149 2034.302.191.78  
GR:GRC1355.9 -72 7 15 155 3423.720.911.23  
BW:ALTM356.0 -72 7 14 153 3283.722.402.14  
WB:KOPD356.7 -47 14 15 353 5504.080.892.29  
WB:LOUD356.7 -45 7 11 238 3315.630.180.37  
BW:MKON357.7 -51 9 15 214 3633.661.861.78  
GR:GRC4358.3 -70 9 14 164 2912.851.021.48  
CZ:NKC360.3 -47 10 16 230 3783.620.981.66  
GR:GRB1360.8 -64 10 35 349 8095.460.931.51  
GR:FUR362.1 -87 6 17 178 3284.681.262.04  
GR:GRC2362.9 -74 8 18 210 4874.180.871.35  
BW:MANZ363.0 -53 7 14 270 4446.420.951.26  
WB:SNED363.1 -46 8 17 199 5284.072.637.08  
WB:LBC364.6 -47 6 12 135 2873.760.150.30  
WB:PLED364.6 -48 7 19 430 6149.8310.2321.88  
BW:MROB365.1 -51 32 57 824 9554.062.294.27  
WB:POLD366.7 -50 7 11 187 3674.070.451.26  
BW:BE1367.5 -91 4 15 90 1983.791.352.04  
SX:ROHR367.5 -48 4 6 95 1793.760.550.72  
WB:BUBD367.7 -45 8 14 219 3244.600.150.43  
SX:WERN368.1 -47 7 12 147 3393.211.051.38  
GR:GRB4370.2 -64 7 16 203 5824.830.931.45  
BW:MZEK371.2 -54 7 10 138 2133.182.001.58  
SX:TANN373.0 -45 12 24 273 5273.761.822.29  
BW:MSBB373.9 -53 5 8 158 2215.161.781.26  
WB:KOC374.3 -48 6 20 163 3434.590.280.83  
SX:FBE374.9 -32 5 4 115 1333.900.760.87  
SX:MULD375.7 -45 4 9 86 2263.101.021.17  
SX:GUNZ376.0 -46 7 9 131 2133.111.021.48  
BW:VIEL376.3 -50 5 8 114 1953.551.071.15  
SI:ROSI378.5 -108 3 10 44 1272.231.172.24  
BW:PART382.1 -98 3 6 105 1604.842.513.39  
OE:SQTA382.5 -103 2 5 54 923.581.351.26  
GR:GRA4382.8 -63 8 12 156 2972.990.981.48  
SX:TRIB385.8 -48 5 8 126 1953.771.021.35  
OE:MOTA386.6 -100 3 4 57 892.761.381.15  
GR:GRA2391.9 -62 4 16 95 3093.501.001.51  
SI:ABSI393.5 -111 4 9 58 1262.400.951.38

BW:ZUGS393.9 -99 3 5 73 1294.073.094.90  
TH:PLN394.3 -46 6 10 139 2423.521.071.26  
SX:SCHF396.2 -42 6 12 148 3064.090.981.20  
GR:GRA3399.7 -60 3 8 78 1983.561.121.62

Event: E8

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
kmdegum/sum/sum/s^2um/s^2111  
CZ:NKC 1.2 -132 6636 179523078728100957.380.981.66  
WB:KOPD 4.2 166 3939 1025325415350881910.270.892.29  
WB:LBC 4.4 -52 3269 284622955013077811.180.150.30  
SX:WERN 8.0 -49 2774 24021471811117358.451.051.38  
WB:HRED 8.0 111 1813 76831044403945519.170.451.51  
WB:SNED 8.4 20 3297 748121600541620710.432.637.08  
WB:PLED 9.4 -112 3736 99551910934796258.1410.2321.88  
WB:HOPD 14.0 -97 2076 20261047581663098.030.271.70  
WB:BUBD 16.2 14 1057 1839 624061786039.400.150.43  
WB:KOC 16.4 -80 1723 2435 824071216957.610.280.83  
SX:GUNZ 16.5 -34 417 566 20383 286437.781.021.48  
WB:POLD 18.6 -120 1088 1653 62568 875589.150.451.26  
SX:TANN 19.5 0 563 2081 255501067467.231.822.29  
SX:MULD 19.5 -12 577 677 36368 2648710.031.021.17  
SX:WERD 25.6 -25 227 398 11928 211878.371.051.00  
SX:TRIB 26.2 -61 242 329 10017 242366.591.021.35  
BW:VIEL 26.2 -103 446 457 18140 244386.471.071.15  
BW:MKON 29.5 -147 250 1155 18115 5038711.521.861.78  
BW:MGBB 34.6 -149 108 226 7169 992810.562.191.78  
TH:PLN 34.8 -38 263 296 16550 2004010.001.071.26  
BW:MZEK 47.9 -130 87 100 7737 631614.172.001.58  
SX:SCHF 48.8 -5 223 306 6182 117574.420.981.20  
TH:GRZ1 53.0 -19 89 121 3487 41336.251.071.17  
BW:ROTZ 55.7 -161 97 111 4180 60376.830.911.12  
TH:ZEU 58.9 -35 35 56 2024 24089.081.051.12  
TH:MLFH 66.8 -24 34 125 2521 630811.731.021.32  
TH:ANNA 73.4 10 70 95 4307 50489.781.021.23  
GR:MOX 75.1 -53 35 53 1114 23255.021.051.15  
TH:MODW 78.2 0 43 70 1841 42396.781.121.58  
TH:HWTS 80.4 -60 35 66 1166 19245.251.071.15  
TH:ABG1 81.4 6 98 200 3942 80726.411.051.38  
TH:ZEITZ 93.2 -15 92 176 5070 100888.791.001.20  
TH:WESF 94.7 -69 41 65 2313 21628.931.051.29  
TH:LEIB1 97.2 -67 35 61 2283 499510.521.001.05  
GR:GRA3 97.6 -123 74 228 4106 55638.841.121.62  
TH:TAUT 98.1 -32 33 65 2244 362810.761.021.29  
SX:FBE 98.8 40 24 27 1143 17847.630.760.87  
GR:GRA2102.3 -129 50 117 1434 26244.581.001.51  
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GR:GRA1107.7 -124 70 216 2398 53835.441.121.58  
GR:GRB3110.3 -154 127 436 4510 114275.670.981.48

GR:GRB1110.9 -148 103 442 4559 104007.050.931.51  
SX:NEUB116.7 -24 74 139 2795 54716.011.201.48  
U1:RICC121.3 73 88 135 2747 43894.973.554.17  
GR:GRB2121.9 -152 45 124 1330 33634.730.911.48  
U1:SKAC124.6 72 159 733 4036 204254.034.6810.72  
GR:CLL124.8 18 36 95 1149 24085.121.071.17  
GR:WET125.5 166 45 78 2144 39507.540.951.10  
GR:BRG126.8 56 54 103 1836 34965.421.051.20  
P1:LES129.5 120 29 69 966 25995.312.881.62  
P1:HAJ130.2 118 51 83 2078 29056.464.471.62  
P1:JER130.4 119 34 116 1484 53416.860.811.26  
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P1:JES131.2 119 93 125 3052 60935.233.551.23  
P1:BUK132.4 119 43 102 2579 62039.583.471.26  
P1:PAL133.3 119 43 47 1528 23805.723.551.23  
GR:GRB5137.6 -155 28 66 1097 20846.291.021.45  
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CZ:KHC147.4 146 22 34 642 9954.661.001.00  
CZ:PRU151.5 100 52 85 1860 48095.660.911.10  
CZ:PVCC153.4 77 90 229 3771 81256.630.981.17  
GR:GRC1154.1 -154 24 36 666 14534.450.911.23  
BW:ALTM154.2 -154 24 34 751 14424.982.402.14  
GR:GRC3162.9 -157 32 93 1477 38587.440.911.26  
BW:HROE167.0 -78 33 79 673 15253.234.794.57  
CZ:GOPC170.5 101 71 146 2083 34954.681.6214.45  
GR:GRC2171.6 -152 23 72 820 20295.750.871.35  
TH:MOB1172.1 -47 31 73 893 22454.631.551.70  
T1:DOUB173.7 127 20 33 841 16786.781.050.87  
TH:MOB5178.6 -47 25 78 1221 24277.711.911.55  
GR:GEC2179.3 149 27 40 751 12914.371.051.12  
T1:BILA179.7 131 40 33 1372 13185.441.001.00  
TH:VITZ182.6 -66 45 113 920 28653.271.171.70  
T1:PODE183.1 135 32 41 1296 20346.520.830.79  
GR:UBBA185.9 -69 18 26 640 6725.571.231.05  
TH:NEUST186.4 -36 12 12 348 5434.651.260.98  
TH:SPAHL186.8 -75 45 112 1631 26635.791.321.38  
T1:VRCH188.2 123 32 30 1279 11016.291.100.83  
TH:CHRS191.2 -37 11 26 518 16137.591.021.00  
T1:KLAU204.3 131 20 33 670 15295.210.781.00  
CZ:CKRC207.0 139 12 26 334 6864.350.951.10  
BW:NORI215.0 -141 23 54 769 9615.232.752.14  
GR:A807217.2 18 19 32 461 7083.898.717.41  
GR:GTTG227.9 -49 27 88 697 12554.111.412.14  
GR:CLZ230.6 -39 17 22 288 6512.721.051.48  
GR:MILB231.5 -100 20 64 477 13893.860.932.69  
BW:KW1235.8 178 9 32 296 6295.040.912.14  
CZ:TREC242.1 115 21 39 847 14716.500.891.32  
GR:FUR246.5 -159 18 42 360 7323.221.262.04  
GE:FLT1247.7 -20 7 13 163 2743.831.321.74  
CZ:UPC254.4 82 13 36 401 8644.791.001.38

CZ:CHVC258.4 80 8 18 218 4294.081.121.51  
GE:RUE265.2 20 6 22 214 3295.811.451.41  
BW:BE1274.4 -160 10 16 211 3553.521.352.04  
CZ:DPC275.4 86 19 31 662 10075.600.931.05  
BW:RTSA276.3 174 6 19 130 5153.222.404.68  
BW:RMOA277.2 174 7 23 143 3653.393.163.89  
BW:RTSH277.9 174 9 45 200 8403.593.1611.48  
BW:RWMO278.3 176 6 6 100 1882.751.412.19  
PD:MICH278.5 62 25 54 845 10075.298.5120.42  
BW:RJOB279.4 175 12 19 247 3023.271.151.66  
BW:RNON279.6 174 8 16 109 2062.253.243.80  
D1:MYDU280.9 115 14 30 483 12885.591.100.89  
D1:NADU286.5 111 22 38 593 12094.220.950.98  
GE:STU287.3 -123 11 38 270 7383.781.020.98  
M1:PIVO291.7 90 8 14 297 4915.900.911.35  
OE:BIOA296.3 163 10 14 162 2192.691.071.32  
OE:MOA296.8 153 5 8 117 2003.681.121.17  
D1:RUDU297.4 118 20 24 694 9565.471.321.07  
CZ:KRLC312.9 91 9 12 248 3264.460.951.20  
CZ:KRUC312.9 113 13 15 233 3272.960.871.00  
D1:KRDU312.9 113 11 15 226 3953.201.480.78  
D1:SEDU314.0 116 10 20 334 5375.241.291.07  
CZ:VRAC315.2 108 12 13 186 2942.380.911.20  
GR:CLNZ318.2 -19 11 35 219 5443.311.783.80  
OE:WATA329.4 -168 5 9 123 2613.761.051.62  
M1:LUKC330.4 100 9 16 162 3952.911.781.48  
OE:RETA330.5 -157 4 9 54 1412.051.101.12  
M1:LIPC331.6 96 15 37 558 10155.841.662.69  
GR:UBR332.7 -148 5 16 98 3002.911.381.29  
GR:FBRG335.4 -27 5 12 97 1863.252.759.12  
OE:WTTA336.5 -169 4 7 67 962.460.741.23  
OE:MOTA337.0 -162 5 8 112 1333.241.381.15  
OE:SQTA348.2 -164 6 9 157 1583.901.351.26  
M1:MUVC348.7 96 6 11 173 3214.401.201.51  
GR:RETHO350.6 -37 4 8 70 1202.791.457.59  
M1:SUPC351.7 104 4 11 110 1944.022.091.74  
M1:ANAC351.9 91 6 10 124 2453.101.551.48  
BW:OBER352.9 -152 10 9 136 1532.212.402.04  
OE:CSNA357.3 135 6 11 145 2573.621.291.05  
OE:CONA357.5 135 4 7 94 1183.351.291.05  
OE:KBA357.6 169 4 4 56 662.110.951.02  
M1:LOSC359.2 99 8 10 194 2613.781.701.51  
BW:SCE360.4 -171 4 7 78 1162.871.072.45  
CZ:MORC367.9 96 10 9 161 2232.511.070.98  
CH:WALHA368.9 -137 4 8 72 1623.041.121.48  
CH:EMING371.0 -133 5 10 119 2174.061.051.20  
GR:DEEL372.6 -35 3 5 272 9815.534.5711.75  
SI:ROSI376.3 -168 5 11 89 1412.791.172.24  
OE:DAVA379.2 -149 3 5 67 853.240.951.82  
OE:FETA380.0 -160 3 2 35 352.190.871.17

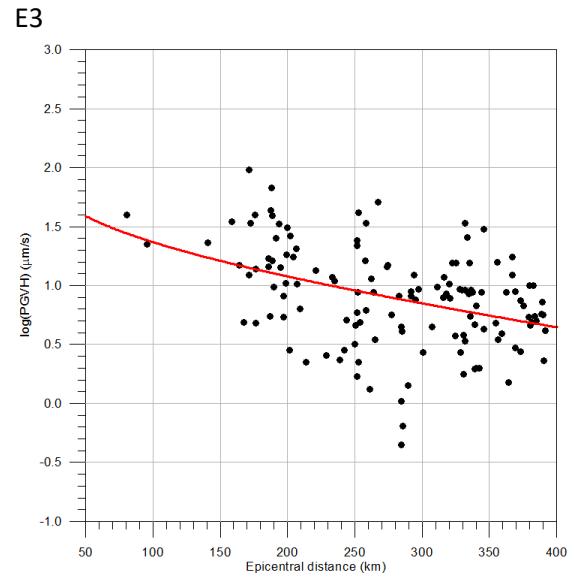
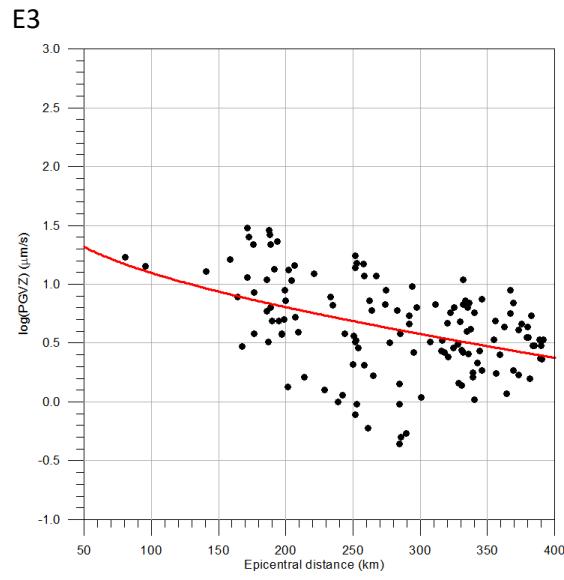
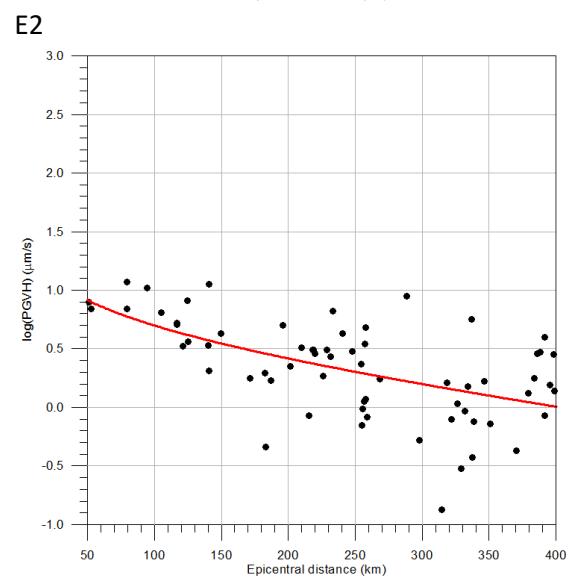
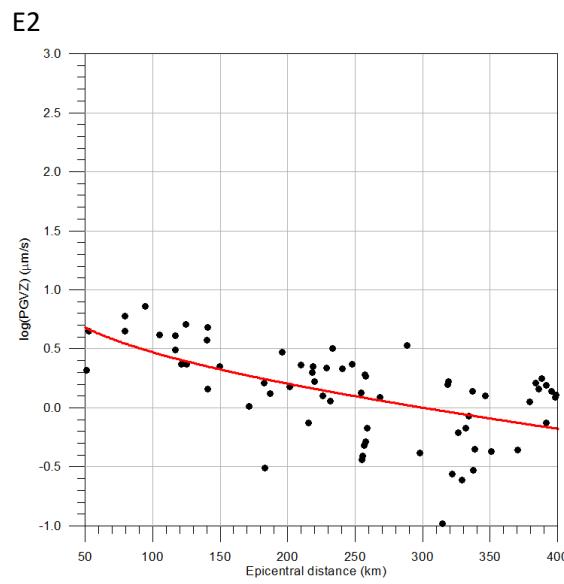
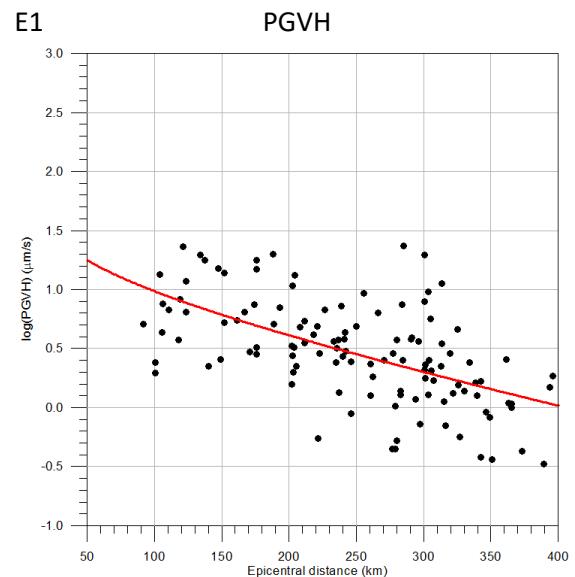
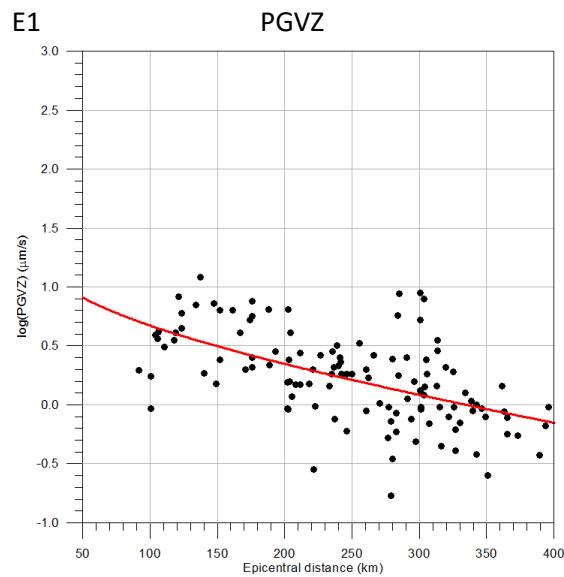
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S9:LAKS391.6 116 3 9 51 1182.602.045.50  
CH:LIENZ393.5 -145 2 3 34 482.871.231.86  
CH:SGT04394.4 -143 2 4 57 773.891.171.45  
OE:RONA398.3 134 2 6 44 1103.220.661.10  
S9:PLAV399.6 117 2 5 35 732.290.761.23

Event: E9

network:stationdistanceazimuthPGV\_zPGV\_hPGA\_zPGA\_hF\_Mcorr\_zcorr\_h  
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PD:MICH 27.0 -152 996 5096 9224 370331.478.5120.42  
PD:STEG106.1 60 60 210 984 26182.6112.5926.92  
CZ:DPC136.1 176 23 36 510 11353.570.931.05  
M1:PIVO156.1 170 19 25 374 6683.190.911.35  
CZ:PVCC161.8 -135 57 136 1820 35535.100.981.17  
CZ:KRLC170.3 164 27 42 285 5731.660.951.20  
GR:BRG174.1 -115 19 43 406 6923.481.051.20  
U1:SKAC181.5 -127 48 110 931 23443.094.6810.72  
U1:RICC185.3 -127 28 52 494 8462.773.554.17  
M1:ANAC186.6 153 8 14 181 2863.511.551.48  
GE:RUE193.1 -58 19 46 285 6472.341.451.41  
M1:LIPC201.6 162 13 37 303 9033.821.662.69  
CZ:GOPC208.8 -151 18 29 223 3271.991.6214.45  
SX:FBE210.1 -109 12 12 122 1351.590.760.87  
CZ:PRU210.5 -146 12 14 215 2452.980.911.10  
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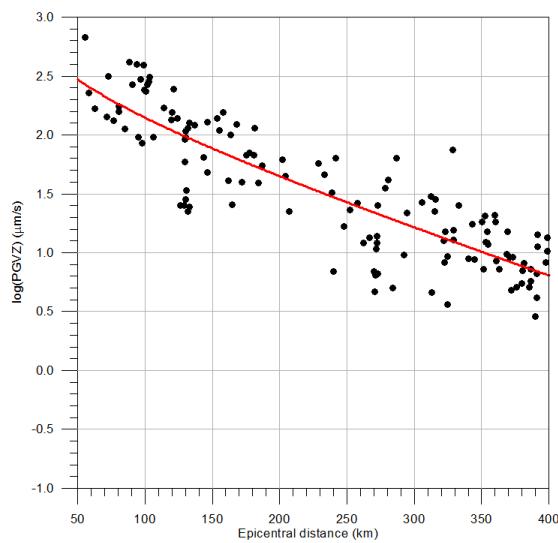
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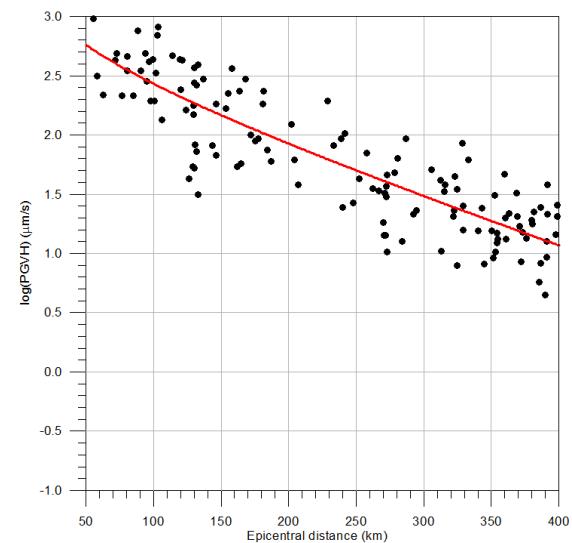
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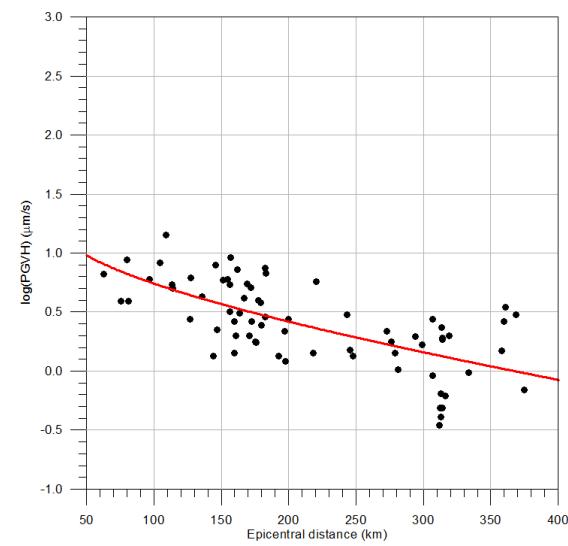
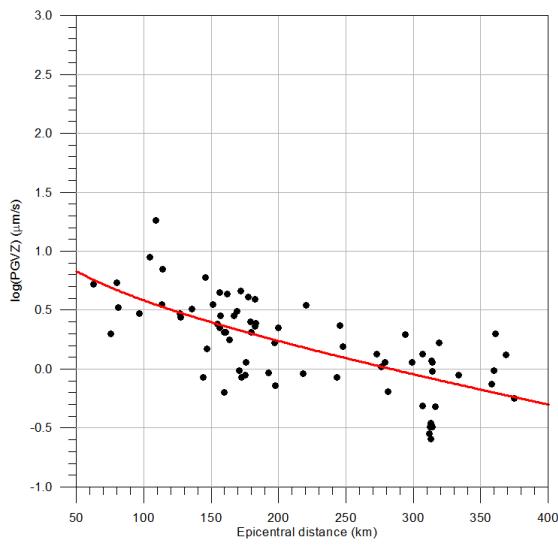
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PGVH



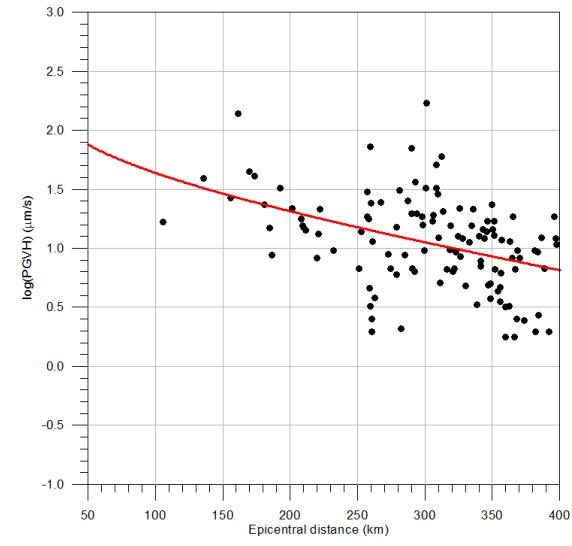
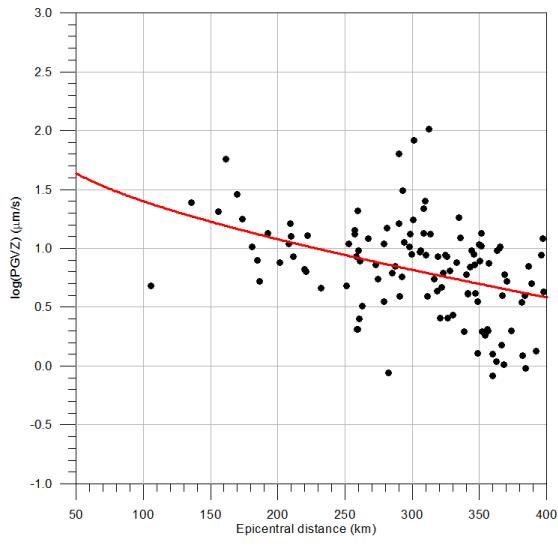
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E5



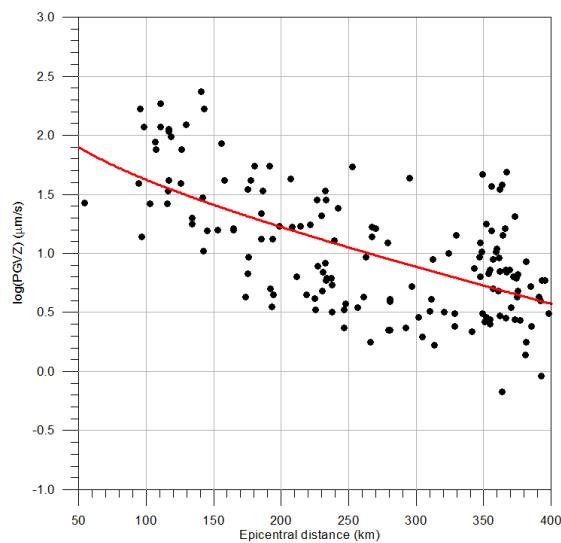
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E6



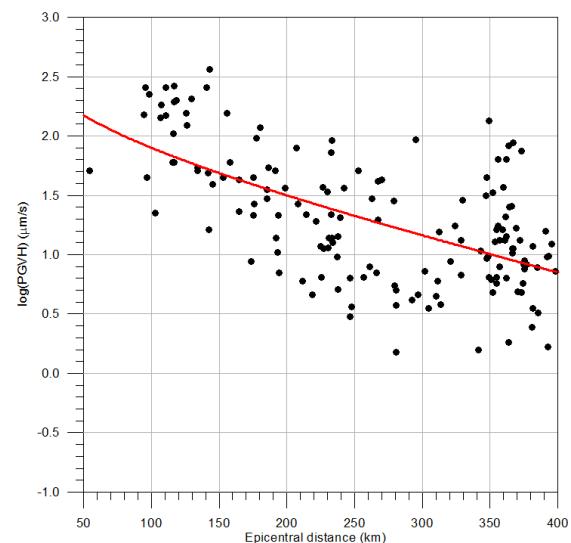
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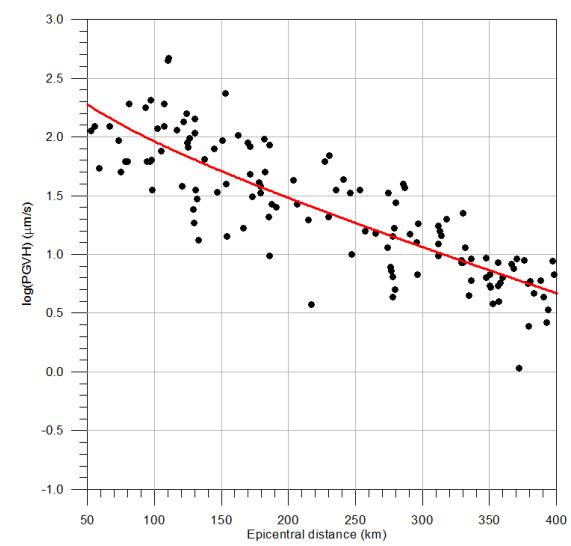
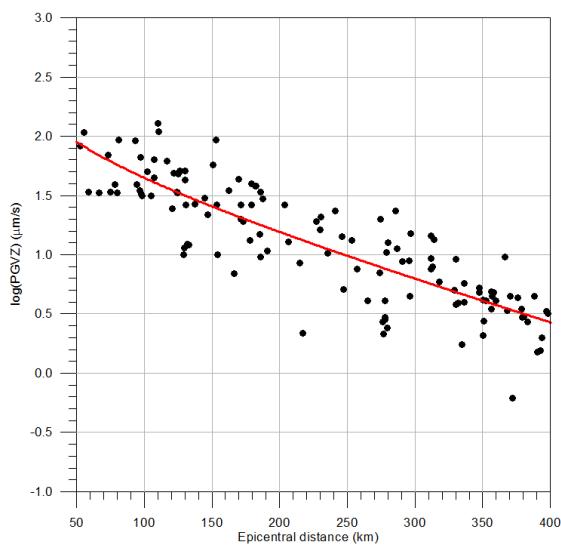
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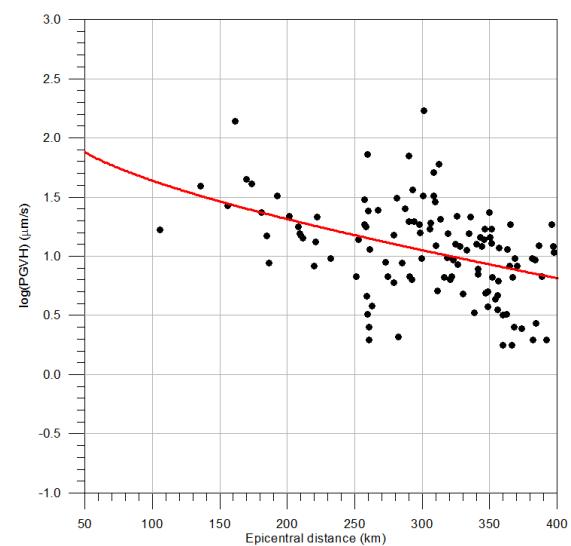
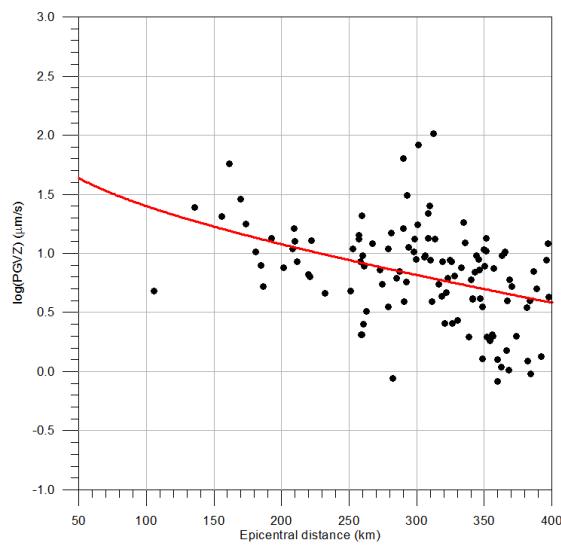
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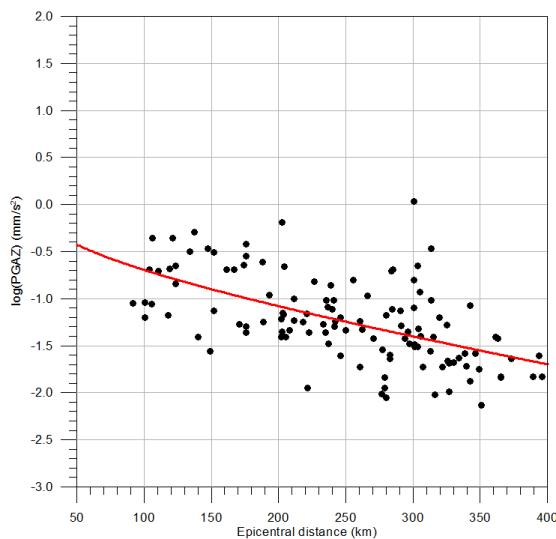
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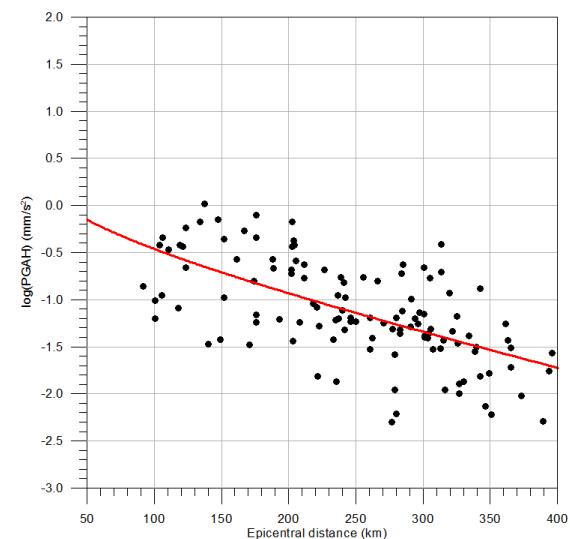


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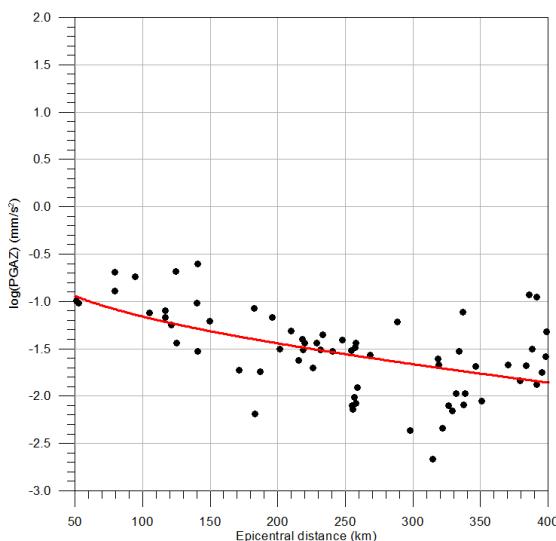
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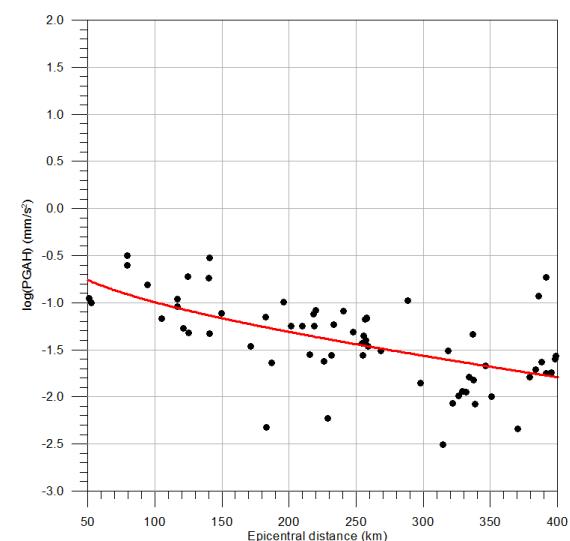
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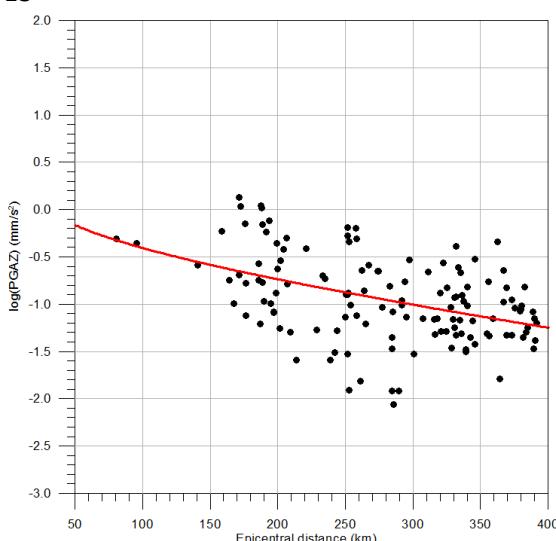
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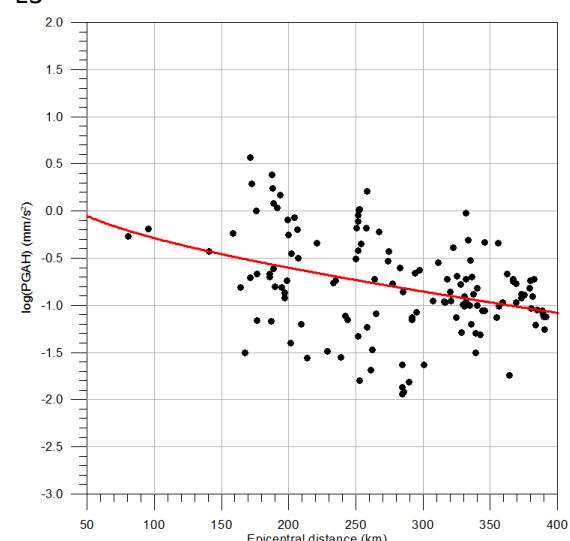
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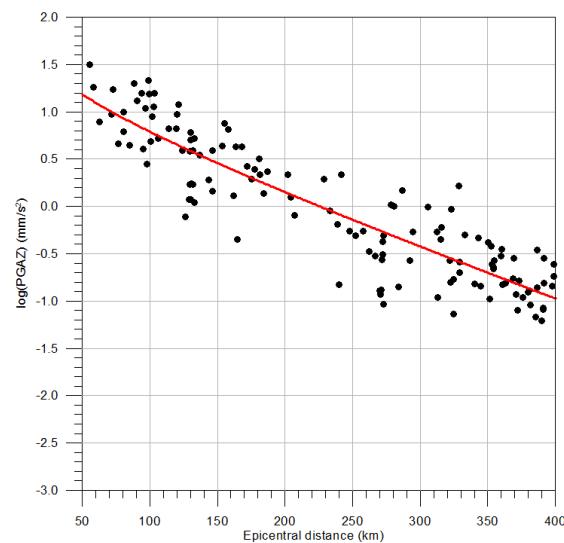


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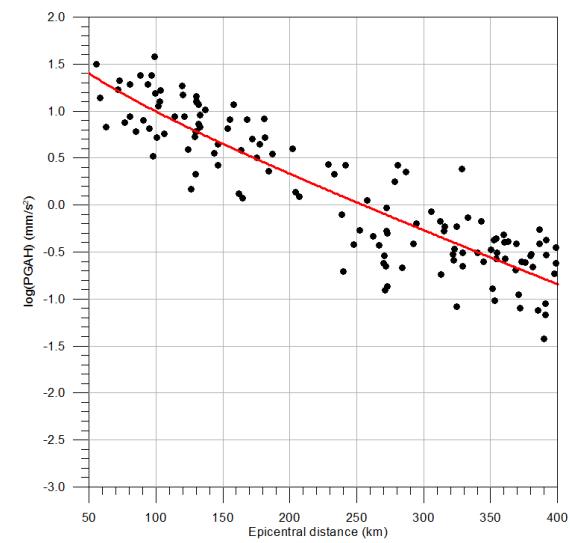
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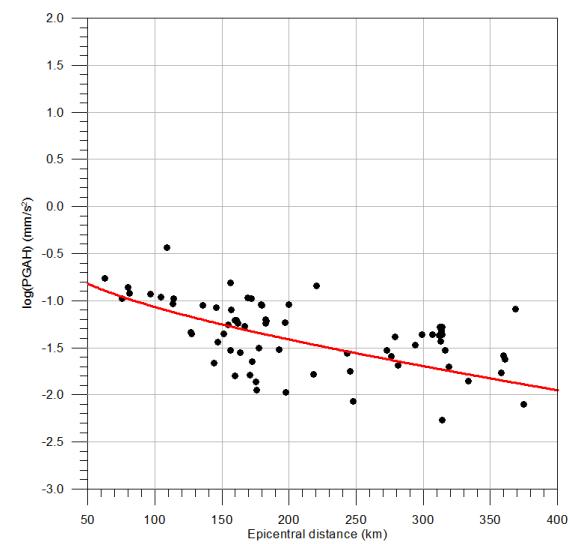
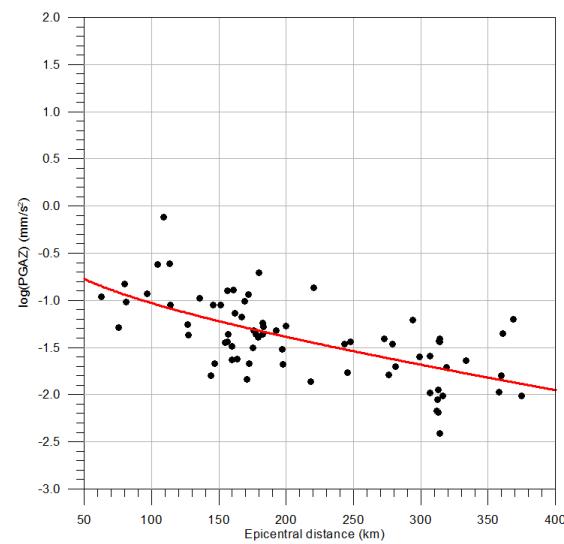
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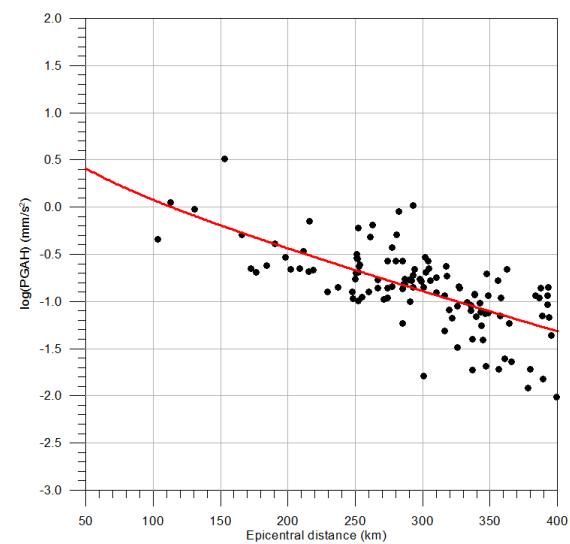
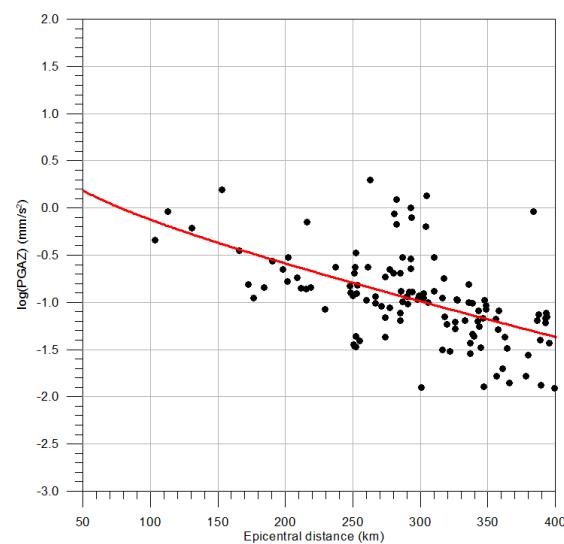
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E5



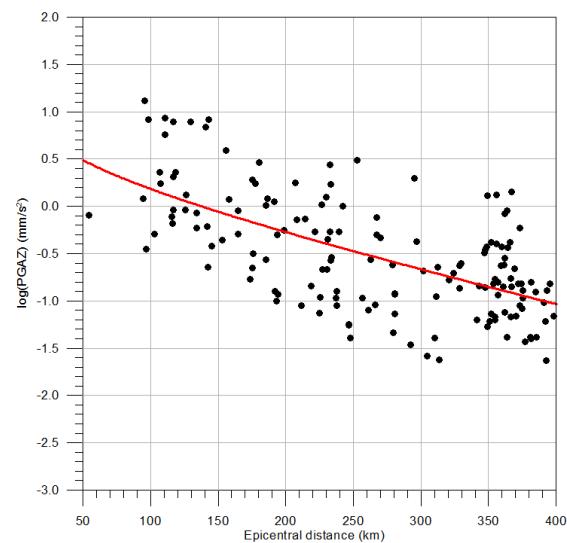
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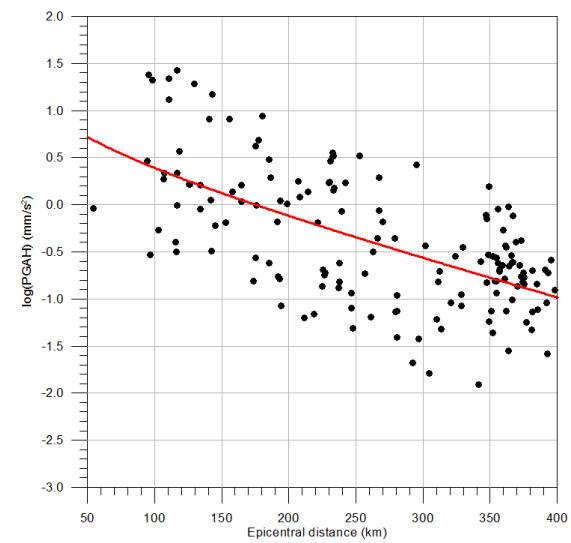


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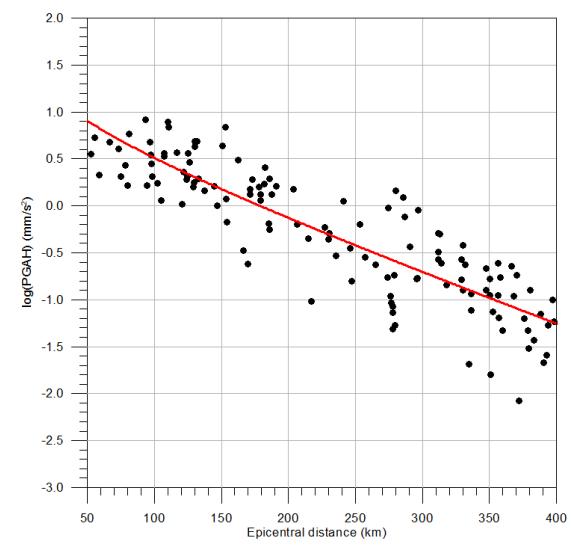
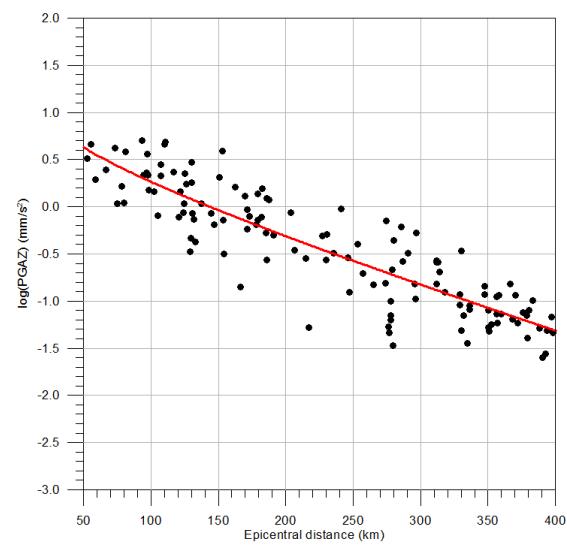


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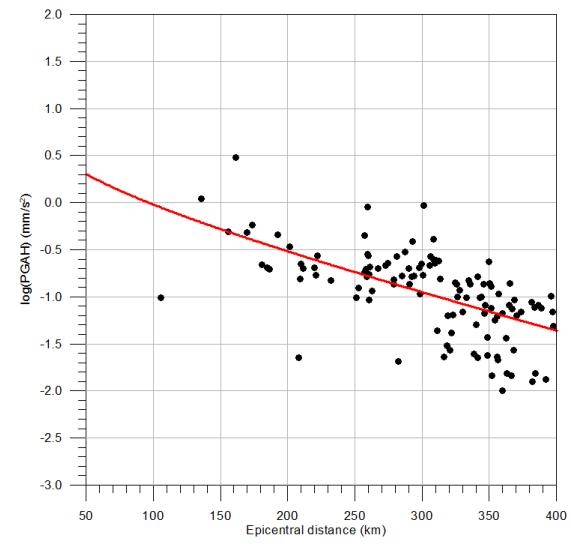
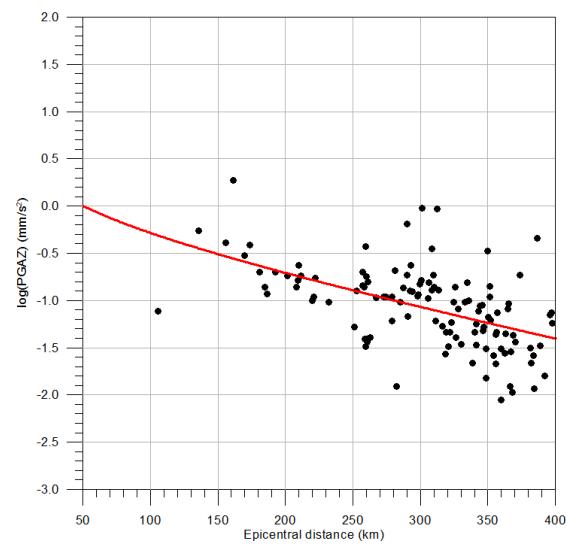
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E8



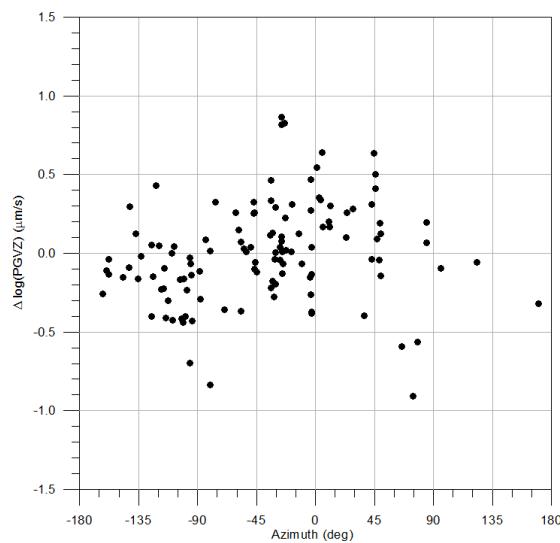
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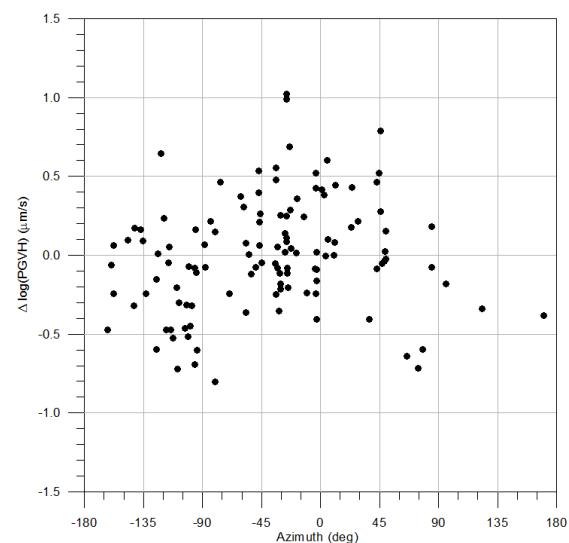
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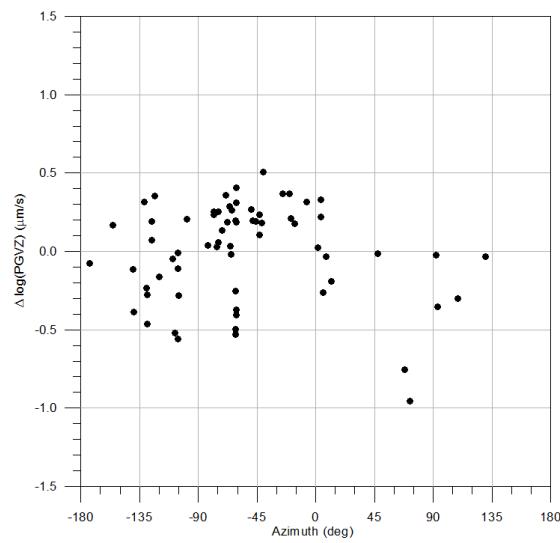


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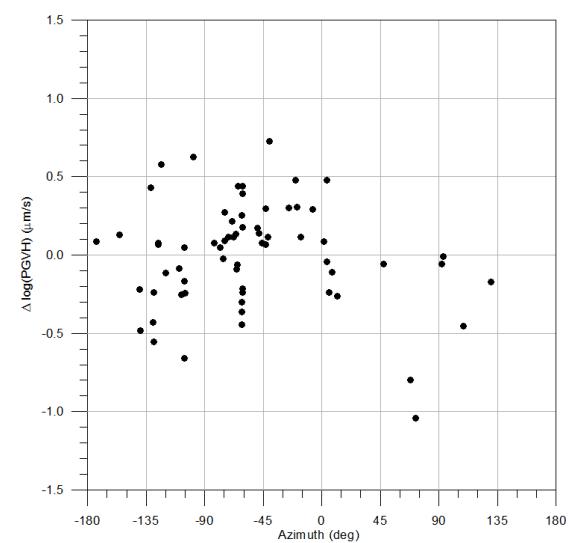
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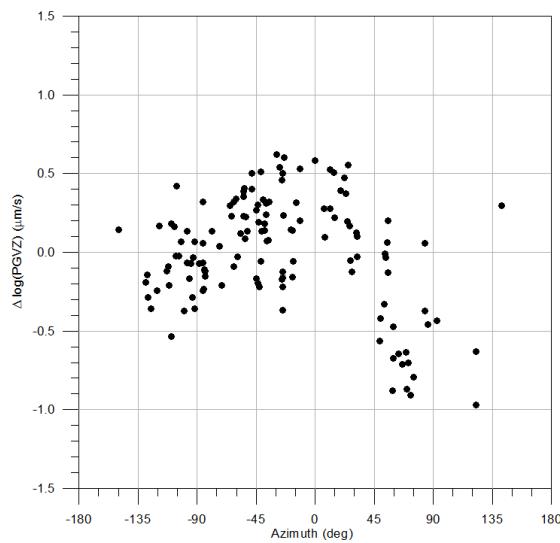
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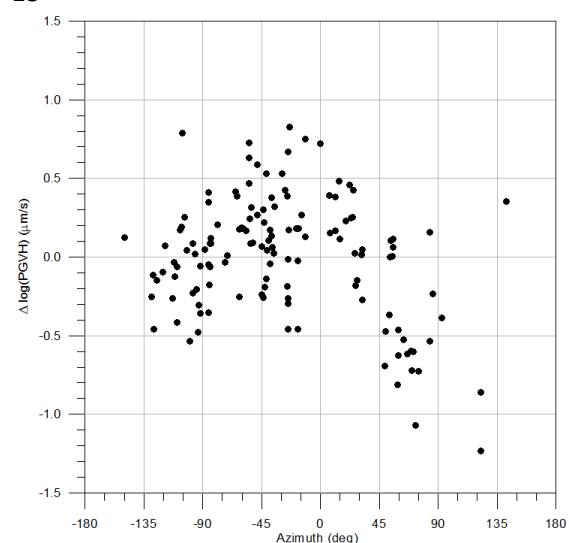
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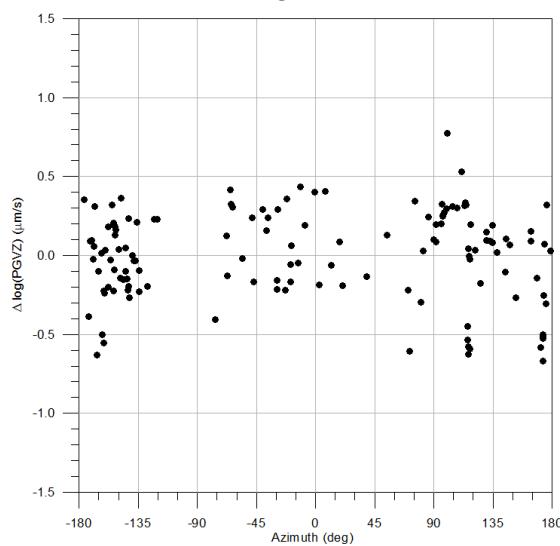


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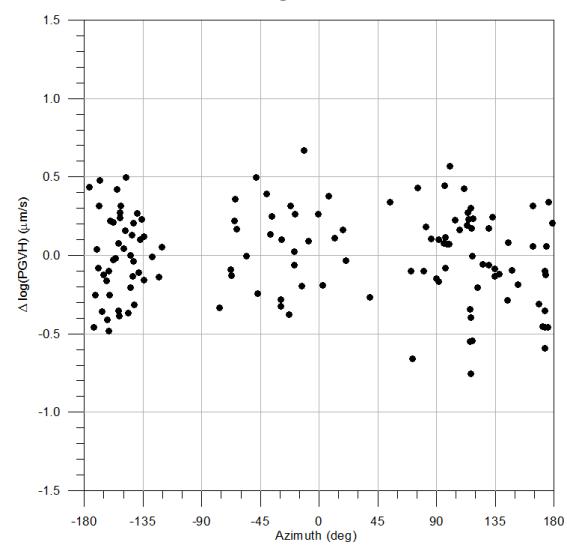
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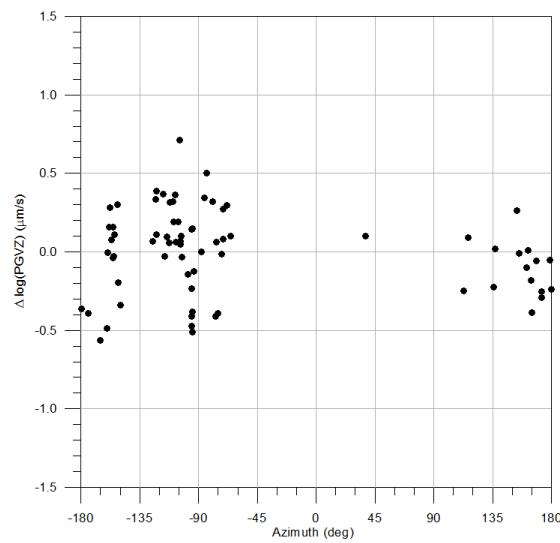


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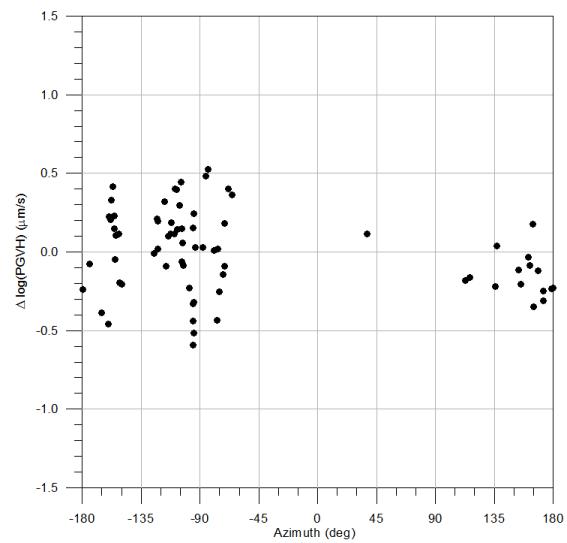
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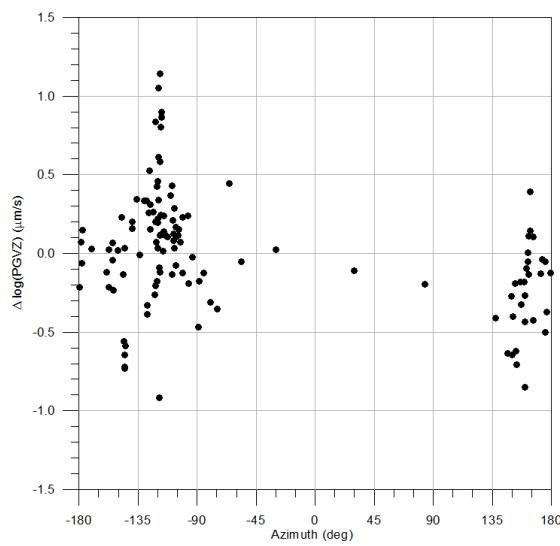
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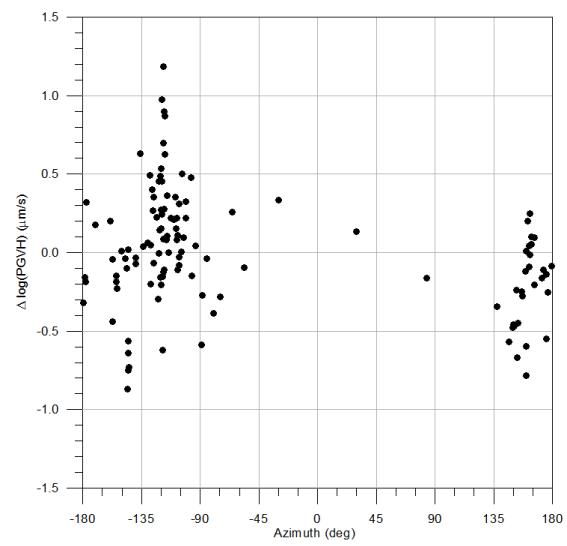
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E6

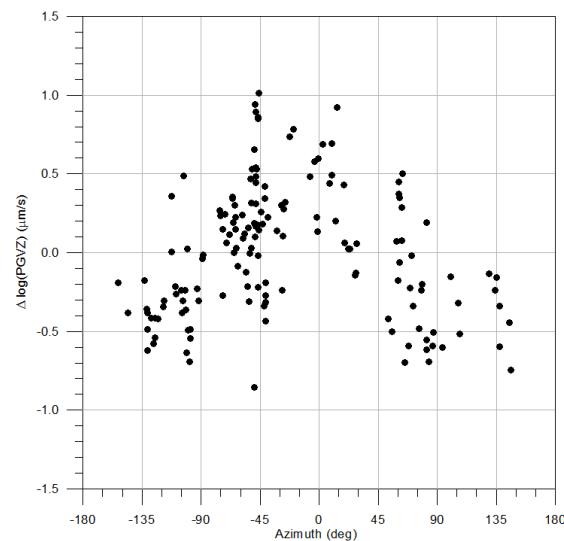


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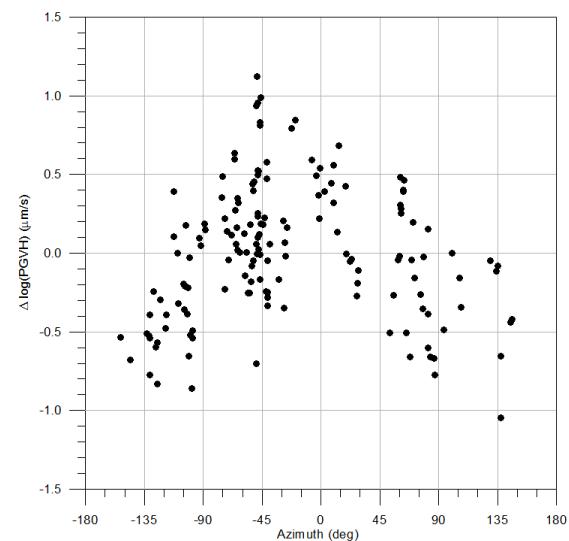
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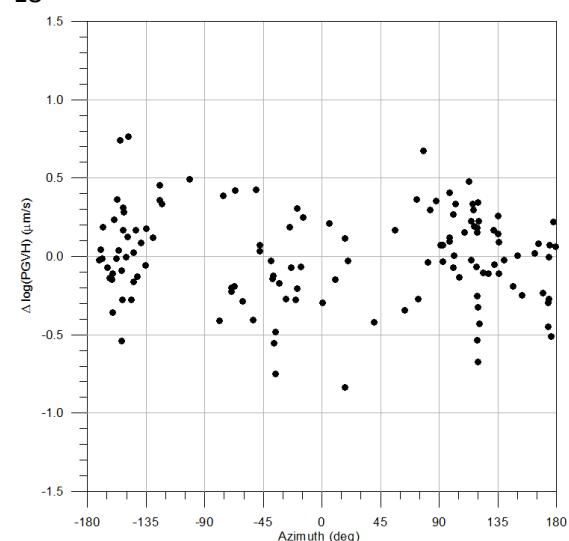
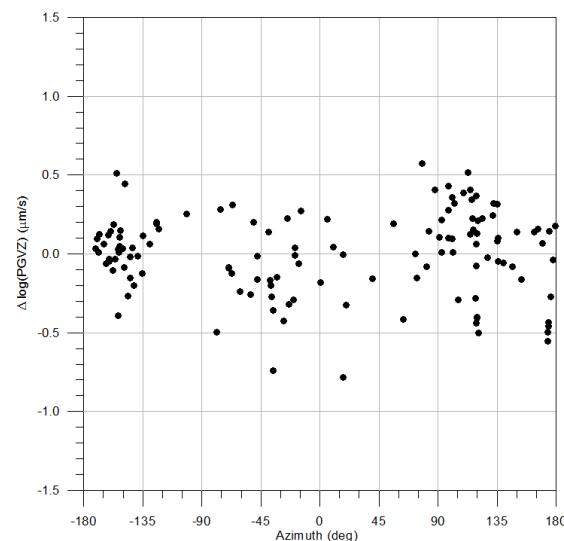
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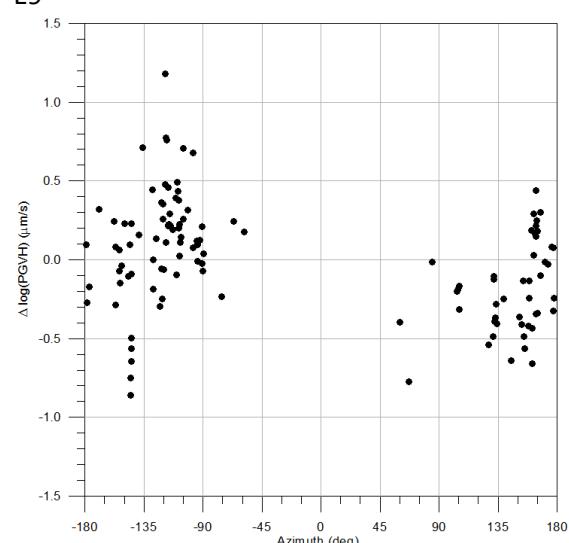
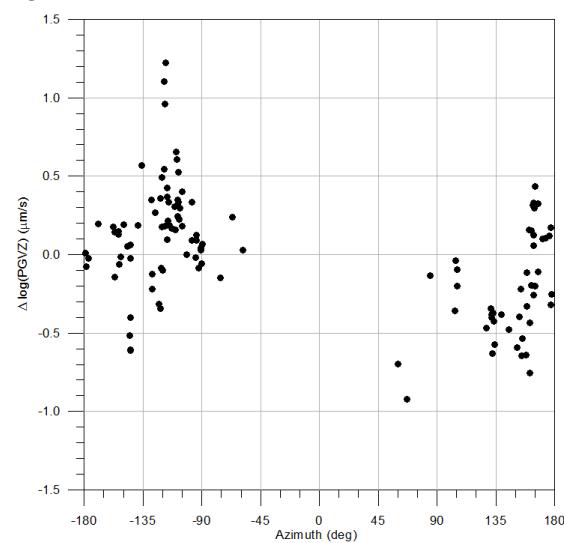
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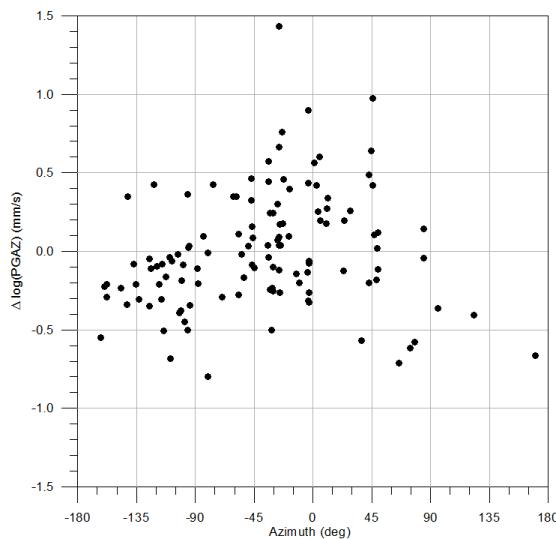
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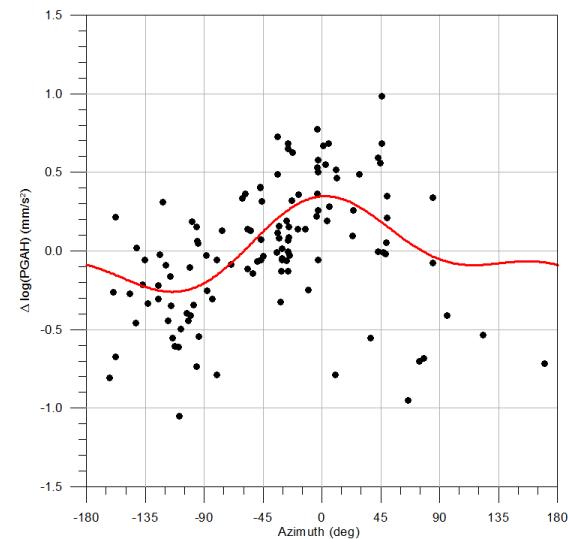


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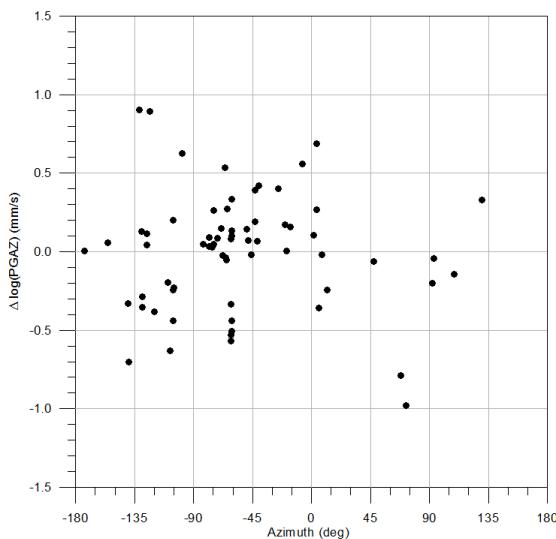
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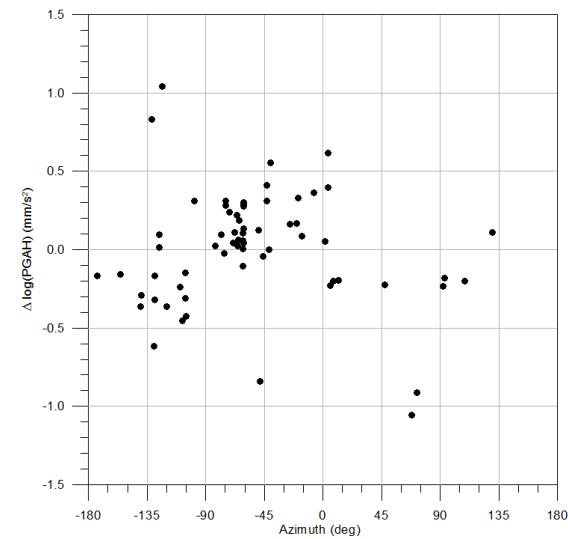
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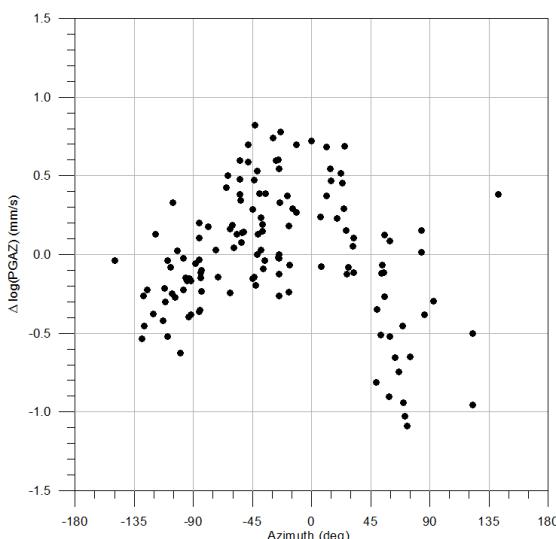
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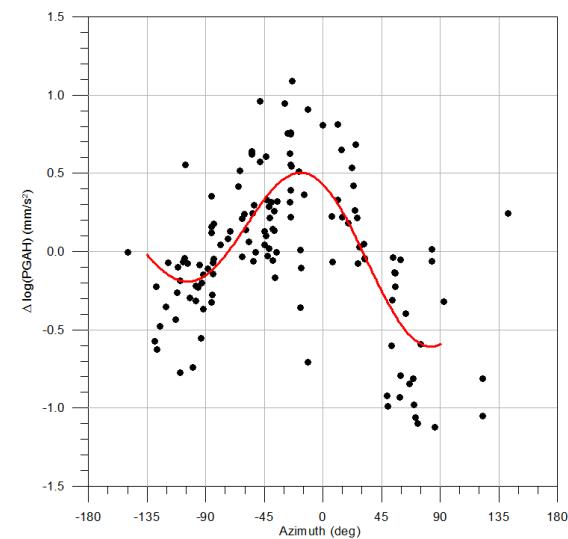
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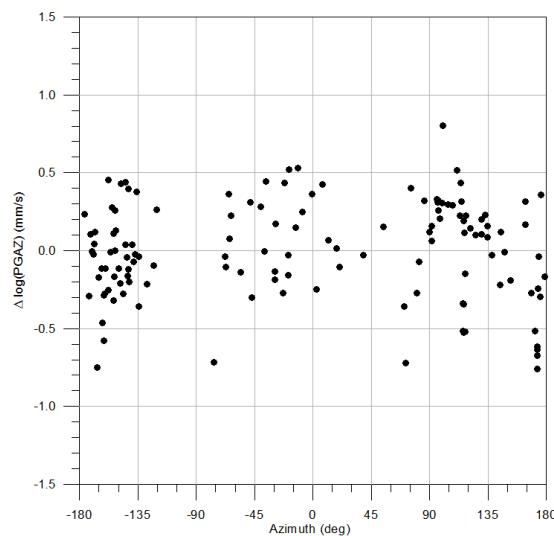


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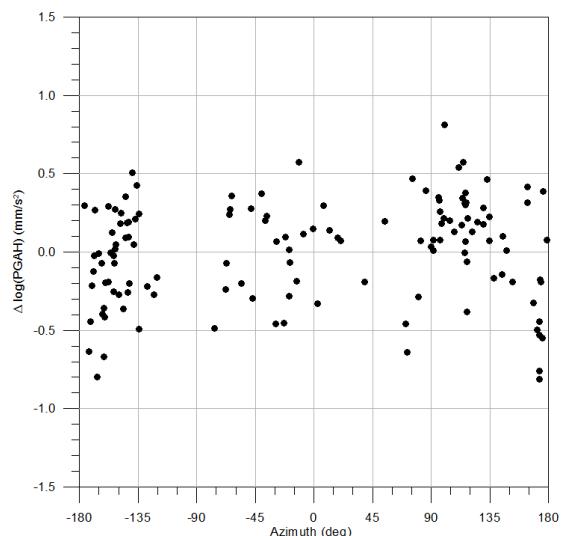


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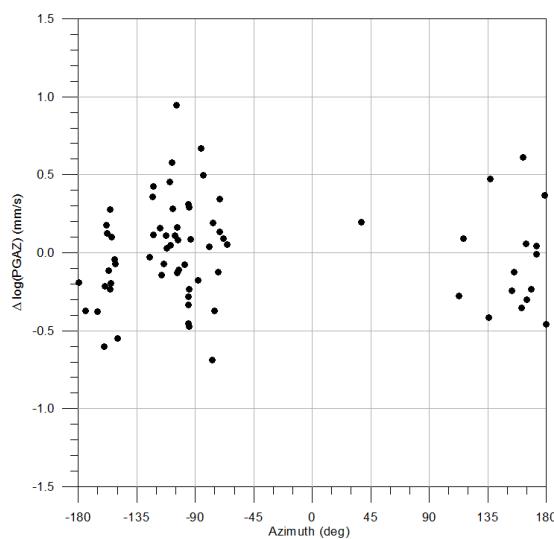
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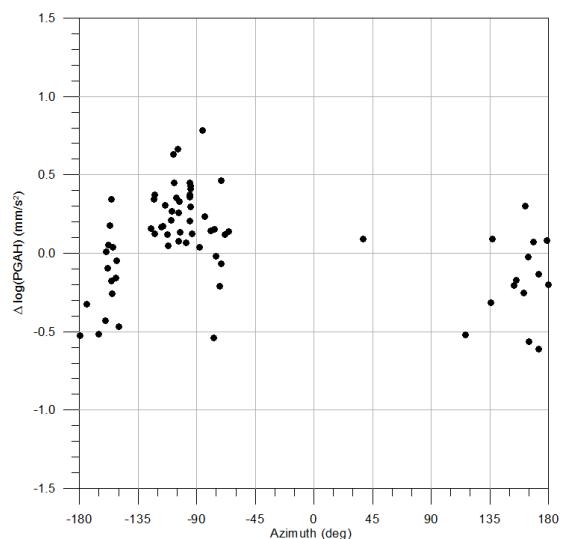
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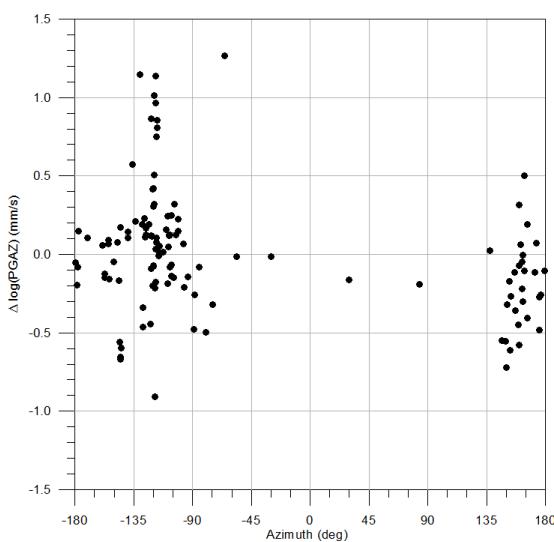
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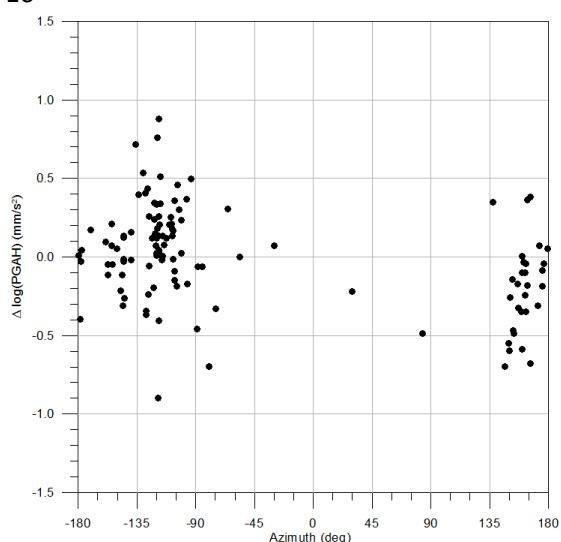
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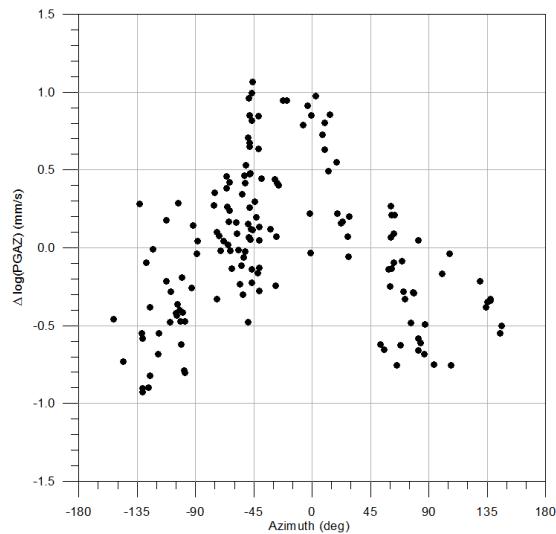


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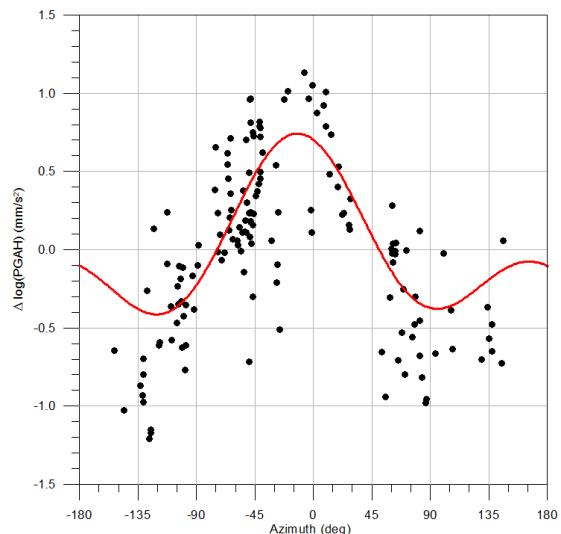
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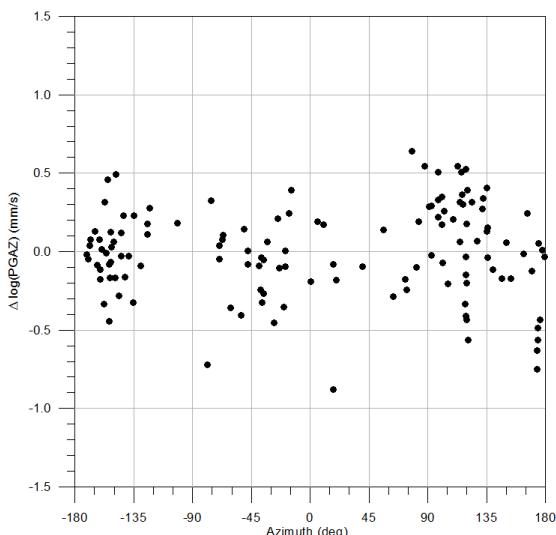


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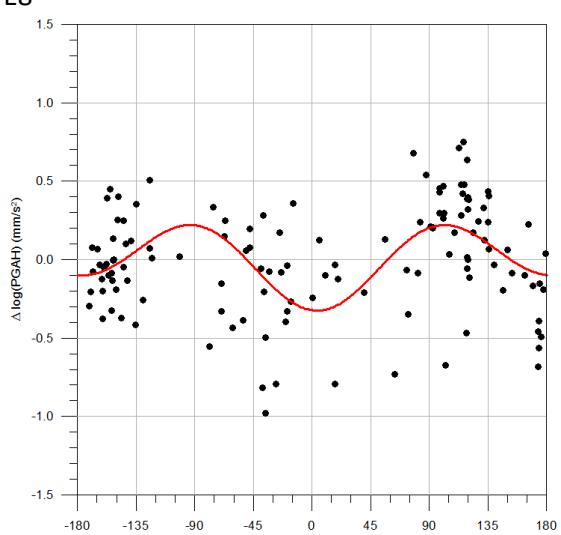
PGAH



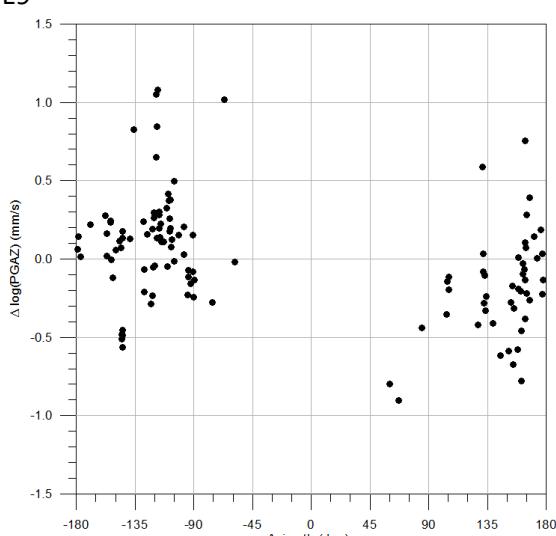
E8



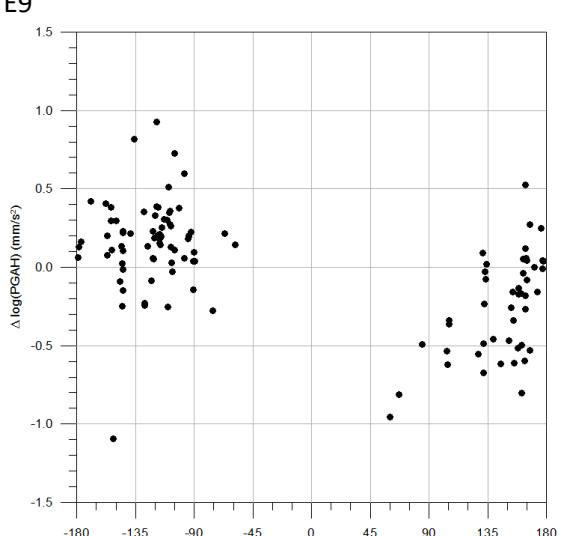
E8



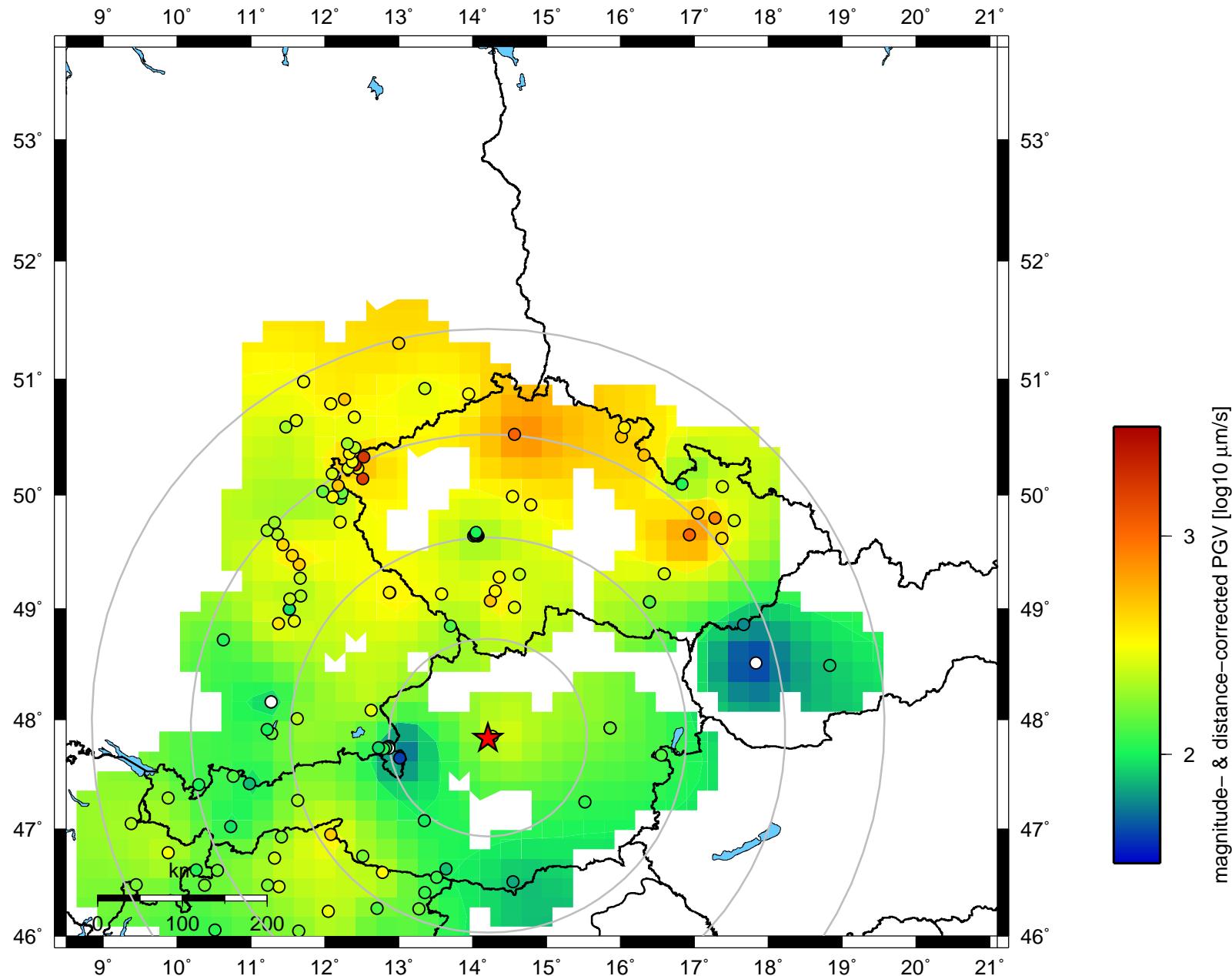
E9



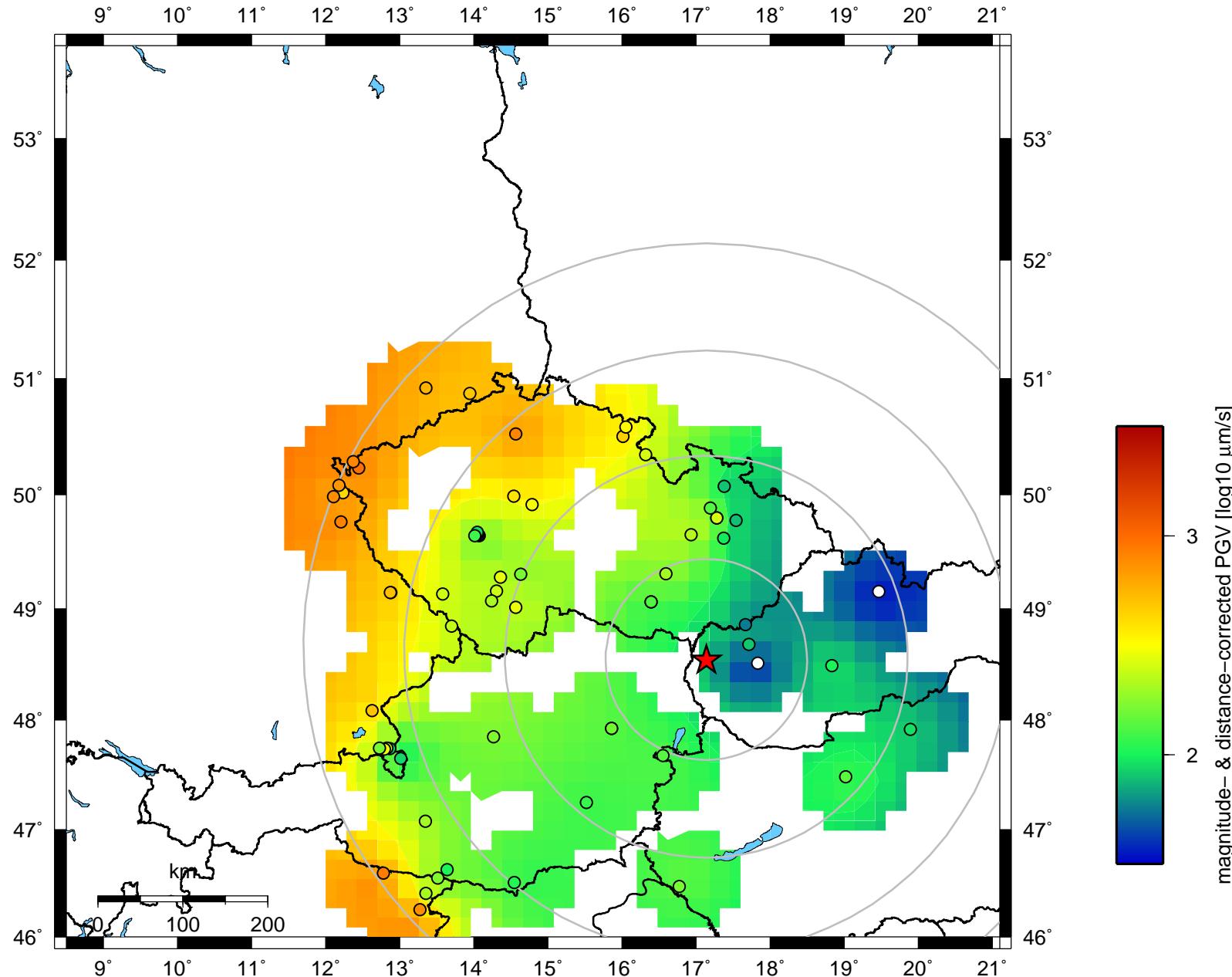
E9

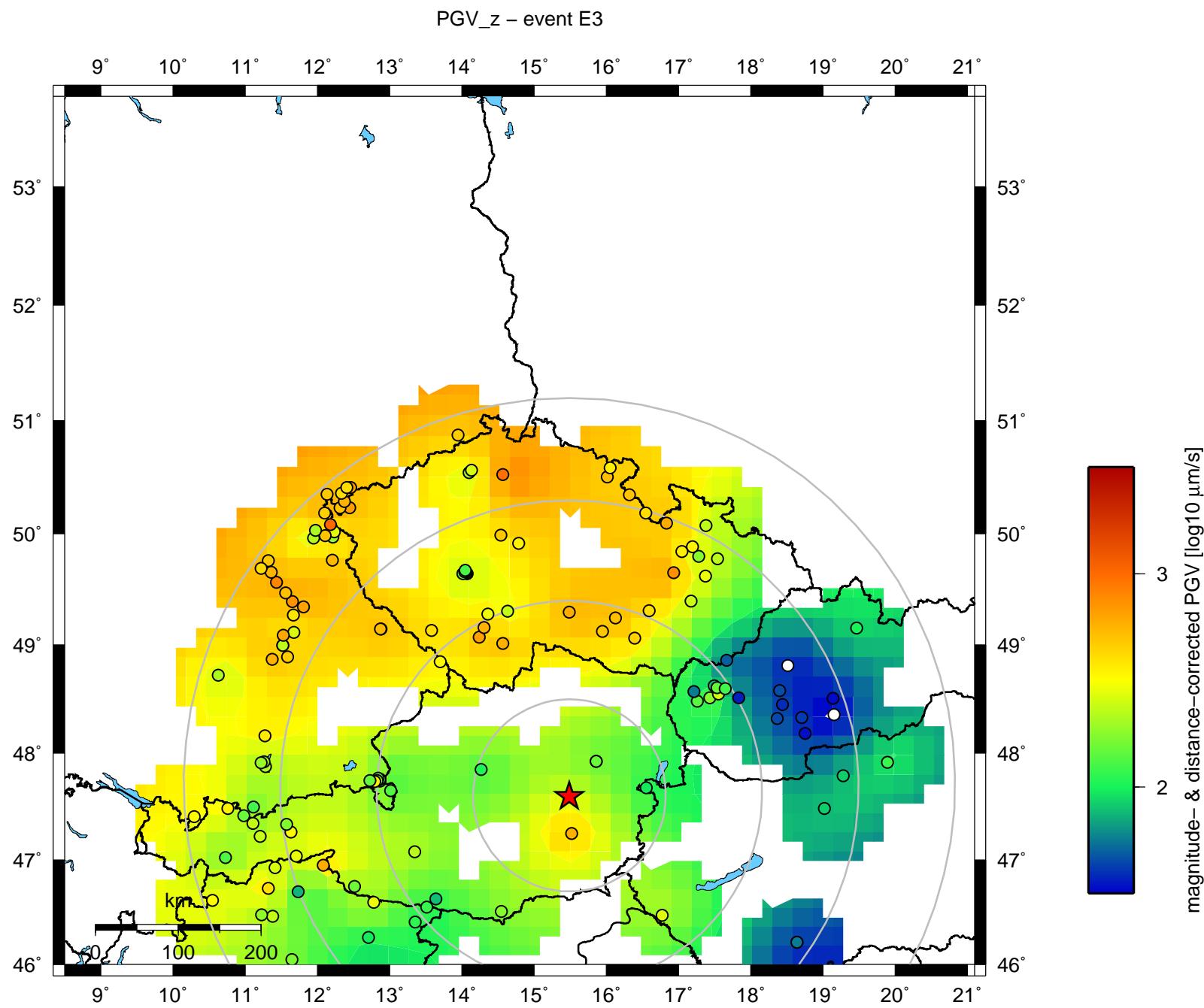


PGV<sub>z</sub> – event E1

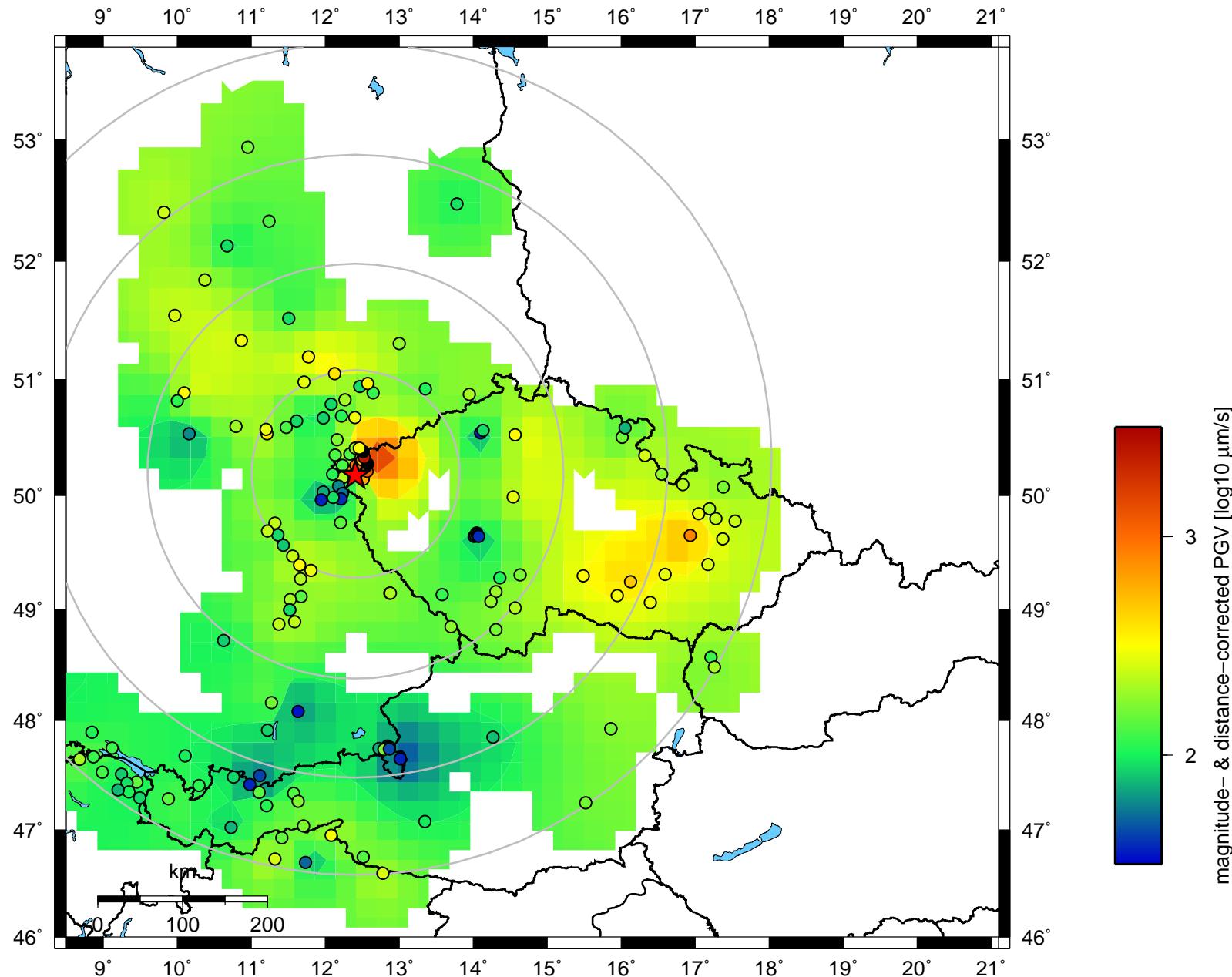


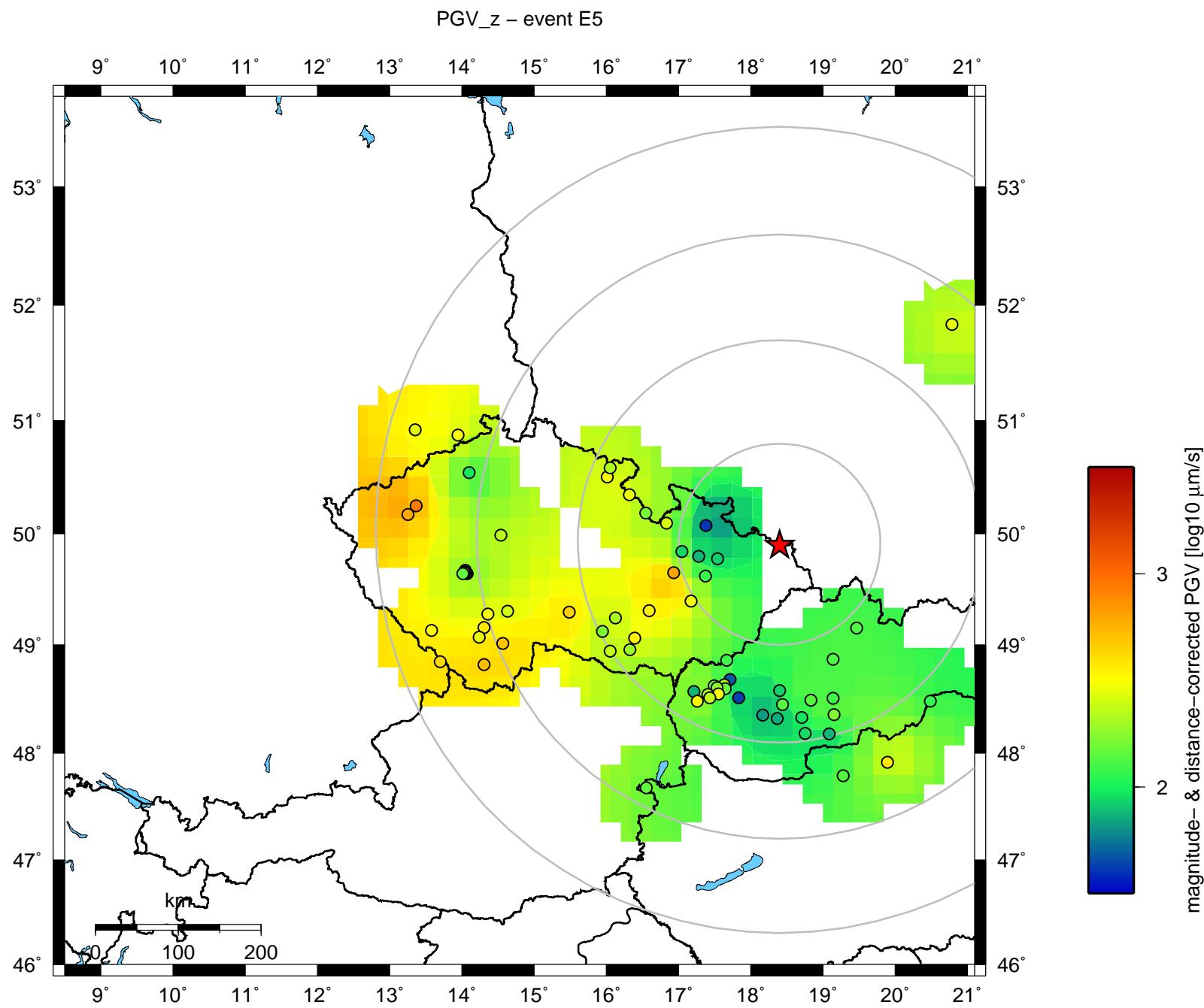
PGV<sub>z</sub> – event E2

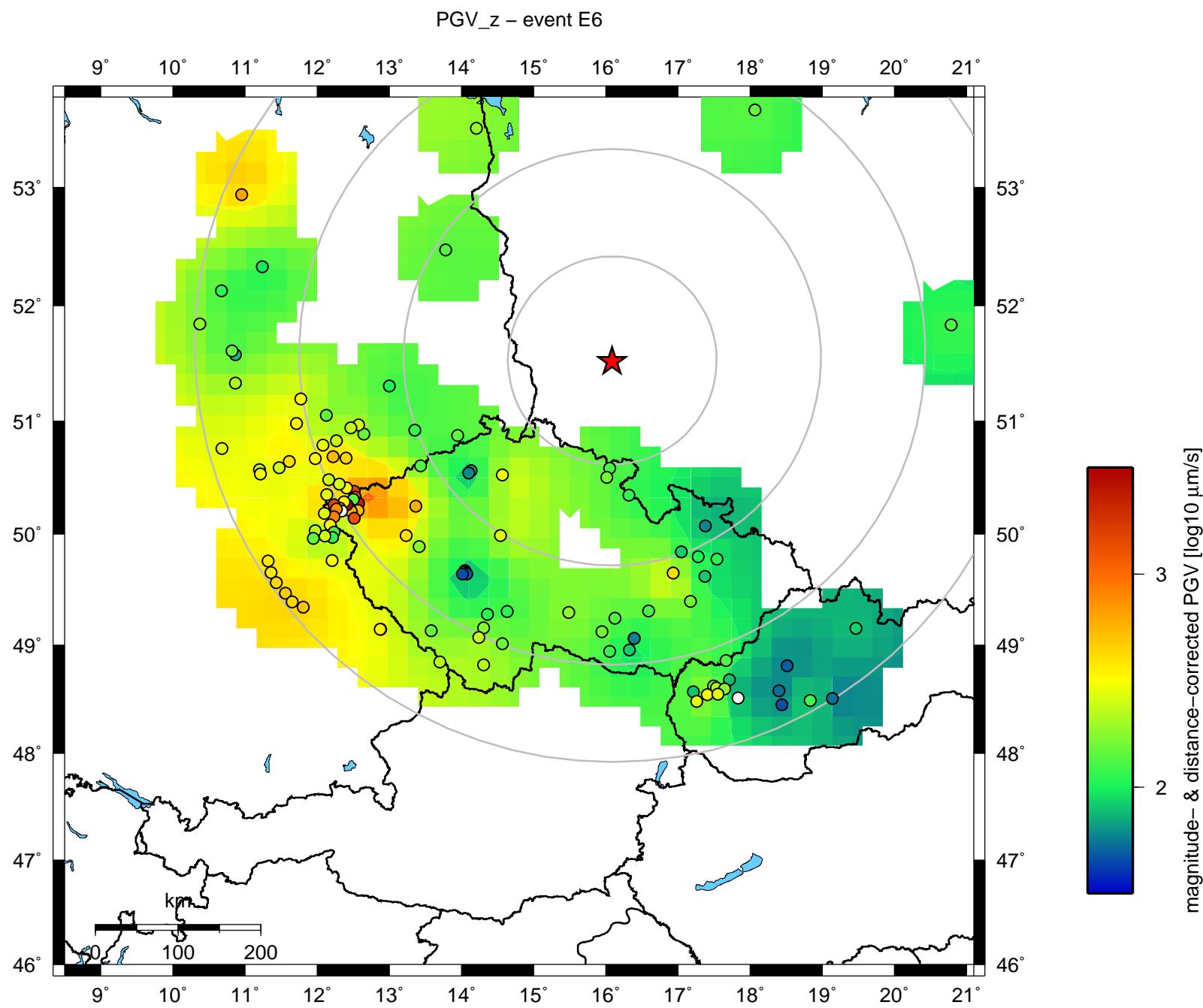




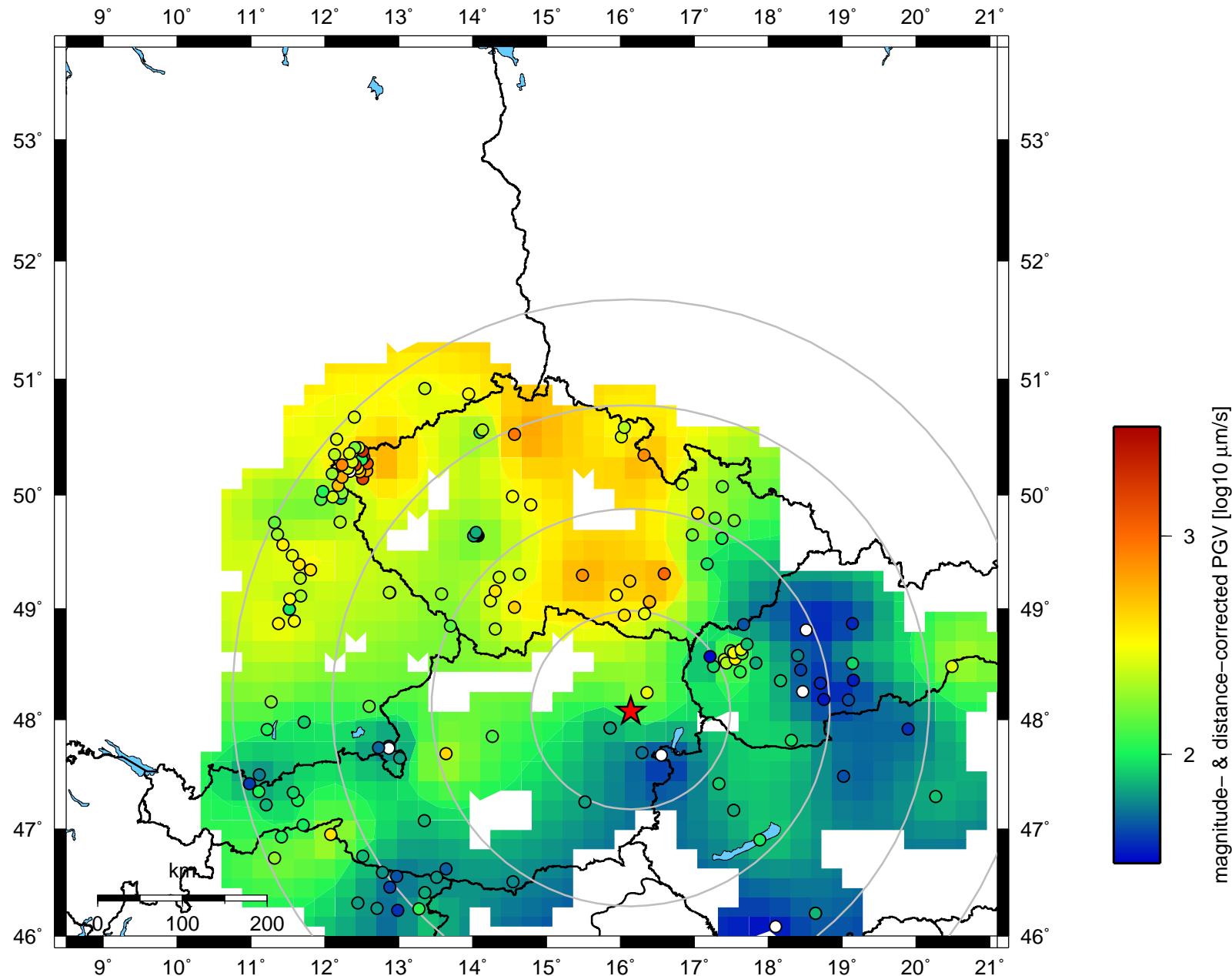
PGV<sub>z</sub> – event E4

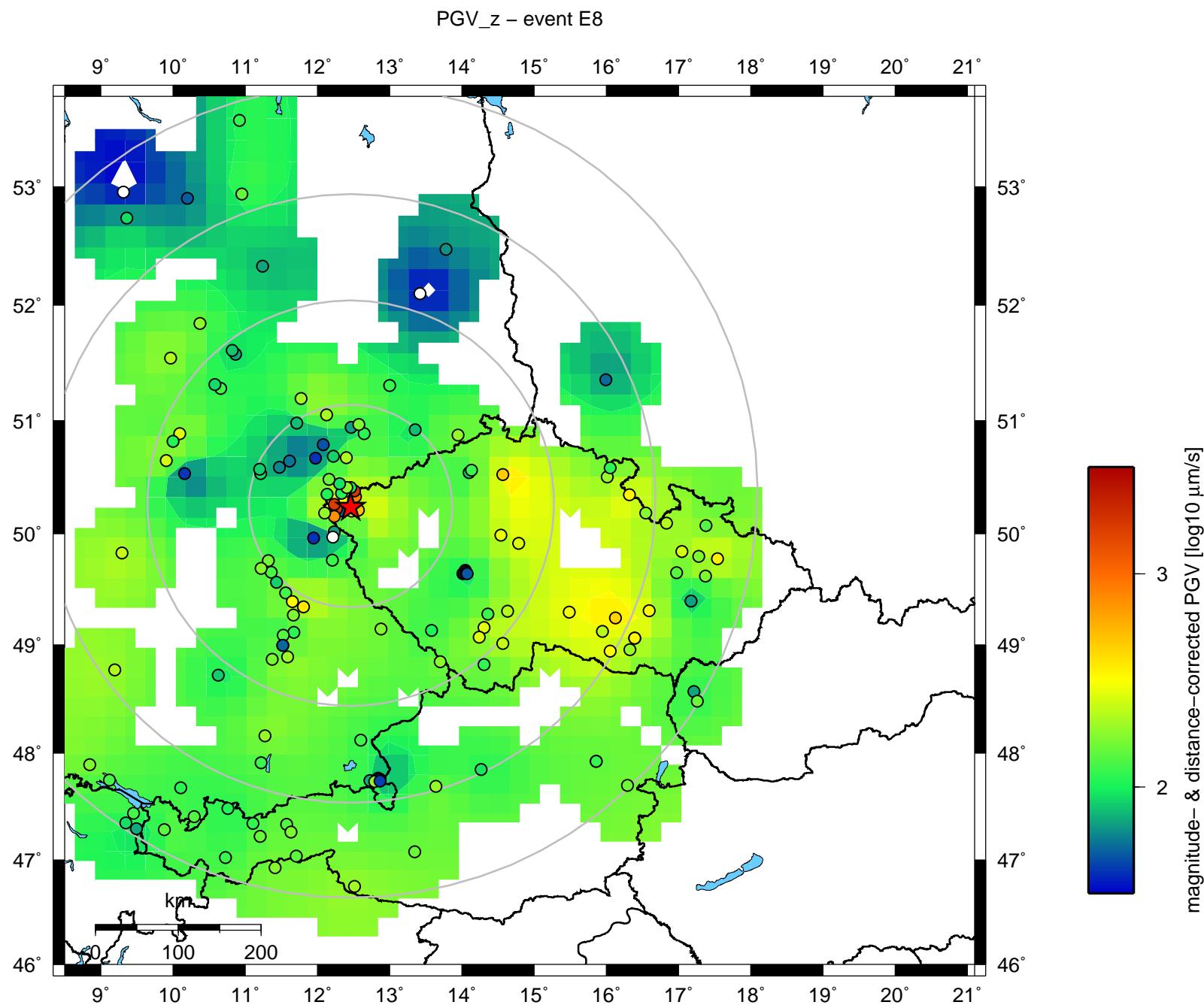


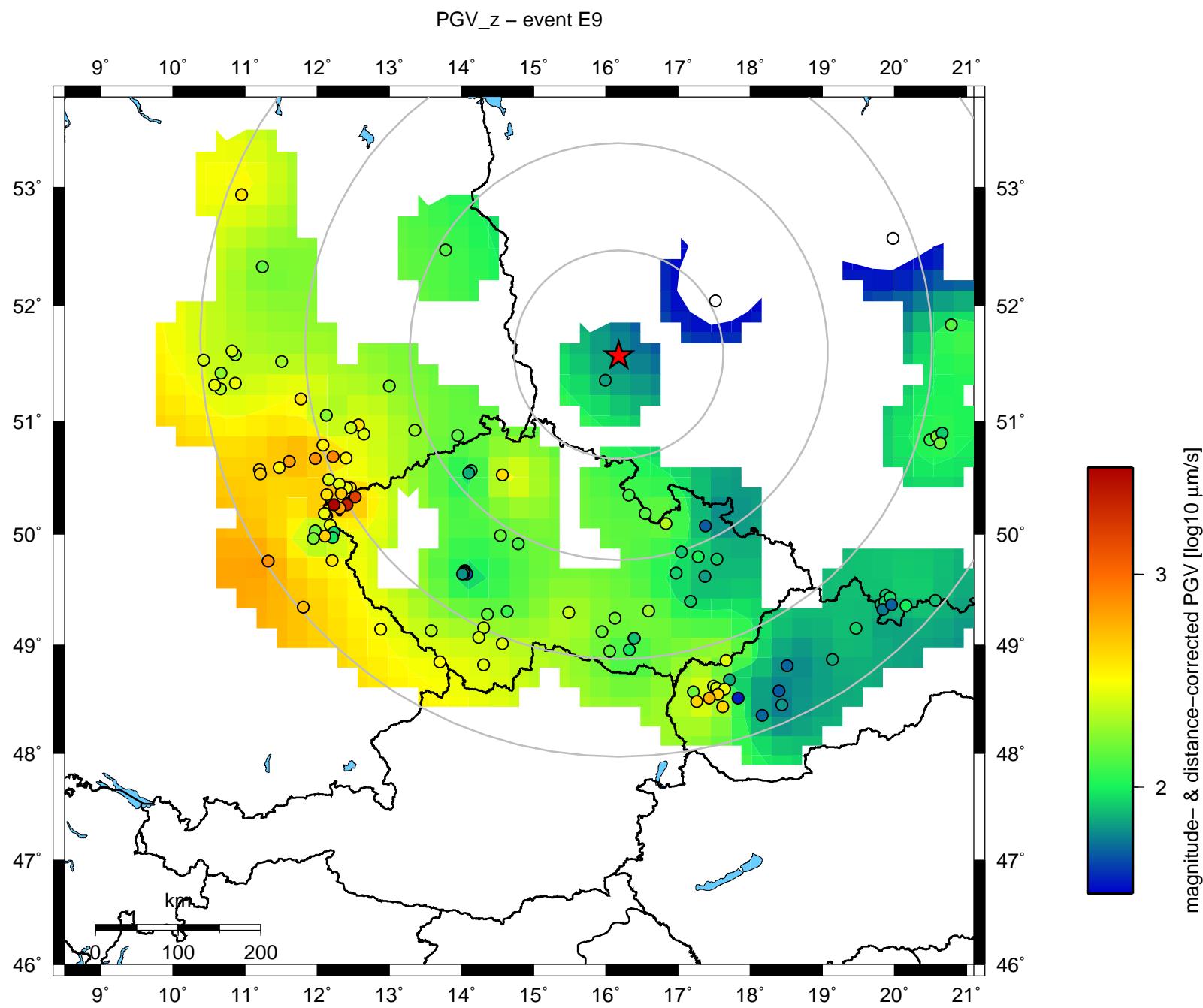




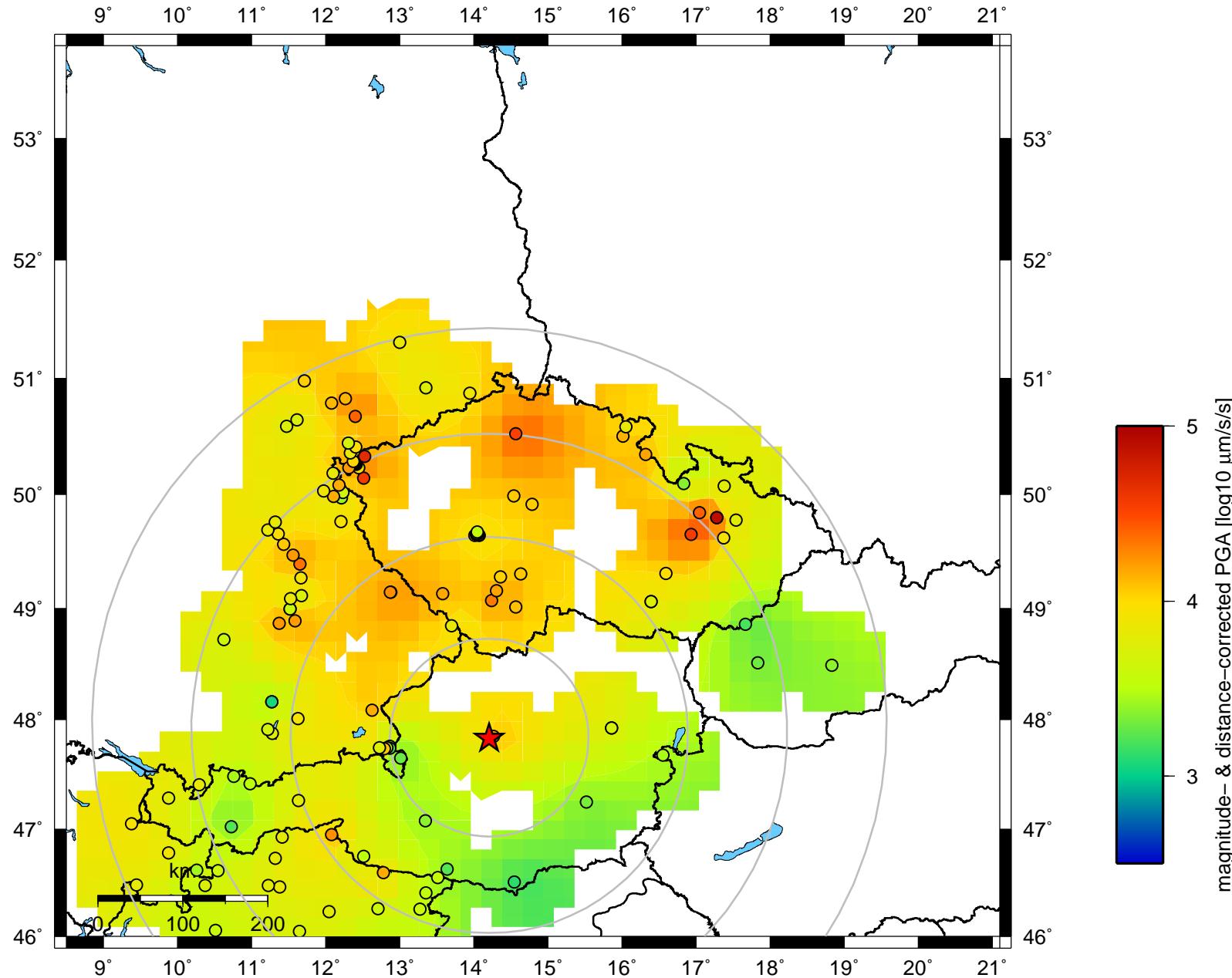
PGV<sub>z</sub> – event E7

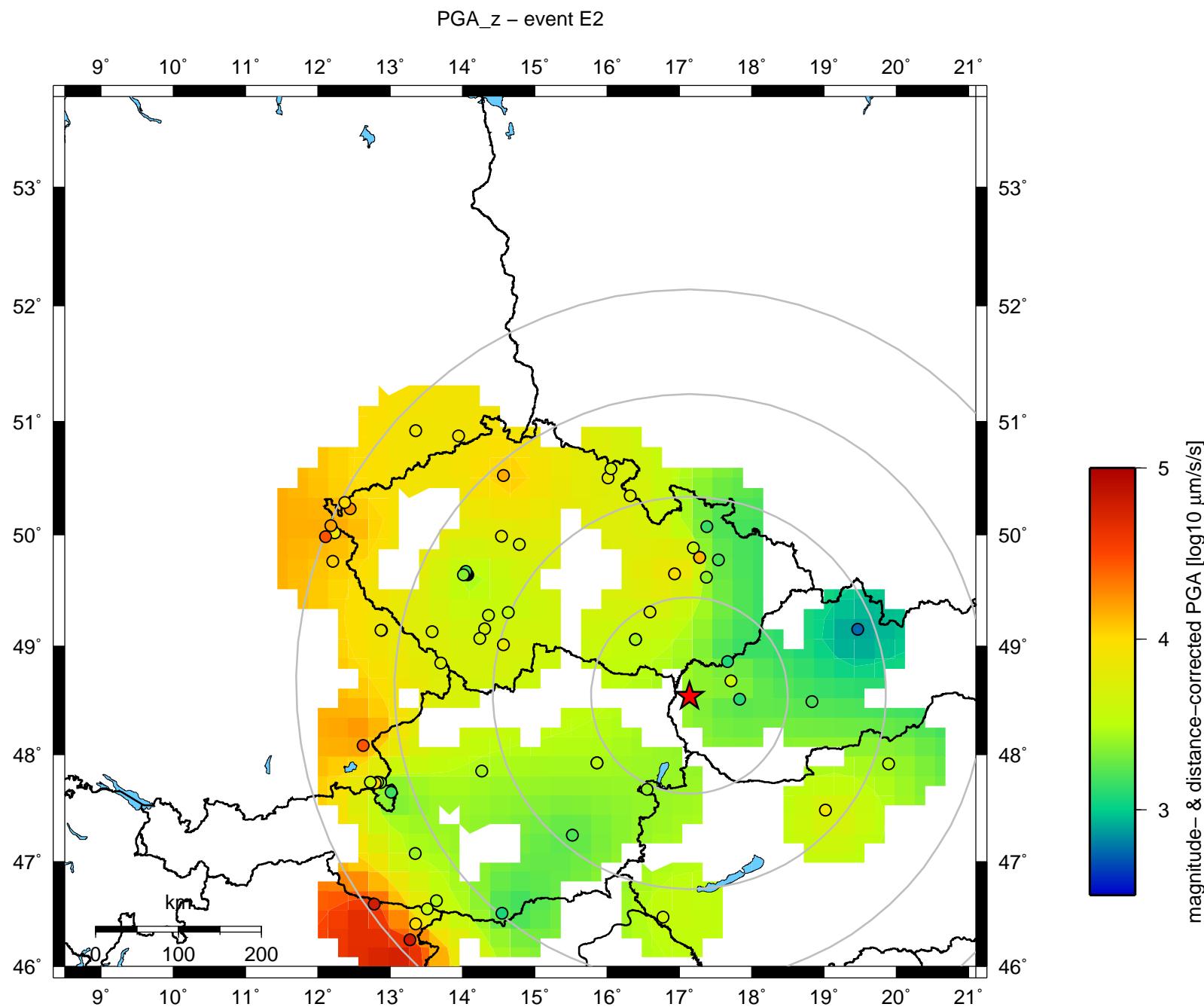


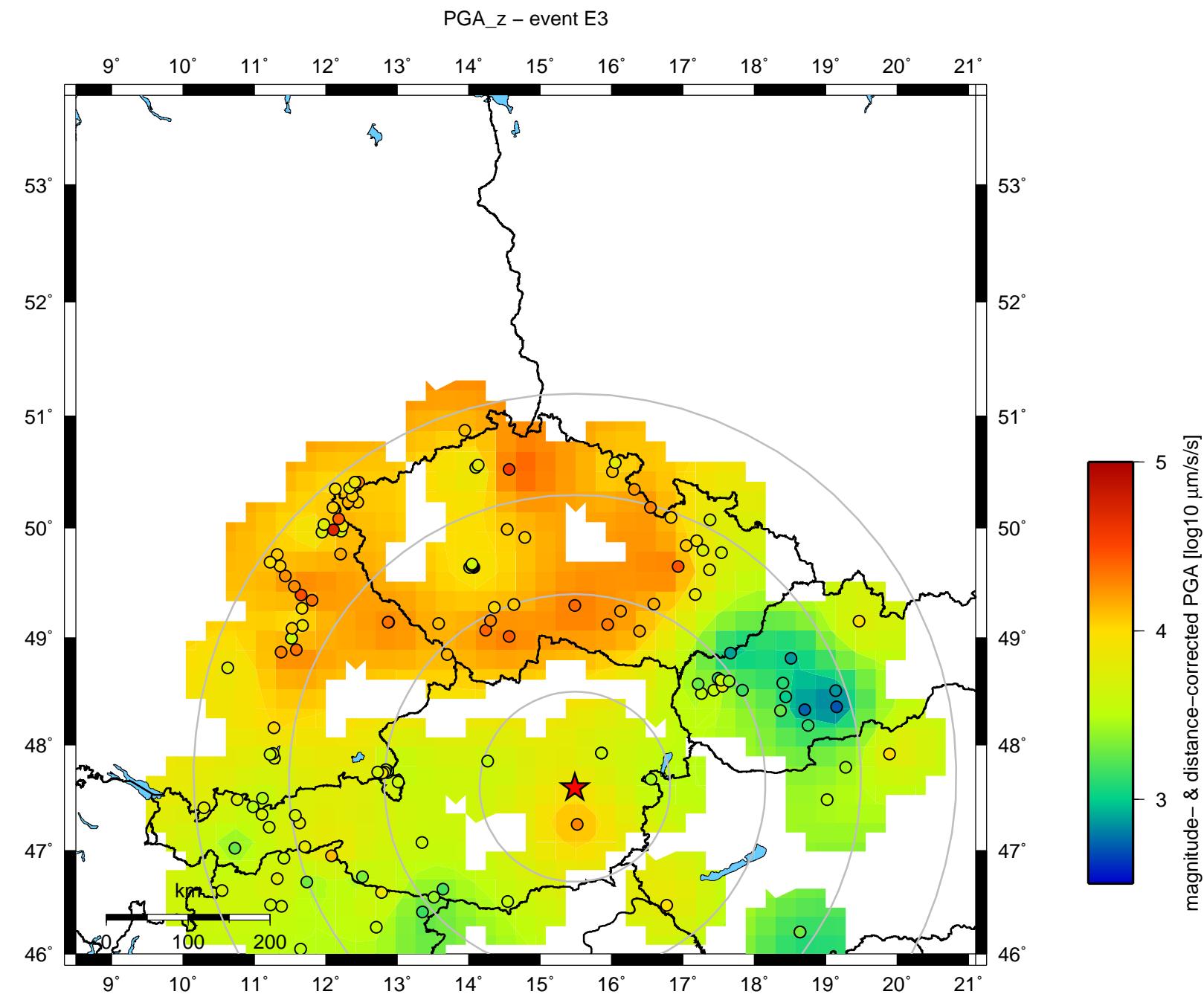


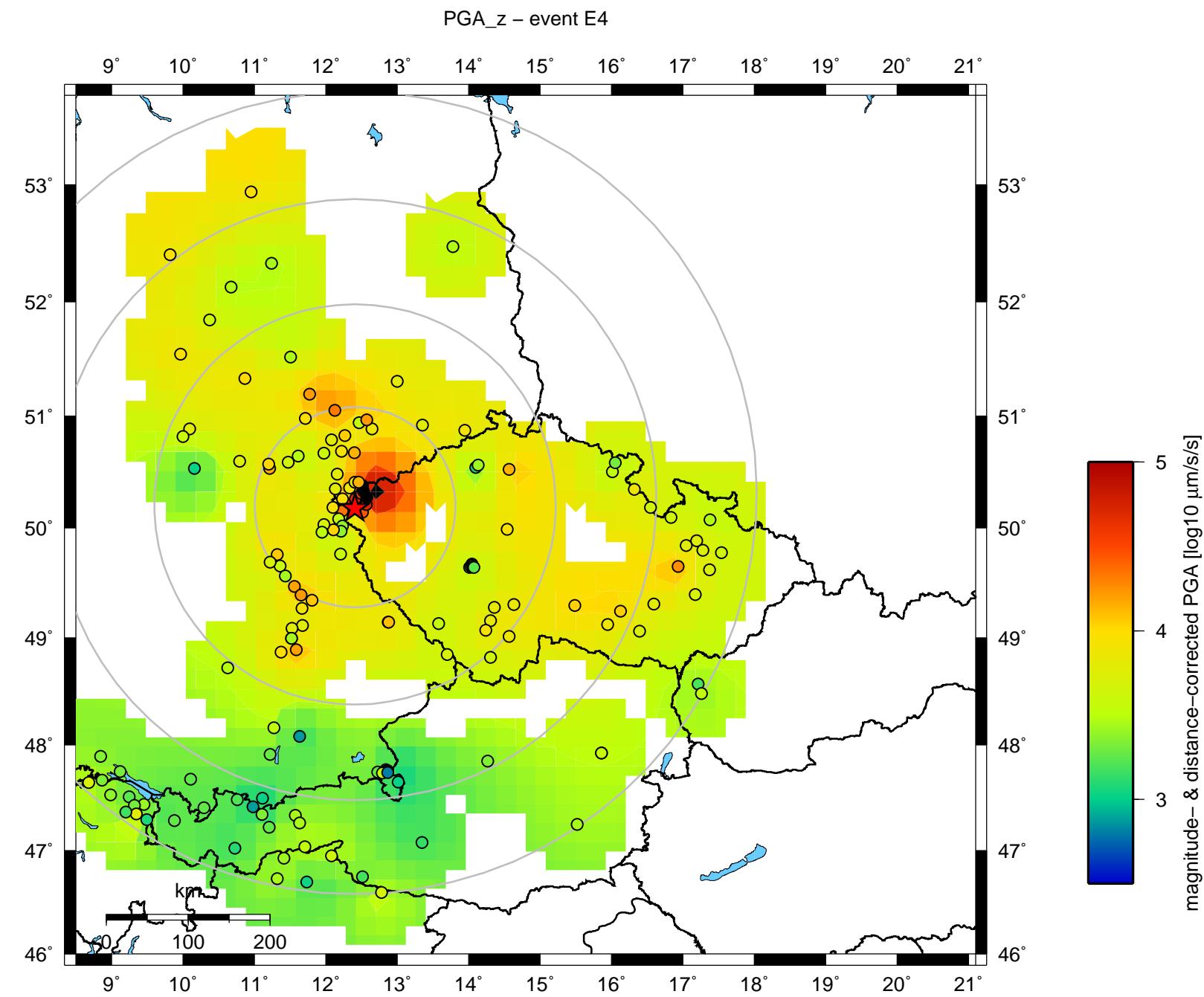


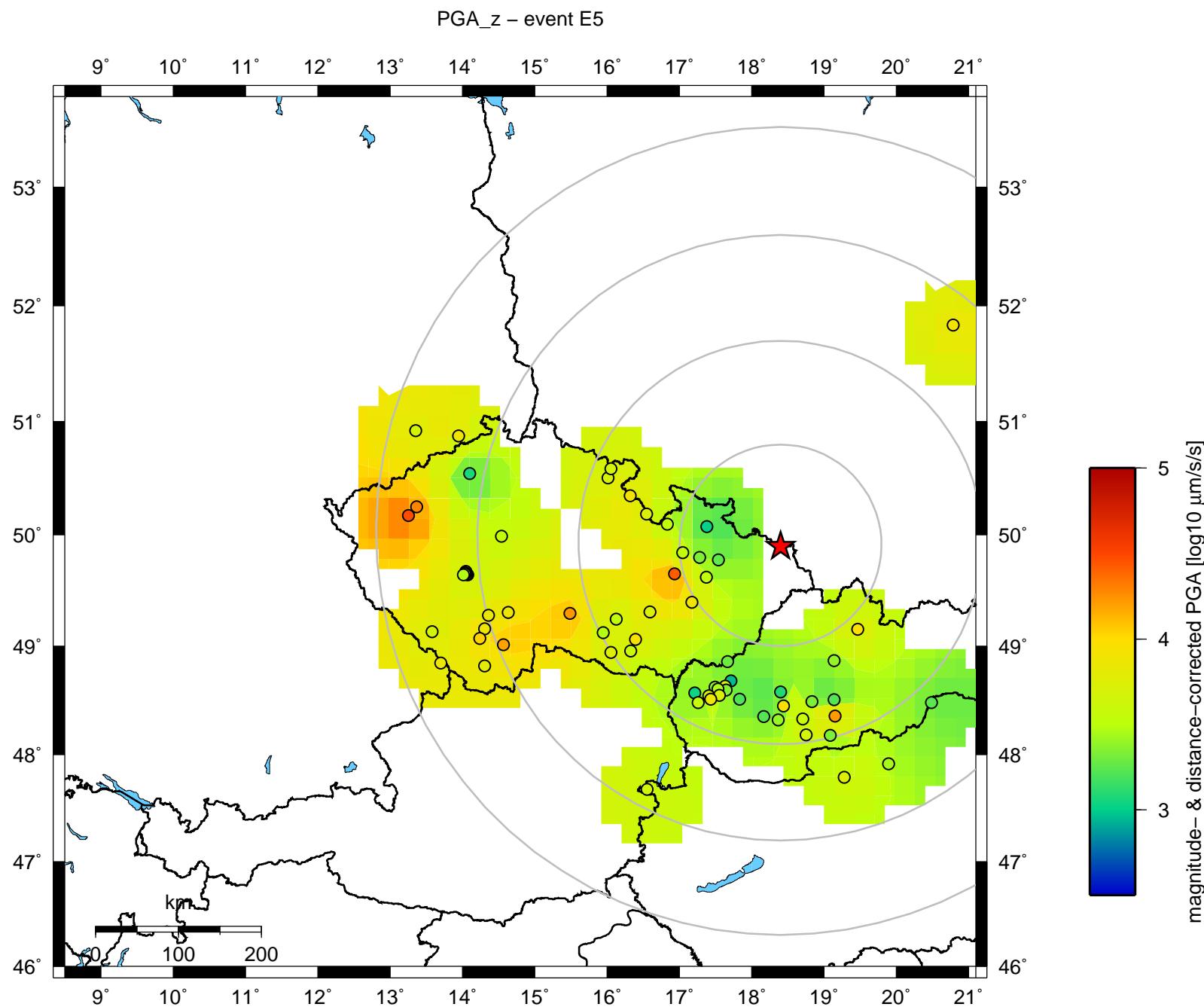
PGA<sub>z</sub> – event E1

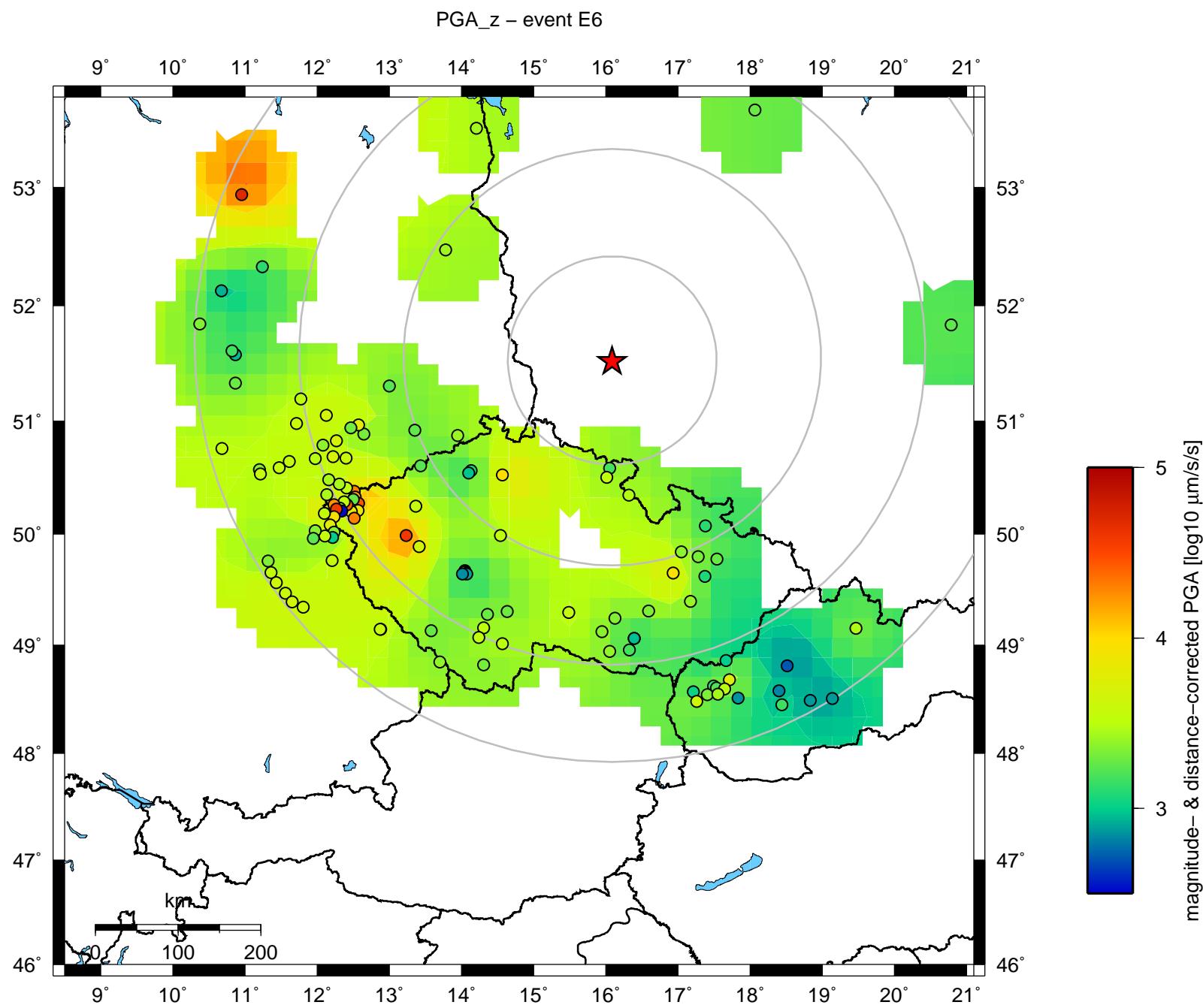




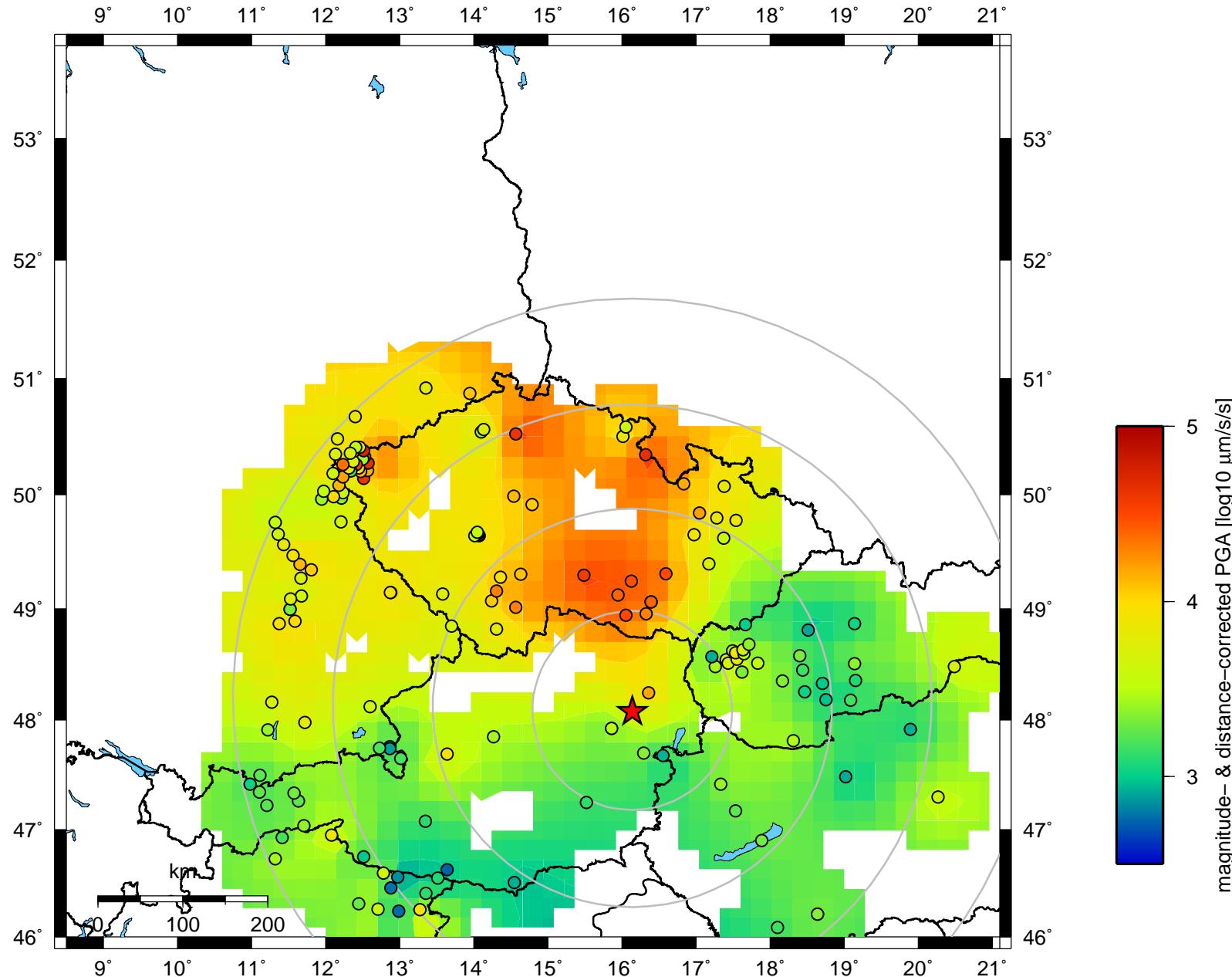


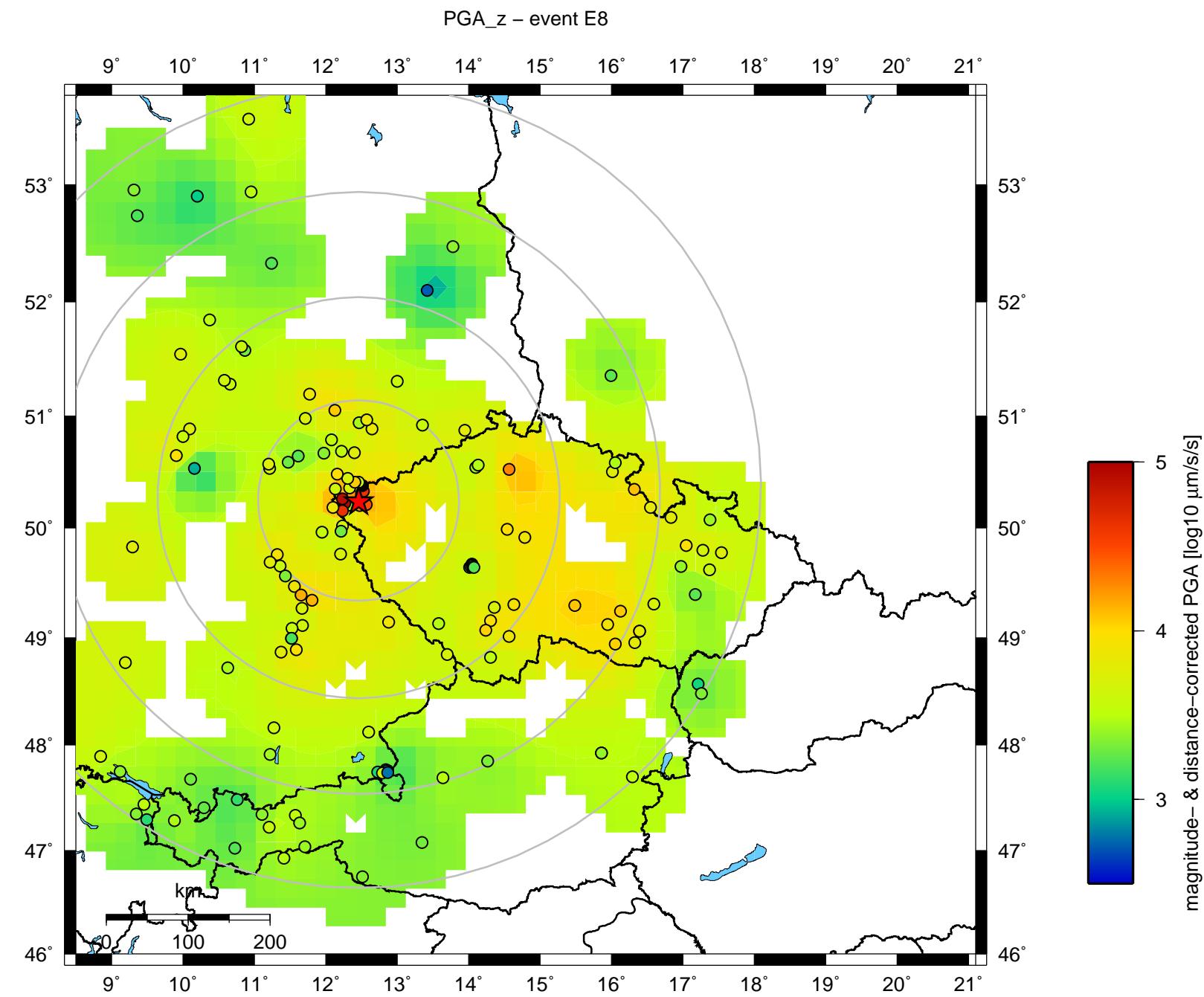


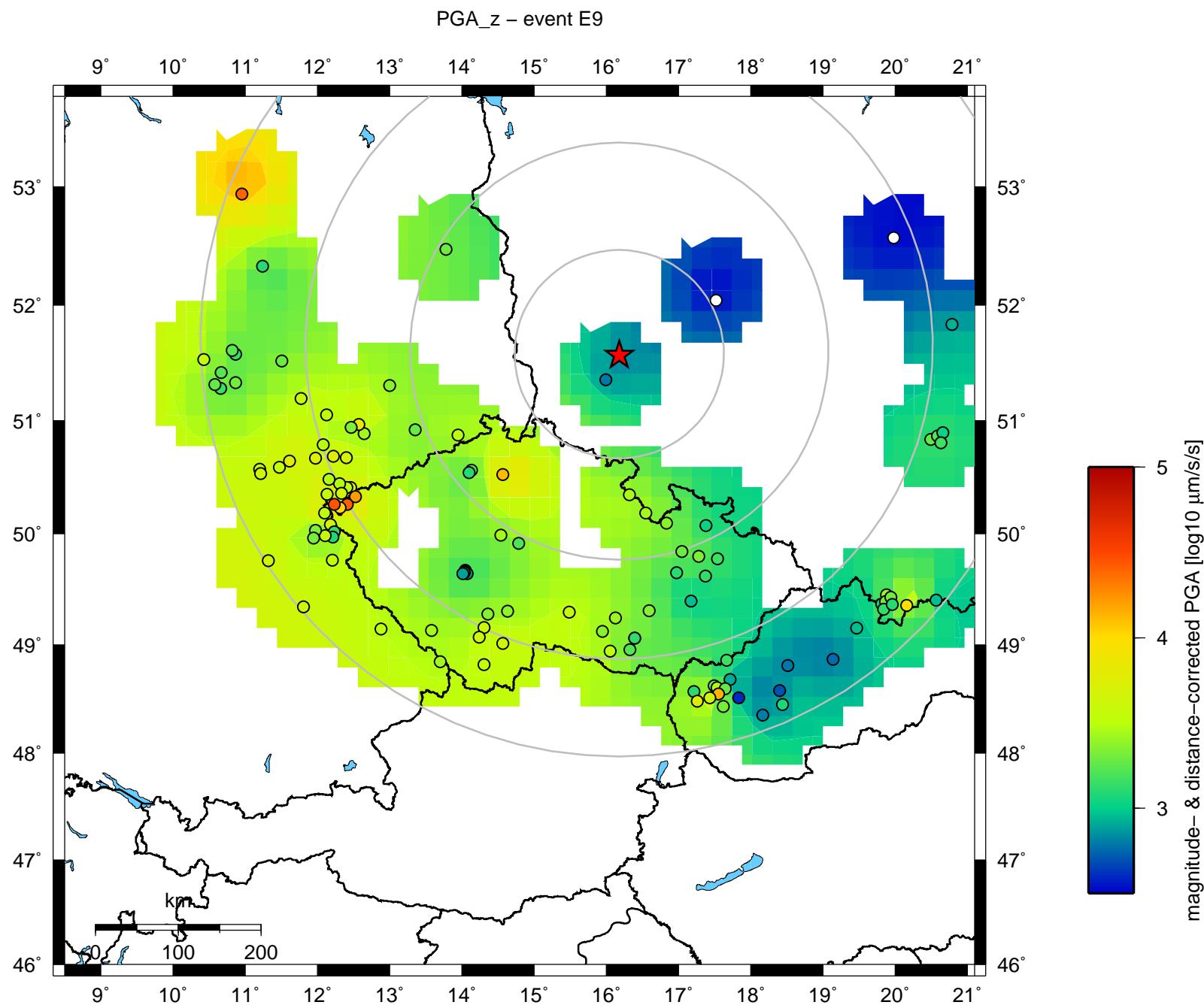




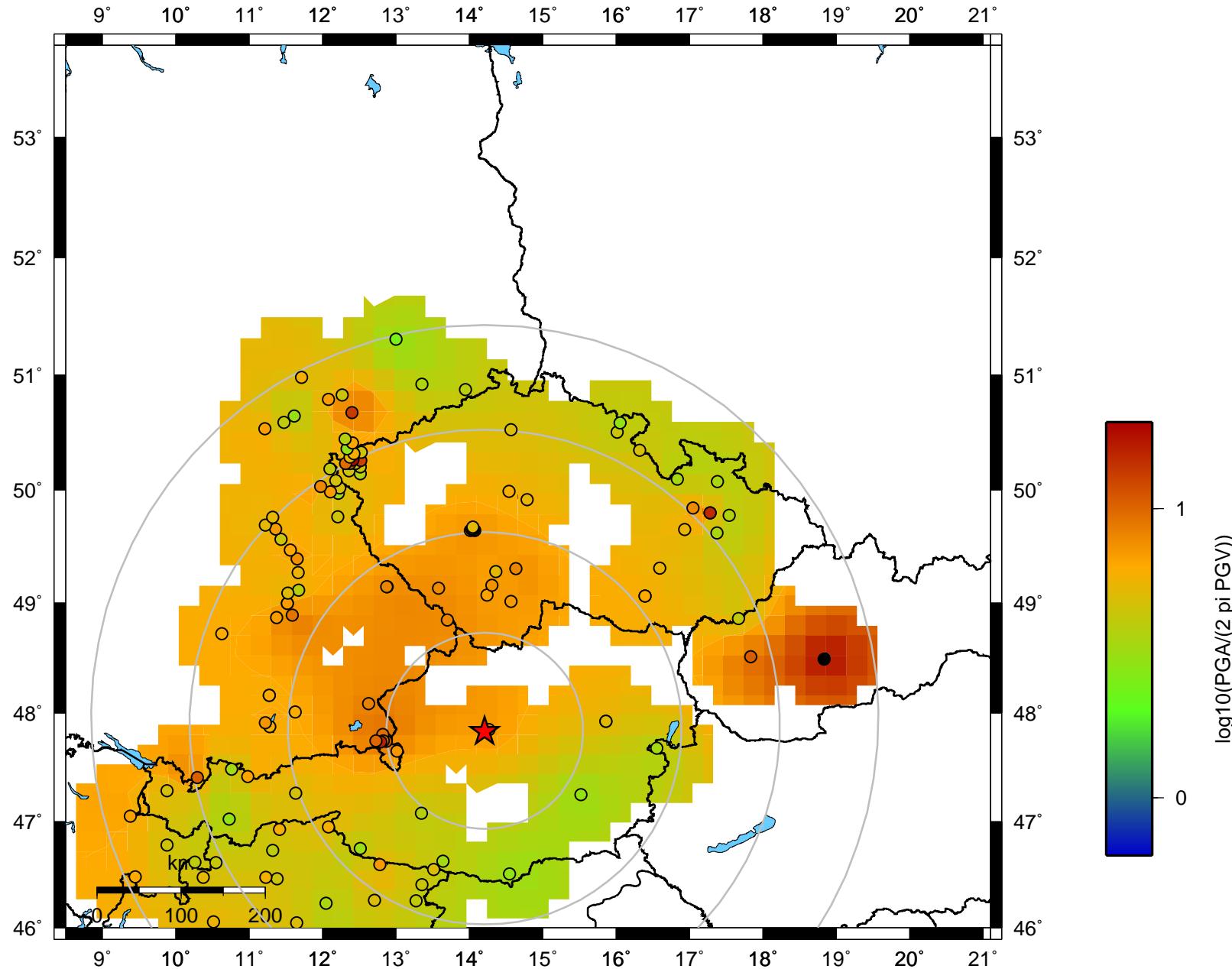
PGA<sub>z</sub> – event E7



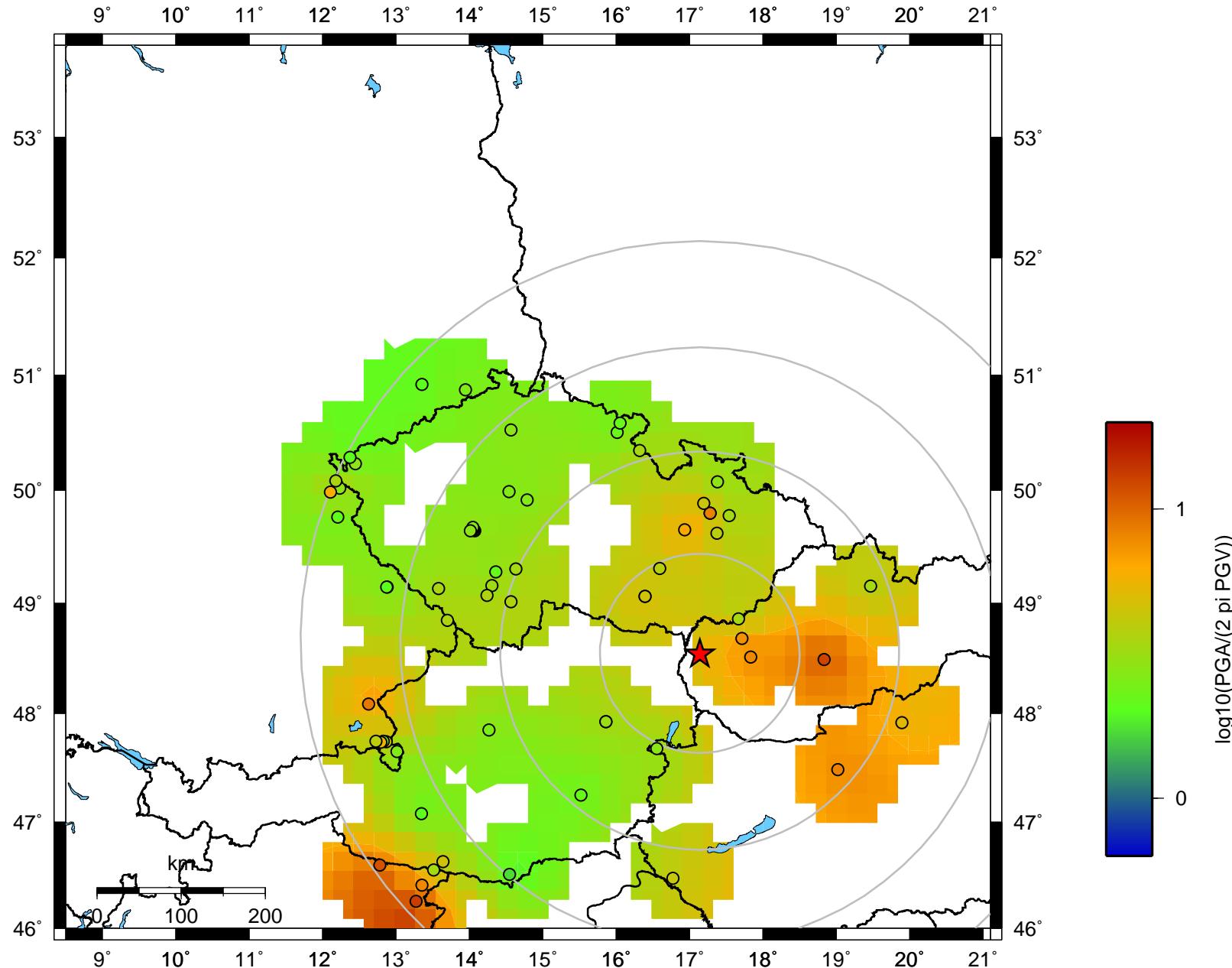




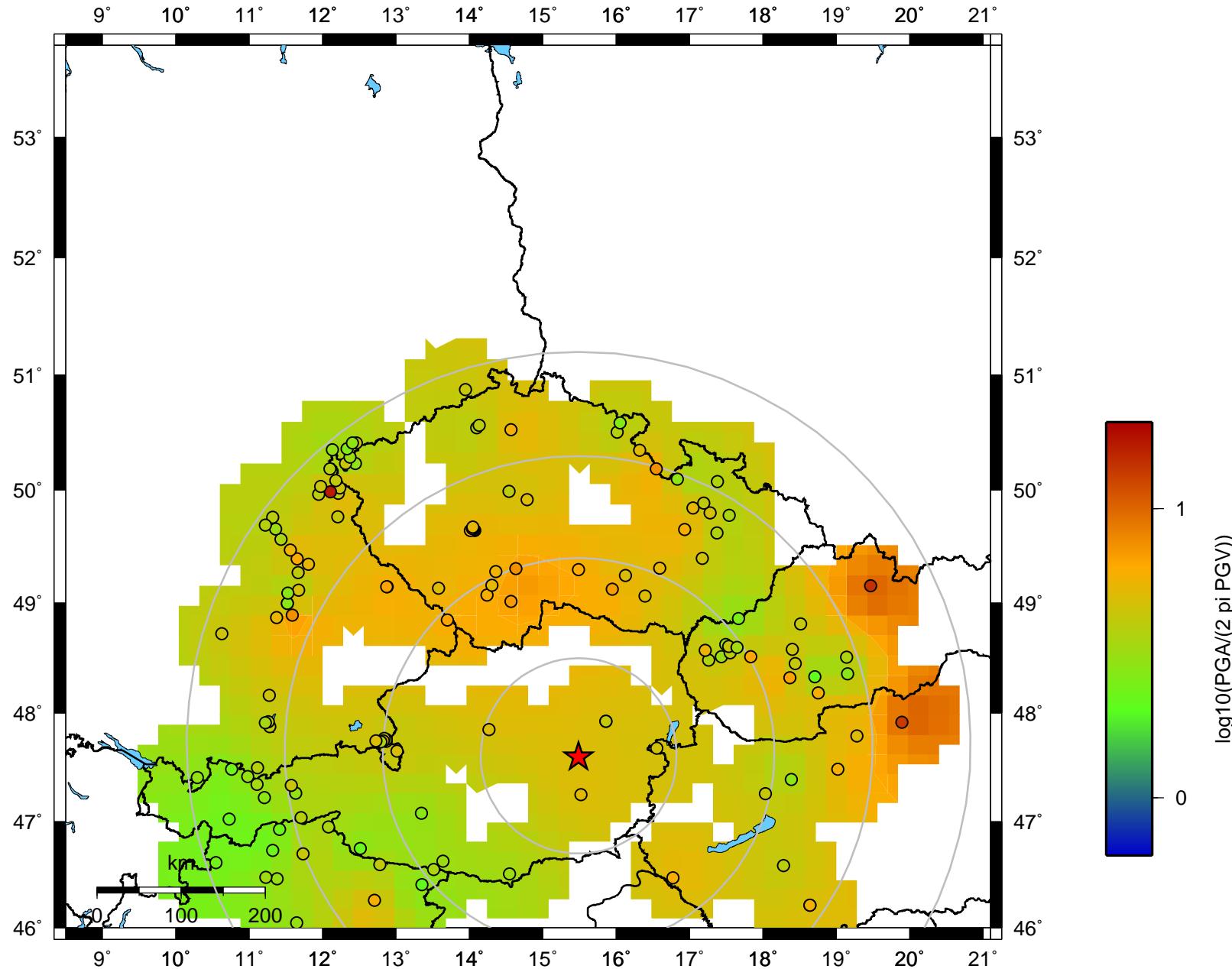
PGA to PGV – event E1



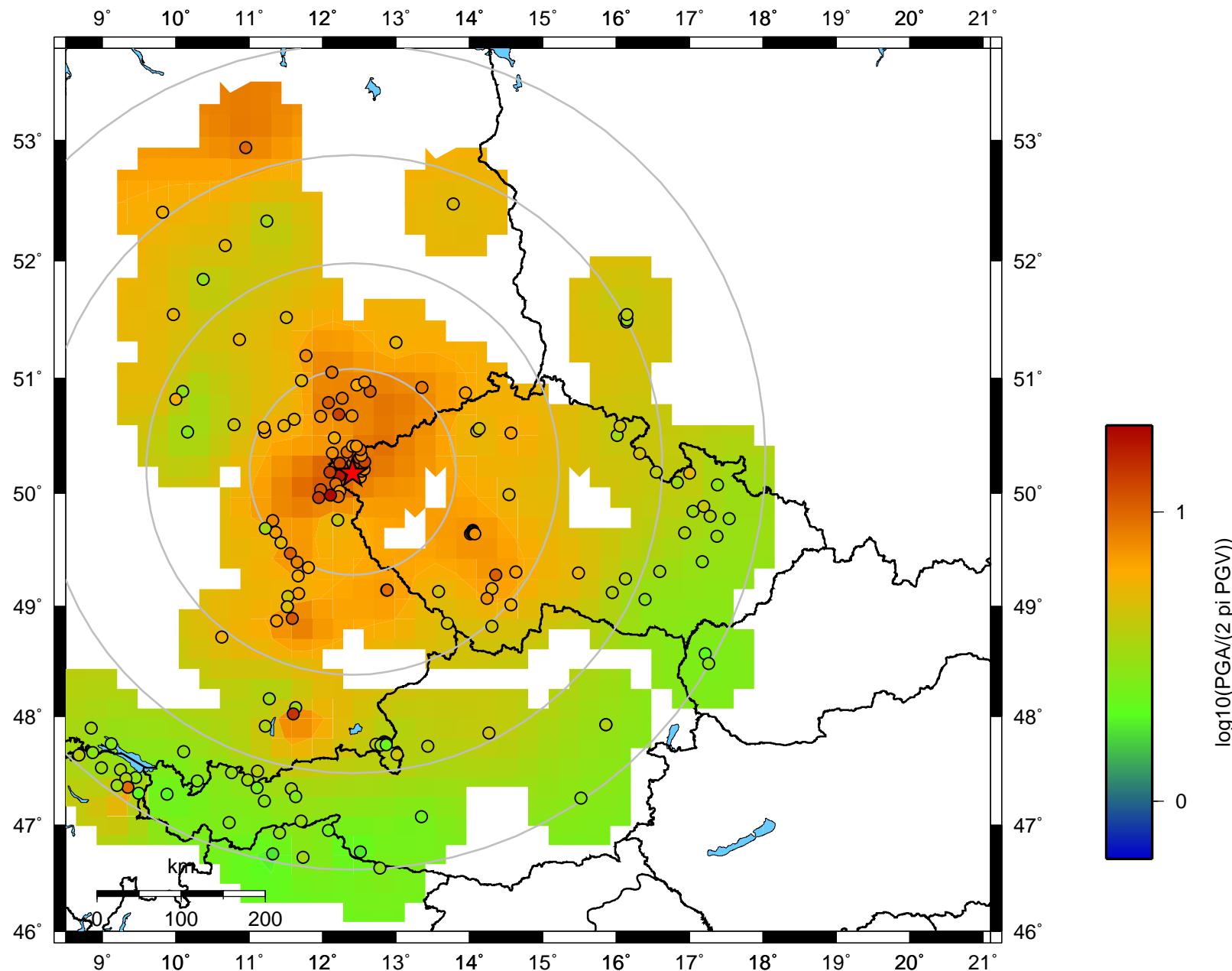
PGA to PGV – event E2



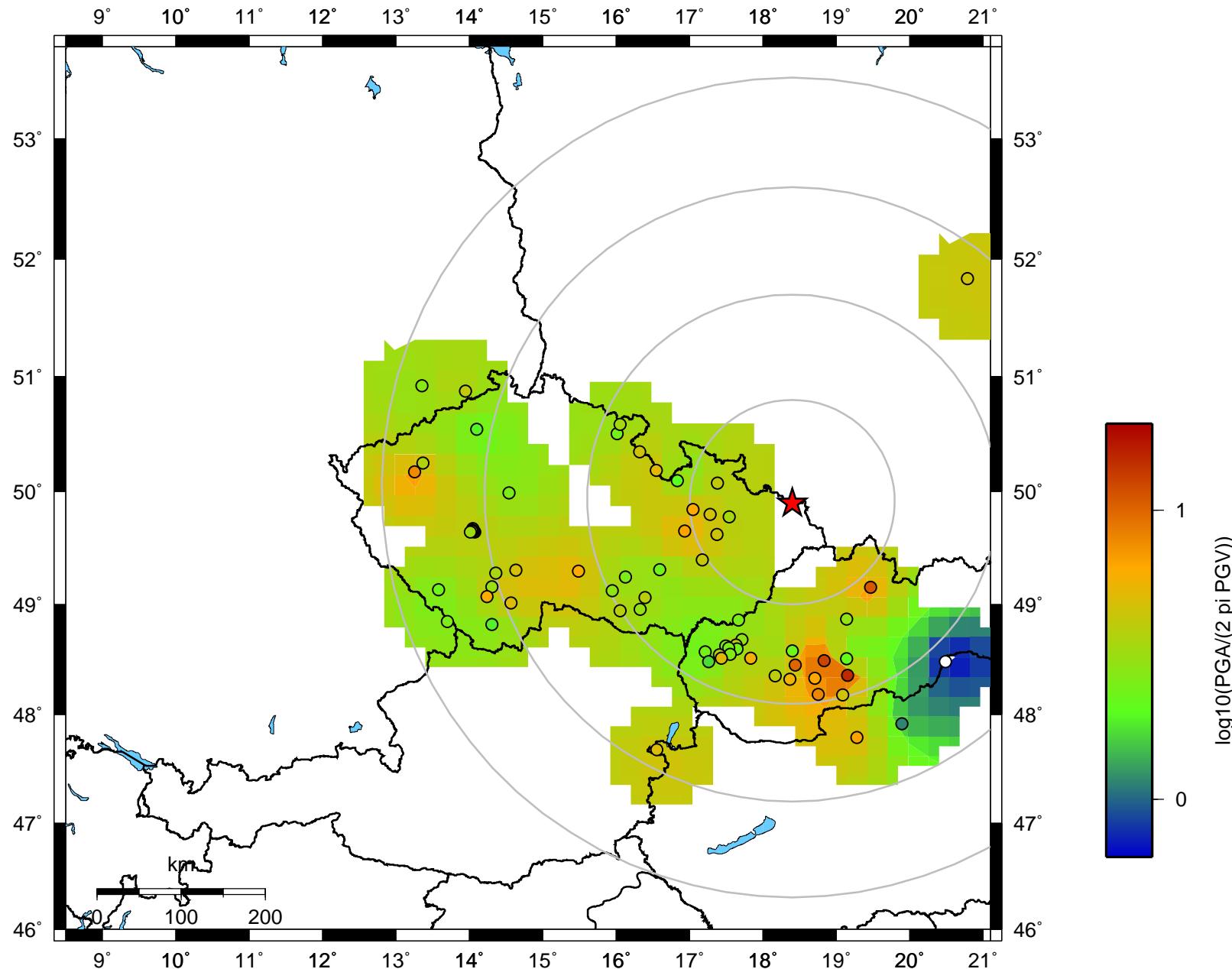
PGA to PGV – event E3



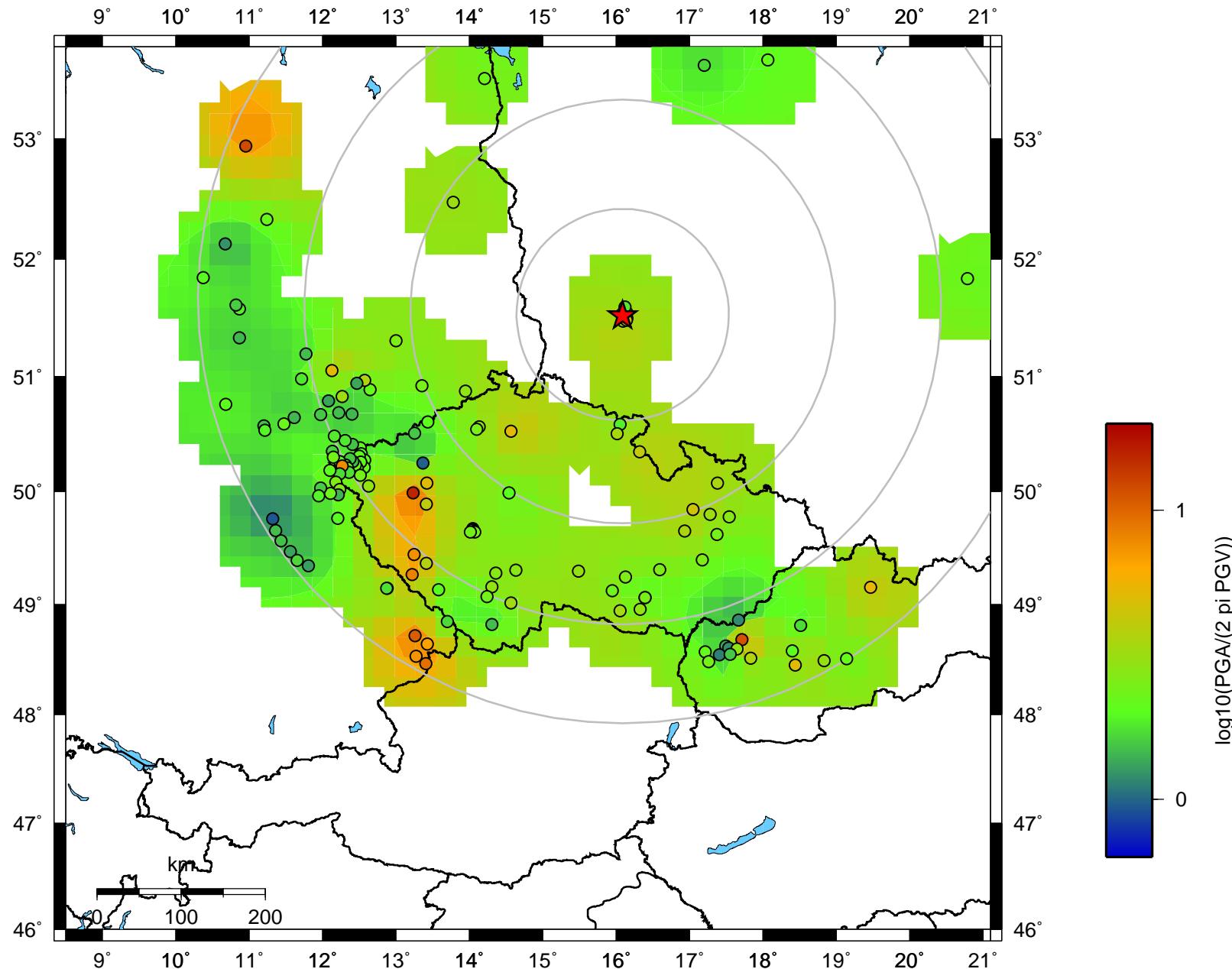
PGA to PGV – event E4



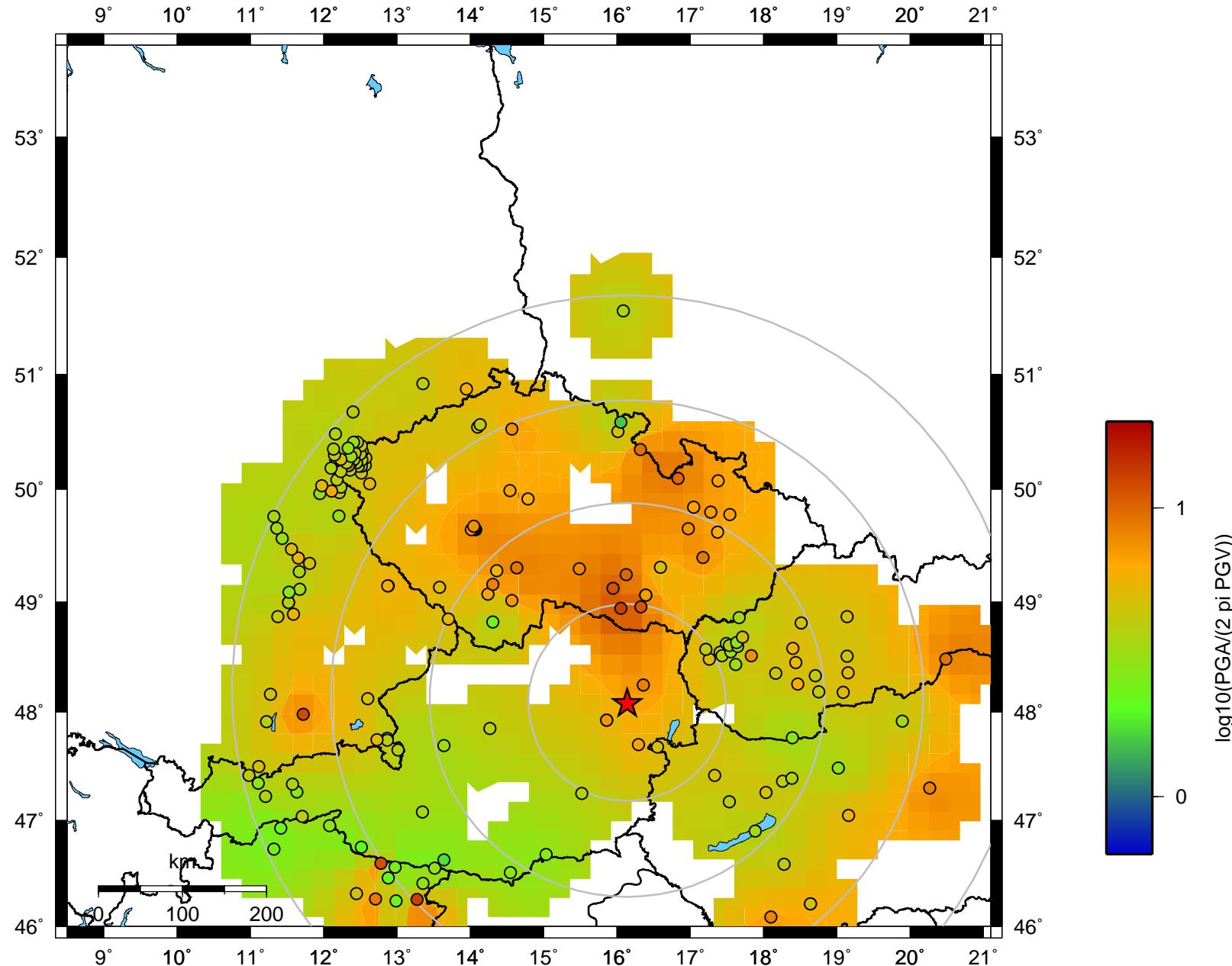
PGA to PGV – event E5



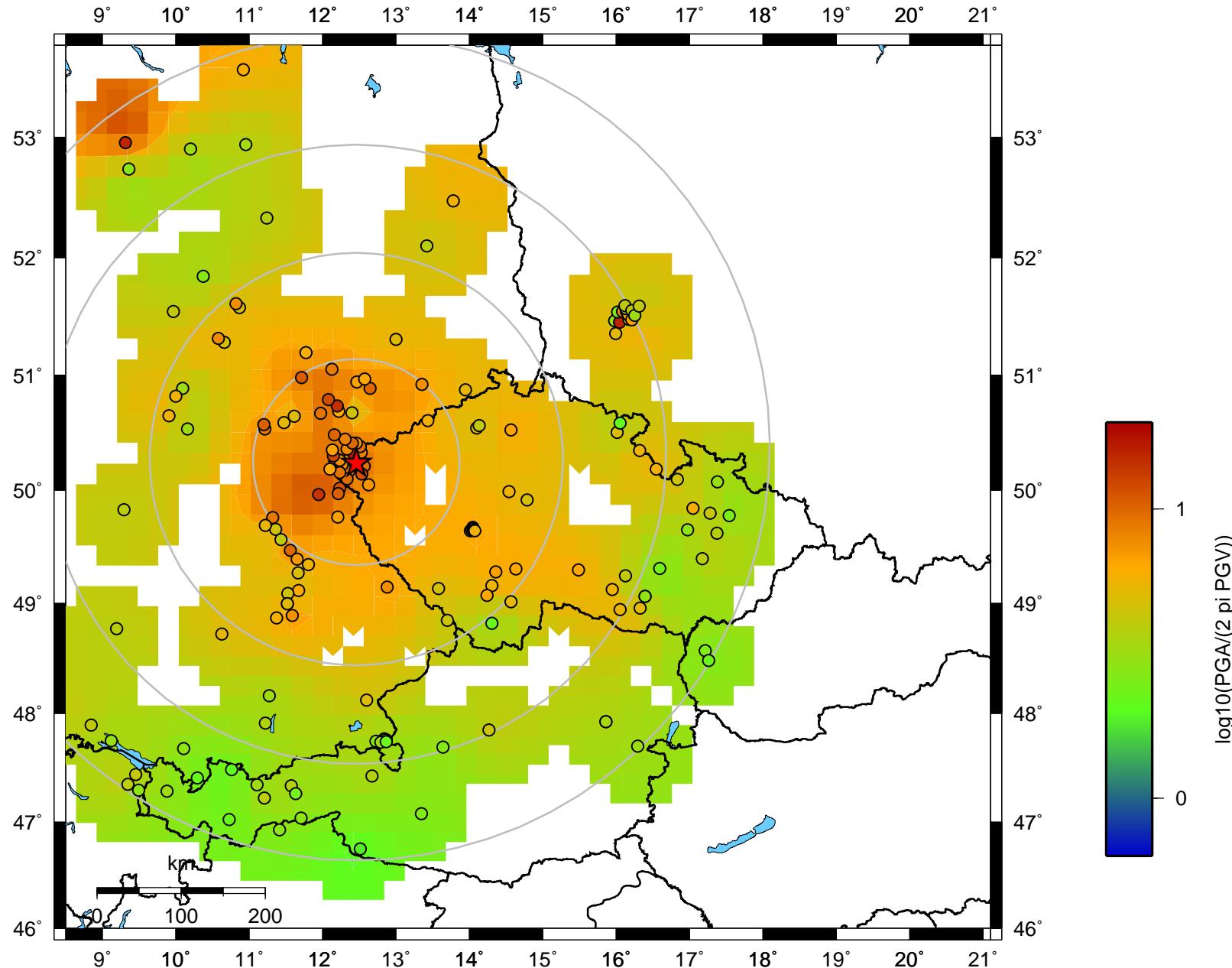
PGA to PGV – event E6



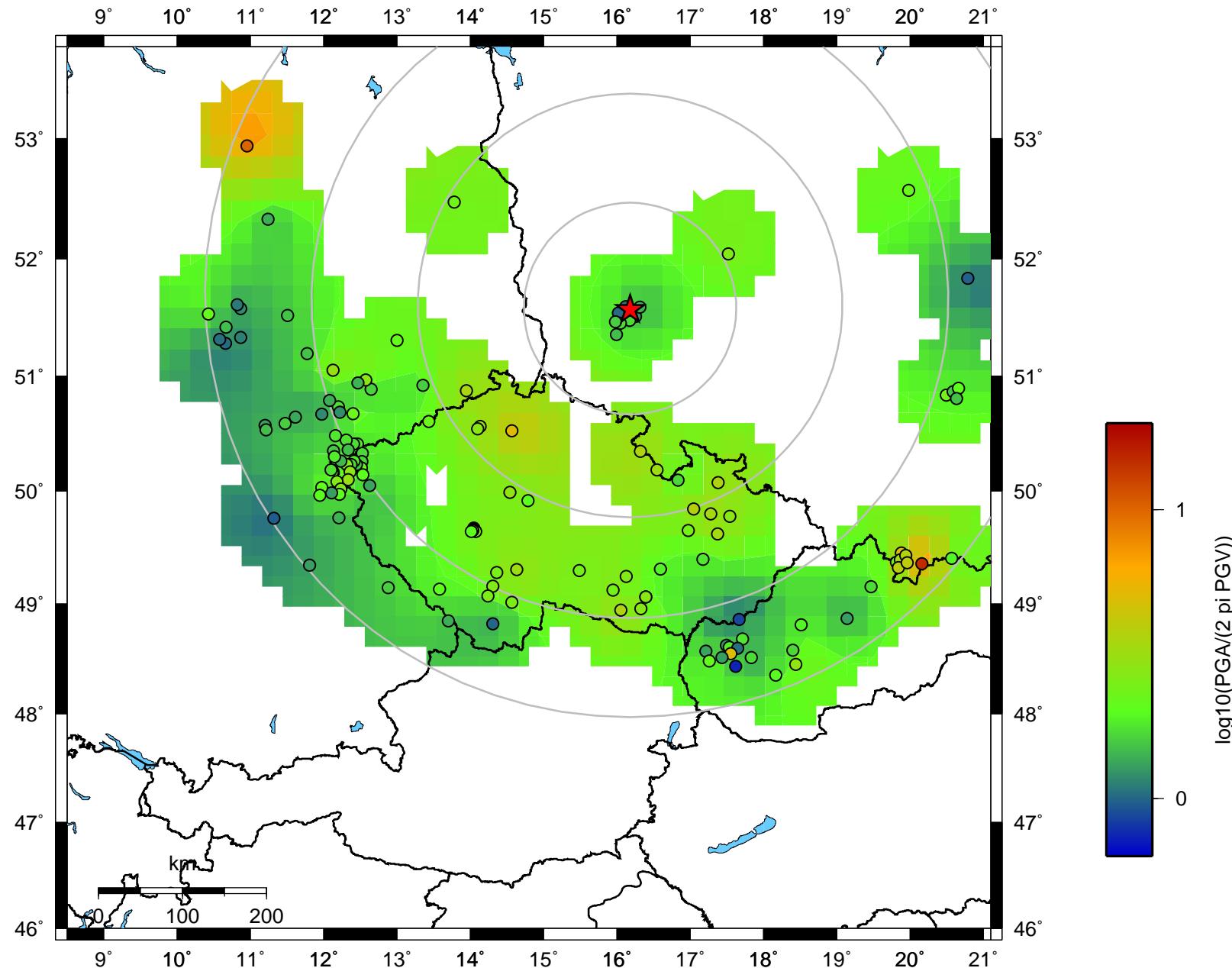
PGA to PGV – event E7



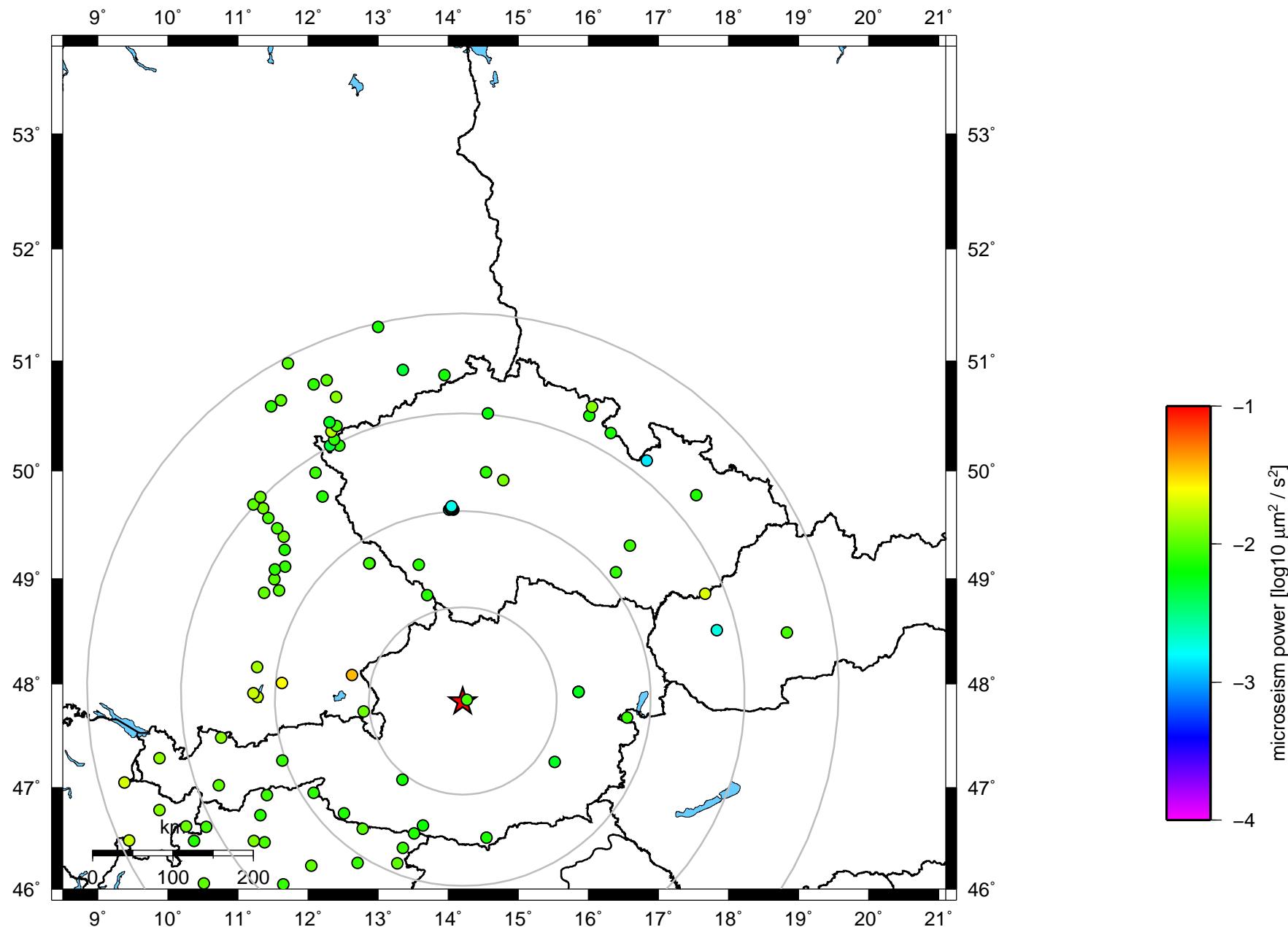
PGA to PGV – event E8



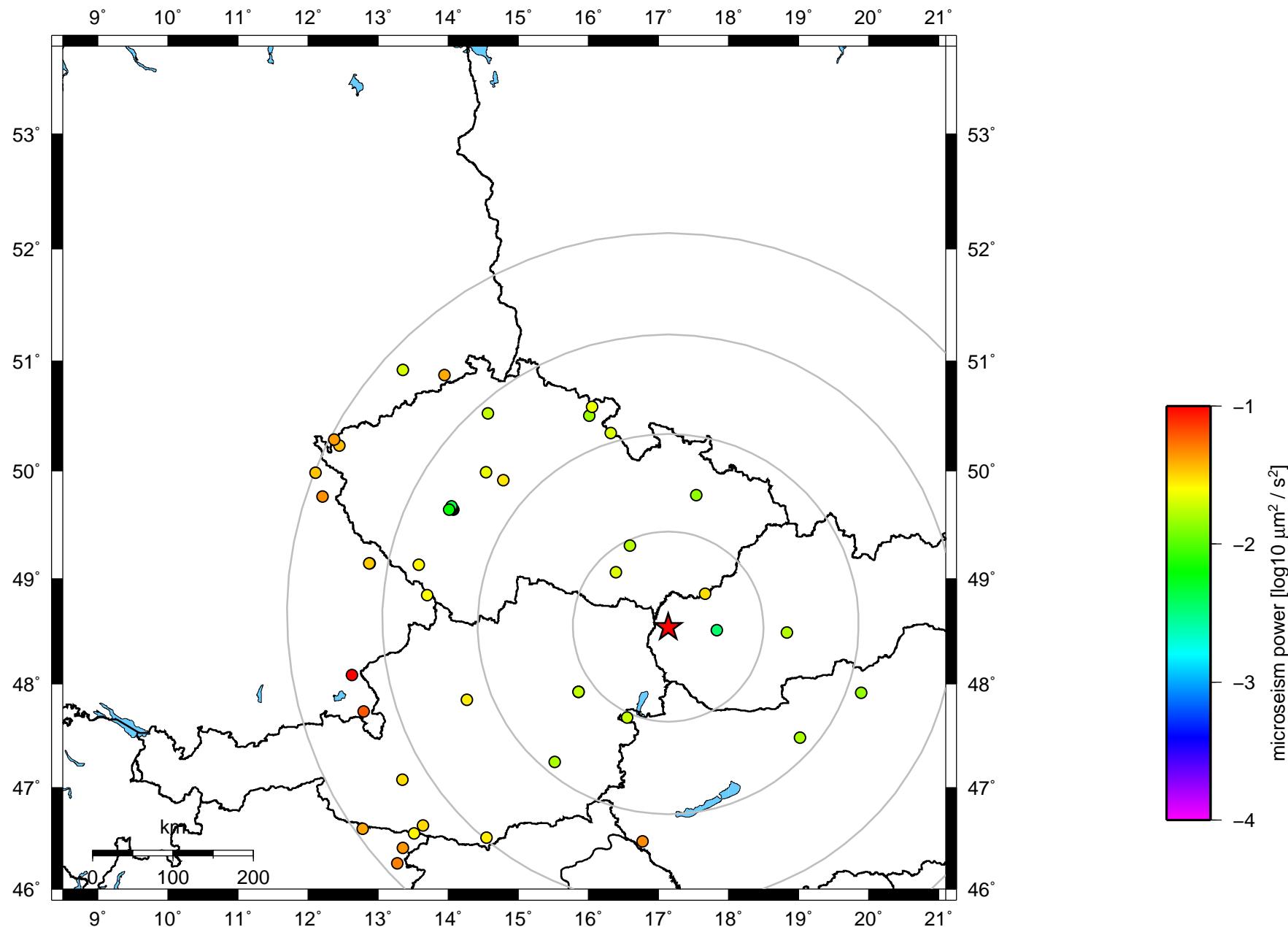
PGA to PGV – event E9



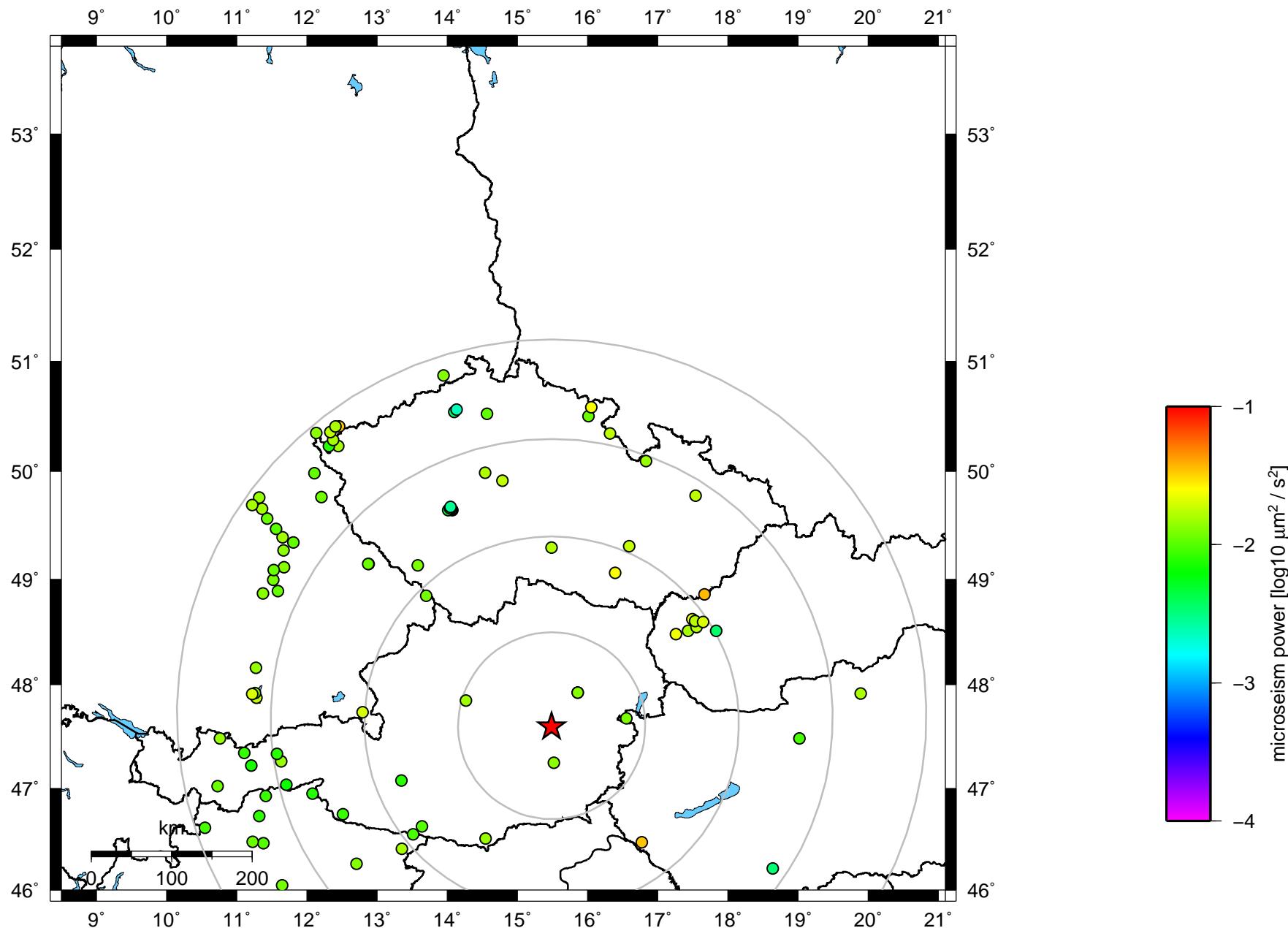
### microseism amplitude – event E1



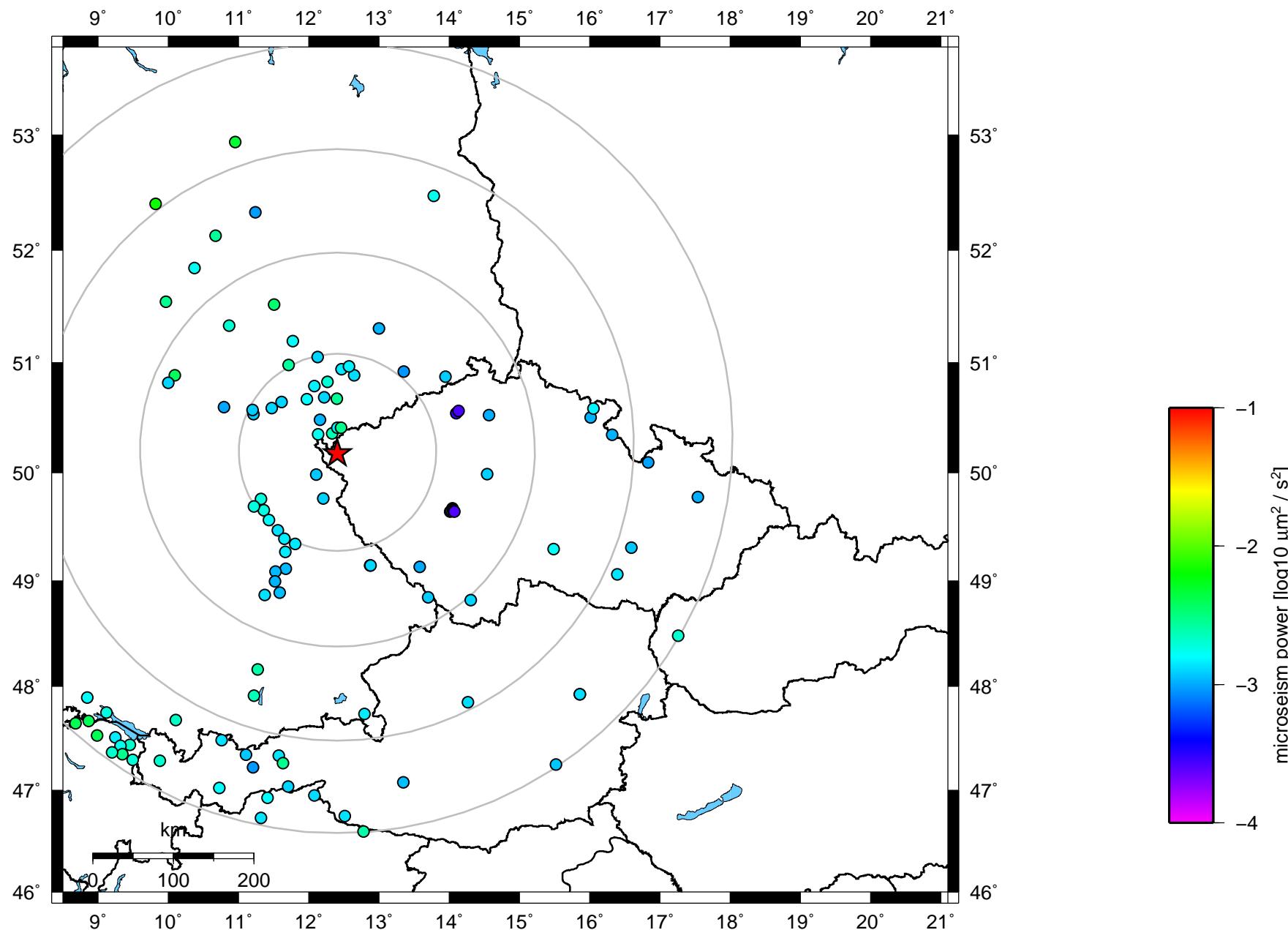
### microseism amplitude – event E2



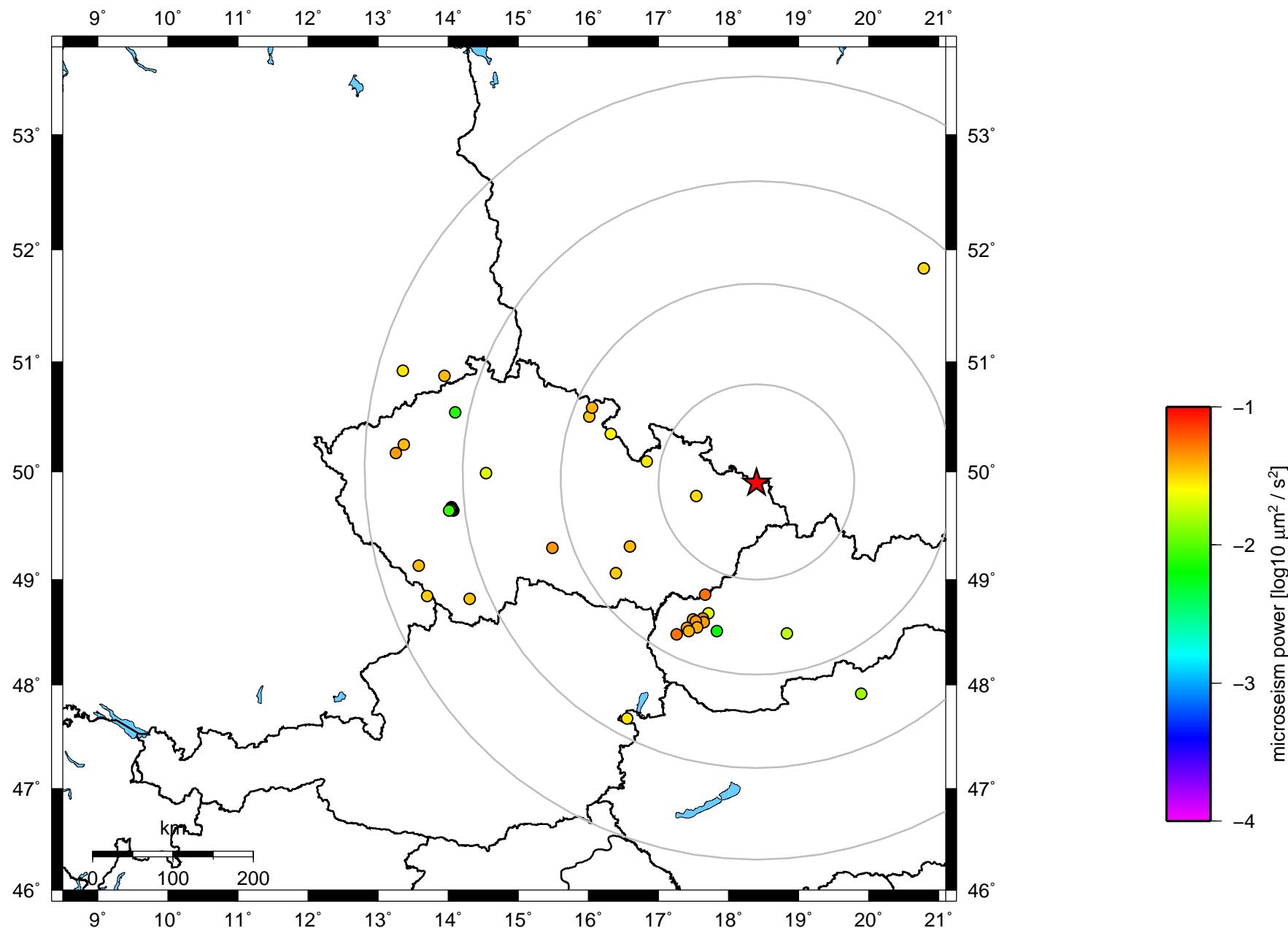
### microseism amplitude – event E3



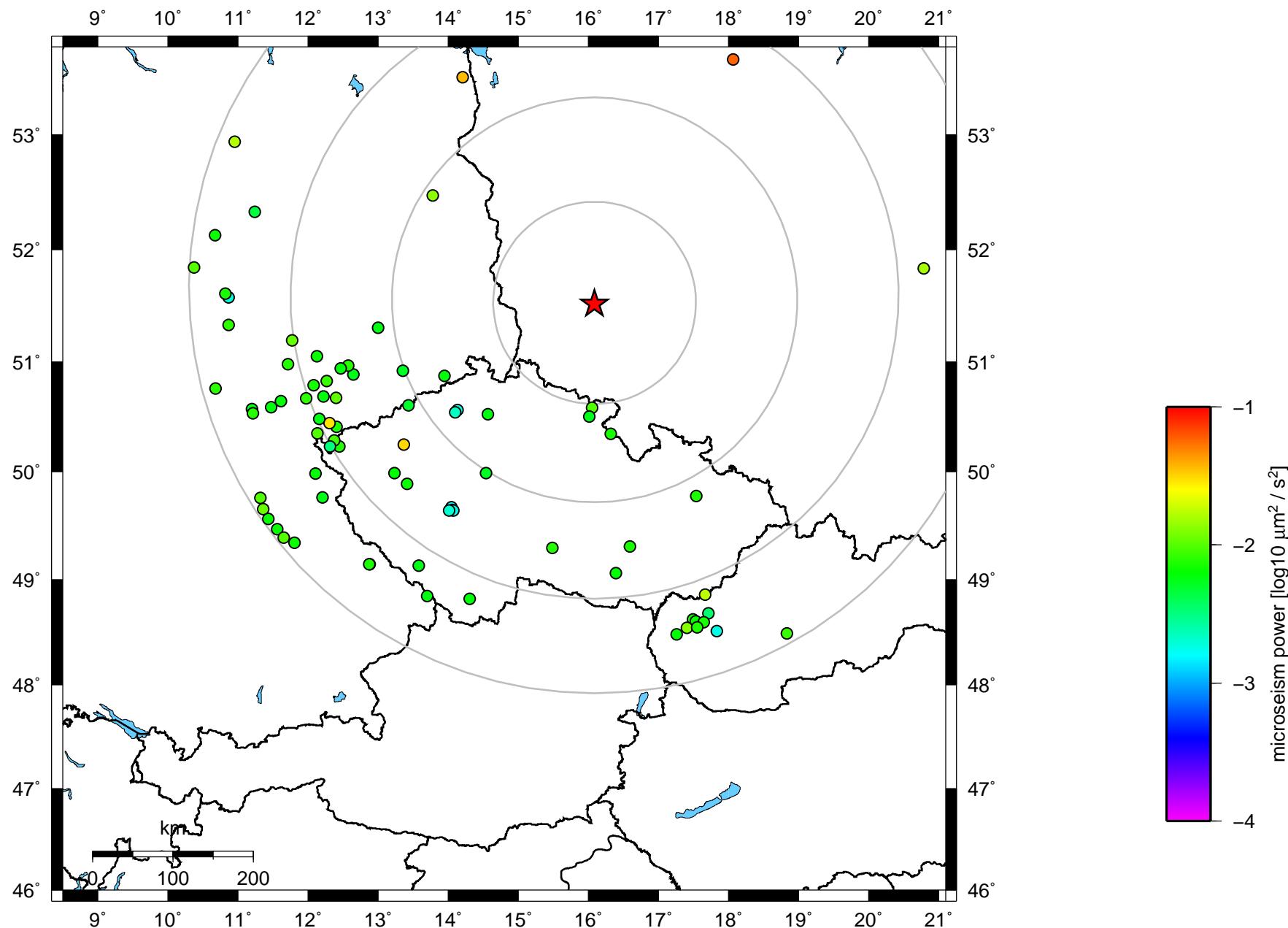
### microseism amplitude – event E4



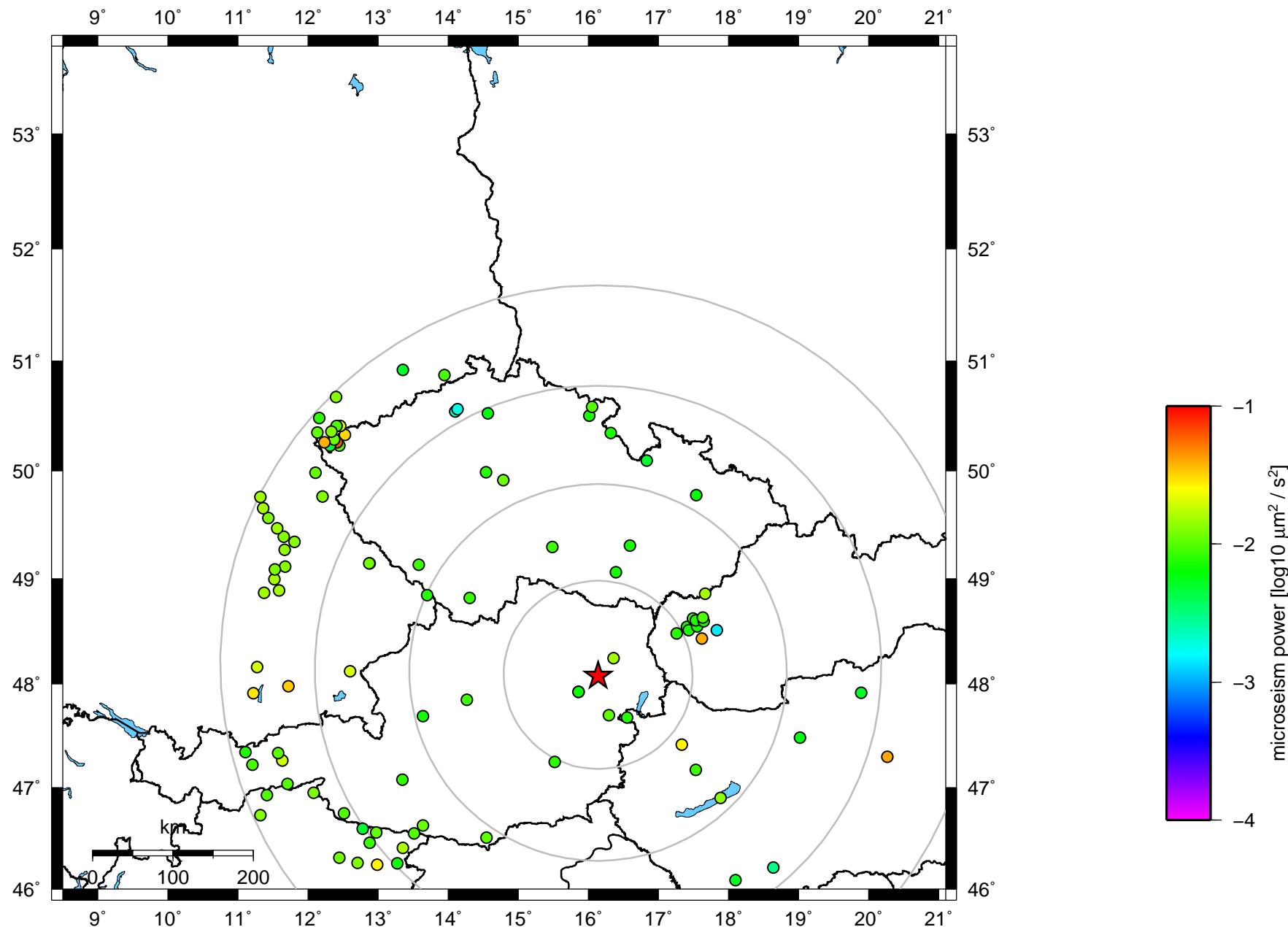
microseism amplitude – event E5



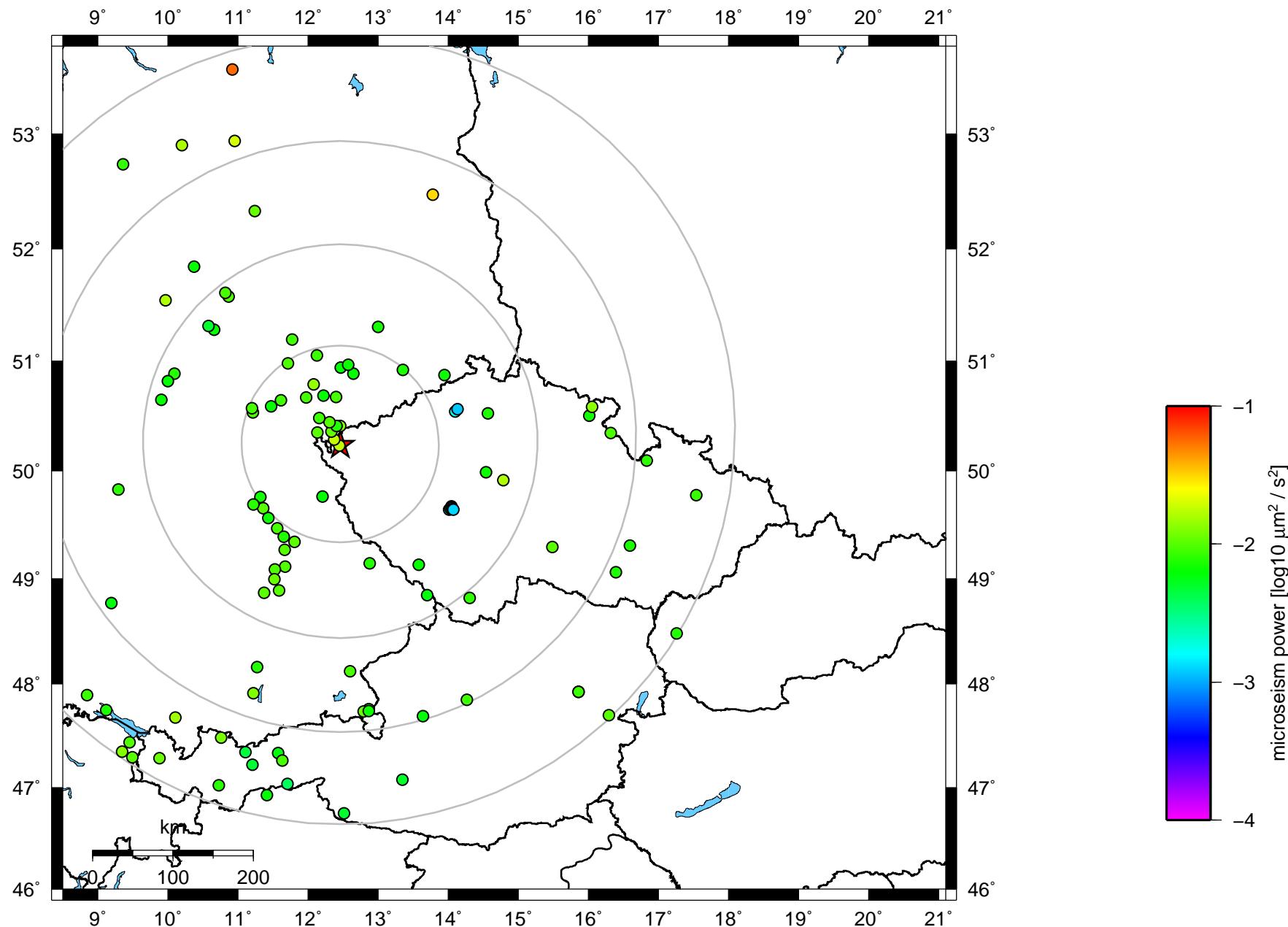
### microseism amplitude – event E6



### microseism amplitude – event E7



### microseism amplitude – event E8



microseism amplitude – event E9

