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GENERAL BULLETIN INFORMATION

The location program currently used for locating earthquakes is Hypocenter (Lienert et al.,1986). Plane parallel layers are assumed for local and regional events, while the IASPEI travel time tables are used for distant events.

The model used for all local and regional events, is compiled by Havskov & Dushi (2021).

P-wave velocity (km/sec)	depth to top of layer (km)
5.6	0.0
6.0	11.0
6.35	23.5
7.80	41.0
8.20	70.0

Magnitudes are calculated from amplitudes.

Instrument corrected maximum ground amplitudes $A(nm)$ are used to assess the local magnitude M_l , based on the Richter formula (Hutton & Boore, 1987), corrected referred to EMSC:

$$M_l = 1.0 \cdot \log(A) + 1.11 \cdot \log(D) + 0.00189 \cdot D - 1.686$$

where, D is the hypocentral distance (km).

Representative M_L value is the arithmetic mean of the resulted magnitude values for each station. No station corrections are used for either travel times or magnitude. The V_p/V_s velocity ratio, used in the layered velocity model above, is 1.81.

As a general policy, neither depths nor epicenters are fixed unless stated, since this might restrict later use of the data.

As a consequence, some event locations might be unrealistic, like zero depth earthquakes or teleseismic locations off by 1000 km.

However, the locations are based on the available data and reflect the location procedure and the models used.

The bulletin working group is composed of supervising staff:

Prof. Asoc. Edmond Dushi (researcher), MSc. Damiano Koxhaj (researcher), MSc. Klajdi Qoshi (researcher) and the Analysts: Eng. Ardian Minarolli, MSc. Irena Dushi, MSc. Anila Subashi, MSc. Olgert Gjuzi and MSc. Dionald Mucaj. Link to the web bulletine working group

https://www.geo.edu.al/Services/Department_of_Seismology/Bulletin_working_group

STATIONS USED

The stations listed below are those operated by the Department of Seismology, Polytechnic University of Tirana (PUT). However, readings from other cooperating agencies are also used in locating the events and calculating magnitudes and thus more stations will appear in the event lists than in the station list.

STATION	LATITUDE	LONGITUDE	HEIGHT(m)	NAME
BCI	42.3666N	20.0675E	500	Bajram Curri
PUK	42.0426N	19.8926E	900	Puke
PHP	41.6847N	20.4408E	670	Peshkopi
SDA	42.0500N	19.5000E	30	Shkoder
TIR	41.3472N	19.8631E	247	Tirane
BERA	40.7081N	19.9455E	234	Berat
KBN	40.6200N	20.7900E	800	Korce
VLO	40.4700N	19.5000W	50	Vlore
SRN	39.8800N	20.0050W	20	Sarande
LSK	40.1499N	20.5987W	960	Leskovik
BPA1	40.7232N	19.6560E	10	Marinza Oilfield
BPA2	40.7302N	19.6187E	25	Marinza Oilfield
BELS	40.9709N	19.9128E	243	Belsh, Elbasan
BURR	41.6015N	20.0048E	362	Burrel
DRSH	41.2813N	19.5215E	123	Shkembi i Kavajes, Durres
FUST	41.3251N	20.3969E	1161	Fushe Studen, Librazhd
MOGL	40.7054N	20.3916E	497	Moglice, Maliq
PLSA	40.1659N	19.6240E	386	Palase, Vlore
POGR2	40.9376N	20.6340E	747	Memelisht, Pogradec
PRMT	40.2287N	20.3515E	294	Permet
RZM	42.3461N	19.5487E	1177	Razem, Shkoder
VLO2	40.4678N	19.5876E	183	Peshkepi - Vlore
POGR	40.8996N	20.6790E	710	Pogradec
KKS	42.0730N	20.4017E	399	Kukes

MACROSEISMIC DATA

Macroseismic data, if available, are included in the bulletin.

Abbreviations:

TIME: Origin time in UTC (hr. min. and sec.) or data file onset time if event is not located.

LAT: Latitude of epicenter

LON: Longitude of epicenter

DEPTH: Focal depth in kilometer (trailing F indicates fixed depth)

AGENCY: Hypocenter reporting agency e.g. TIR (ASN), EMS (EMSC), etc

MAGNITUDES: Up to 3 different magnitudes can be given followed by type and reporting agency, e.g. 3.1 MC TIR - coda magnitude calculated in TIR.

RMS: Root mean square value of travel time residuals

STAT: Station code

CO: Component, S: short period, L: long period, B: broadband,

DIST: Epicenter distance (km)

AZI: Azimuth from source to station

PHAS: Phase; The first letter characterizes onset E(mergent) or I(mpulsive)

P: Polarity (C for compression, D for dilatation)

HR: Hour

MN: Minute

SECON: Seconds

TRES: Residual (seconds)

CODA: Signal duration in seconds

AMPL: Ground Amplitude ($0.5 * (\text{peak to peak})$), (nm) at period PERI

PERI: Period where amplitude is measured

BAZ: Back azimuth (station to event)

ARES: Back azimuth residual

VELO: Apparent phase velocity (km/sec)

WT: Weight of phase in the location

*: An asterix before the phase arrival time implies a potential timing error. If an S phase is read, differential S-P times will be used in the hypocenter location.

References:

- Ottmoller, Voss and Haskov (2017). Seisan Earthquake Analysis Software for Windows, Solaris, Linux and MacOSx. <http://seisan.info>.
- Hutton, L. K. and Boore, David M. (1987). The Ml scale in Southern California. Bull. of Seimological Society of America, 77 (6). pp. 2074-2094. ISSN 0037-1106, <https://resolver.caltech.edu/CaltechAUTHORS:20140905-113510505>.
- Havskov, J., Kuka, N., Duni, Ll., Dushi, E., Bozo, Rr. (2020). The Albanian Seismic Network, plans and progress towards improving data acquisition and processing. Status January 2020. Cooperation between the Albanian Seismic Network and the Iniversity of Bergen. <ftp://ftp.geo.uib.no/pub/seismo/REPORTS/ALBANIA/albania-uib-report-2.pdf>.

December 3 2023 Hour: 7:32 28.9 Lat: 40.29N Lon: 20.25E D: 19.7 Ag: TIR Local
 Magnitudes: 3.0ML TIR 3.4MW TIR Rms: 0.5 secs
 5 km SE of Kelcyre

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
TPE	HZ	20	272	EP		0732	3.314	-0.43							1.0
TPE	HN	20	272	ES		0732	7.142	-0.52							1.0
TPE	HZ	20	272	IAML		0732	9.793			956	0.3				
AL05AHZ		48	15	EP		0732	7.769	-0.13							1.0
AL05AHN		48	15	ES		0732	5.576	0.38							1.0
SRN	HZ	50	205	EP		0732	8.324	0.17							1.0
SRN	HN	50	205	ES		0732	6.254	0.60							1.0
SRN	HZ	50	205	IAML		0732	8.390			678	0.2				
BERA	HZ	53	332	EP		0732	7.709	-0.87							1.0
BERA	HN	53	332	ES		0732	6.225	-0.20							1.0
BERA	HZ	53	332	IAML		0732	7.337			657	0.2				
KBN	HZ	59	51	EP		0732	9.348	-0.37							1.0
KBN	HN	59	51	ES		0732	8.469	-0.01							1.0
KBN	HZ	59	51	IAML		0732	3.281			71	0.3				
VLO	HZ	67	288	EP		0732	1.467	0.57							1.0
VLO	HN	67	288	ES		0732	1.365	0.75							1.0
VLO	HZ	67	288	IAML		0732	4.622			1683	0.3				
NEST	HZ	70	78	EP		0732	1.031	-0.41							1.0
NEST	HN	70	78	ES		0732	1.421	-0.18							1.0
NEST	HZ	70	78	IAML		0732	3.169			237	0.3				
BPA2	HZ	72	313	EP		0732	2.321	0.52							1.0
BPA2	HN	72	313	ES		0732	2.758	0.51							1.0
KEK	HZ	74	211	EP		0732	1.674	-0.47							1.0
KEK	HN	74	211	ES		0732	2.276	-0.60							1.0
KEK	HZ	74	211	IAML		0732	7.271			510	0.6				
AL07AHZ		77	28	EP		0732	2.724	0.07							1.0
AL07AHN		77	28	IS		0732	3.881	0.09							1.0
IGT	HZ	84	175	EP		0732	3.535	-0.23							1.0
IGT	HN	84	175	ES		0732	6.216	0.40							1.0
IGT	HZ	84	175	IAML		0733	0.053			341	0.4				
AL08AHZ		92	352	EP		0732	4.662	-0.32							1.0
AL04AHZ		99	324	EP		0732	6.330	0.19							1.0
TIR	HZ	122	345	EP		0732	0.208	0.26							1.0
TIR	HN	122	345	ES		0733	6.854	-0.14							1.0
TIR	HZ	122	345	IAML		0733	1.354			74	0.8				
BURR	EZ	147	352	EP		0732	4.181	0.24							1.0
BURR	EN	147	352	IS		0733	4.142	-0.08							1.0
AL03AHZ		147	352	EP		0732	4.232	0.29							1.0
SCTE	HZ	153	262	EP		0732	5.051	0.18							1.0
SCTE	HN	153	262	ES		0733	4.950	-0.96							1.0
LACI	HN	156	344	ES		0733	5.762	-0.82							1.0
PHP	HZ	156	6	IAML		0733	7.372			185	0.4				
LACI	HZ	156	344	EP		0732	5.160	-0.08							1.0
PHP	HZ	156	6	EP		0732	6.318	1.03							1.0
PHP	HN	156	6	ES		0733	5.826	-0.84							1.0
LACI	HZ	156	344	IAML		0733	6.413			95	0.4				
THL	HZ	171	117	EP		0732	7.904	0.74							0.9
KKS	HZ	199	4	EP		0733	1.343	0.61							0.9
KKS	HN	199	4	ES		0733	6.147	-0.36							0.9
SDA	HZ	205	343	EP		0733	1.557	0.01							0.9
SDA	HN	205	343	ES		0733	8.799	0.80							0.9
SDA	HZ	205	343	IAML		0733	3.103			8	0.9				
PDG	HZ	252	341	EP		0733	7.200	-0.29							0.9
PDG	HZ	252	341	IAML		0733	3.657			22	0.2				

December 5 2023 Hour: 18:22 22.5 Lat: 40.28N Lon: 20.27E D: 18.2 Ag: TIR Local
 Magnitudes: 3.3ML TIR 3.5MW TIR Rms: 0.6 secs
 7 km SE of Kelcyre

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
TPE	HZ	22	274	EP		1822	6.880	-0.51							1.0
TPE	HN	22	274	ES		1822	0.917	-0.46							1.0
TPE	HZ	22	274	IAML		1822	3.901			1421	0.6				
LSK	HZ	32	117	EP		1822	8.837	-0.05							1.0
LSK	HN	32	117	ES		1822	3.767	-0.33							1.0
LSK	HZ	32	117	IAML		1822	4.770			1453	0.7				
AL05AHZ		48	12	EP		1822	1.477	0.02							1.0
AL05AHE		48	12	ES		1822	8.661	-0.08							1.0
SRN	HZ	50	207	EP		1822	1.664	0.01							1.0
SRN	HN	50	207	ES		1822	9.082	-0.02							1.0
SRN	HZ	50	207	IAML		1822	0.579			1159	0.8				
BERA	HZ	54	330	EP		1822	1.291	-1.06							1.0
BERA	HE	54	330	ES		1822	9.616	-0.75							1.0
BERA	HZ	54	330	IAML		1822	1.262			906	0.6				
KBN	HZ	58	49	EP		1822	2.906	-0.17							1.0
KBN	HN	58	49	ES		1822	1.852	0.18							1.0
KBN	HZ	58	49	IAML		1822	3.840			137	0.7				
NEST	HZ	68	77	EP		1822	4.846	0.17							1.0
NEST	HN	68	77	ES		1822	4.450	-0.13							1.0
NEST	HZ	68	77	IAML		1822	5.069			246	0.7				
VLO	HZ	69	288	EP		1822	4.863	0.11							1.0
VLO	HE	69	288	ES		1822	5.814	1.11							1.0
VLO	HZ	69	288	IAML		1822	7.913			1533	0.5				
BPA2	HZ	74	312	EP		1822	5.590	-0.06							1.0
BPA2	HN	74	312	ES		1822	6.712	0.38							1.0
KEK	HZ	75	213	EP		1822	5.049	-0.66							1.0
KEK	HN	75	213	ES		1822	5.747	-0.69							1.0
KEK	HZ	75	213	IAML		1822	0.825			530	0.7				
AL07AHZ		77	27	EP		1822	5.861	-0.30							1.0
AL07AHN		77	27	ES		1822	7.507	0.25							1.0
IGT	HZ	83	176	EP		1822	7.486	0.36							1.0
IGT	HN	83	176	ES		1822	9.877	0.88							1.0
IGT	HZ	83	176	IAML		1822	2.856			447	0.6				
AL08AHZ		93	351	EP		1822	8.366	-0.33							1.0
AL08AHN		93	351	ES		1822	2.052	0.20							1.0
AL04AHZ		100	324	EP		1822	0.923	0.95							1.0
TIR	HZ	123	344	EP		1822	3.986	0.20							1.0
TIR	HE	123	344	ES		1823	1.229	0.17							1.0
TIR	HZ	123	344	IAML		1823	6.871			119	0.5				
KZN	HZ	128	88	EP		1822	4.731	0.17							1.0
AL02AHZ		145	330	EP		1822	8.550	1.31							1.0
AL02AHE		145	330	ES		1823	8.101	0.79							1.0
AL03AHZ		148	351	EP		1822	7.570	-0.20							1.0
AL03AHE		148	351	ES		1823	8.489	0.22							1.0
BURR	EZ	148	352	EP		1822	7.808	0.04							1.0
SCTE	HZ	155	262	EP		1822	8.965	0.18							1.0
PHP	HZ	157	5	EP		1822	9.158	0.07							1.0
PHP	HE	157	5	ES		1823	0.763	0.10							1.0
PHP	HZ	157	5	IAML		1823	3.369			252	1.5				
LACI	HZ	158	343	EP		1822	8.705	-0.44							0.9
LACI	HN	158	343	ES		1823	9.026	-1.73							0.9
LACI	HZ	158	343	IAML		1823	4.324			147	0.5				
THL	HZ	169	117	EP		1822	1.484	0.87							0.9
LKD2	HZ	169	168	EP		1822	0.442	-0.19							0.9
LKD2	HN	169	168	ES		1823	3.542	0.09							0.9
THL	HN	169	117	ES		1823	3.021	-0.40							0.9
KKS	HZ	199	3	EP		1822	5.045	0.50							0.9
SDA	HZ	207	342	EP		1822	4.697	-0.75							0.9
THE	HZ	232	79	EP		1822	8.779	0.09							0.9

AL01AHZ	237	346	EP	1822	8.584-0.91									0.9
PDG HZ	253	341	EP	1823	0.954-0.44									0.9
PDG HZ	253	341	IAML	1823	0.126			48	0.7					
PVY HZ	258	354	EP	1823	3.324 1.11									0.9
PEJK HZ	262	0	EP	1823	2.532-0.14									0.9
PLG HZ	270	87	EP	1823	3.948 0.32									0.9

December 11 2023 Hour: 1:52 34.4 Lat: 38.76N Lon: 20.50E D: 17.4 Ag: TIR Local
Magnitudes: 3.4ML TIR 3.8MW TIR Rms: 0.5 secs
103 km S of Konispol

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
LKD2	HZ	14	78	EP	D	0152	8.114	-0.31							1.0
LKD2	HN	14	78	ES		0152	1.303	-0.37							1.0
IGT	HZ	87	351	EP	C	0152	9.643	0.01							1.0
IGT	HN	87	351	ES		0153	2.137	0.18							1.0
IGT	HZ	87	351	IAML		0153	6.414			939	0.6				
KEK	HZ	121	331	EP	C	0152	6.170	0.76							1.0
KEK	HN	121	331	ES		0153	2.384	-0.04							1.0
KEK	HZ	121	331	IAML		0153	8.009			702	0.5				
SRN	HZ	131	341	EP	C	0152	7.467	0.46							1.0
SRN	HE	131	341	ES		0153	5.366	0.05							1.0
SRN	HZ	131	341	IAML		0153	1.913			309	0.6				
LSK	HZ	154	3	EP	C	0153	1.308	0.58							1.0
LSK	HE	154	3	ES		0153	2.323	0.28							1.0
LSK	HZ	154	3	IAML		0153	0.138			392	0.7				
THL	HZ	159	55	EP	C	0153	1.645	0.33							0.9
THL	HN	159	55	ES		0153	3.300	0.20							0.9
TPE	HZ	175	347	EP		0153	4.068	0.64							0.9
TPE	HN	175	347	ES		0153	6.170	-0.76							0.9
TPE	HZ	175	347	IAML		0153	1.481			505	0.7				
NEST	HZ	189	14	EP		0153	5.786	0.40							0.9
NEST	HN	189	14	ES		0153	0.495	0.03							0.9
NEST	HZ	189	14	IAML		0153	9.655			146	0.4				
KZN	HZ	203	32	EP	D	0153	7.760	0.60							0.9
KZN	HN	203	32	ES		0153	4.003	0.32							0.9
KBN	HZ	208	7	EP	D	0153	8.199	0.45							0.9
KBN	HZ	208	7	IAML		0153	5.605			75	0.7				
ITM	HZ	216	144	EP	C	0153	9.445	0.72							0.9
ITM	HN	216	144	ES		0153	6.606	0.10							0.9
AL05AHZ	216	358	EP			0153	9.065	0.36							0.9
BERA	HZ	220	348	EP		0153	9.221	-0.01							0.9
BERA	HZ	220	348	IAML		0153	9.460			202	0.6				
AL08AHZ	262	353	EP			0153	4.333	-0.28							0.9
TIR	HZ	292	350	EP		0153	8.026	-0.40							0.8
TIR	HZ	292	350	IAML		0154	2.227			53	0.9				
THE	HZ	297	45	EP	C	0153	8.694	-0.30							0.8
PLG	HZ	310	54	EP	D	0153	0.103	-0.69							0.8
AL03AHZ	318	353	EP	C		0153	1.253	-0.52							0.8
BURR	EZ	318	353	EP		0153	1.415	-0.36							0.8
PHP	HZ	324	359	EP	C	0153	2.348	-0.30							0.8
PHP	HZ	324	359	IAML		0154	0.301			52	0.8				
LACI	HZ	326	349	EP		0153	1.991	-0.76							0.8
LACI	HZ	326	349	IAML		0154	0.086			46	0.7				
KKS	HZ	368	359	EP		0153	7.730	-0.42							0.8
NOCI	HZ	370	309	EP		0153	8.285	-0.18							0.8
SDA	HZ	375	347	EP		0153	7.730	-1.27							0.8
SDA	HZ	375	347	IAML		0154	2.346			8	0.5				
NVR	HZ	406	44	EP		0153	2.331	-0.80							0.7
PVY	HZ	428	354	EP		0153	5.654	-0.33							0.7
PEJK	HZ	431	358	EP		0153	5.995	-0.36							0.7

December 12 2023 Hour: 7:58 40.9 Lat: 39.09N Lon: 20.32E D: 33.2 Ag: TIR Local
 Magnitudes: 2.8ML TIR 3.1MW TIR Rms: 0.5 secs
 64 km S of Konispol

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
LKD2	HZ	45	138	EP		0758	0.309	0.08							1.0
LKD2	HN	45	138	ES		0758	7.896	0.08							1.0
IGT	HZ	49	2	EP		0758	0.963	0.13							1.0
IGT	HN	49	2	ES		0758	9.298	0.38							1.0
IGT	HZ	49	2	IAML		0758	9.524			210	0.3				
JAN	HN	78	36	EP		0758	5.637	0.58							1.0
JAN	HE	78	36	ES		0759	6.074	-0.48							1.0
KEK	HZ	82	327	EP		0758	5.471	-0.21							1.0
KEK	HE	82	327	ES		0759	7.043	-0.66							1.0
KEK	HZ	82	327	IAML		0759	9.534			111	0.2				
SRN	HZ	92	343	EP		0758	6.859	-0.26							1.0
SRN	HN	92	343	ES		0759	9.898	-0.40							1.0
SRN	HZ	92	343	IAML		0759	2.562			70	0.3				
LSK	HZ	120	12	EP		0759	1.760	0.36							1.0
LSK	HN	120	12	ES		0759	7.863	-0.17							1.0
LSK	HZ	120	12	IAML		0759	5.925			75	0.5				
TPE	HZ	136	349	EP		0759	4.094	0.72							1.0
TPE	HN	136	349	ES		0759	1.545	-0.06							1.0
TPE	HZ	136	349	IAML		0759	7.228			76	0.4				
THL	HZ	156	70	EP		0759	6.417	0.59							1.0
THL	HN	156	70	ES		0759	5.142	-0.92							1.0
NEST	HZ	160	23	EP		0759	7.342	0.84							0.9
NEST	HN	160	23	ES		0759	7.560	0.27							0.9
NEST	HZ	160	23	IAML		0759	9.288			49	0.5				
AL05AHZ	180	2	EP		0759	9.258	0.31								0.9
BERA	HZ	182	350	EP		0759	9.458	0.27							0.9
BERA	HN	182	350	ES		0759	2.578	0.43							0.9
BERA	HZ	182	350	IAML		0759	2.097			47	0.4				
KZN	HZ	184	42	EP		0759	9.618	0.06							0.9
KZN	HE	184	42	ES		0759	2.217	-0.59							0.9
SCTE	HZ	193	305	EP		0759	9.934	-0.66							0.9
ITM	HZ	255	146	EP		0759	7.778	-0.79							0.9

December 12 2023 Hour: 16:54 25.3 Lat: 41.19N Lon: 20.29E D: 6.5 Ag: TIR Local
 Magnitudes: 2.6ML TIR 3.0MW TIR Rms: 0.4 secs
 0 km N of Librazhd

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
AL08AHZ	19	240	EP		1654	8.484	-0.34								1.0
AL08AHE	19	240	ES		1654	2.107	0.42								1.0
TIR	HZ	40	296	EP		1654	2.195	-0.32							1.0
TIR	HN	40	296	ES		1654	8.751	0.38							1.0
TIR	HZ	40	296	IAML		1654	9.904			197	0.3				
AL07AHZ	46	135	EP		1654	3.772	0.22								1.0
AL07AHN	46	135	ES		1654	0.525	0.28								1.0
AL03AHZ	52	332	EP		1654	4.882	0.29								1.0
AL03AHN	52	332	ES		1654	2.269	0.13								1.0
BURR	EZ	52	332	EP		1654	4.936	0.35							1.0
BURR	EN	52	332	ES		1654	2.585	0.46							1.0
AL05AHZ	55	171	EP		1654	4.552	-0.54								1.0
AL05AHN	55	171	ES		1654	3.011	-0.03								1.0
PHP	HZ	56	13	EP		1654	5.817	0.40							1.0
PHP	HN	56	13	ES		1654	3.762	0.15							1.0
PHP	HZ	56	13	IAML		1654	7.702			278	0.3				
BERA	HZ	61	208	EP		1654	6.030	-0.28							1.0
BERA	HE	61	208	ES		1654	5.133	-0.11							1.0
BERA	HZ	61	208	IAML		1654	6.397			147	0.2				
AL04AHZ	65	252	EP		1654	7.289	0.38								1.0
AL04AHN	65	252	ES		1654	6.504	0.18								1.0
LACI	HZ	69	316	EP		1654	6.797	-0.88							1.0

LACI	HN	69	316	ES	1654	7.375-0.34			1.0
LACI	HZ	69	316	IAML	1654	9.221	179	0.1	
KBN	HZ	75	146	EP	1654	8.910 0.09			1.0
KBN	HN	75	146	ES	1654	9.901 0.12			1.0
BPA2	HZ	76	228	EP	1654	8.089-0.89			1.0
BPA2	HN	76	228	ES	1654	0.477 0.41			1.0
AL02AHZ		79	288	EP	1654	9.764 0.33			1.0
KKS	HZ	98	5	EP	1654	2.586-0.13			1.0
KKS	HE	98	5	ES	1654	6.969 0.14			1.0
TPE	HZ	102	193	EP	1654	2.690-0.64			1.0
TPE	HN	102	193	ES	1654	8.213 0.27			1.0
TPE	HZ	102	193	IAML	1655	2.569	71	0.8	
VLO	HZ	105	220	EP	1654	3.896 0.17			1.0
VLO	HN	105	220	ES	1654	8.927 0.26			1.0
VLO	HZ	105	220	IAML	1655	2.200	54	0.3	
SDA	HZ	116	326	EP	1654	5.101-0.54			1.0
SDA	HN	116	326	ES	1655	2.412 0.28			1.0
LSK	HZ	118	167	EP	1654	5.872-0.20			1.0
LSK	HN	118	167	ES	1655	3.106 0.20			1.0
LSK	HZ	118	167	IAML	1655	2.782	76	0.8	
AL01AHZ		143	334	EP	1654	9.272-0.84			1.0
AL01AHN		143	334	ES	1655	0.055-0.17			1.0
SRN	HZ	148	190	EP	1654	1.475 0.60			1.0
SRN	HN	148	190	ES	1655	1.961 0.35			1.0
SRN	HZ	148	190	IAML	1655	2.104	24	0.7	
KZN	HZ	159	128	EP	1654	3.472 0.68			0.9
KZN	HN	159	128	ES	1655	4.434-0.64			0.9
PEJK	HZ	161	360	EP	1654	3.413 0.19			0.9
PEJK	HE	161	360	ES	1655	5.612-0.24			0.9
PDG	HZ	162	328	EP	1654	2.624-0.69			0.9
PDG	HN	162	328	ES	1655	5.931-0.10			0.9
PDG	HZ	162	328	IAML	1655	8.865	43	0.8	
KEK	HZ	169	195	EP	1654	4.345-0.17			0.9
KEK	HN	169	195	ES	1655	7.806-0.39			0.9
KEK	HZ	169	195	IAML	1655	9.478	31	0.5	
GMRK	HZ	180	25	EP	1654	5.752-0.57			0.9
GMRK	HE	180	25	ES	1655	1.500 0.04			0.9
IGT	HZ	184	179	EP	1654	6.780 0.06			0.9
IGT	HE	184	179	ES	1655	2.488 0.31			0.9
IGT	HZ	184	179	IAML	1655	2.910	20	0.9	
ME01AHZ		187	350	EP	1654	7.272 0.12			0.9
ME01AHN		187	350	ES	1655	2.854-0.11			0.9
SCTE	HZ	198	232	EP	1654	7.771-0.73			0.9
ME05AHZ		205	314	EP	1654	9.474 0.16			0.9
ME05AHE		205	314	ES	1655	7.038 0.16			0.9
NKME	HZ	207	328	EP	1654	9.476-0.28			0.9
NKME	HN	207	328	ES	1655	7.973 0.30			0.9
BARS	BZ	220	34	EP	1655	1.574 0.21			0.9
BARS	BE	220	34	ES	1655	0.877 0.29			0.9
BOSS	SZ	231	50	EP	1655	2.581-0.24			0.9
THL	HZ	232	140	EP	1655	3.027 0.17			0.9
SJES	BZ	232	354	EP	1655	3.437 0.52			0.9
SJES	BE	232	354	ES	1655	3.535 0.13			0.9
ME02AHZ		239	336	EP	1655	4.234 0.35			0.9
ME02AHN		239	336	ES	1655	5.258 0.11			0.9
LKD2	HZ	268	173	EP	1655	7.030-0.52			0.9
PLG	HZ	281	108	EP	1655	9.518 0.35			0.8

December 15 2023 Hour: 23:33 43.1 Lat: 39.67N Lon: 21.06E D: 5.8 Ag: TIR Local
 Magnitudes: 2.5ML TIR 3.1MW TIR Rms: 0.4 secs
 74 km E of Konispol

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
IGT	HZ	64	256	EP		2333	4.677	0.07							1.0
IGT	HN	64	256	ES		2334	3.496	-0.40							1.0
IGT	HZ	64	256	IAML		2334	7.731			65	0.3				
LSK	HZ	66	324	EP		2333	5.195	0.24							1.0
LSK	HN	66	324	ES		2334	4.869	0.33							1.0
LSK	HZ	66	324	IAML		2334	8.522			196	0.5				
NEST	HZ	83	360	EP		2333	8.254	0.34							1.0
NEST	HE	83	360	ES		2334	9.382	-0.51							1.0
NEST	HZ	83	360	IAML		2334	5.665			92	0.4				
THL	HZ	83	98	EP		2333	8.710	0.68							1.0
THL	HN	83	98	ES		2334	9.918	-0.18							1.0
SRN	HZ	93	285	EP		2333	9.558	-0.15							1.0
SRN	HE	93	285	ES		2334	2.975	-0.16							1.0
SRN	HZ	93	285	IAML		2334	5.170			48	0.3				
KZN	HZ	93	41	EP		2334	0.331	0.55							1.0
KZN	HE	93	41	ES		2334	2.760	-0.50							1.0
LKD2	HZ	104	199	EP		2334	1.519	0.01							1.0
LKD2	HE	104	199	ES		2334	6.672	0.28							1.0
KBN	HN	108	348	ES		2334	7.749	0.03							1.0
KEK	HZ	108	273	EP		2334	1.983	-0.18							1.0
KEK	HN	108	273	ES		2334	7.486	-0.09							1.0
KEK	HZ	108	273	IAML		2334	2.020			73	0.4				
KBN	HZ	108	348	EP		2334	2.227	-0.01							1.0
KBN	HZ	108	348	IAML		2334	5.782			15	0.7				
TPE	HZ	113	308	EP		2334	3.107	0.17							1.0
TPE	HN	113	308	ES		2334	8.798	-0.19							1.0
MOGL	EZ	128	334	EP		2334	5.664	0.14							1.0
AL05AHZ	128	334	EP		2334	5.309	-0.21								1.0
AL05AHN	128	334	ES		2334	3.991	0.33								1.0
BERA	HZ	148	321	EP		2334	8.499	-0.38							1.0
BERA	HE	148	321	ES		2334	9.439	-0.29							1.0
BERA	HZ	148	321	IAML		2334	5.231			33	0.4				
VLO	HZ	160	304	EP		2334	1.231	0.43							0.9
AL08AHZ	179	333	EP		2334	4.049	0.13								0.9
AL08AHN	179	333	ES		2334	9.263	0.40								0.9
THE	HZ	195	56	EP		2334	5.958	0.00							0.9
AL04AHE	195	320	ES		2334	3.318	0.62								0.9
PLG	HZ	218	68	EP		2334	9.048	-0.02							0.9
KKS	HZ	272	349	EP		2334	6.656	0.69							0.9
PUK	HZ	281	340	EP		2334	5.837	-1.30							0.8
ITM	HZ	287	164	EP		2334	7.412	-0.43							0.8
NVR	HZ	302	51	EP		2334	8.961	-0.88							0.8

December 16 2023 Hour: 10:40 40.1 Lat: 39.97N Lon: 20.75E D: 1.2 Ag: TIR Local
 Magnitudes: 2.9ML TIR 3.3MW TIR Rms: 0.5 secs
 41 km E of Libohove

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
LSK	HZ	23	327	EP		1040	4.454	0.11							1.0
LSK	HN	23	327	ES		1040	7.798	0.05							1.0
LSK	HZ	23	327	IAML		1040	0.696			2792	0.6				
NEST	HZ	55	27	EP		1040	0.466	0.45							1.0
NEST	HE	55	27	ES		1040	8.381	0.36							1.0
NEST	HZ	55	27	IAML		1041	2.012			522	0.3				
IGT	HZ	61	216	EP		1040	0.577	-0.38							1.0
IGT	HE	61	216	ES		1040	9.898	0.18							1.0
IGT	HZ	61	216	IAML		1041	0.220			309	0.5				
SRN	HZ	65	261	EP		1040	1.759	0.04							1.0
SRN	HN	65	261	ES		1041	1.137	0.04							1.0
SRN	HZ	65	261	IAML		1041	2.810			302	0.5				

BURR	EZ	47	211	EP	C	0042	8.560-0.27			1.0
BURR	EE	47	211	ES		0042	5.158-0.63			1.0
BCI	HZ	49	337	EP	C	0042	9.235 0.12			1.0
BCI	HE	49	337	ES		0042	6.169-0.15			1.0
BCI	HZ	49	337	IAML		0042	9.321	265	0.3	
LACI	HZ	60	233	EP		0042	0.888-0.13			1.0
LACI	HN	60	233	ES		0042	9.861 0.10			1.0
LACI	HZ	60	233	IAML		0042	5.095	158	0.4	
SDA	HZ	67	279	EP		0042	2.033-0.06			1.0
SDA	HN	67	279	ES		0042	2.080 0.37			1.0
PVY	HZ	76	338	EP	D	0042	3.871 0.25			1.0
PVY	HE	76	338	ES		0042	4.763 0.29			1.0
PEJK	HZ	76	359	EP		0042	3.858 0.27			1.0
PEJK	HN	76	359	ES		0042	4.225-0.18			1.0
TIR	HZ	77	208	EP		0042	3.709-0.14			1.0
TIR	HN	77	208	ES		0042	5.308 0.43			1.0
AL08AHZ		97	190	EP		0042	6.566-0.51			1.0
AL08AHN		97	190	ES		0043	0.224-0.50			1.0
AL02AHZ		97	231	EP		0042	7.393 0.26			1.0
AL02AHN		97	231	ES		0043	1.573 0.74			1.0
PDG	HZ	100	301	EP		0042	7.278-0.36			1.0
PDG	HE	100	301	ES		0043	2.032 0.29			1.0
PDG	HZ	100	301	IAML		0043	4.670	121	0.3	
ME01AHZ		104	341	EP		0042	8.254-0.06			1.0
ME01AHE		104	341	ES		0043	2.893-0.07			1.0
GMRK	HZ	108	44	EP	C	0042	9.964 0.90			1.0
GMRK	HE	108	44	ES		0043	4.058-0.26			1.0
BELS	EZ	115	196	EP		0042	9.672-0.42			1.0
BELS	EN	115	196	ES		0043	6.550 0.36			1.0
AL07AHZ		122	165	EP		0042	0.977-0.40			1.0
AL07AHN		122	165	ES		0043	8.455-0.05			1.0
AL04AHZ		123	210	EP		0042	1.465 0.06			1.0
AL05AHZ		140	177	EP		0042	3.837-0.45			1.0
AL05AHE		140	177	ES		0043	4.266 0.49			1.0
MOGL	EZ	140	177	EP		0042	3.887-0.40			1.0
MOGL	EN	140	177	ES		0043	4.069 0.29			1.0
NKME	HZ	142	309	EP		0042	3.901-0.81			1.0
NKME	HE	142	309	ES		0043	4.548 0.01			1.0
BERA	HZ	143	192	EP		0042	4.024-0.76			1.0
BERA	HE	143	192	ES		0043	5.054 0.39			1.0
BERA	HZ	143	192	IAML		0043	8.106	89	0.3	
KBN	HZ	154	164	EP		0042	6.814 0.11			1.0
KBN	HN	154	164	ES		0043	8.325 0.18			1.0
BARS	BZ	157	52	EP		0042	7.248 0.16			1.0
BARS	BE	157	52	ES		0043	8.412-0.44			1.0
ME05AHZ		158	291	EP		0042	6.655-0.56			0.9
ME05AHN		158	291	ES		0043	9.235 0.16			0.9
ME02AHZ		164	324	EP		0042	8.277-0.05			0.9
ME02AHN		164	324	ES		0043	0.974-0.10			0.9
ME03AHZ		172	334	EP		0042	9.832 0.47			0.9
ME03AHE		172	334	ES		0043	3.309 0.34			0.9
NEST	HZ	183	160	EP		0043	0.862 0.09			0.9
NEST	HE	183	160	ES		0043	5.546 0.03			0.9
NEST	HZ	183	160	IAML		0043	0.289	41	0.3	
TPE	HZ	187	187	EP		0043	1.299 0.15			0.9
TPE	HE	187	187	ES		0043	6.319 0.13			0.9
TPE	HZ	187	187	IAML		0043	8.039	87	0.6	
BOSS	SZ	188	71	EP		0043	1.000-0.38			0.9
BOSS	SN	188	71	ES		0043	6.017-0.60			0.9
LSK	HZ	203	173	EP		0043	3.270-0.03			0.9
LSK	HN	203	173	ES		0043	9.900-0.20			0.9
LSK	HZ	203	173	IAML		0043	5.686	100	0.7	
KZN	HZ	222	146	EP		0043	5.808 0.12			0.9
SRN	HZ	233	186	EP		0043	7.444 0.44			0.9

SRN	HN	233	186	ES	0043	6.845	0.06			0.9
KEK	HZ	253	190	EP	0043	0.395	0.71			0.9
KEK	HE	253	190	ES	0043	2.445	0.79			0.9
KEK	HZ	253	190	IAML	0043	2.904		39	0.5	
SCTE	HZ	260	217	EP	0043	0.214	-0.36			0.9
IGT	HZ	270	179	EP	0043	2.859	1.05			0.9
IGT	HZ	270	179	IAML	0044	4.910		17	1.0	
NOCI	HZ	300	245	EP	0043	5.000	-0.73			0.8
THL	HZ	303	151	EP	0043	6.452	0.41			0.8
NVR	HZ	305	102	EP	0043	6.740	0.42			0.8
PLG	HZ	318	123	EP	0043	8.040	0.09			0.8
MRVN	HZ	357	255	EP	0043	2.032	-0.96			0.8
BZS	HZ	420	14	EP	0043	9.927	-1.16			0.7