

Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

August

2020

Prepared by
The National Centre for Geophysical Research
Bhannes

*P.o.b. : 165432
Ashrafyeh Beirut 1100-2040*

*Tel : +9614-981885
Fax : +9614-981886
Email : geophys@cnrs.edu.lb*

GENERAL BULLETIN INFORMATION

The National Centre for Geophysical Research is a governmental agency established 1975 in Lebanon by the National Council for Scientific Research (CNRS). The mission of the Centre, among other assignments, is the monitoring of seismic activity within the national territory. Currently, the national seismic network is under deployment; it has been officially registered as GRAL, an acronym for Geophysical Research Arrays of Lebanon. Station coordinates and status are given below.

Since 1993, the Centre has been participating in a regional initiative by the UNESCO and the USGS known as RELEMR, i.e. Reducing Earthquake Losses in the Eastern Mediterranean Region.

Within this framework, the Centre routinely contributes to the database set up for this purpose and maintained by the Euro-Mediterranean Seismological Centre (EMSC). For coherence, the Centre has adopted the recommended seismic analysis system SEISAN developed by Jens Havskov and Lars Ottemoller from the University of Bergen, Norway.

The localization 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 velocity model used for all local and regional events is the one currently adopted by the RELEMR initiative.

P-wave velocity (km/sec)	depth to top of layer (km)
6.2	0.0
6.8	14.0
8.05	34.0
8.25	50.0
8.5	80.0

Magnitudes are calculated from the coda duration. The coda wave magnitude is estimated via the formula:

$$M_c = 0.08 + 1.63 * \log_{10}(T) + 0.0009 * D.$$

where T is the coda duration (sec) and D is the epicentral distance (km). The coefficients above were adopted at the outset of our Centre in 1980 and thus are still in use for the sake of continuity.

All available coda values are used for magnitude calculations. No station corrections are used for either travel times or magnitudes calculations. The V_p/V_s velocity ratio used in both layered models above is 1.74.

As a general policy, neither depths, nor epicenters, are fixed unless stated otherwise since this might restrict later use of the data. Consequently, some event locations might be unrealistic such as zero depth earthquakes or teleseismic locations off by 1000 km. However, the locations are based on the available data and reflect the localization procedure and the models used.

STATIONS USED

The stations listed below are operated by the National Centre for Geophysical Research. They constitute the basic setup of the National Seismic Network of Lebanon.

However, readings from other cooperating agencies are also used in locating the events and thus more stations may appear in the event lists than in the station list; it is worth mentioning the systematic use of arrival times from the Cypriot seismic network CSS in order to constrain events corresponding to an active zone off the Lebanese shorelines.

STATION	LATITUDE	LONGITUDE	HEIGHT (m)	NAME	COMMENTS
BHL	3354.25N	3539.25E	1000	BHANNES	Opened May 1980
HWQ	3416.68N	3556.78E	1161	HAWQA	Opened Jan 2001
MATL	3329.32N	3519.78E	5	MATARIH	Nov2000-Sep2012
FKH	3414.69N	3624.61E	1152	FAKEHEH	Opened Dec 2004
RCY	3329.79N	3550.14E	1370	RACHAYA	Opened Jun 2006
BEYL	3352.30N	3529.59E	49	BEIRUT	Opened Jul 2006
NAQL	3307.02N	3508.46E	83	NAQOURA	Jul2008-Jan2012
DQRL	3342.34N	3534.21E	963	DEIR QAMAR	Opened Mar 2010
QRWL	3332.86N	3540.93E	875	QARAOUN	Opened Oct 2011
SHBL	3320.90N	3544.63E	1422	CHEBAA	Opened Oct 2011
ZAHL	3351.48N	3553.12E	1211	ZAHLE	Opened Aug 2015
BEIL	3432.50N	3611.08E	572	BEINO	Opened Jan 2017
SAIL	3334.52N	3524.09E	159	SAIDA	Opened Jan 2020
CPTL	3353.47N	3528.60E	32	QRAYTEM	Opened Mar 2020

REGIONAL AND DISTANT EARTHQUAKES

Because regional events and teleseisms are not localized, but simply identified, EMSC determination data are given along with phase arrivals (in general first arrival) at the stations of our network.

MACROSEISMIC DATA

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

MONTHLY EPICENTER MAPS

Maps will be found on the last page.

ELECTRONIC PUBLICATION

This provisional bulletin is available for download in pdf format on:
<http://www.cnrs.edu.lb/grdownload.html>

REFERENCES

- Havskov, J. and Ottemoller, L. (2001). SEISAN: The Earthquake Analysis Software. -version 7.2-
Institute of Solid Earth Physics, University of Bergen.
<http://www.ifjf.uib.no/seismo/software/seisan.html>
- Lienert, B.R., Berg, E. and Frazer, L.N. (1986). Hypocenter: An earthquake location method using centered, scaled, and adaptively least squares. Bull. Seism. Soc. Am., 76., pp 771-783.

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: REL throughout the bulletin, aka. REsearch Lebanon

MAGNITUDES: Up to 3 different magnitudes can be given followed by type and reporting agency, e.g. 3.1 MC REL - coda magnitude calculated according to above mentioned formula.

EMSC: Euro-Mediterranean Seismological Centre.

OT: Origin Time

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 ($0.5 \times (\text{peak to peak})$), (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 asterisk 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.

August 1 2020 Hour: 17:9 1.2 Agency: REL Distant
EMSC OT=17:09:01.2 7.33N 124.13E 473Km M=6.4 MINDANAO, PHILIPPINES
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BEIL SZ EP 1720 42.96
 HWQ BZ EP 1720 43.80
 ZAHL SZ EP 1720 44.38
 RCY SZ EP 1720 44.88
 BHL BZ EP 1720 45.17
 SHBL SZ EP 1720 45.39
 QRWL SZ EP 1720 45.38
 DQRL SZ EP 1720 45.87
 CPTL SZ EP 1720 45.45

August 2 2020 Hour: 6:16 13.8 Lat: 34.55N Lon: 36.69E Depth: 13 Agency: REL Regional
Magnitudes: 3.2MC REL Rms: 0.1 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ	46	269	EP		616	21.64	0.05	72						1.0
BEIL	SN	46	269	ES		616	27.42	0.06							1.0
HWQ	BZ	75	246	EP		616	25.64	-0.18							1.0
HWQ	BN	75	246	ES		616	34.70	-0.01							1.0
ZAHL	SZ	107	224	EP		616	30.46	-0.08							1.0
BHL	BZ	119	233	EP		616	32.39	0.01							1.0
CPTL	SZ	134	237	EP		616	35.00	0.60							0.2
DQRL	SZ	140	228	EP		616	35.33	-0.00							1.0
RCY	SZ	141	214	EP		616	35.67	0.07							1.0
QRWL	SZ	145	220	EP		616	36.14	-0.01							1.0
SHBL	SZ	160	213	EP		616	38.38	0.07							1.0

August 4 2020 Hour: 9:37 35.8 Agency: REL Regional

EMSC OT=09:37:35.8 38.19N 38.72E 5Km M=5.6 EASTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		938	39.66								
HWQ	BZ			EP		938	44.11								
ZAHL	SZ			EP		938	50.45								
BHL	BZ			EP		938	51.42								
DQRL	SZ			EP		938	54.30								
QRWL	SZ			EP		938	55.63								
RCY	SZ			EP		938	55.46								
SHBL	SZ			EP		938	57.86								

August 4 2020 Hour: 15:30 58.1 Agency: REL Regional

EMSC OT=15:30:58.1 38.20N 38.76E 5Km M=4.3 EASTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		1532	4.39								
HWQ	BZ			EP		1532	9.54								
ZAHL	SZ			EP		1532	15.02								
BHL	BZ			EP		1532	15.61								
DQRL	SZ			EP		1532	18.62								
RCY	SZ			EP		1532	20.01								
QRWL	SZ			EP		1532	19.90								
SHBL	SZ			EP		1532	22.23								

August 4 2020 Hour: 18:40 6.2 Agency: REL Regional

EMSC OT=18:40:06.2 38.24N 38.76E 4Km M=4.5 EASTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		1841	9.71								
HWQ	BZ			EP		1841	14.22								
ZAHL	SZ			EP		1841	20.20								
BHL	BZ			EP		1841	20.70								
CPTL	SZ			EP		1841	22.39								
DQRL	SZ			EP		1841	23.82								
RCY	SZ			EP		1841	25.05								

QRWL SZ EP 1841 24.92
 SHBL SZ EP 1841 27.37

August 5 2020 Hour: 12: 6 36.6

Agency: REL Distant

EMSC OT=12:05:36.6 16.13S 168.07E 183Km M=6.5 VANUATU

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ			EP		1227	38.37								
BHL	BZ			EP		1227	43.09								
BEIL	SZ			EP		1227	43.42								
RCY	SZ			EP		1227	44.74								
QRWL	SZ			EP		1227	44.58								
SHBL	SZ			EP		1227	45.16								

August 6 2020 Hour: 22:15 38.4

Agency: RE Regional

EMSC OT=22:15:38.4 38.13N 38.63E 5Km M=3.2 EASTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2216	44.14								
HWQ	BZ			EP		2216	48.27								
BHL	BZ			EP		2216	54.58								
ZAHL	SZ			EP		2217	0.10								
DQRL	SZ			EP		2216	57.84								
QRWL	SZ			EP		2216	57.95								
SHBL	SZ			EP		2217	1.60								

August 6 2020 Hour: 22:17 30.8

Agency: REL Distant

EMSC OT=22:17:30.8 28.05N 56.81E 10Km M=4.7 SOUTHERN IRAN

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		2221	52.40								
HWQ	BZ			EP		2221	53.04								
BEIL	SZ			EP		2221	53.00								
BHL	BZ			EP		2221	53.70								
DQRL	SZ			EP		2221	55.45								

August 7 2020 Hour: 0:21 25.4

Lat: 35.08N

Lon: 36.37E

Depth: 0

Agency: REL Regional

Magnitudes: 2.8MC REL

Rms: 0.1 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ	62	196	EP		021	35.28-0.14		42						1.0
BEIL	SN	62	196	ES		021	42.81-0.02								1.0
HWQ	BZ	97	204	EP		021	41.07 0.01								1.0
HWQ	BN	97	204	ES		021	52.58-0.07								1.0
ZAHL	SZ	143	198	EP		021	48.31-0.01								1.0
ZAHL	SN	143	198	ES		022	5.34 0.06								1.0
BHL	BZ	146	207	EP		021	48.78-0.03								1.0
DQRL	SZ	169	206	EP		021	52.27 0.06								1.0
QRWL	SZ	181	201	EP		021	54.05 0.06								1.0
SHBL	SZ	201	197	EP		021	56.48-0.01								1.0
SHBL	SN	201	197	ES		022	19.59 0.09								1.0

August 8 2020 Hour: 0:35 7.6

Agency: REL Distant

EMSC OT=00:35:07.6 43.27N 87.73E 10Km M=5.3 NORTHERN XINJIANG, CHINA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		042	47.25								
HWQ	BZ			EP		042	49.57								
ZAHL	SZ			EP		042	52.33								
BHL	BZ			EP		042	52.71								
RCY	SZ			EP		042	53.81								
DQRL	SZ			EP		042	54.51								
QRWL	SZ			EP		042	54.73								

August 8 2020 Hour: 1:29 52.0

Agency: REL Regional

EMSC OT=01:29:52.0 38.23N 38.80E 5Km M=3.8 EASTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		130	57.89								
HWQ	BZ			EP		131	2.74								
ZAHL	SZ			EP		131	8.38								
BHL	BZ			EP		131	9.27								
DQRL	SZ			EP		131	12.23								
RCY	SZ			EP		131	13.32								
QRWL	SZ			EP		131	14.31								
SHBL	SZ			EP		131	16.68								

August 8 2020 Hour: 3:36 24.6

Lat: 33.35N

Lon: 35.79E

Depth: 3

Agency: REL Local

Magnitudes: 2.5MC REL

Rms: 0.0 secs

HASBAYA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	SZ	4	273	EP		336	25.65	0.01	32						1.0
SHBL	SN	4	273	ES		336	26.38	-0.01							1.0
RCY	SZ	17	14	EP		336	27.49	-0.00							1.0
RCY	SN	17	14	ES		336	29.60	-0.00							1.0
QRWL	SZ	25	336	EP		336	28.65	0.01							1.0
DQRL	SZ	45	333	EP		336	31.89	-0.01							1.0

August 9 2020 Hour: 9:16 19.7

Agency: REL Regional

EMSC OT=09:16:19.7 34.07N 45.55E 15Km M=4.9 IRAN-IRAQ BORDER REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		918	13.68								
RCY	SZ			EP		918	18.20								
SHBL	SZ			EP		918	19.56								
BHL	BZ			EP		918	20.86								
QRWL	SZ			EP		918	21.00								
DQRL	SZ			EP		918	22.32								

August 11 2020 Hour: 8:40 25.4

Lat: 33.03N

Lon: 35.48E

Depth: 9

Agency: REL Regional

Magnitudes: 3.6MC REL

Rms: 0.1 secs

DEAD SEA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	SZ	43	35	EP		840	32.52	0.03	130						1.0
SHBL	SN	43	35	ES		840	37.78	0.05							1.0
QRWL	SZ	60	18	EP		840	35.20	0.00							1.0
RCY	SZ	61	33	EP		840	35.29	-0.10							1.0
DQRL	SZ	75	7	EP		840	37.52	-0.06							1.0
DQRL	SN	75	7	ES		840	46.60	0.01							1.0
BEYL	SZ	93	1	EP		840	40.24	-0.06							1.0
BHL	BZ	98	10	EP		840	40.90	-0.19							1.0
BHL	BN	98	10	ES		840	52.68	-0.02							1.0
ZAHL	SZ	99	22	EP		840	41.42	0.16							1.0
HWQ	BZ	145	17	EP		840	48.10	0.12							1.0
BEIL	SZ	179	21	EP		840	52.90	0.06							1.0

August 12 2020 Hour: 14:19 1.3

Lat: 33.63N

Lon: 36.92E

Depth: 95

Agency: REL Regional

Magnitudes: 3.5MC REL

Rms: 0.1 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
ZAHL	SZ	99	285	EP		1419	19.51	-0.07							1.0
RCY	SZ	102	262	EP		1419	19.77	-0.09							1.0
SHBL	SZ	114	254	EP		1419	21.12	0.11							1.0
SHBL	SN	114	254	ES		1419	35.65	0.03							1.0
QRWL	SZ	116	266	EP		1419	21.06	-0.03							1.0
BHL	BZ	121	285	EP		1419	21.68	0.01							1.0
BEIL	SZ	122	326	EP		1419	21.69	0.06	107						1.0
BEIL	SN	122	326	ES		1419	36.71	-0.00							1.0
DQRL	SZ	126	274	EP		1419	22.09	-0.02							1.0

August 12 2020 Hour: 15:32 28.7 Lat: 33.62N Lon: 35.45E Depth: 17 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.1 secs

CHOUF REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	15	49	EP		1532	32.47	0.02	31						1.0
DQRL	SN	15	49	ES		1532	35.23	0.01							1.0
QRWL	SZ	23	110	EP		1532	33.32	-0.05							1.0
QRWL	SN	23	110	ES		1532	36.85	0.03							1.0
CPTL	SZ	30	5	EP		1532	34.27	0.03							1.0
BHL	BZ	37	31	EP		1532	35.10	-0.13							1.0
RCY	SZ	38	111	EP		1532	35.47	0.00							1.0
SHBL	SZ	41	138	EP		1532	35.81	0.02							1.0
ZAHL	SZ	48	57	EP		1532	36.85	-0.02							1.0
HWQ	BZ	86	32	EP		1532	42.45	0.03							1.0
BEIL	SZ	123	33	EP		1532	47.81	0.07							1.0

August 12 2020 Hour: 17: 3 37.8 Lat: 35.85N Lon: 35.47E Depth: 14 Agency: REL Regional
Magnitudes: 3.8MC REL Rms: 0.1 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ	159	156	EP		17 4	2.11	-0.04							1.0
BEIL	SN	159	156	ES		17 4	20.26	0.11							1.0
HWQ	BZ	179	166	EP		17 4	4.69	-0.09	144						1.0
HWQ	BN	179	166	ES		17 4	24.61	-0.10							1.0
BHL	BZ	216	175	EP		17 4	9.34	0.02							1.0
CPTL	SZ	217	180	EP		17 4	9.37	0.05							1.0
ZAHL	SZ	224	170	EP		17 4	10.33	0.02							1.0
DQRL	SZ	238	178	EP		17 4	12.07	0.08							1.0
QRWL	SZ	256	176	EP		17 4	14.24	0.01							1.0
RCY	SZ	263	173	EP		17 4	15.16	-0.00							1.0
SHBL	SZ	278	175	EP		17 4	17.04	-0.04							1.0

August 12 2020 Hour: 22:40 45.3 Agency: REL Distant
EMSC OT=22:40:45.3 28.01N 66.07E 10Km M=5.6 PAKISTAN

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2246	22.28								
HWQ	BZ			EP		2246	25.13								
ZAHL	SZ			EP		2246	25.19								
RCY	SZ			EP		2246	26.32								
SHBL	SZ			EP		2246	26.26								
QRWL	SZ			EP		2246	27.55								
DQRL	SZ			EP		2246	27.81								

August 13 2020 Hour: 13:35 17.6 Agency: REL Regional
EMSC OT=13:35:17.6 36.15N 31.29E 10Km M=3.4 WESTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ			EP		1336	22.01								
BEIL	SZ			EP		1336	22.87								
RCY	SZ			EP		1336	25.14								
SHBL	SZ			EP		1336	26.01								

August 14 2020 Hour: 13:46 24.9 Agency: REL Regional
EMSC OT=13:46:24.9 34.85N 26.36E 10Km M=4.0 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ			EP		1348	16.11								
SHBL	SZ			EP		1348	17.62								
RCY	SZ			EP		1348	17.89								
HWQ	BZ			EP		1348	18.19								
BEIL	SZ			EP		1348	19.84								

August 14 2020 Hour: 16:39 28.4

Agency: REL Regional

EMSC OT=16:39:28.4 34.12N 25.72E 10Km M=4.1 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ			EP		1641	25.50								
SHBL	SZ			EP		1641	27.42								
ZAHL	SZ			EP		1641	28.07								
RCY	SZ			EP		1641	27.49								
HWQ	BZ			EP		1641	27.73								
BEIL	SZ			EP		1641	30.51								

August 14 2020 Hour: 17:48 52.5

Agency: REL Regional

EMSC OT=17:48:52.5 34.24N 25.74E 10Km M=4.2 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ			EP		1750	50.43								
SHBL	SZ			EP		1750	51.22								
RCY	SZ			EP		1750	51.78								
ZAHL	SZ			EP		1750	52.12								
HWQ	BZ			EP		1750	52.67								
BEIL	SZ			EP		1750	55.27								

August 14 2020 Hour: 22:35 29.7 Lat: 33.54N Lon: 34.88E Depth: 29 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.1 secs

OFFSHORE SOUTH LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	67	74	EP		2235	40.98	0.02	52						1.0
DQRL	SN	67	74	ES		2235	49.23	-0.03							1.0
CPTL	SZ	68	55	EP		2235	41.12	0.10							0.2
QRWL	SZ	74	89	EP		2235	42.15	0.10							1.0
BHL	BZ	82	60	EP		2235	43.08	-0.07							0.2
SHBL	SZ	83	105	EP		2235	43.18	-0.13							1.0
SHBL	SN	83	105	ES		2235	53.36	0.01							1.0
RCY	SZ	89	93	EP		2235	44.15	0.03							1.0
ZAHL	SZ	100	69	EP		2235	45.63	0.06							1.0
HWQ	BZ	128	50	EP		2235	49.08	-0.03							1.0
BEIL	SZ	164	47	EP		2235	53.45	-0.03							1.0

August 15 2020 Hour: 15:58 55.3 Lat: 34.32N Lon: 36.31E Depth: 12 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.0 secs

HERMEL REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ	27	336	EP		1559	0.11	0.05	56						1.0
BEIL	SN	27	336	ES		1559	3.57	-0.04							1.0
HWQ	BZ	33	262	EP		1559	1.05	-0.01							1.0
HWQ	BN	33	262	ES		1559	5.33	-0.01							1.0
ZAHL	SZ	64	217	EP		1559	5.92	0.06							1.0
BHL	BZ	76	233	EP		1559	7.52	-0.01							1.0
DQRL	SZ	96	225	EP		1559	10.60	0.06							1.0
RCY	SZ	101	206	EP		1559	11.22	-0.08							1.0
QRWL	SZ	103	214	EP		1559	11.62	0.05							1.0
SHBL	SZ	120	206	EP		1559	13.95	-0.07							1.0

August 16 2020 Hour: 0:40 29.4

Agency: REL Regional

EMSC OT=00:40:29.4 34.26N 25.87E 20Km M=3.8 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ			EP		042	25.00								
SHBL	SZ			EP		042	27.43								
RCY	SZ			EP		042	26.60								
ZAHL	SZ			EP		042	27.33								
HWQ	BZ			EP		042	28.66								
BEIL	SZ			EP		042	29.92								

August 17 2020 Hour: 7:27 4.0 Agency: REL Regional

EMSC OT=07:27:04.0 36.92N 23.71E 83Km M=5.0 SOUTHERN GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
CPTL	SZ			EP		729	19.87								
DQRL	SZ			EP		729	22.12								
HWQ	BZ			EP		729	23.84								
QRWL	SZ			EP		729	24.49								
ZAHL	SZ			EP		729	25.52								
BEIL	SZ			EP		729	25.87								
SHBL	SZ			EP		729	25.91								
RCY	SZ			EP		729	26.13								

August 17 2020 Hour: 9:11 58.9 Lat: 33.69N Lon: 35.78E Depth: 11 Agency: REL Local

Magnitudes: 2.7MC REL

Rms: 0.1 secs

WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	18	209	EP		912	2.47	-0.03	38						1.0
QRWL	SN	18	209	ES		912	5.21	0.06							1.0
DQRL	SZ	19	274	EP		912	2.64	0.02							1.0
DQRL	SN	19	274	ES		912	5.37	0.01							1.0
ZAHL	SZ	21	29	EP		912	2.92	0.08							1.0
RCY	SZ	23	166	EP		912	3.01	-0.08							1.0
BHL	BZ	26	334	EP		912	3.44	-0.13							1.0
CPTL	SZ	36	308	EP		912	4.95	0.02							1.0
SHBL	SZ	38	185	EP		912	5.46	0.01							1.0
HWQ	BZ	67	13	EP		912	10.55	0.69							0.2

August 18 2020 Hour: 0:3 48.4

Agency: REL Distant

EMSC OT=00:03:48.4 12.02N 124.20E 10Km M=6.6 SAMAR, PHILIPPINES

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		016	8.23								
HWQ	BZ			EP		016	10.91								
RCY	SZ			EP		016	13.91								
BHL	BZ			EP		016	12.57								
SHBL	SZ			EP		016	12.90								
QRWL	SZ			EP		016	12.73								
DQRL	SZ			EP		016	15.13								

August 19 2020 Hour: 9:49 13.7

Agency: REL Regional

EMSC OT=09:49:13.7 34.02N 25.72E 10Km M=4.5 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		951	13.74								
HWQ	BZ			EP		951	15.95								
BEIL	SZ			EP		951	17.45								

August 20 2020 Hour: 9:19 29.4

Agency: REL Regional

EMSC OT=09:19:29.4 33.99N 25.73E 10Km M=4.4 EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		921	28.24								
HWQ	BZ			EP		921	31.96								
BEIL	SZ			EP		921	32.73								

August 20 2020 Hour: 19:54 7.7 Lat: 33.35N Lon: 35.50E Depth: 0 Agency: REL Local

Magnitudes: 2.6MC REL

Rms: 0.1 secs

NABATIYE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	SZ	23	89	EP		1954	11.39	-0.06	32						1.0
QRWL	SZ	28	38	EP		1954	12.23	-0.07							1.0
QRWL	SN	28	38	ES		1954	15.76	0.07							1.0
RCY	SZ	36	62	EP		1954	13.47	-0.02							1.0
RCY	SN	36	62	ES		1954	17.78	0.01							1.0
DQRL	SZ	41	10	EP		1954	14.31	0.04							1.0
DQRL	SN	41	10	ES		1954	18.98	-0.13							1.0

BHL	BZ	64	13	EP	1954	18.02	0.02										1.0
ZAHL	SZ	67	32	EP	1954	18.62	0.03										1.0
HWQ	BZ	112	22	EP	1954	25.81	0.10										1.0
BEIL	SZ	147	25	EP	1954	31.27	0.01										1.0

August 21 2020 Hour: 4: 9 52.4 Agency: REL Distant

EMSC OT=04:09:52.4 6.68S 123.49E 643Km M=6.9 BANDA SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		421	52.65								
HWQ	BZ			EP		421	53.26								
RCY	SZ			EP		421	53.92								
SHBL	SZ			EP		421	54.17								
QRWL	SZ			EP		421	54.56								
BHL	BZ			EP		421	54.39								
DQRL	SZ			EP		421	55.00								
CPTL	SZ			EP		421	54.62								

August 24 2020 Hour: 0:45 9.2 Agency: REL Distant

EMSC OT=00:45:09.2 28.86S 176.35W 10Km M=5.4 KERMADEC ISLANDS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		1 5	8.04								
HWQ	BZ			EP		1 5	8.00								
ZAHL	SZ			EP		1 5	8.92								
BHL	BZ			EP		1 5	8.60								
RCY	SZ			EP		1 5	8.94								
DQRL	SZ			EP		1 5	9.49								
QRWL	SZ			EP		1 5	9.34								
SHBL	SZ			EP		1 5	9.42								

August 24 2020 Hour: 22:49 59.7 Agency: REL Distant

EMSC OT=22:49:59.7 21.94S 175.40W 40Km M=5.2 TONGA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		23 9	44.86								
HWQ	BZ			EP		23 9	44.75								
BHL	BZ			EP		23 9	45.99								
DQRL	SZ			EP		23 9	46.38								
QRWL	SZ			EP		23 9	46.44								
SHBL	SZ			EP		23 9	46.55								

**August 25 2020 Hour: 12:18 9.8 Lat: 34.83N Lon: 36.48E Depth: 0 Agency: REL Regional
Magnitudes: 3.5MC REL Rms: 0.1 secs**

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ	42	220	EP		1218	16.54-0.02								1.0
BEIL	SN	42	220	ES		1218	21.56-0.01								1.0
HWQ	BZ	78	219	EP		1218	22.34-0.12	108							1.0
HWQ	BN	78	219	ES		1218	31.82 0.00								1.0
ZAHL	SZ	121	207	EP		1218	29.41 0.09								1.0
BHL	BZ	128	217	EP		1218	30.47 0.06								1.0
CPTL	SZ	139	222	EP		1218	32.11-0.01								1.0
BEYL	SZ	140	221	EP		1218	32.23 0.01								1.0
DQRL	SZ	150	214	EP		1218	33.96 0.14								1.0
RCY	SZ	160	202	EP		1218	35.19-0.02								1.0
QRWL	SZ	160	207	EP		1218	35.25-0.03								1.0
SHBL	SZ	178	203	EP		1218	37.84-0.08								1.0

**August 26 2020 Hour: 18: 1 57.0 Lat: 35.57N Lon: 31.25E Depth: 70 Agency: REL Regional
Magnitudes: 4.3MC REL Rms: 0.1 secs**

CYPRUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	444	113	EP		18 2	54.41-0.05								1.0
DQRL	SZ	447	116	EP		18 2	54.90 0.07								1.0
HWQ	BZ	453	107	EP		18 2	55.49-0.02								1.0

HWQ	BN	453	107	ES		18	3	38.69	-0.09								1.0
ZAHL	SZ	465	113	EP		18	2	56.87	-0.14								1.0
QRWL	SZ	465	118	EP		18	2	56.94	0.04								1.0
BEIL	SZ	465	103	EP		18	2	57.00	0.15	207							1.0
BEIL	SN	465	103	ES		18	3	41.15	0.03								1.0
RCY	SZ	480	117	EP		18	2	58.62	-0.12								1.0
SHBL	SZ	481	120	EP		18	2	58.94	0.06								1.0
SHBL	SN	481	120	ES		18	3	44.73	0.07								1.0

August 27 2020 Hour: 20:14 43.4 Lat: 34.47N Lon: 31.90E Depth:141 Agency: REL Regional
Magnitudes: 3.7MC REL Rms: 0.1 secs

EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	350	103	EP		2015	30.60	-0.02							1.0
BHL	BZ	352	99	EP		2015	30.88	-0.03							1.0
QRWL	SZ	364	105	EP		2015	32.30	0.02							1.0
HWQ	BZ	373	92	EP		2015	33.41	0.10							1.0
HWQ	BN	373	92	ES		2016	10.25	-0.02							1.0
ZAHL	SZ	374	99	EP		2015	33.48	0.06							1.0
SHBL	SZ	377	108	EP		2015	33.79	0.02							1.0
SHBL	SN	377	108	ES		2016	11.05	-0.02							1.0
RCY	SZ	380	105	EP		2015	33.90	-0.17							1.0
RCY	SN	380	105	ES		2016	11.69	0.09							1.0
BEIL	SZ	394	88	EP		2015	35.63	0.02	101						1.0
BEIL	SN	394	88	ES		2016	14.22	-0.05							1.0

August 28 2020 Hour: 14: 8 32.4 Lat: 34.60N Lon: 36.24E Depth: 16 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs

AKKAR REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ	9	219	EP		14	8	35.48	0.03	46					1.0
BEIL	SN	9	219	ES		14	8	37.67	-0.01						1.0
HWQ	BZ	45	217	EP		14	8	40.04	-0.09						1.0
HWQ	BN	45	217	ES		14	8	45.83	0.02						1.0
ZAHL	SZ	89	202	EP		14	8	46.53	-0.01						1.0
BHL	BZ	95	215	EP		14	8	47.41	0.05						1.0
DQRL	SZ	117	212	EP		14	8	50.71	0.02						1.0
RCY	SZ	128	197	EP		14	8	52.31	-0.03						1.0
SHBL	SZ	147	199	EP		14	8	55.06	0.03						1.0

August 30 2020 Hour: 21:20 30.7 Agency: REL Distant
EMSC OT=21:20:30.7 0.87N 29.70W 10Km M=6.5 CENTRAL MID-ATLANTIC RIDGE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		2131	39.35								
HWQ	BZ			EP		2131	39.56								
BEIL	SZ			EP		2131	41.64								

August 31 2020 Hour: 17:24 4.9 Agency: REL Distant
EMSC OT=17:24:04.9 4.02S 70.20E 10Km M=6.1 CHAGOS ARCHIPELAGO REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	SZ			EP		1732	55.71								
RCY	SZ			EP		1732	55.61								
DQRL	SZ			EP		1732	57.91								
BHL	BZ			EP		1732	58.08								
HWQ	BZ			EP		1732	57.95								
BEIL	SZ			EP		1732	59.60								

August 31 2020 Hour: 19:58 40.0 Lat: 34.28N Lon: 26.08E Depth:426 Agency: REL Regional
Magnitudes: 4.9MC REL Rms: 0.1 secs

EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	879	92	EP		20	0	37.50	-0.04						1.0
BHL	BZ	884	90	EP		20	0	38.06	-0.06						1.0
SHBL	SZ	900	94	EP		20	0	39.90	-0.00						1.0

ZAHL	SZ	906	90	EP	20	0	40.37-0.12		1.0
RCY	SZ	906	93	EP	20	0	40.61	0.08	1.0
HWQ	BZ	908	87	EP	20	0	40.76	0.05	1.0
HWQ	BN	908	87	ES	20	2	10.16	0.13	1.0
BEIL	SZ	929	85	EP	20	0	42.99	0.09	1.0
BEIL	SN	929	85	ES	20	2	13.71-0.13		1.0

249

Epicentral Map of Lebanon

AUGUST 2020

