

Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

July

2021

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

July 1 2021 Hour: 13:14 12.5 Lat: 33.57N Lon: 35.46E Depth: 16 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.2 secs

CHOUF REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	18	34	EP		1314	16.49	0.04	28						1.0
DQRL	SN	18	34	ES		1314	19.43	0.03							1.0
QRWL	SZ	21	97	EP		1314	16.91	0.15							1.0
QRWL	SN	21	97	ES		1314	19.85	-0.09							1.0
RCY	SZ	36	103	EP		1314	18.89	0.07							1.0
RCY	SN	36	103	ES		1314	23.55	0.02							1.0
SHBL	SZ	36	133	EP		1314	18.78	-0.08							1.0
BHL	BZ	41	26	EP		1314	19.22	-0.33							1.0
ZAHL	SZ	51	51	EP		1314	20.86	-0.09							1.0
HWQ	BZ	90	30	EP		1314	27.06	0.28							1.0

July 2 2021 Hour: 4:17 30.2 Lat: 33.70N Lon: 35.86E Depth: 11 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 0.1 secs

WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
ZAHL	SZ	18	9	EP		417	33.89	0.10							1.0
RCY	SZ	22	185	EP		417	34.34	-0.07							1.0
RCY	SN	22	185	ES		417	37.48	-0.03							1.0
QRWL	SZ	23	224	EP		417	34.44	-0.05	25						1.0
DQRL	SZ	27	272	EP		417	35.01	0.04							1.0
DQRL	SN	27	272	ES		417	38.51	0.03							1.0
BHL	BZ	30	321	EP		417	35.30	-0.11							1.0
SHBL	SZ	40	195	EP		417	37.17	0.13							1.0
HWQ	BZ	65	7	EP		417	40.86	-0.03							1.0
FKH	SZ	79	40	EP		417	43.06	0.00							0.2

July 2 2021 Hour: 20:14 35.7 Agency: REL Distant
EMSC OT=20:14:35.7 21.80S 179.33W 576Km M=5.1 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2033	13.00								
FKH	SZ			EP		2033	13.00								
HWQ	BZ			EP		2033	13.19								
ZAHL	SZ			EP		2033	14.10								
BHL	BZ			EP		2033	14.49								
RCY	SZ			EP		2033	14.42								
DQRL	SZ			EP		2033	14.94								
QRWL	SZ			EP		2033	14.87								
SHBL	SZ			EP		2033	14.94								
SAIL	SZ			EP		2033	15.13								

July 4 2021 Hour: 13:59 14.9 Lat: 32.44N Lon: 35.12E Depth: 0 Agency: REL Regional
Magnitudes: 3.3MC REL Rms: 0.2 secs

DEAD SEA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	SZ	116	30	EP		1359	33.44	-0.21	87						1.0
QRWL	SZ	134	23	EP		1359	36.43	0.01							1.0
RCY	SZ	135	29	EP		1359	36.23	-0.40							1.0
RCY	SN	135	29	ES		1359	52.80	0.06							1.0
DQRL	SZ	147	16	EP		1359	38.31	-0.03							1.0
DQRL	SN	147	16	ES		1359	55.72	0.02							1.0
BHL	BZ	170	17	EP		1359	41.76	-0.01							1.0
ZAHL	SZ	173	24	EP		1359	42.32	0.12							1.0
HWQ	BZ	218	20	EP		1359	48.09	0.01							1.0
BEIL	SZ	253	23	EP		1359	52.46	0.05							1.0

July 4 2021 Hour: 17:30 12.2 Agency: REL Regional

EMSC OT=17:30:12.2 33.91N 28.39E 41Km M=3.8 EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		1731	35.59								
QRWL	SZ			EP		1731	34.85								
SHBL	SZ			EP		1731	36.70								
RCY	SZ			EP		1731	36.77								
ZAHL	SZ			EP		1731	36.77								
HWQ	BZ			EP		1731	38.74								
BEIL	SZ			EP		1731	41.53								

July 5 2021 Hour: 0:22 31.2 Lat: 34.33N Lon: 35.98E Depth: 15 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 0.1 secs

MINIEH-DINNIEH REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ	6	212	EP		022	34.11	-0.02	26						1.0
HWQ	BN	6	212	ES		022	36.28	0.00							1.0
BEIL	SZ	31	38	EP		022	36.67	-0.09							1.0
BEIL	SN	31	38	ES		022	40.93	0.08							1.0
FKH	SZ	41	103	EP		022	38.22	-0.01							1.0
ZAHL	SZ	53	190	EP		022	40.21	0.22							0.2
BHL	BZ	56	213	EP		022	40.42	0.01							1.0
DQRL	SZ	78	209	EP		022	44.16	0.39							0.2
RCY	SZ	93	188	EP		022	45.96	0.04							0.2

July 5 2021 Hour: 20:40 30.5 Agency: REL Regional

EMSC OT=20:40:30.5 35.12N 25.23E 10Km M=4.2 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2042	38.73								
HWQ	BZ			EP		2042	39.59								

July 8 2021 Hour: 13: 7 34.8 Lat: 35.16N Lon: 36.69E Depth: 0 Agency: REL Regional
Magnitudes: 3.3MC 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	83	214	EP		13 7	48.35	0.11	85						1.0
BEIL	SN	83	214	ES		13 7	58.19	0.01							1.0
FKH	SZ	105	194	EP		13 7	51.62	-0.17							1.0
FKH	SN	105	194	ES		13 8	4.44	0.09							1.0
HWQ	BZ	120	215	EP		13 7	54.26	0.13							1.0
HWQ	BN	120	215	ES		13 8	8.34	-0.09							1.0
ZAHL	SZ	163	207	EP		13 8	0.58	-0.06							1.0
BHL	BZ	169	215	EP		13 8	1.39	-0.18							1.0
DQRL	SZ	192	213	EP		13 8	4.80	0.09							1.0
RCY	SZ	201	203	EP		13 8	5.84	-0.05							1.0
QRWL	SZ	202	208	EP		13 8	6.05	0.10							1.0
SHBL	SZ	220	204	EP		13 8	8.22	0.03							1.0

July 8 2021 Hour: 21:10 11.8 Agency: REL Regional

EMSC OT=21:10:11.8 36.52N 36.53E 10Km M=2.9 TURKEY-SYRIA BORDER REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2110	46.53								
BEIL	SN			ES		2111	13.28								
FKH	SZ			EP		2110	50.06								
HWQ	BZ			EP		2110	51.49								
ZAHL	SZ			EP		2110	56.84								
DQRL	SZ			EP		2111	1.98								
QRWL	SZ			EP		2111	8.15								

July 9 2021 Hour: 3:10 25.8 Lat: 33.77N Lon: 36.85E Depth: 4 Agency: REL Regional
 Magnitudes: 3.3MC REL Rms: 0.0 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	66	322	EP		310	36.45	-0.00	87						1.0
FKH	SN	66	322	ES		310	44.30	-0.06							1.0
ZAHL	SZ	90	276	EP		310	40.25	0.02							1.0
RCY	SZ	99	252	EP		310	41.70	-0.02							1.0
HWQ	BZ	100	304	EP		310	41.96	0.00							1.0
HWQ	BN	100	304	ES		310	53.95	0.01							1.0
BEIL	SZ	105	325	EP		310	42.69	0.00							1.0
BEIL	SN	105	325	ES		310	55.26	0.05							1.0
BHL	BZ	111	278	EP		310	43.76	0.02							1.0
QRWL	SZ	111	257	EP		310	43.66	-0.01							1.0
SHBL	SZ	113	246	EP		310	44.02	0.04							1.0
DQRL	SZ	119	267	EP		310	44.74	-0.06							1.0
SAIL	SZ	136	261	EP		310	47.40	0.11							0.2

July 9 2021 Hour: 15:41 20.9 Agency: REL Regional
 EMSC OT=15:41:20.9 36.81N 45.38E 15Km M=4.9 IRAN-IRAQ BORDER REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		1543	12.87								
HWQ	BZ			EP		1543	15.29								
ZAHL	SZ			EP		1543	18.89								
BHL	BZ			EP		1543	19.79								
RCY	SZ			EP		1543	21.49								
DQRL	SZ			EP		1543	22.62								
QRWL	SZ			EP		1543	23.39								
SHBL	SZ			EP		1543	23.45								

July 10 2021 Hour: 0:43 57.3 Agency: REL Distant
 EMSC OT=00:43:57.3 2.98N 126.56E 60Km M=6.3 MOLUCCA SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		056	44.81								
BEIL	SZ			EP		056	44.74								
HWQ	BZ			EP		056	45.97								
ZAHL	SZ			EP		056	45.82								
RCY	SZ			EP		056	46.26								
SHBL	SZ			EP		056	46.47								
BHL	BZ			EP		056	47.41								
QRWL	SZ			EP		056	47.70								
DQRL	SZ			EP		056	47.27								

July 12 2021 Hour: 22:11 19.9 Lat: 33.70N Lon: 35.76E Depth: 12 Agency: REL Local
 Magnitudes: 2.4MC REL Rms: 0.1 secs

WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	18	271	EP		2211	23.53	0.09	27						1.0
DQRL	SN	18	271	ES		2211	26.03	-0.06							1.0
QRWL	SZ	19	203	EP		2211	23.54	-0.03							1.0
QRWL	SN	19	203	ES		2211	26.37	0.05							1.0
ZAHL	SZ	21	34	EP		2211	23.89	0.03							1.0
RCY	SZ	24	163	EP		2211	24.26	-0.07							1.0
BHL	BZ	24	336	EP		2211	24.34	-0.01							1.0
SHBL	SZ	39	182	EP		2211	26.62	0.02							1.0
HWQ	BZ	66	15	EP		2211	30.61	-0.07							0.2

July 13 2021 Hour: 0:30 16.1

Agency: REL Distant

EMSC OT=00:30:16.1 46.18N 151.63E 35Km M=5.6 KURIL ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		042	27.08								
FKH	SZ			EP		042	28.16								
HWQ	BZ			EP		042	28.44								
ZAHL	SZ			EP		042	30.66								
BHL	BZ			EP		042	30.43								
DQRL	SZ			EP		042	32.30								
RCY	SZ			EP		042	32.30								
QRWL	SZ			EP		042	32.59								
SHBL	SZ			EP		042	33.10								

July 13 2021 Hour: 2:28 54.2

Agency: REL Distant

EMSC OT=02:28:54.2 52.51N 160.42E 10Km M=5.3 EAST COAST OF KAMCHATKA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		241	7.21								
HWQ	BZ			EP		241	8.67								
ZAHL	SZ			EP		241	10.77								
BHL	BZ			EP		241	11.22								
RCY	SZ			EP		241	12.73								
QRWL	SZ			EP		241	12.91								
SHBL	SZ			EP		241	13.68								

July 14 2021 Hour: 23:54 13.9

Agency: REL Distant

EMSC OT=23:54:13.9 22.14S 179.30E 600Km M=5.1 SOUTH OF FIJI ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2412	46.00								
FKH	SZ			EP		2412	45.91								
HWQ	BZ			EP		2412	46.19								
ZAHL	SZ			EP		2412	47.08								
BHL	BZ			EP		2412	47.41								
RCY	SZ			EP		2412	47.36								
DQRL	SZ			EP		2412	47.97								
QRWL	SZ			EP		2412	47.69								
SHBL	SZ			EP		2412	47.78								
SAIL	SZ			EP		2412	47.97								

July 16 2021 Hour: 21:19 31.7

Lat: 33.54N

Lon: 35.55E

Depth: 2

Agency: REL Local

Magnitudes: 2.5MC REL

Rms: 0.0 secs

JEZZINE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	13	89	EP		2119	33.76	-0.05	30						1.0
SAIL	SZ	14	284	EP		2119	33.95	-0.01							1.0
DQRL	SZ	18	7	EP		2119	34.70	0.06							1.0
DQRL	SN	18	7	ES		2119	36.84	0.01							1.0
RCY	SZ	27	101	EP		2119	36.24	0.08							1.0
RCY	SN	27	101	ES		2119	39.45	-0.02							1.0
SHBL	SZ	29	140	EP		2119	36.32	-0.02							1.0
SHBL	SN	29	140	ES		2119	39.79	0.01							1.0
BHL	BZ	41	14	EP		2119	38.30	-0.04							1.0
HWQ	BZ	89	24	EP		2119	46.10	-0.01							1.0

July 17 2021 Hour: 2:3 5.7

Agency: REL Regional

EMSC OT=02:03:05.7 36.44N 27.08E 10Km M=3.5 DODECANESE-TURKEY BORDER REG

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2 4	0.83								
FKH	SZ			EP		2 4	5.71								
HWQ	BZ			EP		2 4	5.83								

July 17 2021 Hour: 2:56 20.5 Lat: 33.70N Lon: 35.86E Depth: 12 Agency: REL Local
 Magnitudes: 2.3MC REL Rms: 0.1 secs

WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
ZAHL	SZ	17	7	EP		256	24.11	0.02							1.0
ZAHL	SN	17	7	ES		256	26.76	0.04							1.0
RCY	SZ	23	186	EP		256	24.81	-0.09	23						1.0
QRWL	SZ	24	224	EP		256	24.99	-0.01							1.0
QRWL	SN	24	224	ES		256	28.25	-0.06							1.0
DQRL	SZ	27	270	EP		256	25.38	-0.05							1.0
DQRL	SN	27	270	ES		256	29.19	0.12							1.0
BHL	BZ	29	319	EP		256	25.61	-0.15							1.0
SHBL	SZ	41	196	EP		256	27.68	0.16							1.0
HWQ	BZ	64	7	EP		256	31.06	0.03							1.0

July 17 2021 Hour: 3:23 47.3 Agency: REL Distant

EMSC OT=03:23:47.3 20.58S 178.39W 560Km M=5.5 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		342	26.48								
FKH	SZ			EP		342	26.53								
HWQ	BZ			EP		342	26.77								
ZAHL	SZ			EP		342	27.47								
BHL	BZ			EP		342	27.96								
RCY	SZ			EP		342	28.11								
DQRL	SZ			EP		342	28.60								
QRWL	SZ			EP		342	28.40								
SHBL	SZ			EP		342	28.45								
SAIL	SZ			EP		342	28.75								

July 18 2021 Hour: 0:33 21.9 Lat: 33.76N Lon: 36.91E Depth: 0 Agency: REL Regional
 Magnitudes: 3.0MC REL Rms: 0.2 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	71	320	EP		033	33.14	-0.25	58						1.0
FKH	SN	71	320	ES		033	41.91	0.04							1.0
ZAHL	SZ	96	277	EP		033	37.46	0.12							1.0
RCY	SZ	104	254	EP		033	38.65	-0.03							1.0
RCY	SN	104	254	ES		033	51.08	0.00							1.0
HWQ	BZ	106	303	EP		033	38.71	-0.33							1.0
BEIL	SZ	110	323	EP		033	40.01	0.39							1.0
QRWL	SZ	116	259	EP		033	40.82	0.13							1.0
BHL	BZ	117	278	EP		033	40.77	-0.10							1.0
SHBL	SZ	117	248	EP		033	40.82	-0.06							1.0
DQRL	SZ	124	268	EP		033	42.07	0.08							1.0

July 18 2021 Hour: 0:33 33.3 Agency: REL Distant

EMSC OT=00:36:33.3 19.30S 175.36W 215Km M=5.4 TONGA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		055	54.92								
FKH	SZ			EP		055	55.10								
HWQ	BZ			EP		055	54.86								
ZAHL	SZ			EP		055	56.20								
BHL	BZ			EP		055	56.50								
DQRL	SZ			EP		055	57.04								
RCY	SZ			EP		055	56.62								
QRWL	SZ			EP		055	56.92								
SHBL	SZ			EP		055	56.98								

July 18 2021 Hour: 14:34 18.7 Agency: REL Distant
EMSC OT=14:34:18.7 29.59N 51.17E 10Km M=5.4 SOUTHERN IRAN
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 FKH SZ EP 1437 29.30
 ZAHL SZ EP 1437 36.27
 SHBL SZ EP 1437 34.60
 HWQ BZ EP 1437 35.00
 QRWL SZ EP 1437 36.06
 BHL BZ EP 1437 37.44
 DQRL SZ EP 1437 36.13

July 18 2021 Hour: 22: 9 20.1 Lat: 35.84N Lon: 39.62E Depth: 15 Agency: REL Regional
Magnitudes: 4.3MC REL Rms: 0.5 secs
SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		2210	6.71	-0.45							1.0
FKH	SN	341	240	ES		2210	42.33	0.36							1.0
BEIL	SZ	344	246	EP		2210	8.43	1.05	263						1.0
BEIL	SN	344	246	ES		2210	41.63	-0.73							1.0
HWQ	BZ	377	244	EP		2210	11.56	0.08							1.0
ZAHL	SZ	405	238	EP		2210	14.87	-0.12							1.0
ZAHL	SN	405	238	ES		2210	55.50	-0.10							1.0
BHL	BZ	421	241	EP		2210	16.93	0.12							1.0
RCY	SZ	433	234	EP		2210	18.03	-0.28							1.0
RCY	SN	433	234	ES		2211	1.83	0.46							1.0
DQRL	SZ	439	239	EP		2210	19.50	0.46							1.0
QRWL	SZ	441	236	EP		2210	18.64	-0.58							1.0
SHBL	SZ	450	233	EP		2210	20.09	-0.27							1.0

July 23 2021 Hour: 20:48 58.0 Agency: REL Distant
EMSC OT=20:48:58.0 13.73N 120.77E 118Km M=6.7 MINDORO, PHILIPPINES

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		21 0	43.73								
BEIL	SZ			EP		21 0	44.29								
HWQ	BZ			EP		21 0	45.47								
ZAHL	SZ			EP		21 0	46.43								
RCY	SZ			EP		21 0	47.10								
BHL	BZ			EP		21 0	47.10								
QRWL	SZ			EP		21 0	47.49								
SHBL	SZ			EP		21 0	47.78								
DQRL	SZ			EP		21 0	47.94								
SAIL	SZ			EP		21 0	48.79								

July 24 2021 Hour: 2: 7 38.1 Agency: REL Regional
EMSC OT=02:07:38.1 35.13N 25.23E 10Km M=4.8 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		2 9	42.94								
QRWL	SZ			EP		2 9	44.02								
HWQ	BZ			EP		2 9	44.86								
SHBL	SZ			EP		2 9	45.37								
RCY	SZ			EP		2 9	45.25								
BEIL	SZ			EP		2 9	46.96								
FKH	SZ			EP		2 9	50.74								

July 24 2021 Hour: 12:51 27.2 Agency: REL Distant
EMSC OT=12:51:27.2 30.15S 176.77W 2Km M=6.8 KERMADEC ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ			EP		1311	21.57								
BHL	BZ			EP		1311	22.51								
BEIL	SZ			EP		1311	24.55								
DQRL	SZ			EP		1311	25.17								
RCY	SZ			EP		1311	26.11								

July 24 2021 Hour: 21:28 47.0 Lat: 33.72N Lon: 35.79E Depth: 17 Agency: REL Local
Magnitudes: 2.3MC REL Rms: 0.1 secs

WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
ZAHL	SZ	18	30	EP		2128	51.14	0.06	22						1.0
ZAHL	SN	18	30	ES		2128	54.07	0.00							1.0
DQRL	SZ	21	265	EP		2128	51.42	0.02							1.0
QRWL	SZ	22	208	EP		2128	51.43	-0.10							1.0
QRWL	SN	22	208	ES		2128	54.83	-0.02							1.0
BHL	BZ	24	328	EP		2128	51.85	0.04							1.0
RCY	SZ	25	171	EP		2128	51.96	-0.05							1.0
SHBL	SZ	42	186	EP		2128	54.38	0.13							1.0
HWQ	BZ	63	13	EP		2128	57.30	-0.09							1.0

July 25 2021 Hour: 9:13 24.3 Agency: REL Regional

EMSC OT=09:13:24.3 35.37N 32.71E 10Km M=2.9 CYPRUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		914	6.22								
HWQ	BZ			EP		914	7.66								
BEIL	SZ			EP		914	8.82								
RCY	SZ			EP		914	10.78								
SHBL	SZ			EP		914	11.23								

July 25 2021 Hour: 17:57 30.3 Agency: REL Regional

EMSC OT=17:57:30.3 37.19N 36.44E 2Km M=3.3 CENTRAL TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		1758	14.86								
HWQ	BZ			EP		1758	20.42								
FKH	SZ			EP		1758	20.42								
BHL	BZ			EP		1758	23.78								
DQRL	SZ			EP		1758	25.66								

July 25 2021 Hour: 20:55 5.3 Agency: REL Regional

EMSC OT=20:55:05.3 37.21N 36.44E 7Km M=4.2 CENTRAL TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		2055	49.19								
HWQ	BZ			EP		2055	52.57								
FKH	SZ			EP		2055	53.78								
ZAHL	SZ			EP		2055	58.86								
BHL	BZ			EP		2055	58.70								
DQRL	SZ			EP		2056	2.33								
QRWL	SZ			EP		2056	2.90								
RCY	SZ			EP		2056	3.78								
SHBL	SZ			EP		2056	6.44								

July 26 2021 Hour: 2:16 16.7 Agency: REL Distant

EMSC OT=02:16:16.7 41.48N 142.13E 64Km M=5.1 HOKKAIDO, JAPAN

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		228	10.94								
FKH	SZ			EP		228	11.32								
HWQ	BZ			EP		228	12.24								
ZAHL	SZ			EP		228	14.62								
BHL	BZ			EP		228	14.62								
DQRL	SZ			EP		228	16.13								
RCY	SZ			EP		228	15.92								
QRWL	SZ			EP		228	16.21								
SHBL	SZ			EP		228	16.71								

July 26 2021 Hour: 7:55 17.8 Lat: 35.05N Lon: 36.75E Depth: 0 Agency: REL Regional
Magnitudes: 2.9MC 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	77	222	EP		755	29.95	-0.17	52						1.0
BEIL	SN	77	222	ES		755	39.34	0.08							1.0
FKH	SZ	95	199	EP		755	32.98	-0.08							1.0
HWQ	BZ	113	221	EP		755	36.07	0.07							1.0
HWQ	BN	113	221	ES		755	49.41	-0.08							1.0
BHL	BZ	162	219	EP		755	43.59	0.04							1.0
DQRL	SZ	184	216	EP		755	46.79	-0.03							1.0
RCY	SZ	192	206	EP		755	47.79	0.01							1.0
RCY	SN	192	206	ES		756	10.03	0.04							1.0
QRWL	SZ	194	211	EP		755	48.05	0.11							1.0
SHBL	SZ	210	206	EP		755	50.09	0.00							1.0

July 26 2021 Hour: 12:9 6.3 Agency: REL Distant
EMSC OT=12:09:06.3 0.65S 121.94E 10Km M=6.2 SULAWESI, INDONESIA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		1221	50.96								
HWQ	BZ			EP		1221	51.37								
BHL	BZ			EP		1221	52.28								
RCY	SZ			EP		1221	52.38								
SHBL	SZ			EP		1221	52.58								

July 27 2021 Hour: 16:57 45.3 Lat: 34.59N Lon: 36.37E Depth: 7 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.2 secs

AKKAR REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ	18	251	EP		1657	48.82	0.39	55						1.0
BEIL	SN	18	251	ES		1657	50.67	-0.07							1.0
FKH	SZ	39	174	EP		1657	51.49	-0.21							1.0
FKH	SN	39	174	ES		1657	56.60	0.16							1.0
HWQ	BZ	52	228	EP		1657	53.43	-0.40							1.0
HWQ	BN	52	228	ES		1658	0.17	0.03							1.0
ZAHL	SZ	93	209	EP		1658	0.28	-0.06							1.0
BHL	BZ	101	221	EP		1658	1.55	-0.03							1.0
DQRL	SZ	123	217	EP		1658	4.85	0.03							1.0
RCY	SZ	131	202	EP		1658	6.23	0.16							1.0

July 28 2021 Hour: 12:27 13.6 Agency: REL Regional
EMSC OT=12:27:13.6 39.19N 40.34E 5Km M=4.1 EASTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		1228	41.04								
FKH	SZ			EP		1228	41.84								
HWQ	BZ			EP		1228	46.17								
BHL	BZ			EP		1228	48.77								

July 28 2021 Hour: 16:21 10.3 Lat: 33.60N Lon: 35.99E Depth: 8 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.0 secs

RACHAYA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	19	231	EP		1621	13.61	-0.07	33						1.0
RCY	SN	19	231	ES		1621	16.18	0.02							1.0
QRWL	SZ	29	258	EP		1621	15.23	-0.03							1.0
ZAHL	SZ	30	341	EP		1621	15.46	0.05							1.0
ZAHL	SN	30	341	ES		1621	19.18	0.00							1.0
SHBL	SZ	36	219	EP		1621	16.42	0.06							1.0
DQRL	SZ	41	287	EP		1621	17.06	0.01							1.0
BHL	BZ	46	317	EP		1621	17.86	-0.00							1.0
HWQ	BZ	75	357	EP		1621	22.51	-0.03							1.0

July 28 2021 Hour: 21: 6 44.6

Agency: REL Distant

EMSC OT=21:06:44.6 30.88S 179.71W 361Km M=5.1 KERMADEC ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		2125	52.09								
BEIL	SZ			EP		2125	52.25								
HWQ	BZ			EP		2125	52.32								
ZAHL	SZ			EP		2125	53.09								
RCY	SZ			EP		2125	53.05								
BHL	BZ			EP		2125	53.19								
SHBL	SZ			EP		2125	53.28								
QRWL	SZ			EP		2125	53.48								
DQRL	SZ			EP		2125	53.65								

July 29 2021 Hour: 6:15 50.5

Agency: REL Distant

EMSC OT=06:15:50.5 55.54N 158.01W 43Km M=8.2 ALASKA PENINSULA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEIL	SZ			EP		628	44.40								
FKH	SZ			EP		628	45.99								
HWQ	BZ			EP		628	48.12								
BHL	BZ			EP		628	49.98								
RCY	SZ			EP		628	49.71								
DQRL	SZ			EP		628	48.38								
QRWL	SZ			EP		628	48.91								
SHBL	SZ			EP		628	50.77								

July 30 2021 Hour: 3:17 10.6

Lat: 33.84N Lon: 35.97E Depth: 6 Agency: REL Local

Magnitudes: 2.4MC REL

Rms: 0.2 secs

ZAHLE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
ZAHL	SZ	8	281	EP		317	12.41	-0.04	26						1.0
ZAHL	SN	8	281	ES		317	13.83	0.04							1.0
BHL	BZ	30	283	EP		317	15.54	-0.09							1.0
DQRL	SZ	40	248	EP		317	17.35	0.13							1.0
DQRL	SN	40	248	ES		317	22.02	-0.08							1.0
RCY	SZ	41	198	EP		317	17.21	-0.09							1.0
QRWL	SZ	42	219	EP		317	17.60	0.02							1.0
HWQ	BZ	48	357	EP		317	18.59	0.09							1.0
SHBL	SZ	59	201	EP		317	20.31	0.09							1.0
FKH	SZ	60	42	EP		317	19.11	-1.30							0.2

July 31 2021 Hour: 19:57 54.6

Agency: REL Regional

EMSC OT=19:57:54.6 36.36N 27.07E 17Km M=4.7 DODECANESE-TURKEY BORDER REG

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		1959	43.33								
DQRL	SZ			EP		1959	43.70								
HWQ	BZ			EP		1959	45.20								
QRWL	SZ			EP		1959	46.18								
ZAHL	SZ			EP		1959	45.65								
BEIL	SZ			EP		1959	46.93								
SHBL	SZ			EP		1959	47.46								
RCY	SZ			EP		1959	47.46								
FKH	SZ			EP		1959	50.53								

Epicentral Map of Lebanon

JULY 2021

