

Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

July

2015

Prepared by
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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

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 2015 Hour: 7: 9 31.9 Lat: 33.48N Lon: 35.62E Depth: 15 Agency: REL Local
Magnitudes: 2.4MC 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	10	40	EP		7 9	34.96	-0.01	25						1.0
SHBL	BZ	19	141	EP		7 9	35.96	-0.01							1.0
SHBL	BN	19	141	ES		7 9	39.00	0.01							1.0
RCY	SZ	21	85	EP		7 9	36.16	0.00							1.0
DQRL	SZ	25	350	EP		7 9	36.74	0.01							1.0
DQRL	SN	25	350	ES		7 9	40.32	-0.00							1.0

July 1 2015 Hour: 15: 2 17.9 Lat: 33.74N Lon: 35.86E Depth: 11 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs

WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	26	314	EP		15 2	22.53	-0.05	45						1.0
BHL	BE	26	314	ES		15 2	26.00	-0.02							1.0
DQRL	SZ	27	262	EP		15 2	22.78	0.08							1.0
DQRL	SE	27	262	ES		15 2	26.23	0.00							1.0
QRWL	SZ	27	217	EP		15 2	22.69	-0.01							1.0
RCY	SZ	27	184	EP		15 2	22.78	0.00							1.0
RCY	SN	27	184	ES		15 2	26.37	0.00							1.0
SHBL	BZ	45	194	EP		15 2	25.44	-0.01							1.0
HWQ	SZ	60	8	EP		15 2	27.79	-0.04							1.0
HWQ	SN	60	8	ES		15 2	35.21	0.05							1.0

July 3 2015 Hour: 1: 7 46.9 Agency: REL Distant
EMSC OT=01:07:46.9 37.47N 78.11E 20Km M=6.4 SOUTHERN XINJIANG, CHINA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		114	31.06								
RCY	SZ			EP		114	33.99								
BHL	BZ			EP		114	34.35								
QRWL	SZ			EP		114	35.15								

July 3 2015 Hour: 3:14 8.7 Agency: REL Regional
EMSC OT=03:14:08.7 36.52N 28.34E 58Km M=3.8 DODECANESE IS.-TURKEY BORDER REG

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		315	40.10								
DQRL	SZ			EP		315	39.34								
HWQ	SZ			EP		315	40.98								
RCY	SZ			EP		315	43.97								

July 3 2015 Hour: 6:43 24.4 Agency: REL Distant
EMSC OT=06:43:24.4 10.21N 126.04E 60Km M=6.1 PHILIPPINE ISLANDS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		655	50.21								
RCY	SZ			EP		655	51.72								
BHL	BZ			EP		655	51.77								
SHBL	BZ			EP		655	52.24								
QRWL	SZ			EP		655	52.59								
DQRL	SZ			EP		655	53.11								

July 4 2015 Hour: 1:21 30.3 Lat: 33.75N Lon: 35.86E Depth: 15 Agency: REL Local
Magnitudes: 2.2MC REL Rms: 0.0 secs

WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	26	312	EP		121	35.22	0.00							1.0
DQRL	SZ	27	260	EP		121	35.44	0.01							1.0
DQRL	SE	27	260	ES		121	39.19	-0.01							1.0
RCY	SZ	28	185	EP		121	35.56	-0.01	18						1.0
RCY	SE	28	185	ES		121	39.45	0.01							1.0

July 4 2015 Hour: 13:45 36.6 Lat: 33.74N Lon: 35.83E Depth: 3 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.1 secs

ZAHLE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	25	262	EP		1345	40.67	0.06							1.0
DQRL	SN	25	262	ES		1345	43.60	-0.02							1.0
BHL	BZ	25	318	EP		1345	40.57	-0.07							1.0
QRWL	SZ	25	214	EP		1345	40.78	0.06							1.0
RCY	SZ	27	180	EP		1345	40.90	-0.06	41						1.0
RCY	SN	27	180	ES		1345	44.23	0.02							1.0
SHBL	BZ	44	191	EP		1345	43.63	-0.07							1.0
SHBL	BN	44	191	ES		1345	49.01	0.02							1.0
HWQ	SZ	61	10	EP		1345	46.46	0.05							1.0

July 6 2015 Hour: 12:24 0.8 Agency: REL Distant

EMSC OT=12:24:00.8 20.80S 174.52W 2Km M=5.7 TONGA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		1243	50.23								
QRWL	SZ			EP		1243	50.30								

July 6 2015 Hour: 15:25 54.0 Lat: 33.80N Lon: 35.78E Depth: 14 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.0 secs

ZAHLE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	316	EP		1525	57.67	-0.02	35						1.0
BHL	BE	17	316	ES		1526	0.41	0.01							1.0
DQRL	SZ	22	243	EP		1525	58.35	0.02							1.0
QRWL	SZ	29	198	EP		1525	59.28	-0.02							1.0
RCY	SZ	34	171	EP		1525	59.99	-0.00							1.0
RCY	SE	34	171	ES		1526	4.41	0.01							1.0
HWQ	SZ	56	16	EP		1526	3.33	0.12							0.2

July 7 2015 Hour: 5:10 26.0 Agency: REL Distant

EMSC OT=05:10:26.0 44.00N 147.98E 30Km M=6.3 KURIL ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		522	35.66								
BHL	BZ			EP		522	38.31								
SHBL	BZ			EP		522	40.50								

July 7 2015 Hour: 13:50 57.2 Lat: 33.89N Lon: 35.85E Depth: 8 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.2 secs

METN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	18	274	EP		1351	0.44	-0.06							1.0
BHL	BN	18	274	ES		1351	2.97	0.02							1.0
DQRL	SZ	33	231	EP		1351	2.78	0.03	53						1.0
HWQ	SZ	44	12	EP		1351	5.07	0.66							0.2
RCY	SZ	44	182	EP		1351	4.32	-0.12							1.0
RCY	SN	44	182	ES		1351	9.89	0.07							1.0

July 7 2015 Hour: 20: 3 12.9 Agency: REL Distant

EMSC OT=20:03:12.9 23.21S 176.99W 125Km M=5.8 SOUTH OF FIJI ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		2022	46.41								
BHL	BZ			EP		2022	47.52								
RCY	SZ			EP		2022	47.58								

July 8 2015 Hour: 2:15 31.4 Agency: REL Regional
EMSC OT=02:15:31.4 28.95N 34.62E 12Km M=3.5 EGYPT
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 RCY SZ EP 216 51.92
 DQRL SZ EP 216 59.02
 BHL BZ EP 217 1.28

July 8 2015 Hour: 7:37 59.4 Lat: 33.49N Lon: 35.65E Depth: 14 Agency: REL Local
 Magnitudes: 2.2MC REL Rms: 0.0 secs
WEST BEKAA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	7	21	EP		738	2.10	-0.05	19						1.0
RCY	SZ	17	86	EP		738	3.17	0.01							1.0
SHBL	BZ	18	151	EP		738	3.27	0.04							1.0
SHBL	BN	18	151	ES		738	6.04	-0.00							1.0
DQRL	SZ	25	342	EP		738	4.16	-0.06							1.0
DQRL	SN	25	342	ES		738	7.82	0.06							1.0

July 8 2015 Hour: 13:45 46.9 Lat: 33.79N Lon: 35.77E Depth: 8 Agency: REL Local
 Magnitudes: 2.6MC REL Rms: 0.0 secs
ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	319	EP		1345	50.04	-0.01	36						1.0
DQRL	SZ	21	244	EP		1345	50.70	0.03							1.0
DQRL	SE	21	244	ES		1345	53.43	-0.01							1.0
RCY	SZ	33	170	EP		1345	52.48	-0.03							1.0
RCY	SE	33	170	ES		1345	56.66	0.02							1.0
HWQ	SZ	56	16	EP		1345	56.31	0.15							0.2

July 8 2015 Hour: 15:51 40.8 Lat: 33.80N Lon: 35.76E Depth: 17 Agency: REL Local
 Magnitudes: 2.6MC REL Rms: 0.0 secs
ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	15	319	EP		1551	44.59	0.02	36						1.0
DQRL	SZ	21	240	EP		1551	45.17	0.02							1.0
DQRL	SN	21	240	ES		1551	48.36	-0.02							1.0
RCY	SZ	34	169	EP		1551	46.96	0.01							1.0
RCY	SE	34	169	ES		1551	51.51	-0.00							1.0
HWQ	SZ	56	18	EP		1551	50.01	-0.02							1.0

July 8 2015 Hour: 22:14 1.0 Agency: REL Regional
EMSC OT=22:14:01.0 37.61N 29.52E 7Km M=4.4 WESTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		2215	32.89								
DQRL	SZ			EP		2215	33.61								
HWQ	SZ			EP		2215	33.84								
RCY	SZ			EP		2215	38.54								

July 9 2015 Hour: 16:32 36.4 Lat: 33.79N Lon: 35.78E Depth: 3 Agency: REL Local
 Magnitudes: 2.5MC REL Rms: 0.1 secs
ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	316	EP		1632	39.24	-0.02	29						1.0
DQRL	SZ	22	244	EP		1632	40.05	0.03							1.0
DQRL	SE	22	244	ES		1632	42.70	-0.00							1.0
RCY	SZ	33	172	EP		1632	41.76	-0.05							1.0
RCY	SE	33	172	ES		1632	45.85	0.03							1.0
HWQ	SZ	56	16	EP		1632	45.82	0.38							0.2

July 10 2015 Hour: 16:028.6 Lat: 33.79N Lon: 35.77E Depth: 3 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.1 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	320	EP		16	0	31.37	-0.01	32					1.0
DQRL	SZ	21	244	EP		16	0	32.05	0.03						1.0
DQRL	SN	21	244	ES		16	0	34.54	-0.01						1.0
RCY	SZ	33	169	EP		16	0	33.94	-0.04						1.0
RCY	SE	33	169	ES		16	0	37.98	0.02						1.0
HWQ	SZ	57	17	EP		16	0	37.96	0.20						0.2

July 11 2015 Hour: 2:1134.9 Lat: 33.38N Lon: 36.30E Depth: 46 Agency: REL Local
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
RCY	SZ	45	287	EP		211	44.44	-0.01	41						1.0
RCY	SE	45	287	ES		211	51.51	0.00							1.0
DQRL	SZ	77	298	EP		211	47.93	0.06							1.0
DQRL	SE	77	298	ES		211	57.46	0.00							1.0
BHL	BZ	84	314	EP		211	48.57	-0.09							1.0
HWQ	SZ	105	342	EP		211	51.80	0.55							0.2

July 11 2015 Hour: 11:2536.9 Lat: 34.03N Lon: 35.74E Depth: 2 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.0 secs

KESROUAN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	16	212	EP		1125	39.54	0.02	61						1.0
BHL	BE	16	212	ES		1125	41.43	-0.02							1.0
BEYL	SZ	29	234	EP		1125	41.62	0.06							1.0
HWQ	SZ	34	34	EP		1125	42.37	0.00							1.0
HWQ	SE	34	34	ES		1125	46.41	0.00							1.0
DQRL	SZ	39	204	EP		1125	43.15	-0.06							1.0
QRWL	SZ	53	186	EP		1125	45.48	-0.04							1.0
RCY	SZ	59	172	EP		1125	46.46	-0.03							1.0
RCY	SN	59	172	ES		1125	53.64	0.06							1.0

July 12 2015 Hour: 14:1141.3 Lat: 33.78N Lon: 35.79E Depth: 0 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	19	317	EP		1411	44.27	-0.03	48						1.0
DQRL	SZ	22	248	EP		1411	44.89	0.04							1.0
DQRL	SN	22	248	ES		1411	47.49	-0.01							1.0
QRWL	SZ	28	202	EP		1411	45.69	-0.06							1.0
BEYL	SZ	30	290	EP		1411	46.07	0.04							1.0
RCY	SZ	32	173	EP		1411	46.40	0.00							1.0
RCY	SN	32	173	ES		1411	50.21	0.02							1.0
HWQ	SZ	57	14	EP		1411	50.49	0.02							0.2

July 12 2015 Hour: 22:5630.7 Lat: 33.78N Lon: 35.79E Depth: 0 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.1 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	19	315	EP		2256	33.71	-0.02	35						1.0
BHL	BN	19	315	ES		2256	35.92	-0.03							1.0
DQRL	SZ	23	247	EP		2256	34.46	0.07							1.0
DQRL	SN	23	247	ES		2256	37.10	0.01							1.0
QRWL	SZ	28	202	EP		2256	35.25	-0.06							1.0
RCY	SZ	32	173	EP		2256	35.96	0.02							1.0
RCY	SN	32	173	ES		2256	39.77	-0.02							1.0
HWQ	SZ	56	14	EP		2256	40.27	0.43							0.2

July 15 2015 Hour: 11:18 25.9 Lat: 33.85N Lon: 35.82E Depth: 0 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs

ZAHLE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	16	293	EP		1118	28.48	-0.05	44						1.0
BHL	BN	16	293	ES		1118	30.49	0.02							1.0
DQRL	SZ	28	235	EP		1118	30.39	0.01							1.0
RCY	SZ	39	177	EP		1118	32.27	0.06							1.0
RCY	SE	39	177	ES		1118	36.83	-0.04							1.0
HWQ	SZ	49	14	EP		1118	33.85	-0.01							0.2

July 16 2015 Hour: 15: 6 55.8 Lat: 33.78N Lon: 35.79E Depth: 4 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.1 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	19	317	EP		15 6	58.86	-0.07	36						1.0
BHL	BN	19	317	ES		15 7	1.27	0.03							1.0
DQRL	SZ	22	248	EP		15 6	59.48	0.01							1.0
DQRL	SN	22	248	ES		15 7	2.17	0.01							1.0
RCY	SZ	32	172	EP		15 7	1.04	0.01							1.0
RCY	SE	32	172	ES		15 7	4.87	-0.01							1.0
HWQ	SZ	57	15	EP		15 7	5.43	0.37							0.2

July 16 2015 Hour: 16: 3 52.6 Lat: 33.82N Lon: 35.76E Depth: 21 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.0 secs

BAABDA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	13	314	EP		16 3	56.74	0.00	31						1.0
BHL	BN	13	314	ES		16 3	59.78	-0.00							1.0
DQRL	SZ	22	233	EP		16 3	57.55	0.02							1.0
DQRL	SN	22	233	ES		16 4	1.15	-0.01							1.0
RCY	SZ	37	169	EP		16 3	59.41	-0.01							1.0
RCY	SE	37	169	ES		16 4	4.46	0.01							1.0
HWQ	SZ	53	19	EP		16 4	1.62	-0.05							0.2

July 16 2015 Hour: 16: 6 22.2 Lat: 33.78N Lon: 35.78E Depth: 2 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 0.0 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	18	319	EP		16 6	25.01	-0.06	25						1.0
BHL	BN	18	319	ES		16 6	27.26	0.03							1.0
DQRL	SZ	21	246	EP		16 6	25.66	0.01							1.0
RCY	SZ	32	171	EP		16 6	27.47	0.05							1.0
RCY	SE	32	171	ES		16 6	31.28	-0.03							1.0
HWQ	SZ	57	16	EP		16 6	31.36	0.01							1.0

July 16 2015 Hour: 19:54 41.4 Lat: 33.01N Lon: 35.97E Depth: 0 Agency: REL Local
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
RCY	SZ	55	347	EP		1954	50.33	0.07	48						1.0
RCY	SN	55	347	ES		1954	56.77	-0.08							1.0
DQRL	SZ	86	334	EP		1954	55.08	-0.07							1.0
DQRL	SN	86	334	ES		1955	5.44	0.09							1.0
BHL	BZ	103	344	EP		1954	57.91	-0.10							1.0
HWQ	SZ	140	359	EP		1955	4.02	0.08							1.0

July 17 2015 Hour: 16:41 29.9 Lat: 34.01N Lon: 34.14E Depth: 11 Agency: REL Regional
Magnitudes: 3.9MC REL Rms: 0.1 secs

OFFSHORE CENTRAL LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEYL	SZ	126	97	EP		1641	49.24	-0.30							0.2
DQRL	SZ	137	104	EP		1641	51.15	-0.01							1.0
DQRL	SE	137	104	ES		1642	7.04	0.12							1.0
BHL	BZ	140	95	EP		1641	51.70	-0.02	173						1.0
BHL	BE	140	95	ES		1642	7.66	-0.23							1.0
QRWL	SZ	152	110	EP		1641	53.59	0.19							1.0
RCY	SZ	167	110	EP		1641	55.68	-0.01							1.0
RCY	SN	167	110	ES		1642	14.66	-0.13							1.0
HWQ	SZ	169	80	EP		1641	55.84	-0.06							1.0
HWQ	SE	169	80	ES		1642	15.36	0.21							1.0

July 17 2015 Hour: 18:49 51.9 Agency: REL Distant

EMSC OT=18:49:51.9 18.12S 178.20W 522Km M=5.8 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		19 8	30.46								
BHL	BZ			EP		19 8	31.01								
RCY	SZ			EP		19 8	31.49								

July 20 2015 Hour: 11:46 15.0 Lat: 33.88N Lon: 35.85E Depth: 0 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.0 secs

ZAHLE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	18	278	EP		1146	17.95	-0.00	39						1.0
BHL	BN	18	278	ES		1146	20.12	-0.02							1.0
DQRL	SZ	32	233	EP		1146	20.26	0.04							1.0
RCY	SZ	43	182	EP		1146	21.86	-0.02							1.0
RCY	SN	43	182	ES		1146	26.97	-0.00							1.0
HWQ	SZ	45	11	EP		1146	22.26	0.00							1.0

July 20 2015 Hour: 15:31 44.6 Lat: 33.79N Lon: 35.78E Depth: 10 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	319	EP		1531	48.00	0.01	44						1.0
BHL	BE	17	319	ES		1531	50.48	-0.01							1.0
DQRL	SZ	21	245	EP		1531	48.53	-0.00							1.0
RCY	SZ	33	171	EP		1531	50.24	-0.00							1.0
RCY	SE	33	171	ES		1531	54.41	0.00							1.0
HWQ	SZ	57	16	EP		1531	53.94	-0.00							1.0

July 21 2015 Hour: 16:29 16.8 Lat: 34.72N Lon: 32.90E Depth: 15 Agency: REL Regional
Magnitudes: 4.1MC REL Rms: 0.6 secs

CYPRUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEYL	SZ	257	111	EP		1629	52.42	-0.75							0.2
BHL	BZ	269	109	EP		1629	54.19	-0.64	203						1.0
BHL	BE	269	109	ES		1630	22.55	-0.41							1.0
DQRL	SZ	271	114	EP		1629	54.31	-0.69							1.0
DQRL	SE	271	114	ES		1630	23.21	-0.05							1.0
HWQ	SZ	284	99	EP		1629	56.45	-0.24							1.0
HWQ	SN	284	99	ES		1630	26.70	0.49							1.0
QRWL	SZ	288	116	EP		1629	58.33	1.22							1.0
RCY	SZ	303	116	EP		1629	59.40	0.34							1.0

July 24 2015 Hour: 9:58 32.7 Agency: REL Regional
EMSC OT=09:58:32.7 36.58N 26.80E 155Km M=5.0 DODECANESE ISLANDS, GREECE
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL BZ EP 10 0 23.70
 DQRL SZ EP 10 0 24.85
 HWQ SZ EP 10 0 26.76
 QRWL SZ EP 10 0 27.39
 RCY SZ EP 10 0 29.88

July 24 2015 Hour: 12: 3 42.4 Agency: REL Regional
EMSC OT=12:03:42.4 36.27N 28.87E 30Km M=3.5 DODECANESE IS.-TURKEY BORDER REG
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ EP 12 5 9.48
 RCY SZ EP 12 5 12.07

July 24 2015 Hour: 12:35 28.4 Agency: REL Regional
EMSC OT=12:35:28.4 36.11N 28.33E 60Km M=3.5 DODECANESE IS.-TURKEY BORDER REG
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ EP 1236 58.99
 RCY SZ EP 1237 0.87

July 25 2015 Hour: 8:39 4.6 Lat: 33.78N Lon: 35.77E Depth: 1 Agency: REL Local
 Magnitudes: 2.8MC REL Rms: 0.0 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	18	323	EP		839	7.41	-0.03	44						1.0
BHL	BN	18	323	ES		839	9.56	0.01							1.0
DQRL	SZ	20	246	EP		839	7.91	0.05							1.0
QRWL	SZ	27	197	EP		839	8.86	-0.08							1.0
RCY	SZ	32	169	EP		839	9.83	0.06							1.0
RCY	SN	32	169	ES		839	13.58	-0.01							1.0
HWQ	SZ	58	16	EP		839	13.93	0.00							1.0

July 25 2015 Hour: 18:35 52.2 Agency: REL Regional
EMSC OT=18:35:52.2 37.13N 28.70E 12Km M=4.2 WESTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		1837	29.83								
HWQ	SZ			EP		1837	31.77								
RCY	SZ			EP		1837	34.92								

July 25 2015 Hour: 23:17 17.2 Lat: 33.71N Lon: 35.91E Depth: 0 Agency: REL Local
 Magnitudes: 2.7MC REL Rms: 0.0 secs

ZAHLE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	25	197	EP		2317	21.21	-0.00							1.0
RCY	SE	25	197	ES		2317	24.19	-0.00							1.0
QRWL	SZ	28	230	EP		2317	21.75	0.02							1.0
DQRL	SZ	32	269	EP		2317	22.31	-0.03							1.0
DQRL	SN	32	269	ES		2317	26.16	0.01							1.0
BHL	BZ	32	312	EP		2317	22.40	0.00	41						1.0
BHL	BN	32	312	ES		2317	26.25	-0.00							1.0
HWQ	SZ	63	3	EP		2317	27.44	0.08							0.2

July 26 2015 Hour: 7: 5 8.9 Agency: REL Distant
EMSC OT=07:05:08.9 9.15S 112.72E 60Km M=5.9 SOUTH OF JAVA, INDONESIA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		717	35.78								
BHL	BZ			EP		717	36.79								
DQRL	SZ			EP		717	36.95								

July 26 2015 Hour: 13:30 42.5 Lat: 33.82N Lon: 35.76E Depth: 23 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.0 secs

BAABDA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	14	317	EP		1330	46.87	0.00	35						1.0
BHL	BN	14	317	ES		1330	50.09	-0.00							1.0
DQRL	SZ	21	234	EP		1330	47.55	0.02							1.0
DQRL	SE	21	234	ES		1330	51.23	-0.01							1.0
RCY	SZ	36	168	EP		1330	49.31	-0.03							1.0
RCY	SE	36	168	ES		1330	54.41	0.02							1.0

July 27 2015 Hour: 4:49 45.2 Agency: REL Distant
EMSC OT=04:49:45.2 52.39N 169.57W 20Km M=6.9 FOX ISLANDS, ALEUTIAN ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		5 2	46.40								
BHL	BZ			EP		5 2	49.43								
RCY	SZ			EP		5 2	51.12								

July 27 2015 Hour: 9:55 10.3 Agency: REL Regional
EMSC OT=09:55:10.3 36.07N 31.17E 10Km M=4.1 WESTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		956	17.27								
RCY	SZ			EP		956	21.49								

July 27 2015 Hour: 13:42 49.8 Lat: 33.88N Lon: 35.84E Depth: 0 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.1 secs

ZAHLE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	281	EP		1342	52.50	-0.09	41						1.0
BHL	BN	17	281	ES		1342	54.67	0.02							1.0
DQRL	SZ	31	233	EP		1342	54.90	0.07							1.0
RCY	SZ	42	180	EP		1342	56.56	-0.05							1.0
RCY	SE	42	180	ES		1343	1.65	0.02							1.0
HWQ	SZ	46	13	EP		1342	57.23	0.03							1.0

July 27 2015 Hour: 13:50 26.4 Lat: 33.45N Lon: 35.69E Depth: 2 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.1 secs

HASBAYA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	11	358	EP		1350	28.25	-0.02	41						1.0
RCY	SZ	15	68	EP		1350	28.89	0.02							1.0
RCY	SE	15	68	ES		1350	30.70	-0.01							1.0
DQRL	SZ	31	339	EP		1350	31.36	-0.00							1.0
DQRL	SN	31	339	ES		1350	35.06	0.02							1.0
BHL	BZ	51	357	EP		1350	34.94	0.35							0.2
HWQ	SZ	95	15	EP		1350	41.39	-0.36							0.2

July 27 2015 Hour: 16:41 47.2 Lat: 34.05N Lon: 36.12E Depth: 50 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.0 secs

BAALBECK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	30	328	EP		1641	55.87	0.02	40						1.0
HWQ	SN	30	328	ES		1642	2.23	-0.01							1.0
BHL	BZ	46	250	EP		1641	57.07	-0.05							1.0
BHL	BE	46	250	ES		1642	4.45	0.01							1.0
DQRL	SZ	63	234	EP		1641	58.90	0.02							1.0
RCY	SZ	66	203	EP		1641	59.25	-0.00							1.0

July 27 2015 Hour: 22:59 5.5 Lat: 33.76N Lon: 34.83E Depth: 31 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs

OFFSHORE CENTRAL LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	69	95	EP		2259	17.09	-0.08							1.0
DQRL	SN	69	95	ES		2259	25.83	0.03							1.0
BHL	BZ	78	78	EP		2259	18.46	0.03							1.0
RCY	SZ	98	107	EP		2259	21.11	0.06	40						1.0
RCY	SN	98	107	ES		2259	32.52	-0.03							1.0
HWQ	SZ	118	61	EP		2259	23.54	-0.01							1.0

July 29 2015 Hour: 14:59 1.2 Lat: 33.82N Lon: 35.76E Depth: 20 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.0 secs

BAABDA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	14	313	EP		1459	5.21	-0.00	33						1.0
BHL	BN	14	313	ES		1459	8.15	-0.00							1.0
DQRL	SZ	22	235	EP		1459	6.02	0.00							1.0
RCY	SZ	37	169	EP		1459	7.89	0.00							1.0
RCY	SN	37	169	ES		1459	12.80	-0.00							1.0

July 29 2015 Hour: 22:05 59.0 Lat: 36.31N Lon: 34.84E Depth: 13 Agency: REL Regional
Magnitudes: 4.6MC REL Rms: 0.1 secs

EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEYL	SZ	277	167	EP		22	1	38.21	0.14						1.0
BHL	BZ	277	164	EP		22	1	38.09	-0.08	442					1.0
BHL	BN	277	164	ES		22	2	7.11	-0.03						1.0
DQRL	SZ	296	167	EP		22	1	40.35	-0.24						1.0
DQRL	SE	296	167	ES		22	2	11.37	0.03						1.0
QRWL	SZ	316	166	EP		22	1	43.07	0.08						1.0
RCY	SZ	325	163	EP		22	1	44.28	0.10						1.0

July 29 2015 Hour: 22:26 3.6 Agency: REL Regional

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		2226	10.65								
DQRL	SZ			EP		2226	13.72								
BHL	BZ			EP		2226	16.86								

July 30 2015 Hour: 2:39 5.8 Lat: 31.36N Lon: 35.58E Depth: 2 Agency: REL Regional
Magnitudes: 4.2MC REL Rms: 0.1 secs

DEAD SEA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	238	6	EP		239	40.97	-0.22							1.0
QRWL	SZ	242	2	EP		239	41.82	0.11							1.0
DQRL	SZ	260	360	EP		239	43.98	0.10							1.0
DQRL	SN	260	360	ES		240	12.08	-0.00							1.0
BEYL	SZ	278	358	EP		239	46.09	0.01							1.0
BHL	BZ	282	1	EP		239	46.68	0.05	241						1.0
BHL	BN	282	1	ES		240	16.85	-0.02							1.0

July 30 2015 Hour: 15:41 11.5 Lat: 34.42N Lon: 33.87E Depth: 40 Agency: REL Regional
Magnitudes: 4.5MC REL Rms: 0.2 secs

CYPRUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEYL	SZ	162	112	EP		15	4	35.02	0.33						1.0
BEYL	SN	162	112	ES		*15	4	51.14	-0.69						0.0
BHL	BZ	175	109	EP		15	4	36.16	-0.18	438					1.0
BHL	BN	175	109	ES		15	4	54.45	-0.27						1.0
DQRL	SZ	176	116	EP		15	4	36.30	-0.25						1.0
DQRL	SN	176	116	ES		15	4	55.29	0.22						1.0
QRWL	SZ	194	120	EP		15	4	38.90	0.18						1.0
RCY	SZ	209	119	EP		15	4	40.77	0.11						1.0

July 30 2015 Hour: 21:343.1

Agency: REL Regional

EMSC OT=21:03:43.1 34.33N 33.63E 15Km M=2.6 CYPRUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		21	4	14.57							
DQRL	SZ			EP		21	4	10.41							

July 31 2015 Hour: 5:1043.4

Lat: 33.69N Lon: 35.73E Depth: 15 Agency: REL Local

Magnitudes: 2.7MC REL

Rms: 0.0 secs

CHOUF REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	15	275	EP		510	47.02	0.04							1.0
DQRL	SN	15	275	ES		510	49.60	0.00							1.0
QRWL	SZ	17	195	EP		510	47.12	-0.06	37						1.0
RCY	SZ	24	156	EP		510	48.16	0.04							1.0
RCY	SE	24	156	ES		510	51.59	-0.00							1.0
BHL	BZ	24	343	EP		510	48.12	-0.02							1.0

Epicentral Map of Lebanon

July 2015

