

Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

June

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.

June 2 2015 Hour: 14:48 19.5 Lat: 33.05N Lon: 35.59E Depth: 2 Agency: REL Local
Magnitudes: 2.9MC 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	BZ	36	23	EP		1448	25.50	0.14							1.0
RCY	SZ	55	24	EP		1448	28.22	-0.11	52						1.0
RCY	SN	55	24	ES		1448	34.88	-0.01							1.0
DQRL	SZ	73	358	EP		1448	31.26	-0.01							1.0
DQRL	SN	73	358	ES		1448	40.02	0.01							1.0
BHL	BZ	95	3	EP		1448	34.81	-0.03							1.0
HWQ	SZ	140	13	EP		1448	41.87	0.01							1.0

June 3 2015 Hour: 14:20 53.5 Lat: 33.09N Lon: 35.58E Depth: 9 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 0.0 secs

DEAD SEA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	BZ	33	27	EP		1420	59.10	0.02	24						1.0
SHBL	BN	33	27	ES		1421	3.18	-0.01							1.0
RCY	SZ	51	27	EP		1421	1.97	0.00							1.0
DQRL	SZ	69	359	EP		1421	4.71	-0.02							1.0
DQRL	SN	69	359	ES		1421	13.03	0.01							1.0

June 3 2015 Hour: 15:44 17.5 Lat: 33.88N Lon: 35.84E Depth: 0 Agency: REL Local
Magnitudes: 2.9MC 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		1544	20.27	-0.06	54						1.0
BHL	BN	17	281	ES		1544	22.46	0.05							1.0
DQRL	SZ	31	233	EP		1544	22.61	0.06							1.0
DQRL	SE	31	233	ES		1544	26.22	-0.05							1.0
BEYL	SZ	32	269	EP		1544	22.30	-0.37							0.2
RCY	SZ	42	180	EP		1544	24.29	-0.01							1.0
RCY	SN	42	180	ES		1544	29.28	-0.03							1.0
HWQ	SZ	46	13	EP		1544	24.91	-0.01							1.0
SHBL	BZ	59	189	EP		1544	27.12	0.07							1.0

June 4 2015 Hour: 3:17 47.0 Lat: 33.06N Lon: 35.59E Depth: 8 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.0 secs

DEAD SEA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	54	25	EP		317	55.79	-0.02	50						1.0
RCY	SN	54	25	ES		318	2.32	-0.00							1.0
QRWL	SZ	55	9	EP		317	56.05	0.04							1.0
DQRL	SZ	72	358	EP		317	58.69	-0.03							1.0
DQRL	SN	72	358	ES		318	7.38	-0.00							1.0
BHL	BZ	94	3	EP		318	2.23	0.00							1.0

June 4 2015 Hour: 13:42 27.2 Lat: 33.54N Lon: 35.71E Depth: 0 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.0 secs

RACHAYA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	3	297	EP		1342	27.66	-0.01	31						1.0
RCY	SZ	13	111	EP		1342	29.21	-0.09							1.0
RCY	SN	13	111	ES		1342	30.88	0.05							1.0
SHBL	BZ	21	171	EP		1342	30.68	0.02							1.0
DQRL	SZ	23	326	EP		1342	30.88	0.00							1.0
DQRL	SN	23	326	ES		1342	33.60	0.02							1.0

June 6 2015 Hour: 9:42 6.2 Lat: 33.87N Lon: 35.81E Depth: 8 Agency: REL Local
Magnitudes: 2.9MC 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	15	286	EP		942	9.00	0.02	53						1.0
BHL	BN	15	286	ES		942	11.06	-0.01							1.0
DQRL	SZ	28	231	EP		942	10.99	-0.00							1.0
RCY	SZ	41	176	EP		942	13.01	-0.01							1.0
RCY	SN	41	176	ES		942	18.10	0.00							1.0
HWQ	SZ	47	16	EP		942	13.93	-0.00							1.0

June 6 2015 Hour: 11:45 7.7 Lat: 33.81N Lon: 35.79E Depth: 18 Agency: REL Local
Magnitudes: 2.7MC 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	16	309	EP		1145	11.60	-0.03	38						1.0
BHL	BE	16	309	ES		1145	14.57	0.01							1.0
DQRL	SZ	23	239	EP		1145	12.50	0.05							1.0
QRWL	SZ	31	198	EP		1145	13.33	-0.08							1.0
RCY	SZ	35	173	EP		1145	14.10	0.05							1.0
RCY	SN	35	173	ES		1145	18.77	-0.01							1.0

June 6 2015 Hour: 12:11 17.5 Lat: 33.47N Lon: 35.69E Depth: 2 Agency: REL Local
Magnitudes: 2.7MC 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	9	353	EP		1211	18.86	-0.06							1.0
RCY	SZ	14	78	EP		1211	19.73	0.02	41						1.0
SHBL	BZ	14	161	EP		1211	19.83	-0.02							1.0
SHBL	BN	14	161	ES		1211	21.65	0.03							1.0
DQRL	SZ	28	336	EP		1211	22.04	-0.03							1.0
DQRL	SE	28	336	ES		1211	25.54	0.06							1.0

June 6 2015 Hour: 16:57 36.1 Lat: 33.35N Lon: 35.65E Depth: 15 Agency: REL Local
Magnitudes: 2.6MC 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	22	8	EP		1657	40.47	-0.10							1.0
RCY	SZ	24	47	EP		1657	40.86	0.05	33						1.0
RCY	SN	24	47	ES		1657	44.28	0.01							1.0
DQRL	SZ	40	349	EP		1657	43.19	0.13							1.0
DQRL	SN	40	349	ES		1657	48.20	0.01							1.0
BHL	BZ	62	0	EP		1657	46.08	-0.10							1.0

June 7 2015 Hour: 12:35 56.8 Lat: 33.82N Lon: 35.77E Depth: 28 Agency: REL Local
Magnitudes: 2.7MC 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	15	312	EP		1236	1.85	-0.00	39						1.0
DQRL	SZ	22	236	EP		1236	2.50	0.01							1.0
DQRL	SN	22	236	ES		1236	6.68	-0.00							1.0
RCY	SZ	36	171	EP		1236	4.01	-0.01							1.0
RCY	SN	36	171	ES		1236	9.34	0.00							1.0

June 7 2015 Hour: 14:40 41.3 Lat: 33.43N Lon: 35.67E Depth: 10 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	BZ	11	143	EP		1440	43.86	-0.02							1.0
SHBL	BN	11	143	ES		1440	45.79	0.02							1.0
QRWL	SZ	13	4	EP		1440	44.03	-0.08	28						1.0
QRWL	SN	13	4	ES		1440	46.19	0.01							1.0
RCY	SZ	17	63	EP		1440	44.64	0.02							1.0

DQRL SZ 32 343 EP 1440 46.89 0.05 1.0

June 8 2015 Hour: 0: 8 53.2 Agency: REL Regional

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		0 9	1.21								
DQRL	SZ			EP		0 9	4.92								
HWQ	SZ			EP		0 9	23.95								

June 8 2015 Hour: 15:33 54.3 Lat: 33.81N Lon: 35.78E Depth: 18 Agency: REL Local
Magnitudes: 2.7MC 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	15	312	EP		1533	58.23	-0.00	38						1.0
BHL	BN	15	312	ES		1534	1.14	0.00							1.0
DQRL	SZ	23	238	EP		1533	59.01	0.00							1.0
DQRL	SN	23	238	ES		1534	2.49	-0.00							1.0
RCY	SZ	35	171	EP		1534	0.71	-0.00							1.0

June 8 2015 Hour: 22:20 45.4 Agency: REL Regional

EMSC OT=22:20:45.4 34.25N 26.25E 46Km M=4.6 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		2222	36.06								
DQRL	SZ			EP		2222	33.65								

June 9 2015 Hour: 21:49 48.5 Agency: REL Regional

EMSC OT=21:49:48.5 34.96N 26.68E 25Km M=5.4 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		2151	33.95								
DQRL	SZ			EP		2151	34.52								
RCY	SZ			EP		2151	37.07								

June 10 2015 Hour: 13:26 50.4 Lat: 33.53N Lon: 35.71E Depth: 0 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.1 secs

RACHAYA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	3	298	EP		1326	50.74	-0.11							1.0
RCY	SZ	12	110	EP		1326	52.32	-0.05	32						1.0
SHBL	BZ	21	171	EP		1326	53.78	0.04							1.0
SHBL	BN	21	171	ES		1326	56.26	0.01							1.0
DQRL	SZ	23	325	EP		1326	54.16	0.10							1.0
DQRL	SN	23	325	ES		1326	56.80	0.00							1.0

June 11 2015 Hour: 14: 8 29.8 Lat: 33.80N Lon: 35.78E Depth: 16 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	314	EP		14 8	33.74	0.01	32						1.0
DQRL	SZ	22	242	EP		14 8	34.40	0.00							1.0
DQRL	SE	22	242	ES		14 8	37.76	-0.00							1.0
RCY	SZ	34	172	EP		14 8	35.97	0.00							1.0
RCY	SN	34	172	ES		14 8	40.49	-0.01							1.0

June 12 2015 Hour: 16:54 57.7 Lat: 33.81N Lon: 35.77E Depth: 17 Agency: REL Local
Magnitudes: 2.4MC 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	15	314	EP		1655	1.45	-0.01	27						1.0
BHL	BE	15	314	ES		1655	4.24	-0.00							1.0
DQRL	SZ	22	238	EP		1655	2.23	0.01							1.0
DQRL	SN	22	238	ES		1655	5.57	-0.00							1.0
RCY	SZ	35	170	EP		1655	4.05	-0.00							1.0
HWQ	SZ	54	18	EP		1655	6.74	0.01							1.0

June 15 2015 Hour: 11:26 31.2 Lat: 33.88N Lon: 35.85E Depth: 7 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	18	278	EP		1126	34.37	-0.03	43						1.0
DQRL	SZ	32	233	EP		1126	36.54	-0.01							1.0
DQRL	SN	32	233	ES		1126	40.57	0.03							1.0
RCY	SZ	43	182	EP		1126	38.16	-0.01							1.0
RCY	SN	43	182	ES		1126	43.37	0.00							1.0
HWQ	SZ	45	11	EP		1126	38.55	0.02							1.0

June 15 2015 Hour: 13:42 22.7 Lat: 33.88N Lon: 35.84E 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	279	EP		1342	25.52	-0.07	40						1.0
DQRL	SZ	32	233	EP		1342	27.88	0.03							1.0
DQRL	SE	32	233	ES		1342	31.68	0.04							1.0
RCY	SZ	42	181	EP		1342	29.51	-0.07							1.0
RCY	SE	42	181	ES		1342	34.67	0.03							1.0
HWQ	SZ	45	12	EP		1342	30.09	0.05							1.0

June 15 2015 Hour: 23:33 44.4 Lat: 35.10N Lon: 36.54E Depth: 0 Agency: REL Local
Magnitudes: 3.3MC REL Rms: 0.2 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	106	211	EP		2334	1.63	0.06	80						1.0
HWQ	SE	106	211	ES		2334	14.00	-0.25							1.0
BHL	BZ	156	212	EP		2334	9.39	0.14							1.0
BHL	BN	156	212	ES		2334	27.75	0.14							1.0
DQRL	SZ	179	210	EP		2334	12.65	0.03							1.0
QRWL	SZ	189	205	EP		2334	14.03	-0.06							1.0
RCY	SZ	189	200	EP		2334	13.91	-0.22							1.0
RCY	SN	189	200	ES		2334	36.27	0.16							1.0

June 17 2015 Hour: 16:36 16.0 Lat: 33.80N Lon: 35.78E Depth: 8 Agency: REL Local
Magnitudes: 2.5MC 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	316	EP		1636	19.04	0.01	31						1.0
DQRL	SZ	22	242	EP		1636	19.80	-0.01							1.0
DQRL	SN	22	242	ES		1636	22.61	-0.00							1.0
RCY	SZ	34	171	EP		1636	21.71	0.01							1.0
RCY	SE	34	171	ES		1636	25.90	-0.01							1.0
HWQ	SZ	56	16	EP		1636	25.08	-0.01							1.0

June 18 2015 Hour: 6:55 57.5 Lat: 33.36N Lon: 35.65E Depth: 13 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.2 secs

HASBAYA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	BZ	8	98	EP		656	0.20	-0.09							1.0
SHBL	BE	8	98	ES		656	2.48	0.11							1.0
QRWL	SZ	21	7	EP		656	1.33	-0.31	31						1.0
RCY	SZ	23	48	EP		656	1.93	0.03							1.0
RCY	SN	23	48	ES		656	5.18	0.01							1.0
DQRL	SZ	39	348	EP		656	4.51	0.25							1.0

June 18 2015 Hour: 14:12 25.3 Lat: 33.79N Lon: 35.78E Depth: 7 Agency: REL Local
Magnitudes: 2.7MC 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	317	EP		1412	28.50	-0.01	37						1.0
DQRL	SZ	22	245	EP		1412	29.13	0.00							1.0
DQRL	SN	22	245	ES		1412	31.94	0.00							1.0
RCY	SZ	33	172	EP		1412	30.78	-0.01							1.0
RCY	SE	33	172	ES		1412	34.84	0.01							1.0
HWQ	SZ	56	15	EP		1412	34.54	0.01							1.0

June 18 2015 Hour: 15:43 15.6 Lat: 33.80N Lon: 35.76E Depth: 13 Agency: REL Local
Magnitudes: 2.7MC 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	320	EP		1543	19.03	-0.00	37						1.0
DQRL	SZ	20	239	EP		1543	19.63	-0.05							1.0
DQRL	SN	20	239	ES		1543	22.70	0.03							1.0
RCY	SZ	34	168	EP		1543	21.67	-0.00							1.0
RCY	SN	34	168	ES		1543	26.15	0.01							1.0
HWQ	SZ	56	18	EP		1543	24.89	0.02							1.0

June 18 2015 Hour: 16:18 13.3 Lat: 34.06N Lon: 35.65E Depth: 3 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.1 secs

KESROUAN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	179	EP		1618	16.05	-0.08	67						1.0
BHL	BN	17	179	ES		1618	18.25	0.03							1.0
BEYL	SZ	25	216	EP		1618	17.42	0.00							1.0
HWQ	SZ	37	48	EP		1618	19.14	-0.08							1.0
HWQ	SN	37	48	ES		1618	23.68	0.08							1.0
DQRL	SZ	40	191	EP		1618	19.77	0.02							1.0
RCY	SZ	65	165	EP		1618	23.64	-0.09							1.0
RCY	SN	65	165	ES		1618	31.47	0.02							1.0

June 20 2015 Hour: 19:52 46.7 Agency: REL Regional
EMSC OT=19:52:46.7 34.30N 26.14E 45Km M=4.9 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		1954	35.32								
BHL	BZ			EP		1954	37.30								
RCY	SZ			EP		1954	38.71								
HWQ	SZ			EP		1954	39.33								

June 20 2015 Hour: 23:39 8.4 Agency: REL Distant
EMSC OT=23:39:08.4 23.51S 177.09W 144Km M=6.5 SOUTH OF FIJI ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		2358	39.72								
BHL	BZ			EP		2358	40.99								
DQRL	SZ			EP		2358	41.47								
RCY	SZ			EP		2358	41.51								

June 21 2015 Hour: 21:28 16.3 Agency: REL Distant
EMSC OT=21:28:16.3 20.47S 178.34W 563Km M=6.0 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		2146	52.24								
BHL	BZ			EP		2146	53.10								
DQRL	SZ			EP		2146	53.70								
RCY	SZ			EP		2146	53.45								
QRWL	SZ			EP		2146	53.92								

June 22 2015 Hour: 9:42 25.3 Lat: 33.84N Lon: 35.79E Depth: 0 Agency: REL Local
Magnitudes: 2.8MC 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	15	299	EP		942	27.70	0.01	47						1.0
BHL	BN	15	299	ES		942	29.47	-0.01							1.0
DQRL	SZ	26	235	EP		942	29.40	0.01							1.0
RCY	SZ	38	174	EP		942	31.38	-0.03							1.0
RCY	SN	38	174	ES		942	35.97	0.01							1.0
HWQ	SZ	51	16	EP		942	33.46	0.01							1.0

June 22 2015 Hour: 13: 3 5.3 Lat: 33.40N Lon: 34.47E Depth: 44 Agency: REL Local
Magnitudes: 3.1MC 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	108	72	EP		13 3	21.74	-0.15							1.0
DQRL	SN	108	72	ES		13 3	34.25	0.07							1.0
SHBL	BZ	119	93	EP		13 3	23.26	-0.05							1.0
SHBL	BN	119	93	ES		13 3	36.67	0.02							1.0
BHL	BZ	123	63	EP		13 3	23.85	0.05							1.0
RCY	SZ	128	85	EP		13 3	24.39	0.02	60						1.0
HWQ	SZ	168	54	EP		13 3	29.44	0.13							1.0
HWQ	SN	168	54	ES		13 3	46.99	-0.09							1.0

June 22 2015 Hour: 15:50 17.7 Lat: 33.79N Lon: 35.77E Depth: 10 Agency: REL Local
Magnitudes: 2.5MC 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	320	EP		1550	21.02	-0.03	29						1.0
BHL	BN	17	320	ES		1550	23.53	0.01							1.0
DQRL	SZ	21	245	EP		1550	21.58	0.01							1.0
RCY	SZ	33	170	EP		1550	23.33	0.00							1.0
RCY	SN	33	170	ES		1550	27.47	-0.00							1.0
HWQ	SZ	57	16	EP		1550	27.08	0.01							1.0

June 22 2015 Hour: 16:11 0.2 Agency: REL Regional
EMSC OT=16:11:00.2 35.87N 28.98E 23Km M=3.2 EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		1612	22.99								
DQRL	SZ			EP		1612	24.47								
HWQ	SZ			EP		1612	25.26								
RCY	SZ			EP		1612	27.48								

June 23 2015 Hour: 12: 5 43.3 Lat: 33.78N Lon: 35.76E Depth: 3 Agency: REL Local
Magnitudes: 2.7MC 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	324	EP		12 5	46.01	-0.05	37						1.0
DQRL	SZ	19	244	EP		12 5	46.55	0.04							1.0
DQRL	SN	19	244	ES		12 5	48.91	0.03							1.0
QRWL	SZ	27	195	EP		12 5	47.59	-0.11							1.0
RCY	SZ	33	167	EP		12 5	48.67	0.07							1.0
RCY	SE	33	167	ES		12 5	52.52	-0.01							1.0
HWQ	SZ	58	17	EP		12 5	52.65	0.03							1.0
HWQ	SN	58	17	ES		12 5	59.52	0.00							1.0

June 23 2015 Hour: 12:18 30.5 Agency: REL Distant
EMSC OT=12:18:30.5 27.69N 139.80E 472Km M=6.5 BONIN ISLANDS, JAPAN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		1230	15.88								
BHL	BZ			EP		1230	17.84								
RCY	SZ			EP		1230	18.52								
DQRL	SZ			EP		1230	18.83								

SHBL BZ EP 1230 19.40

June 23 2015 Hour: 17:5 7.8

Agency: REL Regional

EMSC OT=17:05:07.8 35.40N 29.63E 35Km M=3.3 EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		17	6	21.83							
BHL	BZ			EP		17	6	21.56							
HWQ	SZ			EP		17	6	24.46							
RCY	SZ			EP		17	6	26.73							

June 24 2015 Hour: 8:37 16.4

Agency: REL Regional

EMSC OT=08:37:16.4 36.60N 26.98E 133Km M=4.6 DODECANESE ISLANDS, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		838	58.78								
DQRL	SZ			EP		838	59.33								
HWQ	SZ			EP		839	1.27								
QRWL	SZ			EP		839	2.60								
RCY	SZ			EP		839	4.34								

June 24 2015 Hour: 16:23 7.7

Lat: 34.07N

Lon: 35.61E

Depth: 5

Agency: REL Local

Magnitudes: 2.9MC REL

Rms: 0.1 secs

JBEIL REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	19	166	EP		1623	10.73	-0.12	52						1.0
HWQ	SZ	39	53	EP		1623	14.06	-0.01							1.0
HWQ	SN	39	53	ES		1623	18.84	0.04							1.0
DQRL	SZ	40	185	EP		1623	14.27	0.02							1.0
DQRL	SN	40	185	ES		1623	19.23	0.12							1.0
RCY	SZ	67	161	EP		1623	18.70	0.19							1.0
RCY	SN	67	161	ES		1623	26.47	-0.05							1.0
SHBL	BZ	81	171	EP		1623	20.57	-0.18							1.0

June 25 2015 Hour: 10:42 21.0

Lat: 33.87N

Lon: 35.83E

Depth: 9

Agency: REL Local

Magnitudes: 2.8MC 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	282	EP		1042	24.05	-0.16	45						1.0
BHL	BN	17	282	ES		1042	26.59	0.01							1.0
DQRL	SZ	31	233	EP		1042	26.38	0.16							1.0
DQRL	SN	31	233	ES		1042	30.11	0.03							1.0
RCY	SZ	42	180	EP		1042	27.91	-0.05							1.0
HWQ	SZ	46	13	EP		1042	28.69	0.05							1.0
HWQ	SN	46	13	ES		1042	34.29	0.01							1.0

June 25 2015 Hour: 18:45 56.8

Agency: REL Distant

EMSC OT=18:45:56.8 32.22S 178.08W 10Km M=6.0 SOUTH OF KERMADEC ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		19	5	52.78							
RCY	SZ			EP		19	5	52.78							

June 26 2015 Hour: 10:35 20.3

Lat: 33.81N

Lon: 35.77E

Depth: 17

Agency: REL Local

Magnitudes: 2.4MC 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	15	314	EP		1035	24.17	-0.02	26						1.0
BHL	BE	15	314	ES		1035	27.02	-0.01							1.0
DQRL	SZ	22	239	EP		1035	24.88	-0.05							1.0
DQRL	SE	22	239	ES		1035	28.37	0.05							1.0
RCY	SZ	35	170	EP		1035	26.67	-0.00							1.0
HWQ	SZ	54	17	EP		1035	29.43	0.03							1.0

June 26 2015 Hour: 14:0 1.6 Lat: 33.79N Lon: 35.78E Depth: 1 Agency: REL Local
Magnitudes: 2.7MC 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	318	EP		14	0	4.41-0.03	37						1.0
BHL	BE	18	318	ES		14	0	6.57	0.00						1.0
DQRL	SZ	22	246	EP		14	0	5.11	0.03						1.0
RCY	SZ	33	171	EP		14	0	6.77-0.07							1.0
RCY	SN	33	171	ES		14	0	10.77	0.03						1.0
HWQ	SZ	57	15	EP		14	0	10.74	0.03						1.0

June 26 2015 Hour: 16:15 6.8 Lat: 33.79N Lon: 35.76E Depth: 12 Agency: REL Local
Magnitudes: 2.8MC 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	16	320	EP		1615	10.21-0.03		44						1.0
DQRL	SZ	21	242	EP		1615	10.87	0.06							1.0
DQRL	SN	21	242	ES		1615	13.78	0.02							1.0
QRWL	SZ	28	196	EP		1615	11.74-0.15								1.0
RCY	SZ	34	169	EP		1615	12.76	0.07							1.0
RCY	SE	34	169	ES		1615	17.05	0.01							1.0
HWQ	SZ	56	17	EP		1615	16.20	0.02							1.0

June 26 2015 Hour: 19:38 42.8 Lat: 34.17N Lon: 35.70E Depth: 30 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.1 secs

JBEIL REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	25	63	EP		1938	48.91-0.00								1.0
BHL	BZ	30	189	EP		1938	49.34-0.08								1.0
BHL	BE	30	189	ES		1938	54.40	0.05							1.0
DQRL	SZ	53	193	EP		1938	52.22-0.01								1.0
RCY	SZ	76	171	EP		1938	55.45	0.09	32						1.0
RCY	SE	76	171	ES		1939	4.64-0.05								1.0

June 27 2015 Hour: 5:56 28.9 Lat: 33.62N Lon: 35.43E Depth: 19 Agency: REL Local
Magnitudes: 2.9MC 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	16	54	EP		556	33.01	0.07	51						1.0
DQRL	SN	16	54	ES		556	35.97	0.01							1.0
QRWL	SZ	25	109	EP		556	33.80-0.11								1.0
BHL	BZ	38	34	EP		556	35.54-0.07								1.0
BHL	BN	38	34	ES		556	40.58-0.02								1.0
RCY	SZ	40	110	EP		556	35.93-0.05								1.0
SHBL	BZ	42	136	EP		556	36.24	0.00							1.0
SHBL	BN	42	136	ES		556	41.76	0.07							1.0
HWQ	SZ	87	33	EP		556	42.86	0.10							1.0

June 27 2015 Hour: 15:33 58.2 Lat: 28.45N Lon: 34.81E Depth: 18 Agency: REL Regional
Magnitudes: 5.1MC REL Rms: 0.4 secs

GULF OF AQABA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	BZ	550	9	EP		1535	9.97-0.35								1.0
QRWL	SZ	571	8	EP		1535	12.80	0.00							1.0
DQRL	SZ	587	7	EP		1535	14.62-0.12		601						1.0
DQRL	SN	587	7	ES		1536	11.18-0.20								1.0
BEYL	SZ	604	6	EP		1535	17.10	0.35							1.0
BHL	BZ	610	7	EP		1535	17.47-0.04								1.0
BHL	BN	610	7	ES		1536	16.83	0.62							1.0
HWQ	SZ	655	9	EP		1535	23.82	0.82							1.0
HWQ	SE	655	9	ES		1536	25.33-0.43								1.0

June 28 2015 Hour: 10:26 8.8 Lat: 33.54N Lon: 35.71E Depth: 0 Agency: REL Local
Magnitudes: 2.5MC 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	3	281	EP		1026	9.17	-0.13							1.0
RCY	SZ	13	114	EP		1026	10.76	-0.07	32						1.0
SHBL	BZ	22	172	EP		1026	12.35	0.03							1.0
SHBL	BN	22	172	ES		1026	14.96	0.04							1.0
DQRL	SZ	22	324	EP		1026	12.53	0.11							1.0
DQRL	SN	22	324	ES		1026	15.11	0.01							1.0

June 28 2015 Hour: 13:58 18.5 Lat: 33.79N Lon: 35.79E Depth: 8 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	315	EP		1358	21.78	-0.01	27						1.0
BHL	BE	18	315	ES		1358	24.21	0.01							1.0
DQRL	SZ	23	246	EP		1358	22.43	-0.01							1.0
RCY	SZ	33	173	EP		1358	24.03	0.02							1.0
RCY	SE	33	173	ES		1358	28.06	-0.01							1.0
HWQ	SZ	56	15	EP		1358	27.69	-0.00							1.0

June 28 2015 Hour: 16: 2 27.3 Lat: 33.88N Lon: 35.83E Depth: 1 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.1 secs

BAABDA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	280	EP		16 2	29.95	-0.06	49						1.0
BHL	BN	17	280	ES		16 2	32.04	0.01							1.0
DQRL	SZ	31	232	EP		16 2	32.37	0.08							1.0
BEYL	SZ	31	269	EP		16 2	32.34	-0.01							1.0
RCY	SZ	42	180	EP		16 2	34.06	-0.08							1.0
RCY	SN	42	180	ES		16 2	39.25	0.03							1.0
HWQ	SZ	46	13	EP		16 2	34.67	0.03							1.0

June 29 2015 Hour: 14:47 34.7 Lat: 34.09N Lon: 35.71E Depth: 7 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.1 secs

JBEIL REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	21	193	EP		1447	38.38	0.02	44						1.0
BHL	BN	21	193	ES		1447	41.02	-0.01							1.0
BEYL	SZ	31	220	EP		1447	39.59	-0.28							0.2
DQRL	SZ	44	197	EP		1447	41.99	0.01							1.0
DQRL	SN	44	197	ES		1447	47.34	0.01							1.0
RCY	SZ	67	170	EP		1447	45.55	-0.01							1.0

June 30 2015 Hour: 10:35 5.6 Lat: 33.85N Lon: 35.80E Depth: 8 Agency: REL Local
Magnitudes: 2.7MC 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	293	EP		1035	8.28	-0.04	37						1.0
DQRL	SZ	27	232	EP		1035	10.13	0.02							1.0
DQRL	SN	27	232	ES		1035	13.50	0.02							1.0
RCY	SZ	40	175	EP		1035	12.09	-0.07							1.0
RCY	SE	40	175	ES		1035	17.07	0.03							1.0
HWQ	SZ	49	16	EP		1035	13.66	0.04							1.0

June 30 2015 Hour: 15:14 46.7 Lat: 33.83N Lon: 35.78E Depth: 19 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.1 secs

BAABDA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	14	304	EP		1514	50.76	0.18	30						1.0
BHL	BN	14	304	ES		1514	53.42	-0.07							1.0
DQRL	SZ	24	234	EP		1514	51.56	-0.06							1.0

RCY	SZ	38	172	EP	1514	53.41	-0.00								1.0
RCY	SE	38	172	ES	1514	58.42	0.00								1.0
HWQ	SZ	52	17	EP	1514	55.32	-0.05								1.0

June 30 2015 Hour: 16:14 45.2 Lat: 33.81N Lon: 35.78E Depth: 16 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	15	311	EP		1614	48.83	0.02	32						1.0
BHL	BE	15	311	ES		1614	51.49	-0.02							1.0
DQRL	SZ	23	238	EP		1614	49.70	0.01							1.0
RCY	SZ	36	171	EP		1614	51.43	-0.07							1.0
RCY	SE	36	171	ES		1614	56.22	0.04							1.0
HWQ	SZ	54	17	EP		1614	54.11	0.01							1.0

Epicentral Map of Lebanon

June 2015

