

Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

March

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.

March 1 2015 Hour: 2:16 38.5 Agency: REL Regional

EMSC OT=02:16:38.5 37.14N 36.81E 9Km M=3.4 CENTRAL TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		217	27.04								
BHL	BZ			EP		217	33.65								
DQRL	SZ			EP		217	34.02								
QRWL	SZ			EP		217	39.11								

March 1 2015 Hour: 7:43 32.2 Lat: 33.38N Lon: 35.57E Depth: 11 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.1 secs

MARJAAYOUN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	BZ	17	102	EP		743	35.69	0.05							1.0
SHBL	BN	17	102	ES		743	38.21	0.03							1.0
QRWL	SZ	21	30	EP		743	36.03	-0.18							1.0
RCY	SZ	28	63	EP		743	37.16	-0.04							1.0
RCY	SN	28	63	ES		743	40.90	0.01							1.0
DQRL	SZ	36	0	EP		743	38.45	0.07	68						1.0
DQRL	SN	36	0	ES		743	42.92	-0.03							1.0
BHL	BZ	59	8	EP		743	41.90	0.01							1.0
BHL	BN	59	8	ES		743	49.14	0.08							1.0
HWQ	SZ	106	19	EP		743	48.89	-0.00							1.0

March 1 2015 Hour: 12:10 50.4 Agency: REL Regional

EMSC OT=12:10:50.4 32.07N 30.02E 30Km M=4.0 EASTERN MEDITERRANEAN SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		1212	3.20								
QRWL	SZ			EP		1212	3.93								
BHL	BZ			EP		1212	4.43								
RCY	SZ			EP		1212	5.63								
HWQ	SZ			EP		1212	9.02								

March 1 2015 Hour: 14:59 1.5 Lat: 33.42N Lon: 35.62E Depth: 8 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.1 secs

JEZZINE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	15	21	EP		1459	4.35	-0.03							1.0
RCY	SZ	21	67	EP		1459	5.35	0.03							1.0
RCY	SN	21	67	ES		1459	8.12	0.01							1.0
DQRL	SZ	32	351	EP		1459	6.91	0.00	65						1.0
DQRL	SN	32	351	ES		1459	10.98	0.10							1.0
BHL	BZ	54	3	EP		1459	10.29	-0.04							1.0
BHL	BN	54	3	ES		1459	16.73	-0.10							1.0
HWQ	SZ	100	17	EP		1459	17.64	0.04							1.0

March 4 2015 Hour: 7:18 24.9 Lat: 34.85N Lon: 36.77E Depth: 10 Agency: REL Local
Magnitudes: 3.2MC REL Rms: 0.0 secs

SYRIA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	99	231	EP		718	40.62	-0.01	71						1.0
HWQ	SN	99	231	ES		718	52.26	-0.03							1.0
BHL	BZ	147	225	EP		718	47.75	0.07							1.0
DQRL	SZ	168	222	EP		718	50.78	-0.04							1.0
DQRL	SN	168	222	ES		719	10.08	0.05							1.0
RCY	SZ	173	210	EP		718	51.44	-0.01							1.0
RCY	SN	173	210	ES		719	11.10	-0.02							1.0

March 4 2015 Hour: 21:54 50.9 Lat: 34.30N Lon: 35.53E Depth: 11 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.1 secs

OFFSHORE NORTH LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	38	93	EP		2154	57.47	0.05	57						1.0
HWQ	SN	38	93	ES		2155	2.22	-0.01							1.0
BHL	BZ	45	166	EP		2154	58.49	0.01							1.0
BHL	BN	45	166	ES		2155	4.01	-0.06							1.0
DQRL	SZ	66	177	EP		2155	1.74	0.01							1.0
DQRL	SN	66	177	ES		2155	9.83	0.11							1.0
QRWL	SZ	84	171	EP		2155	4.34	-0.11							1.0

March 5 2015 Hour: 13:18 10.4 Lat: 33.80N Lon: 35.77E Depth: 13 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	16	317	EP		1318	13.78	-0.01	30						1.0
BHL	BE	16	317	ES		1318	16.32	0.00							1.0
DQRL	SZ	21	240	EP		1318	14.49	-0.01							1.0
DQRL	SN	21	240	ES		1318	17.55	0.00							1.0
RCY	SZ	34	170	EP		1318	16.40	0.00							1.0
HWQ	SZ	55	17	EP		1318	19.58	0.00							1.0

March 5 2015 Hour: 22:54 48.8 Agency: REL Distant

EMSC OT=22:54:48.8 27.99N 56.92E 10Km M=5.3 SOUTHERN IRAN

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		2259	10.86								
HWQ	SZ			EP		2259	12.61								
BHL	BZ			EP		2259	13.69								

March 6 2015 Hour: 8:57 22.5 Lat: 33.40N Lon: 35.67E Depth: 0 Agency: REL Local
Magnitudes: 2.6MC 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	9	126	EP		857	23.98	0.01							1.0
QRWL	SZ	17	5	EP		857	25.16	-0.07							1.0
RCY	SZ	19	55	EP		857	25.62	-0.01	35						1.0
RCY	SN	19	55	ES		857	27.98	0.02							1.0
DQRL	SZ	36	346	EP		857	28.27	0.05							1.0
DQRL	SN	36	346	ES		857	32.47	0.01							1.0

March 7 2015 Hour: 9:37 18.9 Lat: 33.36N Lon: 35.63E Depth: 13 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.0 secs

MARJAAYOUN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
SHBL	BZ	11	95	EP		937	21.83	0.00							1.0
QRWL	SZ	22	14	EP		937	23.05	-0.01							1.0
RCY	SZ	25	52	EP		937	23.55	0.01	32						1.0
RCY	SN	25	52	ES		937	26.98	-0.01							1.0
DQRL	SZ	39	353	EP		937	25.56	-0.01							1.0
DQRL	SN	39	353	ES		937	30.53	0.01							1.0

March 7 2015 Hour: 13:10 52.3 Lat: 33.81N Lon: 35.76E Depth: 20 Agency: REL Local
Magnitudes: 2.3MC 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	318	EP		1310	56.22	-0.11	21						1.0
DQRL	SZ	21	237	EP		1310	56.97	0.00							1.0
DQRL	SN	21	237	ES		1311	0.50	0.08							1.0
QRWL	SZ	30	194	EP		1310	57.93	-0.10							1.0
RCY	SZ	35	168	EP		1310	58.85	0.05							1.0
RCY	SN	35	168	ES		1311	3.61	-0.00							1.0
HWQ	SZ	55	18	EP		1311	1.58	0.07							1.0

March 7 2015 Hour: 15:54 39.9 Lat: 33.33N Lon: 35.63E Depth: 0 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.1 secs

MARJAAYOUN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	24	12	EP		1554	43.61	-0.20							1.0
QRWL	SN	24	12	ES		1554	46.79	0.07							1.0
RCY	SZ	27	47	EP		1554	44.22	0.04	32						1.0
RCY	SE	27	47	ES		1554	47.36	-0.00							1.0
DQRL	SZ	42	353	EP		1554	46.76	0.16							1.0
DQRL	SN	42	353	ES		1554	51.51	-0.06							1.0
BHL	BZ	63	2	EP		1554	50.10	-0.01							1.0

March 7 2015 Hour: 16: 3 1.1 Lat: 33.70N Lon: 35.78E 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
QRWL	SZ	19	208	EP		16 3	4.83	0.01							1.0
QRWL	SN	19	208	ES		16 3	7.58	-0.01							1.0
DQRL	SZ	20	271	EP		16 3	4.84	-0.01							1.0
DQRL	SN	20	271	ES		16 3	7.64	0.01							1.0
RCY	SZ	23	168	EP		16 3	5.41	0.00							1.0
BHL	BZ	25	332	EP		16 3	5.65	-0.00	42						1.0

March 7 2015 Hour: 20:51 42.9 Agency: REL Distant
EMSC OT=20:51:42.9 24.61S 179.30E 527Km M=5.2 SOUTH OF FIJI ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		2110	26.53								
BHL	BZ			EP		2110	27.43								
RCY	SZ			EP		2110	27.49								
DQRL	SZ			EP		2110	27.70								

March 8 2015 Hour: 12:30 16.9 Agency: REL Regional

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		1230	22.32								
DQRL	SZ			EP		1230	27.18								
HWQ	SZ			EP		1230	35.34								

March 8 2015 Hour: 12:54 50.4 Lat: 33.54N Lon: 35.71E Depth: 0 Agency: REL Local
Magnitudes: 2.8MC 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	293	EP		1254	50.77	-0.11							1.0
RCY	SZ	12	111	EP		1254	52.33	-0.04							1.0
RCY	SN	12	111	ES		1254	53.84	-0.01							1.0
SHBL	BZ	21	172	EP		1254	53.80	0.02							1.0
SHBL	BN	21	172	ES		1254	56.34	0.03							1.0
DQRL	SZ	23	325	EP		1254	54.03	-0.04	43						1.0
DQRL	SN	23	325	ES		1254	56.87	0.06							1.0
BHL	BZ	41	352	EP		1254	57.06	0.06							1.0
HWQ	SZ	85	15	EP		1255	4.09	0.00							1.0

March 8 2015 Hour: 15:52 24.0 Agency: REL Distant
EMSC OT=15:52:24.0 20.22S 177.78W 574Km M=5.4 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		1611	3.83								
BHL	BZ			EP		1611	4.68								
RCY	SZ			EP		1611	5.13								

March 8 2015 Hour: 22: 6 48.3 Agency: REL Regional
EMSC OT=22:06:48.3 36.48N 34.80E 20Km M=3.4 CENTRAL TURKEY
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL BZ EP 22 7 29.50
 DQRL SZ EP 22 7 32.10
 RCY SZ EP 22 7 36.42

March 9 2015 Hour: 10:13 16.6 Lat: 33.47N Lon: 35.69E 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	9	358	EP		1013	17.93	-0.10							1.0
SHBL	BZ	14	158	EP		1013	18.91	0.02							1.0
RCY	SZ	14	77	EP		1013	18.93	0.03	28						1.0
RCY	SN	14	77	ES		1013	20.61	0.00							1.0
DQRL	SZ	29	338	EP		1013	21.16	-0.04							1.0
DQRL	SN	29	338	ES		1013	24.69	0.08							1.0

March 10 2015 Hour: 12:12 54.9 Lat: 33.78N Lon: 35.76E Depth: 8 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	323	EP		1212	57.97	-0.03	41						1.0
DQRL	SZ	20	244	EP		1212	58.52	0.07							1.0
DQRL	SN	20	244	ES		1213	1.09	-0.00							1.0
QRWL	SZ	27	196	EP		1212	59.46	-0.08							1.0
RCY	SZ	33	168	EP		1213	0.40	0.02							1.0
RCY	SN	33	168	ES		1213	4.47	0.02							1.0
HWQ	SZ	57	17	EP		1213	4.54	0.27							0.2

March 11 2015 Hour: 23:40 32.1 Agency: REL Regional
EMSC OT=23:40:32.1 35.45N 27.85E 10Km M=3.9 DODECANESE ISLANDS, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		2342	10.28								
QRWL	SZ			EP		2342	10.99								
RCY	SZ			EP		2342	13.05								

March 12 2015 Hour: 0:39 22.4 Agency: REL Regional
EMSC OT=00:39:22.4 35.44N 27.82E 10Km M=4.5 DODECANESE ISLANDS, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		040	59.43								
DQRL	SZ			EP		041	0.39								
QRWL	SZ			EP		041	0.92								
RCY	SZ			EP		041	2.85								

March 13 2015 Hour: 7:16 0.3 Lat: 33.30N Lon: 35.83E Depth: 12 Agency: REL Local
Magnitudes: 3.1MC 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	10	302	EP		716	3.08	-0.01							1.0
SHBL	BN	10	302	ES		716	5.11	-0.03							1.0
RCY	SZ	22	1	EP		716	4.56	0.08	65						1.0
RCY	SN	22	1	ES		716	7.52	-0.05							1.0
QRWL	SZ	31	333	EP		716	5.79	0.07							1.0
DQRL	SZ	51	332	EP		716	8.79	-0.03							1.0
DQRL	SN	51	332	ES		716	15.15	0.03							1.0
BHL	BZ	69	346	EP		716	11.47	-0.03							1.0
HWQ	SZ	109	6	EP		716	17.36	-0.03							1.0

March 13 2015 Hour: 15: 7 32.0 Lat: 33.86N Lon: 35.85E Depth: 0 Agency: REL Local
Magnitudes: 3.1MC 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	18	285	EP		15	7	34.87-0.05	67						1.0
BHL	BE	18	285	ES		15	7	37.01-0.09							1.0
DQRL	SZ	31	236	EP		15	7	37.00	0.05						1.0
DQRL	SN	31	236	ES		15	7	40.79	0.15						1.0
QRWL	SZ	38	203	EP		15	7	38.01-0.11							1.0
RCY	SZ	41	181	EP		15	7	38.53-0.00							1.0
RCY	SN	41	181	ES		15	7	43.37-0.02							1.0
HWQ	SZ	47	11	EP		15	7	39.58	0.03						1.0
HWQ	SN	47	11	ES		15	7	45.19	0.03						1.0

March 14 2015 Hour: 13:32 51.3 Lat: 33.47N Lon: 35.68E Depth: 0 Agency: REL Local
Magnitudes: 2.5MC 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	8	4	EP		1332		52.61-0.03							1.0
RCY	SZ	15	80	EP		1332		53.70-0.03	32						1.0
RCY	SE	15	80	ES		1332		55.56	0.03						1.0
SHBL	BZ	15	156	EP		1332		53.76	0.00						1.0
DQRL	SZ	28	339	EP		1332		55.79	0.03						1.0
DQRL	SN	28	339	ES		1332		59.06	0.00						1.0

March 15 2015 Hour: 2:17 4.7 Agency: REL Distant
EMSC OT=02:17:04.7 22.21S 176.30W 80Km M=5.4 SOUTH OF FIJI ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		236		45.31							
QRWL	SZ			EP		236		45.54							
DQRL	SZ			EP		236		45.76							

March 15 2015 Hour: 14:35 36.9 Lat: 33.95N Lon: 35.87E Depth: 16 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.1 secs

METN REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	21	256	EP		1435		41.36	0.09	39					1.0
BHL	BN	21	256	ES		1435		44.42-0.06							1.0
DQRL	SZ	39	226	EP		1435		43.73	0.03						1.0
DQRL	SN	39	226	ES		1435		48.75	0.03						1.0
QRWL	SZ	48	202	EP		1435		44.86-0.13							1.0
RCY	SZ	50	184	EP		1435		45.38	0.00						1.0
RCY	SN	50	184	ES		1435		51.68	0.04						1.0

March 15 2015 Hour: 21:11 6.0 Lat: 33.54N Lon: 35.58E Depth: 5 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.1 secs

JEZZINE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SN	9	86	EP		2111		7.73-0.04	49						1.0
DQRL	SZ	18	357	EP		2111		9.02-0.06							1.0
DQRL	SN	18	357	ES		2111		11.46	0.08						1.0
RCY	SZ	24	102	EP		2111		9.96-0.05							1.0
RCY	SN	24	102	ES		2111		13.05	0.05						1.0
BHL	BZ	41	10	EP		2111		12.54-0.10							1.0
BHL	BN	41	10	ES		2111		17.53-0.03							1.0
HWQ	SZ	88	22	EP		2111		20.40	0.12						1.0

March 15 2015 Hour: 21:14 3.4 Lat: 33.54N Lon: 35.58E Depth: 5 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.1 secs

JEZZINE REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
QRWL	SZ	9	86	EP		2114	5.11	-0.05	54						1.0
DQRL	SZ	18	357	EP		2114	6.44	-0.01							1.0
DQRL	SN	18	357	ES		2114	8.80	0.06							1.0
RCY	SZ	24	102	EP		2114	7.43	0.03							1.0
RCY	SN	24	102	ES		2114	10.41	0.01							1.0
BHL	BZ	41	10	EP		2114	9.82	-0.19							1.0
BHL	BN	41	10	ES		2114	14.96	0.03							1.0
HWQ	SZ	88	22	EP		2114	17.75	0.10							1.0

March 16 2015 Hour: 10:42 0.0 Agency: REL Regional

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		1043	14.76								
BHL	BZ			EP		1043	12.78								

March 16 2015 Hour: 20:9 33.5 Agency: REL Regional
EMSC OT=20:09:33.5 36.46N 27.92E 2Km M=4.2 DODECANESE IS. -TURKEY BORDER REG

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		2011	11.22								
DQRL	SZ			EP		2011	13.54								
HWQ	SZ			EP		2011	14.70								
QRWL	SZ			EP		2011	15.30								
RCY	SZ			EP		2011	17.47								

March 17 2015 Hour: 10:11 15.3 Agency: REL Regional

EMSC OT=10:11:15.3 36.37N 26.58E 165Km M=4.4 DODECANESE ISLANDS, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		1013	7.33								
HWQ	SZ			EP		1013	9.31								
RCY	SZ			EP		1013	11.41								

March 17 2015 Hour: 20:16 18.2 Agency: REL Distant

EMSC OT=20:16:18.2 17.92S 178.54W 549Km M=5.5 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		2034	54.76								
RCY	SZ			EP		2034	54.97								

March 17 2015 Hour: 22:12 30.2 Agency: REL Distant

EMSC OT=22:12:30.2 1.69N 126.46E 50Km M=6.2 MOLUCCA SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		2225	22.45								
RCY	SZ			EP		2225	23.37								
BHL	BZ			EP		2225	23.64								
DQRL	SZ			EP		2225	24.37								

March 18 2015 Hour: 11:50 8.7 Lat: 34.27N Lon: 36.43E Depth: 13 Agency: REL Local
Magnitudes: 3.2MC REL Rms: 0.1 secs

BAALBECK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	44	271	EP		1150	16.18	-0.05	80						1.0
BHL	BZ	82	240	EP		1150	21.94	0.14							1.0
DQRL	SZ	101	232	EP		1150	24.55	-0.02							1.0
DQRL	SE	101	232	ES		1150	36.30	-0.03							1.0
RCY	SZ	102	213	EP		1150	24.67	-0.06							1.0
RCY	SN	102	213	ES		1150	36.61	0.02							1.0

March 18 2015 Hour: 14:59 45.8 Lat: 33.51N Lon: 35.60E Depth: 11 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	9	60	EP		1459	48.24	-0.01	27						1.0
QRWL	SN	9	60	ES		1459	50.07	0.01							1.0
RCY	SZ	22	93	EP		1459	49.89	-0.01							1.0
DQRL	SZ	22	353	EP		1459	49.89	0.01							1.0
DQRL	SE	22	353	ES		1459	52.90	-0.01							1.0
BHL	BZ	44	6	EP		1459	53.28	0.08							0.2

March 18 2015 Hour: 15:26 26.4 Lat: 33.79N Lon: 35.79E Depth: 4 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	18	315	EP		1526	29.37	-0.02	27						1.0
DQRL	SZ	23	244	EP		1526	30.12	-0.04							1.0
DQRL	SN	23	244	ES		1526	32.96	0.03							1.0
RCY	SZ	33	173	EP		1526	31.88	0.02							1.0
RCY	SN	33	173	ES		1526	35.87	-0.01							1.0
HWQ	SZ	56	15	EP		1526	35.47	0.02							1.0

March 18 2015 Hour: 15:59 48.1 Lat: 33.87N Lon: 35.84E Depth: 6 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	18	284	EP		1559	51.18	-0.10	49						1.0
BHL	BN	18	284	ES		1559	53.66	0.05							1.0
DQRL	SZ	31	235	EP		1559	53.30	0.03							1.0
QRWL	SZ	38	203	EP		1559	54.42	-0.03							1.0
RCY	SZ	41	181	EP		1559	54.98	0.09							1.0
RCY	SN	41	181	ES		1559	59.85	-0.04							1.0
HWQ	SZ	47	12	EP		1559	55.78	0.01							1.0

March 21 2015 Hour: 1: 5 5.8 Agency: REL Regional

EMSC OT=01:05:05.8 34.45N 33.18E 30Km M=2.8 CYPRUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		1 5	42.23								
HWQ	SZ			EP		1 5	41.55								
QRWL	SZ			EP		1 5	40.33								
BHL	BZ			EP		1 5	41.46								

March 22 2015 Hour: 5:46 22.2 Agency: REL Distant

EMSC OT=05:46:22.2 17.86S 178.49W 600Km M=5.2 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		6 4	53.41								
BHL	BZ			EP		6 4	54.45								
RCY	SZ			EP		6 4	54.94								

March 22 2015 Hour: 13:24 44.0 Lat: 33.88N Lon: 35.83E Depth: 10 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	281	EP		1324	47.04	-0.08	41						1.0
BHL	BN	16	281	ES		1324	49.47	0.02							1.0
DQRL	SZ	30	231	EP		1324	49.21	0.05							1.0
RCY	SZ	42	179	EP		1324	50.98	-0.03							1.0
RCY	SE	42	179	ES		1324	56.24	0.01							1.0
HWQ	SZ	46	14	EP		1324	51.62	0.03							1.0

March 23 2015 Hour: 12:46 50.7 Lat: 33.67N Lon: 35.60E Depth: 28 Agency: REL Local
Magnitudes: 2.7MC 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	5	321	EP		1246	55.40	0.05							1.0
DQRL	SN	5	321	ES		1246	58.80	0.01							1.0
BHL	BZ	26	10	EP		1246	56.72-0.10		37						1.0
RCY	SZ	29	132	EP		1246	57.12-0.03								1.0
RCY	SN	29	132	ES		1247	1.94	0.01							1.0
HWQ	SZ	74	25	EP		1247	3.05	0.06							1.0

March 23 2015 Hour: 17:50 49.5 Lat: 33.84N Lon: 35.73E Depth: 34 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	10	314	EP		1750	55.14	0.04	40						1.0
DQRL	SZ	21	225	EP		1750	55.80	0.03							1.0
DQRL	SN	21	225	ES		1751	0.39-0.03								1.0
QRWL	SZ	33	188	EP		1750	56.80-0.03								1.0
RCY	SZ	39	166	EP		1750	57.65	0.06							1.0
RCY	SN	39	166	ES		1751	3.57-0.02								1.0
HWQ	SZ	52	22	EP		1750	59.10-0.04								1.0

March 24 2015 Hour: 2:20 29.9 Lat: 33.69N Lon: 35.78E Depth: 16 Agency: REL Local
Magnitudes: 2.6MC 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	210	EP		220	33.83	0.02	32						1.0
QRWL	SN	18	210	ES		220	36.65-0.08								1.0
DQRL	SZ	19	277	EP		220	33.99-0.04								1.0
DQRL	SN	19	277	ES		220	37.17	0.07							1.0
RCY	SZ	22	166	EP		220	34.40	0.07							1.0
BHL	BZ	27	335	EP		220	34.94-0.03								1.0
HWQ	SZ	68	13	EP		220	40.70-0.13								0.2

March 24 2015 Hour: 15:13 59.4 Lat: 34.04N Lon: 36.11E Depth: 52 Agency: REL Local
Magnitudes: 3.0MC 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	330	EP		1514	8.15-0.04		54						1.0
HWQ	SN	30	330	ES		1514	14.72	0.02							1.0
BHL	BZ	45	250	EP		1514	9.35	0.02							1.0
DQRL	SZ	62	233	EP		1514	10.98-0.06								1.0
RCY	SZ	66	203	EP		1514	11.44-0.00								1.0
RCY	SN	66	203	ES		1514	20.34-0.02								1.0
QRWL	SZ	68	216	EP		1514	11.68	0.08							1.0

March 24 2015 Hour: 22: 6 14.4 Agency: REL Regional
EMSC OT=22:06:14.4 37.07N 28.63E 9Km M=3.9 WESTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		22 7	52.46								
HWQ	SZ			EP		22 7	53.01								
QRWL	SZ			EP		22 7	54.32								

March 25 2015 Hour: 0: 5 47.3 Lat: 33.78N Lon: 35.78E Depth: 0 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.2 secs

ALEY REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	18	322	EP		0 5	50.15-0.10								1.0
BHL	BE	18	322	ES		0 5	52.44	0.01							1.0
DQRL	SZ	21	248	EP		0 5	50.66	0.05	58						1.0
DQRL	SN	21	248	ES		0 5	53.06-0.02								1.0
QRWL	SZ	27	199	EP		0 5	51.64	0.05							1.0

BEYL	SZ	28	292	EP	*	0	5	51.12	-0.74										0.0
RCY	SZ	31	170	EP		0	5	52.30	-0.05										1.0
RCY	SN	31	170	ES		0	5	56.08	-0.01										1.0
HWQ	SZ	58	16	EP		0	5	57.51	0.86										0.2

March 25 2015 Hour: 2:17 0.3 Agency: REL Regional

EMSC OT=02:17:00.3 36.28N 35.90E 2Km M=3.4 CENTRAL TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		217	35.44								
BHL	BZ			EP		217	40.55								
DQRL	SZ			EP		217	44.58								
QRWL	SZ			EP		217	45.43								

March 25 2015 Hour: 13:27 20.3 Lat: 33.87N 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	281	EP		1327	23.14	-0.03	39						1.0
DQRL	SZ	31	234	EP		1327	25.40	0.04							1.0
DQRL	SE	31	234	ES		1327	29.12	0.01							1.0
QRWL	SZ	39	203	EP		1327	26.53	-0.07							1.0
RCY	SZ	42	181	EP		1327	27.03	-0.01							1.0
RCY	SE	42	181	ES		1327	32.01	-0.02							1.0
HWQ	SZ	46	12	EP		1327	27.71	0.02							1.0
SHBL	BZ	59	189	EP		1327	29.80	-0.00							1.0
SHBL	BE	59	189	ES		1327	36.89	0.05							1.0

March 25 2015 Hour: 16:27 16.9

Agency: REL Regional

EMSC OT=16:27:16.9 35.34N 32.48E 30Km M=3.5 CYPRUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		1628	1.90								
HWQ	SZ			EP		1628	2.45								
QRWL	SZ			EP		1628	3.57								
RCY	SZ			EP		1628	5.39								

March 26 2015 Hour: 15: 6 55.1 Lat: 33.82N Lon: 35.77E Depth: 23 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	15	311	EP		15	6	59.40	-0.07	30					1.0
DQRL	SZ	22	236	EP		15	7	0.23	0.01						1.0
DQRL	SN	22	236	ES		15	7	4.08	0.08						1.0
QRWL	SZ	31	195	EP		15	7	1.05	-0.16						1.0
RCY	SZ	36	170	EP		15	7	2.05	0.16						1.0
RCY	SN	36	170	ES		15	7	6.87	-0.04						1.0
HWQ	SZ	54	18	EP		15	7	4.25	0.03						1.0

March 27 2015 Hour: 23:34 54.7

Agency: REL Regional

EMSC OT=23:34:54.7 35.63N 26.59E 80Km M=5.2 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		2336	39.73								
BHL	BZ			EP		2336	39.46								
QRWL	SZ			EP		2336	41.64								
HWQ	SZ			EP		2336	42.99								
RCY	SZ			EP		2336	43.60								

March 28 2015 Hour: 13:26 23.0

Agency: REL Regional

EMSC OT=13:26:23.0 36.58N 27.20E 126Km M=4.4 DODECANESE IS. -TURKEY BORDER REG

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		1328	3.41								
BHL	BZ			EP		1328	3.24								
HWQ	SZ			EP		1328	5.38								

March 28 2015 Hour: 22:38 52.0 Agency: REL Distant
EMSC OT=22:28:52.0 0.45N 122.04E 124Km M=6.0 MINAHASA, SULAWESI, INDONESIA
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL BZ EP 2241 20.80
 QRWL SZ EP 2241 22.76
 DQRL SZ EP 2241 23.00

March 29 2015 Hour: 4:16 17.2 Agency: REL Distant
EMSC OT=04:16:17.2 27.06N 57.72E 10Km M=5.0 SOUTHERN IRAN
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ EP 420 51.58
 QRWL SZ EP 420 51.52
 BHL BZ EP 420 52.63
 DQRL SZ EP 420 53.12

March 29 2015 Hour: 12:14 60.0 Lat: 34.09N Lon: 35.98E Depth: 57 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
 HWQ SZ 21 351 EP 1215 8.79 0.04 41 1.0
 HWQ SE 21 351 ES 1215 15.20-0.03 1.0
 BHL BZ 37 236 EP 1215 9.74 0.08 1.0
 DQRL SZ 57 222 EP 1215 11.27-0.15 1.0
 DQRL SN 57 222 ES 1215 19.91 0.04 1.0
 RCY SZ 67 192 EP 1215 12.51 0.05 1.0
 RCY SE 67 192 ES 1215 21.66-0.02 1.0

March 31 2015 Hour: 4:16 58.6 Agency: REL Regional
EMSC OT=04:16:58.6 37.03N 36.90E 2Km M=3.5 CENTRAL TURKEY
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ EP 417 46.23
 BHL BZ EP 417 59.17
 DQRL SZ EP 417 55.94
 QRWL SZ EP 417 58.15

Epicentral Map of Lebanon

MARCH 2015

