

Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

February

2011

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	Opened Nov 2000
FKH	3414.69N	3624.61E	1152	FAKEHEH	Opened Dec 2004
RCY	3329.79N	3550.14E	1370	RACHAYA	Opened Jun 2006
DWR	3323.13N	3524.08E	420	DWEIR	Scheduled 2003
BEYL	3352.30N	3529.59E	49	BEIRUT	Opened Jul 2006
NAQL	3307.02N	3508.46E	83	NAQOURA	Opened Jul 2008
DQRL	3342.34N	3534.21E	963	DEIR QAMAR	Opened Mar 2010

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.

February 2 2011 Hour: 3:53 25.1 Lat: 33.17N Lon: 35.35E Depth: 11 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.0 secs

SOUTH LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
NAQL	SZ	20	252	EP		353	28.92	-0.01	30						1.0
NAQL	SN	20	252	ES		353	31.75	0.00							1.0
DQRL	SZ	62	19	EP		353	35.34	-0.04							1.0
DQRL	SN	62	19	ES		353	43.00	0.02							1.0
BHL	BZ	86	19	EP		353	38.89	0.05							1.0
HWQ	BZ	134	24	EP		353	46.01	0.01							1.0
HWQ	BN	134	24	ES		354	1.42	-0.04							1.0

February 2 2011 Hour: 16:38 11.0 Agency: REL Distant

EMSC OT=16:38:11.0 24.72S 179.95W 526Km mb=5.2 SOUTH OF FIJI ISLS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ			EP		1656	57.44								
BHL	BZ			EP		1656	58.52								
RCY	SZ			EP		1656	58.64								

February 3 2011 Hour: 9:12 20.2 Lat: 34.34N Lon: 36.71E Depth: 0 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.2 secs

NEBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	29	249	EP		912	24.62	-0.28	52						1.0
FKH	SN	29	249	ES		912	28.44	0.05							1.0
HWQ	BZ	70	264	EP		912	31.70	0.18							1.0
HWQ	BN	70	264	ES		912	39.87	-0.03							1.0
RCY	BZ	123	221	EP		912	40.19	0.08							1.0

February 3 2011 Hour: 9:35 42.7 Lat: 34.28N Lon: 36.45E Depth: 10 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.0 secs

HERMEL BAALBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	6	222	EP		935	44.84	-0.02	38						1.0
FKH	SN	6	222	ES		935	46.48	0.01							1.0
HWQ	BZ	47	269	EP		935	50.50	0.02							1.0
HWQ	BN	47	269	ES		935	56.23	-0.01							1.0
RCY	BZ	105	213	EP		935	59.29	0.00							1.0

February 3 2011 Hour: 10:19 39.9 Lat: 34.36N Lon: 36.81E Depth: 0 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.0 secs

NEBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	39	251	EP		1019	46.09	-0.06	69						1.0
FKH	SN	39	251	ES		1019	50.70	-0.06							1.0
HWQ	BZ	80	264	EP		1019	52.74	-0.04							1.0
HWQ	BN	80	264	ES		1020	2.37	0.07							1.0
BHL	BZ	118	245	EP		1019	58.94	0.05							1.0
RCY	SZ	131	224	EP		1020	1.07	0.01							1.0
DQRL	SZ	135	238	EP		1020	1.74	0.03							1.0

February 3 2011 Hour: 15:1 16.2 Lat: 33.79N Lon: 35.78E Depth: 0 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.0 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	317	EP		15	1	18.89	0.02	40					1.0
BHL	BN	17	317	ES		15	1	20.85	-0.02						1.0
DQRL	SZ	22	243	EP		15	1	19.65	0.01						1.0
BEYL	BZ	28	288	EP		15	1	20.52	-0.11						0.2
RCY	SZ	33	171	EP		15	1	21.58	0.02						1.0
RCY	SN	33	171	ES		15	1	25.52	-0.03						1.0
HWQ	BZ	56	16	EP		15	1	25.20	0.00						1.0

February 4 2011 Hour: 8:44 43.5 Lat: 33.87N Lon: 35.83E Depth: 0 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.1 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	284	EP		844	46.26	0.01	57						1.0
DQRL	SZ	30	234	EP		844	48.35	-0.01							1.0
RCY	SZ	41	180	EP		844	50.07	-0.03							1.0
RCY	SN	41	180	ES		844	55.01	0.01							1.0
HWQ	BZ	47	13	EP		844	51.02	-0.02							1.0
HWQ	BN	47	13	ES		844	56.64	0.01							1.0

February 4 2011 Hour: 10:53 49.9 Lat: 33.78N Lon: 35.94E Depth: 0 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.3 secs

CENTRAL BEKAA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	30	297	EP		1053	54.77	0.01	48						1.0
RCY	SZ	33	198	EP		1053	54.99	-0.19							1.0
RCY	SN	33	198	ES		1053	59.12	0.02							1.0
DQRL	SZ	36	257	EP		1053	55.68	0.06							1.0
DQRL	SN	36	257	ES		1053	59.85	-0.02							1.0
HWQ	BZ	55	0	EP		1053	58.78	-0.03							1.0
FKH	SZ	67	40	EP		1054	0.75	0.03							1.0
FKH	SN	67	40	ES		1054	8.72	-0.03							1.0

February 4 2011 Hour: 13: 7 8.9 Lat: 34.04N Lon: 35.74E Depth: 0 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.1 secs

KESROUANE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	206	EP		13 7	11.61	-0.10	35						1.0
BHL	BN	17	206	ES		13 7	13.76	0.00							1.0
HWQ	BZ	33	37	EP		13 7	14.21	0.00							1.0
HWQ	BN	33	37	ES		13 7	18.09	-0.01							1.0
DQRL	SZ	40	202	EP		13 7	15.56	0.10							1.0
RCY	SZ	61	171	EP		13 7	18.86	0.02							1.0
RCY	SN	61	171	ES		13 7	26.15	-0.01							1.0

February 4 2011 Hour: 13:56 47.0 Agency: REL Distant
EMSC OT=13:53:47.0 24.64N 94.72E 92Km mb=6.4 MYANMAR-INDIA REG

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		14 2	41.75								
HWQ	BZ			EP		14 2	44.94								
RCY	BZ			EP		14 2	45.86								
BHL	BZ			EP		14 2	46.78								
DQRL	SZ			EP		14 2	47.85								
BEYL	BZ			EP		14 2	47.49								

February 6 2011 Hour: 0:55 1.6 Lat: 33.85N Lon: 35.88E Depth: 0 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.1 secs

CENTRAL BEKAA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	22	288	EP		055	5.04	-0.08	39						1.0
BHL	BN	22	288	ES		055	7.69	0.00							1.0
DQRL	SZ	32	241	EP		055	6.89	0.04							1.0
RCY	SZ	39	186	EP		055	7.99	0.07							1.0
RCY	SN	39	186	ES		055	12.52	-0.04							1.0
HWQ	BZ	48	8	EP		055	9.54	0.10							1.0
FKH	SZ	66	48	EP		055	12.24	-0.08							1.0

February 6 2011 Hour: 2:9 0.0

Agency: REL Regional

EMSC OT=02:09:00.0 37.83N 27.25E 2Km ML=4.2 WESTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ			EP		210	53.91								
RCY	SZ			EP		210	57.36								

February 6 2011 Hour: 11:8 11.8

Lat: 34.33N

Lon: 36.73E

Depth: 2

Agency: REL Local

Magnitudes: 3.1MC REL

Rms: 0.1 secs

NEBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	31	253	EP		11 8	16.59	-0.19	66						1.0
FKH	SN	31	253	ES		11 8	20.51	0.04							1.0
HWQ	BZ	72	266	EP		11 8	23.56	0.10							1.0
HWQ	BN	72	266	ES		11 8	32.10	0.00							1.0
BHL	BZ	110	245	EP		11 8	29.48	0.00							1.0
RCY	BZ	124	222	EP		11 8	31.79	0.05							1.0
DQRL	SZ	127	238	EP		11 8	32.29	0.03							1.0
DQRL	SN	127	238	ES		11 8	47.39	-0.03							1.0

February 7 2011 Hour: 16:19 35.4

Lat: 34.57N

Lon: 36.40E

Depth: 2

Agency: REL Local

Magnitudes: 2.9MC REL

Rms: 0.1 secs

HERMEL BAALBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	36	179	EP		1619	41.16	-0.08	53						1.0
FKH	SN	36	179	ES		1619	45.59	0.05							1.0
HWQ	BZ	53	233	EP		1619	44.07	0.08							1.0
HWQ	BN	53	233	ES		1619	50.28	-0.05							1.0
DQRL	SZ	123	219	EP		1619	55.21	0.01							1.0
RCY	BZ	130	204	EP		1619	56.28	-0.01							1.0

February 7 2011 Hour: 18:31 45.0

Agency: REL Regional

EMSC OT=18:31:45.0 36.60N 26.89E 102Km ML=4.0 DODECANESE ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		1833	28.39								
DQRL	SZ			EP		1833	29.04								
HWQ	BZ			EP		1833	31.03								
RCY	BZ			EP		1833	33.74								
FKH	SZ			EP		1833	36.14								

February 9 2011 Hour: 10:35 6.2

Lat: 33.78N

Lon: 36.64E

Depth: 0

Agency: REL Local

Magnitudes: 3.1MC REL

Rms: 0.1 secs

DAMASCUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	55	338	EP		1035	15.09	0.01	63						1.0
FKH	SN	55	338	ES		1035	21.62	-0.06							1.0
RCY	BZ	81	247	EP		1035	19.11	-0.11							1.0
RCY	BN	81	247	ES		1035	28.83	-0.05							1.0
HWQ	BZ	84	311	EP		1035	19.73	0.00							1.0
BHL	BZ	92	279	EP		1035	21.08	0.08							1.0
DQRL	SZ	99	265	EP		1035	22.28	0.10							1.0
DQRL	SN	99	265	ES		1035	34.05	0.02							1.0

February 9 2011 Hour: 15:48 15.6

Lat: 33.31N

Lon: 35.60E

Depth: 6

Agency: REL Local

Magnitudes: 2.6MC REL

Rms: 0.1 secs

MOUNT HERMON REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	30	46	EP		1548	20.44	-0.13	34						1.0
RCY	SN	30	46	ES		1548	24.35	0.07							1.0
DQRL	SZ	44	356	EP		1548	22.81	0.05							1.0
DQRL	SN	44	356	ES		1548	28.01	-0.08							1.0
BHL	BZ	66	4	EP		1548	26.39	0.10							1.0
HWQ	BZ	112	16	EP		1548	33.51	-0.01							1.0

February 9 2011 Hour: 16:52.4 Lat: 33.58N Lon: 35.76E Depth: 9 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.1 secs

CENTRAL BEKAA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	BZ	12	146	EP		16	5	24.93	-0.04	31					1.0
RCY	BN	12	146	ES		16	5	26.91	0.02						1.0
DQRL	SZ	22	307	EP		16	5	26.41	0.07						1.0
DQRL	SN	22	307	ES		16	5	29.28	0.00						1.0
BHL	BZ	37	344	EP		16	5	28.42	-0.12						1.0
HWQ	BZ	79	12	EP		16	5	35.25	0.07						1.0

February 10 2011 Hour: 3:56 42.0 Agency: REL Regional
EMSC OT=03:56:42.0 36.16N 37.69E 30Km MD=3.4 TURKEY-SYRIA REG

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		357	18.29								
HWQ	BZ			EP		357	21.15								
BHL	BZ			EP		357	27.32								
DQRL	SZ			EP		357	30.37								
RCY	SZ			EP		357	31.29								

February 10 2011 Hour: 6:223.7 Lat: 34.15N Lon: 35.73E Depth: 27 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.3 secs

KESROUANE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ	24	54	EP		6	2	29.44	-0.06	63					1.0
HWQ	BN	24	54	ES		6	2	33.84	0.04						1.0
BHL	BZ	28	195	EP		6	2	29.79	-0.12	65					1.0
DQRL	SZ	52	197	EP		6	2	32.89	0.11						1.0
FKH	SZ	63	80	EP		6	2	34.37	-0.01						1.0
FKH	SN	63	80	ES		6	2	42.29	0.01						1.0
RCY	SZ	73	173	EP		6	2	35.69	-0.09	69					1.0
RCY	SN	73	173	ES		6	2	44.73	0.00						1.0

February 10 2011 Hour: 8:33 9.4 Lat: 34.43N Lon: 36.78E Depth: 0 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.2 secs

NEBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	40	240	EP		833	15.41	-0.34	58						1.0
FKH	SN	40	240	ES		833	20.53	0.07							1.0
HWQ	BZ	78	258	EP		833	22.15	0.12							1.0
RCY	SZ	135	221	EP		833	31.37	0.21							1.0
RCY	SN	135	221	ES		833	47.23	-0.05							1.0
DQRL	SZ	137	235	EP		833	31.47	-0.01							1.0

February 10 2011 Hour: 9:38 58.3 Lat: 34.36N Lon: 36.76E Depth: 1 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.1 secs

NEBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	34	249	EP		939	3.69	-0.17	54						1.0
FKH	SN	34	249	ES		939	7.99	0.02							1.0
HWQ	BZ	75	264	EP		939	10.56	0.11							1.0
HWQ	BN	75	264	ES		939	19.43	0.00							1.0
RCY	SZ	128	222	EP		939	19.02	0.06							1.0
DQRL	SZ	131	237	EP		939	19.47	-0.01							1.0

February 10 2011 Hour: 14:39 28.0 Agency: REL Distant
EMSC OT=14:39:28.0 04.19N 123.07E 524Km Mw=6.4 CELEBES SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		1451	8.57								
HWQ	BZ			EP		1451	9.90								
RCY	SZ			EP		1451	10.86								
BHL	BZ			EP		1451	11.03								
BEYL	BZ			EP		1451	11.50								

February 10 2011 Hour: 16: 0 0.0

Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		16	1	15.29							
DQRL	SZ			EP		16	1	15.88							

February 10 2011 Hour: 17: 7 2.8

Lat: 33.79N

Lon: 35.77E

Depth: 0

Agency: REL Local

Magnitudes: 2.7MC REL

Rms: 0.0 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	321	EP		17	7	5.51-0.02	37						1.0
DQRL	SZ	20	243	EP		17	7	6.20	0.06						1.0
DQRL	SN	20	243	ES		17	7	8.56-0.02							1.0
RCY	SZ	33	169	EP		17	7	8.14-0.03							1.0
RCY	SE	33	169	ES		17	7	12.11	0.01						1.0
HWQ	BZ	57	17	EP		17	7	12.02	0.01						1.0

February 11 2011 Hour: 1:36 7.2

Agency: REL Distant

EMSC OT=01:29:27.0 15.02S 177.63W 362Km mb=4.9 FIJI REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		148	21.73								
RCY	SZ			EP		148	21.98								
DQRL	SZ			EP		148	22.51								

February 12 2011 Hour: 4: 9 41.0

Lat: 33.78N

Lon: 35.76E

Depth: 0

Agency: REL Local

Magnitudes: 2.6MC REL

Rms: 0.0 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	323	EP		4	9	43.76	0.01	34					1.0
BHL	BN	17	323	ES		4	9	45.77-0.01							1.0
DQRL	SZ	20	245	EP		4	9	44.21	0.00						1.0
RCY	SZ	32	168	EP		4	9	46.24	0.03						1.0
RCY	SN	32	168	ES		4	9	50.05-0.02							1.0
HWQ	BZ	58	17	EP		4	9	50.28	0.00						1.0

February 12 2011 Hour: 13: 9 1.7

Lat: 33.39N

Lon: 35.39E

Depth: 4

Agency: REL Local

Magnitudes: 3.0MC REL

Rms: 0.0 secs

SAIDA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	39	25	EP		13	9	8.05	0.02	56					1.0
DQRL	SN	39	25	ES		13	9	12.73-0.01							1.0
RCY	SZ	43	74	EP		13	9	8.67-0.03							1.0
RCY	SN	43	74	ES		13	9	13.93	0.02						1.0
HWQ	BZ	111	27	EP		13	9	19.66	0.00						1.0

February 12 2011 Hour: 13:21 21.6

Lat: 33.40N

Lon: 35.45E

Depth: 2

Agency: REL Local

Magnitudes: 2.8MC REL

Rms: 0.0 secs

SAIDA REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ	36	17	EP		1321	27.36-0.04		46						1.0
DQRL	SN	36	17	ES		1321	31.70	0.02							1.0
RCY	SZ	37	73	EP		1321	27.63	0.01							1.0
RCY	SN	37	73	ES		1321	32.06-0.01								1.0
HWQ	BZ	108	25	EP		1321	39.01	0.02							1.0
HWQ	BN	108	25	ES		1321	51.83-0.01								1.0

February 12 2011 Hour: 17:57 57.0

Agency: REL Distant

EMSC OT=17:57:57.0 20.82S 175.64W 90Km Mw=6.1 TONGA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BEYL	BZ			EP		1817	30.02								
HWQ	BZ			EP		1817	30.12								
BHL	BZ			EP		1817	30.80								
RCY	BZ			EP		1817	31.76								

February 13 2011 Hour: 4:0 18.6 Lat: 33.10N Lon: 35.48E Depth: 6 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.1 secs

SOUTH LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
NAQL	SZ	32	273	EP		4	0	23.95	0.18	40					1.0
NAQL	SE	32	273	ES		4	0	27.48	-0.15						1.0
RCY	BZ	55	37	EP		4	0	27.32	-0.16						1.0
DQRL	SZ	67	7	EP		4	0	29.57	0.09						1.0
DQRL	SN	67	7	ES		4	0	37.56	-0.01						1.0
BHL	BZ	90	10	EP		4	0	33.29	0.12						1.0
HWQ	BZ	137	18	EP		4	0	40.17	-0.06						1.0

February 13 2011 Hour: 12:19 23.2 Lat: 33.80N Lon: 36.95E Depth: 0 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.2 secs

DAMASCUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	70	315	EP		1219	34.37	-0.07	65						1.0
FKH	SN	70	315	ES		1219	42.67	-0.09							1.0
HWQ	BZ	106	300	EP		1219	40.32	-0.03							1.0
HWQ	BN	106	300	ES		1219	53.10	0.06							1.0
RCY	BZ	108	252	EP		1219	40.38	-0.31							1.0
RCY	BN	108	252	ES		1219	53.53	-0.10							1.0
BHL	BZ	120	276	EP		1219	42.55	-0.02							1.0
BHL	BE	120	276	ES		1219	56.92	0.02							1.0
DQRL	SZ	128	266	EP		1219	44.36	0.53							1.0

February 14 2011 Hour: 3:54 27.0

EMSC OT=03:54:27.0 34.63N 32.93E 2Km ML=3.8 CYPRUS REGION

Agency: REL Regional

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		355	6.60								
DQRL	SZ			EP		355	5.97								
HWQ	BZ			EP		355	7.75								
RCY	SZ			EP		355	10.21								

February 14 2011 Hour: 9:19 14.5 Lat: 34.27N Lon: 36.42E Depth: 0 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.1 secs

HERMEL BAALBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	3	200	EP		919	14.85	-0.11	60						1.0
HWQ	BZ	44	272	EP		919	21.56	0.01							1.0
HWQ	BN	44	272	ES		919	26.71	-0.05							1.0
DQRL	SZ	100	232	EP		919	30.76	0.09							1.0
RCY	BZ	101	212	EP		919	30.87	0.06							1.0
RCY	BN	101	212	ES		919	42.87	-0.01							1.0

February 14 2011 Hour: 10:13 11.2 Lat: 34.31N Lon: 36.53E Depth: 6 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.1 secs

HERMEL BAALBEK REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ	54	266	EP		1013	20.04	-0.02	52						1.0
HWQ	BN	54	266	ES		1013	26.53	-0.06							1.0
BHL	BZ	93	241	EP		1013	26.38	0.12							1.0
RCY	BZ	111	216	EP		1013	28.85	-0.23							1.0
RCY	BN	111	216	ES		1013	42.31	0.02							1.0
DQRL	SZ	112	233	EP		1013	29.28	0.17							1.0

February 14 2011 Hour: 10:32 44.7 Lat: 33.77N Lon: 36.93E Depth: 3 Agency: REL Local
Magnitudes: 3.2MC REL Rms: 0.1 secs

DAMASCUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ	72	318	EP		1032	56.21	-0.03							1.0
FKH	SN	72	318	ES		1033	4.80	-0.01							1.0
RCY	SZ	106	254	EP		1033	1.77	-0.03							1.0

RCY	SN	106	254	ES	1033	14.49	0.00										1.0
HWQ	BZ	107	302	EP	1033	2.06	0.08	69									1.0
BHL	BZ	119	278	EP	1033	3.80	-0.08										1.0
DQRL	SZ	126	267	EP	1033	5.00	0.07										1.0

February 17 2011 Hour: 13:15 50.0 Lat: 33.76N Lon: 36.69E Depth: 28 Agency: REL Local
Magnitudes: 3.2MC REL Rms: 0.1 secs

DAMASCUS REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	85	250	EP		1316	3.64	-0.09	77						1.0
RCY	SN	85	250	ES		1316	13.94	0.04							1.0
HWQ	BZ	90	310	EP		1316	4.60	0.14							1.0
HWQ	BN	90	310	ES		1316	15.13	-0.04							1.0
BHL	BZ	98	280	EP		1316	5.30	-0.24							1.0
DQRL	SZ	104	267	EP		1316	6.68	0.17							1.0
DQRL	SN	104	267	ES		1316	18.75	0.02							1.0

February 18 2011 Hour: 21: 0 19.0 Agency: REL Regional
EMSC OT=21:00:19.0 35.64N 35.92E 5Km MD=3.2 COAST OF SYRIA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ			EP		21 0	39.23								
BHL	BZ			EP		21 0	46.11								
DQRL	SZ			EP		21 0	47.51								
RCY	BZ			EP		21 0	50.92								

February 19 2011 Hour: 1:16 25.3 Lat: 33.79N Lon: 35.80E Depth: 4 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	18	313	EP		116	28.37	0.02							1.0
BHL	BE	18	313	ES		116	30.61	0.00							1.0
DQRL	SZ	23	245	EP		116	29.17	0.02							1.0
DQRL	SN	23	245	ES		116	31.97	-0.03							1.0
RCY	SZ	33	174	EP		116	30.74	0.01	45						1.0
HWQ	BZ	55	14	EP		116	34.26	-0.03							1.0

February 20 2011 Hour: 1:12 31.8 Lat: 33.12N Lon: 35.43E Depth: 0 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.1 secs

SOUTH LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
NAQL	SZ	27	270	EP		112	36.21	0.05	44						1.0
NAQL	SN	27	270	ES		112	39.39	-0.01							1.0
RCY	BZ	57	42	EP		112	40.79	-0.12							1.0
DQRL	SZ	67	11	EP		112	42.55	0.01							1.0
DQRL	SN	67	11	ES		112	50.50	0.01							1.0
BHL	BZ	90	13	EP		112	46.24	-0.03							1.0
HWQ	BZ	137	20	EP		112	53.90	-0.01							1.0

February 20 2011 Hour: 1:27 4.0 Agency: REL Regional
EMSC OT=01:27:04.0 27.86N 34.04E 2Km ML=4.3 RED SEA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		128	35.01								
DQRL	SZ			EP		128	39.64								
BHL	BZ			EP		128	40.73								
HWQ	BZ			EP		128	44.46								

February 21 2011 Hour: 10:57 52.0 Agency: REL Distant
EMSC OT=10:57:52.0 26.13S 178.46E 554Km Mw=6.5 SOUTH OF FIJI ISLS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	BZ			EP		1116	33.40								
BHL	BZ			EP		1116	34.48								
RCY	BZ			EP		1116	34.42								
BEYL	BZ			EP		1116	34.60								

February 21 2011 Hour: 13:12 0.0

Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		1312	29.47								
HWQ	BZ			EP		1312	30.38								

February 21 2011 Hour: 23:51 41.0

Agency: REL Distant

EMSC OT=23:51:41.0 43.53S 172.76E 6Km Mw=6.3 NEW ZEALAND

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		011	20.70								
HWQ	BZ			EP		011	20.58								
BHL	BZ			EP		011	21.12								
RCY	BZ			EP		011	20.76								
DQRL	SZ			EP		011	22.21								
BEYL	BZ			EP		011	21.61								

February 22 2011 Hour: 8:9 39.2

Lat: 33.78N

Lon: 35.78E

Depth: 4

Agency: REL Local

Magnitudes: 2.5MC REL

Rms: 0.0 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	18	319	EP		8 9	42.12	-0.01	30						1.0
BHL	BN	18	319	ES		8 9	44.33	0.00							1.0
DQRL	SZ	21	246	EP		8 9	42.71	0.02							1.0
RCY	BZ	32	171	EP		8 9	44.41	-0.03							1.0
RCY	BN	32	171	ES		8 9	48.37	0.02							1.0
HWQ	BZ	57	16	EP		8 9	48.39	0.02							1.0

February 22 2011 Hour: 18:15 53.0

Agency: REL Regional

EMSC OT=18:15:53.0 38.97N 42.33E 4Km Mw=4.8 EASTERN TURKEY

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		1817	33.00								
HWQ	BZ			EP		1817	43.46								
BHL	BZ			EP		1817	55.95								

February 23 2011 Hour: 4:25 30.8

Lat: 33.12N

Lon: 35.47E

Depth: 0

Agency: REL Local

Magnitudes: 2.7MC REL

Rms: 0.1 secs

SOUTH LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
NAQL	SZ	30	270	EP		425	35.55	-0.18							1.0
NAQL	SN	30	270	ES		425	39.33	-0.02							1.0
RCY	SZ	54	39	EP		425	39.60	0.00							1.0
RCY	SN	54	39	ES		425	46.07	-0.01							1.0
DQRL	SZ	66	8	EP		425	41.44	-0.02							1.0
DQRL	SN	66	8	ES		425	49.29	-0.03							1.0
BHL	BZ	89	11	EP		425	45.14	-0.04	37						1.0
HWQ	BZ	136	19	EP		425	52.80	0.01							1.0

February 23 2011 Hour: 5:30 0.0

Agency: REL Regional

EMSC OT=05:29:29.0 34.45N 26.62E 47Km mb=4.7 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ			EP		531	16.97								
HWQ	BZ			EP		531	17.82								

February 23 2011 Hour: 17:1 48.3

Lat: 33.79N

Lon: 35.78E

Depth: 5

Agency: REL Local

Magnitudes: 2.5MC REL

Rms: 0.0 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	317	EP		17 1	51.20	-0.01	30						1.0
BHL	BN	17	317	ES		17 1	53.40	0.01							1.0
DQRL	SZ	22	244	EP		17 1	51.92	0.00							1.0
RCY	SZ	33	171	EP		17 1	53.75	0.02							1.0
RCY	SN	33	171	ES		17 1	57.77	-0.01							1.0
HWQ	BZ	56	16	EP		17 1	57.36	0.00							1.0

February 24 2011 Hour: 7:18 56.4 Lat: 33.67N Lon: 36.02E Depth: 0 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.0 secs

CENTRAL BEKAA

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	26	221	EP		719	0.64	0.02	33						1.0
RCY	SN	26	221	ES		719	3.74	-0.03							1.0
DQRL	SZ	42	275	EP		719	3.22	0.05							1.0
DQRL	SN	42	275	ES		719	8.20	0.00							1.0
BHL	BZ	43	307	EP		719	3.22	-0.03							1.0
HWQ	BZ	67	354	EP		719	7.23	-0.01							1.0

February 24 2011 Hour: 10:14 0.0 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
FKH	SZ			EP		1015	18.50								
HWQ	BZ			EP		1015	25.49								

February 25 2011 Hour: 8:43 52.8 Lat: 33.12N Lon: 35.44E Depth: 0 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.1 secs

SOUTH LEBANON

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
RCY	SZ	55	41	EP		844	1.61	-0.04	45						1.0
RCY	SN	55	41	ES		844	8.30	0.06							1.0
DQRL	SZ	66	10	EP		844	3.33	-0.02							1.0
DQRL	SN	66	10	ES		844	11.22	0.02							1.0
BHL	BZ	89	13	EP		844	7.11	0.03							0.2
HWQ	BZ	136	20	EP		844	14.74	0.01							1.0

February 25 2011 Hour: 21:33 26.0 Agency: REL Regional

EMSC OT=21:33:26.0 36.60N 27.18E 139Km ML=3.8 DODECANESE ISLANDS

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ			EP		2135	10.27								
DQRL	SZ			EP		2135	11.36								
RCY	SZ			EP		2135	15.47								

February 27 2011 Hour: 14:31 35.2 Lat: 33.79N Lon: 35.79E Depth: 5 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 0.0 secs

BEIRUT REGION

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	17	315	EP		1431	38.21	0.00	26						1.0
DQRL	SZ	22	244	EP		1431	38.98	0.02							1.0
DQRL	SN	22	244	ES		1431	41.73	-0.01							1.0
RCY	SZ	33	172	EP		1431	40.67	-0.02							1.0
RCY	SN	33	172	ES		1431	44.75	0.01							1.0
HWQ	BZ	56	15	EP		1431	44.27	0.00							1.0

February 28 2011 Hour: 7:49 6.0 Agency: REL Regional

EMSC OT=07:49:06.0 34.82N 25.44E 50Km mb=5.2 CRETE, GREECE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
DQRL	SZ			EP		751	2.59								
BHL	BZ			EP		751	3.53								
RCY	SZ			EP		751	6.16								
HWQ	BZ			EP		751	6.58								

February 28 2011 Hour: 23:49 23.2 Lat: 33.98N Lon: 35.86E Depth: 15 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 0.0 secs

KESROUANE

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	BZ	21	245	EP		2349	27.40	-0.03							1.0
BHL	BN	21	245	ES		2349	30.60	0.02							1.0
HWQ	BZ	34	13	EP		2349	29.16	0.03							1.0
HWQ	BN	34	13	ES		2349	33.53	-0.02							1.0
DQRL	SZ	41	221	EP		2349	30.20	0.00	26						1.0
RCY	SZ	54	183	EP		2349	32.15	0.00							1.0

Epicentral Map of Lebanon

February 2011

