Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

July

2004

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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:

Mc = 0.08 + 1.63 * log10(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 Vp/Vs 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 and the Syrian seismic network SNSN 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	3414.13N	3624.11E	1170	FAKEHEH	Scheduled 2003
RCY	3329.08N	3549.13E	1360	RACHAYA	Scheduled 2003
DWR	3323.13N	3524.08E	420	DWEIR	Scheduled 2003

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 will be available for download in pdf format on:
http://www.cnrs.edu.lb/geophysicalresearch/

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:	GRL throughout the bulletin, aka. Geophysical Research Lebanon
MAGNITUDES:	Up to 3 different magnitudes can be given followed by type and and reporting agency, e.g. 3.1 MC GRL - coda magnitude calculated according to GRL standard parameters.
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*(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 2004 Hour: 15:22 7.7 Lat: 34.18N Lon: 35.47E Depth: 15 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.3 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	35.26	151	IPG		1522	14.37	0.5	38			228	-99	17.7	1.0
BHL	SN	35.26	151	ISG		1522	18.58	0.1							1.0
HWQ	SZ	45.19	76	IPG		1522	15.22	-0.1							1.0
HWQ	SN	45.19	76	ISG		1522	20.59	-0.4							1.0

July 1 2004 Hour: 22:32 3.2 Agency: REL Regional

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			EP		2232	16.38								
BHL	SZ			EP		2232	22.52								
MATL	SZ			EP		2232	29.55								

July 2 2004 Hour: 15:40 11.1 Lat: 34.18N Lon: 35.57E Depth: 0 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.1 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	31.46	166	IPG		1540	16.30	0.2	31			345	0	52.9	1.0
BHL	SN	31.46	166	ISG		1540	19.83	-0.1							1.0
HWQ	SZ	36.45	72	IPG		1540	16.91	0.0							1.0
HWQ	SN	36.45	72	ISG		1540	21.25	-0.1							1.0

July 2 2004 Hour: 22:59 5.8 Lat: 33.91N Lon: 35.31E Depth: 14 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.1 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	31.54	91	IPG		2259	11.38	-0.1	46						1.0
BHL	SN	31.54	91	ISG		2259	15.70	0.1							1.0
MATL	SZ	46.64	178	IPG		2259	13.68	0.0							1.0
HWQ	SZ	71.34	55	IPG		2259	17.71	0.1							1.0
HWQ	SN	71.34	55	ISG		2259	26.23	-0.1							1.0

July 3 2004 Hour: 17: 0 58.5 Lat: 34.35N Lon: 35.25E Depth: 15 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.2 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	62.45	143	IPG		17 1	8.84	0.1							1.0
BHL	SN	62.45	143	ISG		17 1	15.90	-0.3							1.0
HWQ	SZ	64.77	97	IPG		17 1	9.13	0.1	31			72	154	70.0	1.0
HWQ	SN	64.77	97	ISG		17 1	16.94	0.1							1.0

July 3 2004 Hour: 17:30 52.3 Lat: 34.43N Lon: 35.23E Depth: 15 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.3 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	67.97	104	IPG		1731	3.35	0.0	32			128	-99	62.8	1.0
HWQ	SE	67.97	104	ISG		1731	11.10	-0.4							1.0
BHL	SZ	70.02	146	IPG		1731	3.68	0.0							1.0
BHL	SE	70.02	146	ISG		1731	12.34	0.3							1.0

July 4 2004 Hour: 10:30 0.1 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ			IPG		1030	52.60								
BHL	SE			ISG		1031	4.50								
HWQ	SZ			IPG		1030	53.31								
HWQ	SN			ISG		1031	6.56								

July 4 2004 Hour: 13:33 0.5 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ			IPG		1334	12.31								
HWQ	SZ			IPG		1334	12.41								
HWQ	SE			ISG		1334	17.15								
BHL	SN			ISG		1334	16.26								

July 4 2004 Hour: 14:55 1.1 Lat: 34.19N Lon: 35.54E Depth: 15 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.2 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	33.64	162	IPG		1455	7.25	0.2	38			103	121	11.7	1.0
BHL	SN	33.64	162	ISG		1455	11.26	-0.2							1.0
HWQ	SZ	38.67	76	IPG		1455	8.02	0.2							1.0
HWQ	SN	38.67	76	ISG		1455	12.66	-0.1							1.0

July 4 2004 Hour: 20:10 24.2 Lat: 37.57N Lon: 36.08E Depth: 0 Agency: REL Regional
Magnitudes: 4.2MC REL Rms: 1.7 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	365.4	182	EPN		2011	17.62	1.9	199						1.0
HWQ	SN	365.4	182	SN		2011	53.24	-0.6							1.0
BHL	SZ	408.5	186	EPN		2011	18.12	-2.9							1.0
BHL	SE	408.5	186	SN		2012	3.71	0.6							1.0
MATL	SZ	457.8	189	EPN		2011	28.05	1.0							1.0

July 6 2004 Hour: 16:58 45.4 Lat: 33.86N Lon: 37.13E Depth: 15 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.9 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	118.8	293	IPG		1659	4.39	0.6	65			67	-45	22.8	1.0
HWQ	SN	118.8	293	ISG		1659	18.56	1.1							1.0
BHL	SZ	136.8	272	IPG		1659	5.30	-1.2							1.0
BHL	SN	136.8	272	ISG		1659	21.62	-0.5							1.0

July 7 2004 Hour: 14:35 8.7 Lat: 31.94N Lon: 35.67E Depth: 14 Agency: REL Local
Magnitudes: 4.3MC REL Rms: 1.1 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
MATL	SZ	174.7	349	IPG		1435	35.10	-0.2							1.0
BHL	SZ	217.7	360	IPG		1435	40.98	-0.7				231	51	18.1	1.0
BHL	SN	217.7	360	ISG		1436	7.23	1.1							1.0
HWQ	SZ	260.4	6	IPG		1435	46.94	-1.0	269			187	2	62.0	1.0
HWQ	SN	260.4	6	ISG		1436	13.57	-3.5							1.0

July 9 2004 Hour: 12:16 24.6 Lat: 31.43N Lon: 35.50E Depth: 34 Agency: REL Local
Magnitudes: 3.5MC REL Rms: 0.4 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
MATL	SZ	229.3	356	IPG		1216	59.34	-0.1							1.0
BHL	SZ	275.3	3	IPG		1217	6.84	0.7	92						1.0
BHL	SN	275.3	3	ISG		1217	36.66	-0.3							1.0
HWQ	SZ	319.1	7	IPG		1217	12.02	-0.6							1.0
HWQ	SN	319.1	7	ISG		1217	48.47	0.3							1.0

July 9 2004 Hour: 19:34 56.4 Lat: 33.53N Lon: 35.90E Depth: 0 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.6 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	47.33	331	IPG		1935	3.00	-1.0	39						1.0
BHL	SN	47.33	331	ISG		1935	9.71	0.0							1.0
MATL	SZ	53.21	265	IPG		1935	5.50	0.5							1.0
HWQ	SZ	83.05	3	IPG		1935	9.70	-0.1							1.0
HWQ	SN	83.05	3	ISG		1935	20.28	0.6							1.0

July 10 2004 Hour: 16:43 36.4 Lat: 34.18N Lon: 35.46E Depth: 15 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.5 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	35.27	149	IPG		1643	43.21	0.7	31			286	-42	43.5	1.0
BHL	SN	35.27	149	ISG		1643	47.42	0.3							1.0
HWQ	SZ	46.42	76	IPG		1643	43.88	-0.3							1.0
HWQ	SN	46.42	76	ISG		1643	49.38	-0.6							1.0

July 12 2004 Hour: 10:16 1.1 Lat: 33.62N Lon: 36.55E Depth: 15 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.9 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	88.59	291	IPG		1016	14.15	-1.0	43			343	128	54.2	1.0
BHL	SN	88.59	291	ISG		1016	24.71	-0.8							1.0
HWQ	SZ	92.05	323	IPG		1016	16.48	0.8							1.0
HWQ	SE	92.05	323	ISG		1016	27.48	1.0							1.0

July 13 2004 Hour: 7:23 20.0 Lat: 33.15N Lon: 35.07E Depth: 10 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 2.2 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
MATL	SZ	44.11	33	IPG		723	29.47	2.1	50						1.0
BHL	SZ	99.15	33	IPG		723	32.80	-3.3							1.0
BHL	SE	99.15	33	ISG		723	46.95	-1.1							1.0
HWQ	SZ	148.6	33	IPG		723	46.80	2.7							1.0
HWQ	SN	148.6	33	ISG		724	1.47	-0.4							1.0

July 13 2004 Hour: 15: 9 35.1 Lat: 34.16N Lon: 35.48E Depth: 15 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.5 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	32.49	150	IPG		15 9	41.57	0.7	39			195	-99	30.8	1.0
BHL	SN	32.49	150	ISG		15 9	45.45	0.3							1.0
HWQ	SZ	44.92	73	IPG		15 9	42.33	-0.3							1.0
HWQ	SN	44.92	73	ISG		15 9	47.66	-0.7							1.0

July 15 2004 Hour: 6:54 17.4 Lat: 34.51N Lon: 35.86E Depth:152 Agency: REL Local
Magnitudes: 3.3MC REL Rms: 0.3 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	26.79	163	IPG		654	37.44	0.1	77						1.0
HWQ	SN	26.79	163	ISG		654	51.73	-0.3							1.0
BHL	SZ	69.68	196	IPG		654	39.30	0.4							1.0
BHL	SE	69.68	196	ISG		654	55.02	0.3							1.0
MATL	SZ	123.3	204	IPG		654	41.82	-0.5							1.0

July 15 2004 Hour: 8:18 1.0 Lat: 33.75N Lon: 36.34E Depth: 15 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.1 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	65.39	285	IPG		818	11.63	0.1							1.0
BHL	SN	65.39	285	ISG		818	19.32	-0.1							1.0
HWQ	SZ	68.46	328	IPG		818	12.04	0.0	39			43	-99	37.3	1.0
HWQ	SE	68.46	328	ISG		818	20.24	0.0							1.0

July 15 2004 Hour: 10:11 0.7 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			IPG		1012	14.79								
HWQ	SE			ISG		1012	26.64								
BHL	SN			ISG		1012	23.86								

July 16 2004 Hour: 15:10 0.3 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ			IPG		1510	44.64								
HWQ	SZ			IPG		1510	43.95								
BHL	SN			ISG		1510	47.31								
HWQ	SE			ISG		1510	50.12								

July 16 2004 Hour: 23:54 29.7 Lat: 34.32N Lon: 36.06E Depth: 16 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.1 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ	11.55	244	IPG		2354	33.15	0.1	33			64	0	37.0	1.0
HWQ	SN	11.55	244	ISG		2354	35.42	-0.1							1.0
BHL	SZ	59.70	219	IPG		2354	39.33	-0.1							1.0
BHL	SN	59.70	219	ISG		2354	46.78	0.1							1.0

July 18 2004 Hour: 16:11 55.1 Lat: 33.14N Lon: 35.09E Depth: 23 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.6 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
MATL	SZ	45.07	30	IPG		1612	3.30	0.3	44						1.0
BHL	SZ	100.1	32	IPG		1612	10.25	-0.6							1.0
BHL	SE	100.1	32	ISG		1612	21.86	-0.7							1.0
HWQ	SZ	149.5	32	IPG		1612	18.41	0.3							1.0
HWQ	SN	149.5	32	ISG		1612	35.93	0.7							1.0

July 19 2004 Hour: 12:36 1.5 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ			IPG		1236	46.56								
BHL	SN			ISG		1236	49.23								
HWQ	SE			ISG		1236	58.71								

July 20 2004 Hour: 7:48 56.8 Lat: 33.85N Lon: 36.07E Depth: 15 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.4 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	39.18	278	IPG		749	3.86	0.3				158	60	15.9	1.0
BHL	SE	39.18	278	ISG		749	8.51	-0.1							1.0
HWQ	SZ	48.45	346	IPG		749	5.25	0.3	32						1.0
HWQ	SN	48.45	346	ISG		749	10.39	-0.6							1.0

July 20 2004 Hour: 21:42 51.6 Lat: 32.50N Lon: 35.25E Depth: 0 Agency: REL Local
Magnitudes: 3.7MC REL Rms: 1.4 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
MATL	SZ	109.5	4	IPG		2143	8.99	-0.2							1.0
BHL	SZ	159.8	13	IPG		2143	16.62	-0.4							1.0
BHL	SE	159.8	13	ISG		2143	36.52	0.7							1.0
HWQ	SZ	207.1	18	IPG		2143	22.49	-0.9	124						1.0
HWQ	SE	207.1	18	ISG		2143	49.39	2.4							1.0

July 21 2004 Hour: 15: 4 22.6 Lat: 33.90N Lon: 36.02E Depth: 15 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.3 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	33.60	272	IPG		15 4	28.75	0.2	31			67	-24	48.4	1.0
BHL	SN	33.60	272	ISG		15 4	32.83	-0.1							1.0
HWQ	SZ	42.98	351	IPG		15 4	29.44	-0.5							1.0
HWQ	SE	42.98	351	ISG		15 4	35.69	0.4							1.0

July 22 2004 Hour: 9: 9 43.8 Lat: 33.99N Lon: 35.51E Depth: 15 Agency: REL Local
Magnitudes: 2.2MC REL Rms: 0.4 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	16.08	126	IPG		9 9	47.29	-0.1	20			312	6	12.1	1.0
BHL	SN	16.08	126	ISG		9 9	50.05	-0.1							1.0
HWQ	SZ	51.12	51	IPG		9 9	51.92	-0.4							1.0
HWQ	SE	51.12	51	ISG		9 9	59.21	0.6							1.0

July 22 2004 Hour: 9:58 51.9 Lat: 33.59N Lon: 35.49E Depth: 15 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 1.0 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
MATL	SZ	18.11	233	IPG		958	56.23	0.5							1.0
BHL	SZ	38.54	24	IPG		958	56.86	-1.8	46						1.0
BHL	SE	38.54	24	ISG		959	3.37	-0.2							1.0
HWQ	SZ	87.73	29	IPG		959	5.87	0.0							1.0
HWQ	SE	87.73	29	ISG		959	17.52	1.4							1.0

July 23 2004 Hour: 9:31 43.0 Lat: 33.84N Lon: 35.57E Depth: 0 Agency: REL Local
Magnitudes: 1.8MC REL Rms: 1.2 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	10.57	46	IPG		931	44.13	-0.6	12			227	1	26.8	1.0
BHL	SN	10.57	46	ISG		931	44.44	-1.6							1.0
HWQ	SZ	59.80	35	IPG		931	53.20	0.5							1.0
HWQ	SN	59.80	35	ISG		932	1.50	1.7							1.0

July 24 2004 Hour: 15:23 21.2 Lat: 34.41N Lon: 35.13E Depth: 15 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.8 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	73.90	139	IPG		1523	33.85	0.8							1.0
BHL	SN	73.90	139	ISG		1523	40.64	-1.2							1.0
HWQ	SZ	76.12	101	IPG		1523	33.83	0.5	38			77	155	53.5	1.0
HWQ	SN	76.12	101	ISG		1523	42.23	-0.2							1.0

July 25 2004 Hour: 10: 5 0.4 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SE			ISG		10 6	47.59								
HWQ	SZ			IPG		10 6	37.55								
HWQ	SN			ISG		10 6	49.45								

July 25 2004 Hour: 19:57 1.6 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
HWQ	SZ			IPG		1958	3.49								
HWQ	SE			ISG		1958	24.24								
BHL	SE			ISG		1958	20.11								

July 26 2004 Hour: 8:15 10.8 Lat: 33.74N Lon: 35.74E Depth: 44 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 1.0 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	19.83	335	IPG		815	19.41	1.4	26			6	-99	16.8	1.0
BHL	SN	19.83	335	ISG		815	22.25	-1.1							1.0
HWQ	SZ	62.30	17	IPG		815	21.18	-0.8							1.0
HWQ	SE	62.30	17	ISG		815	30.93	0.6							1.0

July 26 2004 Hour: 14:46 49.5 Lat: 33.90N Lon: 34.98E Depth: 15 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.1 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	62.50	89	IPG		1446	59.83	0.2	46			202	-67	20.8	1.0
BHL	SN	62.50	89	ISG		1447	7.21	0.0							1.0
HWQ	SZ	98.66	65	IPG		1447	4.81	-0.2							1.0
HWQ	SE	98.66	65	ISG		1447	16.49	0.0							1.0

July 26 2004 Hour: 22:50 0.7 Lat: 33.59N Lon: 35.87E Depth: 0 Agency: REL Local
Magnitudes: 3.1MC REL Rms: 0.6 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	39.84	330	IPG		2250	6.24	-0.9	64						1.0
BHL	SN	39.84	330	ISG		2250	11.85	0.0							1.0
MATL	SZ	51.22	257	IPG		2250	9.45	0.5							1.0
HWQ	SZ	76.43	5	IPG		2250	12.61	-0.4							1.0
HWQ	SN	76.43	5	ISG		2250	22.84	0.7							1.0

July 29 2004 Hour: 8:59 1.6 Agency: REL Local

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ			IPG		9 0	33.25								
HWQ	SZ			IPG		9 0	34.85								
HWQ	SN			ISG		9 0	44.99								
BHL	SN			ISG		9 0	42.80								

July 31 2004 Hour: 12:37 43.0 Lat: 33.39N Lon: 35.82E Depth: 3 Agency: REL Local Magnitudes: 2.7MC REL Rms: 0.3 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
MATL	SZ	47.28	284	IPG		1237	50.68	0.0							1.0
BHL	SZ	59.36	345	IPG		1237	52.21	-0.4	40						1.0
BHL	SN	59.36	345	ISG		1237	59.97	0.2							1.0
HWQ	SZ	99.35	7	IPG		1237	59.49	0.4							1.0
HWQ	SE	99.35	7	ISG		1238	10.71	-0.2							1.0

July 31 2004 Hour: 16:33 56.1 Lat: 34.19N Lon: 35.53E Depth: 15 Agency: REL Local Magnitudes: 2.6MC REL Rms: 0.3 secs

STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT
BHL	SZ	33.90	160	IPG		1634	2.07	0.0	35			113	132	69.2	1.0
BHL	SN	33.90	160	ISG		1634	6.11	-0.4							1.0
HWQ	SZ	39.40	76	IPG		1634	3.31	0.4							1.0
HWQ	SN	39.40	76	ISG		1634	8.04	0.1							1.0

Epicentral Map of Lebanon

July 2004

Magnitudes

- MI = 2
- MI = 3
- MI = 4
- MI = 5