

Republic of Lebanon
National Council for Scientific Research

Provisional Seismological Bulletin

from the

NATIONAL SEISMIC NETWORK

June

2004

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 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 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 ($0.5 \times (\text{peak to peak})$), (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 1 2004 Hour: 7:3 1.4 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 7 4 21.23
 BHL SN ISG 7 4 23.91
 HWQ SE ISG 7 4 32.41

June 1 2004 Hour: 9:49 0.5 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 950 24.05
 BHL SE ISG 950 32.63
 HWQ SZ IPG 950 25.14
 HWQ SE ISG 950 33.44

June 1 2004 Hour: 10:41 4.8 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 1042 13.63
 HWQ SE ISG 1042 27.19
 BHL SN ISG 1042 25.03
 HWQ SZ IPG 1042 14.75

June 2 2004 Hour: 14:15 3.7 Lat: 33.14N Lon: 35.19E Depth: 0 Agency: REL Local
 Magnitudes: 2.7MC REL Rms: 0.4 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ40.41 18 IPG 1415 10.38 0.2 41 1.0
 BHL SZ94.67 27 IPG 1415 18.26 -0.7 1.0
 BHL SN94.67 27 ISG 1415 30.24 0.0 1.0
 HWQ SZ143.9 29 IPG 1415 27.49 0.6 1.0
 HWQ SE143.9 29 ISG 1415 44.15 0.0 1.0

June 2 2004 Hour: 14:55 43.4 Lat: 34.19N Lon: 35.53E 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 SZ34.00 160 IPG 1455 49.59 0.2 37 18 38 19.7 1.0
 BHL SN34.00 160 ISG 1455 53.54 -0.3 1.0
 HWQ SZ39.93 76 IPG 1455 50.18 -0.1 1.0
 HWQ SE39.93 76 ISG 1455 55.56 0.2 1.0

June 3 2004 Hour: 0:16 17.0 Lat: 33.12N Lon: 35.45E Depth: 0 Agency: REL Local
 Magnitudes: 3.0MC REL Rms: 1.0 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ42.60 344 IPG 016 23.57 -0.3 1.0
 BHL SZ89.03 12 IPG 016 30.50 -0.9 54 1.0
 BHL SE89.03 12 ISG 016 43.37 1.4 1.0
 HWQ SZ136.4 19 IPG 016 38.60 -0.4 1.0
 HWQ SE136.4 19 ISG 016 57.12 1.8 1.0

June 3 2004 Hour: 13:18 29.5 Lat: 32.25N Lon: 35.53E Depth: 0 Agency: REL Regional
 Rms: 0.0 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ138.3 352 EPN 1319 17.87 25.2 1.0
 BHL SZ183.6 4 EPN 1319 26.19 27.8 1.0
 BHL SN183.6 4 SN 1319 52.94 33.1 1.0
 HWQ SZ228.0 10 EPN 1319 33.08 29.1 1.0
 HWQ SE228.0 10 SN 1320 4.30 34.8 1.0

June 3 2004 Hour: 15:3 0.8 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 15 4 8.08
 HWQ SZ IPG 15 4 5.87
 HWQ SE ISG 15 4 18.40
 BHL SN ISG 15 4 23.39

June 4 2004 Hour: 0:3 0.2 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 0 4 39.15
 HWQ SZ IPG 0 4 35.94
 BHL SE ISG 0 4 55.11
 HWQ SE ISG 0 4 48.78

June 4 2004 Hour: 1:30 24.9 Lat: 33.38N Lon: 35.31E Depth: 0 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 SZ12.27 6 IPG 130 27.00 0.2 1.0
 BHL SZ66.24 28 IPG 130 34.66 -0.9 42 1.0
 BHL SN66.24 28 ISG 130 42.85 -0.6 1.0
 HWQ SZ115.6 30 IPG 130 44.22 0.7 1.0
 HWQ SE115.6 30 ISG 130 57.93 0.6 1.0

June 4 2004 Hour: 7:14 42.4 Lat: 33.91N Lon: 35.65E Depth: 10 Agency: REL Local
 Magnitudes: 2.4MC REL Rms: 0.9 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ0.975 114 IPG 714 43.35 -1.0 25 294 0 43.1 1.0
 BHL SE0.975 114 ISG 714 46.30 0.6 1.0
 HWQ SZ49.62 34 IPG 714 51.84 1.2 1.0
 HWQ SN49.62 34 ISG 714 55.90 -0.8 1.0

June 4 2004 Hour: 20:33 46.6 Lat: 33.54N Lon: 36.92E Depth: 15 Agency: REL Local
 Magnitudes: 3.0MC REL Rms: 0.6 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ121.5 313 IPG 2034 6.32 0.8 51 33 -98 39.1 1.0
 HWQ SE121.5 313 ISG 2034 19.35 -0.1 1.0
 BHL SN123.8 289 ISG 2034 19.33 -0.7 1.0

June 5 2004 Hour: 9:58 0.7 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SE ISG 959 13.02
 BHL SE ISG 959 11.81

June 5 2004 Hour: 14:37 11.0 Lat: 34.99N Lon: 36.02E Depth: 15 Agency: REL Local
 Magnitudes: 2.9MC REL Rms: 0.2 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ79.39 185 IPG 1437 23.91 0.2 50 1.0
 HWQ SE79.39 185 ISG 1437 32.90 -0.2 1.0
 BHL SZ125.2 196 IPG 1437 30.53 0.1 1.0
 BHL SE125.2 196 ISG 1437 44.99 0.2 1.0
 MATL SZ178.4 201 IPG 1437 37.91 -0.3 1.0

June 6 2004 Hour: 5:57 0.9 Agency: REL Regional
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ EPN 559 15.94
 BHL SE SN 6 0 49.61
 HWQ SE SN 6 0 32.84
 BHL SZ EPN 559 25.56

June 6 2004 Hour: 9:57 0.1 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 958 14.69
 BHL SE ISG 958 22.53
 HWQ SZ IPG 958 15.32
 HWQ SE ISG 958 23.38

June 6 2004 Hour: 17:26 33.2 Lat: 34.26N Lon: 35.47E Depth: 59 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 SZ43.51 157 IPG 1726 43.82 0.2 337 0 28.2 1.0
 BHL SN43.51 157 ISG 1726 51.20 -0.1 1.0
 HWQ SZ44.07 88 IPG 1726 43.45 -0.2 36 1.0
 HWQ SE44.07 88 ISG 1726 51.57 0.1 1.0

June 7 2004 Hour: 13:45 48.9 Lat: 33.84N Lon: 36.62E Depth: 0 Agency: REL Local
Magnitudes: 3.6MC REL Rms: 0.4 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ79.23 308 IPG 1346 1.94 0.2 136 1.0
 HWQ SE79.23 308 ISG 1346 11.74 0.6 1.0
 BHL SZ89.94 275 IPG 1346 3.59 0.2 1.0
 BHL SN89.94 275 ISG 1346 13.48 -0.7 1.0
 MATL SZ126.1 252 IPG 1346 9.36 0.1 1.0

June 7 2004 Hour: 14: 5 50.7 Lat: 33.81N Lon: 36.74E Depth: 15 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.0 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ89.95 305 IPG 14 6 4.91 0.0 45 74 -50 30.8 1.0
 HWQ SE89.95 305 ISG 14 6 15.56 0.1 1.0
 BHL SZ101.4 276 IPG 14 6 6.62 0.0 1.0
 BHL SN101.4 276 ISG 14 6 18.38 0.0 1.0

June 7 2004 Hour: 14:54 48.3 Lat: 34.13N Lon: 35.61E Depth: 26 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.2 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ25.71 171 IPG 1454 54.37 0.3 46 351 0 76.5 1.0
 BHL SN25.71 171 ISG 1454 58.26 -0.2 1.0
 HWQ SZ34.74 62 IPG 1454 54.89 -0.3 1.0
 HWQ SE34.74 62 ISG 1455 0.38 0.2 1.0

June 7 2004 Hour: 15:31 42.3 Lat: 33.58N Lon: 36.00E Depth: 15 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 SZ47.58 318 IPG 1531 50.42 0.1 28 270 131 43.1 1.0
 BHL SN47.58 318 ISG 1531 56.07 -0.1 1.0
 HWQ SZ77.06 357 IPG 1531 54.67 0.1 1.0
 HWQ SE77.06 357 ISG 1532 3.68 -0.1 1.0

June 8 2004 Hour: 10: 2 24.9 Lat: 34.28N Lon: 35.21E 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 SZ58.29 135 IPG 10 2 34.45 -0.1 1.0
 BHL SE58.29 135 ISG 10 2 41.38 -0.2 1.0
 HWQ SZ67.62 90 IPG 10 2 36.03 0.1 38 69 158 34.0 1.0
 HWQ SE67.62 90 ISG 10 2 44.10 0.1 1.0

June 9 2004 Hour: 17:32 33.5 Lat: 34.40N Lon: 35.24E Depth: 15 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.0 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ66.96 102 IPG 1732 44.33 0.0 40 1.0
 HWQ SE66.96 102 ISG 1732 52.37 0.0 1.0
 BHL SZ67.66 145 IPG 1732 44.44 0.0 353 27 20.4 1.0
 BHL SE67.66 145 ISG 1732 52.51 0.0 1.0

June 9 2004 Hour: 21:38 14.1 Lat: 34.70N Lon: 35.24E Depth: 15 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.8 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ79.72 125 IPG 2138 27.54 0.8 31 39 93 62.2 1.0
 HWQ SE79.72 125 ISG 2138 37.06 0.9 1.0
 BHL SZ95.74 156 IPG 2138 28.19 -0.9 1.0
 BHL SN95.74 156 ISG 2138 39.60 -0.7 1.0

June 10 2004 Hour: 15:27 37.0 Lat: 34.19N Lon: 35.51E Depth: 0 Agency: REL Local
Magnitudes: 2.4MC REL Rms: 0.1 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ34.38 158 IPG 1527 42.71 0.1 25 338 0 11.7 1.0
 BHL SN34.38 158 ISG 1527 46.61 -0.1 1.0
 HWQ SZ41.09 76 IPG 1527 43.56 -0.1 1.0
 HWQ SE41.09 76 ISG 1527 48.63 0.1 1.0

June 10 2004 Hour: 23:17 43.4 Lat: 34.81N Lon: 35.42E Depth: 5 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.5 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ76.08 140 IPG 2317 55.77 0.0 52 302 -18 37.2 1.0
 HWQ SN76.08 140 ISG 2318 4.66 -0.2 1.0
 BHL SZ102.4 168 IPG 2317 59.42 -0.6 1.0
 BHL SN102.4 168 ISG 2318 13.01 0.8 1.0

June 11 2004 Hour: 9: 0 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 29.35
 BHL SN ISG 9 0 31.36
 HWQ SN ISG 9 0 43.24

June 11 2004 Hour: 12:42 31.2 Lat: 33.60N Lon: 36.00E Depth: 0 Agency: REL Local
Magnitudes: 2.7MC REL Rms: 0.9 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ46.07 317 IPG 1242 36.91 -1.7 40 1.0
 BHL SN46.07 317 ISG 1242 44.88 0.8 1.0
 MATL SZ63.15 259 IPG 1242 41.20 -0.2 1.0
 HWQ SZ75.07 357 IPG 1242 42.42 -0.9 1.0
 HWQ SE75.07 357 ISG 1242 53.26 1.0 1.0

June 11 2004 Hour: 16:31 23.6 Lat: 34.12N Lon: 35.62E Depth: 18 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 SZ24.10 172 IPG 1631 28.25 -0.2 32 352 0 10.4 1.0
 BHL SN24.10 172 ISG 1631 32.24 0.1 1.0
 HWQ SZ35.14 60 IPG 1631 30.21 0.2 1.0
 HWQ SN35.14 60 ISG 1631 34.50 -0.1 1.0

June 11 2004 Hour: 23:47 58.6 Lat: 33.29N Lon: 35.44E Depth: 0 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.8 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ24.17 336 IPG 2348 1.18 -1.3 1.0
 BHL SZ71.05 16 IPG 2348 8.89 -1.1 56 1.0
 BHL SE71.05 16 ISG 2348 20.49 2.0 1.0
 HWQ SZ119.3 23 IPG 2348 16.94 -0.9 1.0
 HWQ SE119.3 23 ISG 2348 32.99 0.9 1.0

June 12 2004 Hour: 12:28 37.7 Lat: 33.28N Lon: 35.43E Depth: 2 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 0.9 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ24.40 338 IPG 1228 39.68 -2.0 35 1.0
 BHL SZ71.96 17 IPG 1228 48.61 -0.7 1.0
 BHL SN71.96 17 ISG 1228 59.82 1.9 1.0
 HWQ SZ120.3 23 IPG 1228 56.95 -0.2 1.0

HWQ	SE120.3	23	ISG		1229	12.05	0.6										1.0
June	12 2004	Hour:	13:37 39.9		Lat:	39.64N	Lon:	40.61E	Depth: 15	Agency: REL	Regional						
												Rms: 1.6 secs					
STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT		
HWQ	SZ725.6	216	EPN			1339	13.41	-1.2								1.0	
HWQ	SE725.6	216	SN			1340	24.24	-0.5								1.0	
BHL	SZ775.0	216	EPN			1339	19.76	-1.0								1.0	
BHL	SE775.0	216	SN			1340	37.57	2.2								1.0	
MATL	SZ830.1	216	EPN			1339	27.09	-0.4								1.0	
June	12 2004	Hour:	18:42 36.1		Lat:	33.77N	Lon:	37.04E	Depth: 0	Agency: REL	Local						
												Magnitudes: 3.4MC REL					
												Rms: 0.7 secs					
STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT		
HWQ	SZ115.3	299	IPG			1842	54.78	0.1	92							1.0	
HWQ	SE115.3	299	ISG			1843	8.81	0.4								1.0	
BHL	SZ128.8	277	IPG			1842	55.70	-1.1								1.0	
BHL	SE128.8	277	ISG			1843	12.44	0.2								1.0	
MATL	SZ161.5	259	IPG			1843	1.80	-0.3								1.0	
June	12 2004	Hour:	22:49 29.4		Lat:	33.26N	Lon:	35.46E	Depth: 15	Agency: REL	Local						
												Magnitudes: 2.4MC REL					
												Rms: 0.9 secs					
STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT		
MATL	SZ27.71	334	IPG			2249	34.57	0.1	25							1.0	
BHL	SZ73.10	14	IPG			2249	42.61	1.5								1.0	
BHL	SN73.10	14	ISG			2249	50.23	0.4								1.0	
HWQ	SE121.0	22	ISG			2250	1.06	-1.0								1.0	
June	13 2004	Hour:	14:58 1.6		Lat:	33.69N	Lon:	36.81E	Depth: 15	Agency: REL	Local						
												Magnitudes: 3.4MC REL					
												Rms: 0.2 secs					
STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT		
HWQ	SZ102.7	309	IPG			1458	17.48	-0.2	92			74	-54	44.5	1.0		
HWQ	SE102.7	309	ISG			1458	29.68	0.1								1.0	
BHL	SZ109.5	283	IPG			1458	18.94	0.3								1.0	
BHL	SE109.5	283	ISG			1458	31.17	-0.2								1.0	
June	13 2004	Hour:	15:16 33.3		Lat:	33.70N	Lon:	36.90E	Depth: 15	Agency: REL	Local						
												Magnitudes: 3.3MC REL					
												Rms: 0.1 secs					
STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT		
HWQ	SZ108.8	306	IPG			1516	50.19	-0.1	83			80	-45	24.3	1.0		
HWQ	SE108.8	306	ISG			1517	3.08	0.2								1.0	
BHL	SZ117.5	281	IPG			1516	51.58	0.0								1.0	
BHL	SE117.5	281	ISG			1517	4.89	-0.2								1.0	
June	13 2004	Hour:	20:35 27.0		Lat:	33.23N	Lon:	35.13E	Depth: 14	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		
MATL	SZ34.59	32	IPG			2035	32.66	-0.4	34							1.0	
BHL	SZ89.62	33	IPG			2035	41.10	-0.1								1.0	
BHL	SE89.62	33	ISG			2035	52.01	0.3								1.0	
HWQ	SZ139.1	33	IPG			2035	48.98	0.5								1.0	
HWQ	SE139.1	33	ISG			2036	4.06	-0.3								1.0	
June	13 2004	Hour:	22:48 42.3		Lat:	33.81N	Lon:	35.62E	Depth: 0	Agency: REL	Local						
												Magnitudes: 2.6MC REL					
												Rms: 0.7 secs					
STAT	CO	DIST	AZI	PHASE	P	HRMN	SECON	TRES	CODA	AMPL	PERI	BAZ	ARES	VELO	WT		
BHL	SZ11.18	19	IPG			2248	42.66	-1.4	33			199	0	42.6	1.0		
BHL	SE11.18	19	ISG			2248	46.14	0.7								1.0	
MATL	SZ44.28	217	IPG			2248	49.74	0.3								1.0	
HWQ	SZ60.38	30	IPG			2248	52.14	0.1								1.0	
HWQ	SE60.38	30	ISG			2248	59.39	0.2								1.0	

June 14 2004 Hour: 7:12 23.8 Lat: 33.29N Lon: 35.27E Depth: 0 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.3 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ22.31 14 IPG 712 27.20 -0.2 49 1.0
 MATL SZ22.31 14 ISG 712 30.16 0.1 1.0
 BHL SZ76.44 27 IPG 712 35.79 -0.3 1.0
 BHL SN76.44 27 ISG 712 44.93 -0.3 1.0
 HWQ SZ125.8 30 IPG 712 44.48 0.4 1.0
 HWQ SE125.8 30 ISG 712 59.19 0.1 1.0

June 14 2004 Hour: 23:40 11.2 Lat: 33.82N Lon: 35.69E Depth: 15 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 1.0 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ9.674 343 IPG 2340 12.54 -1.7 29 1.0
 BHL SE9.674 343 ISG 2340 17.01 0.6 1.0
 MATL SZ49.43 222 IPG 2340 20.20 0.8 1.0
 HWQ SZ56.16 25 IPG 2340 19.65 -0.8 1.0
 HWQ SE56.16 25 ISG 2340 28.37 1.1 1.0

June 15 2004 Hour: 5:38 27.1 Lat: 33.65N Lon: 35.47E Depth: 0 Agency: REL Local
Magnitudes: 2.6MC REL Rms: 1.0 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ22.46 217 IPG 538 31.06 0.4 1.0
 BHL SZ32.66 30 IPG 538 31.10 -1.2 35 211 0 85.4 1.0
 BHL SE32.66 30 ISG 538 35.55 -0.7 1.0
 HWQ SZ82.11 32 IPG 538 40.14 -0.2 1.0
 HWQ SE82.11 32 ISG 538 51.80 1.7 1.0

June 15 2004 Hour: 12:26 36.6 Lat: 34.38N Lon: 35.16E Depth: 15 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 SZ69.61 139 IPG 1226 48.38 0.6 1.0
 BHL SN69.61 139 ISG 1226 55.21 -0.9 1.0
 HWQ SZ73.29 98 IPG 1226 48.51 0.1 38 42 123 44.3 1.0
 HWQ SE73.29 98 ISG 1226 57.29 0.2 1.0

June 15 2004 Hour: 14:43 0.7 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ 1443 38.08
 BHL SN 1443 42.36
 HWQ SE 1443 44.06
 BHL SZ 1443 35.93

June 15 2004 Hour: 21:53 24.9 Lat: 33.65N Lon: 35.38E Depth: 15 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 1.6 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ18.78 195 IPG 2153 29.92 1.2 1.0
 BHL SZ37.61 42 IPG 2153 29.80 -1.7 30 269 47 41.4 1.0
 BHL SE37.61 42 ISG 2153 34.31 -2.0 1.0
 HWQ SZ86.81 37 IPG 2153 39.22 0.5 1.0
 HWQ SE86.81 37 ISG 2153 50.82 1.9 1.0

June 16 2004 Hour: 9: 7 47.1 Lat: 33.25N Lon: 35.10E Depth: 10 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.2 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ33.77 38 IPG 9 7 52.77 -0.1 44 1.0
 BHL SZ88.72 35 IPG 9 8 1.41 -0.2 1.0
 BHL SE88.72 35 ISG 9 8 12.54 0.3 1.0
 HWQ SZ138.2 34 IPG 9 8 9.73 0.2 1.0
 HWQ SE138.2 34 ISG 9 8 25.75 -0.3 1.0

June 16 2004 Hour: 14:48 7.3 Lat: 34.47N Lon: 35.34E Depth: 15 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.3 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ60.19 111 IPG 1448 17.27 0.1 52 193 -97 35.2 1.0
 HWQ SE60.19 111 ISG 1448 24.08 -0.4 1.0
 BHL SZ69.62 155 IPG 1448 18.41 -0.1 1.0
 BHL SN69.62 155 ISG 1448 27.26 0.4 1.0

June 18 2004 Hour: 19:33 22.7 Lat: 33.35N Lon: 35.59E Depth: 0 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 1.0 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ28.83 301 IPG 1933 27.99 0.6 57 1.0
 BHL SZ61.34 5 IPG 1933 31.07 -1.6 1.0
 BHL SE61.34 5 ISG 1933 39.26 -0.7 1.0
 HWQ SZ107.6 18 IPG 1933 40.50 0.4 1.0
 HWQ SE107.6 18 ISG 1933 54.16 1.2 1.0

June 20 2004 Hour: 10:20 1.4 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 1020 38.37
 BHL SN ISG 1020 49.07
 HWQ SE ISG 1020 50.70

June 21 2004 Hour: 5:14 55.6 Lat: 34.07N Lon: 36.47E Depth: 15 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.3 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ54.09 296 IPG 515 4.62 0.1 42 37 -78 31.5 1.0
 HWQ SE54.09 296 ISG 515 10.82 -0.4 1.0
 BHL SZ78.01 257 IPG 515 8.40 0.4 1.0
 BHL SN78.01 257 ISG 515 17.19 -0.1 1.0

June 21 2004 Hour: 10: 0 0.4 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ IPG 10 0 49.77
 BHL SN ISG 10 0 59.52
 HWQ SE ISG 10 1 2.25

June 22 2004 Hour: 9: 7 0.4 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ IPG 9 8 25.14
 BHL SZ IPG 9 8 30.67
 HWQ SE ISG 9 8 28.13
 BHL SN ISG 9 8 34.21

June 22 2004 Hour: 11:20 41.4 Lat: 33.97N Lon: 36.40E Depth: 21 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
 HWQ SZ54.29 309 IPG 1120 50.91 0.4 38 127 -1 36.7 1.0
 HWQ SE54.29 309 ISG 1120 57.46 0.1 1.0
 BHL SN69.84 264 ISG 1121 0.72 -0.5 1.0

June 22 2004 Hour: 14:39 2.6 Lat: 28.01N Lon: 36.45E Depth: 0 Agency: REL Regional
Magnitudes: 4.9MC REL Rms: 0.7 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ616.5 350 EPN 1440 26.32 1.1 1.0
 BHL SZ657.6 354 EPN 1440 29.97 -0.4 169 -4 16.4 1.0
 BHL SN657.6 354 SN 1441 35.39 0.0 1.0
 HWQ SZ696.3 356 EPN 1440 34.48 -0.7 352 184 9 21.7 1.0

June 22 2004 Hour: 15:15 0.5 **Agency: REL Local**
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 1515 47.73
 HWQ SN ISG 1515 53.25
 BHL SN ISG 1515 52.40
 HWQ SZ IPG 1515 48.67

June 23 2004 Hour: 3: 5 0.0 **Agency: REL Regional**
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ EPN 3 6 15.67
 HWQ SZ EPN 3 6 21.11

June 23 2004 Hour: 15: 6 25.0 Lat: 34.18N Lon: 35.52E Depth: 15 Agency: REL Local
Magnitudes: 2.5MC REL Rms: 0.2 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ33.55 158 IPG 15 6 31.14 0.2 29 5 27 34.3 1.0
 BHL SN33.55 158 ISG 15 6 35.14 -0.2 1.0
 HWQ SZ40.94 75 IPG 15 6 32.26 0.2 1.0
 HWQ SE40.94 75 ISG 15 6 37.17 -0.1 1.0

June 23 2004 Hour: 21:20 29.0 Lat: 33.23N Lon: 35.41E Depth: 0 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 1.8 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ29.97 345 IPG 2120 33.94 0.1 50 1.0
 BHL SZ78.39 17 IPG 2120 40.74 -0.9 1.0
 BHL SE78.39 17 ISG 2120 51.47 0.5 1.0
 HWQ SZ126.6 23 IPG 2120 49.10 -0.3 1.0
 HWQ SE126.6 23 ISG 2121 5.88 1.3 1.0

June 24 2004 Hour: 17:43 1.1 **Agency: REL Local**
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 1744 12.10
 HWQ SZ IPG 1744 11.51
 HWQ SE ISG 1744 19.74
 BHL SE ISG 1744 20.93

June 24 2004 Hour: 21:42 53.5 Lat: 32.56N Lon: 34.63E Depth: 0 Agency: REL Local
Magnitudes: 3.3MC REL Rms: 2.5 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 MATL SZ121.5 32 IPG 2143 13.53 0.4 1.0
 BHL SZ176.6 32 IPG 2143 19.16 -2.8 73 1.0
 BHL SE176.6 32 ISG 2143 41.59 -1.4 1.0
 HWQ SZ226.0 32 IPG 2143 34.37 4.4 1.0
 HWQ SE226.0 32 ISG 2143 56.27 -0.6 1.0

June 25 2004 Hour: 16:57 6.8 Lat: 33.88N Lon: 36.09E 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 SZ40.18 275 IPG 1657 13.98 0.2 33 211 117 41.8 1.0
 BHL SE40.18 275 ISG 1657 18.76 -0.1 1.0
 HWQ SZ46.44 344 IPG 1657 15.06 0.4 1.0
 HWQ SN46.44 344 ISG 1657 19.97 -0.5 1.0

June 26 2004 Hour: 13:43 19.6 Lat: 34.88N Lon: 36.46E Depth: 14 Agency: REL Local
Magnitudes: 3.0MC REL Rms: 0.5 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ81.83 215 IPG 1343 33.18 0.5 59 77 41 29.4 1.0
 HWQ SE81.83 215 ISG 1343 41.68 -0.6 1.0
 BHL SZ131.3 215 IPG 1343 39.42 -0.5 1.0
 BHL SE131.3 215 ISG 1343 55.45 0.5 1.0

June 26 2004 Hour: 14:41 9.9 Lat: 34.34N Lon: 36.27E Depth: 13 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 1.2 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ30.48 257 IPG 1441 13.91 -1.4 52 77 0 13.3 1.0
 HWQ SE30.48 257 ISG 1441 20.24 0.8 1.0
 BHL SZ74.56 230 IPG 1441 23.58 1.4 1.0
 BHL SN74.56 230 ISG 1441 30.38 -0.8 1.0

June 27 2004 Hour: 16:54 7.2 Lat: 34.19N Lon: 35.56E Depth: 15 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.2 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ33.34 165 IPG 16 5 53.32 0.2 43 306 -38 22.4 1.0
 BHL SE33.34 165 ISG 16 5 57.34 -0.2 1.0
 HWQ SZ36.96 75 IPG 16 5 53.89 0.2 1.0
 HWQ SN36.96 75 ISG 16 5 58.15 -0.3 1.0

June 27 2004 Hour: 19:29 0.1 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ IPG 1930 16.30
 BHL SE ISG 1930 44.21
 HWQ SE ISG 1930 33.59
 BHL SZ IPG 1930 25.21

June 27 2004 Hour: 20:25 39.4 Lat: 33.38N Lon: 35.45E Depth: 21 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 SZ16.43 316 IPG 2025 44.19 0.6 1.0
 BHL SZ60.78 18 IPG 2025 48.33 -1.1 46 1.0
 BHL SE60.78 18 ISG 2025 55.75 -1.1 1.0
 HWQ SZ109.3 25 IPG 2025 56.54 0.1 1.0
 HWQ SE109.3 25 ISG 2026 10.80 1.6 1.0

June 30 2004 Hour: 16:18 36.1 Lat: 34.70N Lon: 36.73E Depth: 7 Agency: REL Local
Magnitudes: 2.9MC REL Rms: 0.5 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SZ85.78 237 IPG 1618 50.58 0.6 51 57 0 44.2 1.0
 HWQ SE85.78 237 ISG 1618 59.96 -0.3 1.0
 BHL SZ132.6 229 IPG 1618 56.95 -0.6 1.0
 BHL SE132.6 229 ISG 1619 13.71 0.3 1.0

June 30 2004 Hour: 16:46 41.2 Lat: 33.79N Lon: 35.98E Depth: 5 Agency: REL Local
Magnitudes: 2.8MC REL Rms: 0.3 secs
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ32.77 292 IPG 1646 46.17 -0.4 42 112 0 15.2 1.0
 BHL SN32.77 292 ISG 1646 50.78 0.2 1.0
 HWQ SZ53.70 356 IPG 1646 50.25 0.3 1.0
 HWQ SE53.70 356 ISG 1646 56.24 -0.1 1.0
 MATL SZ69.48 241 IPG 1646 52.50 0.0 1.0

June 30 2004 Hour: 17:29 1.5 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 BHL SZ IPG 1729 55.00
 HWQ SZ IPG 1729 56.19
 BHL SN ISG 1729 59.74
 HWQ SE ISG 1730 2.29

June 30 2004 Hour: 20:29 1.3 Agency: REL Local
 STAT CO DIST AZI PHASE P HRMN SECON TRES CODA AMPL PERI BAZ ARES VELO WT
 HWQ SE ISG 2029 44.88
 BHL SN ISG 2029 48.24

Seismic Events of June 2004 as recorded by the GRAL network

