A STUDY OF NEW ENGLAND SEISMICITY

Quarterly Earthquake Report

January - March, 2002

New England Seismic Network

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Notice

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Introduction

The New England Seismic Network (NESN) is operated collaboratively by the Weston Observatory (WES) of Boston College and the Earth Resources Lab (ERL) of the Massachusetts Institute of Technology. The mission of the NESN is to operate and maintain a regional seismic network with digital recording of seismic ground motions for the following purposes: 1) to determine the location and magnitude of earthquakes in and adjacent to New England and report felt events to public safety agencies, 2) to define the crust and upper mantle structure ofthe northeastern United States, 3) to derive the source parameters of New England earthquakes, and 4) to estimate the seismic hazard in the area.

This report summarizes the work ofthe NESN for the period January - March, 2002. It includes a brief summary of the network's equipment and operation, and a short discussion of data management procedures. A list of participating personnel is given in Table 1. There were 7 earthquakes that occurred within or near the network during this reporting period. Phase information for these earthquakes is included in this report.

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Current Network Operation and Status

The New England Seismic Network currently consists of 14 broadband three-component, 4 short-period vertical, and 8 strong-motion stations. The coordinates of the stations are given in Table 2, and maps of the weak- and strong-motion networks are shown in Figures 1 and 2, respectively.

WES now operates 13 stations with broadband instruments consisting of Guralp CMG-40T three-component sensors. Ground motions recorded by these sensors are digitized at 100 sps with 16-bit resolution. Additional gain-ranging provides 126 dB dynamic range. These stations are operated in dialup mode with waveform segments of suspected events transmitted in digital mode to Weston Observatory for analysis and archiving. During the year 2001, two new seismic stations were added to the WES network. Station UMM was placed in northeastern Maine and station FFD was placed in central New Hampshire. Station MIM, in central Maine was dismantled. WES also maintains 8 SMA-1 strong-motion instruments in New England.

ERL at MIT currently operates 4 short-period stations, all located within 100 km of Boston. The short-period instruments have 1.0 Hz L4C vertical seismometers. Data recorded by these seismometers is transmitted continuously in analog mode to ERL and digitized (12-bit) into a PC at 50 sps. A data acquisition program on the PC triggers on events detected in the short-period data streams and saves them to a disk for manual analysis. Station WFM also has a new three-component, high dynamic range instrument. The instrument has a CMG-40T sensorand transmits 3-channel, 24-bit data at 100 sps continuously to a central processor (Pentium PC) at ERL. Waveform windows of suspected events are extracted from the data stream, analyzed and archived with the short-period data.WES and ERL record some stations in analog format on helicorders to provide additional data for analysis.

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Seismicity

There were 7 earthquakes that occurred in or adjacent to the NESN during this reporting period. A summary of the location data is given in Table 3.Figure 3 shows the locations of these events. Figure 4 shows the locations of all events since the beginning of network operation in October, 1975.

Table 4 gives the station phase data and detailed hypocenter data for each event listed in Table 3. In addition to NESN data, arrival time and magnitude data sometimes are contributed for seismic stations operated by the Geological Survey of Canada (GSC), the Lamont-Doherty Cooperative Seismographic Network, and the US National Seismic Network. Final locations for this section were computed using the program HYPO78. For regional events (those too far from the NESN to obtain accurate locations and magnitudes) phase data are given for NESN stations, but the entry in Table 3 lists the hypocenter and geographic location information adopted from the authoritative network. Accordingly, the epicenter is plotted on the maps using the entry from Table 3.

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Data Management

Recent event locations are available via FTPat: SEISMOEAGLE.BC.EDU. Waveform data are saved in Nanometrics, ASCII, and SEED formats and are available via SEISMOEAGLE.BC.EDU or through personal contact. Earthquake lists can be fingered at QUAKE@SEISMOEAGLE.BC.EDU. Weston Observatory maintains two web pages with information about local earthquakes:"http://www.bc.edu:80/bc_org/avp/cas/wesobs/" and "http://seismoeagle.bc.edu/". The latter page is still undercontruction. Currently available on the seismoeagle web page is the full catalog of northeastern U.S. earthquake activity to 1992. This will be updated as new Northeastern U.S. Seismic Network Bulletins are produced.

MIT/ERL provides two internet utilities, the MIT/ERL web-site ("www-erl.mit.edu/NESN/homepage.html") and an anonymous FTP directory, to distribute seismic data. SESAME (Seismic Event Server at MIT/ERL) is the web data server that distributes catalogs, reports, earthquake bulletins, and epicenter and station maps (including an archive of recent seismic events). The FTP site, named "sunda.mit.edu", is the current facility available to download waveform data recorded by the MIT NESN. The client machine IP number must be forwarded to us for the client to gain access to the anonymous FTP directory. After logging on, the user changes directories to "pub/seismic". Waveforms of individual events for the period April 1995 through the present are accessed as Unix-compressed SAC files, through the anonymous FTP directory. A "readme" file offers further explanation about the data. Older waveform data in SAC format (1981 - March 1995) will be made available on the FTP site upon request.

For more information on matters discussed in this report or generalearthquake information (reports, maps, catalogs, etc.) consult our web-sites www-erl.mit.edu/NESN and www.bc.edu:80/bc_org/avp/cas/wesobs/ or contact:

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Explanation of Tables

Table 1: List of personnel operating the NESN

Table 2: List of Seismic and Strong Motion Stations

1. Code = st ation name
2. Lat = station latitude, degrees north
3. Long = station longitude, degrees west
4. Elev = station elevation in meters
5. Location = geographic location
6. Operator = network operator

Table 3: Earthquake Hypocenter List

1. D ate = date event occurred, Yr (year)/Mo (month)/Dy (day)
2. Time = origin time of event, Hr (hour):Mn (minute):Sec (second) in UCT (Universal Coordinated Time, same as Greenwich Mean Time)
3. Lat = event location, latitude north in degrees
4. Long = event location, longitude west in degrees
5. Depth = event depth in kilometers
6. Mag = event magnitude
7. Int = event epicentral intensity
8. Location = event geographic location

Table 4: Earthquake detailed hypocenter and phase data list< p>Table Header: detailed hypocenter data

1. Geographic location
2. DATE = date event occurred, yr/mo/dy (year/month/day)
3. ORIGIN = event origin time (UCT) in hours, minutes, and seconds
4. LAT N = latitude north in degrees and minutes
5. LONG W = longitude west in degrees and minutes
6. DEPTH = event depth in kilometers
7. MN = Nuttli Lg phase magnitude with amplitude divided by period
8. MC = signal duration (coda) magnitude

   WES: 2.23 Log(FMP) + 0.12Log(Dist) - 2.36 (Rosario, 1979)
   MIT: 2.21 Log(FMP) - 1.7 (Chaplin *et al.*, 1980)

9. ML = local magnitude

   WES: calculated from Wood-Anderson seismograms (Ebel, 1982)
   GSC (Geological Survey of Canada): Richter Lg magnitude

10. GAP = largest azimuthal se paration, in degrees, between stations
11. RMS = root mean square error of travel time residual in seconds
12. ERH = standard error of epicenter in kilometers
13. ERZ = standard error of event depth in kilometers
14. Q = solution quality of hypocenter

    A = excellent
    B = good
    C = fair
    D = poor

Table Body: earthquake phase data

1. STN = station name
2. DIST = epicentral distance in kilometers
3. AZM = azimuthal angle in degrees measured clockwise between true north and vector pointing from epicenter to station

4. Description of onset of phase arrival

   I = impulsive
   E = emergent

5. R = phase

   P = first P arrival
   S = first S arrival

6. M = first motion direction of phase arr ival

   U = up or compression
   D = down or dilatation

7. K = weight of arrival

   0 = full weight (1.0)
   1 = 0.75 weight
   2 = 0.50 weight
   3 = 0.25 weight
   4 = no weight (0.0)

8. HRMN = hour and minute of phase arriva l
9. SEC = second of phase arrival
10. TCAL = calculated travel time of phase in seconds
11. RES = travel time residual (error) of phase arrival
12. WT = weight of phase used in hypocentral solution
13. AMX = peak-to-peak ground motion, in millimicrons, of the maximum envelope amplitude of vertical-component signal, corrected for system response
14. PRX = period in seconds of the signal from which amplitude was measured
15. XMAG = Nuttli magnitude recorded at station
16. FMP = sign al duration (coda), in seconds, measured from first P arrival
17. FMAG = coda magnitude recorded at station

Table 5: Microearthquakes and other non-locatable events

1. Date = date event occurred, Yr (year)/Mo (month)/Dy (day)
2. Sta = neares t station recording event
3. Arrival Time = phase arrival time, Hr (hour):Mn (minute):Sec (second)

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TABLE 1

WESTON OBSERVATORY PERSONNEL

Name	Network Position	voice phone	email address
John E. Ebel	Principal Investigator	617-552-8319	ebel@bc.edu
Alan Kafka	Research Seismologist	617-552-8300	kafka@bc.edu
Anastasia Macherides Moulis	Seismic Analyst	617-552-8325	weston.observatory@bc.edu
Edward Johnson	Project Engineer	617-552-8332	johnson@bc .edu
Patricia Tassia	Administrative Secretary	617-552-8311	tassia@bc.edu
W. Richard Ott, S.J.	Assistant to the Director	617-552-8335	ottwi@mail1.bc.edu
Weston Observatory		617-552-8300 617-552-8388 (FAX)	

MIT/ERL PERSONNEL

sara@erl.mit.edu

Name	Network Position	voice phone	email address
M. Nafi Toksöz	Princi pal Investigator	617-253-7852	toksoz@mit.edu
Robert Cicerone	Research Seismologist	617-253-7863	cicerone@erl.mit.edu
Heather Hooper	Seismic Analyst	617-253-6290	
Sara Brydges	Administrator	617-253-7797	
Earth Resources Lab		617-253-8027 617-253-6385 (FAX)	

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TABLE 2

SEISMIC STATIONS OF THE NEW ENGLAND SEISMIC NETWORK

Code	Lat	Long	Elev (m)	Location	Operator
BCX	42.3350	-71.1705	61.0	Chestnut Hill, MA	WES
BRY	41.9178	-71.5388	380.0	Smithfield, RI	WES
DNH	43.1225	-70. 8948	24.0	Durham, NH	MIT
DXB	42.0610	-70.6992	8.0	Duxbury, MA	MIT
FFD	43.4702	-71.6533	131.0	Franklin Falls Dam, NH	WES
GLO	42.6403	-70.7272	15.2	Gloucester, MA	MIT
HNH	43.7050	-72.2860	180.0	Hanover, NH	WES
NH1	43.5473	-71.5743	402.0	Sanbornton, NH	WES
QUA2	4 2.2789	-72.3525	168.0	Belchertown, MA	WES
TRY	42.7311	-73.6669	131.0	Troy, NY	WES
UMM	44.7100	-67.4583	35.0	Machias, ME	WES
VT1	44.3317	-72.7536	410.0	Waterbury, VT	WES
WES	42.3850	-71.3220	60.0	Weston, MA	WES
WFM	42.6106	-71.4906	87.5	Westford, MA	MIT
WVL	44.5648	-69.6575	85.0	Waterville, ME	WES
YLE	41 .3100	-72.9269	914.0	New Haven, CT	WES
PQI	46.6710	-68.0168	175.0	Presque Isle, ME	WES

STRONG MOTION STATIONS OF THE NEW ENGLAND SEISMIC NETWORK

Code	Lat	Long	Location	Operator
SM1	44.90	-67.25	Dennysville, ME	WES
SM2	44.49	-73.10	Essex Junction, VT	WES
SM3	41.45	-71.33	Newport, RI	WES
SM4	42.38	-71.32	Weston, MA	WES
SM5	42.66	-71.30	Lowell, MA	WES
SM6	42.30	-71.34	Natick, MA	WES
SM7	42.39	-71.54	Huds on, MA	WES
SM8	44.48	-69.61	North Vassalboro, ME	WES

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TABLE 3

NEW ENGLAND AND ADJACENT REGIONS
January - March, 2002

Date Yr/Mo/Dy	Time Hr:Mn:Sec	Lat	Long	Depth (km)	Mag	Int	Location
2002/01/20	14:11:57.02	49.4567	-67.0113	23.04	3.5		PQ, LOWER ST. LAWRENCE
2002/02/11	11:41:36.83	46.1592	-73.4443	5.0	3.4		PQ, APPROX 9 KM N OF JOLLIETTE
2002/02/24	21:38:35.97	45.4080	-75.0041	.58	3.0		PQ, WESTERN
2002/02/25	18:06:25.97	44.5317	-68.8490	5.00	2.6		ME, 9 KM SSW OF BUCKSPORT
2002/03/06	11:09:45.77	41.7116	-71.3865	16.98	2.2		RI, 4 KM NE OF WARWICK
2002/03/12	07:13:25.59	41.5463	-69.1355	16.65	3.1		MA, OFFSHORE CAPECOD
2002/03/15	21:58:31.49	45.4802	-69.0000	5.00	2.6		ME, 25 KM N OF MILO

* indicates Mc rather than Mn.

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TABLE 4

EARTHQUAKE PHASE DATA LIST
NEW ENGLAND AND ADJACENT REGIONS
January - March, 2002

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SOUTHEAST MAINE CRUSTAL MODEL
02JAN23 PQ, LOWER ST. LAWRENCE
DATE     ORIGIN    LAT N     LONG W    DEPTH    MN  MC  ML GAP  RMS ERH  ERZ Q
  20123 1411 57.02 49-27.40  67- 0.68  23.04  3.5          204  0.30  2.5  2.8 C
```

```
STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
MNQ 173.7 313  P 0 1412 22.39  25.37  25.40 -0.03 2.46
               S 0 1412 42.37  45.35  45.22  0.13 2.46
A21 277.6 225  P 1 1412 35.63  38.61  38.23  0.38 1.31
               S 0 1412 64.87  67.85  68.05 -0.20 1.78
A64 279.2 230  P 0 1412 35.48  38.46  38.43  0.01 1.77
               S 0 1412 65.43  68.41  68.41 -0.04 1.77
A61 300.1 229  P 0 1412 37.88  40.86  41.01 -0.16 1.64
A16 313.1 225  P 1 1412 40.10  43.08  42.61  0.47 1.13
               S 0 1412 72.91  75.89  75.85  0.04 1.55
PQI 318.7 194 IPD3 1412 41.43  44.41  43.30  1.08 0.19 305 .26  3.5
               S 2 1412 74.52  77.50  77.08  0.37 0.74
LMQ 324.2 229  P 0 1412 40.90  43.88  43.98 -0.17 1.48
               S 1 1412 75.05  78.03  78.29 -0.38 1.10
A54 335.6 229  P 0 1412 42.52  45.50  45.40  0.04 1.40
               S 3 1412 76.35  79.33  80.81 -1.58 0.01
A11 341.3 224  P 1 1412 43.48  46.46  46.10  0.35 1.00
               S 4 1412 75.64  78.62  82.06 -3.46 0.00
DAQ 352.9 242  P 2 1412 43.90  46.88  47.54 -0.82 0.52
               S 3 1412 83.32  86.30  84.61  1.40 0.03
LMN 433.6 158  P 1 1412 53.70  56.68  57.50 -0.82 0.46
                S 3 1412 97.67 100.65 102.35 -1.70 0.00
UMM 528.8 184 IPD1 1413  6.21  69.19  69.24 -0.06 0.10  68 .21  3.4
                S 2 1413 59.10 122.08 123.25 -1.19 0.02
DPQ 528.9 234  P 3 1413  5.34  68.32  69.26 -0.94 0.03
                S 3 1413 59.31 122.29 123.28 -0.99 0.02
WVL 583.7 200 IPD4 1413  3.55  66.53  76.03 -9.51 0.00 110 .48  3.4
                S 4 1413 59.85 122.83 135.33-12.52 0.00
MOQ 607.4 221  P 0 1413 16.18  79.16  78.95  0.07 0.00
                S 1 1413 77.40 140.38 140.53 -0.40 0.00
MNT 664.4 229  P 2 1413 22.40  85.38  85.99 -0.61 0.00
                S 4 1413 87.55 150.53 153.05 -2.52 0.00
TRQ 669.9 238  P 3 1413 22.05  85.03  86.67 -1.64 0.00
                S 4 1413 88.18 151.16 154.27 -3.11 0.00
LBNH 690.7 213  P 1 1413 25.92  88.90  89.24 -0.40 0.00
GRQ 732.5 244  P 4 1413 28.64  91.62  94.39 -2.77 0.00
                 S 4 1413 93.23 156.21 168.02-11.81 0.00
FFD 754.8 208 IPD3 1413 32.18  95.16  97.15 -1.99 0.00
HNH 756.4 212 IPD1 1413 34.88  97.86  97.35  0.48 0.00  53 .28  3.6
                S 4 1413 95.87 158.85 173.28-14.48 0.00
GAC 761.3 237  P 4 1413 32.92  95.90  97.96 -2.06 0.00
MDV 768.6 218 EP 4 1413 41.22 104.20  98.86  5.32 0.00
WBO 798.5 232  P 0 1413 38.45 101.43 102.54 -1.11 0.00
NCB 822.3 222 EP 3 1413 41.22 104.20 105.49 -1.37 0.00
WES 854.3 203 EPD2 1413 47.18 110.16 109.43  0.72 0.00  66 .56  3.5
EEO 953.1 251  P 4 1413 55.30 118.28 121.63 -3.35 0.00
BINY1067.0 221 EP 2 1413 72.06 135.04 135.70 -0.74 0.00

NORTHWEST MAINE CRUSTAL STRUCTURE
02FEB11 PQ, APPROX 9 KM N OF JOLIETTE
DATE      ORIGIN     LAT N     LONG W   DEPTH   MN  MC  ML GAP  RMS ERH  ERZ Q
20211 1141 36.83 46- 9.55  73-26.66   5.00  3.4     115  0.47  1.8  3.2 C
STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
GRQ 192.3 285  P 2 1142  7.70  30.87  30.21  0.66 1.35
WBO 192.3 228  P 3 1142  6.14  29.31  30.21 -0.90 0.62
OTT 196.0 244  P 1 1142  7.08  30.25  30.66 -0.42 2.09
VT1 210.2 165 EP 1 1142  9.15  32.32  32.41 -0.12 2.021877 .29  3.9
                S 4 1142 93.19 116.36  57.70 58.62 0.00
LBNH 244.4 151  P 2 1142 12.78  35.95  36.63 -0.75 1.12
               S 4 1142 39.70  62.87  65.20 -2.44 0.00
DAQ 261.2  40  P 3 1142 16.18  39.35  38.71  0.48 0.56
               S 3 1142 46.63  69.80  68.90  0.62 0.55
A54 272.7  58  P 2 1142 17.25  40.42  40.13  0.23 1.10
               S 0 1142 48.10  71.27  71.43 -0.27 2.20
A11 276.0  64  P 3 1142 18.12  41.29  40.53  0.74 0.50
LMQ 283.4  57  P 2 1142 18.77  41.94  41.44  0.42 1.05
               S 0 1142 50.20  73.37  73.77 -0.53 2.05
HNH 287.7 161 IPD1 1142 18.55  41.72  41.97 -0.29 1.56 426 .37  3.4
               S 0 1142 52.16  75.33  74.71  0.56 2.02
A61 307.2  56  P 2 1142 21.48  44.65  44.39  0.25 0.96
A64 327.8  56  P 2 1142 24.10  47.27  46.92  0.32 0.87
               S 4 1142 62.96  86.13  83.53  2.57 0.00
A21 333.7  59  P 2 1142 24.91  48.08  47.65  0.42 0.85
PQI 421.3  82 EP 4 1142  8.98  32.15  58.47-26.35 0.00  94 .35  3.1
                S 3 1142 79.38 102.55 104.07 -1.58 0.05
EEO 436.2 277  P 0 1142 37.14  60.31  60.31 -0.01 0.90
QUA2 439.9 169 EP 4 1142 40.30  63.47  60.77  2.67 0.00 263 .42  3.5
               S 4 1142 91.46 114.63 108.17  6.40 0.00
WES 452.3 158 IPD3 1142 40.83  64.00  62.30  1.69 0.02  60 .27  3.1
               S 4 1142 94.83 118.00 110.90  7.08 0.00
BINY 485.2 205  P 3 1142 42.27  65.44  66.37 -1.01 0.10
               S 1 1142 95.65 118.82 118.13  0.54 0.37
CNQ 533.5  49  P 2 1142 49.38  72.55  72.32  0.19 0.07
GSQ 567.1  57  P 1 1142 53.20  76.37  76.47 -0.12 0.00
ICQ 594.7  51  P 1 1142 56.60  79.77  79.88 -0.12 0.00
MNQ 597.0  36  P 1 1142 56.87  80.04  80.17 -0.13 0.00

NORTHWEST MAINE CRUSTAL STRUCTURE
02FEB24 PQ, WESTERN
DATE      ORIGIN     LAT N     LONG W   DEPTH   MN  MC  ML GAP   RMS ERH ERZ Q
20224 2138 35.97 45-24.48  75- 0.25   0.58  3.0 162  0.52 11.6  9.8 D
STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
MOQ 215.6  93  P 3 2139  8.95  32.98  33.58 -0.73 1.01
DPQ 223.1  51  P 0 2139 10.57  34.60  34.50  0.10 3.96
               S 3 2139 38.52  62.55  61.41  1.14 0.96
HNH 287.1 131 IPD3 2139 19.58  43.61  42.40  1.18 0.77  31 .17  2.5
               S 2 2139 51.32  75.35  75.47 -0.17 1.59
FFD 343.0 129 IPD2 2139 25.51  49.54  49.30  0.24 1.25 188 .15  3.5
                S 4 2139 60.78  84.81  87.76 -2.95 0.00
EEO 343.7 293  P 3 2139 19.74  43.77  49.40 -5.62 0.03
                S 3 2139 57.26  81.29  87.93 -6.63 0.00
DAQ 404.4  45  P 3 2139 33.81  57.84  56.89  0.80 0.44
A54 420.2  57  P 1 2139 34.65  58.68  58.83 -0.21 1.18
                S 2 2139 80.31 104.34 104.72 -0.49 0.79
```

```
A11 422.7  61  P 4 2139 39.23  63.26  59.15  4.10 0.00
                S 1 2139 81.07 105.10 105.29 -0.20 1.16
LMQ 430.7  56  P 1 2139 35.85  59.88  60.14 -0.32 1.08
                S 0 2139 83.40 107.43 107.04  0.26 1.44
A16 447.2  59  P 4 2139 41.53  65.56  62.17  3.40 0.00
                S 2 2139 86.06 110.09 110.65 -0.56 0.62
A61 454.2  56  P 2 2139 38.47  62.50  63.04 -0.54 0.58
                S 0 2139 88.48 112.51 112.20  0.29 1.16
A64 475.2  56  P 2 2139 41.08  65.11  65.63 -0.54 0.45
                S 1 2139 92.50 116.53 116.82 -0.32 0.68
A21 480.6  58  P 2 2139 41.77  65.80  66.29 -0.49 0.42
                S 2 2139 93.77 117.80 118.00 -0.20 0.42

SOUTHEAST MAINE CRUSTAL MODEL
02FEB25 ME, 9 KM SSW OF BUCKSPORT
DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS ERH ERZ Q
20225 18 6 25.97 44-31.90  68-50.94   5.00  2.6  183  0.51  7.0  4.7 D
STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
WVL  65.0 270 IPD2 18 6 37.19  11.22  10.58  0.63 1.07
               S 0 18 6 44.79  18.82  18.83 -0.02 2.20
UMM 112.2  80 IPD3 18 6 45.22  19.25  18.06  1.18 0.38  19 .16  1.6
                S 0 18 6 57.74  31.77  32.14 -0.39 1.97
LBNH 247.3 262 EP 1 18 7  1.82  35.85  36.29 -0.50 1.00
FFD 254.0 242  S 4 18 7 45.45  79.48  66.07 13.41 0.00 306 .11  3.6
HNH 290.1 252  S 4 18 7 36.48  70.51  74.01 -3.55 0.00
BCX 308.1 218 EP 4 18 6 59.93  33.96  43.80 -9.84 0.00
               S 4 18 6 73.90  47.93  77.96-30.03 0.00
LMN 349.9  65  P 3 18 7 16.57  50.60  48.96  1.64 0.07
               S 2 0 18 7 53.57  87.60  87.16  0.44 0.90
LMQ 354.3 341  P 4 18 7 12.67  46.70  49.51 -2.88 0.00
                S 2 18 7 53.47  87.50  88.12 -0.74 0.41

SOUTH & COASTAL NEW ENGLAND, CHIBURIS, 1979
02MAR06 RI, 4 KM NE OF WARWICK
DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS  ERH ERZ Q
20306 11 9 45.77 41-42.70  71-23.19  16.98  2.2  247  0.19  3.0  3.6 C
STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
BRY  26.2 331 EP 3 11 9 50.81   5.04   5.08 -0.04 0.64 719 .30  2.5
               S 3 11 9 55.06   9.29   9.04  0.25 0.60
WES  74.9   4 IP 2 11 9 58.31  12.54  12.29  0.24 1.11  40 .06 1.9
               S 1 11 9 67.47  21.70  21.88 -0.19 1.68
QUA2 101.9 308 IP 4 11 9 62.69  16.92  16.36  0.53 0.00  57 .09  2.1
               S 4 11 9 65.99  20.22  29.13 -8.96 0.00
YLE 136.1 251 EP 2 11 9 67.46  21.69  21.57  0.13 1.00  57 .28  2.1
               S 2 11 9 83.94  38.17  38.39 -0.21 0.98

SOUTH & COASTAL NEW ENGLAND, CHIBURIS, 1979
02MAR12 MA, OFFSHORE CAPECOD
DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS  ERH ERZ Q
020312  713 25.59 41-32.78  69- 8.13  16.65  3.1         303  0.11 19.9 29.3 D
STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
BCX 190.2 297 EP 4  713 51.49  25.90  28.43 -2.53 0.00 173 .10  3.1
               S 3  713 76.34  50.75  50.61  0.14 0.90
WES 203.7 297 EP 4  713 53.35  27.76  30.09 -2.34 0.00 143 .10  3.1
               S 4  713 77.68  52.09  53.56 -1.49 0.00
BRY 204.3 282 EP 4  713 74.30  48.71  30.16 18.55 0.00 172 .10  3.2
               S 4  713 93.30  67.71  53.69 14.02 0.00
QUA2 279.1 287 EP 4  713 62.49  36.90  39.40 -2.53 0.00  78 .10  3.1
               S 4  713 87.47  61.88  70.13 -8.30 0.00
YLE 318.1 265 EP 1  714  9.77  44.18  44.22 -0.04 1.80 100 .20  3.1
               S 4  714 37.21  71.62  78.71 -7.09 0.00
HNH 352.7 313 EP 2  714 14.10  48.51  48.48  0.00 1.02
               S 2  714 51.80  86.21  86.30 -0.14 0.98
LBNH 376.2 323 EP 3  714 17.30  51.71  51.38  0.27 0.30
               S 4  714 59.48  93.89  91.46  2.32 0.00
UMM 377.0  21 EP 4  714 16.70  51.11  51.49 -0.39 0.00
                S 4  714 49.23  83.64  91.66 -8.03 0.00
GGN 438.8  25 EP 4  714 25.23  59.64  59.12  0.51 0.00
               S 4  714 74.33 108.74 105.24  3.48 0.00

NORTHWEST MAINE CRUSTAL STRUCTURE
 02MAR15 ME, 25 KM N OF MILO

DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS ERH ERZ Q
20315 2158 31.49 45-28.81  69- 0.00   5.00  2.6  120  0.43  4.9  6.4 C
STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
UMM 148.5 125 IPD4 2159 10.94  39.45  23.90 15.54 0.00
               S 4 2159 86.26 114.77  42.54 72.21 0.00
GGN 175.5 103  P 0 2158 59.40  27.91  28.13 -0.23 1.58
A21 252.8 348  S 4 2159 41.97  70.48  67.05  3.43 0.00
MOQ 255.5 266  P 0 2159  9.82  38.33  38.00  0.19 1.25
               S 4 2159 35.81  64.32  67.64 -3.57 0.00
FFD 307.3 223  S 0 2159 49.69  78.20  79.02 -0.82 0.86  30 .16  2.6
HNH 327.0 233  S 0 2159 55.59  84.10  83.37  0.68 0.86
LMN 329.3  83  P 0 2159 18.48  46.99  47.11 -0.12 0.93
               S 0 2159 55.80  84.31  83.86  0.45 0.90
GSQ 407.7  21  P 0 2159 28.22  56.73  56.80 -0.08 0.60
```

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TABLE 5

MICROEARTHQUAKES AND OTHER NON-LOCATABLE EVENTS

Date Yr/Mo/Dy	Sta	Arrival Time Hr:Mn:Sec

None recorded this period.

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NESN Station Map

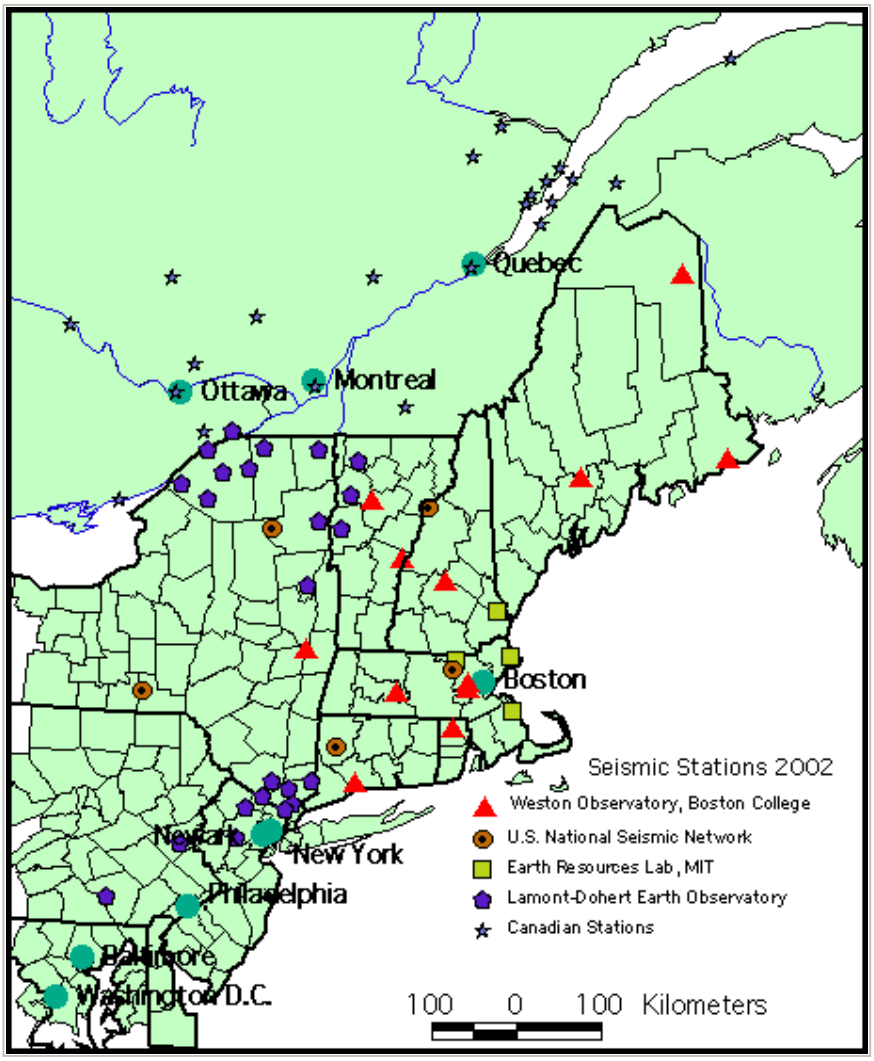

Figure 1: Map of stations of the New England Seismic Network (NESN) in operation during period January - March, 2002. Also included are the US National Seismic Network stations operating in New England during this period.

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NESN Strong-Motion Station Map

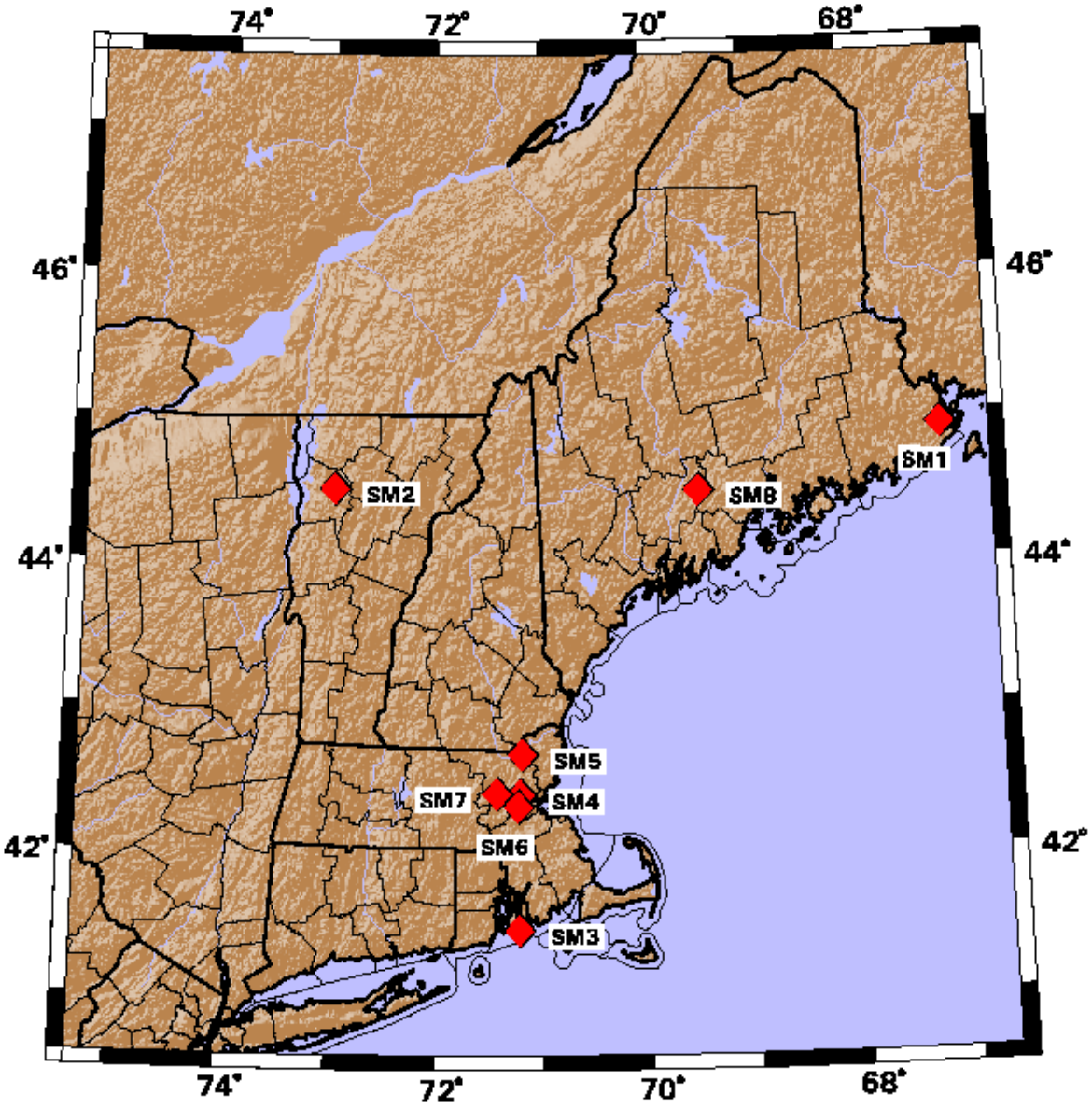

Figure 2: Map of strong-motion stations of the New England Seismic Network (NESN) in operation during period January - March, 2002.

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NESN Quarterly Seismicity Map

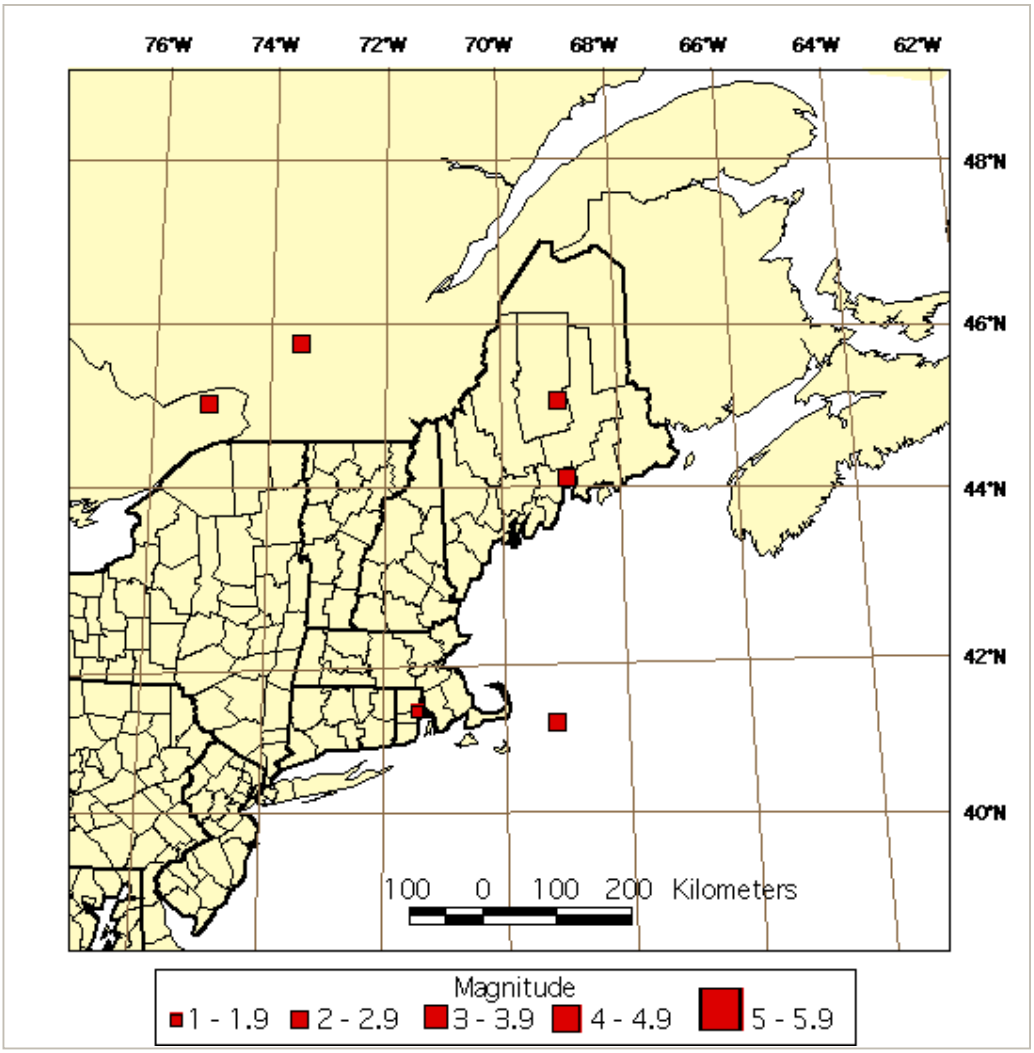

Figure 3: Earthquake epicenters located by the NESN during period January - March, 2002.

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NESN Cumulative Seismicity Map

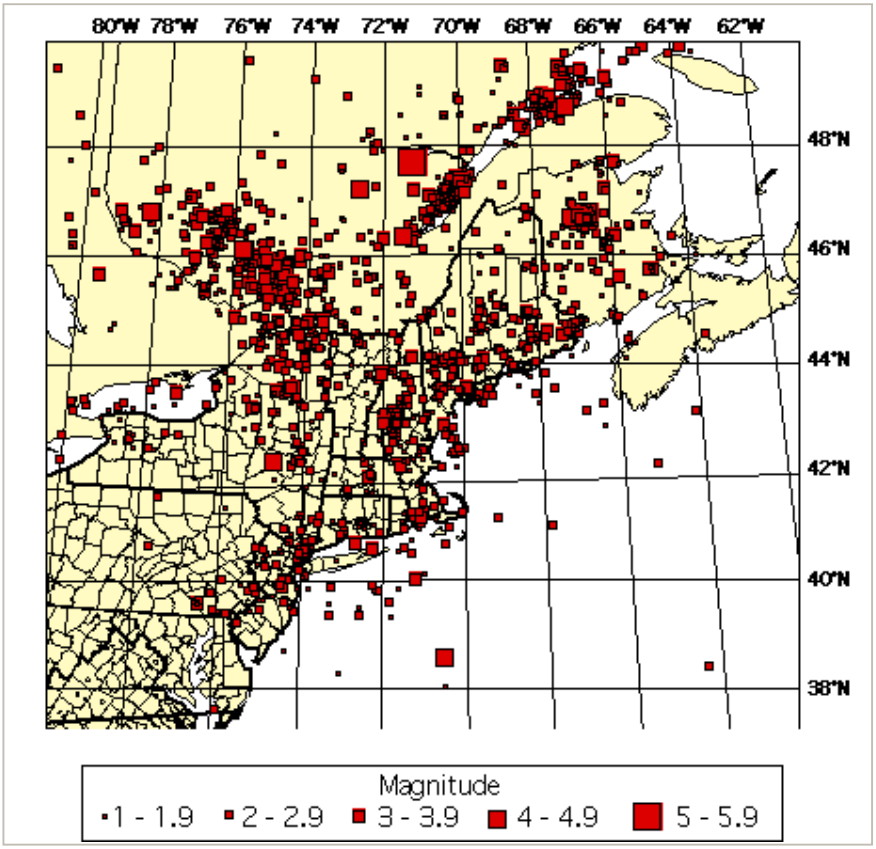

Figure 4: Seismicity for period October, 1975 - March, 2002.

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Acknowledgments

We would like to thank the Undergraduate Research Opportunities Program (UROP) of MITfor its support to the network. Our map database has been developedin-house using ARCINFO and in part basemap data provided byESRI, Inc. (Arcdata Online), USGS GTOPO30 Elevation Data, and TIGER/Line '94, '95, and '97 (US Census Bureau) spatial data.

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