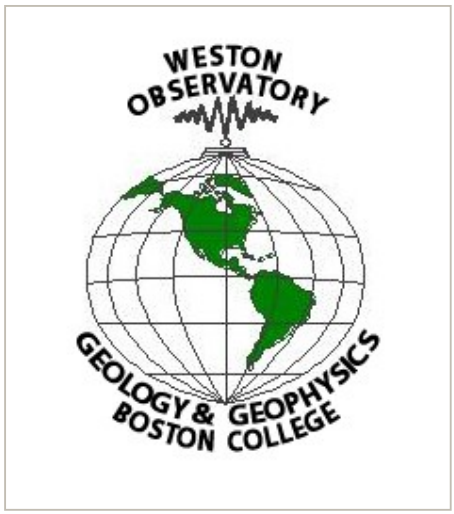
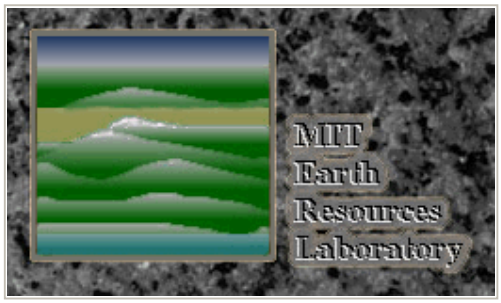
A STUDY OF NEW ENGLAND SEISMICITY

Quarterly Earthquake Report

October - December, 2000

NEW ENGLAND
SEISMIC NETWORK





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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 of the 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 of the NESN for the period October - December, 2000. 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 6 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 13 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 operates 12 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. WES is continuing to upgrade its recording stations with 2 more broadband instruments scheduled for installation in 2000. 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 sensor and 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 6 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 FTP at: 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 under contruction. 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 general earthquake 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 = station 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. Date = 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

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 separation, 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 arrival

   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 arrival
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 = signal 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 = nearest 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@bcvms.bc.edu
Susan O'Connor	Seismic Analyst	617-552-8337	dannolfo@bc.edu
Edward Johnson	Project Engineer	617-552-8332	johnson@bcvms.bc.edu
Patricia Tassia	Administrative Secretary	617-552-8311	tassia@bcvms.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

Name	Network Position	voice phone	email address
M. Nafi Toksöz	Principal 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	sara@erl.mit.edu
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
GLO	42.6403	-70.7272	15.2	Gloucester, MA	MIT
HNH	43.7050	-72.2860	180.0	Hanover, NH	WES
MIM	45.2436	-69.0403	140.0	Milo, ME	WES
NH1	43.5473	-71.5743	402.0	Sanbornton, NH	WES
QUA2	42.2789	-72.3525	168.0	Belchertown, MA	WES
TRY	42.7311	-73.6669	131.0	Troy, NY	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	Hudson, MA	WES
SM8	44.48	-69.61	North Vassalboro, ME	WES

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TABLE 3

EARTHQUAKE HYPOCENTER LIST
NEW ENGLAND AND ADJACENT REGIONS
October - December, 2000

Date Yr/Mo/Dy	Time Hr:Mn:Sec	Lat	Long	Depth (km)	Mag	Int	Location
2000/10/06	13:59:05.46	45.0105	-74.0070	7.61	3.3		PQ, SOUTHERN
2000/10/15	23:49:33.03	43.6523	-71.3928	1.05	2.3		NH, 10 KM E OF MERIDETH
2000/10/27	16:37:39.47	43.4740	-71.5003	9.69	1.4		NH, NEAR BELMONT
2000/11/06	12:16:37.45	42.7683	-73.9578	9.73	2.8		NY, 6 KM W OF ROTTERDAM
2000/11/16	19:41:20.80	41.9195	-71.5405	6.09	1.3		RI, NNW OF PROVIDENCE
2000/12/16	06:05:09.13	43.7335	-71.5105	10.24	2.4		NH, CENTER HARBOR REGION

* indicates Mc rather than Mn.

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TABLE 4

EARTHQUAKE PHASE DATA LIST
NEW ENGLAND AND ADJACENT REGIONS
October - December, 2000

NORTHERN NY AND ADIRONDACKS
00OCT06 PQ, SOUTHERN

DATE	ORIGIN	LAT N	LONG W	DEPTH	MN	MC	ML	GAP	RMS	ERH	ERZ	Q
001006	1359 5.46	45- 6.32	74- 0.47	7.61	3.3	2.9		62	0.33	0.7	1.4	C

STN	DIST	AZM	RMK	HRMN	SEC	TOBS	TCAL	RES	WT	AMX	PRX	XMAG	FMP	FMAG
BGR	42.2	223	P	4 1359	16.61	11.15	6.67	4.48	0.00					
MNT	53.5	34	EP	1 1359	13.50	8.04	8.38	-0.33	1.54					
			ES	1 1359	20.23	14.77	14.91	-0.14	1.56					
PTN	97.2	232	P	2 1359	19.81	14.35	15.00	-0.69	0.83					
			S	3 1359	31.43	25.97	26.71	-0.81	0.38					
WBO	100.4	263	EP	1 1359	20.79	15.33	15.48	-0.15	1.41					
			ES	1 1359	33.07	27.61	27.56	0.05	1.41					
TRQ	131.3	341	EP	1 1359	25.30	19.84	20.16	-0.32	1.30					
			ES	0 1359	41.60	36.14	35.88	0.26	1.76					
VT1	131.4	131	EP	1 1359	25.89	20.43	20.18	0.23	1.32				158	2.9
			ES	0 1359	41.37	35.91	35.92	-0.05	1.75					
GAC	132.9	300	EP	0 1359	25.99	20.53	20.41	0.12	1.75					
OTT	138.0	283	EP	1 1359	26.58	21.12	21.18	-0.06	1.30					
			ES	0 1359	43.41	37.95	37.70	0.25	1.73					
MOQ	139.7	81	EP	0 1359	26.88	21.42	21.44	-0.16	1.72					
			ES	2 1359	44.50	39.04	38.16	0.63	0.80					
LBNH	191.0	120	EP	0 1359	34.78	29.32	29.14	0.12	1.51					
			ES	1 1359	58.07	52.61	51.87	0.64	1.05					
HNH	207.4	139	EPD	0 1359	36.86	31.40	31.17	0.20	1.44	898	.41	3.5	142	2.9
			ES	0 1359	60.77	55.31	55.48	-0.22	1.42					
GRQ	220.3	319	EP	2 1359	39.42	33.96	32.75	1.21	0.25					
			ES	3 1359	65.91	60.45	58.30	2.15	0.00					
WFM	343.1	144	EP	1 1359	53.25	47.79	47.92	-0.14	0.65					
			ES	4 1359	80.79	75.33	85.30	-9.99	0.00					
WVL	349.4	101	EP	4 1359	61.55	56.09	48.70	7.39	0.00	88	.20	3.1	0	2.9
WES	371.8	144	EP	2 1359	56.49	51.03	51.47	-0.44	0.36	68	.20	3.1	0	3.0
A11	378.0	51	P	1 1359	57.71	52.25	52.23	0.01	0.54					
A54	380.8	47	EP	2 1359	57.63	52.17	52.58	-0.47	0.34					
DAQ	382.2	34	EP	3 1359	57.37	51.91	52.75	-1.00	0.10					
LSCT	386.0	171	EP	1 1359	59.56	54.10	53.21	0.84	0.43					
LMQ	392.7	46	EP	2 1359	59.18	53.72	54.04	-0.38	0.32					
			ES	4 1359	53.03	47.57	96.18	-48.74	0.00					
BRY	406.6	151								61	.19	3.1		
A61	416.5	46	EP	1 1359	62.29	56.83	56.98	-0.16	0.42					
EEO	428.6	293	EP	1 1359	63.86	58.40	58.47	-0.07	0.38					
YLE	430.7	168	EP	4 1359	61.46	56.00	58.73	-2.73	0.00	162	.27	3.5		
A64	437.5	46	EP	2 1359	64.64	59.18	59.57	-0.41	0.23					
EFO	480.0	242	EP	3 1359	68.73	63.27	64.82	-1.55	0.00					

NORTHWEST MAINE CRUSTAL STRUCTURE
00OCT15 NH, 10 KM E OF MEREDITH

DATE	ORIGIN	LAT N	LONG W	DEPTH	MN	MC	ML	GAP	RMS	ERH	ERZ	Q
001015	2349 33.03	43-39.14	71-23.57	1.05	2.3	2.5		91	0.51	1.4	3.2	D

STN	DIST	AZM	RMK	HRMN	SEC	TOBS	TCAL	RES	WT	AMX	PRX	XMAG	FMP	FMAG
DNH	71.4	146	EP	00 2349	44.96	11.93	11.86	0.07	2.35				135	2.7
			S	1 2349	53.72	20.69	21.10	-0.41	1.75					
HNH	72.2	275	IPD	1 2349	45.11	12.08	11.99	0.06	1.76	91	.09	2.1	66	2.1
			ES	2 2349	53.96	20.93	21.34	-0.47	1.16					
LBNH	78.1	327	IPD	3 2349	45.49	12.46	12.93	-0.53	0.57				174	2.9
			ES	4 2349	54.59	21.56	23.01	-1.56	0.00					
WFM	116.0	184	IPU	2 2349	52.77	19.74	18.94	0.79	1.02				136	2.8
			IS	0 2349	66.67	33.64	33.72	-0.10	2.13					
GLO	124.8	154	EP	01 2349	53.88	20.85	20.34	0.51	1.55				136	2.8
			S	1 2349	68.94	35.91	36.20	-0.29	1.57					
VT1	132.7	305	EP	0 2349	55.23	22.20	21.59	0.59	2.01	358	.15	3.0		
			ES	3 2349	70.19	37.16	38.44	-1.31	0.37					
WES	140.9	178	EP	1 2349	56.27	23.24	22.90	0.33	1.51	43	.12	2.2		
			ES	2 2349	72.74	39.71	40.76	-1.07	0.88					
WVL	169.2	55	EP	1 2350	0.47	27.44	27.38	0.05	1.40	24	.12	2.1	40	2.0
			ES	4 2350	19.64	46.61	48.74	-2.15	0.00					
QUA2	171.5	207	EP	1 2350	0.25	27.22	27.75	-0.56	1.37	29	.08	2.3		
			ES	3 2350	20.56	47.53	49.39	-1.91	0.09					
BRY	193.1	184	EP	3 2350	4.86	31.83	30.74	1.09	0.38				29	1.9
			ES	2 2350	28.36	55.33	54.71	0.62	0.85					
MOQ	196.7	340	EP	3 2350	3.84	30.81	31.19	-0.52	0.43					
			ES	4 2350	27.03	54.00	55.52	-1.77	0.00					
LSCT	265.7	214	EP	1 2350	12.59	39.56	39.71	-0.20	1.05				177	3.1
			ES	3 2350	45.52	72.49	70.68	1.72	0.13					
MNT	271.4	319	ES	3 2350	47.35	74.32	71.92	2.40	0.00					
WBO	344.1	296	EP	1 2350	22.40	49.37	49.39	-0.02	0.76					
			ES	4 2350	83.51	110.48	87.91	22.57	0.00					
TRQ	379.4	319	EP	2 2350	26.53	53.50	53.75	-0.25	0.42					
			ES	4 2350	75.18	102.15	95.67	6.48	0.00					
GAC	396.0	305	EP	1 2350	29.62	56.59	55.79	0.80	0.54					
			ES	4 2350	81.35	108.32	99.31	9.01	0.00					
A11	409.8	13	EP	1 2350	30.67	57.64	57.50	0.13	0.52					
			ES	4 2350	86.90	113.87	102.35	11.50	0.00					
A54	429.8	10	EP	2 2350	32.80	59.77	59.96	-0.25	0.30					
			ES	4 2350	92.45	119.42	106.73	12.58	0.00					
LMQ	441.0	11	EP	3 2350	34.05	61.02	61.35	-0.40	0.13					
			ES	4 2350	96.68	123.65	109.19	14.33	0.00					
GRQ	481.1	313	ES	4 2351	43.37	130.34	118.01	12.33	0.00					
LMN	575.7	65	EP	2 2350	50.95	77.92	77.98	-0.06	0.00					

HUGHES AND LUETGERT NH
00OCT27 NH, NEAR BELMONT

```
 DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS  ERH  ERZ Q
001027 1637 39.47 43-28.44  71-30.02   9.69  1.4          241  0.37 49.7 **** D

 STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
 HNH  68.4 292 EPD3 1637 51.32  11.85  11.47  0.35 0.55   9 .12  1.1
               ES 1 1637 59.78  20.31  20.42 -0.16 1.68
 WES 121.9 173 EPD3 1637 59.46  19.99  19.89  0.10 0.50  24 .22  1.7
               ES 1 1637 74.52  35.05  35.40 -0.36 1.45
QUA2 149.9 208 EPD2 1638  4.40  24.93  24.23  0.67 0.82   5 .09  1.4
               ESD4 1638 21.58  42.11  43.13 -1.07 0.00
 WVL 188.2  51 EP 4 1637 57.31  17.84  29.46-11.63 0.00
               ES 4 1637 88.41  48.94  52.44 -3.52 0.00

NORTHERN NY AND ADIRONDACKS
 00NOV06 NY, 6 KM WEST OF ROTTERDAM

 DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS  ERH  ERZ Q
001106 1216 37.45 42-46.10  73-57.47   9.73  2.8          210  0.46  2.7  2.1 C

 STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
LSCT 135.4 153 EP 0 1216 58.11  20.66  20.79 -0.18 1.64
 HNH 171.2  53 EP 0 1217  4.35  26.90  26.22  0.65 1.42 276 .27  3.0
               ES 0 1217 23.92  46.47  46.67 -0.26 1.50
 YLE 183.1 152 EP 3 1217  3.62  26.17  27.98 -1.82 0.05 169 .20  2.9
               ES 0 1217 27.46  50.01  49.81  0.20 1.46
 PAL 196.0 179 EP 0 1217  7.01  29.56  29.57 -0.01 1.40
 VT1 199.2  29 EP 2 1217  6.30  28.85  29.96 -1.14 0.56 322 .13  3.3
               ES 0 1217 30.57  53.12  53.33 -0.25 1.39
 WES 220.5 101 EP 2 1217 10.68  33.23  32.59  0.62 0.63  47 .18  2.5
               ES 1 1217 35.62  58.17  58.02  0.13 0.98
 BRY 220.7 115 EP 2 1217 10.78  33.33  32.62  0.70 0.60  43 .13  2.5
               ES 0 1217 35.76  58.31  58.07  0.24 1.31
 BCX 233.8 102 EP 1 1217 11.16  33.71  34.23 -0.53 0.93  43 .16  2.5
               ES 3 1217 36.79  59.34  60.94 -1.60 0.11

SOUTH & COASTAL NEW ENGLAND, CHIBURIS, 1979
 00NOV16 RI, NNW OF PROVIDENCE

 DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS  ERH  ERZ Q
001116 1941 20.80 41-55.17  71-32.43   6.09  1.3 1.2      157  0.22  3.8  3.4 C

 STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
 BRY   0.2 143 IP 1 1941 21.73   0.93   1.03 -0.10 1.371156 .29  0.9  44  1.2
                S 0 1941 22.69   1.89   1.83  0.06 1.83
 WES  54.7  19 EP 4 1941 34.48  13.68   9.15  4.51 0.00  78 .71  1.8
               ES 3 1941 36.40  15.60  16.29 -0.71 0.36
 BCX  55.4  34 EP 4 1941 33.32  12.52   9.26  3.26 0.00  31 .23  1.4
               ES 1 1941 37.47  16.67  16.48  0.18 1.24
QUA2  78.1 301 EP 3 1941 35.63  14.83  13.00  1.79 0.02   6 .17  1.0
               ES 1 1941 44.02  23.22  23.15  0.02 1.18

HUGHES AND LUETGERT NH
 00DEC16 NH, CENTER HARBOR REGION

 DATE     ORIGIN    LAT N    LONG W   DEPTH   MN  MC  ML GAP   RMS  ERH  ERZ Q
001216  6 5  9.13 43-44.01  71-30.63  10.24  2.4 3.0       85  0.60  1.3  1.9 D

 STN  DIST AZM  RMK HRMN   SEC   TOBS   TCAL   RES   WT AMX PRX XMAG FMP FMAG
 HNH  62.6 267 IPD1  6 5 20.06  10.93  10.53  0.37 1.76 166 .16  2.2 180  2.9
               ES 2  6 5 27.40  18.27  18.74 -0.53 1.17
LBNH  65.4 329 IPU0  6 5 20.04  10.91  10.99 -0.14 2.37               226  3.2
               IS 2  6 5 28.07  18.94  19.56 -0.73 1.15
 DNH  84.2 144 EP 1  6 5 23.44  14.31  14.02  0.28 1.72
               ES 1  6 5 33.72  24.59  24.96 -0.38 1.71
 VT1 119.8 304 EPD3  6 5 29.76  20.63  19.54  1.06 0.49 666 .23  3.2
               ES 2  6 5 43.44  34.31  34.79 -0.52 1.08
 WFM 124.8 179 EPU3  6 5 30.52  21.39  20.31  1.07 0.48               164  2.9
               ES 0  6 5 45.27  36.14  36.15 -0.03 2.16
 GLO 137.1 152 EP 2  6 5 32.16  23.03  22.22  0.80 1.01
               ES 1  6 5 49.08  39.95  39.56  0.39 1.57
 WES 150.6 174 EP 3  6 5 34.63  25.50  24.32  1.17 0.44  49 .11  2.3 121  2.7
               ES 1  6 5 52.03  42.90  43.29 -0.41 1.54
 BCX 157.8 170 EP 3  6 5 36.15  27.02  25.43  1.58 0.29  23 .11  2.0
               ES 2  6 5 53.64  44.51  45.27 -0.76 0.98
 WVL 172.1  59 EP 3  6 5 37.92  28.79  27.43  1.35 0.36  38 .13  2.3
               ES 1  6 5 57.30  48.17  48.82 -0.67 1.45
 MOQ 185.1 341 EP 1  6 5 37.90  28.77  29.03 -0.40 1.45
               ES 3  6 5 61.95  52.82  51.68  0.89 0.45
 DXB 197.3 160 EP 3  6 5 40.82  31.69  30.53  1.16 0.40
               ES 3  6 5 62.61  53.48  54.34 -0.87 0.44
 BRY 201.7 181 EP 4  6 5 37.88  28.75  31.08 -2.33 0.00  24 .11  2.3
               ES 3  6 5 63.57  54.44  55.32 -0.89 0.44
 NCB 219.6 277 EP 0  6 5 42.76  33.63  33.28  0.26 1.83               186  3.1
               ES 1  6 5 69.18  60.05  59.25  0.66 1.33
 MNT 258.4 320 EP 3  6 5 45.84  36.71  38.08 -1.37 0.31
               ES 4  6 5 80.50  71.37  67.78  3.59 0.00
LSCT 268.1 212 EP 1  6 5 48.87  39.74  39.27  0.42 1.24               169  3.1
               ES 4  6 5 77.33  68.20  69.90 -1.79 0.00
 WBO 331.3 295 EP 4  6 5 59.52  50.39  47.08  3.31 0.00
 DPQ 342.3 343 EP 4  6 5 55.42  46.29  48.43 -2.14 0.00
 TRQ 366.2 319 EP 3  6 5 58.90  49.77  51.39 -1.62 0.16
 OTT 381.5 299 ES 4  6 6 51.65 102.52  94.83  7.69 0.00
 GAC 383.2 305 EP 3  6 6  1.47  52.34  53.48 -1.15 0.27
               ES 4  6 6 52.35 103.22  95.20  8.02 0.00
 A54 422.6  12 EP 4  6 6  4.25  55.12  58.35 -3.29 0.00
               ES 4  6 6 50.48 101.35 103.87 -2.63 0.00
 LMQ 434.0  12 EP 4  6 6  6.05  56.92  59.75 -2.90 0.00
               ES 4  6 6 52.30 103.17 106.36 -3.31 0.00
 A61 453.8  14 EP 4  6 6 13.51  64.38  62.21  2.16 0.00
               ES 0  6 6 59.89 110.76 110.73  0.01 1.02
 GRQ 467.7 313 EP 4  6 6 17.30  68.17  63.92  4.25 0.00
               ES 4  6 6 78.24 129.11 113.77 15.33 0.00
 DAQ 470.7   3 EP 1  6 6 13.83  64.70  64.29  0.25 0.72
               ES 3  6 6 62.79 113.66 114.43 -1.06 0.21
```

```
LMN 580.4   66 EP 4   6 6 19.28   70.15   77.83 -7.68 0.00
EEO 676.4  299 EP 4   6 6 41.81   92.68   89.68  2.99 0.00
ICQ 720.8   27 ES 4   6 7 55.98 166.85 169.39 -2.56 0.00
MNQ 783.7   15 EP 4   6 6 52.97 103.84 102.93  0.91 0.00
```

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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

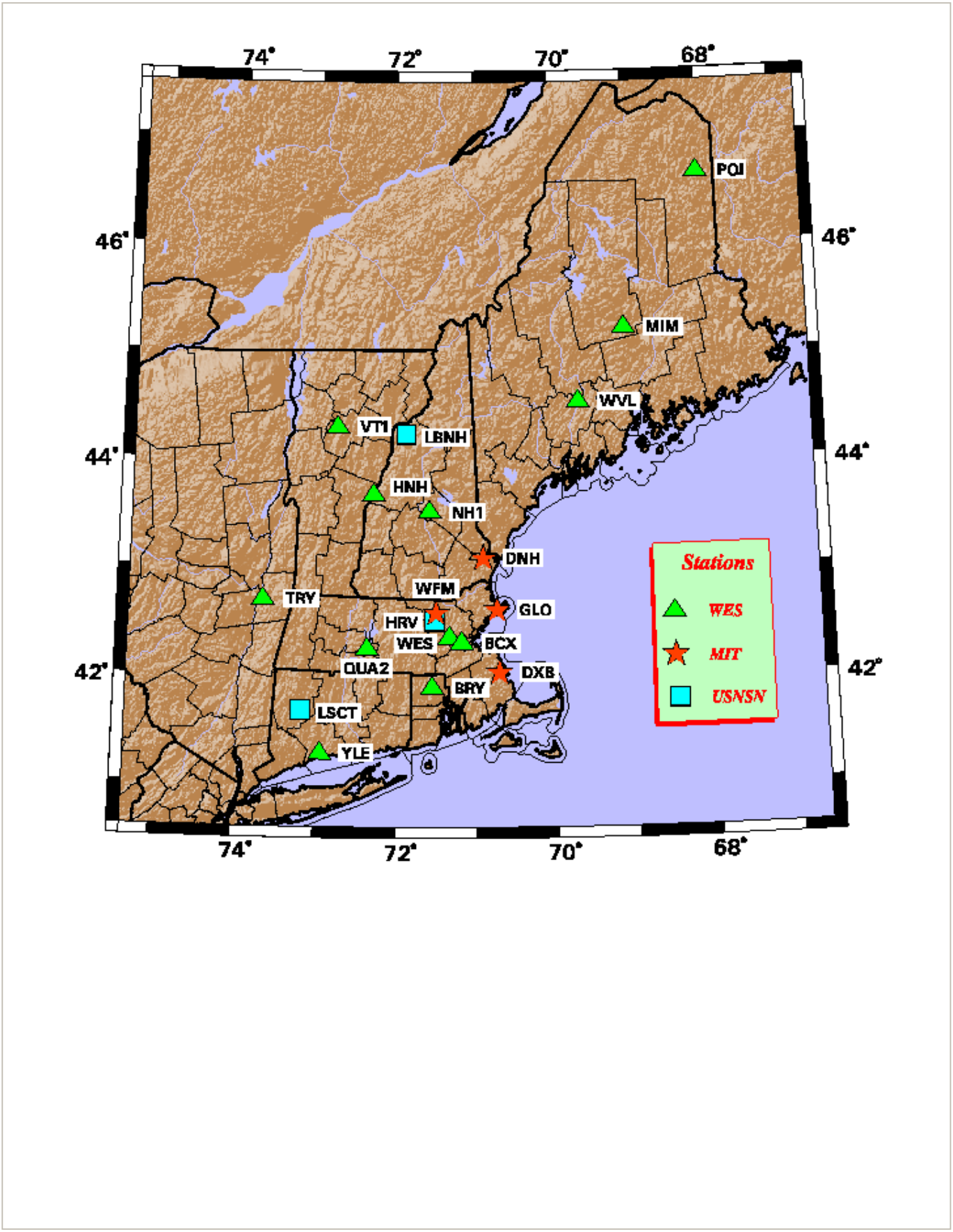

Figure 1: Map of stations of the New England Seismic Network (NESN) in operation during period October - December, 2000. Also included are the US National Seismic Network stations operating in New England during this period.

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NESN Strong-Motion Station Map

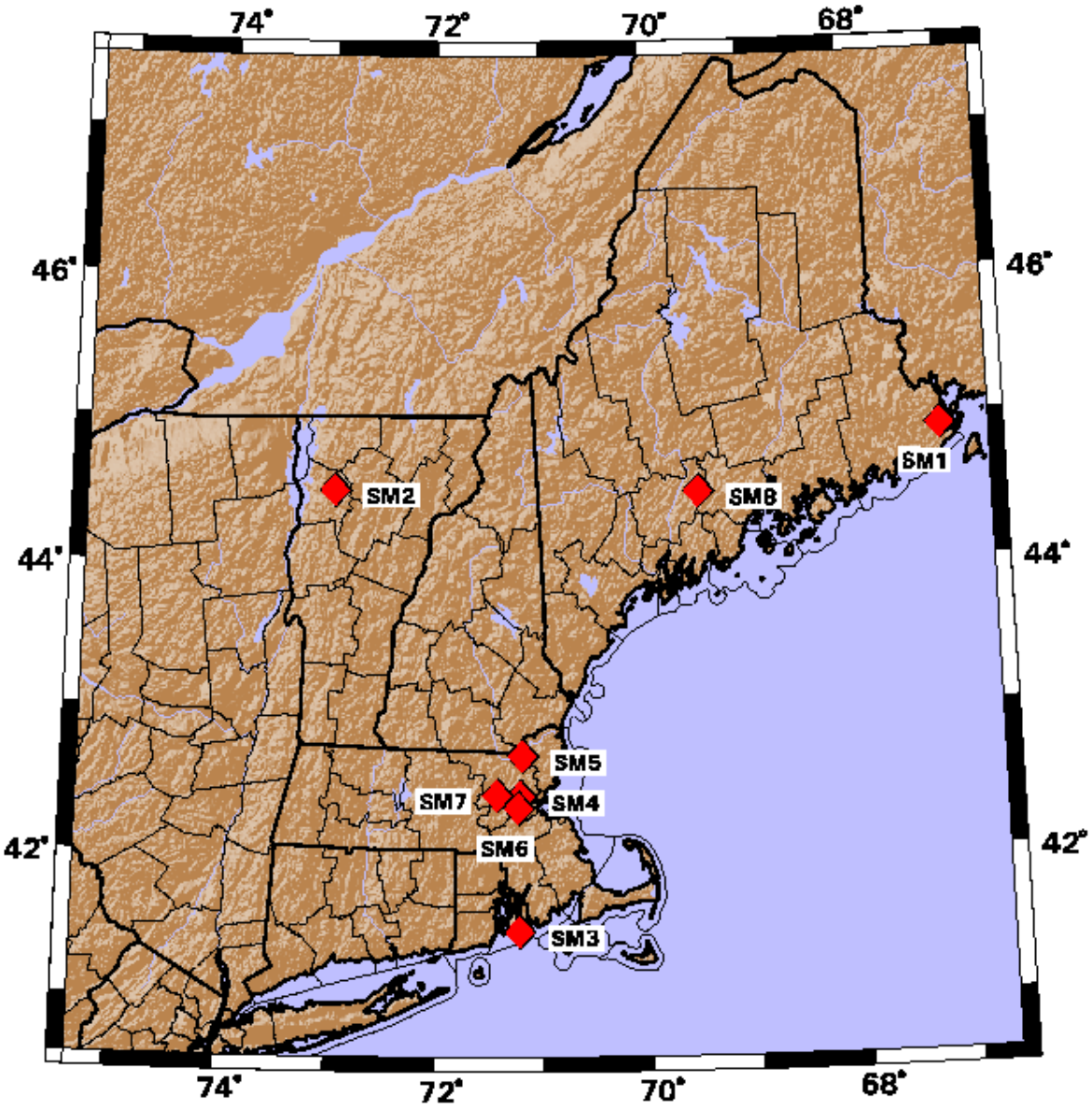

Figure 2: Map of strong-motion stations of the New England Seismic Network (NESN) in operation during period October - Decmeber, 2000.

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NESN Quarterly Seismicity Map

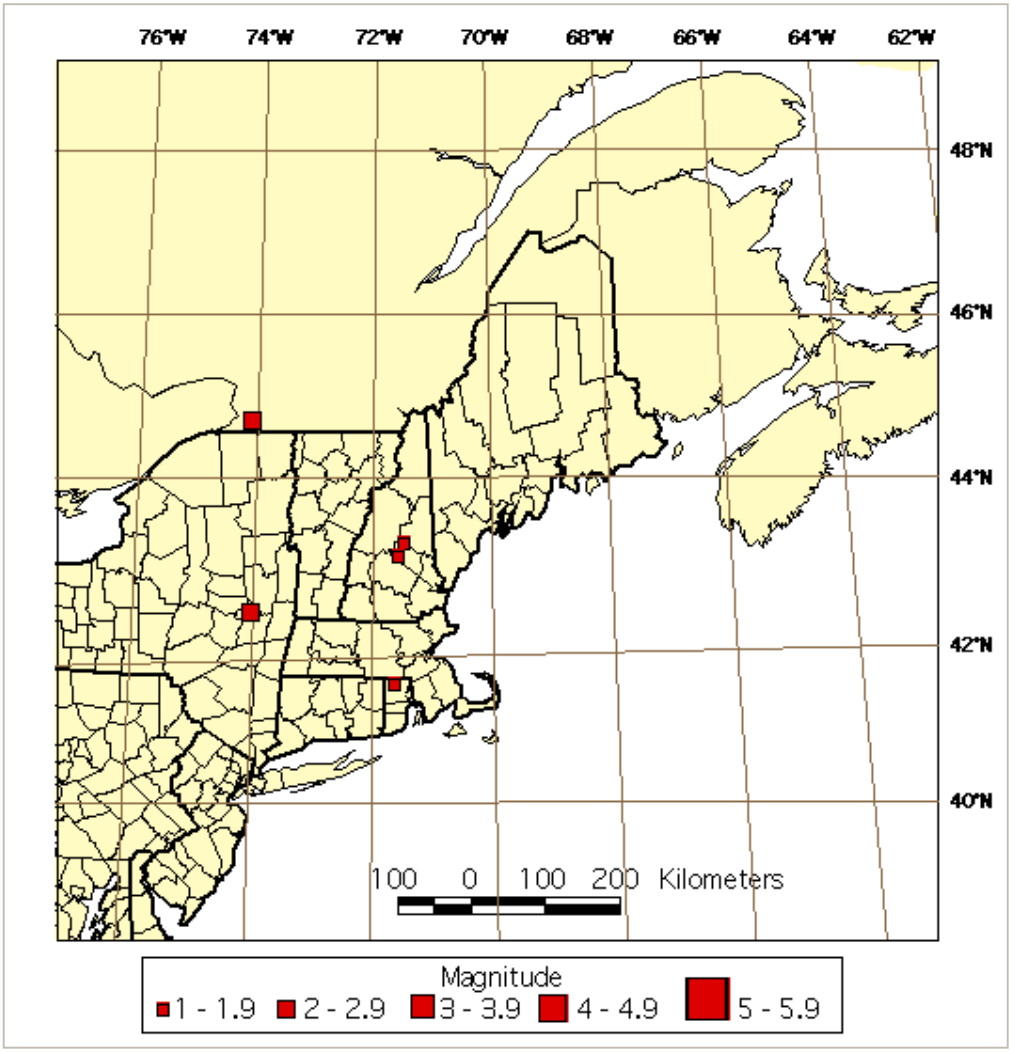

Figure 3: Earthquake epicenters located by the NESN during period October - Decmeber, 2000.

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NESN Cumulative Seismicity Map

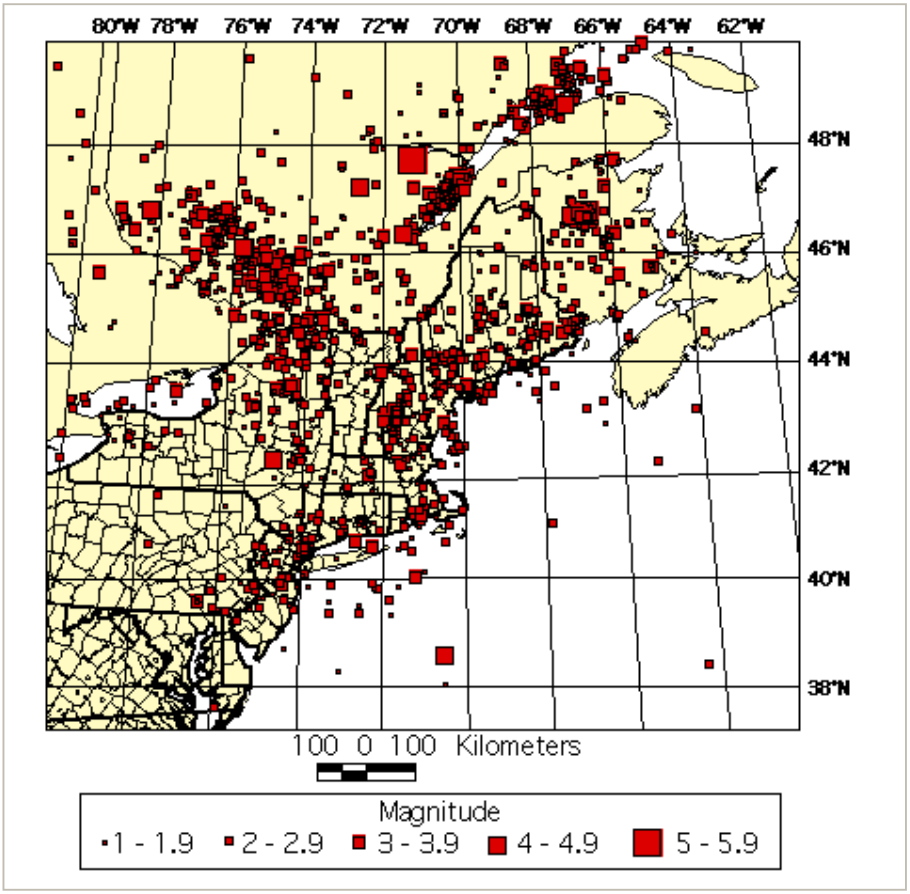

Figure 4: Seismicity for period October, 1975 - December, 2000.

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Acknowledgments

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

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Ebel, J.E. (1982), M_L measurements for northeastern United States earthquakes, *Bull. Seism. Soc. Am., 72,* 1367-1378.

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