



Earthquake Epicenters of West Virginia

1824 through 2012

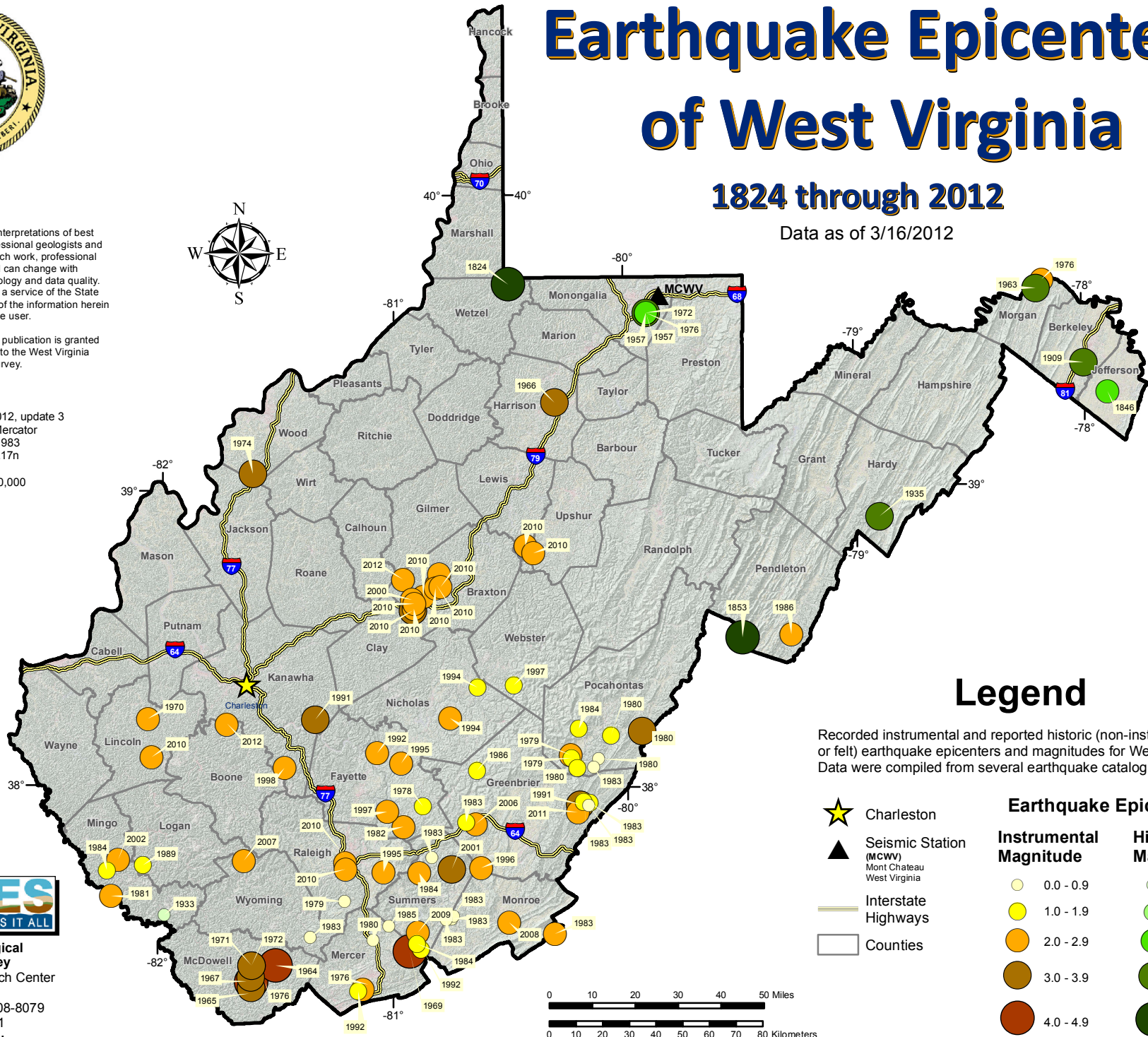
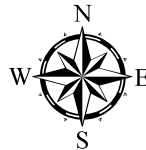
Data as of 3/16/2012

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Map Date: March 23, 2012, update 3
 Projection: Transverse Mercator
 Horizontal Datum: NAD 1983
 Coordinate System: UTMz17n
 Map scale for full 8.5" x 11" display: 1:2,000,000



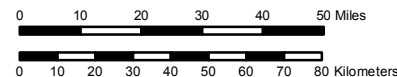
Legend

Recorded instrumental and reported historic (non-instrumental or felt) earthquake epicenters and magnitudes for West Virginia. Data were compiled from several earthquake catalog sources.

- Charleston
- Seismic Station (MCWV)
Mont Chateau
West Virginia
- Interstate Highways
- Counties

Earthquake Epicenters

Instrumental Magnitude	Historic Magnitude



West Virginia Geological and Economic Survey
 Mont Chateau Research Center
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 Morgantown, WV 26508-8079
 Phone: (304) 594-2331
www.wvgs.wvnet.edu

Num	WVQID	County	UTC_Year	UTC_Month	UTC_Day	UTC_HH	UTC_MM	UTC_SS	Lat_N	Long_W	Mag	Recorded	MMI	Mag_Type	Depth_KM	Source1	Source2
1	18240715160	Wetzel	1824	7	15	16	20	0.00	39.700	-80.500	4.1	Historic	4.0	Mb	<NULL>	NCEER	VTSO
2	18461019020	Jefferson	1846	10	19	2	0	0.00	39.300	-77.900	2.7	Historic	3.0	<NULL>	<NULL>	VTSO	<NULL>
3	18530502140	Pendleton	1853	5	2	14	20	0.00	38.500	-79.500	4.4	Historic	5.5	<NULL>	<NULL>	NCEER	Wheeler I-2737
4	19090402070	Berkeley	1909	4	2	7	25	0.00	39.400	-78.000	3.6	Historic	5.0	Mb	<NULL>	VTSO	Wheeler I-2737
5	19330615010	Mingo	1933	6	15	1	14	36.80	37.568	-81.973	0.0	Historic	0.0	<NULL>	5.0	VTSO	<NULL>
6	19351101080	Hardy	1935	11	1	8	30	0.00	38.900	-78.900	3.3	Historic	4.0	<NULL>	<NULL>	VTSO	NCEER
7	19570307210	Monongalia	1957	3	7	21	5	9.00	39.600	-79.900	2.9	Historic	3.0	Mb	<NULL>	VTSO	<NULL>
8	19570313210	Monongalia	1957	3	13	21	0	41.00	39.600	-79.900	2.9	Historic	3.0	Mb	<NULL>	VTSO	<NULL>
9	19631010000	Morgan	1963	10	10	0	0	0.00	39.655	-78.197	3.6	Historic	0.0	<NULL>	<NULL>	Wheeler I-2737	<NULL>
10	19641125020	McDowell	1964	11	25	2	50	5.00	37.400	-81.500	4.5	Instrumental	0.0	Mb	0.0	ANSS	<NULL>
11	19650426150	McDowell	1965	4	26	15	26	19.70	37.325	-81.602	3.5	Instrumental	0.0	MbLg	5.0	VTSO	NCEER
12	19660928000	Harrison	1966	9	28	0	0	0.00	39.300	-80.300	3.1	Instrumental	4.0	<NULL>	<NULL>	NCEER	<NULL>
13	19671216120	McDowell	1967	12	16	12	23	33.40	37.360	-81.604	3.5	Instrumental	0.0	Mb	2.0	VTSO	NCEER
14	19691120010	Mercer	1969	11	20	1	0	9.30	37.449	-80.932	4.6	Instrumental	6.0	MbLg	3.0	VTSO	NCEER
15	19700811060	Lincoln	1970	8	11	6	14	25.50	38.230	-82.050	2.8	Instrumental	4.0	MbLg	10.0	VTSO	NCEER
16	19710401050	McDowell	1971	4	1	5	5	11.00	37.400	-81.600	3.0	Instrumental	0.0	Mb	<NULL>	NCEER	ANSS
17	19720109230	McDowell	1972	1	9	23	24	29.00	37.400	-81.600	3.7	Instrumental	0.0	MbLg	<NULL>	NCEER	ANSS
18	19720912150	Monongalia	1972	9	12	15	17	13.70	39.600	-79.900	2.9	Historic	3.0	Mb	<NULL>	VTSO	NCEER
19	19741020150	Wood	1974	10	20	15	13	55.60	39.060	-81.609	3.8	Instrumental	5.0	Mb	4.0	VTSO	NCEER
20	19760130180	Morgan	1976	1	30	18	58	49.80	39.683	-78.170	2.8	Instrumental	0.0	Unk	15.0	ANSS	<NULL>
21	19760506180	Monongalia	1976	5	6	18	46	8.10	39.600	-79.900	3.1	Historic	4.0	Mb	<NULL>	VTSO	NCEER
22	19760619050	McDowell	1976	6	19	5	54	13.40	37.344	-81.602	4.7	Instrumental	5.0	Mb	1.0	VTSO	NCEER
23	19760703200	Mercer	1976	7	3	20	53	45.80	37.320	-81.130	2.7	Instrumental	0.0	MbLg	1.0	VTSO	<NULL>
24	19780814040	Fayette	1978	8	14	4	50	5.40	37.939	-80.874	1.6	Instrumental	0.0	Mc	23.0	VTSO	ANSS
25	19790916090	Pocahontas	1979	9	16	9	39	22.60	38.099	-80.240	1.6	Instrumental	0.0	Mc	14.4	ANSS	<NULL>
26	19790919000	Pocahontas	1979	9	19	0	45	57.40	38.110	-80.243	2.0	Instrumental	0.0	Mc	17.2	ANSS	<NULL>
27	19791031080	Raleigh	1979	10	31	8	32	47.30	37.617	-81.207	0.8	Instrumental	0.0	Mc	3.8	ANSS	<NULL>
28	19800410220	Mercer	1980	4	10	22	33	15.70	37.487	-81.086	0.7	Instrumental	0.0	Mc	5.0	VTSO	ANSS
29	19800921100	Pocahontas	1980	9	21	10	2	46.30	38.175	-80.070	1.4	Instrumental	0.0	Mc	3.1	VTSO	ANSS
30	19801016030	Pocahontas	1980	10	16	3	48	7.60	38.066	-80.215	1.1	Instrumental	0.0	Mc	10.0	VTSO	ANSS
31	19801105210	Pocahontas	1980	11	5	21	48	14.20	38.188	-79.936	3.0	Instrumental	0.0	ML	2.2	ANSS	<NULL>
32	19801125070	Pocahontas	1980	11	25	7	44	4.00	38.095	-80.123	0.6	Instrumental	0.0	Md	15.3	VTSO	ANSS
33	19811130170	Mingo	1981	11	30	17	33	11.00	37.630	-82.200	2.5	Instrumental	0.0	Mc	6.7	VTSO	ANSS
34	19820623160	Fayette	1982	6	23	16	17	34.10	37.870	-80.957	2.5	Instrumental	0.0	Md	11.1	VTSO	ANSS
35	19830121050	Pocahontas	1983	1	21	5	33	20.40	38.067	-80.144	0.4	Instrumental	0.0	Md	17.8	VTSO	ANSS
36	19830526010	Monroe	1983	5	26	1	4	44.80	37.506	-80.316	2.2	Instrumental	0.0	Md	9.0	VTSO	ANSS
37	19830610000	Greenbrier	1983	6	10	0	18	40.40	37.948	-80.163	1.2	Instrumental	0.0	Md	23.6	VTSO	ANSS
38	19830610001	Greenbrier	1983	6	10	0	24	57.00	37.951	-80.189	1.2	Instrumental	0.0	Md	18.4	VTSO	ANSS
39	19830610002	Greenbrier	1983	6	10	0	31	8.30	37.938	-80.168	0.4	Instrumental	0.0	Md	13.0	VTSO	ANSS
40	19830720040	Greenbrier	1983	7	20	4	41	40.90	37.885	-80.691	1.6	Instrumental	0.0	Md	11.0	VTSO	ANSS
41	19830725030	Wyoming	1983	7	25	3	27	0.20	37.496	-81.352	0.6	Instrumental	0.0	Md	29.0	VTSO	ANSS
42	19831113160	Summers	1983	11	13	16	51	6.70	37.556	-80.775	0.4	Instrumental	0.0	Md	10.0	VTSO	ANSS
43	19831113170	Monroe	1983	11	13	17	50	50.10	37.559	-80.753	0.7	Instrumental	0.0	Md	11.0	VTSO	ANSS
44	19831125160	Monroe	1983	11	25	16	27	47.80	37.568	-80.745	0.7	Instrumental	0.0	Md	11.9	VTSO	<NULL>
45	19831223100	Summers	1983	12	23	10	51	21.90	37.766	-80.837	0.3	Instrumental	0.0	Md	13.7	VTSO	ANSS
46	19840202050	Mingo	1984	2	2	5	10	19.70	37.717	-82.218	1.9	Instrumental	0.0	Md	2.5	VTSO	ANSS
47	19840311040	Summers	1984	3	11	4	1	38.90	37.474	-80.900	1.1	Instrumental	0.0	Md	6.1	VTSO	ANSS
48	19841009050	Summers	1984	10	9	5	33	31.50	37.713	-80.891	2.1	Instrumental	0.0	Md	13.4	VTSO	ANSS
49	19841221130	Pocahontas	1984	12	21	13	12	21.90	38.198	-80.208	1.6	Instrumental	0.0	Md	5.8	VTSO	ANSS
50	19850614070	Mercer	1985	6	14	7	57	10.20	37.534	-81.020	0.8	Instrumental	0.0	Md	2.4	VTSO	ANSS
51	19860226210	Pendleton	1986	2	26	21	53	20.80	38.507	-79.292	2.3	Instrumental	0.0	Md	11.0	VTSO	ANSS
52	19861220080	Greenbrier	1986	12	20	8	13	12.80	38.058	-80.643	1.2	Instrumental	0.0	Md	13.8	VTSO	ANSS
53	19890319100	Logan	1989	3	19	10	7	55.80	37.735	-82.064	1.9	Instrumental	0.0	Md	3.2	VTSO	ANSS
54	19910422010	Greenbrier	1991	4	22	1	1	20.20	37.942	-80.205	3.5	Instrumental	0.0	Md	14.8	VTSO	ANSS

Num	WVQID	County	UTC_Year	UTC_Month	UTC_Day	UTC_HH	UTC_MM	UTC_SS	Lat_N	Long_W	Mag	Recorded	MMI	Mag_Type	Depth_KM	Source1	Source2
55	19910628180	Kanawha	1991	6	28	18	34	55.50	38.231	-81.335	3.0	Instrumental	0.0	Mb	7.0	VTSO	ANSS
56	19920329200	Mercer	1992	3	29	20	16	48.20	37.314	-81.149	1.4	Instrumental	0.0	Md	15.8	VTSO	ANSS
57	19920506210	Fayette	1992	5	6	21	20	23.90	38.118	-81.069	2.3	Instrumental	0.0	Md	10.3	VTSO	ANSS
58	19921124020	Summers	1992	11	24	2	26	50.70	37.457	-80.884	1.2	Instrumental	0.0	Md	12.3	VTSO	ANSS
59	19940204070	Nicholas	1994	2	4	7	40	32.40	38.236	-80.759	2.1	Instrumental	0.0	Md	10.9	VTSO	ANSS
60	19940619080	Nicholas	1994	6	19	8	36	41.30	38.339	-80.640	1.7	Instrumental	0.0	Md	5.0	VTSO	ANSS
61	19951115100	Raleigh	1995	11	15	10	29	24.80	37.717	-81.043	2.6	Instrumental	0.0	Md	32.8	VTSO	ANSS
62	19951228230	Fayette	1995	12	28	23	48	30.40	38.084	-80.968	2.5	Instrumental	0.0	Md	13.1	VTSO	ANSS
63	19960811090	Greenbrier	1996	8	11	9	11	21.30	37.731	-80.628	2.1	Instrumental	<NULL>	Mc	4.9	ANSS	<NULL>
64	19970222140	Fayette	1997	2	22	14	32	33.10	37.921	-81.027	2.0	Instrumental	<NULL>	Mc	5.0	ANSS	<NULL>
65	19970315050	Webster	1997	3	15	5	56	36.40	38.347	-80.484	1.8	Instrumental	0.0	Md	10.0	VTSO	ANSS
66	19970315050	Kanawha	1998	10	2	10	1	6.90	38.068	-81.466	2.5	Instrumental	0.0	Md	0.0	VTSO	ANSS
67	20001016170	Braxton	2000	10	16	17	56	13.80	38.636	-80.920	2.5	Instrumental	0.0	Md	16.9	VTSO	ANSS
68	20011204210	Summers	2001	12	4	21	15	13.90	37.726	-80.752	3.1	Instrumental	0.0	Mb	8.5	VTSO	ANSS
69	20020327080	Mingo	2002	3	27	8	25	3.30	37.753	-82.171	2.1	Instrumental	0.0	Md	7.7	VTSO	ANSS
70	20060711120	Greenbrier	2006	7	11	12	1	42.70	37.878	-80.649	2.6	Instrumental	0.0	Mb	16.3	VTSO	ANSS
71	20070830120	Wyoming	2007	8	30	12	52	9.34	37.753	-81.636	2.6	Instrumental	0.0	Lg GS	1.0	USGS ENS	ANSS
72	20080129010	Monroe	2008	1	29	1	4	20.70	37.545	-80.510	2.4	Instrumental	<NULL>	Md	23.1	ANSS	<NULL>
73	20090411180	Summers	2009	4	11	18	11	9.07	37.513	-80.896	2.4	Instrumental	<NULL>	Md	2.8	ANSS	<NULL>
74	20100404090	Braxton	2010	4	4	9	19	28.00	38.599	-80.916	3.4	Instrumental	0.0	Lg CERI	0.1	USGS ENS	LDEO
75	20100129010	Braxton	2010	4	29	1	36	42.00	38.686	-80.815	2.6	Instrumental	0.0	Lg CERI	0.1	USGS ENS	LDEO
76	20100429120	Braxton	2010	4	29	12	38	106.00	38.647	-80.872	2.7	Instrumental	0.0	Lg CERI	1.1	USGS ENS	LDEO
77	20100429130	Braxton	2010	4	29	23	26	39.47	38.722	-80.803	2.5	Instrumental	0.0	Lg GS	5.0	USGS ENS	ANSS
78	20100507100	Braxton	2010	5	7	10	26	6.00	38.606	-80.913	2.6	Instrumental	0.0	Lg CERI	0.1	USGS ENS	LDEO
79	20100508030	Braxton	2010	5	8	3	3	0.00	38.623	-80.911	2.4	Instrumental	0.0	Md CERI	0.1	USGS ENS	LDEO
80	20100724090	Braxton	2010	7	24	9	15	88.00	38.675	-80.820	2.4	Instrumental	0.0	Md	2.3	USGS ENS	LDEO
81	20100725030	Braxton	2010	7	25	3	48	70.00	38.679	-80.797	2.2	Instrumental	0.0	Md	8.0	USGS ENS	LDEO
82	20100815040	Lewis	2010	8	15	4	38	94.00	38.818	-80.430	2.5	Instrumental	0.0	Md	17.0	USGS ENS	LDEO
83	20100821030	Upshur	2010	8	21	3	16	44.00	38.792	-80.398	2.5	Instrumental	0.0	Md	10.7	USGS ENS	LDEO
84	20100826040	Raleigh	2010	8	26	4	22	30.00	37.748	-81.205	2.4	Instrumental	0.0	Md	0.1	USGS ENS	LDEO
85	20100826041	Raleigh	2010	8	26	4	24	110.00	37.727	-81.204	2.2	Instrumental	0.0	Md	4.3	USGS ENS	LDEO
86	20100913150	Lincoln	2010	9	13	15	8	90.00	38.100	-82.034	2.4	Instrumental	0.0	Md	14.5	USGS ENS	LDEO
87	20110825050	Greenbrier	2011	8	25	5	59	13.00	37.916	-80.215	2.7	Instrumental	4.0	Md	12.9	CERI	<NULL>
88	20120111190	Braxton	2012	1	10	19	38	58.00	38.704	-80.959	2.8	Instrumental	4.0	unk	4.9	CERI	USGS
89	20120316150	Boone	2012	3	16	15	5	55.00	38.212	-81.714	2.8	Instrumental	2.0	MbLg	5.1	USGS NEIC	CERI

Data as of March 23, 2012. For a more detailed listing, please download the West Virginia Earthquake spreadsheet from WVGES, <http://www.wvgs.wvnet.edu>.

Definitions and Explanations:

- County: the name of the county where the epicenter was located, derived from spatial selection.
- Dates and times are in Coordinated Universal Time (UTC) for Year, Month, Day, Hours (HH), Minutes (MM) and Seconds (SS). (For Eastern Standard Time, the offset is - 5 hours).
- Mag: Magnitude numbers indicative of an earthquake's relative size and is the measured maximum motion as recorded by a seismograph. The numbers are pulled from various sources; the primary source whenever possible.
- Recorded: refers to the means by which magnitudes were recorded: if they were reported as "felt" (Historical) or recorded via scientific instrumentation (Instrumental) as retrieved from Source1 or Source2.
- Latitude (Lat_N) and Longitude (Lon_W) values are expressed in decimal degrees for the northern (N) and western (W) hemispheres, respectively.
- MMI: The Modified Mercalli Intensity scale for epicenter intensity, usually designated with Roman numerals. Visit USGS at <http://earthquake.usgs.gov/learn/topics/mercalli.php> for further information.
- Mag_Type: Magnitude type code; the method used in measuring magnitudes (e.g., Mb for "body-wave", Mc for "coda amplitude", Md for "coda duration").
- Depth_KM: The reported depth of the earthquake hypocenter or focus (below the epicenter on the surface) in kilometers.

For other or more detailed earthquake and seismological definitions, please visit the USGS (<http://earthquake.usgs.gov/learn/glossary/>) and Rapid Earthquake Viewer (<http://rev.seis.sc.edu/definition.html>).

Sources (Source1 and Source2):

- VTSO – [Virginia Tech Seismological Observatory](#) (Primary Source)
- ANSS – [Advanced National Seismic System](#)
- CERI – [Center for Earthquake Research and Information](#)
- LDEO – [Lamont-Doherty Earth Observatory](#)
- NCEER – [National Center for Earthquake Engineering Research](#)
- USGS ENS – [United States Geological Survey, Earthquake Notification Service](#)
- Wheeler I-2737 – Wheeler, Russell L., [Earthquakes In and Near the Northeastern United States, 1638-1998](#) (Used only as reference here)

