



Earthquake Epicenters of West Virginia

1824 through 2013

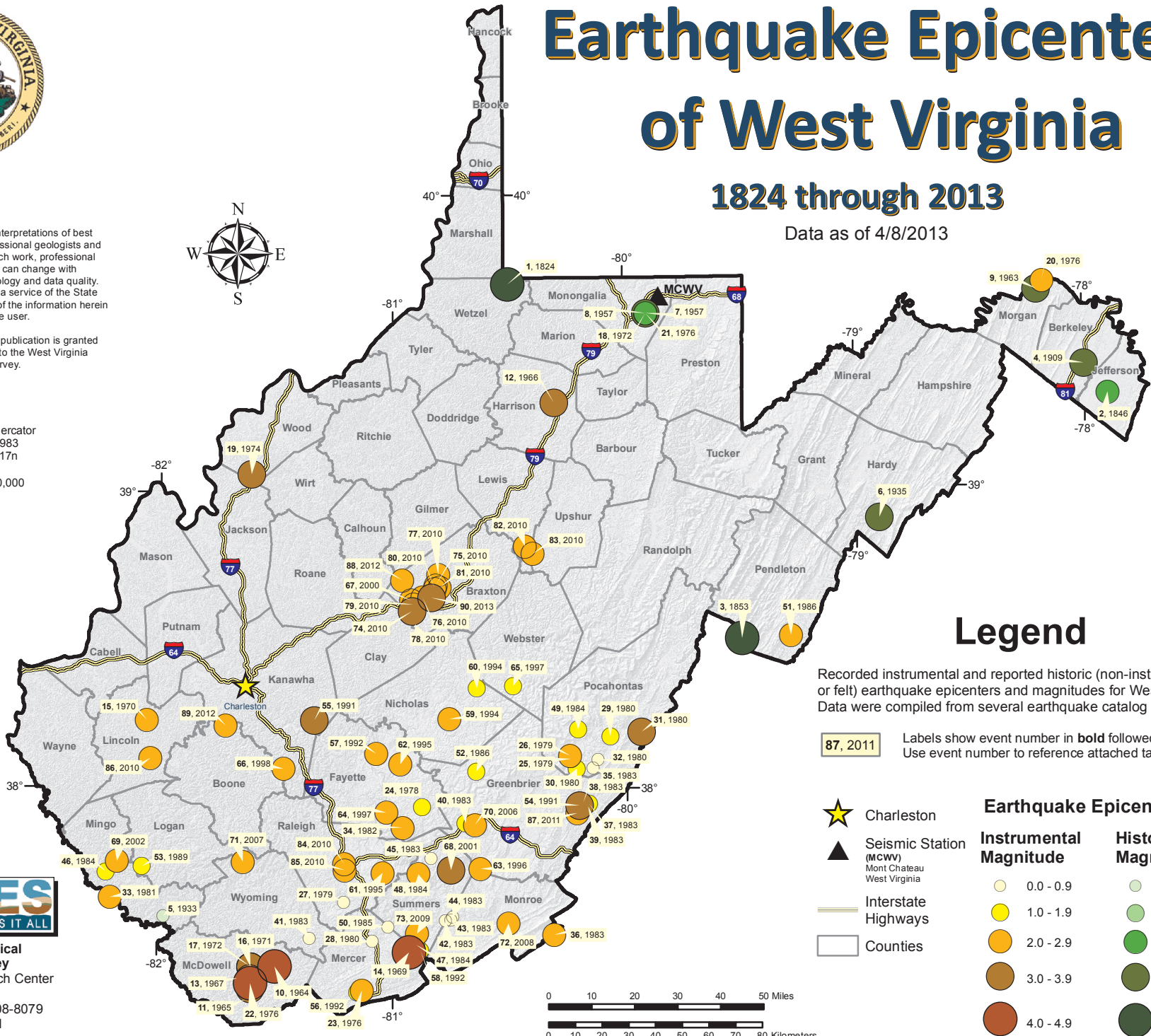
Data as of 4/8/2013

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Map Date: April 8, 2013
 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.

87, 2011 Labels show event number in bold followed by year. Use event number to reference attached table.

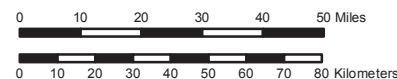
- Charleston
- Seismic Station (MCWV)
Mont Chateau
West Virginia
- Interstate
Highways
- Counties

Earthquake Epicenters

Instrumental Magnitude	Historic Magnitude



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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
90	20130331140	Braxton	2013	3	31	14	1	23.98	38.645	-80.833	3.4	Instrumental	5.0	Mw	8.1	USGS NEIC	CERI/LDEO

Data as of April 8, 2013. 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)

