South Carolina Seismic Network Bulletin

Volume XII
2002

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SPONSORS:

Department of Energy/Westinghouse Savannah River Company
United States Geological Survey

SEPTEMBER 2003

PREFACE

Volume XII of the South Carolina Seismic Network (SCSN) Bulletin describes the seismicity in the state in 2002. In over two decades of instrumental recording, an earthquake was recorded off the coast of South Carolina for the first time. In fact, the two largest earthquakes recorded in 2002 occurred ~ 25 km offshore from Seabrook Island. These included the largest event in the year with a magnitude M_L 4.3 earthquake on November 11, 2002. Seismicity continued near Monticello Reservoir where 115 events were located. Moderate seismicity was recorded in the Middleton Place Summerville Seismic Zone (MPSSZ) where a total of 17 events were located. Two events were located near Lakes Jocassee and Keowee. One event was located on the premises of Savannah River Site near the western border of the state.

The South Carolina Seismic Network website was established in 1998. It lists historical and instrumental seismicity in South Carolina and location of the current seismicity. The website address is http://scsn.seis.sc.edu.

In 2002, the SCSN continued routine digital recording of seismicity in the state. The data from Coastal Plain stations surrounding MPSSZ are recorded in an event triggered format at Charleston Southern University (CSU) near Summerville, and accessed via the Internet from the University of South Carolina (USC), where other digital data are recorded.

Successful operation of the SCSN is due in part to the support from the U.S. Geological Survey and Westinghouse Savannah River Company. This bulletin is the result of the efforts of the staff and students at USC.

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I. INTRODUCTION

Volume XII of the South Carolina Seismic Network (SCSN) Bulletin covers the period from January to December, 2002. This issue presents the details concerning the observed seismicity and network operation in the state for that period.

In over two decades of instrumental recording, an earthquake was recorded off the coast of South Carolina for the first time. In fact, the two largest earthquakes recorded in 2002 occurred ~ 25 km offshore from Seabrook Island. These included a M_L 3.8 event on November 8, 2002, and the largest event in the year, a magnitude M_L 4.3 on November 11, 2002. The recorded seismicity in the Middleton Place Summerville Seismic Zone (MPSSZ) was lower than in 2001, and was highlighted by a widely felt M_L 3.0 event on July 26, 2002.

Monticello Reservoir continued to be active in 2002, 115 events were located near the reservoir area, with the largest magnitude a M_L 2.3 on April 14, 2002. Low level seismicity continued to be observed near Lakes Jocassee and Keowee with the largest M_L 2.3 event on February 13, 2002. Excluding the two events offshore from Seabrook Island, another felt event of M_L 2.2 occurred on March 6, 2002. It was located near the western border of South Carolina.

In 1987 the SCSN began digital recording of seismicity in the state, but only for the stations telemetered to USC. The digitizing of data from Coastal Plain stations surrounding MPSSZ started in 1995 and are recorded in an event triggered format at Charleston Southern University (CSU) near Summerville, and accessed via the Internet from the University of South Carolina (USC), where other digital data are recorded in triggered mode and continuously.

The bulletin is arranged in four sections. The next section deals with the network operations, current methods of data acquisition, retrieval and processing. An analysis of the seismicity of the state in 2002 is presented in the third section. Future plans of the SCSN, (http://scsn.seis.sc.edu), are presented in the last section.

II. SOUTH CAROLINA SEISMIC NETWORK OPERATION - 2002

II.1. Station Locations

In 2002, the SCSN consisted of twenty stations. These included four stations in the Lake Jocassee, three stations in the "main net", eight stations in the Coastal Plain network and five stations in the Monticello Reservoir sub-network. The present configuration of the seismic network is shown in Figure 1. The stations of the "main" SCSN (JSC, LHS) cover the area in the lower Piedmont and (COW) covers the upper Coastal Plain. Data from these stations are telemetered and recorded at the USC. The Coastal Plain Seismic Network consists of three bore-hole stations, CSB, RGR, and HBF, and six surface stations, CSU, DRC, MGS, SVS, TWB and WAS. These cover the Middleton Place Summerville Seismic Zone in the meizoseismal area of the 1886 Charleston earthquake (Figure 2). Data from these stations are telemetered and recorded at Charleston Southern University (Figure 14).

The configuration of stations in the vicinity of Monticello Reservoir area is shown in Figure 3. The stations of the Lake Jocassee network are located so as to monitor seismicity around Lakes Jocassee and Bad Creek Reservoir. Data from the five station Monticello Reservoir sub-network (Figure 3) are telemetered and recorded at the USC Seismic Laboratory in Columbia. Data from BG3, SMT, CCK and JVW (Figure 4) are telemetered and recorded at the USC.

II.2. Recording Facilities

Digital data are recorded continuously at USC on PC-based system at 50 samples/second. To facilitate easier storage of the continuous data being recorded at USC, a DAT tape drive was installed on our PCSUDS analysis workstation. This tape drive can store approximately 2 gigabytes of data on a single tape. Accumulating data at the rate of 288 Mb per day, the new tape drive has given us the ability to mass dump data each morning from hard disk to tape. A backlog of 60 days data is maintained at the present time.

At USC data are also recorded on three Helicorders, of these one is used to record data from stations in the Coastal Plain, one is devoted to a Piedmont station, and one is dedicated to data from the induced seismicity sub-networks. Data from the Coastal Plain stations are recorded on the three Helicorders at CSU.

In October of 1998, the USGS initiated a new phase of cooperative seismic monitoring. The recording operations of both the Charleston Southern University and USC facilities were augmented with the installation of "Earthworm". Earthworm is a PC-based, event triggered and short term continuous data recording system that utilized the Internet for data transfer and sharing. This allows data from the SCSN to be shared with networks at CERI (Memphis) and the USGS in Golden, Colorado as part of the Advanced National Seismic System (ANSS) for the Central and Southeast US region. It also gives the main data analysis group at USC the ability to import data from stations throughout the southeast, thereby enhancing our event detection and location capabilities.

II.3. Operational Status

Yearly operational status of the stations of the main SCSN in 2002 is shown in Figure 5. Most of the stations were completely operational throughout the year. The downtime ranges from 0% to ~10%.

The yearly operational status of the sub-nets at Lakes Jocassee and Monticello Reservoirs are shown in Figure 6. Except for Station SMT which was inoperational throughout the year, all other stations in the Lake Jocassee sub-net were completely operational during 2002. The downtime of stations in the Monticello sub-net ranged from 0% to 0.27%.

II.4. Data Analyses

Data are analyzed at the USC's seismological laboratory. Identification of blasting activity, documentation of regional and teleseismic events, location and analyses of local

earthquakes form a part of the routine analyses. The present configuration of triggering operators consists of six separate triggering parameters encompassing the several sub-networks and the main network and some combinations. This increased triggering capability has allowed for the recording and locating of events of $M_L \leq 1.0$. Examples of the system digital playbacks are shown in Figures 7a to 7d. These include M_L 2.7 event in MPSSZ on January 11, 2002 (Figure 7a), the M_L 2.2 Lake Jocassee event on February 13, 2002 (Figure 7b), the M_L 1.5 Monticello event on March 31, 2002 (Figure 7c) and a regional M_w 5.3 New York event on April 20, 2002 (Figure 7d).

The ability to store data on 8 mm digital tapes is an added advantage of using a digital recording system. The data are processed using the Seismic Analyses Code (SAC) program on the Sun workstations. Hypocentral locations are obtained using HYPO71 and HYPOELLIPSE programs with an appropriate velocity model for each region. Format of the HYPO71 output is given in Table 1. Event magnitudes are determined using the following relation:

$$M_L = -1.83 + 2.04 \log D$$

where D is the signal duration in seconds.

Detailed analyses of recorded seismic activity include spatial correlations with seismogenic structures, mapped or inferred from subsurface data. The results of seismic monitoring in the state during 2002 is presented in the next section.

III. SOUTH CAROLINA SEISMICITY: 2002

Four felt earthquakes occurred in South Carolina during 2002 of which two occurred offshore Seabrook Island, one on the premises of Savannah River Site, and one in MPSSZ. The largest, M_L 4.3 event occurred offshore of Seabrook Island on November 11, 2002. Detailed locations of the earthquakes is shown in Figure 7e. The digital playback of this event as recorded in SCSN is shown in Figure 7f.

Aside from these, activity continued in the MPSSZ (17 located events) and near Lakes Keowee and Jocassee (2 located events). 115 events with magnitudes less than 2.5 occurred near the Monticello Reservoir (Figures 3 and 8). Seismicity in the different regions is discussed below, first tectonic seismicity is presented (Sections III.1 and III.2) and then the induced seismicity (Section III.3).

III.1. Middleton Place Summerville Seismic Zone

The MPSSZ continued to be the most active (non RIS) seismic source zone in the Coastal Plain in 2002 (Figures 2 and 9). Seventeen events were located with magnitudes ranging between M_L = 0.7 and M_L = 3.0 at depths shallower than 12 km (Table 2, Figure 2). The seismicity in 2002 was lower than in 2001. Interestingly 6 of the 17 events recorded in 2002 occurred to the north of the main cluster in MPSSZ (near Station MGS). Those included the three largest events in 2002, including the M 3.0 event on July 26. The depths of the three largest events ranged between 8.5 and 10.8 km. Temporally, the seismicity was distributed throughout the year (Figure 10).

III.2. Other Tectonic Activity

In 2002, several earthquakes were observed outside regions of RIS and MPSSZ. In over two decades of instrumental recording, an earthquake was recorded off the coast of South Carolina for the first time. In fact, the two largest earthquakes recorded in 2002 occurred ~ 25 km offshore from Seabrook Island, the M_L 3.8 event on November 8, 2002 and the M_L 4.3 event on November 11, 2002 (Figure 7e). These events were felt in Seabrook and neighboring islands. They were well recorded on SCSN (Figure 7f) and on neighboring networks. Comparison with offshore geophysical data suggest that these events lie along a NW – SE trend, but are not associated with the offshore extension of the Ashley River fault. Rather they seem to lie along the landward projection of the Blake Spur Fracture Zone. These events are being studied in detail.

A series of events occurred on the premises of the Savannah River Plant beginning October 8, 2001. The ultimate event in this series occurred on March 6, 2002, with a M_L 2.2

and was felt. These events were studied by Don Stevenson of the Westinghouse Savannah River Site and a manuscript has been submitted to Seismological Research Letters documenting the studies. Locations of the entire series of events preceding up to this event as obtained from Don Stevenson are presented in Table 6. On publication this paper can be seen on the SCSN website at http://scsn.seis.sc.edu.

III.3. Reservoir Induced Seismicity

III.3.1. Monticello Reservoir

One hundred-fifteen earthquakes were located near Monticello Reservoir area during 2002 (Table 5). They all had a $M_L < 2.5$. One hundred-five events were located within the reservoir, between stations MR10 and MR01 (Figure 3) and five events were located in the area between Monticello Reservoir and the Broad River. Except for one event, all depths were shallower than 3 km. The monthly distribution of the earthquakes around Monticello Reservoir is given in Figure 11. There was a marked increase in the number of earthquakes in the months of March and April.

III.3.2. Lake Jocassee

Seismicity at lake Jocassee continued at a low level during 2002 (Table 6). One of the events recorded by the Jocassee sub-network was on February 18, 2002 of M_L 0.7 in the vicinity of Lake Jocassee (Figure 4) and at a depth of 3.1 km (Table 6). The monthly distribution of earthquakes recorded and located using the Lake Jocassee sub-network is given in Figure 12. The earthquakes occurred in the first and third quarters of the year.

III.3.3. Lake Keowee

In 2002, one earthquake was recorded around Lake Keowee (Figure 4). The event was a M_L 2.2 on September 29, 2002 and was not felt. It had a focal depth of 2.42 km.

III.3.4. Bad Creek

No events were located near Bad Creek Reservoir in 2002 (Figure 4).

IV. RECORDING FACILITIES AND DIGITAL UPGRADE AT THE SCSN

In 2002 we implemented several changes in the recording facilitiy at USC. The location of stations of the SCSN are shown in Figure 1. Data from stations of the Monticello Reservoir network are now telemetered to the USC via dedicated phone line after the loss of the Parr radio tower in early 2002. Data from the Lake Jocassee network continues to be sent by a dedicated telephone line to the USC. Data from the stations in the MPSSZ are telemetered and recorded at CSU (Figure 14). A station SFQ, installed to monitor the blasting activities at Sandy Flats, was deactivated in June of 2002. We continue to record analog data on Helicorders. The instrument acquisition and deployment history is given in earlier bulletins of the SCSN. Analog data are recorded on three Helicorders at CSU.

IV.1. Future Plans

We hope to bring the bore hole stations at TWB on-line in 2003.

V. SCSN Web Page

We have established a SCSN Web Page. It can be accessed at http://scsn.seis.sc.edu. The historical and instrumental data are displayed on the web site. We also maintain an updated list, and locations of current seismicity.

TABLE 1

HYPO71/HYPOELLIPSE FORMAT

Column	1	Date
Column	2	Origin time (UTC) h.m.sec.
Column	3	Latitude (N) degrees, min.
Column	4	Longitude (W) degrees, min.
Column	5	Depth (km)
Column	6	Local duration magnitude.
Column	7	No. of station readings used to locate event. P and S arrivals from same stations are regarded as 2 readings.
Column	8	Largest azimuthal separation in degrees between stations.
Column	9	Epicentral distance in km to nearest station.
Column	10	Root mean square error of time residuals in sec. RMS = Ri2/No, where Ri is the time residual for the ith station.
Column	11	Standard error of the epicenter in km*.
Column	12	Standard error of the focal depth in km*
Column	13	Quality of the epicentral location.

* Statistical interpretation of standard errors involves assumptions which may not be met in earthquake locations. Therefore standard errors may not represent actual error limits.

Note: If ERH or ERZ is blank, this means that it cannot be computed, because of insufficient data.

Table 2

Locations of events in the MPSSZ during 2002

Date	Orgin	Lat N	Long W	Depth	Mag	No	Gap	Dmin	RMS	ERH	ERZ	Q
20020107	17 0912.19	32-55.89	80-08.98	5.80	0.7	10	117	4	0.08	0.3	0.6	A
20020111	13 30 22.06	32-56.20	80-08.79	6.13	2.7	16	121	4	0.07	0.3	0.5	A
20020111	13 53 58.89	32-56.27	80-08.96	6.74	1.9	10	124	4	0.05	0.4	0.7	A
20020122	23 11 45.43	32-56.12	80-08.73	6.73	1.1	10	123	4	0.03	0.3	0.7	A
20020128	07 49 06.78	33-01.08	80-09.40	4.71	2.4	18	89	9	0.09	0.2	1.1	A
20020202	18 29 03.89	33-00.81	80-09.54	7.71	2.2	12	139	9	0.08	0.4	0.7	A
20020313	20 57 26.69	32-55.16	80-09.18	7.64	2.2	12	222	4	0.23	0.5	0.6	A
20020428	00 02 11.52	32-56.12	80-09.16	6.94	2.3	10	121	4	0.09	0.4	0.7	A
20020530	08 23 13.02	32-57.81	80-12.31	10.11	1.9	12	161	4	0.05	0.5	0.5	A
20020707	02 40 51.05	33-02.58	80-08.01	10.83	2.9	12	117	8	0.05	0.5	0.9	A
20020716	02 08 39.45	32-56.27	80-08.27	6.67	2.8	20	134	4	0.09	0.3	0.5	A
20020716	02 20 12.04	32-56.29	80-08.25	7.15	2.3	16	135	4	0.08	0.3	0.5	A
20020726	21 07 03.01	33-03.57	80-11.67	10.01	3.0	18	128	11	0.07	0.2	0.5	A
20020921	02 57 28.64	32-55.33	80-09.78	8.23	2.0	12	108	3	0.13	0.4	0.6	A
20021001	02 03 07.79	32-55.48	80-10.17	5.74	1.1	10	110	3	0.06	0.3	0.6	A
20021129	06 42 04.39	33-02.95	80-10.64	9.09	2.5	12	115	10	0.07	0.3	0.7	A
20021216	05 32 30.81	33-02.95	80-11.04	8.46	2.8	14	161	6	0.05	0.3	0.8	A

Table 3

Locations of events outside MPSSZ, Monticello Reservoir, Lakes Jocassee and Keowee during 2002

Date	Orgin	Lat N	Long W	Depth	Mag	No	Gap	Dmin	RMS	ERH	ERZ	Q
20020306	00 12 32.83	33-21.62	81-35.27	9.23	2.2	12	262	98	0.11	0.7	1.0	A
20021108	13 29 03.18	32-25.27	79-56.97	3.96	3.8	17	337	56	0.14	1.7	0.9	B
20021111	23 39 29.72	32-24.26	79-56.18	2.42	4.3	20	301	58	0.21	2.5	1.6	B

Table 4

Locations of events at Jocassee during 2002

Date	Orgin	Lat N	Long W	Depth	Mag	No	Gap	Dmin	RMS	ERH	ERZ	Q
20020218	02 51 53.63	34-57.10	82-56.41	3.10	0.7	6	301	5	0.03	1.1	1.7	B
20020929	05 19 45.97	34-34.04	82-55.41	2.42	2.2	6	315	6	0.05	2.3	1.5	C

Table 5

Locations of events at Motnicello Reservoir during 2002

Date	Orgin	Lat N	Long W	Depth	Mag	No	Gap	Dmin	RMS	ERH	ERZ	Q
20020220	05 11 46.17	34-20.26	81-20.15	0.87	0.0	8	150	2	0.06	0.6	0.6	A
20020225	16 23 48.78	34-19.47	81-21.27	0.70	0.2	10	224	2	0.07	0.5	0.7	A
20020319	12 25 57.25	34-19.80	81-19.01	0.93	0.4	10	097	2	0.04	0.2	0.9	A
20020320	03 08 42.57	34-19.89	81-18.65	1.71	0.6	12	105	1	0.04	0.4	0.6	A
20020323	04 41 06.57	34-19.84	81-18.94	0.67	0.5	12	096	2	0.04	0.3	0.5	A
20020323	05 01 11.70	34-19.80	81-19.01	1.21	0.6	8	154	2	0.01	0.4	0.8	A
20020323	06 44 19.38	34-19.76	81-19.02	0.58	0.6	12	099	2	0.03	0.3	0.9	A
20020323	07 10 28.81	34-20.10	81-18.37	1.65	0.8	10	133	1	0.04	0.7	0.6	A
20020323	08 20 59.27	34-19.96	81-18.68	1.35	0.6	12	109	1	0.06	0.4	0.7	A
20020323	09 15 01.55	34-20.03	81-18.95	0.69	1.6	12	108	2	0.03	0.3	0.6	A
20020323	09 34 14.81	34-20.34	81-18.59	0.70	0.8	10	142	2	0.13	0.3	0.7	A
20020323	09 36 15.64	34-19.90	81-18.86	0.80	0.4	8	146	2	0.03	0.5	1.3	B
20020323	10 06 22.10	34-20.00	81-18.60	1.59	0.7	8	136	1	0.02	0.6	0.6	A
20020323	10 09 02.20	34-19.88	81-18.79	1.19	0.3	12	131	2	0.04	0.3	0.6	A
20020323	10 26 09.23	34-19.85	81-18.95	0.54	0.3	12	097	2	0.02	0.3	0.9	A
20020323	11 07 20.19	34-19.77	81-18.95	1.09	0.5	8	155	2	0.02	0.4	0.8	A
20020323	12 39 34.52	34-20.12	81-18.69	0.72	0.9	8	131	2	0.05	0.5	1.1	B
20020323	14 33 24.75	34-19.85	81-18.83	1.20	0.9	12	099	2	0.04	0.3	0.7	A
20020323	16 09 17.06	34-19.80	81-19.00	0.60	0.3	12	097	2	0.03	0.3	0.9	A
20020323	18 02 20.71	34-19.76	81-18.95	0.69	0.9	12	098	2	0.02	0.3	0.5	A
20020323	22 17 20.19	34-19.87	81-18.87	0.31	1.1	8	150	2	0.01	0.5	1.1	B
20020324	00 24 46.56	34-19.81	81-18.73	1.48	0.5	12	097	2	0.05	0.3	0.6	A
20020324	00 25 24.55	34-19.75	81-18.96	0.70	1.2	12	098	2	0.03	0.3	0.5	A
20020324	00 29 22.56	34-19.78	81-18.78	1.56	0.2	8	153	2	0.03	0.5	1.2	B
20020324	03 44 21.06	34-19.72	81-18.74	1.46	0.9	10	094	2	0.02	0.3	0.7	A
20020324	03 46 13.03	34-19.91	81-18.61	1.64	0.9	12	107	1	0.05	0.4	0.6	A
20020324	07 01 45.06	34-19.83	81-18.82	0.42	0.3	8	149	2	0.05	0.4	1.3	B
20020324	18 05 02.64	34-20.10	81-18.89	1.11	0.7	10	114	2	0.05	0.3	0.8	A
20020325	22 37 07.45	34-19.64	81-19.15	1.25	1.0	8	139	2	0.01	0.5	1.4	B
20020329	00 54 37.85	34-20.08	81-18.88	2.00	1.4	12	113	2	0.05	0.3	0.5	A
20020329	00 58 54.26	34-20.07	81-18.63	0.63	0.2	8	133	1	0.02	0.4	0.6	A
20020329	01 00 00.08	34-19.99	81-18.86	1.30	0.3	8	141	2	0.02	0.4	0.7	A
20020329	01 24 11.49	34-19.94	81-18.93	0.66	0.1	8	145	2	0.02	0.4	0.6	A
20020329	01 33 49.06	34-19.96	81-18.83	1.26	0.8	10	107	2	0.02	0.4	0.9	A
20020329	01 34 25.21	34-19.96	81-18.95	0.82	- 0.1	8	143	2	0.02	0.5	1.3	B
20020329	04 45 12.18	34-20.11	81-18.69	0.67	- 0.6	8	132	1	0.08	0.3	0.7	A
20020329	06 51 54.04	34-20.10	81-18.43	1.60	0.2	8	130	1	0.02	0.6	0.6	A
20020329	07 55 35.96	34-19.83	81-18.91	1.66	0.6	10	096	2	0.07	0.3	0.6	A
20020331	02 10 14.34	34-20.02	81-19.05	0.86	1.0	8	264	2	0.04	0.7	1.9	B
20020331	02 58 23.88	34-19.87	81-18.91	1.02	0.5	8	254	2	0.33	0.6	1.4	B
20020331	03 23 26.04	34-19.94	81-19.00	0.89	0.9	10	157	2	0.04	0.4	1.5	B
20020331	04 03 08.58	34-19.81	81-18.67	0.66	0.6	8	246	1	0.08	1.0	1.6	B
20020331	10 24 55.18	34-19.94	81-19.07	0.95	0.9	10	160	2	0.06	0.4	1.4	B
20020331	13 21 08.20	34-19.94	81-18.98	1.65	1.3	10	157	2	0.03	0.4	0.9	A
20020331	17 14 21.12	34-20.00	81-18.99	2.41	1.6	10	157	2	0.05	0.5	0.7	A
20020401	06 35 46.92	34-20.02	81-18.94	1.06	1.1	10	155	2	0.03	0.5	1.2	B
20020401	07 10 48.94	34-19.97	81-19.94	2.52	1.7	10	156	2	0.06	0.4	0.7	A
20020401	09 51 33.66	34-19.75	81-18.86	0.88	0.6	8	245	2	0.06	0.7	1.7	B

20020402	19 17 56.65	34-20.02	81-19.10	1.75	0.9	10	176	2	0.02	0.5	0.8	A
20020403	17 12 12.78	34-20.14	81-18.94	1.30	1.3	12	115	2	0.04	0.3	0.6	A
20020407	06 57 49.27	34-20.29	81-19.09	1.74	0.6	6	205	2	0.02	0.9	0.9	A
20020407	11 44 21.31	34-20.19	81-18.89	0.86	0.9	10	197	2	0.08	1.0	1.5	B
20020407	11 52 57.19	34-20.57	81-19.10	2.35	0.8	12	131	2	0.07	0.3	0.5	A
20020407	12 26 10.54	34-20.05	81-19.16	2.67	1.3	12	104	2	0.06	0.3	0.5	A
20020407	13 31 09.32	34-19.99	81-19.13	1.33	0.9	10	172	2	0.03	0.5	1.0	A
20020407	16 06 24.64	34-20.43	81-18.87	1.42	0.9	10	222	1	0.04	0.8	0.8	A
20020407	18 19 21.33	34-20.02	81-19.12	1.52	0.9	12	103	2	0.03	0.3	0.6	A
20020407	19 39 49.97	34-20.05	81-19.21	1.81	0.5	10	178	2	0.03	0.5	0.8	A
20020408	02 04 06.87	34-19.99	81-19.22	1.62	1.0	10	171	2	0.07	0.5	0.8	A
20020414	16 49 34.18	34-20.29	81-19.28	2.08	2.3	12	112	2	0.07	0.3	0.5	A
20020414	16 58 51.05	34-19.91	81-19.07	0.82	0.8	10	164	2	0.05	0.6	1.8	B
20020414	20 20 24.35	34-20.23	81-18.99	1.50	1.0	10	199	2	0.03	0.5	0.9	A
20020415	04 20 19.44	34-20.04	81-19.24	2.16	1.5	11	101	2	0.05	0.3	0.6	A
20020415	04 20 38.05	34-20.21	81-19.31	1.65	1.8	12	107	1	0.04	0.3	0.6	A
20020415	04 59 32.71	34-20.34	81-19.27	1.91	1.1	11	115	2	0.03	0.3	0.6	A
20020415	05 15 03.81	34-20.32	81-19.25	1.88	0.4	6	208	2	0.03	0.9	0.8	A
20020415	06 22 27.15	34-20.72	81-18.68	1.81	0.4	6	248	2	0.04	1.0	1.5	A
20020415	09 13 10.80	34-19.59	81-19.28	1.30	0.0	6	175	2	0.01	0.9	1.8	B
20020418	03 37 39.18	34-20.05	81-18.88	0.76	0.6	10	182	2	0.04	0.6	1.7	B
20020418	04 12 15.54	34-20.06	81-18.85	1.17	1.2	12	113	2	0.03	0.3	0.7	A
20020427	10 49 17.22	34-20.18	81-19.19	1.68	0.9	10	193	2	0.04	0.5	0.8	A
20020430	06 12 14.29	34-20.28	81-19.29	1.39	1.0	10	203	1	0.08	0.5	0.8	A
20020502	03 09 07.45	34-20.30	81-19.27	2.12	1.1	10	205	2	0.05	0.5	0.6	A
20020502	22 38 23.92	34-20.43	81-19.39	2.70	0.7	10	114	1	0.04	0.3	0.5	A
20020503	00 17 25.85	34-20.18	81-19.05	0.67	0.9	10	114	2	0.03	0.3	0.7	A
20020504	04 00 06.22	34-20.10	81-18.63	1.13	0.9	12	123	1	0.03	0.3	0.6	A
20020504	04 02 42.95	34-20.13	81-18.55	0.82	0.8	12	128	1	0.04	0.3	0.8	A
20020504	04 05 12.67	34-20.35	81-18.48	0.58	0.6	10	149	1	0.04	0.3	0.7	A
20020504	04 07 54.88	34-20.37	81-18.56	1.06	0.4	8	146	2	0.03	0.5	0.8	A
20020504	04 11 49.74	34-20.19	81-19.34	1.12	0.9	12	105	1	0.06	0.3	0.7	A
20020504	05 56 29.26	34-20.14	81-19.05	1.72	1.1	12	111	2	0.03	0.3	0.6	A
20020521	23 28 42.11	34-20.23	81-18.58	0.63	0.6	10	135	1	0.04	0.3	0.6	A
20020522	01 56 26.68	34-20.29	81-18.65	0.61	0.2	10	136	2	0.05	0.3	0.6	A
20020905	21 45 57.81	34-20.44	81-18.47	2.50	1.2	10	231	1	0.04	0.8	0.6	A
20020907	03 41 00.75	34-19.95	81-18.73	0.67	1.6	10	173	2	0.03	0.8	1.3	B
20020907	04 04 33.89	34-19.80	81-18.74	1.22	0.9	10	156	2	0.03	0.5	1.0	B
20020907	12 59 43.69	34-19.28	81-18.81	1.06	0.9	10	158	2	0.06	0.5	1.2	B
20020907	13 01 17.27	34-19.85	81-18.71	1.40	0.2	8	161	1	0.04	0.5	1.0	B
20020907	13 18 11.82	34-19.92	81-18.72	1.36	0.3	8	169	2	0.04	0.5	1.0	B
20020907	23 20 42.99	34-19.96	81-18.65	1.74	0.9	10	175	1	0.04	0.5	0.7	A
20020908	00 32 40.85	34-19.96	81-18.49	1.83	0.5	10	176	1	0.03	0.5	0.7	A
20020908	03 21 58.52	34-19.85	81-18.74	1.62	1.3	10	161	2	0.03	0.5	0.8	A
20020908	03 43 01.13	34-19.75	81-18.44	1.83	0.1	10	149	1	0.04	0.5	0.7	A
20020908	04 27 30.20	34-19.76	81-18.78	1.11	0.8	10	151	2	0.04	0.5	1.2	B
20020908	04 38 19.75	34-19.78	81-18.71	1.47	0.3	8	153	2	0.03	0.5	1.0	B
20020908	04 39 13.59	34-19.82	81-18.88	1.23	0.2	10	157	2	0.03	0.5	1.1	B
20020909	01 52 26.72	34-20.19	81-18.39	1.13	0.9	10	208	1	0.04	0.6	0.7	A
20020909	04 48 32.72	34-20.48	81-18.24	3.23	0.2	8	244	1	0.07	0.9	0.6	B
20020909	09 16 41.49	34-19.67	81-18.84	1.26	0.9	10	142	2	0.05	0.5	1.1	B
20020909	20 14 38.98	34-20.09	81-18.51	2.89	1.0	10	192	1	0.05	0.7	0.7	A
20020910	13 02 14.17	34-19.84	81-18.57	1.66	0.9	10	161	1	0.03	0.5	0.8	A
20020913	04 00 28.48	34-20.16	81-18.43	1.37	0.9	10	203	1	0.02	0.5	0.7	A
20020914	23 38 12.87	34-20.03	81-18.75	2.16	0.8	8	181	2	0.03	0.5	0.7	A

20020919	14 53 31.43	34-20.37	81-20.58	1.72	1.3	10	287	1	0.05	0.5	0.5	A
20020920	06 18 04.09	34-19.70	81-21.38	2.31	1.8	10	260	2	0.05	0.5	0.7	A
20021113	02 33 33.45	34-20.13	81-17.67	1.44	1.1	5	318	0	0.00	3.2	1.2	C
20021113	03 16 31.20	34-20.49	81-16.94	1.63	0.6	6	295	2	0.06	3.4	3.2	C
20021115	09 01 40.11	34-19.69	81-18.58	1.26	0.6	8	151	1	0.02	0.4	0.7	A
20021115	09 06 39.55	34-19.77	81-18.51	1.34	0.8	8	146	1	0.02	0.5	0.7	A
20021123	01 08 31.32	34-19.59	81-20.42	0.90	0.5	10	228	1	0.05	0.6	0.7	A
20021123	05 16 31.78	34-19.78	81-18.30	0.88	0.7	10	128	1	0.03	0.4	0.7	A
20021123	06 50 14.49	34-19.81	81-18.32	1.22	0.4	10	128	1	0.04	0.4	0.6	A
20021125	12 03 18.49	34-20.11	81-18.27	1.46	0.9	10	140	1	0.06	0.4	0.5	A
20021125	12 40 15.63	34-19.96	81-18.40	0.55	0.9	8	135	1	0.03	0.6	0.8	A
20021207	02 59 58.83	34-19.97	81-19.04	1.47	0.9	10	129	2	0.03	0.5	0.7	A

Table 6 (Adapted from Don Stevenson)

Locations of events at Savannah River Site during October 2001 – March 2002

Date	Orgin	Lat (°N)	Long (°W)	Depth	Mag	No	Gap	RMS	ERH	ERZ	Q
20011008	002301.12	33.3240	81.6650	3.90	2.6	10	136	0.04	0.5	0.8	B
20011008	025607.71	33.3193	81.6733	4.19	1.0	10	96	0.04	0.5	0.8	A
20011008	085351.08	33.3317	81.6762	4.15	1.4	11	202	0.06	0.5	0.5	B
20011014	060508.53	33.3467	81.6627	3.14	0.7	6	218	0.02	0.8	1.0	B
20011015	221806.60	33.3475	81.6938	4.67	0.8	13	225	0.08	0.9	0.5	B
20011217	334048.88	33.3283	81.6745	4.13	1.1	11	190	0.03	0.4	0.4	A
20011227	224504.59	33.3310	81.6652	3.76	0.1	10	172	0.06	0.4	0.5	A
20020306	000031.08	33.3313	81.6792	4.61	1.4	12	203	0.08	0.5	0.4	B

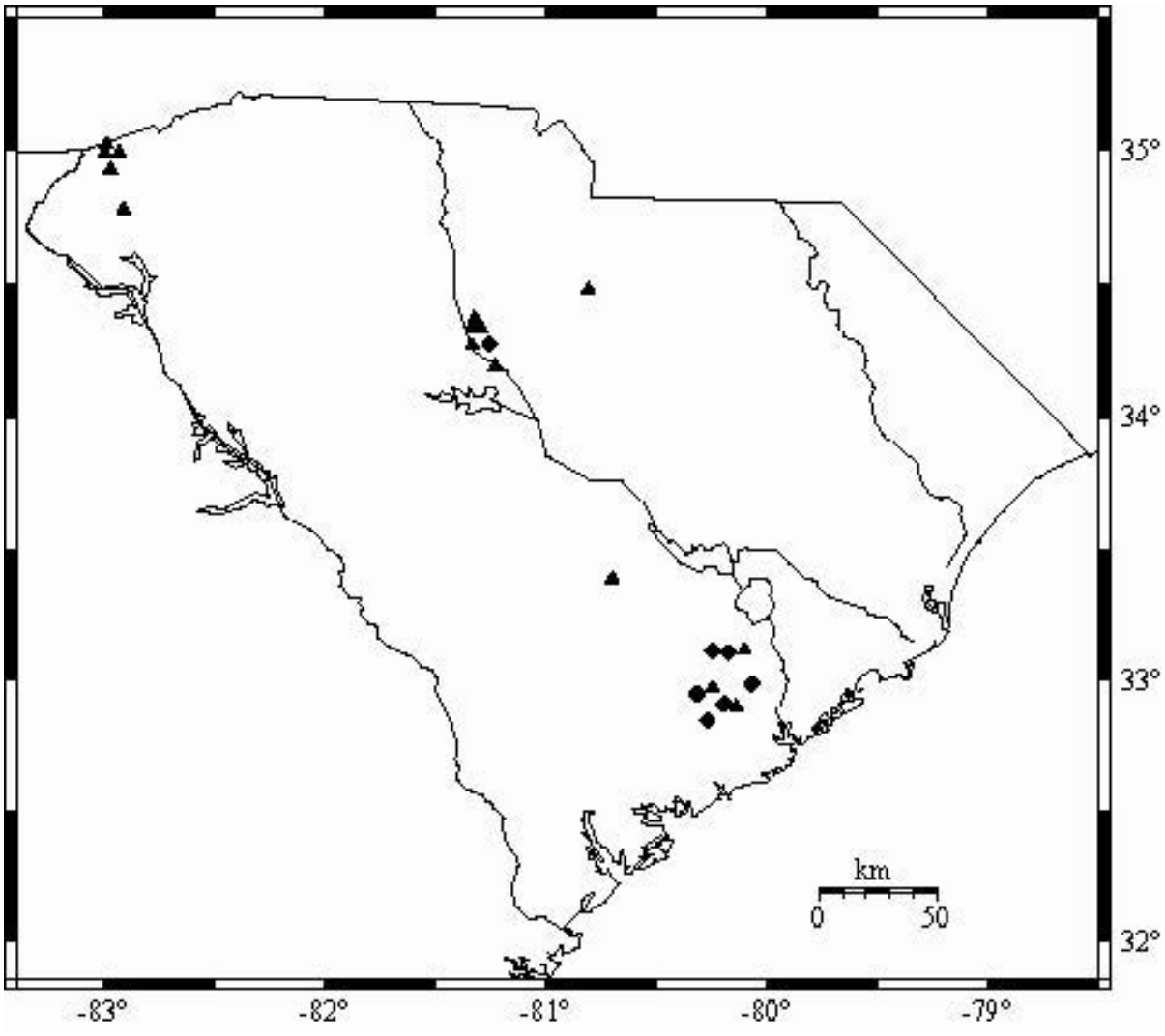


Figure 1: Distribution of stations/subnets of the South Carolina Seismic Network during 2002. Triangles (▲) represent single component stations while diamonds (♦) represent three component stations.

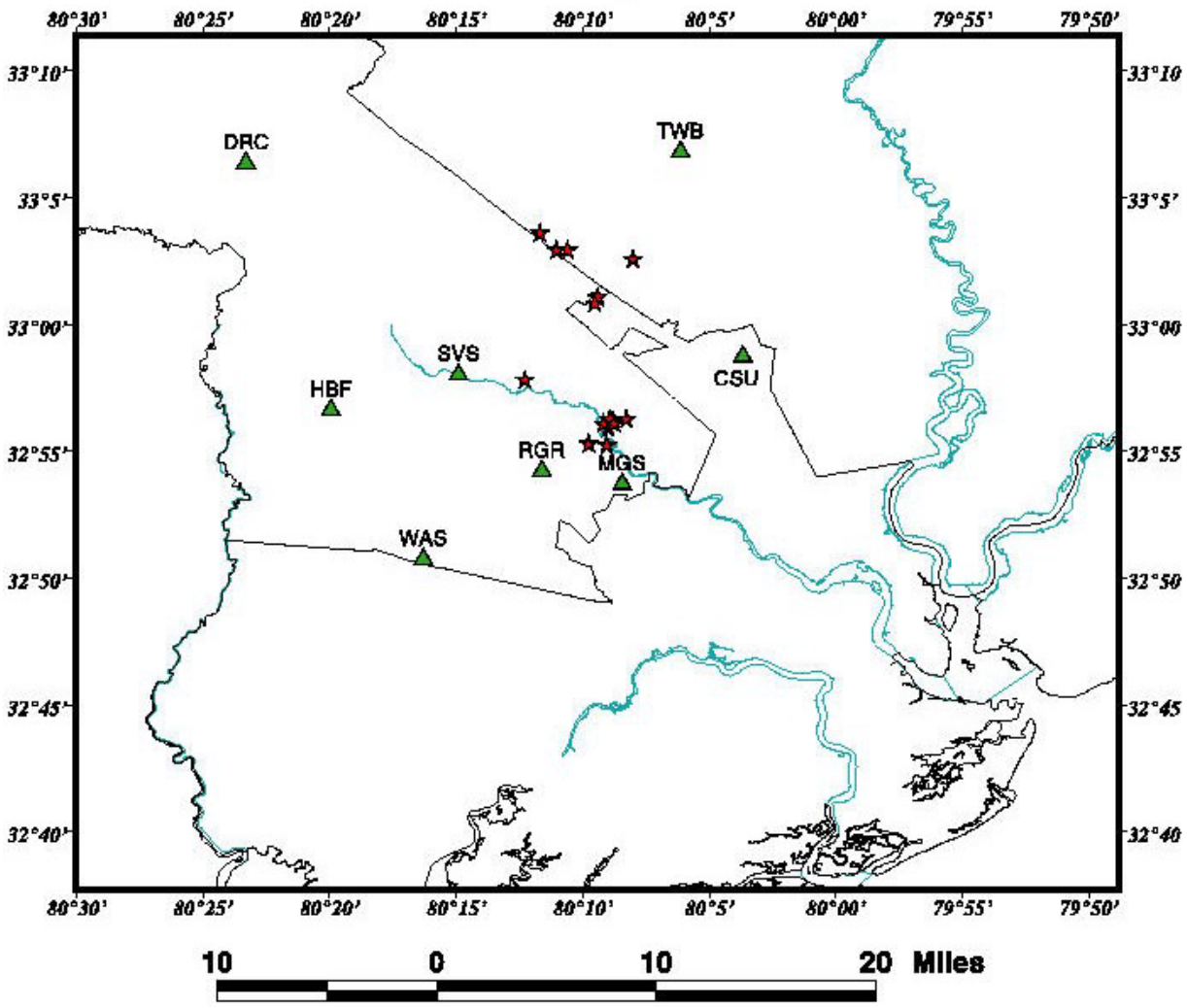


Figure 2: All earthquakes located in the MPSSZ during 2002 (*). Solid green triangles represent station locations of the SCSN in the Coastal Plain. Detailed locations of the two earthquakes off Seabrook Island are shown on Figure 7e.

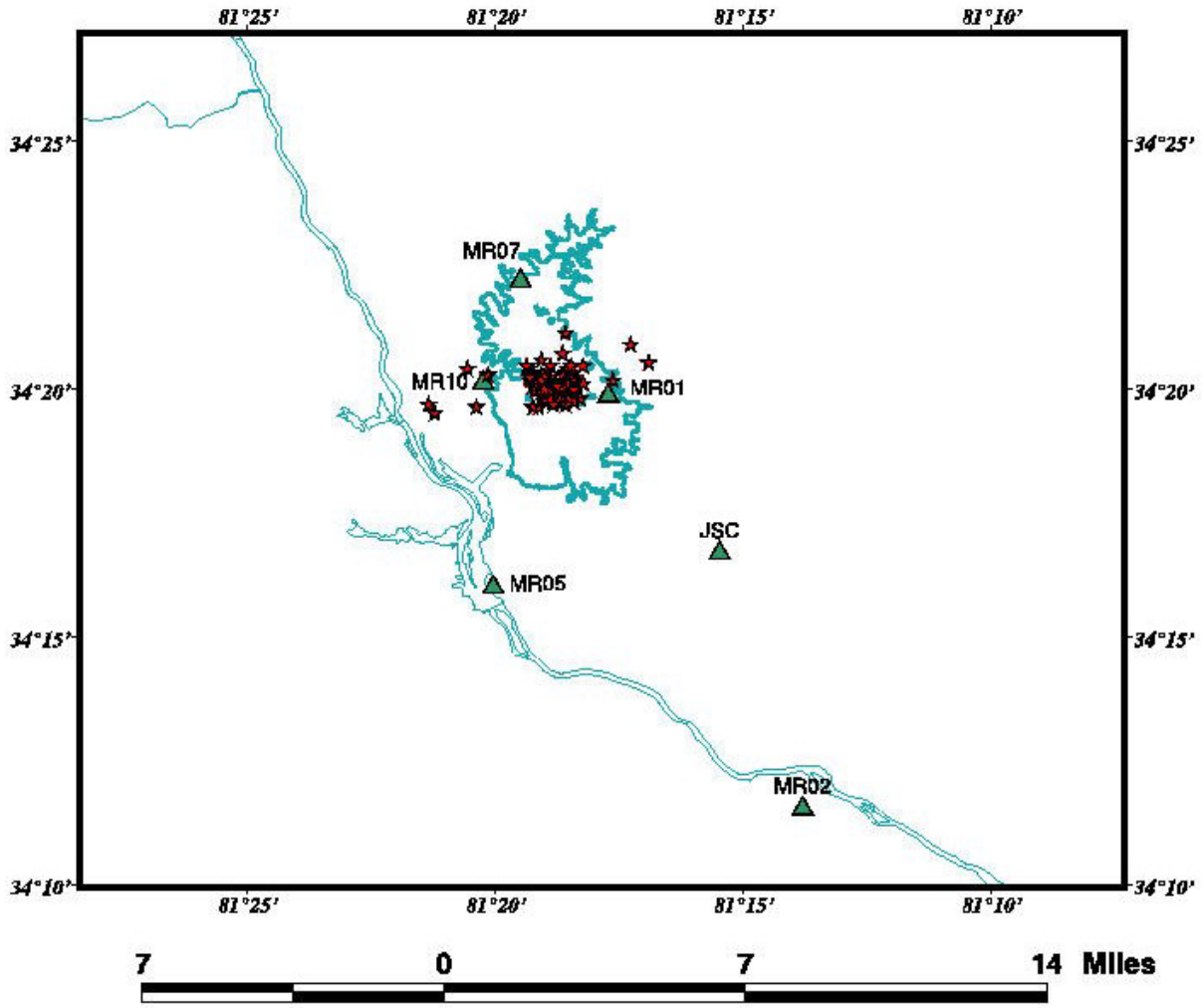


Figure 3: All events located near the Monticello reservoir during 2002 (*). Solid green triangles represent station locations of the Monticello Reservoir subnetwork.

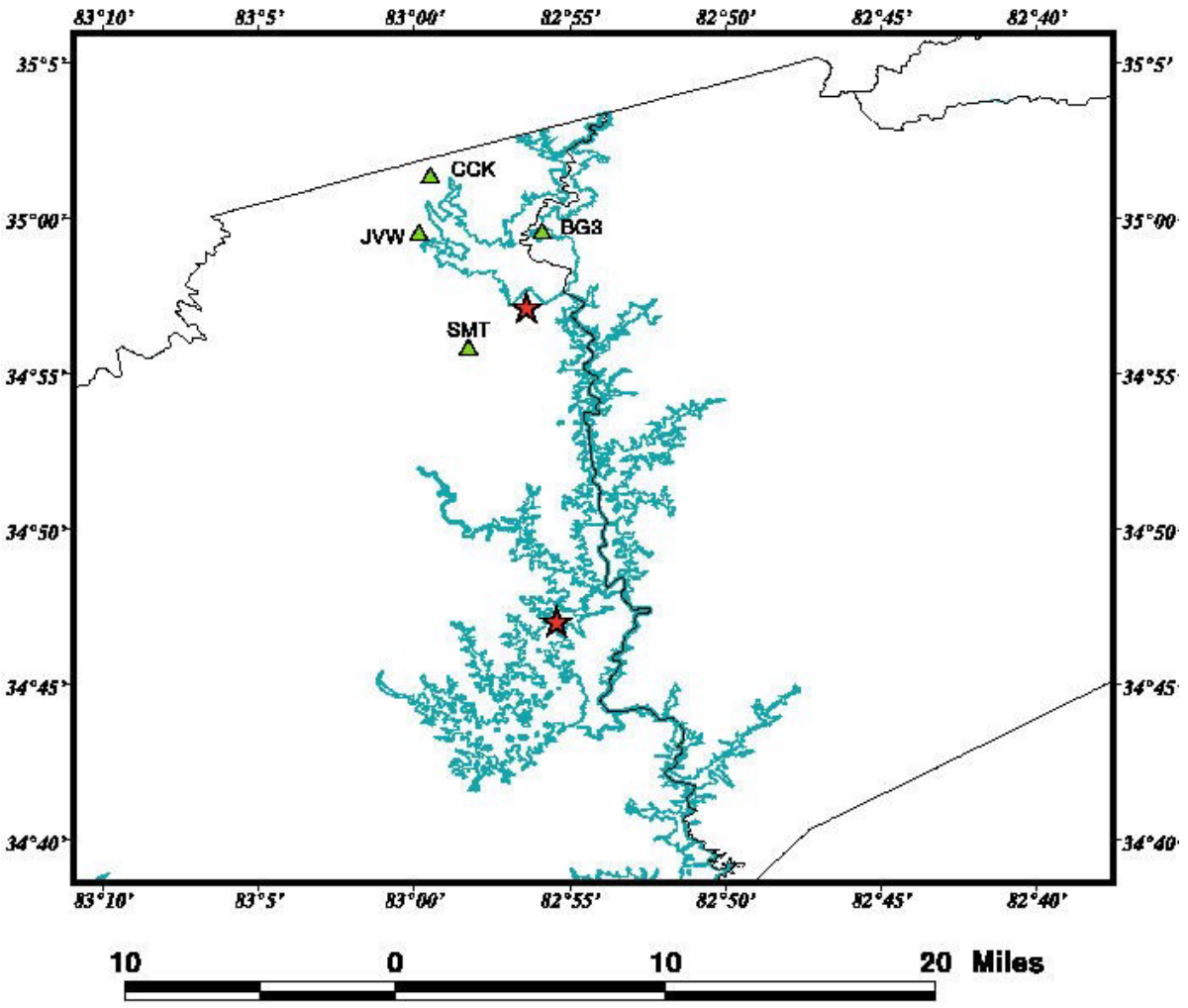


Figure 4: All earthquakes located near lakes Jocassee and Keowee during 2002 (*). Solid green triangles represent the station locations of the Lake Jocassee subnetwork.

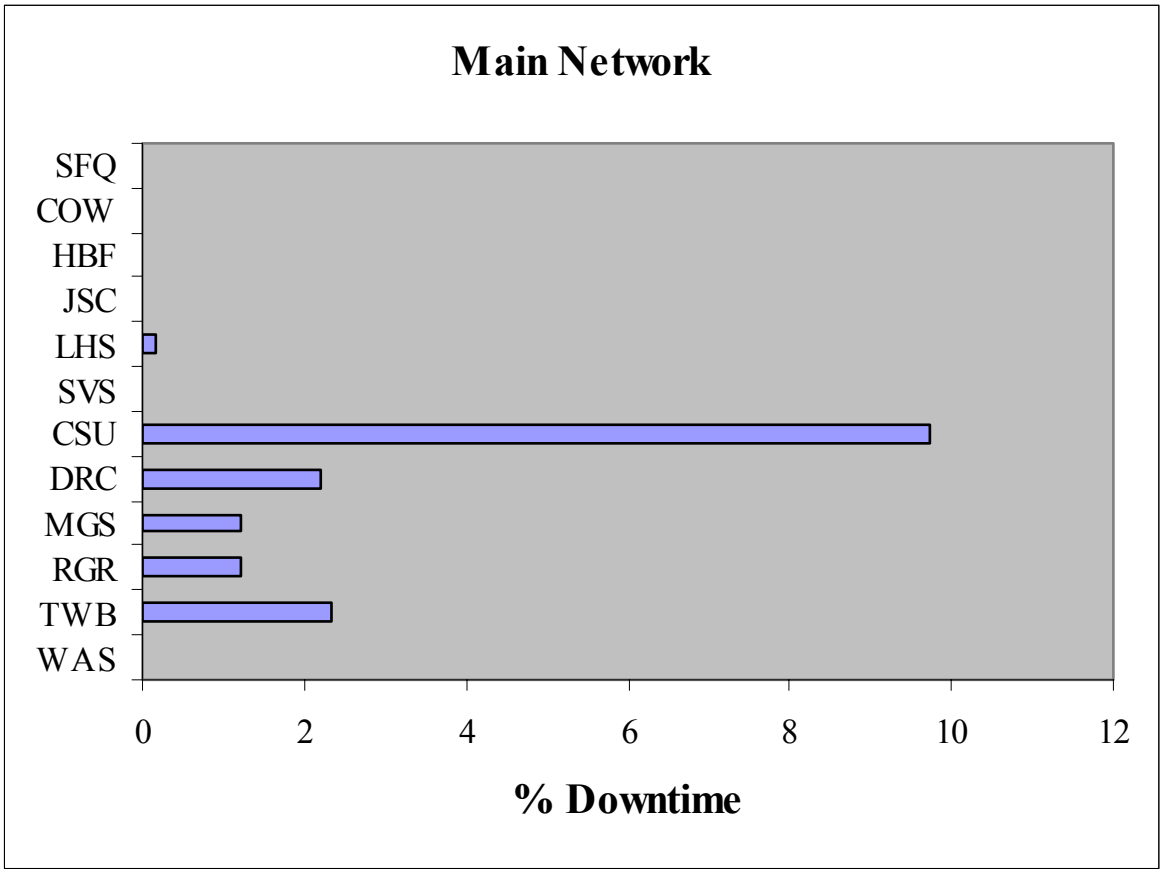
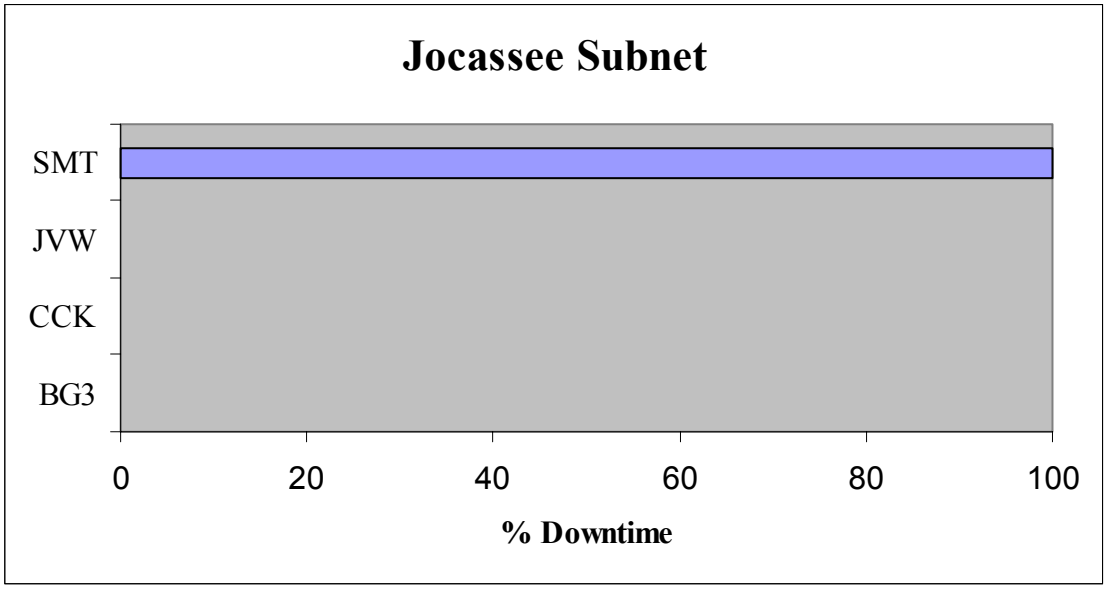


Figure 5: Operational status of the main network of the SCSN during 2002.



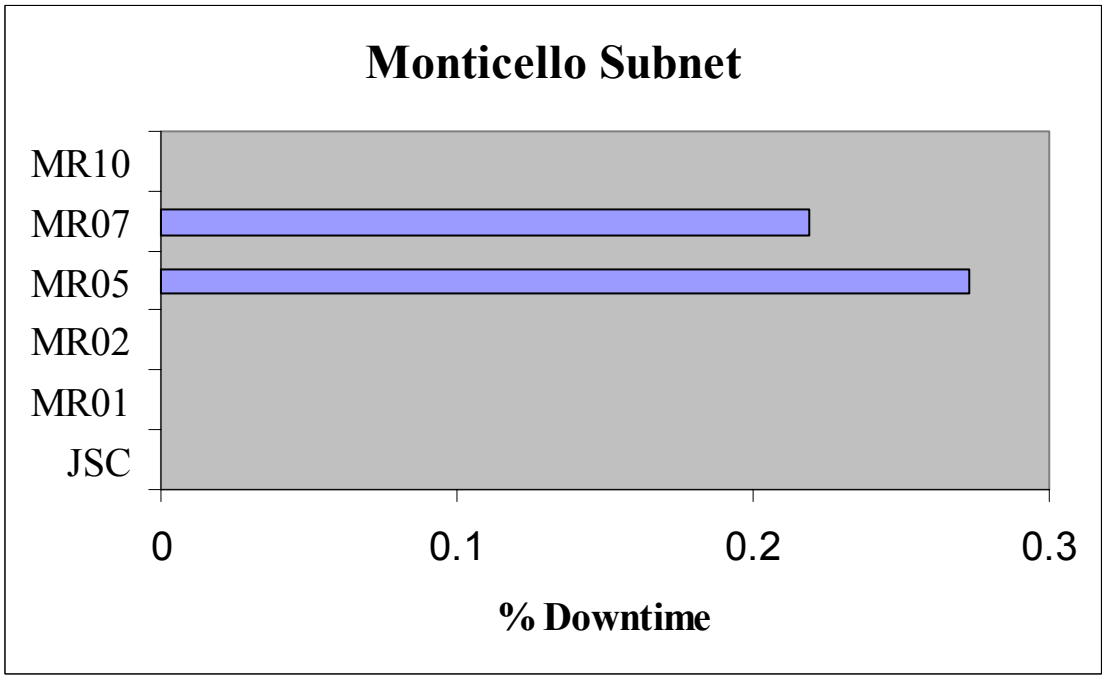


Figure 6: Yearly operational status of the Lake Jocassee and Monticello Reservoir subnetworks during 2002.

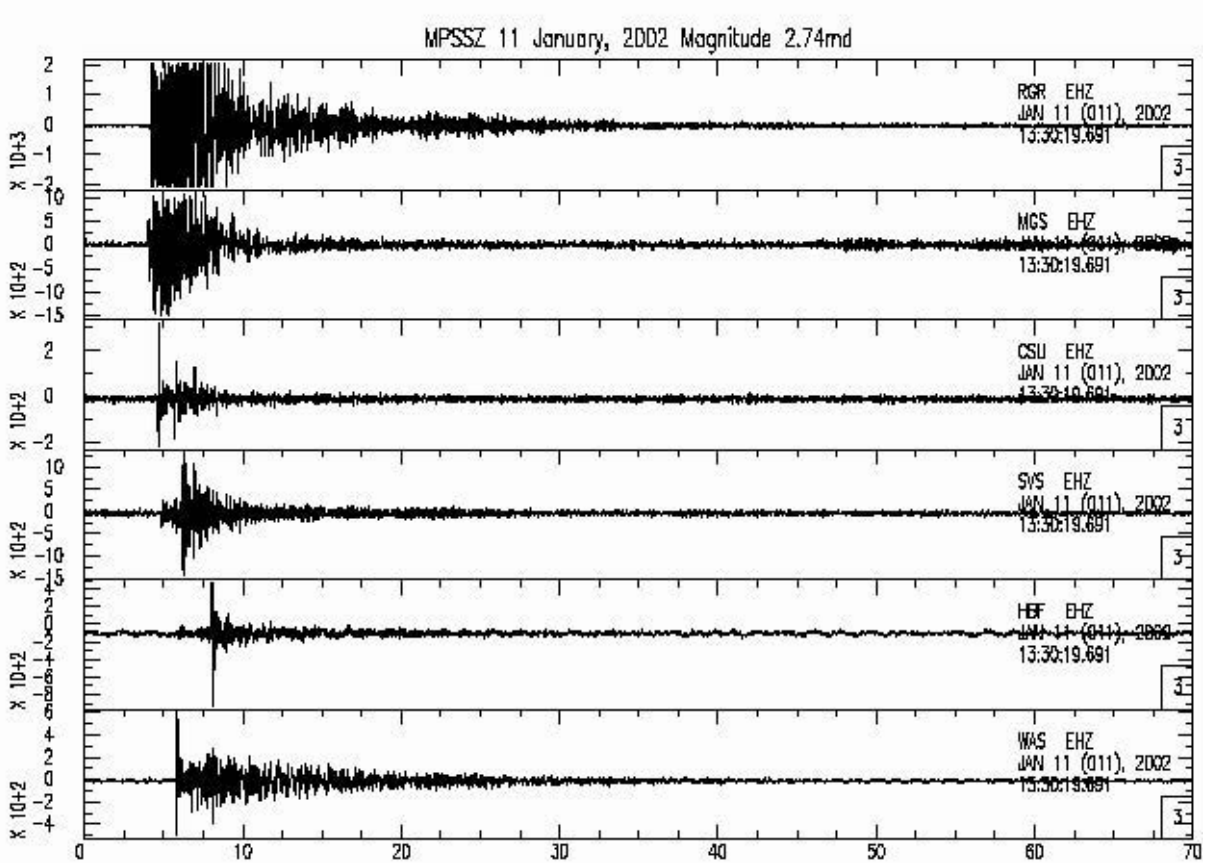


Figure 7a: Digital playback of a M_D 2.7 earthquake in the MPSSZ during 2002.

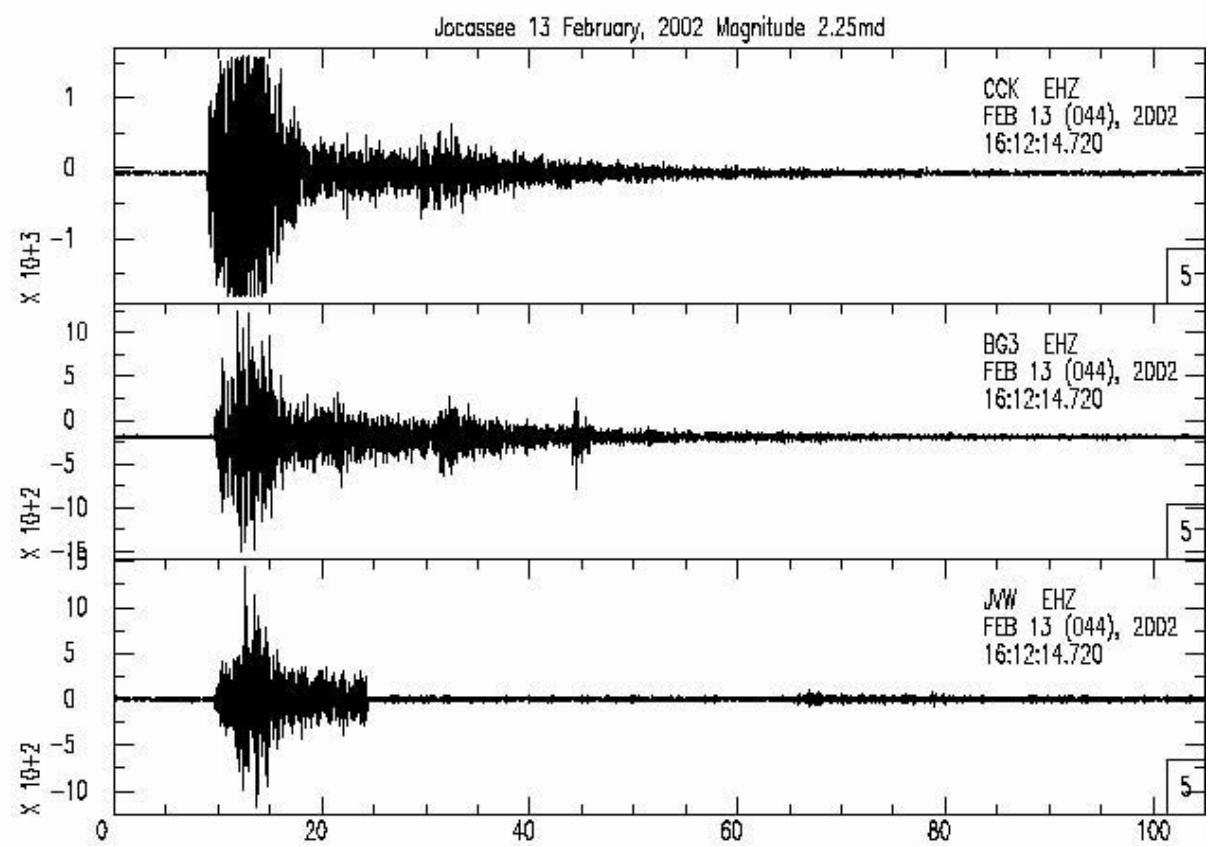


Figure 7b: Digital playback of a M_D 2.3 Lake Jocassee earthquake during 2002.

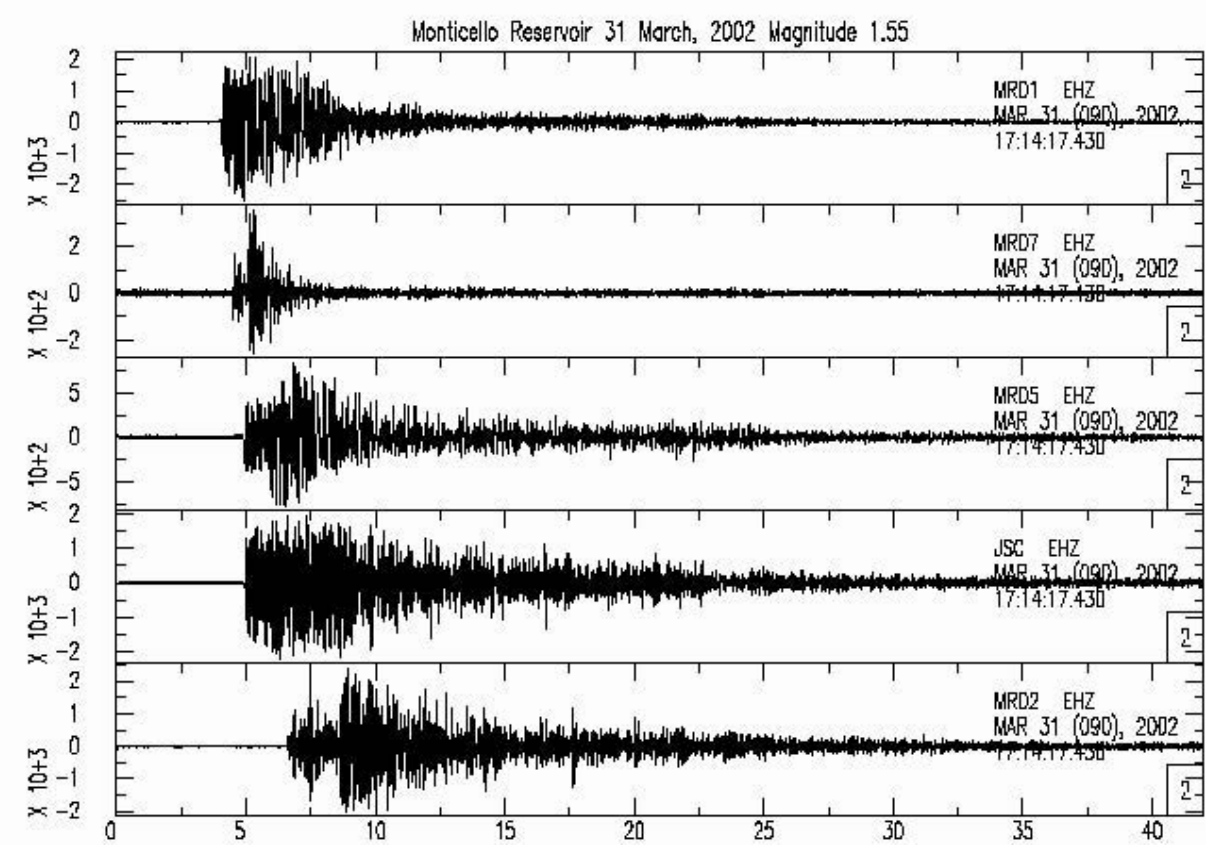


Figure 7c: Digital playback of a M_D 1.6 Monticello Reservoir earthquake during 2002.

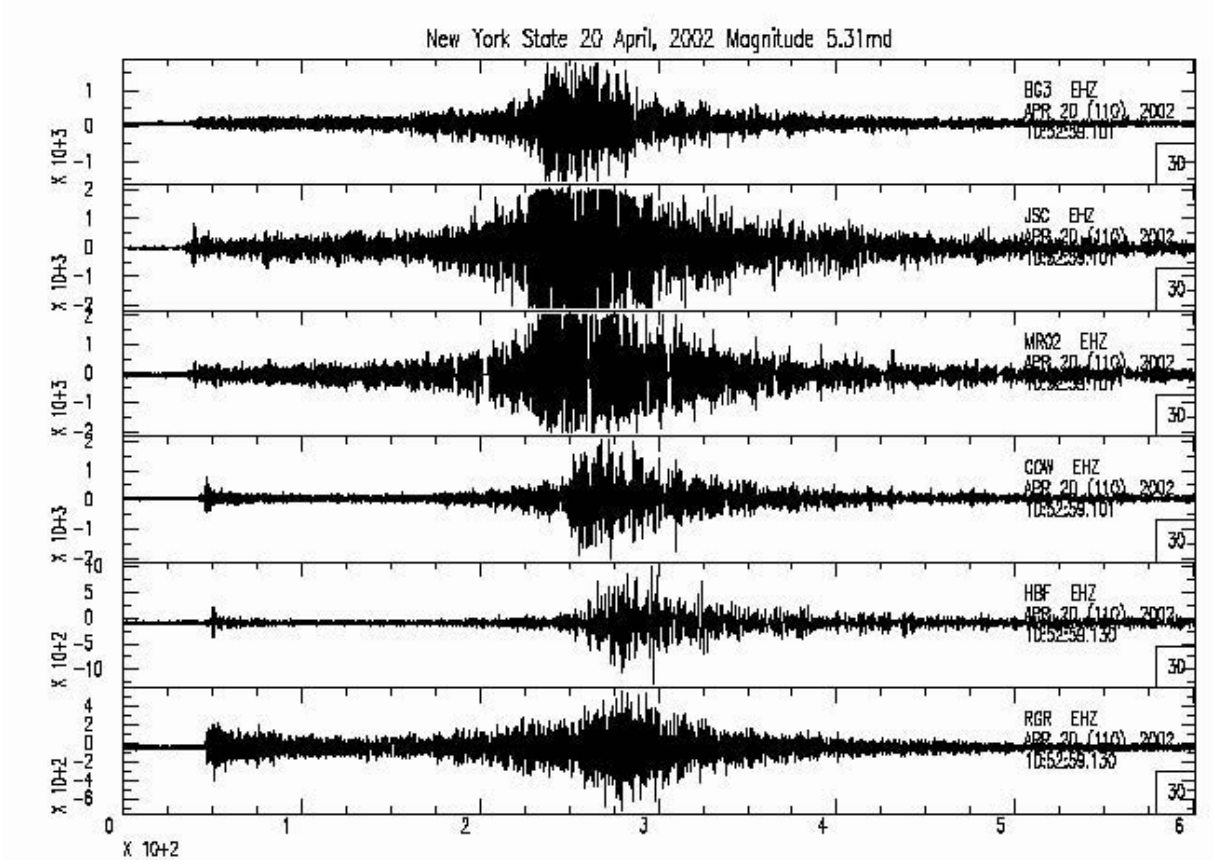


Figure 7d: Digital playback of a M_D 5.3 earthquake near New York during 2002.

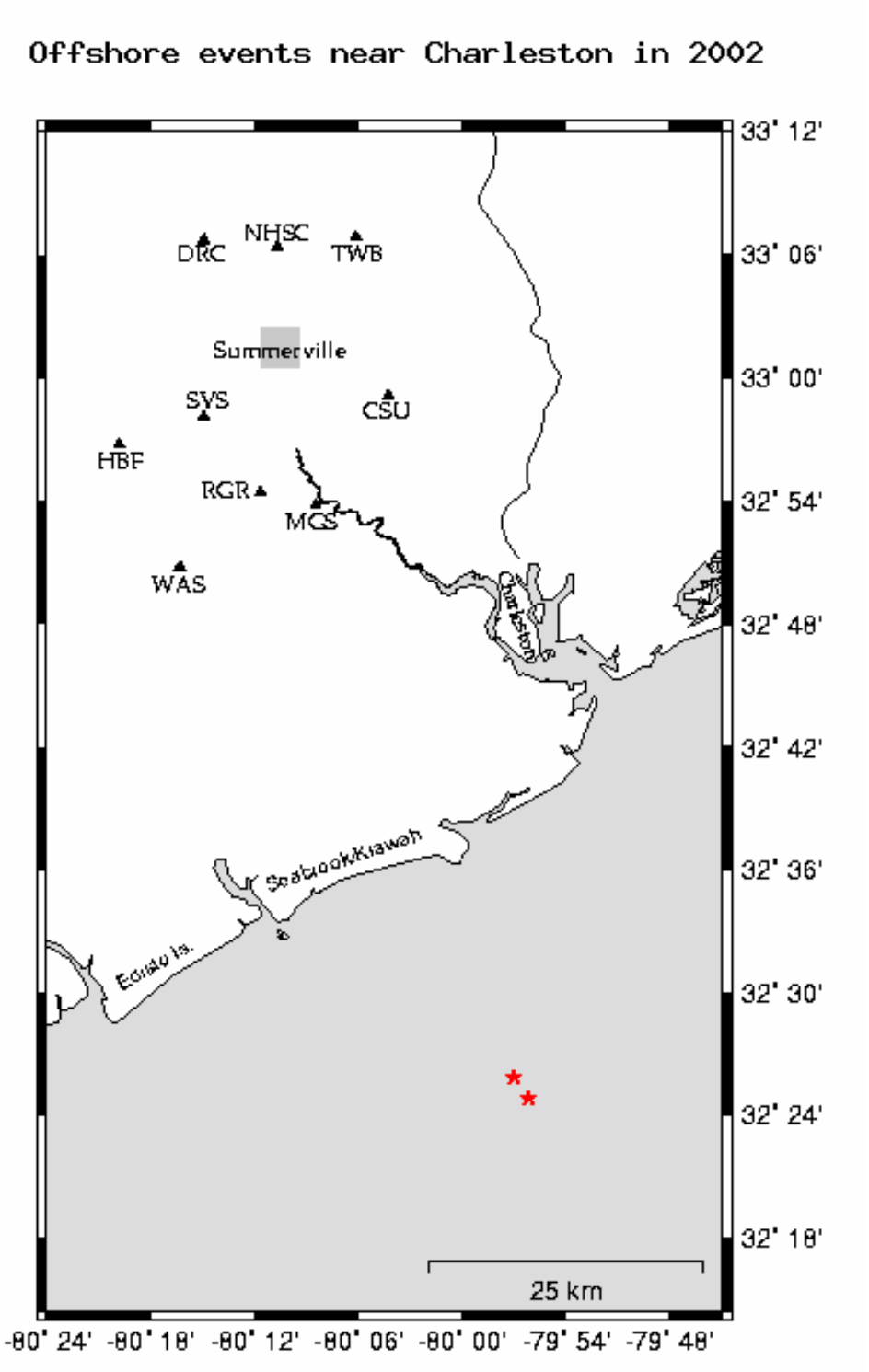


Figure 7e. Locations of the two earthquakes (*) off Seabrook Island during November 2002.

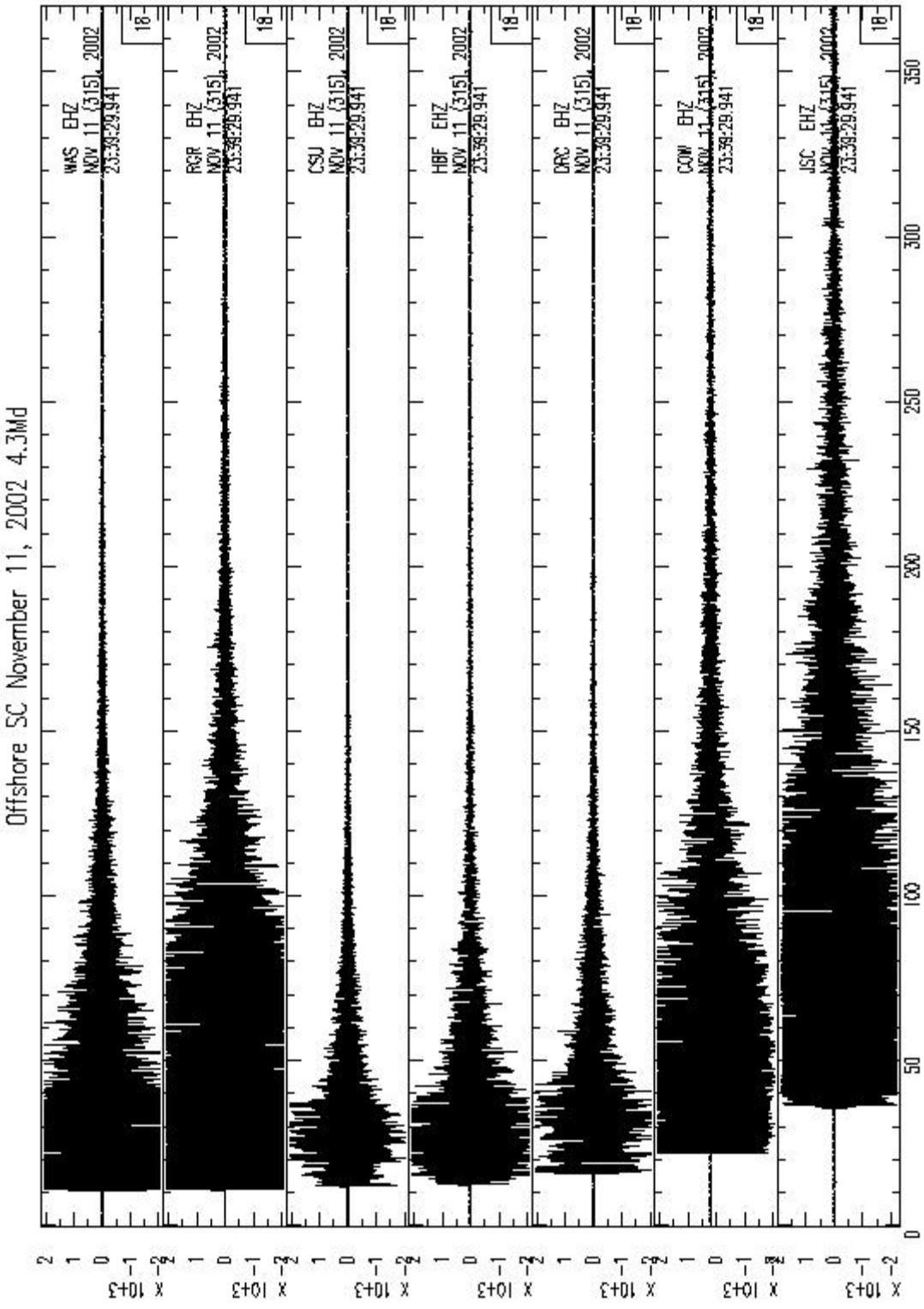


Figure 7f: Digital playback of the M_D 4.3 earthquake off Seabrook Island on November 11, 2002.

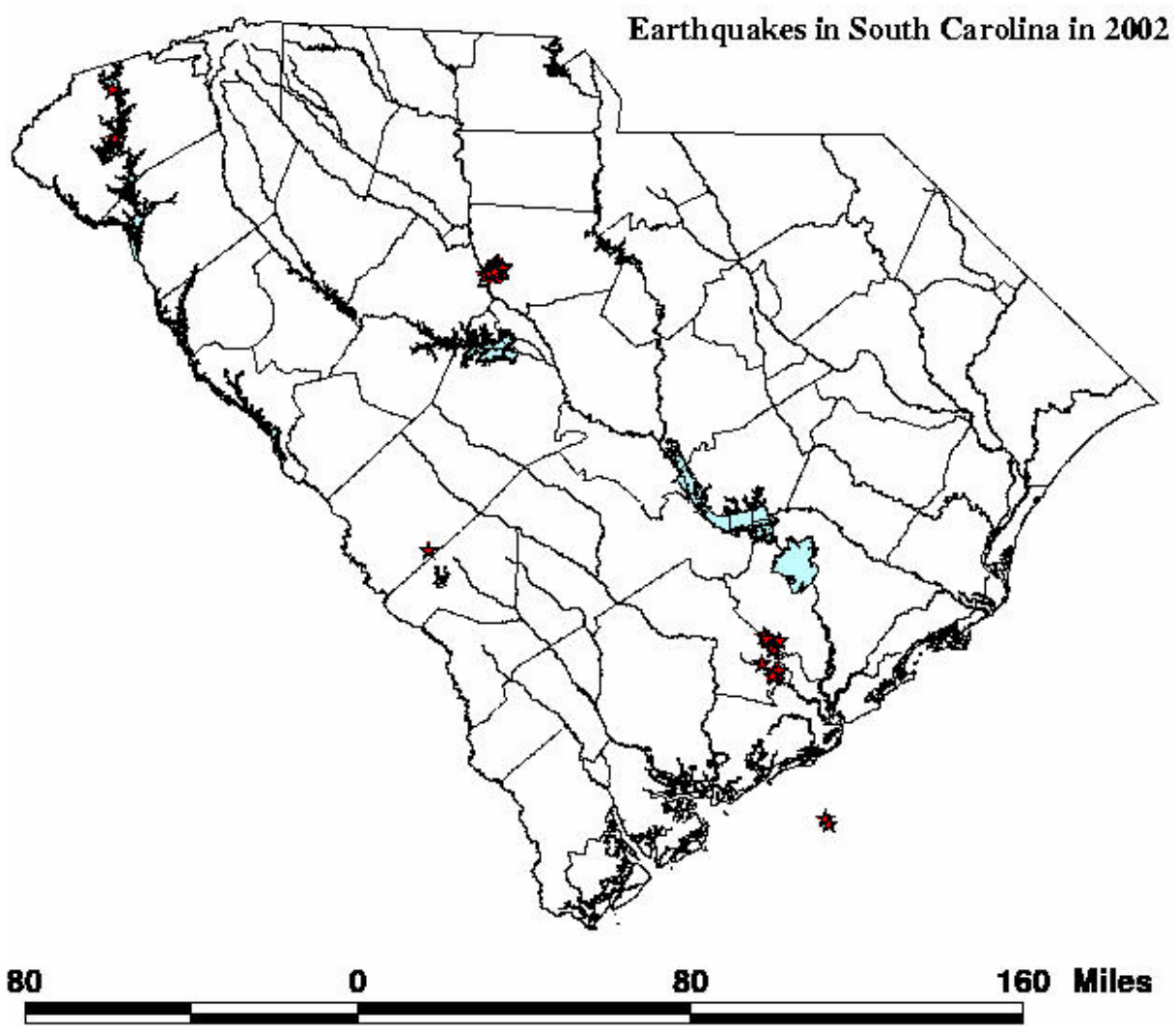


Figure 8: Seismicity in South Carolina during 2002 (*).

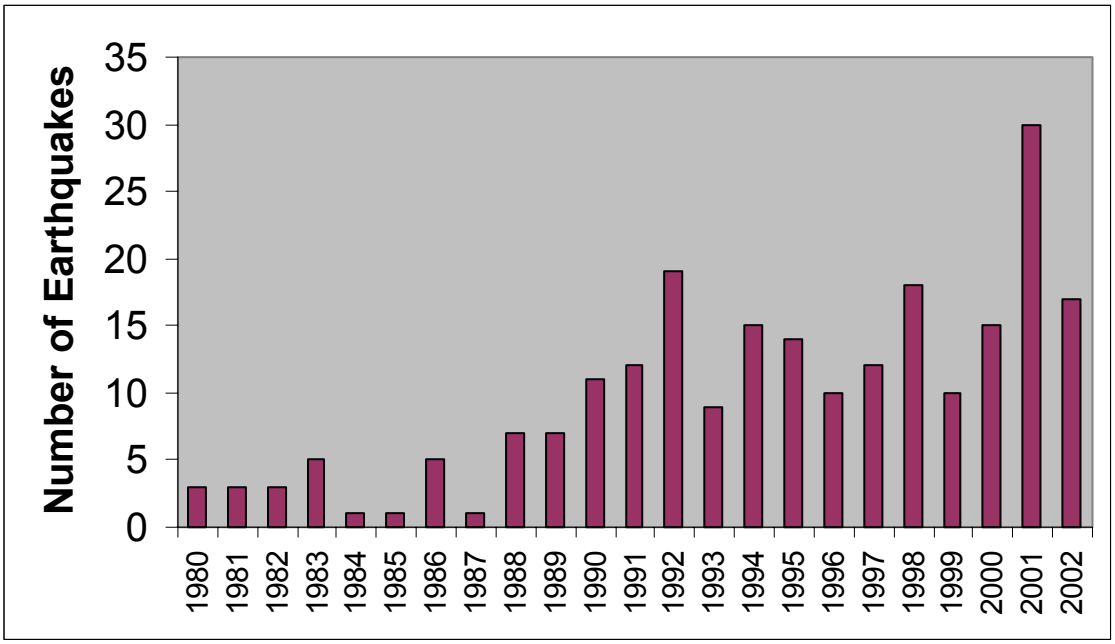


Figure 9: Number of located earthquakes in MPSSZ with magnitudes >0.6 for the period 1980-2002.

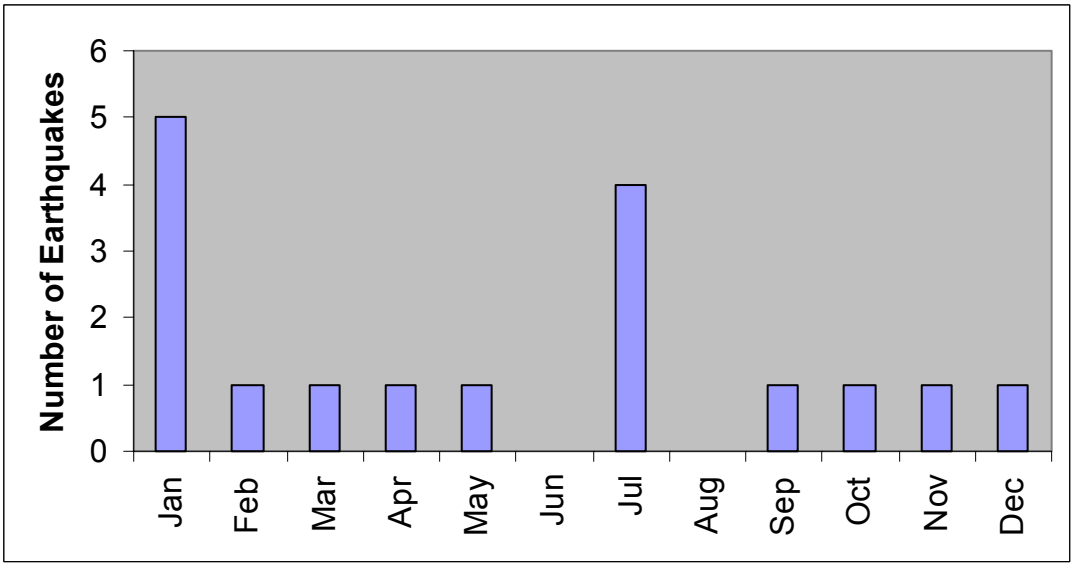


Figure 10: Monthly distribution of earthquakes located in MPSSZ during 2002.

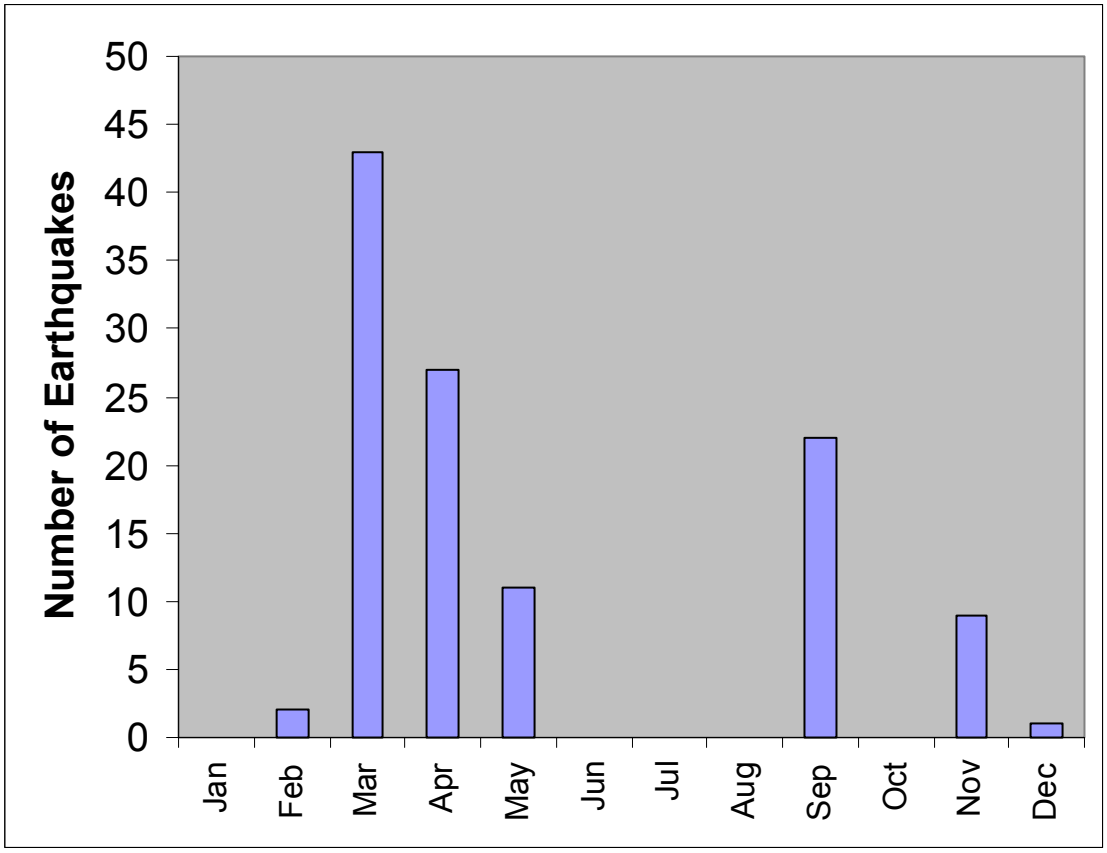


Figure 11: Monthly distribution of located earthquakes near Monticello Reservoir during 2002.

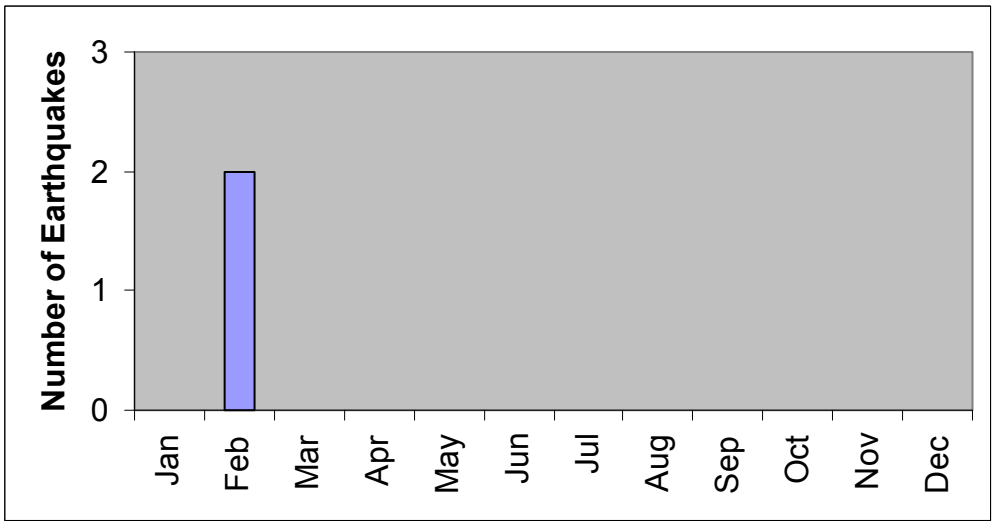


Figure 12: Monthly distribution of located earthquakes near Lakes Jocassee, Keowee, and Bad Creek Reservoir during 2002.

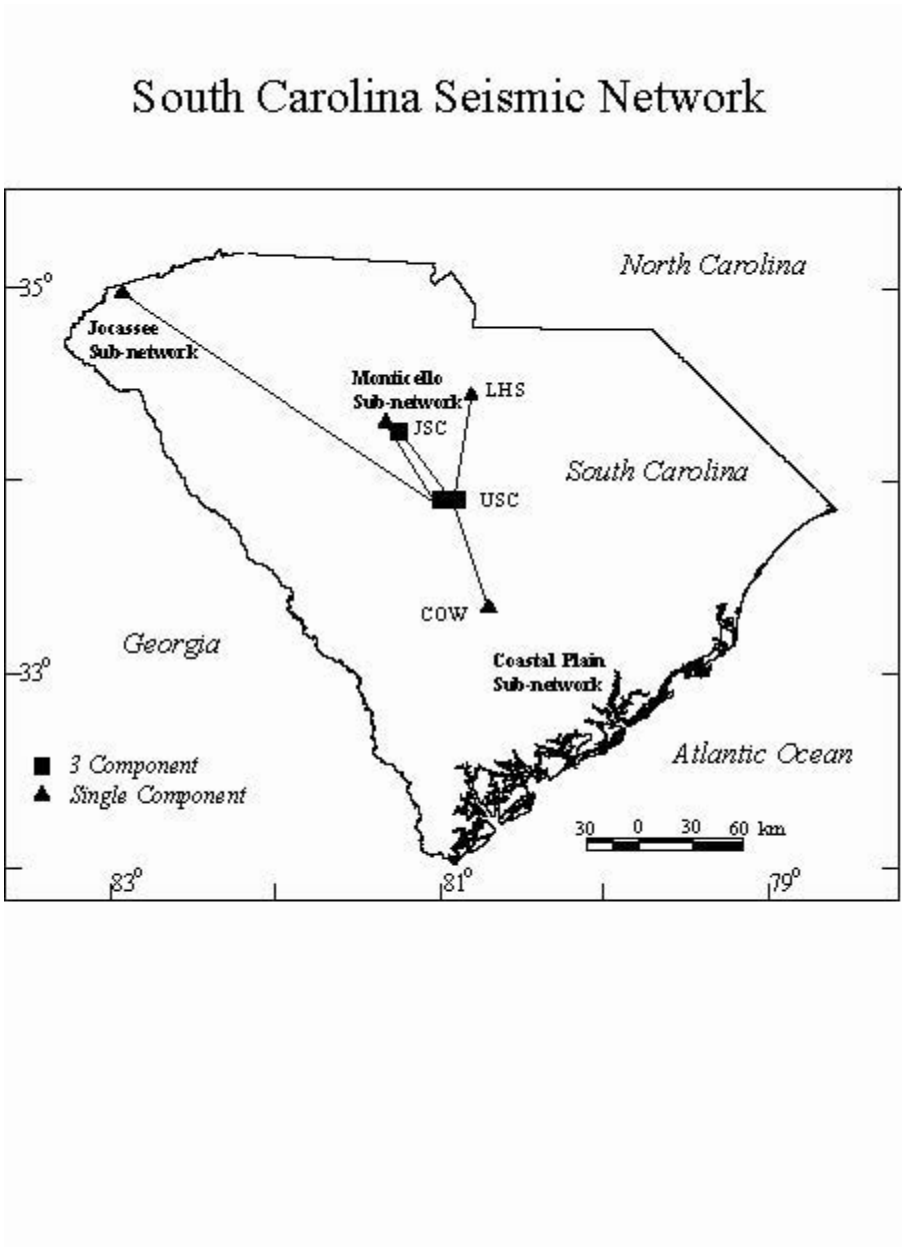


Figure 13: Telemetry routes for seismic data transmitted to USC.

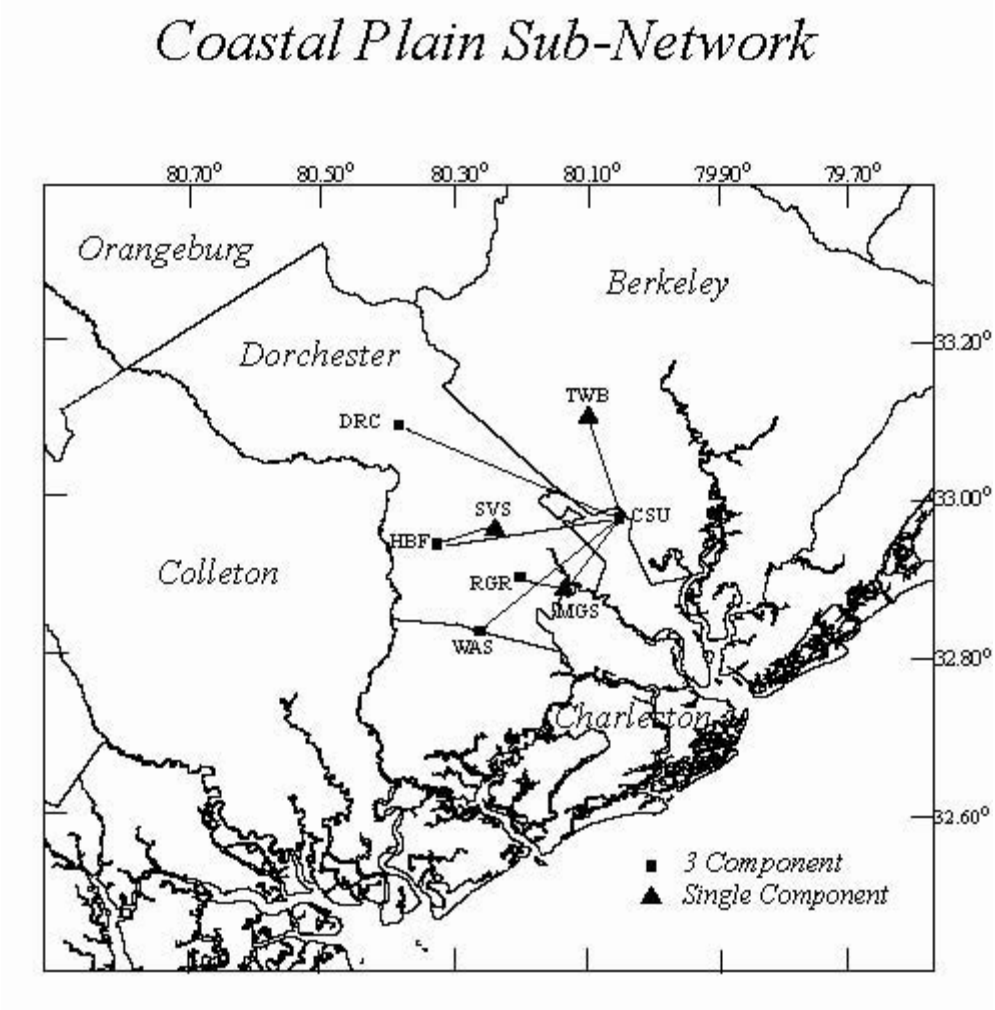


Figure 14: Telemetry routes for seismic data to Charleston Southern University.