UFL/COEL–92/012

PERDIDO KEY BEACH NOURISHMENT PROJECT: GULF ISLANDS NATIONAL SEASHORE
1991 Annual Report

by

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July, 1992

Submitted to:

Department of the Navy
Southern Division
Naval Facilities Engineering Command
Charleston, SC 29411-0068

REPORT DOCUMENTATION PAGE

1. Report No.	2.	3. Recipient's Accession No.
4. Title and Subtitle PERDIDO KEY BEACH NOURISHMENT PROJECT: GULF ISLANDS NATIONAL SEASHORE 1991 Annual Report		5. Report Date August 1992
		6.
7. Author(s) Paul A. Work Robert G. Dean		8. Performing Organization Report No.
9. Performing Organization Name and Address Coastal and Oceanographic Engineering Department University of Florida 336 Weil Hall Gainesville, FL 32611		10. Project/Task/Work Unit No.
		11. Contract or Grant No. N62467-89-C-0500
12. Sponsoring Organization Name and Address Department of the Navy Southern Division Naval Facilities Engineering Command Charleston, SC 29411-0068		13. Type of Report Annual Report
		14.
15. Supplementary Notes		

16. Abstract

This report is the second annual report in a continuing series documenting a field project within the Gulf Islands National Seashore at Perdido Key, Florida. The field project includes the monitoring of a number of physical parameters related to the evolution of the Perdido Key beach nourishment project. Approximately 4.1 million m^3 of dredge spoil from Pensacola Pass were placed upon approximately 7 km of the Gulf of Mexico beaches of Perdido Key between November, 1989, and September, 1990.

Beach profile data describing the evolution of the nourished beach are included, as well as wave, current, tide, wind, temperature, and rainfall data to describe the forces influencing the evolution. Data describing the sediment sizes throughout the project area are also included. A brief discussion of the data is included; a more detailed analysis and interpretation will be presented in the lead author's Ph.D. dissertation.

17. Originator's Key Words			18. Availability Statement
Beach nourishment Sediment transport Shoreline response			
19. U. S. Security Classif. of the Report Unclassified	20. U. S. Security Classif. of This Page Unclassified	21. No. of Pages 304	22. Price

UFL/COEL-92-012

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PERDIDO KEY BEACH NOURISHMENT PROJECT: GULF ISLANDS NATIONAL SEASHORE
1991 Annual Report

1 INTRODUCTION

This report is one of a continuing series documenting a field project within the Gulf Islands National Seashore at Perdido Key, Florida (Figure 1). Approximately 4.1 million m^3 of dredge spoil from Pensacola Pass were placed along the eastern 7 km of the Gulf of Mexico shoreline of Perdido Key for beach nourishment during the period November, 1989, through September, 1990. An ongoing study of the area includes the monitoring of biological, sedimentological, and physical conditions at the site.

Earlier reports (Work et al., 1990a, 1990b, 1991a, 1991b, 1991c) discussed the site and physical data collection methods in detail. The focus of this report will be the field work and physical data collected since the previous annual report. The data describe waves, currents, tides, winds, temperatures, rainfall, and sediment sizes, as well as topographic and bathymetric features.

2 DATA COLLECTION

Figure 2 provides a detail of the study area and indicates the locations of the surveyed beach profiles, the wave gage, the weather station, and the tide gage on Santa Rosa Island. Table 1 provides a history of all the field work done to date; Figure 3 indicates the time periods covered by each data set. A discussion of the data collection and analysis methods may be found in previous reports; only a brief summary will be included here.

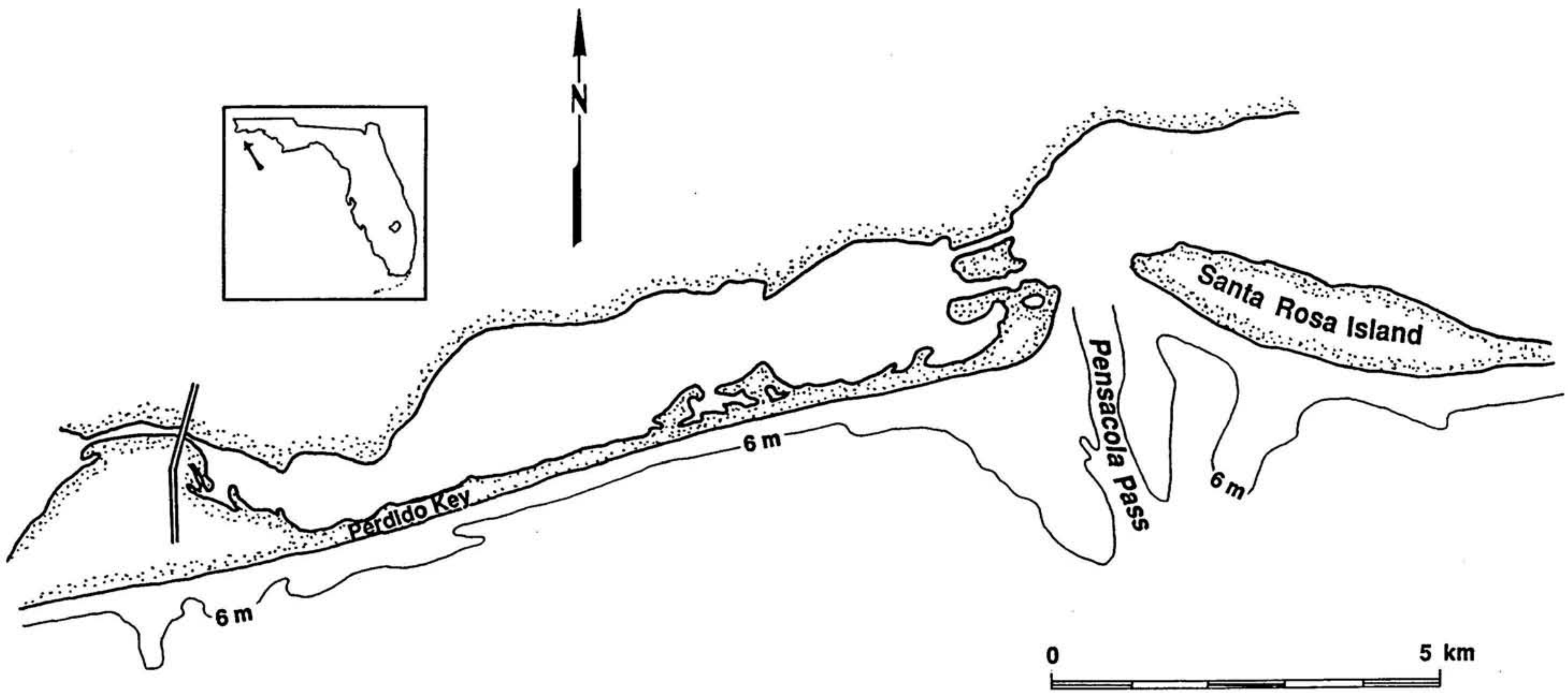

Figure 1: Site location chart.

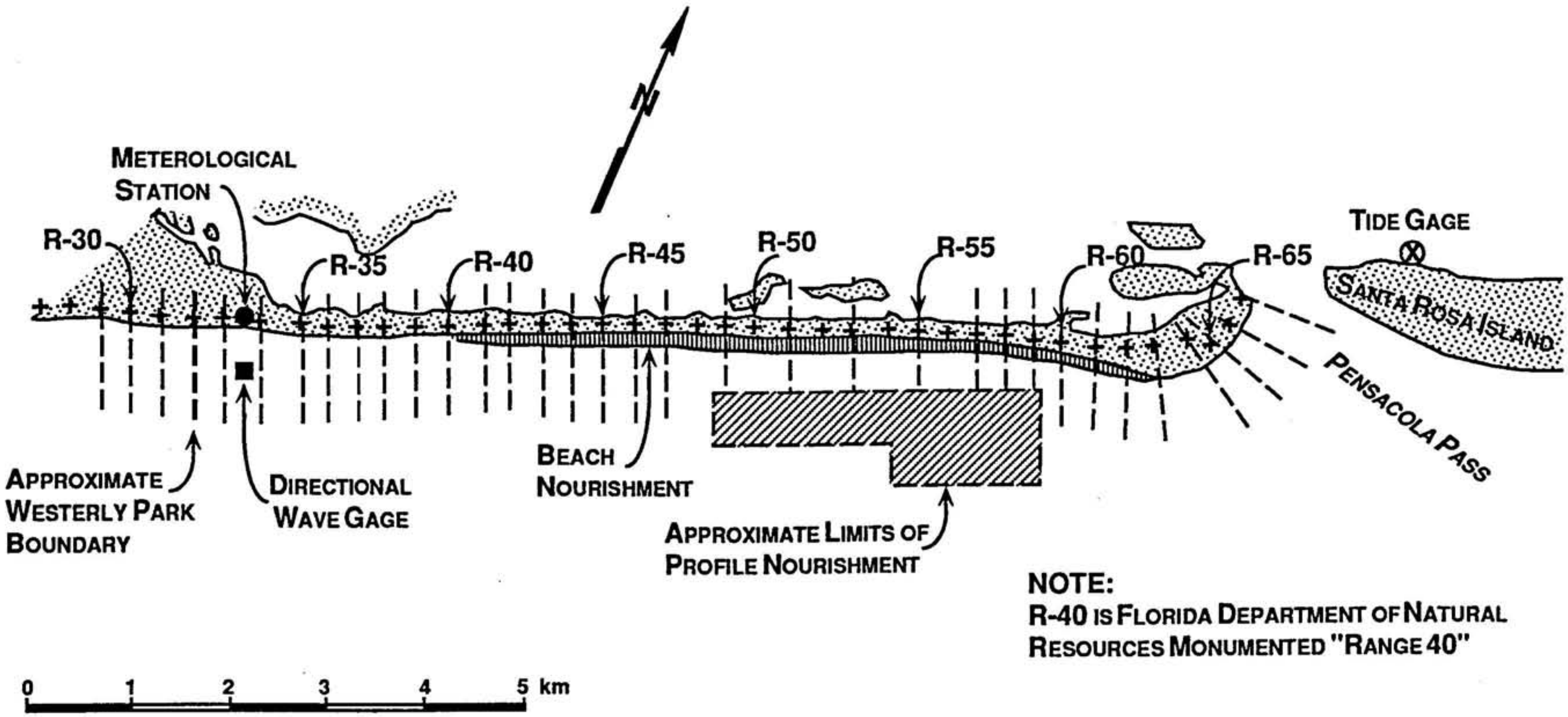

Figure 2: Components of beach nourishment monitoring project.

Table 1: Chronology of Perdido Key Data Collection Efforts

Date	Task
10/28–11/1/89	Pre–nourishment survey: Wading/swimming profiles (Gulf and Bay) Offshore bathymetry Sand samples, photos
11/17/89	Placement of nourishment material begins
1/18/90	Wave gage tripod and standalone gage installed Tide gage with small stilling well installed at Ft. Pickens Pier, Santa Rosa Island
1/29/90	Mechanical (analog) weather station installed
1/30/90	Large stilling well installed for Ft. Pickens tide gage
3/7–3/9/90	56 sand samples collected, to replace those destroyed or not collected during pre-nourishment survey
5/2/90	Standalone wave data collection package retrieved; fresh standalone package installed
6/24/90	Digital weather station installed
8/8/90	Standalone wave data collection package retrieved; fresh standalone package installed
8/17/90	Placement of nourishment material completed
9/22–9/26/90	First post–nourishment survey: Wading/swimming profiles (Gulf side) Offshore bathymetry Sand samples, photos
12/6/90	Standalone wave data collection package retrieved; fresh standalone package installed Ft. Pickens pier tide gage re–surveyed
1/29–2/3/91	Wading/swimming profile survey (Gulf side) Sand samples
3/19–3/21/91	Standalone wave gage retrieved; tripod moved Lightweight data/power transmission cable installed Shore–connected wave gage installed

Table 1: Chronology of Perdido Key Data Collection Efforts (cont'd.)

Date	Task
4/9–4/10/91	Wave gage cable re–buried
5/15–5/16/91	Wave gage cable re–buried
5/28–6/1/91	Wading/swimming profile survey (Gulf side) Sand samples
6/18–6/19/91	Shore–connected wave gage removed; cable cut Standalone wave gage installed
7/29–7/30/91	Wind vane and anemometer replaced
9/10/91	Standalone wave gage removed Fresh standalone wave gage installed
9/28–10/2/91	Wading/swimming profile survey (Gulf side) Sand samples, photos Re–attached Ft. Pickens pier tide gage
10/12–10/20/91	Yearly survey: Wading/swimming profiles (Gulf side) Offshore bathymetry Installed heavyweight data/power cable for wave gage Standalone wave gage removed Shore–connected wave gage installed Fresh standalone wave gage installed
10/23–10/24/91	Shore–connected wave gage replaced
1/16–1/22/92	Wading/swimming profile survey (Gulf side) Replaced wind vane/anemometer Replaced shore–connected wave gage Replaced standalone wave gage

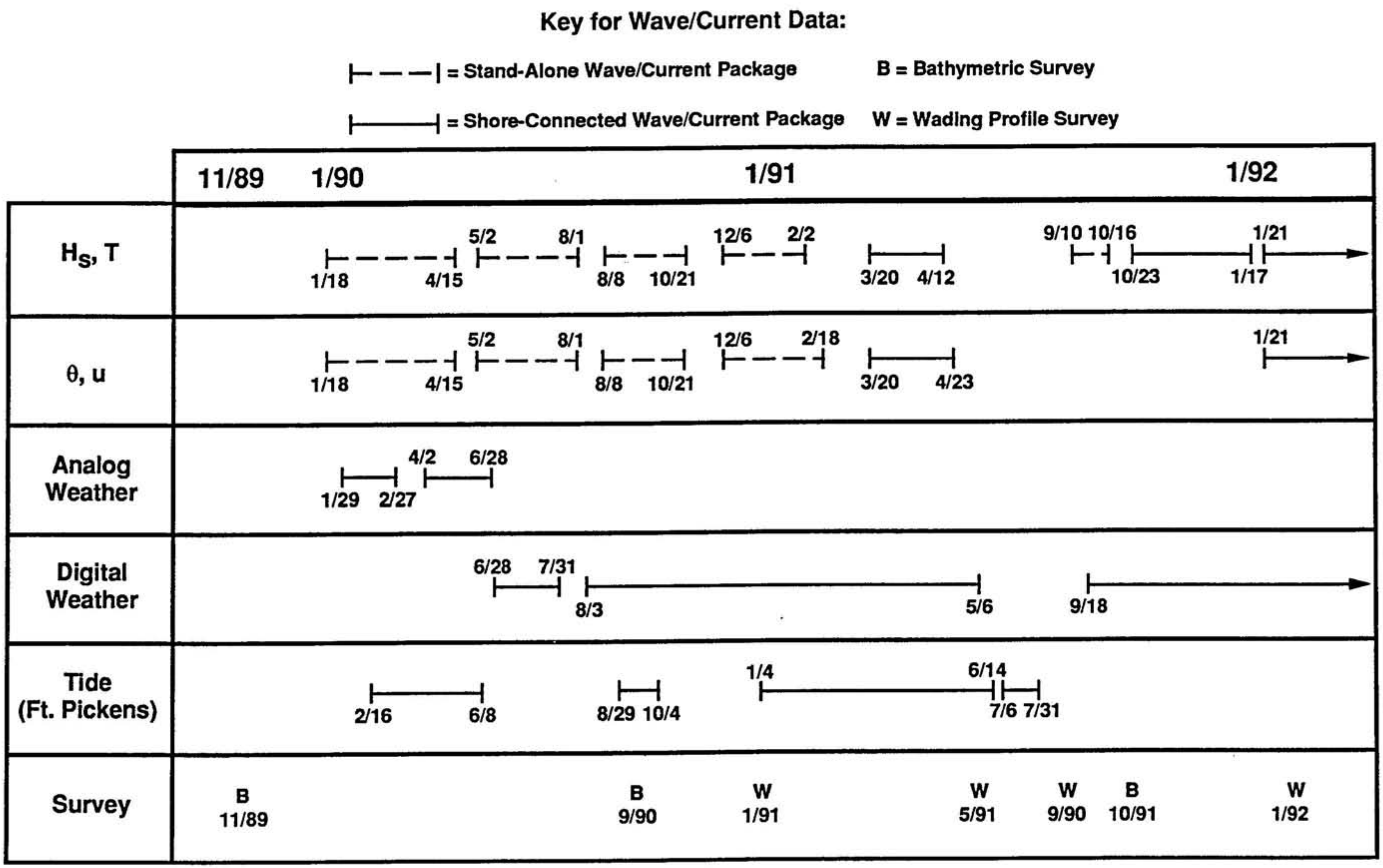

Figure 3: History of data collection.

2.1 Hydrographic and Topographic Surveys

The survey equipment and methodology used were unchanged from previous surveys. The beach profiles were surveyed out to approximately –5 m employing standard rod–and–level techniques. The offshore profile was surveyed by a boat equipped with a fathometer to measure depths and a microwave rangefinder system to measure distances. The profile lines during previous surveys were repeated by following the lines defined by benchmarks and targets placed along the profiles. Missing targets were replaced after determining the proper profile azimuth with a theodolite.

Twenty–five profiles were surveyed by boat, and an additional eight have been surveyed since September, 1990, to wading/swimming depth (generally 4–5 m) only, in order to provide better spatial resolution of the evolution of the nourished area. Table 2 presents coordinates and benchmark elevations for each of the monuments within the survey area. Note that the benchmark elevation previously reported for R–31 was wrong; the correct value was determined by levelling from R–32 and is reported here. A total of seven surveys have been conducted to date: the annual bathymetric surveys of 11/89, 9/90, and 10/91, and the additional wading profile surveys of 1/91, 5/91, 9/91, and 1/92. Data from the three annual bathymetric surveys are shown in Appendix I.

A note regarding several of the profiles surveyed during the September, 1990, bathymetric survey is warranted. A few profiles appear to have large, unexpected "lumps" of sediment offshore of the toe of the beachfill (see, for example, R–42); two possible explanations for this would be: 1) the presence of a large lens of fine sediment, leading to turbid water off which the fathometer signal was reflected, or 2) extremely high gain set on the fathometer. When first analyzed in 1990, the data were assumed to be fully representative of the actual profile, and the vertical origin of the post– nourishment profile was adjusted so that the average error between the offshore portions of the pre– and post–nourishment profiles was minimized. The noise in the September, 1990, profiles thus biased the results. After the October, 1991, data became available, the September, 1990, data were inspected again. It was concluded that the earlier problems were due to a combination of excessive gain and turbid water. The profiles were then re–analyzed and the bias removed. There is

Table 2: Coordinates, Elevations and Azimuths for DNR Monuments

Monument No.	Northing[1] (ft)	Easting (ft)	Elevation (m, NGVD)	Range Azimuth[2] (Degrees)
R–25[w]	482953.000	1071644.000	3.75	170
R–26	482963.500	1072537.500	3.78	170
R–27[w]	483193.000	1073517.000	3.90	170
R–28	483323.000	1074635.500	4.48	170
R–29	483468.000	1075679.500	5.77	170
R–30[b]	483641.000	1076816.000	4.43	170
R–31[w]	483786.140	1077860.920	4.77	170
R–32[b]	483966.820	1078812.720	5.86	170
R–33[w]	484040.500	1079810.500	6.27	170
R–34[b]	484575.000	1081013.000	3.99	165
R–35[w]	484615.000	1082233.500	1.74	165
R–36[b]	484834.280	1083221.300	2.35	165
R–37[w]	485039.000	1084078.000	2.34	160
R–38[b]	485332.000	1085078.000	4.07	160
R–39[w]	485573.000	1086029.500	2.61	160
R–40[b]	485924.050	1087119.670	4.27	160
R–41[w]	486256.000	1088156.500	3.66	160
R–42[b]	486537.500	1089122.500	2.62	160
R–43[b]	486786.000	1090213.000	2.83	160
R–44[b]	486922.770	1091143.410	2.87	160
R–45[b]	487257.000	1092157.000	2.18	160
R–46[b]	487350.000	1093014.000	4.14	165
R–47	487640.000	1094115.500	3.49	165
R–48[b]	487940.770	1095039.730	4.08	165
R–49	488114.500	1096047.000	4.15	165
R–50[b]	488315.000	1097097.000	4.02	165
R–51	488632.090	1098182.820	4.17	165
R–52[b]	489072.500	1099265.000	2.65	165
R–53	488890.500	1100172.000	3.77	165
R–54[b]	489246.500	1101191.000	3.08	165
R–55	489649.180	1102290.990	2.03	165
R–56[b]	489603.500	1103328.000	2.48	165
R–57	489785.670	1104344.820	2.27	165
R–58[b]	489940.500	1105353.000	2.18	165
R–59	490080.500	1106356.500	1.91	165
R–60[b]	490247.500	1107323.000	2.03	165
R–61[b]	490350.500	1108298.000	2.68	165
R–62[b]	490433.130	1109324.130	2.01	165
R–63[b]	490528.250	1110297.350	2.45	165
R–64[b]	490836.540	1111090.500	1.82	170
R–65[b]	491114.930	1111728.450	2.13	105
R–66A[b]	492016.000	1112143.000	2.68	105
R–67[b]	492997.990	1112292.510	3.08	90

Notes:
1) Monument coordinates are in units of feet for consistency with common information sources.
2) Azimuths are measured clockwise from magnetic North and correspond to the line–of–sight of an observer at the monument looking offshore along the survey line.
3) Profiles surveyed by boat are marked by a superscript *b*; those surveyed only to wading depth are marked by superscript *w*.

no completely satisfactory way to correct those portions of the record which were extremely noisy, but such sections are plainly evident, and, with the bias removed, the remainder of the profile is correct. An attempt has also been made to remove systematic errors in the hydrographic survey data by adjusting profile data collected by boat to match in the offshore regions. This is thought to improve the accuracy of the data, especially when considering relative changes between surveys. With these modifications, the estimated beach nourishment quantity is now reduced slightly to 4.1 million m^3.

The large mounds of sediment found in the offshore regions of the eastern profiles (e.g. R–60) are due to a later phase of the nourishment project, completed between September, 1990, and October, 1991. It is planned to include this later phase of the nourishment project in future bathymetric surveys.

2.2 Sand Samples

Onshore sand samples were again collected at the dune, berm, and beachface along each survey line. "Mid–beach" samples have also been taken, from points roughly halfway between the seaward limit of the dunes and the waterline. Offshore samples were collected at the –1 m and –2 m depths by a swimmer. Additional offshore samples were collected during the 10/91 survey by boat, using a bucket sampler, at the locations sampled during the 11/89 and 9/90 surveys (Table 3).

Grain size distributions have been determined by sieve analysis of each sample, using a series of twelve sieves. The details of the analysis procedure are discussed in Work et al. (1991a). Samples that appeared to contain a significant fraction of fines were re–analyzed by first wet–sieving the sample to remove the fraction finer than a number 200 sieve. The remainder of the sample was then dried and sieved in the conventional manner. Five samples from the October, 1991, survey were analyzed by this method, ten from the September, 1990, survey, and three from the November, 1989, survey.

Figures 4 and 5 illustrate the locations of the fine samples. They are all found within the nourished region (i.e. between R–42 and R–60), and all but one are from the 5 m (nominal) sampling depth. Fewer fine samples were found during the 1991 survey. The

Table 3: Locations and Depths of Offshore Sand Samples

Range No.	Nominal Depth (m)	11/89 Depth (m)	9/90 Depth (m)	10/91 Depth (m)	Latitude (Deg., Min.)	Longitude (Deg., Min.)
R–30	5	4.2	5.5	5.2	30 17.49	87 25.52
	8	6.6	6.7	6.7	30 17.26	87 25.48
R–32	5	5.2	5.8	5.5	30 17.59	87 25.14
	8	5.9	5.5	6.1	30 17.30	87 25.10
R–34	5	5.1	5.2	5.5	30 17.68	87 24.71
	8	5.8	5.8	6.1	30 17.45	87 24.66
R–36	5	4.9	5.0	5.8	30 17.76	87 24.30
	8	6.0	5.9	6.4	30 17.48	87 24.50
R–38	5	5.1	5.8	5.5	30 17.85	87 23.91
	8	6.2	6.1	6.4	30 17.61	87 23.81
R–40	5	5.4	5.5	5.8	30 17.95	87 23.53
	8	5.9	5.8	5.8	30 17.73	87 23.43
R–42	5	4.6	5.6	5.8	30 18.07	87 23.16
	8	6.3	6.4	6.4	30 17.82	87 23.08
R–43	5	5.2	5.2	3.7	30 18.14	87 22.93
	8	6.7	6.9	6.7	30 17.87	87 22.84
R–44	5	5	5.3	4.6	30 18.18	87 22.79
	8	7	6.7	7.0	30 17.90	87 22.67
R–45	5	5.3	5.3	4.6	30 18.19	87 22.57
	8	7.5	7.2	6.7	30 17.93	87 22.47
R–46	5	5.4	5.2	4.6	30 18.23	87 22.43
	8	7.3	7.0	7.0	30 17.94	87 22.36
R–48	5	5.3	5.2	4.6	30 18.32	87 22.05
	8	6.7	6.7	6.4	30 18.06	87 21.98
R–50	5	5.7	5.2	5.5	30 18.38	87 21.65
	8	6.4	6.4	5.5	30 18.13	87 21.54
R–52	5	5.3	5.2	4.9	30 18.49	87 21.24
	8	6.4	6.2	5.5	30 18.24	87 21.17
R–54	5	5.4	4.1	4.3	30 18.55	87 20.88
	8	6.1	5.9	4.9	30 18.30	87 20.79
R–56	5	5	5.3	5.2	30 18.60	87 20.47
	8	6	5.8	5.8	30 18.38	87 20.39
R–58	5	5	5.0	5.2	30 18.69	87 20.09
	8	5.8	5.8	4.6	30 18.45	87 20.02
R–60	5	4.5	4.6	4.6	30 18.73	87 19.71
	8	5.6	5.6	4.6	30 18.51	87 19.66
R–61	5	4	4.3	4.3	30 18.75	87 19.53
	8	5.0	5.2	5.2	30 18.53	87 19.47
R–62	5	3.5	3.8	4.0	30 18.78	87 19.34
	8	4.6	4.4	4.6	30 18.55	87 19.27
R–63	5	3	2.4	3.0	30 18.84	87 19.14
	8	3.5	3.5	3.4	30 18.58	87 19.05
R–64	5	2	5.5	2.4	30 18.83	87 19.02
	8	3.1	7.1	3.0	30 18.67	87 18.99
R–65	5	2.7	5.5	4.0	30 19.03	87 18.70
	8	8	9.4	7.3	30 19.00	87 18.61
R–66A	5	5	5	4.6	30 19.21	87 18.72
	8	8	8	7.3	30 19.20	87 18.66
R–67	5	5	8	4.6	30 19.40	87 18.70
	8	5	8	7.0	30 19.30	87 18.69

Notes: 1) All coordinates obtained during pre–nourishment survey of October 28–November 3, 1990, except those for Ranges 66 and 67, which were taken during September, 1990 survey.

2) Measured depths are not corrected for tide, but merely indicate the depth beneath the boat at the time of sampling.

horizontal locations of the sampling stations are not precise, but are believed accurate to approximately 50 m. The large temporal changes evident in Figures 4 and 5 would thus suggest that there are localized regions of fine sediments. The apparent changes are then the result of sampling a slightly different point, or possibly of migration of the fine material.

The computed grain size distributions are shown in Appendix V, as well as statistics of the distributions (D_{50}, sorting index, skewness, etc.). Figure 6 illustrates the cross-shore variation in D_{50} sediment size. The values plotted in this figure were obtained by averaging together all samples from equivalent depths; i.e. each point represents an average of approximately 33 samples. There is a weak trend toward decreasing grain size progressing offshore to the −2 m contour. The net overall reduction in D_{50} seen over time is not statistically significant.

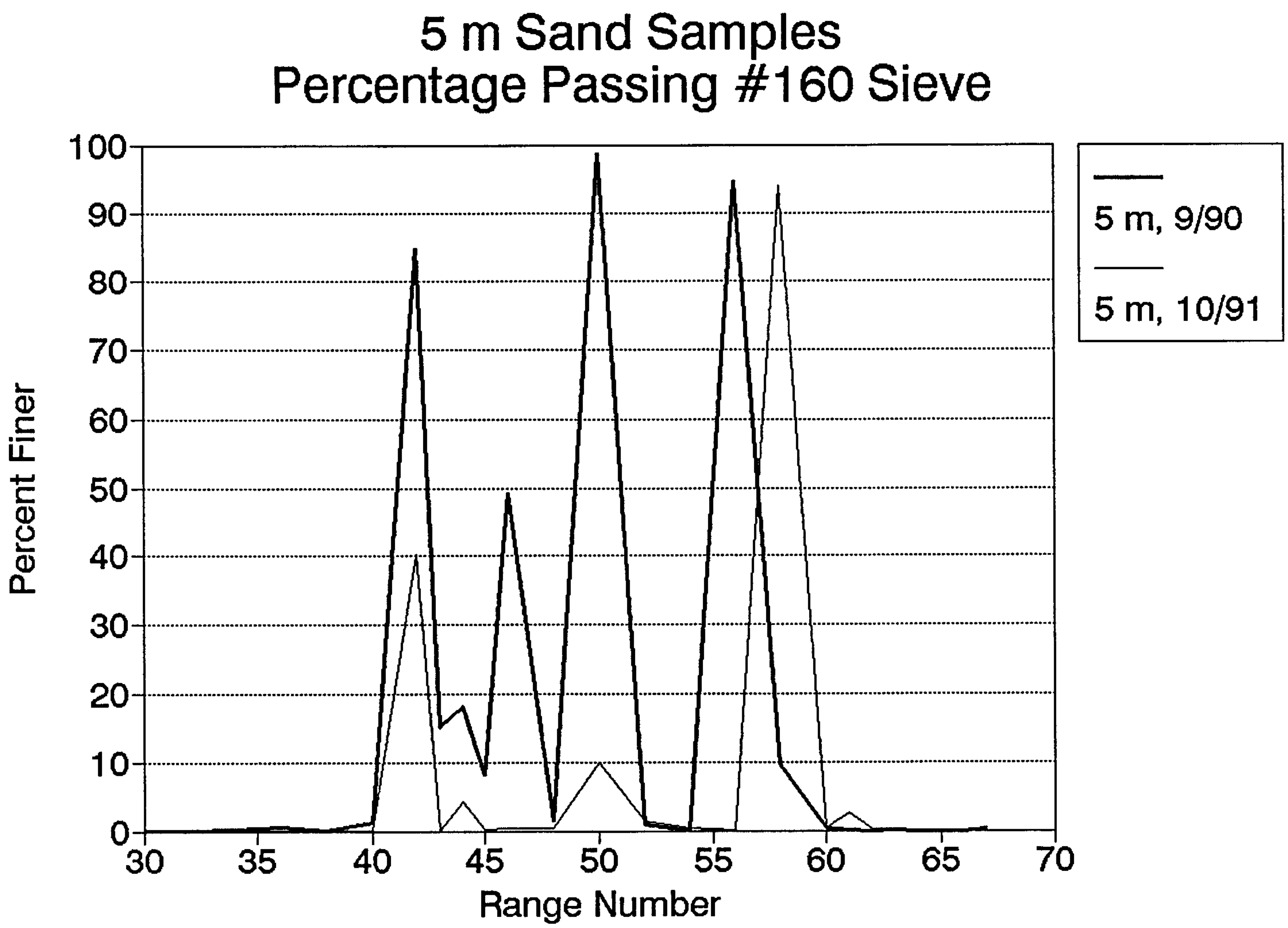

Figure 4: Percentage of fines for 5 m samples, September, 1990, and October, 1991, surveys.

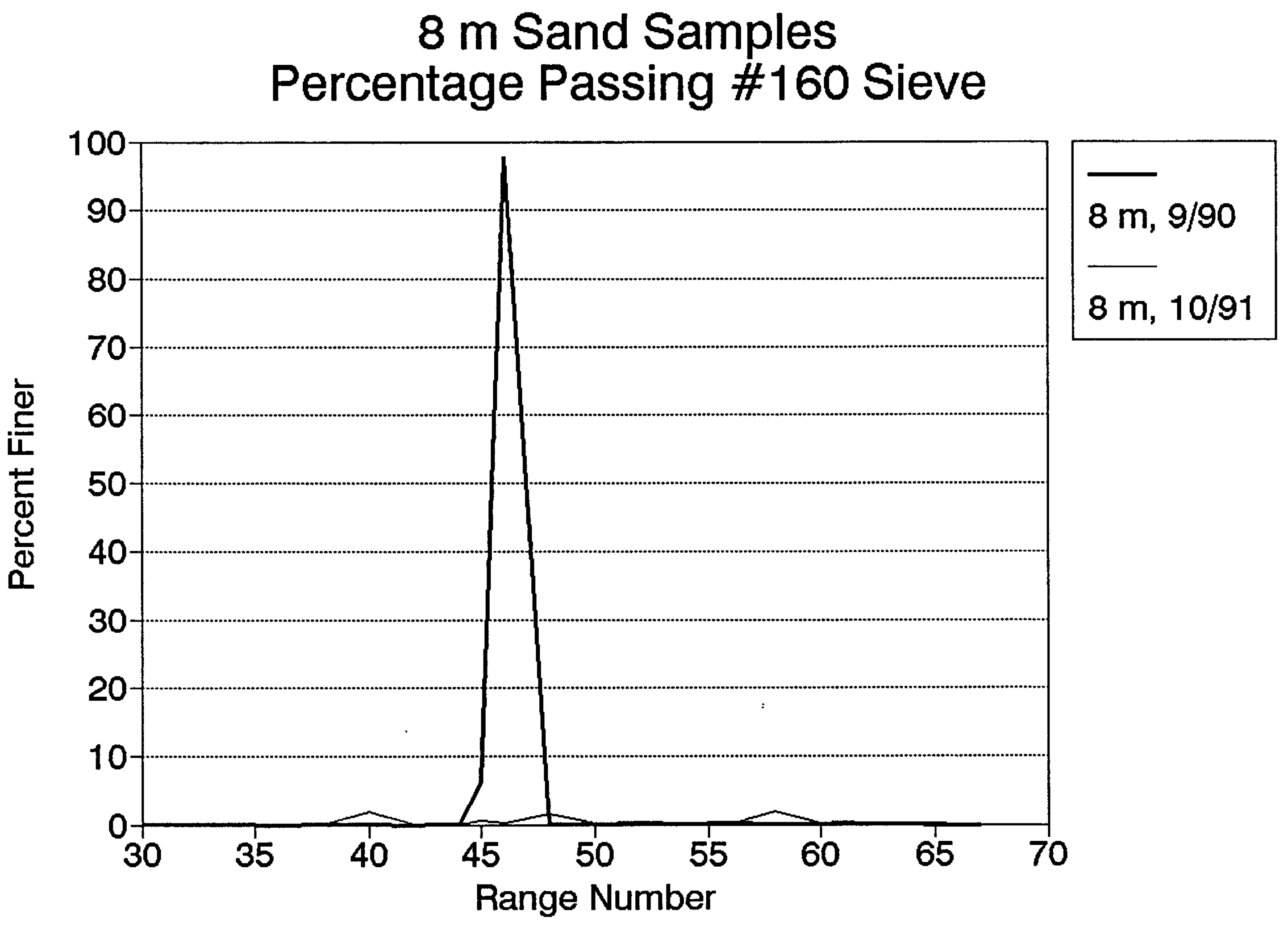

Figure 5: Percentage of fines for 8 m samples, September, 1990, and October, 1991, surveys.

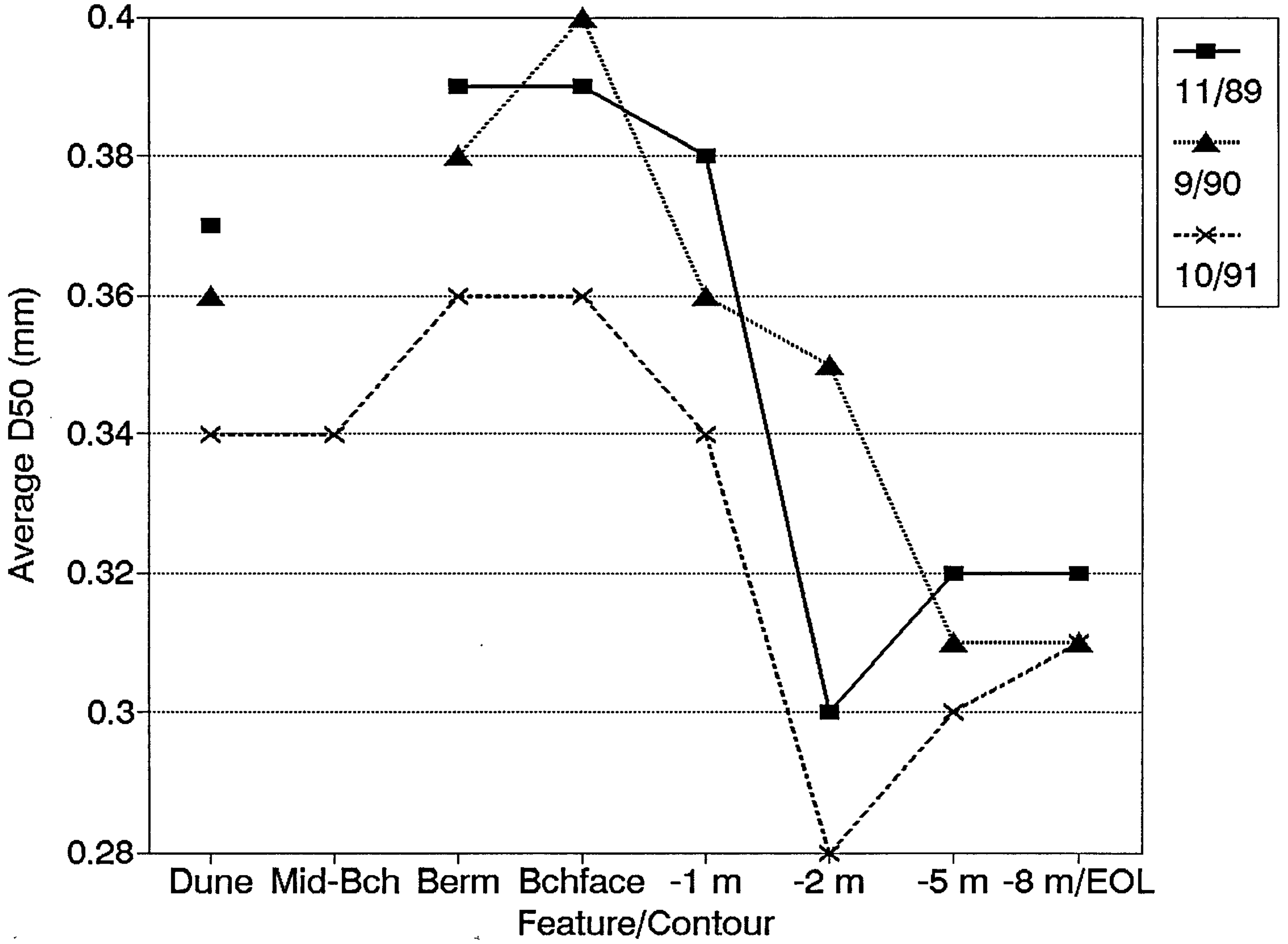

Figure 6: Cross–shore distribution of D_{50} grain size.

2.3 Wave/Current/Tide Data

A directional wave gage was installed offshore the Gulf Islands National Seashore ranger station on Perdido Key in approximately 7 m of water on January 18, 1990. The gage is bolted inside a steel, tetrahedron–shaped frame which rests on the seafloor and is held in place by jetted piles. The gage measures the time– varying pressure and horizontal velocity components, storing the data on a magnetic tape, a hard drive, or in random access memory (RAM). This allows computation of significant wave height, H_s, representative wave period, T_m, wave direction, magnitude and direction of any mean current, and tidal stage. The gage does not record continuously, but collects 17–minute bursts of data at a sampling rate of 1 Hz every six hours. The data analysis procedures are described in Work et al. (1990b).

Two types of wave data collection packages have been used: stand–alone and shore–connected. The shore–connected gage has several advantages: operational status can be polled remotely, data can be "downloaded", and sampling parameters can be changed at any time, and internal batteries are charged by shore power. The stand–alone gages must be retrieved approximately every three months to replace batteries and clear the data storage space. Failure of this type of unit is not evident until the data are downloaded subsequent to retrieval. This can lead to gaps in the wave data (see Figure 3).

In March, 1991, a lightweight data and power transmission cable was installed running from the Perdido Key Ranger Station to the wave gage tripod. This cable transmitted data successfully, but was found to be too light to bury itself. It was cut and the wave gage replaced with a stand–alone unit in May, 1991. This stand– alone unit used RAM for data storage, and was faulty, resulting in a long gap in the data set including the entire summer of 1991. Since that time, a second wave gage has been added to the tripod so that two gages are collecting data at the same location at the same time. Even this redundancy has not resulted in 100% coverage.

A heavier data/power transmission cable was installed in October, 1991. This cable appears to have successfully buried itself and is currently transmitting data. A stand–alone gage resides beside it; trips are planned at three–month intervals to service both units. Appendix II presents all data collected since December, 1990. Note that some of the data points shown in Appendix II are known to be in error; e.g. the uniform currents for the period 9/10/91—1/17/92. Errors in the pressure sensor usually show up as major changes in the mean water level, from which the tidal stage is computed. Malfunctioning of the current meter is generally indicated by a quasi–steady reported current; this prevents accurate computation of wave and current directions. Bad data points are usually reasonably evident.

2.4 Meteorological Data

Wind speed and direction, air temperature, and rainfall data are all collected by a weather station at the Ranger Station on Perdido Key. Wetness data are no longer recorded as of September, 1991. The anemometer and wind vane required replacement in July, 1991. The reason is clear upon inspection of the Spring '91 weather data: there was a strong tendency, due to corrosion, to overpredict the ocurrence of one wind direction, approximately 7°.

Computer problems resulted in the loss of data for the period May 7 — September 18, 1991. The resulting gap in the data set has been filled in with data from the Pensacola National Weather Service station; a comparison found in Work et al. (1991b) indicated that these data sets were at least qualitatively well–correlated. Calibration of the new anemometer in the field revealed non- linear behavior in the wind vane, as shown in Figure 2.4.

Lacking a good way to remove the error in the reported wind directions, data are simply plotted in Appendix III as they were recorded. Note that reported wind directions from zero through 315° appear to be accurate; only the last 45° band appears to be incorrect. Measurement of the wind speed is independent of the wind direction measurement and appears to be reasonable. The faulty anemometer was replaced in January, 1992. Appendix III presents data for the period December, 1990 — February, 1992.

2.5 Additional Tide Data

The mechanical tide gage installed at Ft. Pickens fishing pier on Santa Rosa Island has been recording since January 30, 1990. Data for the period January, 1991—April, 1991 are presented in Appendix III. Sedimentation around the stilling well for the tide gage has

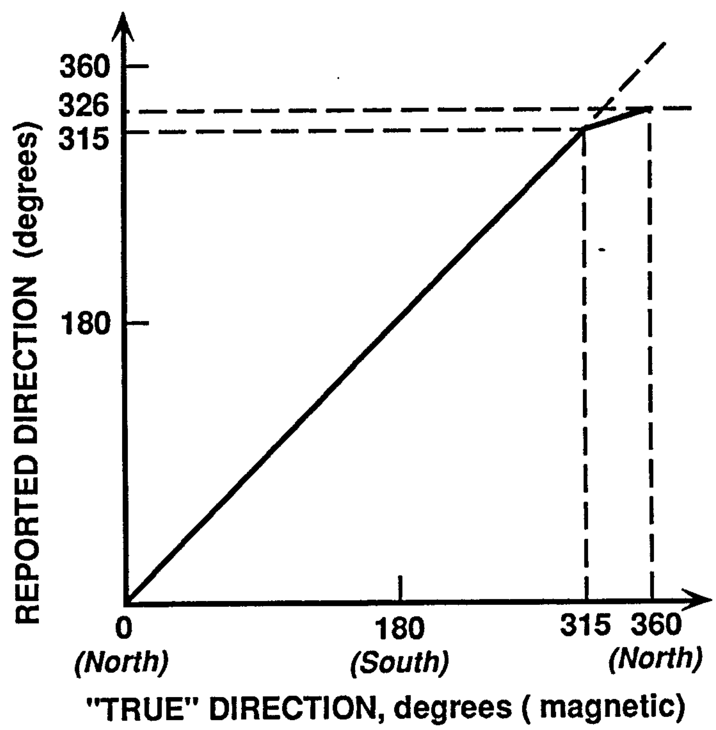

Figure 7: Calibration curve for faulty anemometer.

caused partial blocking of the hole through which water is exchanged; for this reason data subsequent to April, 1991, are not shown.

2.6 Photographic Documentation

Oblique, color, ground photography has been used throughout the study to visually document changes as the nourished beach evolves. Photographs have been taken to coincide with each yearly bathymetric survey. Four photos are generally taken along each profile, viewing north, south, east, and west. The reader may contact the authors regarding availability of the photographs.

3 DISCUSSION

Several features of the evolution of the nourished beach have become evident since its placement. In its original configuration, the added sand represented a long, rectangular block of sediment, with a very steep, nearly linear, slope from the berm down to the toe of the fill. It was anticipated that the earliest stage of its evolution would be a retreat of the mean water line, as wave– enhanced slumping reduced the steep seaward slope of the fill. This can be seen in Figure 8, where the change in the distance from each monument to the waterline, relative to the pre- -nourishment case, is plotted.

Figure 9 presents a similar analysis of changes in the position of the –4 m contour. Here the trend is reversed, i.e. the contour is moving seaward with time, reflecting the gradual reduction in the seaward slope of the new sand. Obviously the "pivot point", above which erosion is occurring and below which sand is being deposited, lies above the –4 m contour. Figure 10 supports this conclusion by presenting the "average" profile within the nourished area for several time periods. The average profile is determined by superimposing several profiles of interest and "pinning" them at the waterline, so that they are all referred to a common horizontal coordinate. For each distance of interest, the depth is determined by averaging corresponding data from each profile included in the averaging process. Figure 11 shows similar results for profiles lying west of the nourished area. The difference is marked;

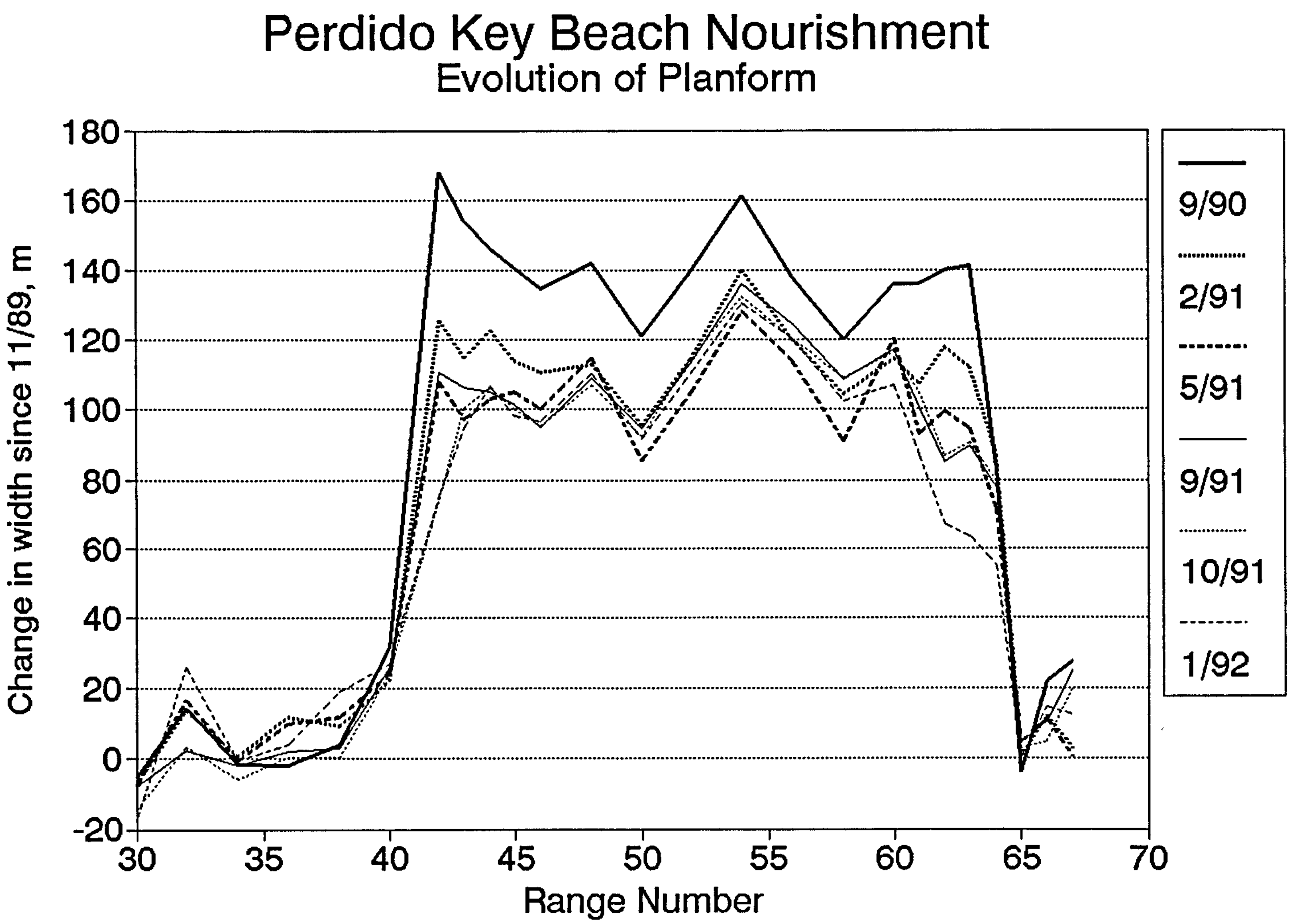

Figure 8: Evolution of dry beach width since completion of beach nourishment.

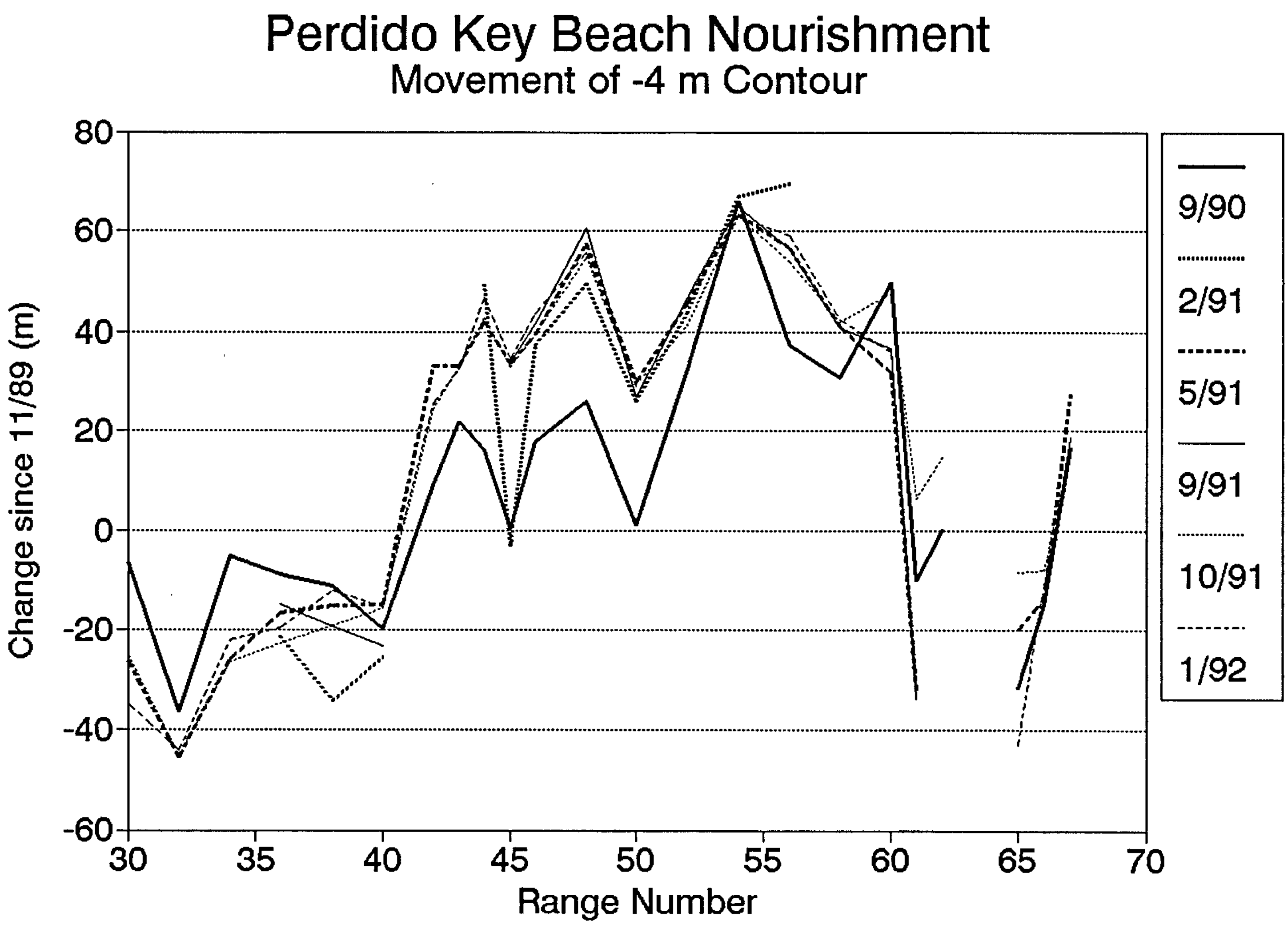

Figure 9: Movement of –4 m contour since completion of beach nourishment.

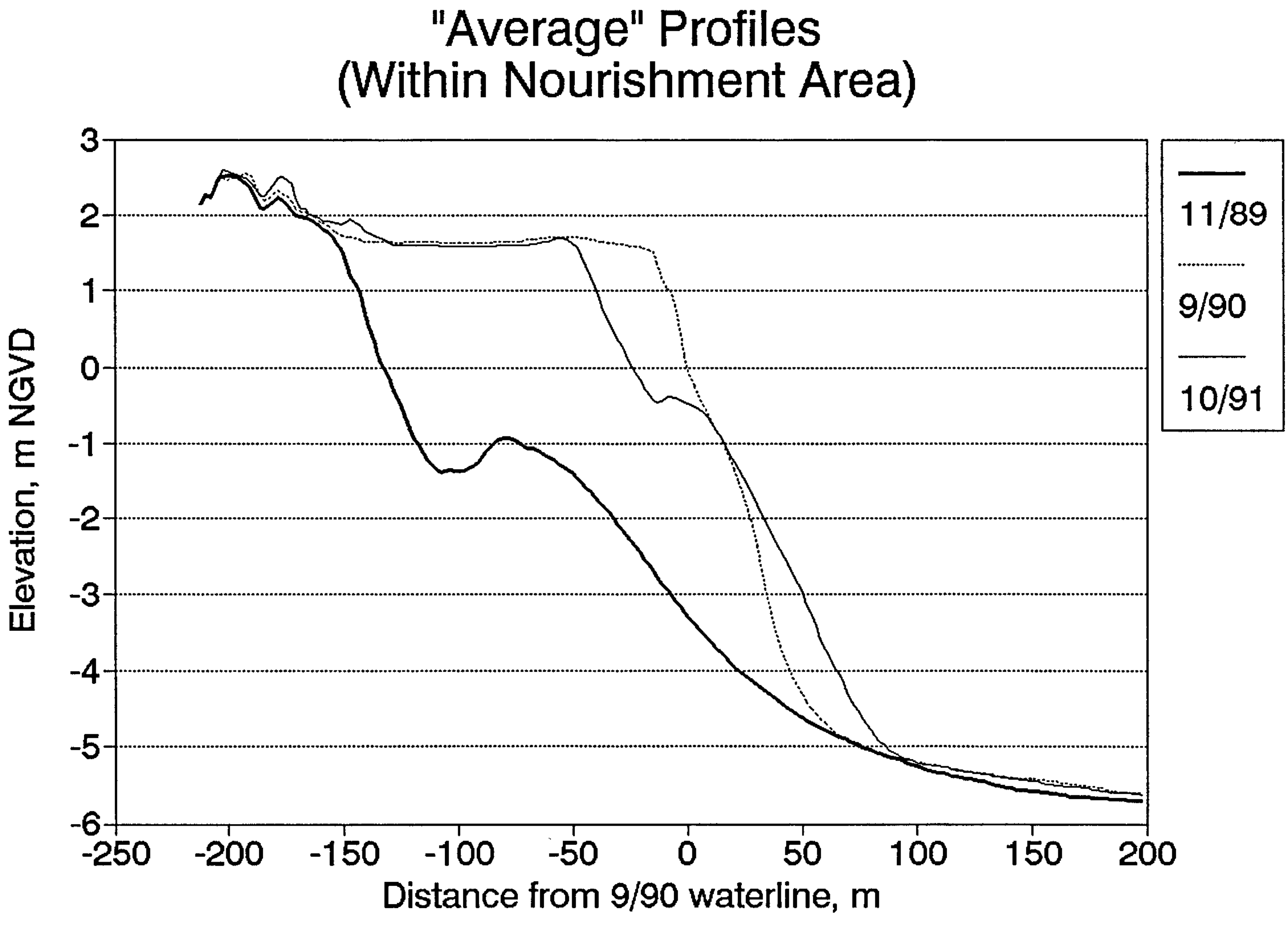

Figure 10: Average profiles within nourished area. Averages based on profiles at R–45, R–46, R–48, R–50, R–52, R–56 and R–58.

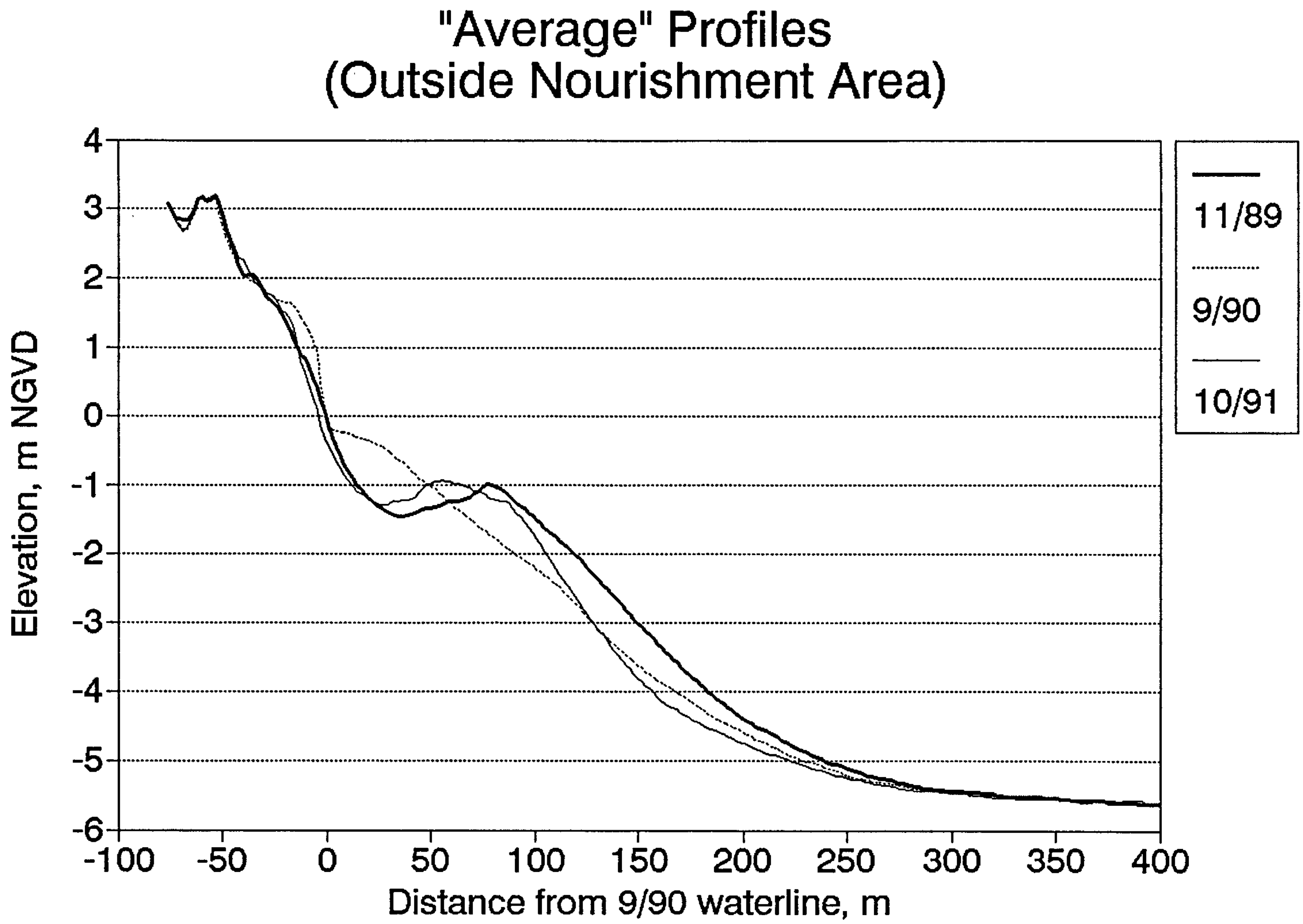

Figure 11: Average profiles west of nourishment area. Averages based on profiles at R–30, R–32, R–34, R–36 and R–38.

changes in the nourished area are much more distinctive and represent more than the primarily seasonal changes evident outside the nourished area. The profiles lying outside the nourished area should eventually start benefitting from the nourishment, as sediment diffuses out of the nourished area. This is becoming evident at R–41, but the process is slower than the cross–shore equilibration. Evolution of the eastern end of the fill is significantly more complex due to the presence of Pensacola Pass and Caucus Shoal.

Figure 12 illustrates the cross–shore redistribution of sediment within the nourished area. There is a net loss indicated, in part due to the movement of sediment in the longshore direction away from the nourished region, and possibly in part due to compaction of the fill material and wind blown transport into the dunes. Figure 13 presents a similar result for the profiles west of the nourished area. The cross–shore signal in this region is roughly half as strong as within the nourished area, but the net loss is much greater. A net gain should become evident when the new sand reaches these western profiles.

Figure 14 provides some additional insight into the sediment transport processes at the site. To generate this figure, each profile was integrated from the dry beach out to a reasonable depth of closure, beyond which changes were neglible. Any change in the resulting areas is indicative of erosion or accretion. In Figure 14, positive values of $\mathrm{d}Qx/\mathrm{d}x$ indicate erosion, while negative values denote accretion. The large, positive spikes shown near R–42 and R–63 are thus losses of sediment from each end of the beachfill, and the corresponding negative peaks adjacent to the fill are areas of accretion. The accretion at the eastern end of the beachfill is the smaller of these two zones; the proximity of Caucus Shoal and Pensacola Pass to this feature complicates interpretation. It is likely that some of the material lost off the eastern end of the beachfill is entering the inlet and therefore not contributing to accretion of the local profiles.

Two other erosional zones are indicated in Figure 14: one within the nourished beach at R–54, and the other downdrift of the beachfill. Erosion of one area relative to an adjacent area generally is caused by a longshore gradient in either the wave/current field, the bathymetry, or in the "erodibility" of the material (this statement assumes the absence of barriers to littoral transport). No structures are found in the vicinity (excepting a small jetty in Pensacola Pass), and the sand has been shown to be quite uniform, with the excep-

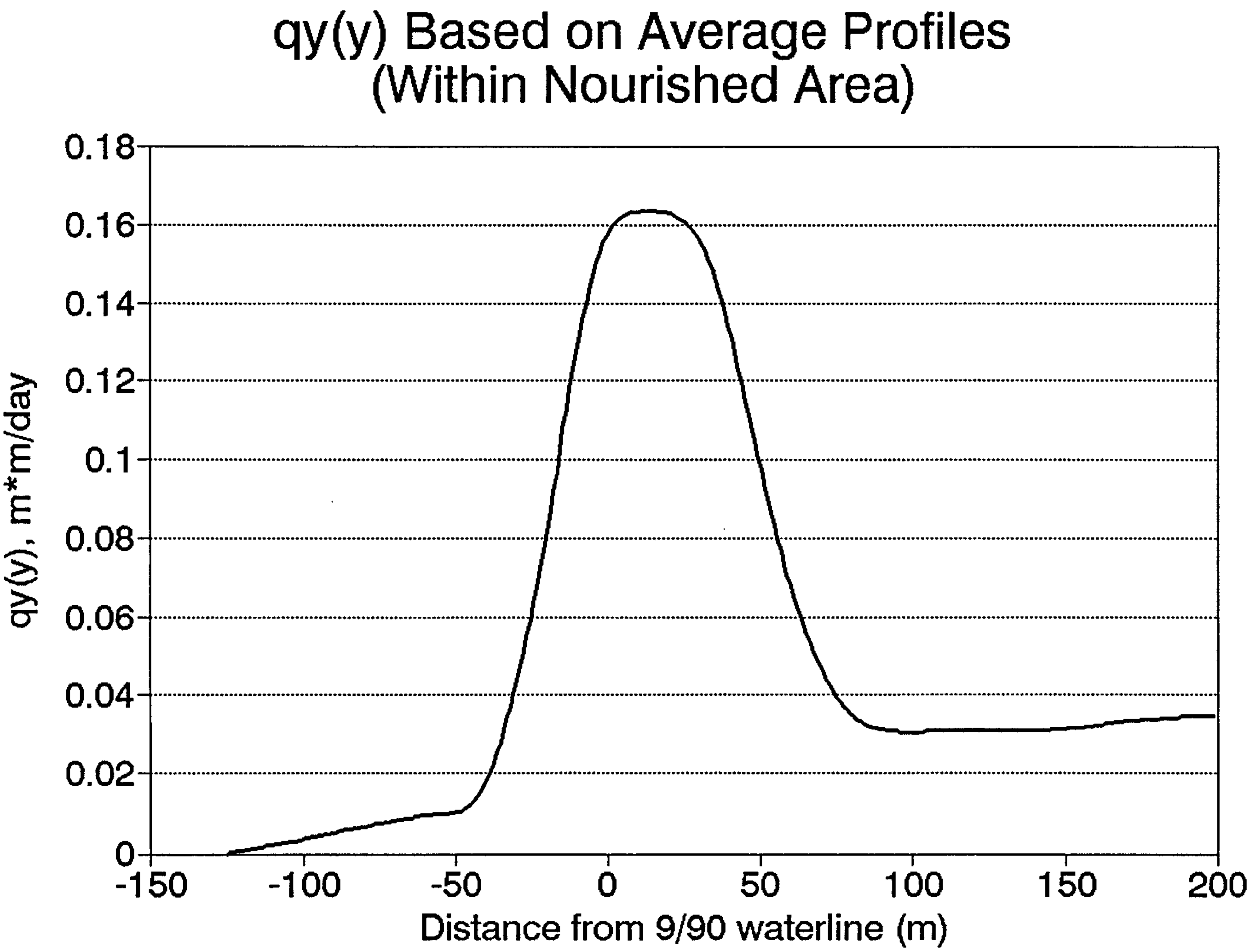

Figure 12: Cross–shore sediment transport within nourished area, based on average profiles shown in Figure 10. Results based on profile deformations occurring between September, 1990, and October, 1991.

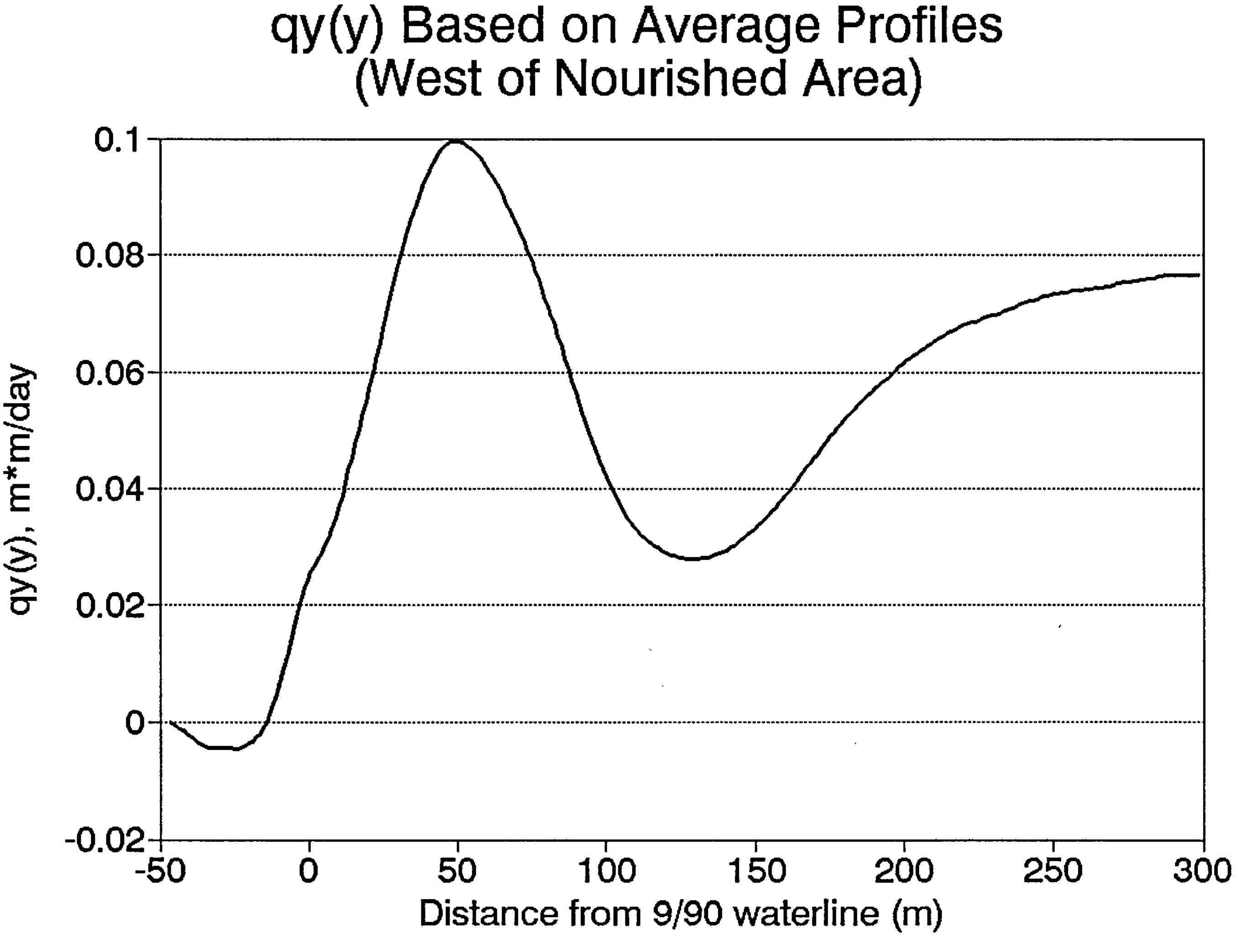

Figure 13: Cross–shore sediment transport west of nourishment area, based on average profiles shown in Figure 11. Results based on profile deformations occurring between September, 1990, and October, 1991.

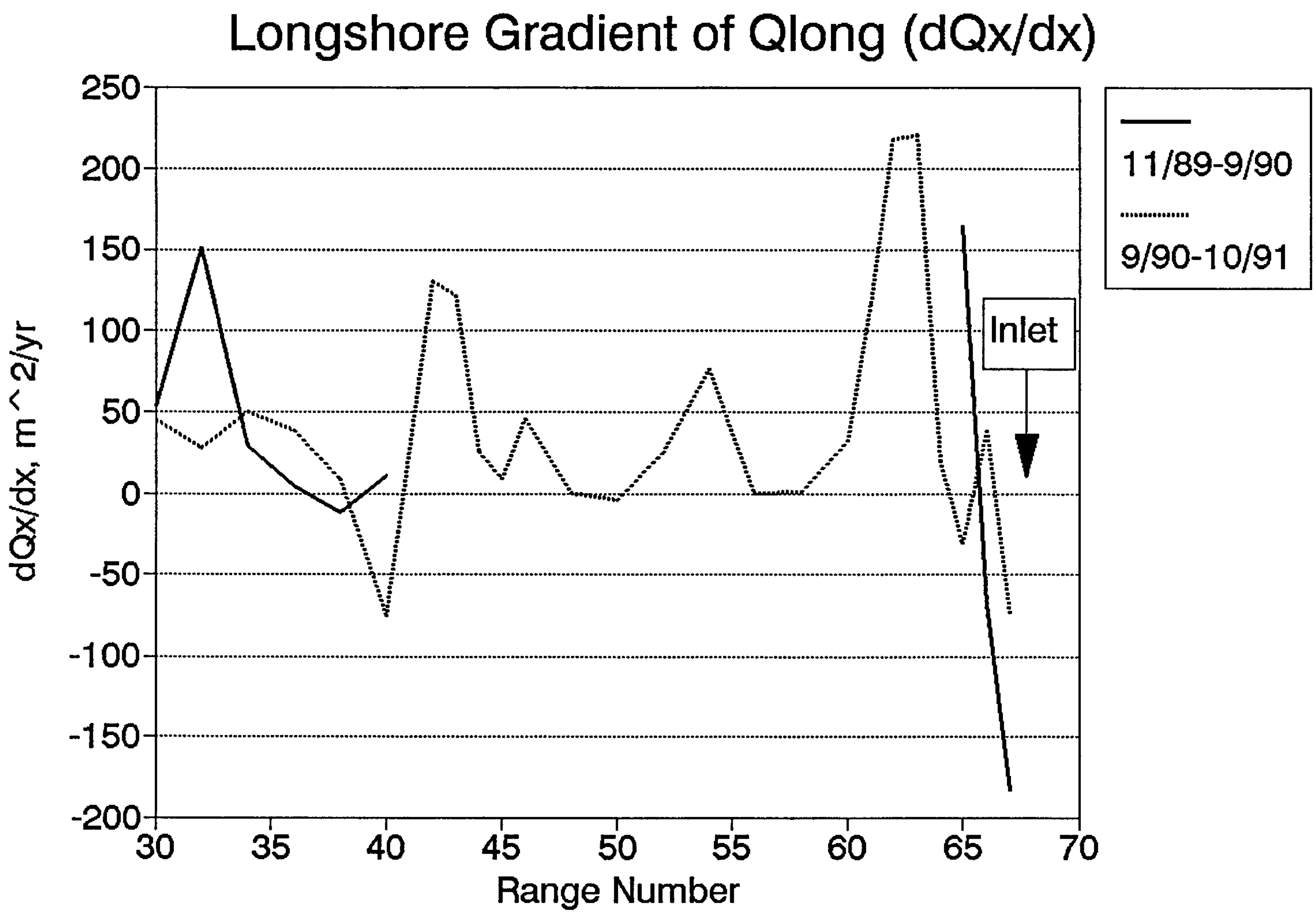

Figure 14: Longshore gradient of longshore sediment transport for entire study area.

tion of some pockets of very fine material offshore of the beachfill. Therefore the erodibility of the material may be considered uniform. The bathymetric contours along Perdido Key, prior to nourishment, were generally shore–parallel, which would tend to minimize longshore gradients in the nearshore wave and current fields. The predominant northwesterly waves and currents and the sheltering caused by Caucus Shoal could be responsible for the erosion centered at R–54. This argument would require that R–54 lie outside the wave shadow created by the shoal and the profiles updrift (east) of R–54 lie inside the shadow. A numerical model for wave refraction over the surveyed bathymetry and measurements of the wave climate near Caucus Shoal would allow further investigation of this hypothesis.

The erosion downdrift of the beachfill for the first year following the nourishment project is relatively minor and may be considered "background" erosion. This region should eventually benefit from the nourishment project as sediment is transported westward from the nourished zone.

Interpretation of the data collected in the field is an ongoing process; the lead author is currently writing a Ph.D. dissertation that will include a more detailed summary and analysis of the results of the physical monitoring study.

4 REFERENCES

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Work, P.A., Lin, L.–H., and Dean, R.G., 1990b. "Perdido Key Beach Nourishment Project: Gulf Islands National Seashore. First Progress Report." Coastal and Oceanographic Engineering Department, University of Florida, Gainesville, Florida. August 27, 1990. COEL 90–009.

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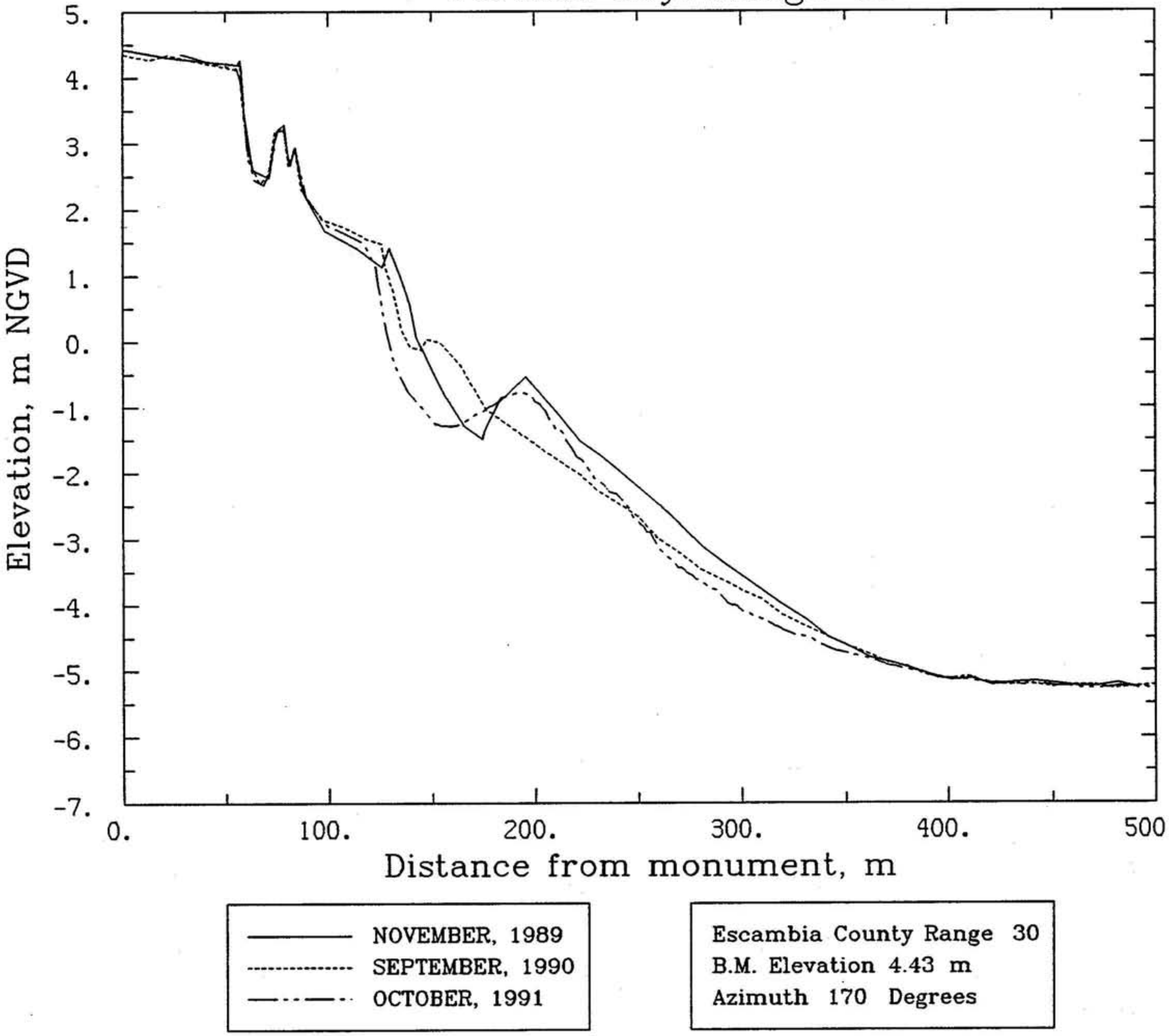
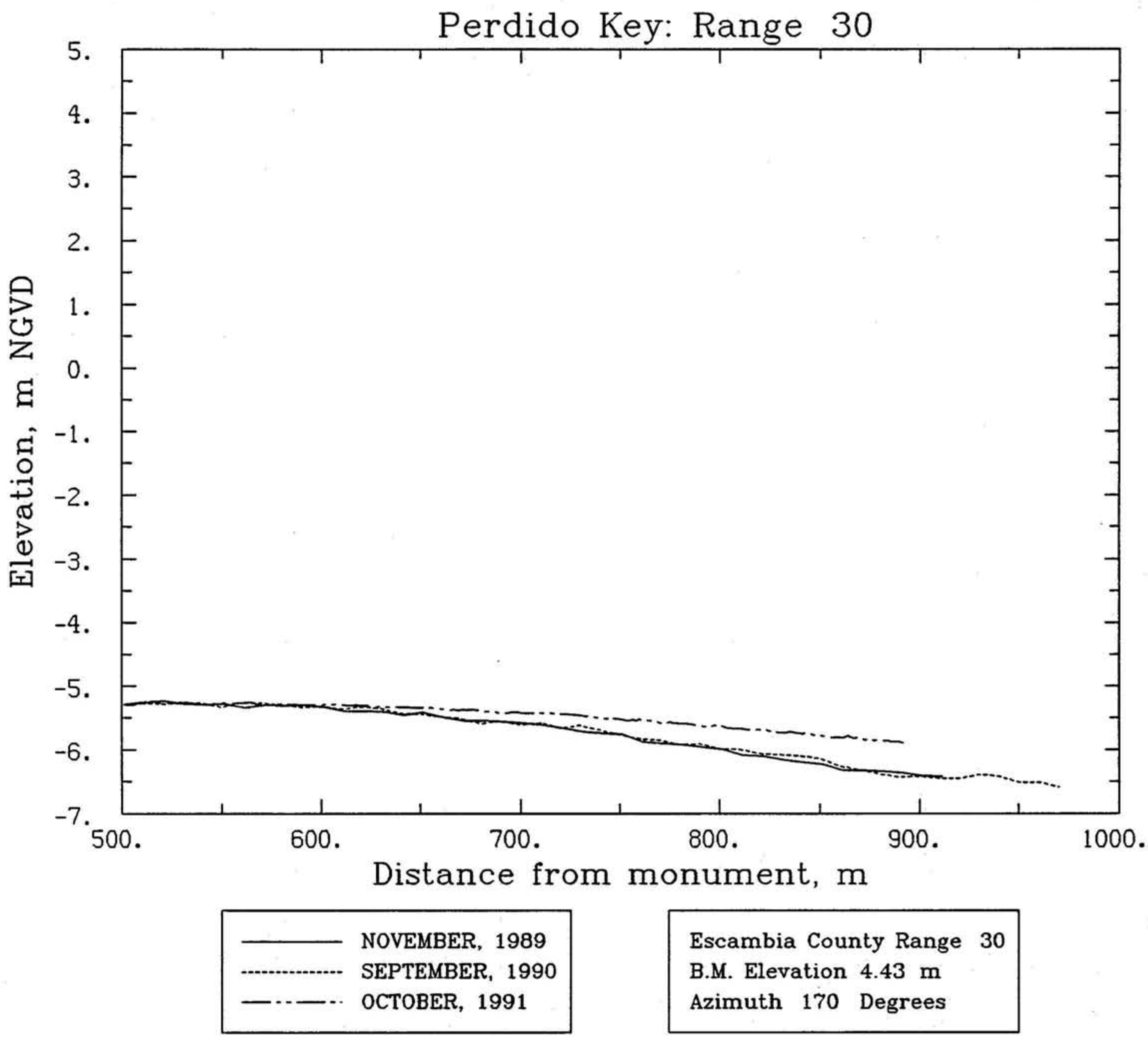
APPENDIX I

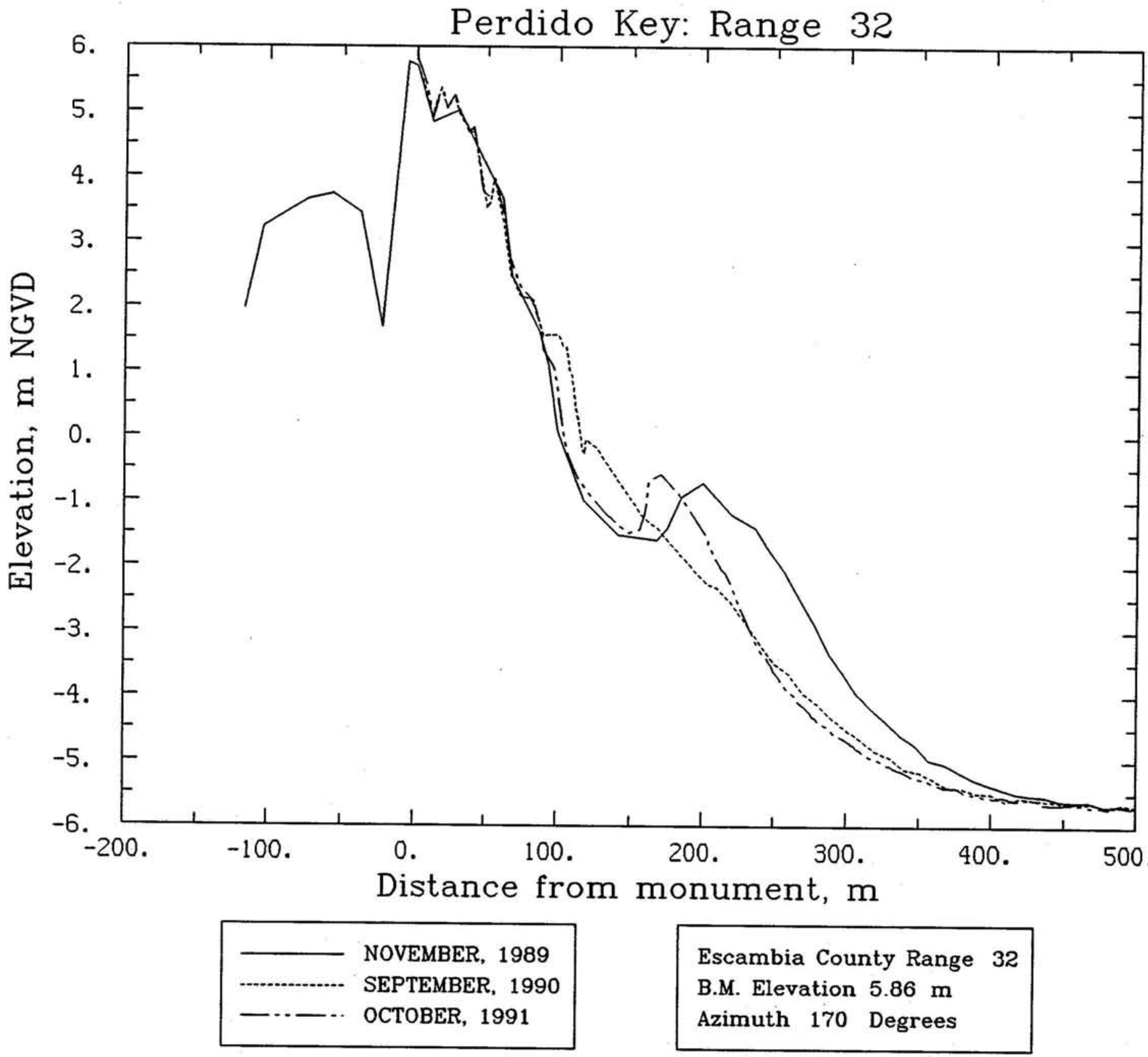
BEACH PROFILES

Notes:
1) All elevations are in meters, relative to NGVD.
2) Horizontal origin is the survey monument, with distances toward the Gulf of Mexico defined as positive.
3) Reported bearings are for observer standing on monument, looking offshore along survey line.

Perdido Key: Range 30




Perdido Key: Range 30
Elevation, m NGVD
5.
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 30
B.M. Elevation 4.43 m
Azimuth 170 Degrees



Perdido Key: Range 32
Elevation, m NGVD
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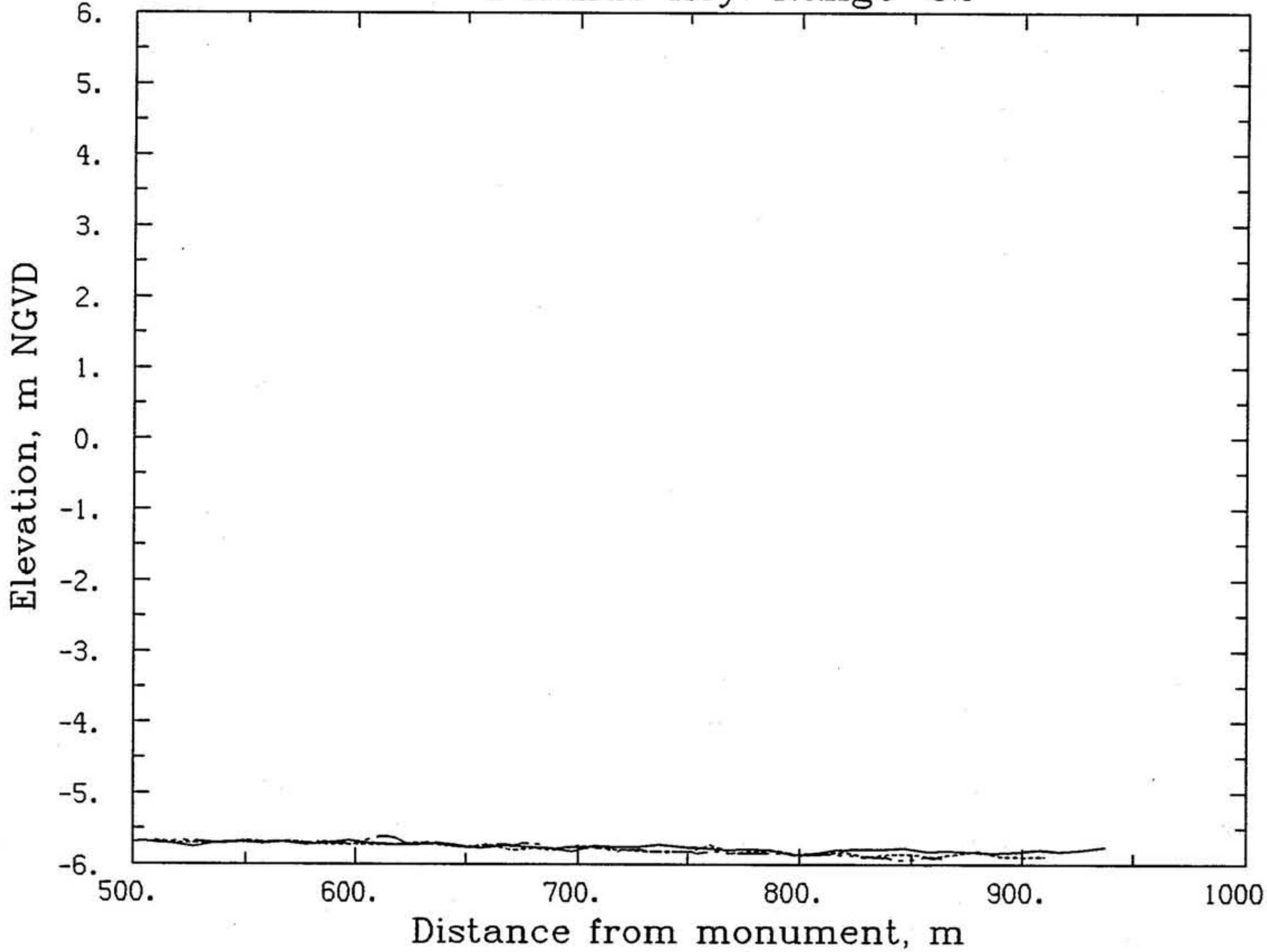
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 32
B.M. Elevation 5.86 m
Azimuth 170 Degrees

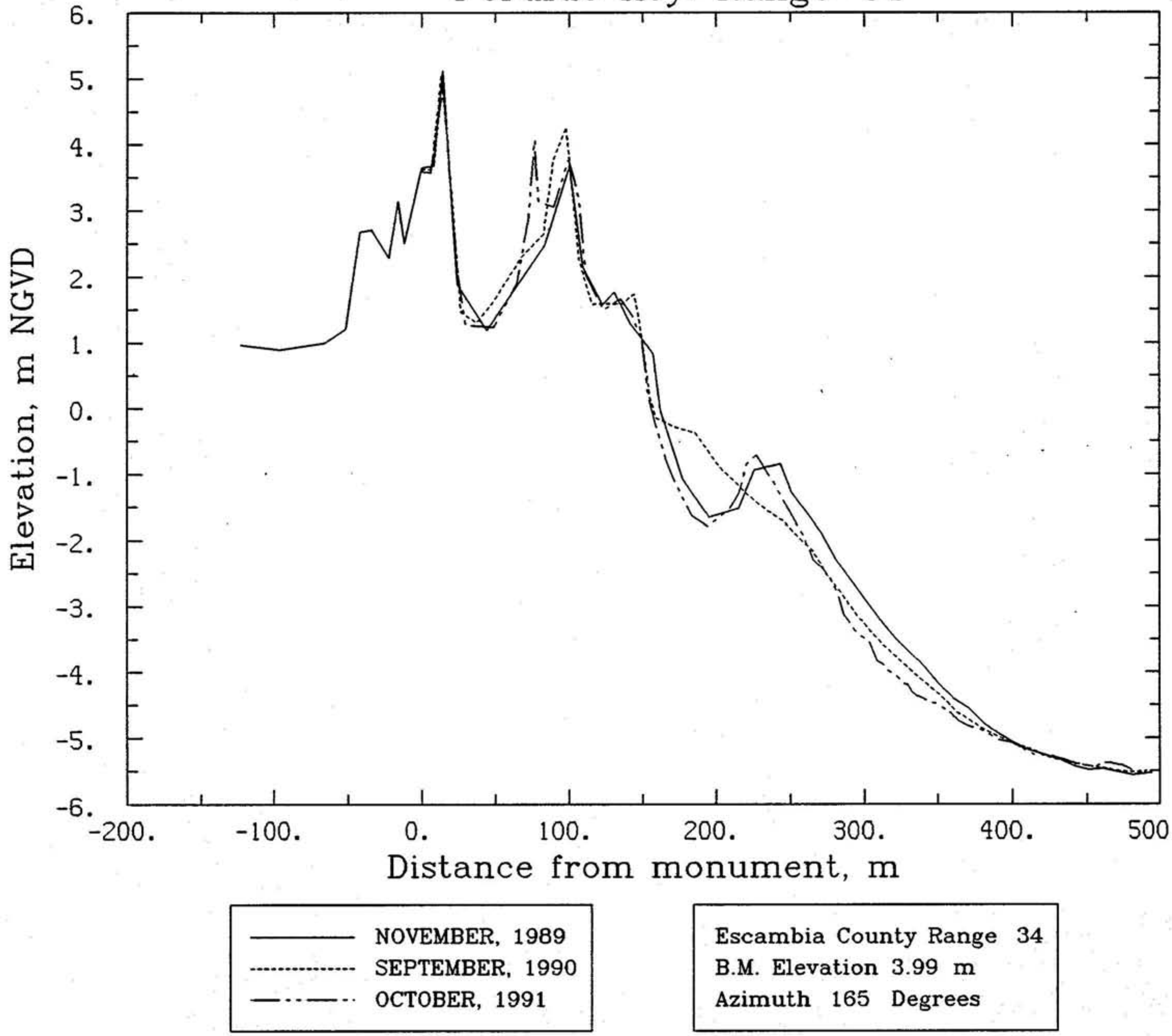
Perdido Key: Range 32

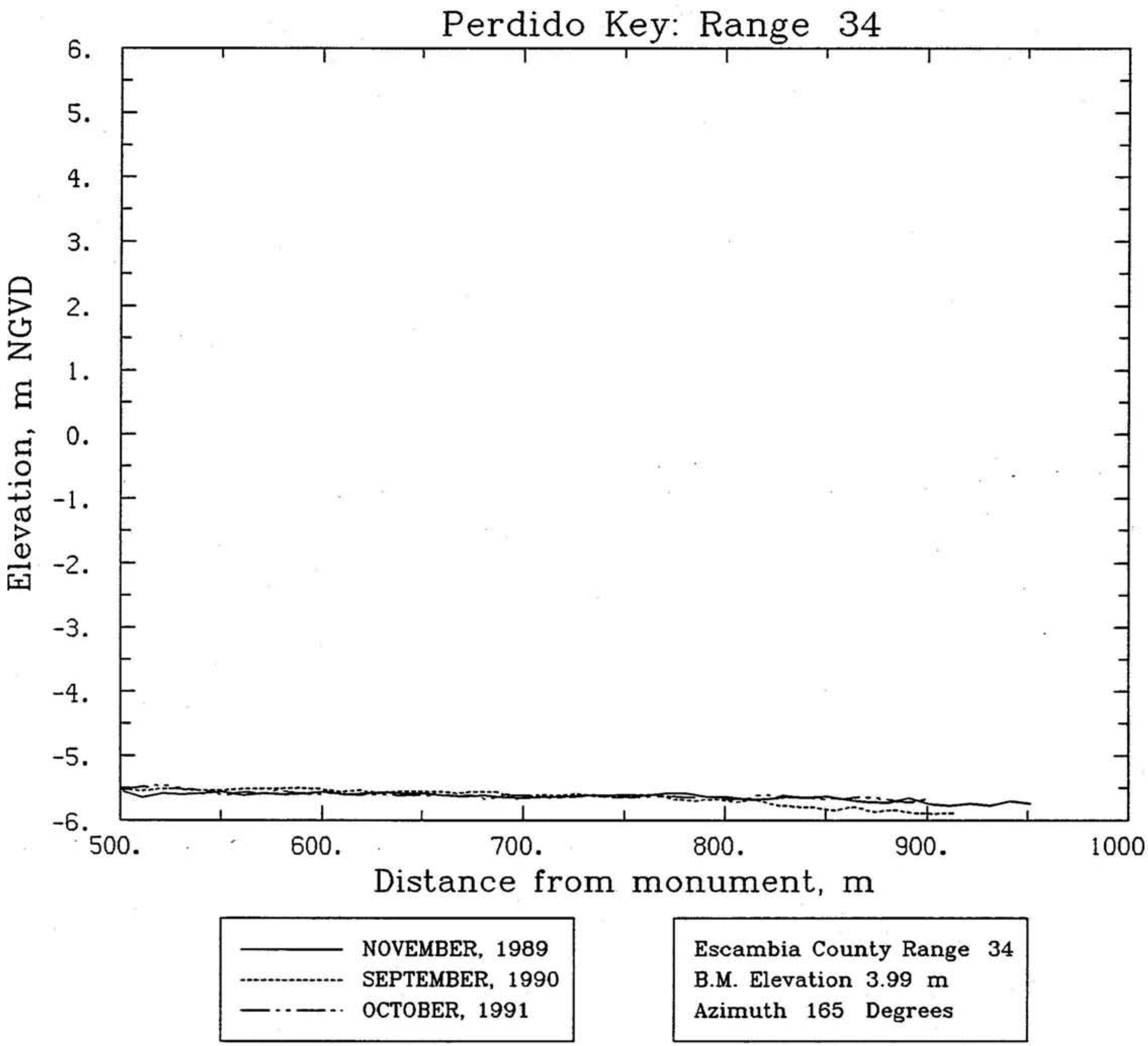


——	NOVEMBER, 1989
-------	SEPTEMBER, 1990
—·-—	OCTOBER, 1991

Escambia County Range 32
B.M. Elevation 5.86 m
Azimuth 170 Degrees

Perdido Key: Range 34

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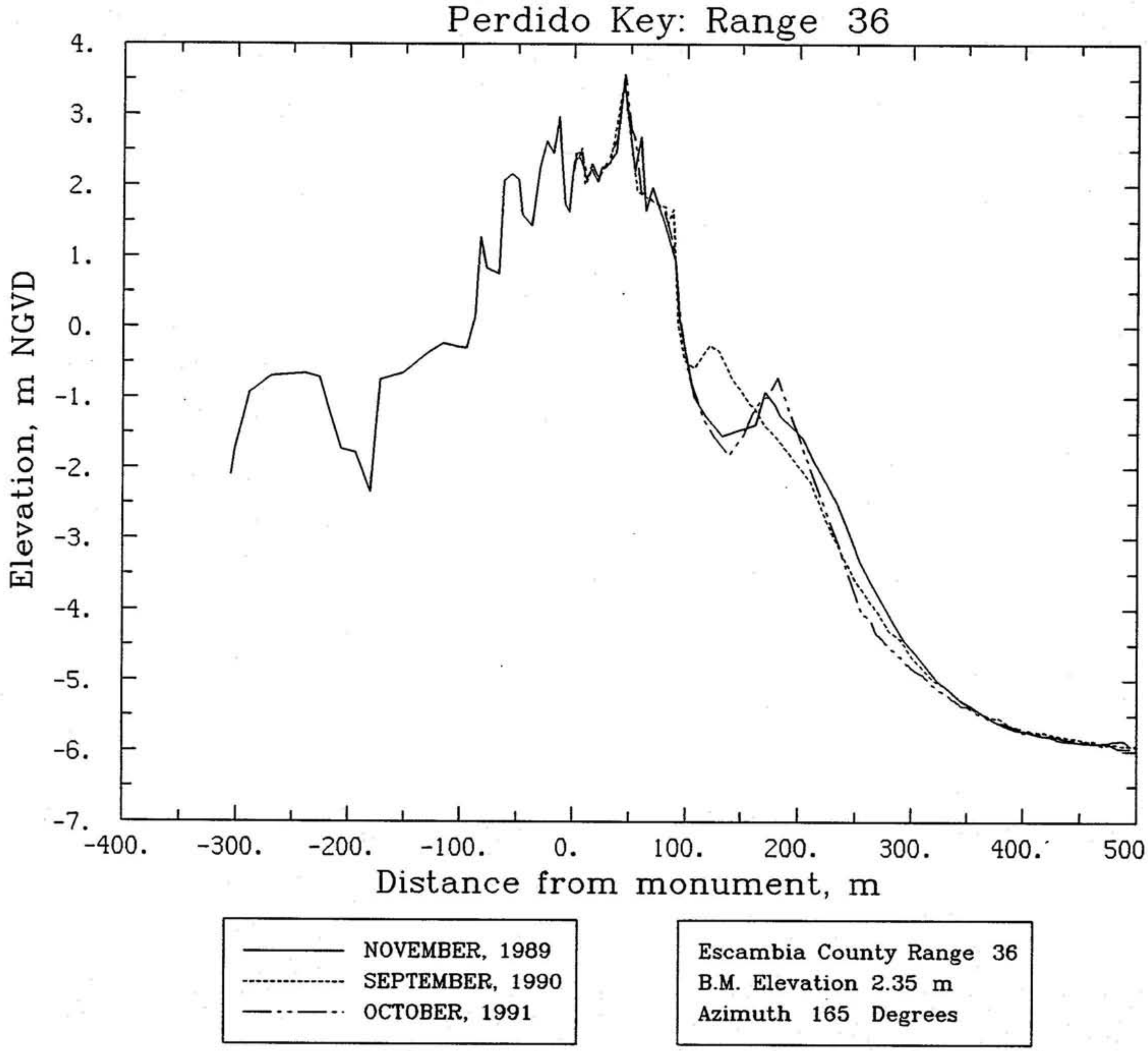
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
500.
600.
700.
800.
900.
1000.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 34
B.M. Elevation 3.99 m
Azimuth 165 Degrees


Perdido Key: Range 36
Elevation, m NGVD
Distance from monument, m
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-400.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
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SEPTEMBER, 1990
OCTOBER, 1991
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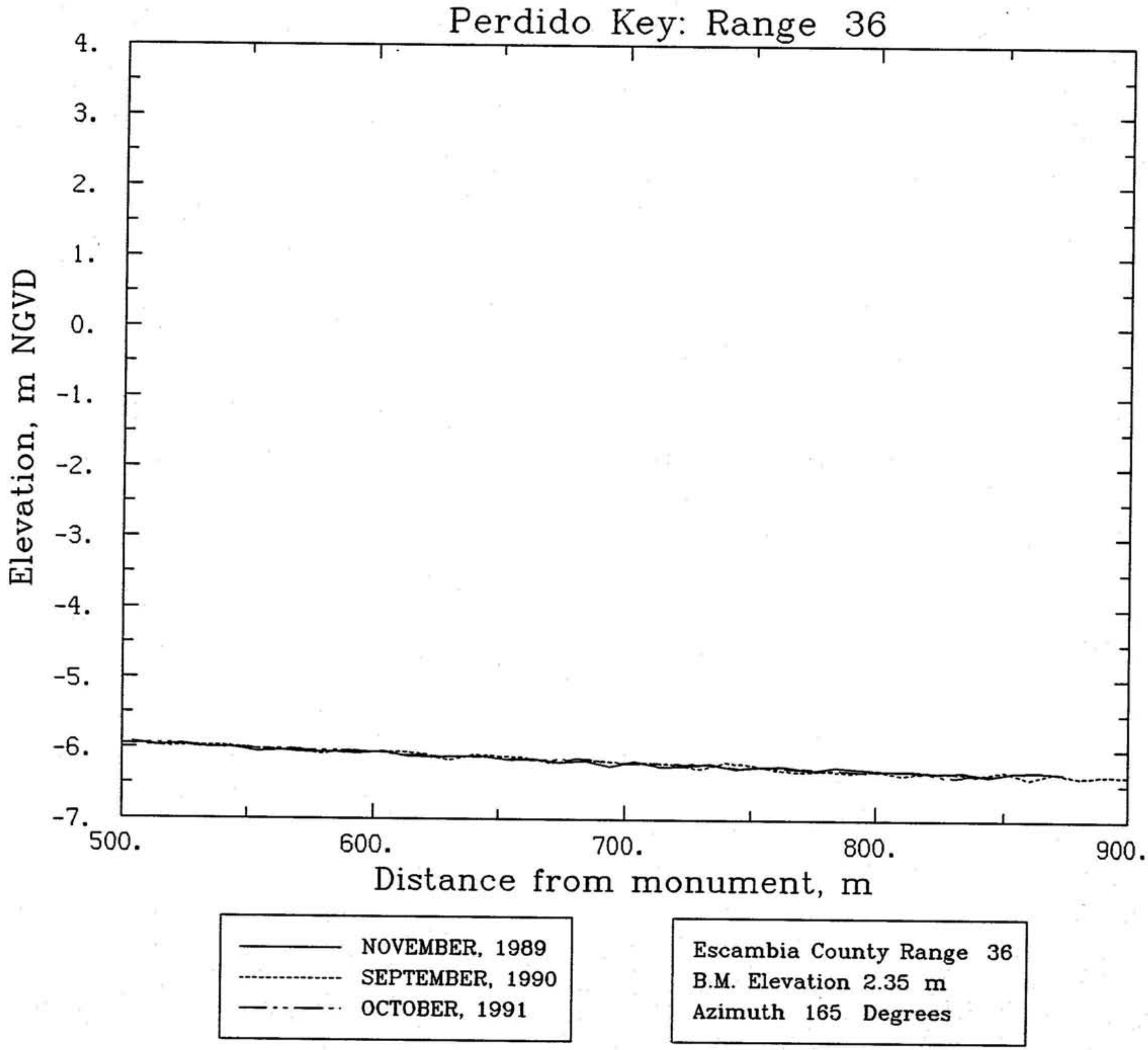
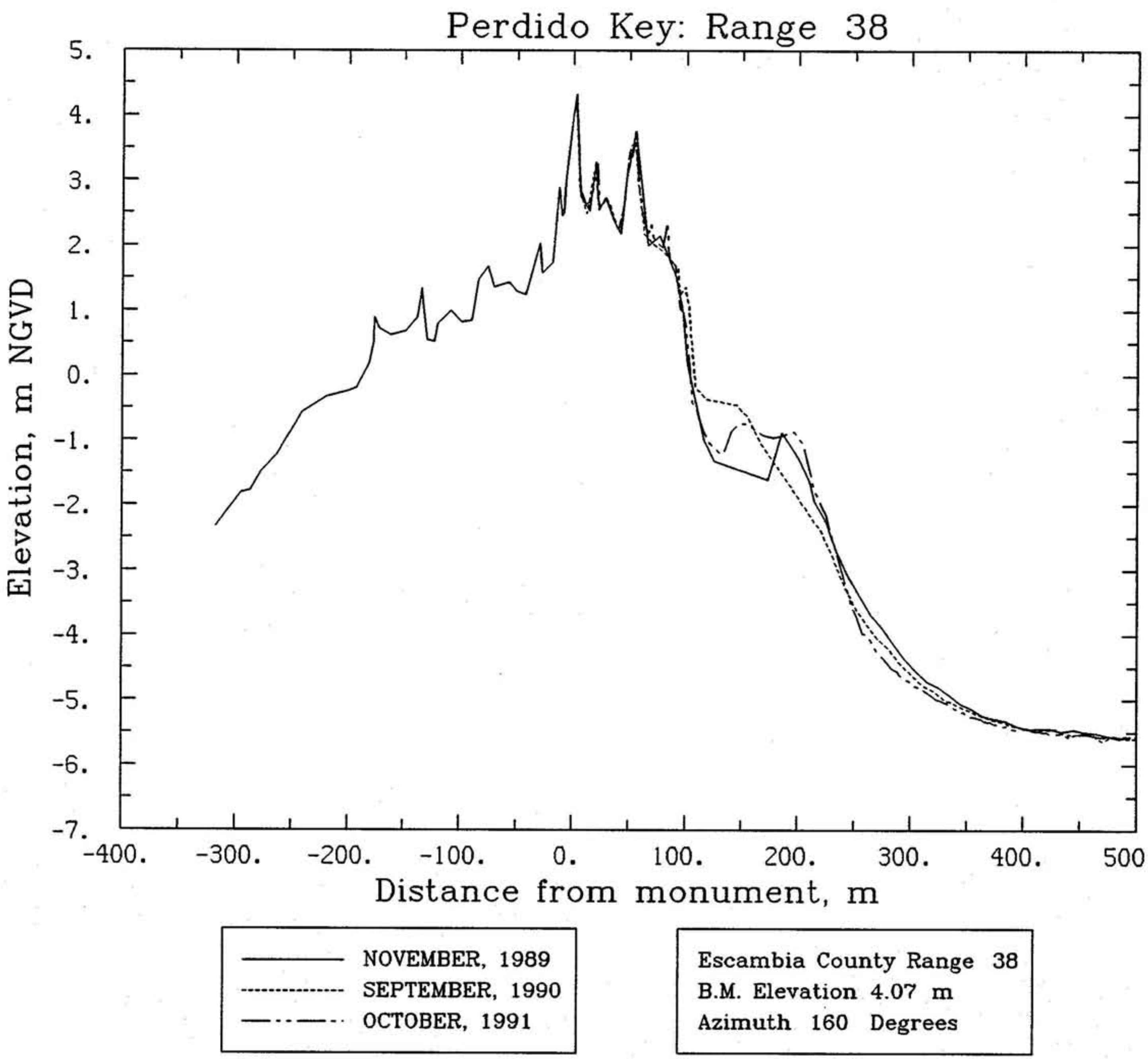
B.M. Elevation 2.35 m
Azimuth 165 Degrees



Perdido Key: Range 36
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 36
B.M. Elevation 2.35 m
Azimuth 165 Degrees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Elevation, m NGVD
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4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-400.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
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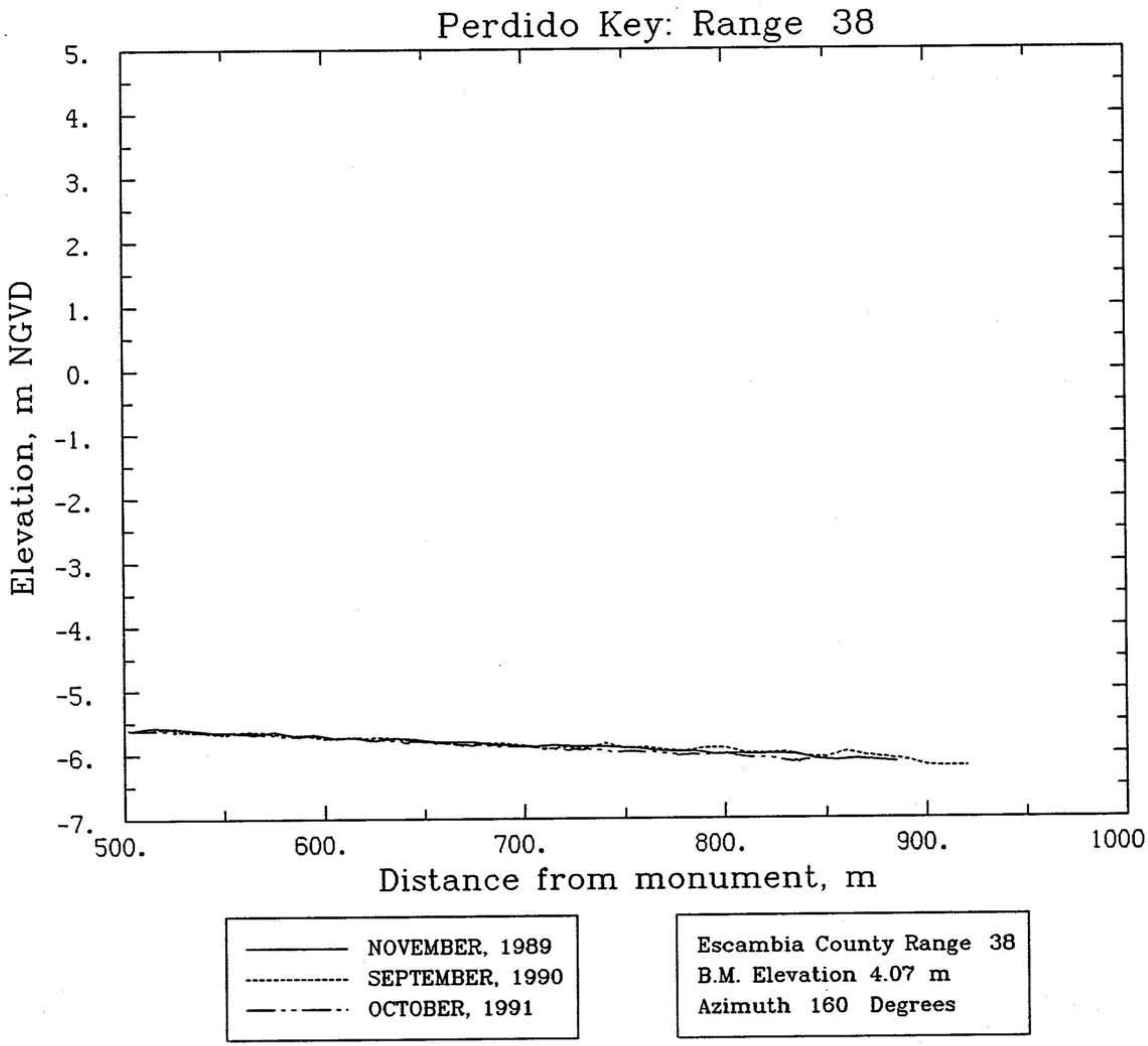
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 38
B.M. Elevation 4.07 m
Azimuth 160 Degrees



Perdido Key: Range 38
Elevation, m NGVD
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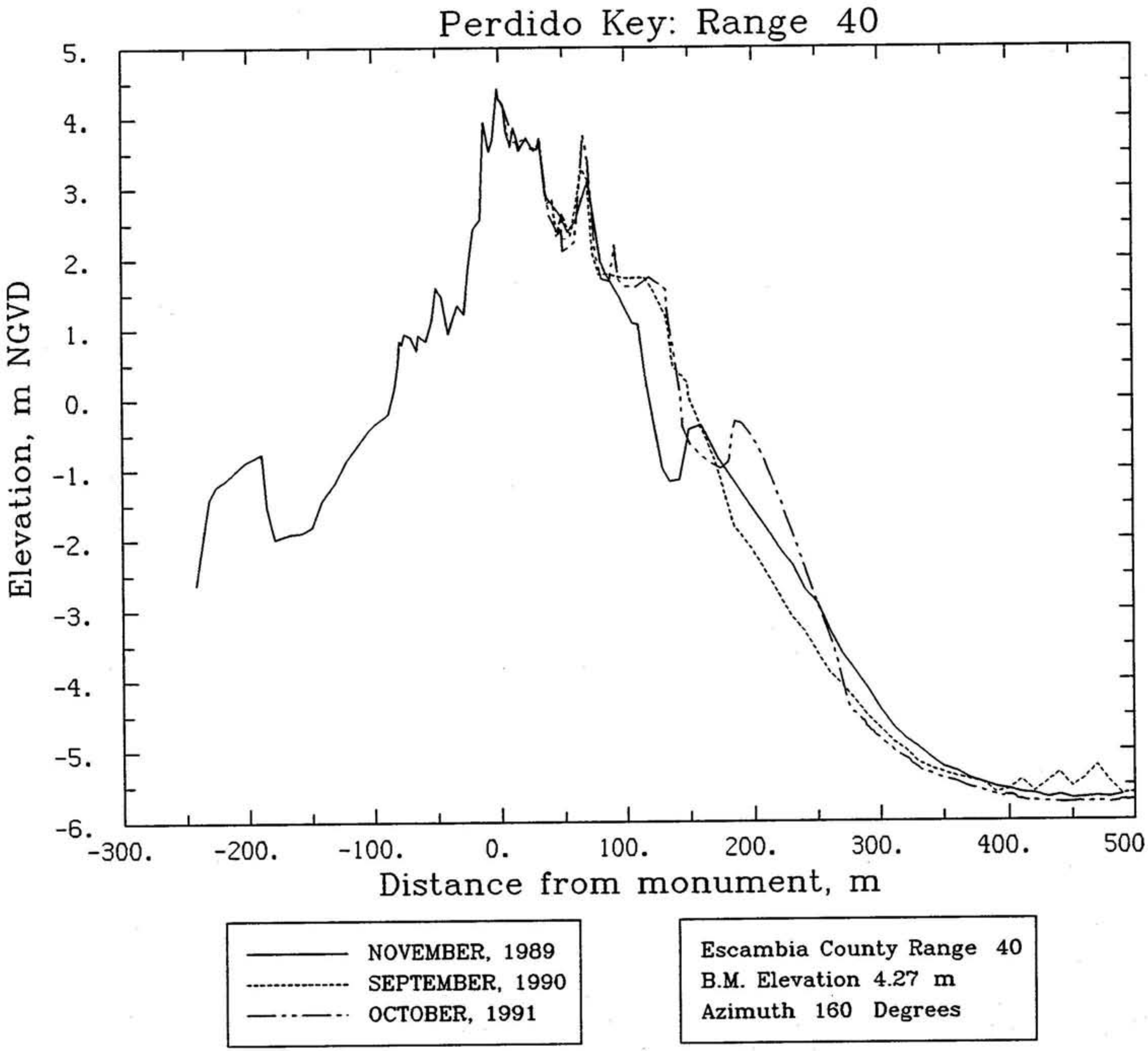
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 38
B.M. Elevation 4.07 m
Azimuth 160 Degrees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3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
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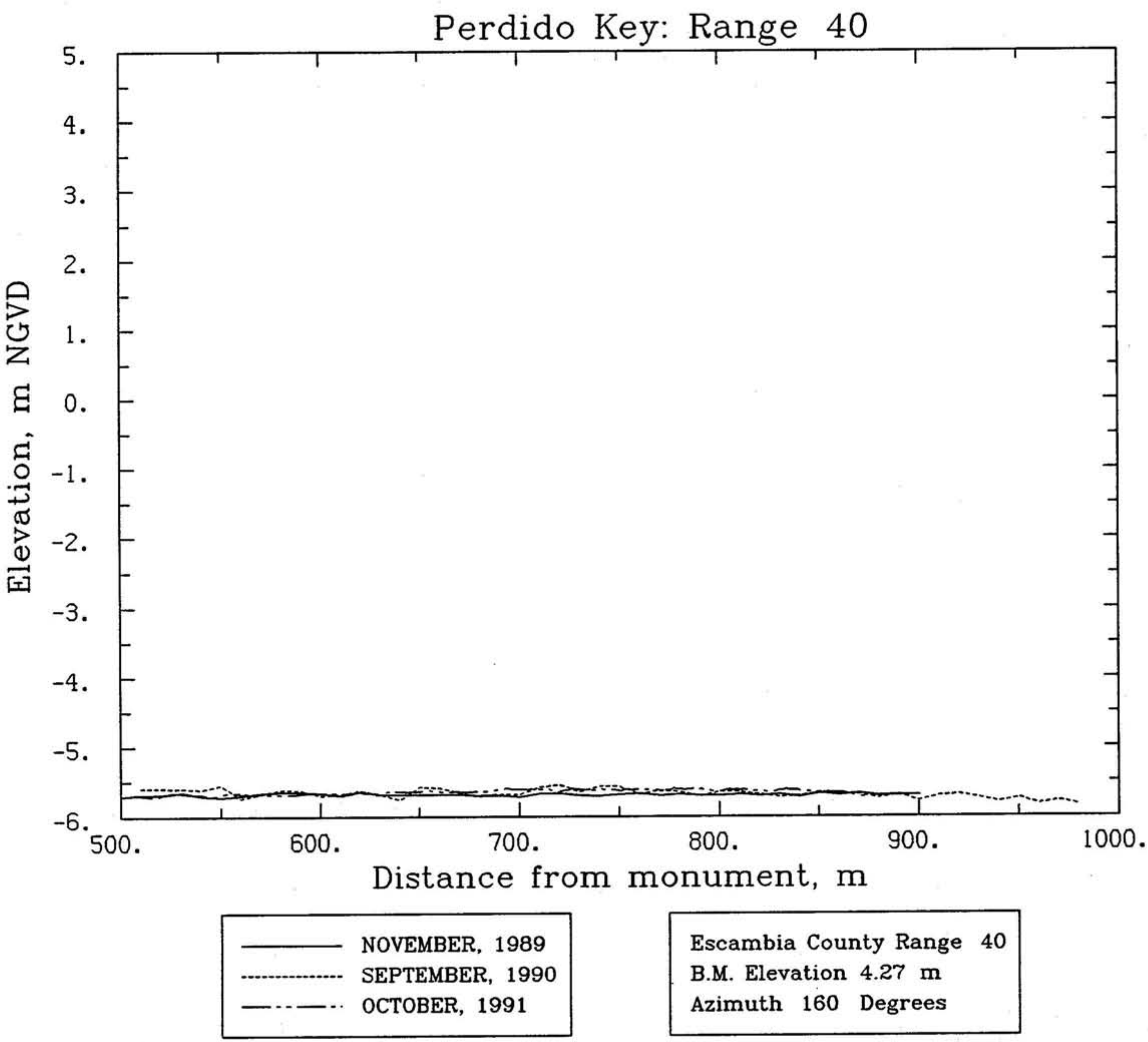
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 40
B.M. Elevation 4.27 m
Azimuth 160 Degrees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4.
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-1.
-2.
-3.
-4.
-5.
-6.
500.
600.
700.
800.
900.
1000.
Distance from monument, m
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SEPTEMBER, 1990
OCTOBER, 1991
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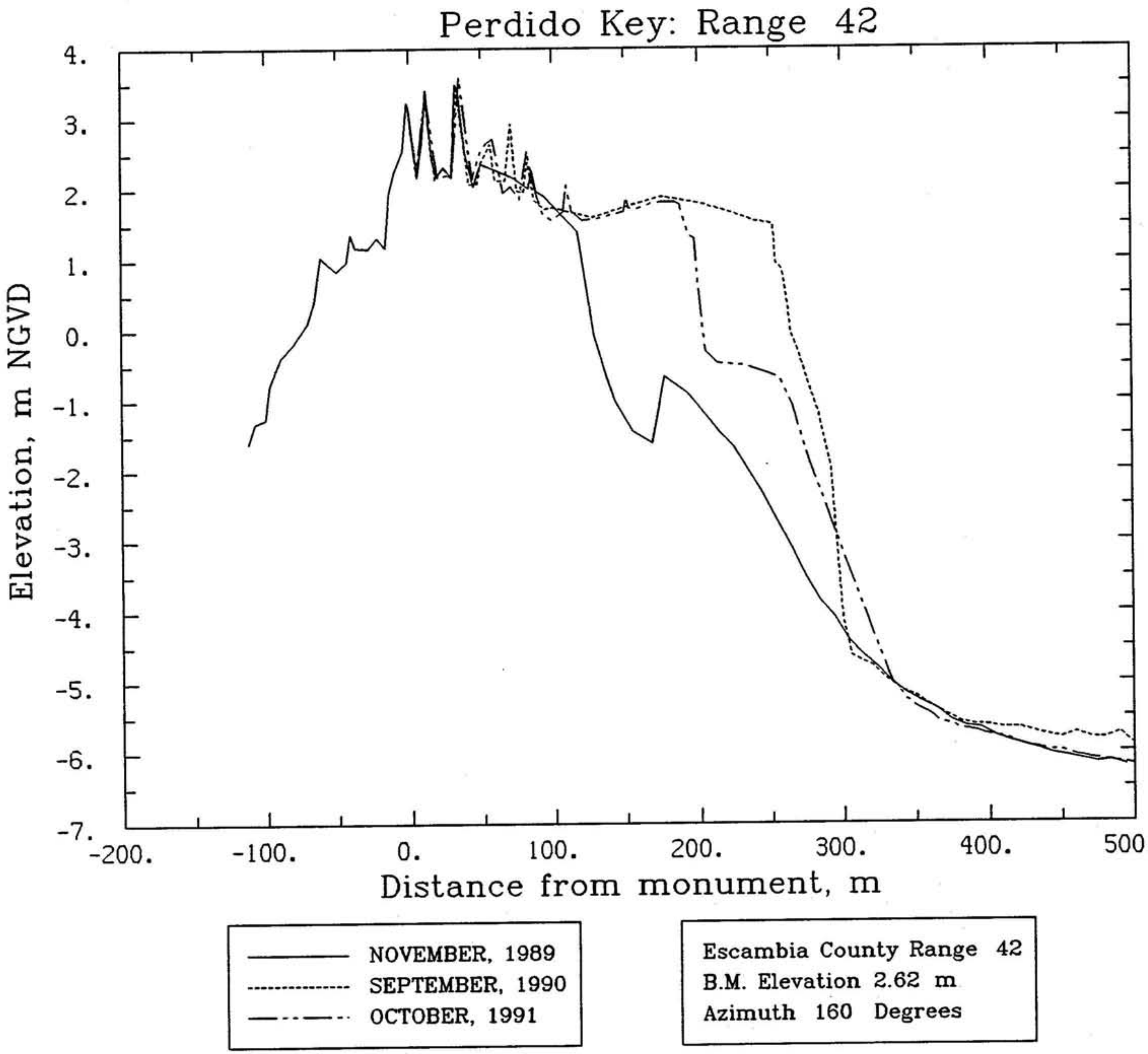
B.M. Elevation 4.27 m
Azimuth 160 Degrees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-2.
-3.
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-5.
-6.
-7.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
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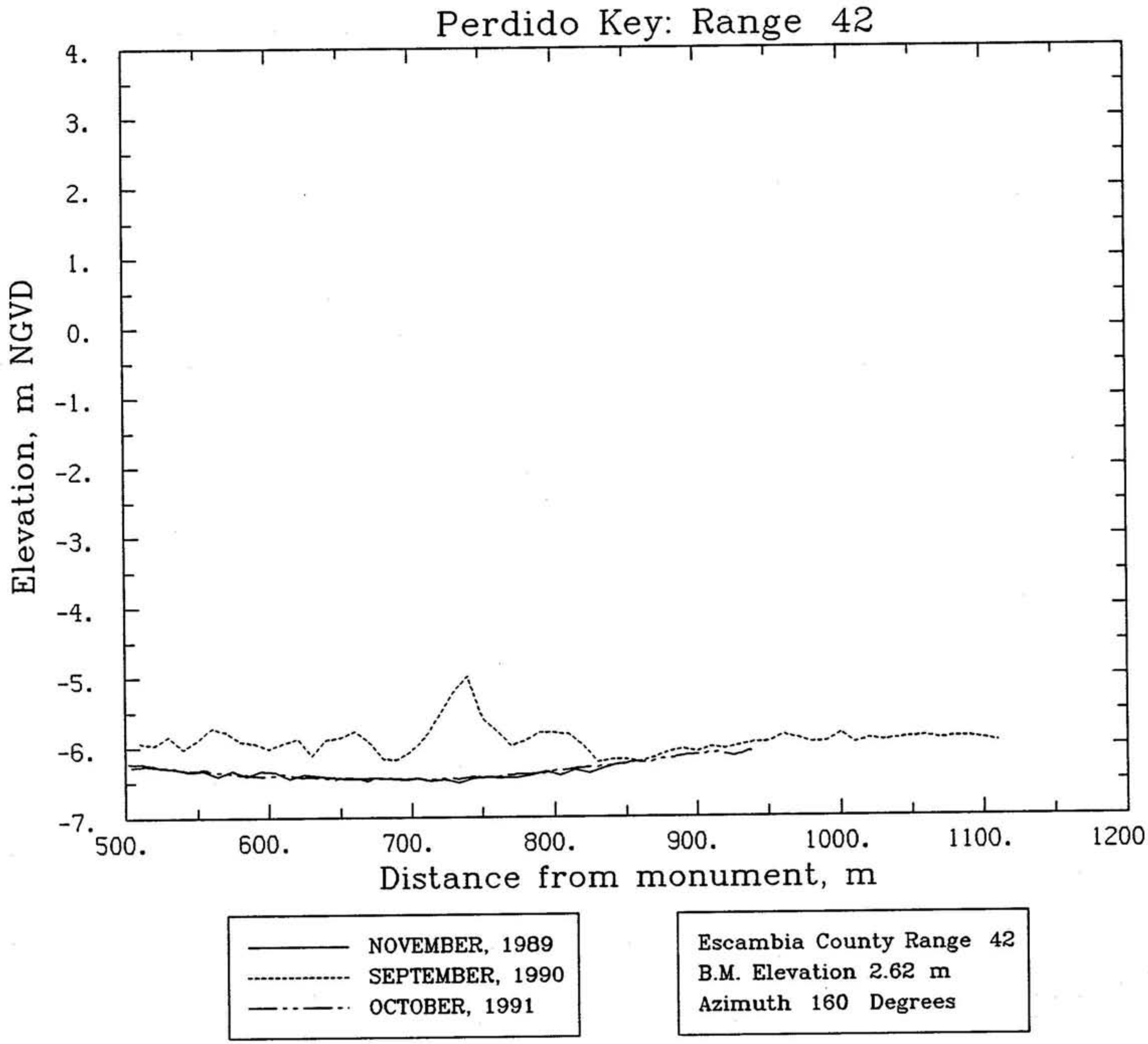
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 42
B.M. Elevation 2.62 m
Azimuth 160 Degrees



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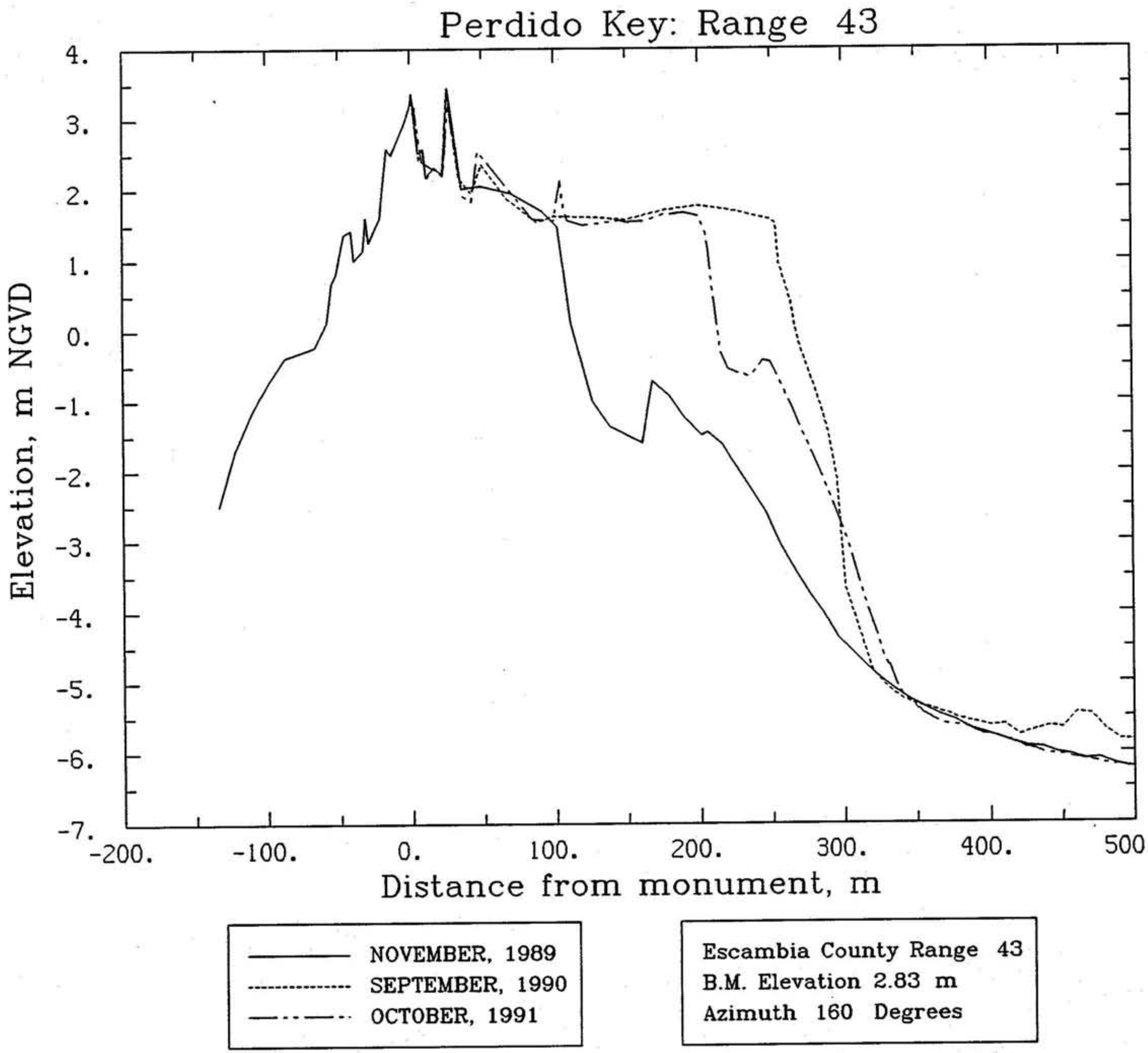
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
Elevation, m NGVD
500.
600.
700.
800.
900.
1000.
1100.
1200.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 42
B.M. Elevation 2.62 m
Azimuth 160 Degrees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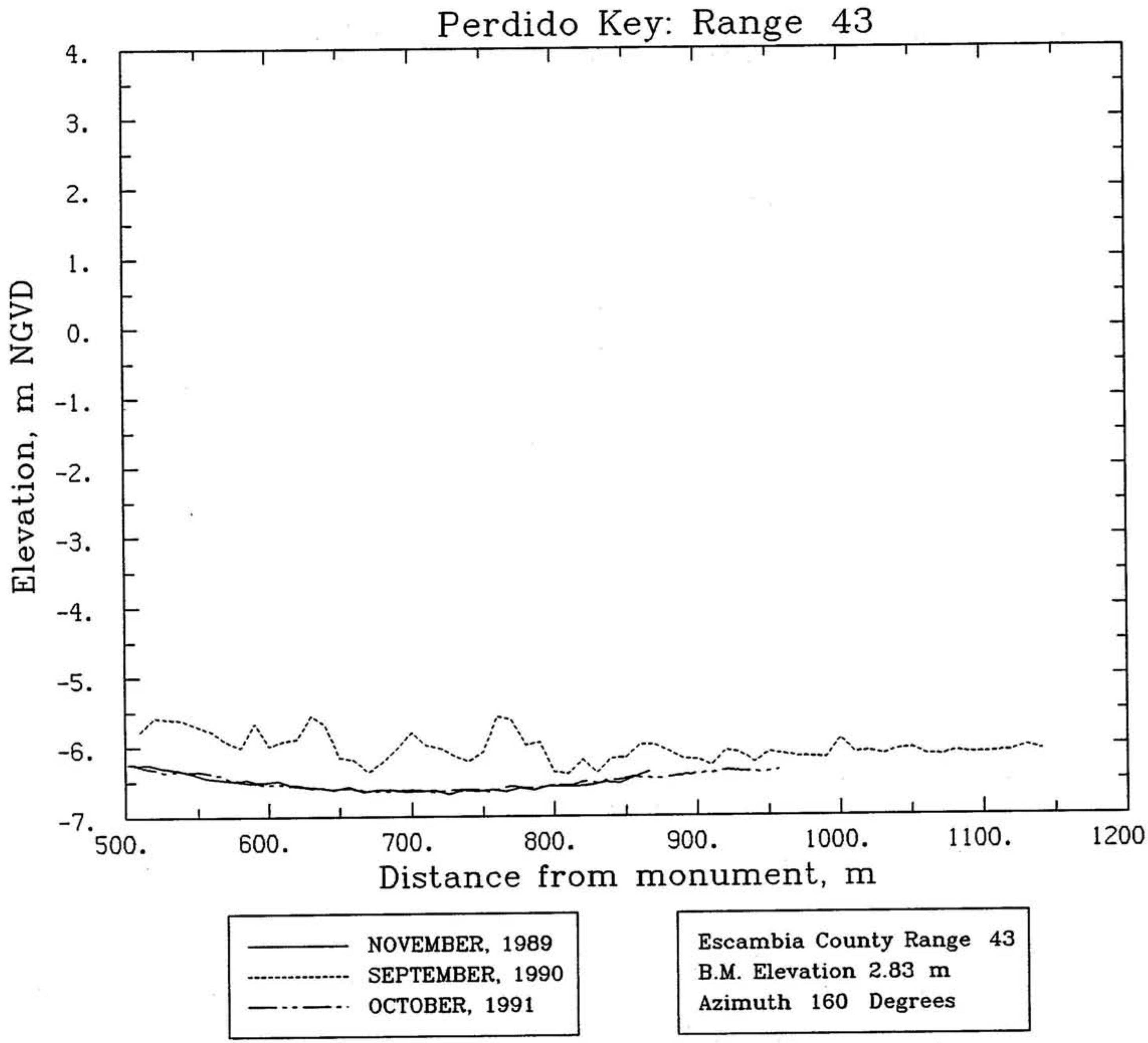
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 43
B.M. Elevation 2.83 m
Azimuth 160 Degrees



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Elevation, m NGVD
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3.
2.
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-2.
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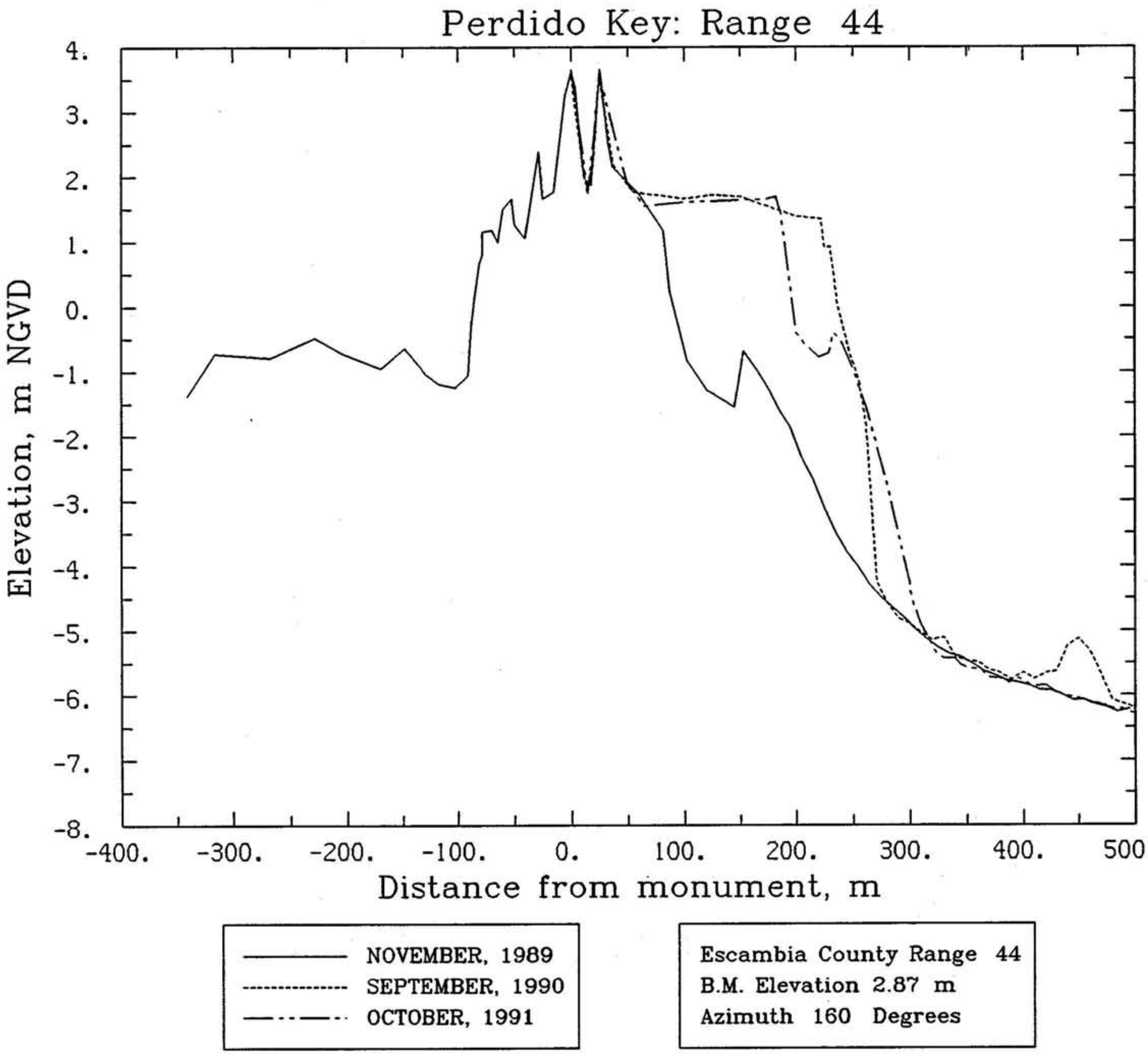
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
1100.
1200.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 43
B.M. Elevation 2.83 m
Azimuth 160 Degrees



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Elevation, m NGVD
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2.
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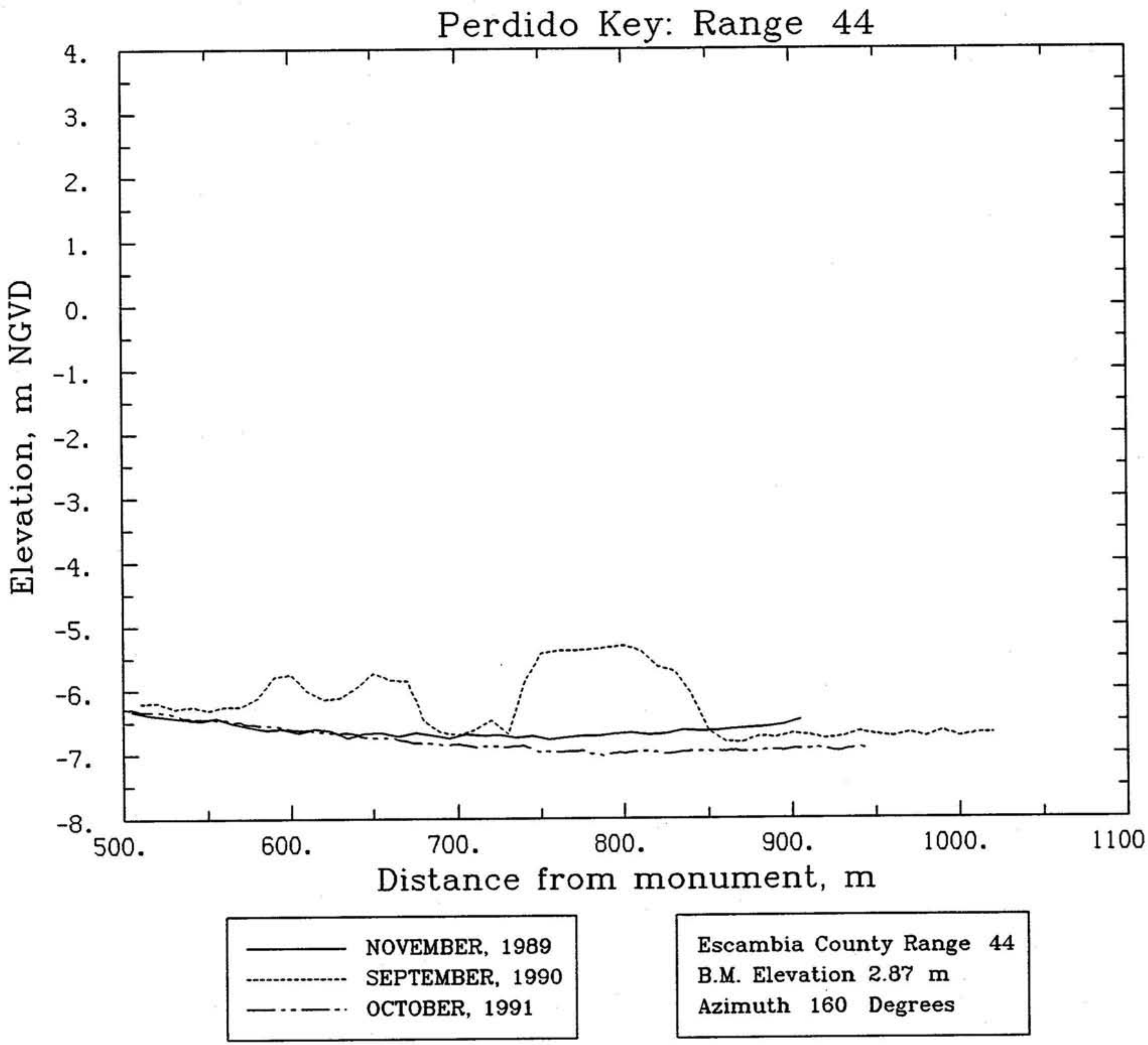
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
-400.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 44
B.M. Elevation 2.87 m
Azimuth 160 Degrees



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2.
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-1.
-2.
-3.
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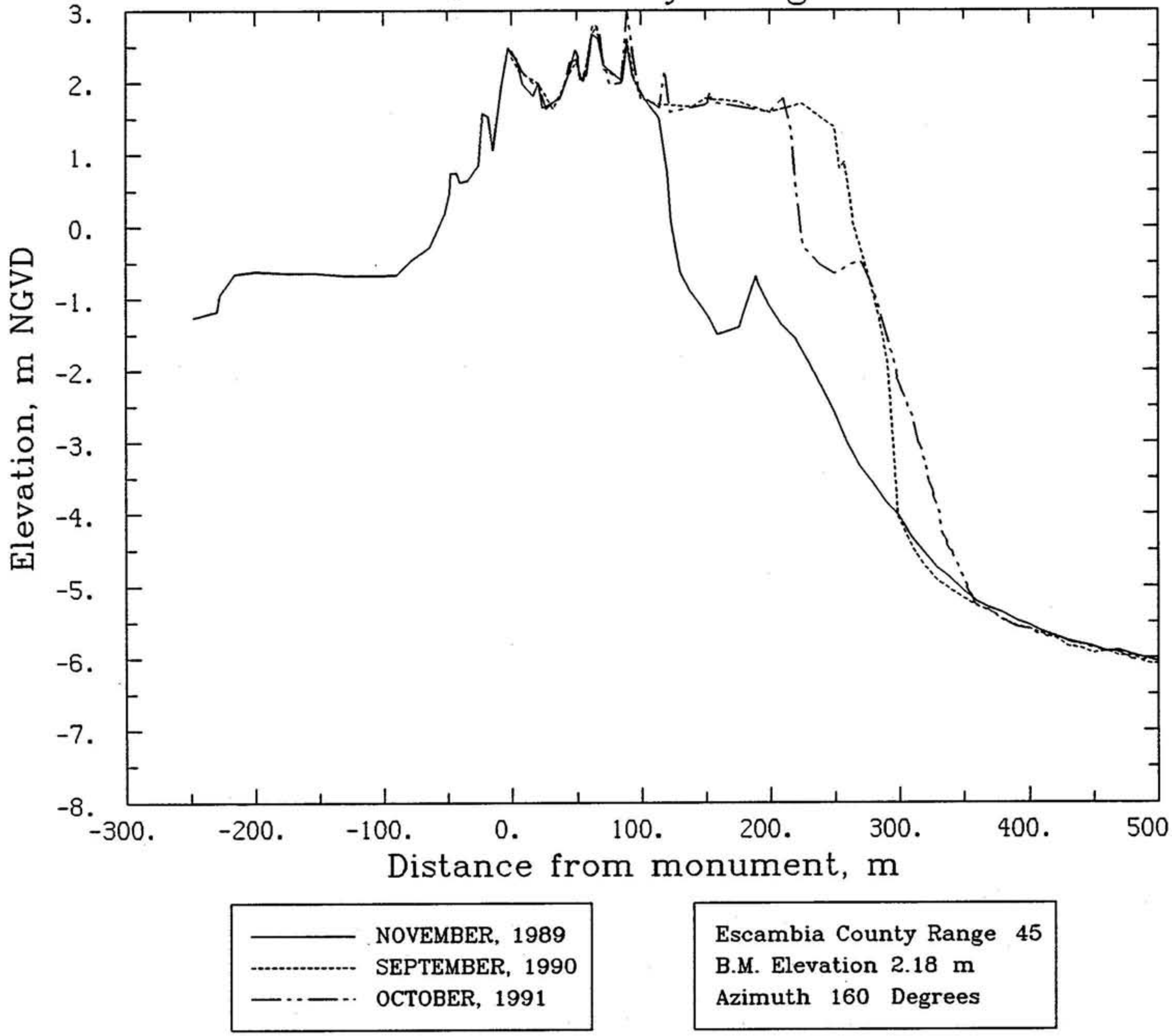
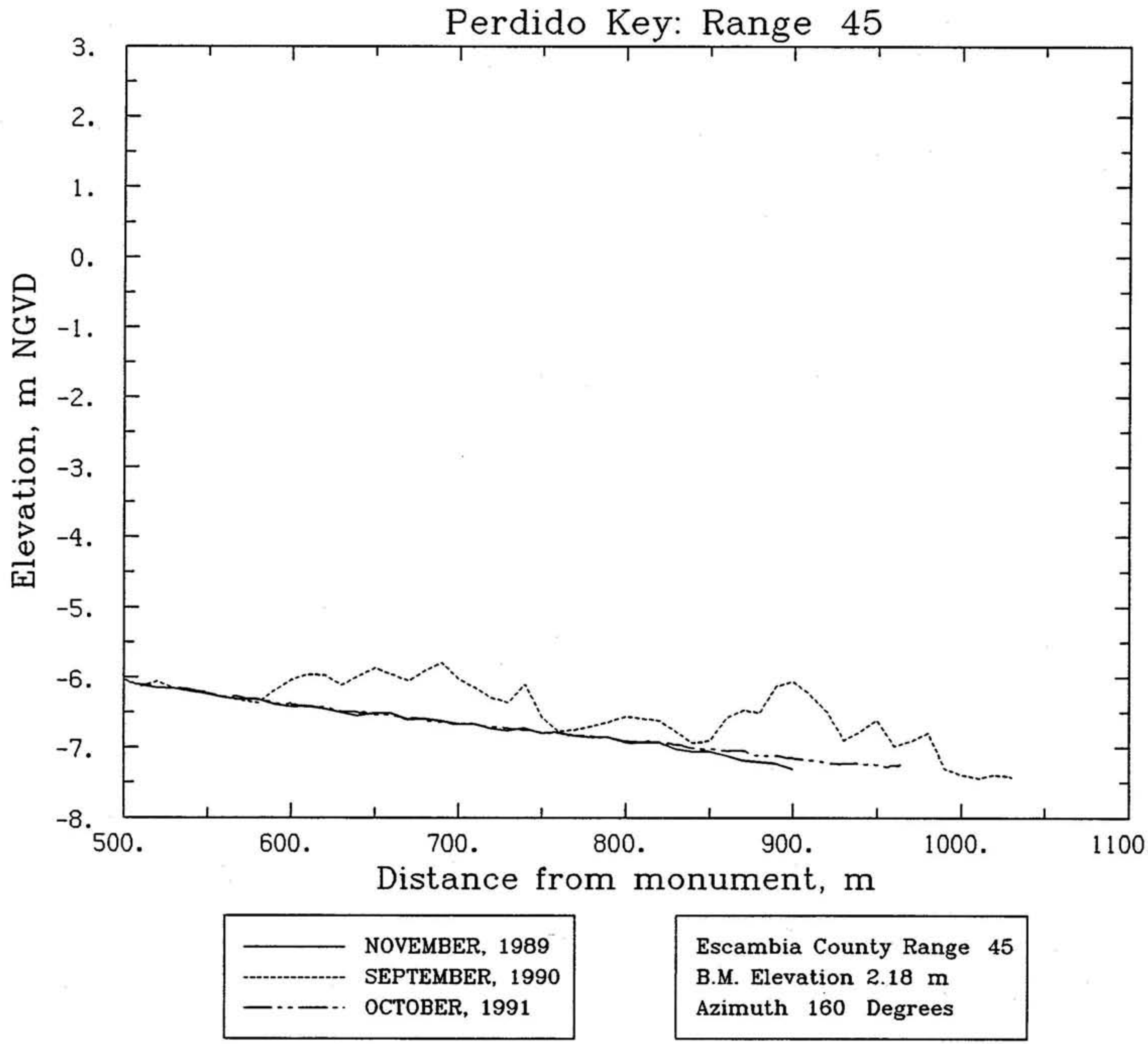
-5.
-6.
-7.
-8.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 44
B.M. Elevation 2.87 m
Azimuth 160 Degrees

Perdido Key: Range 45

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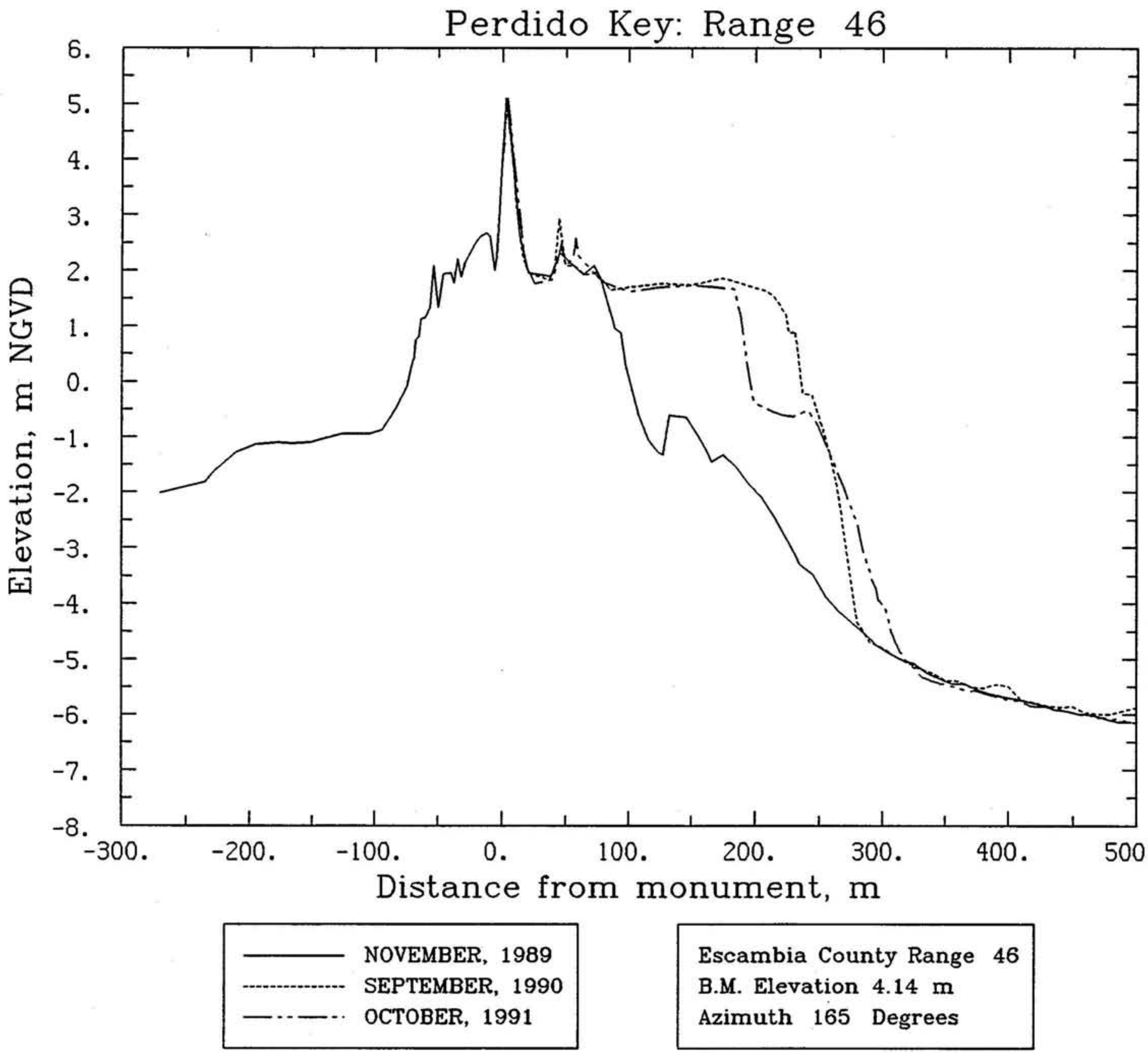
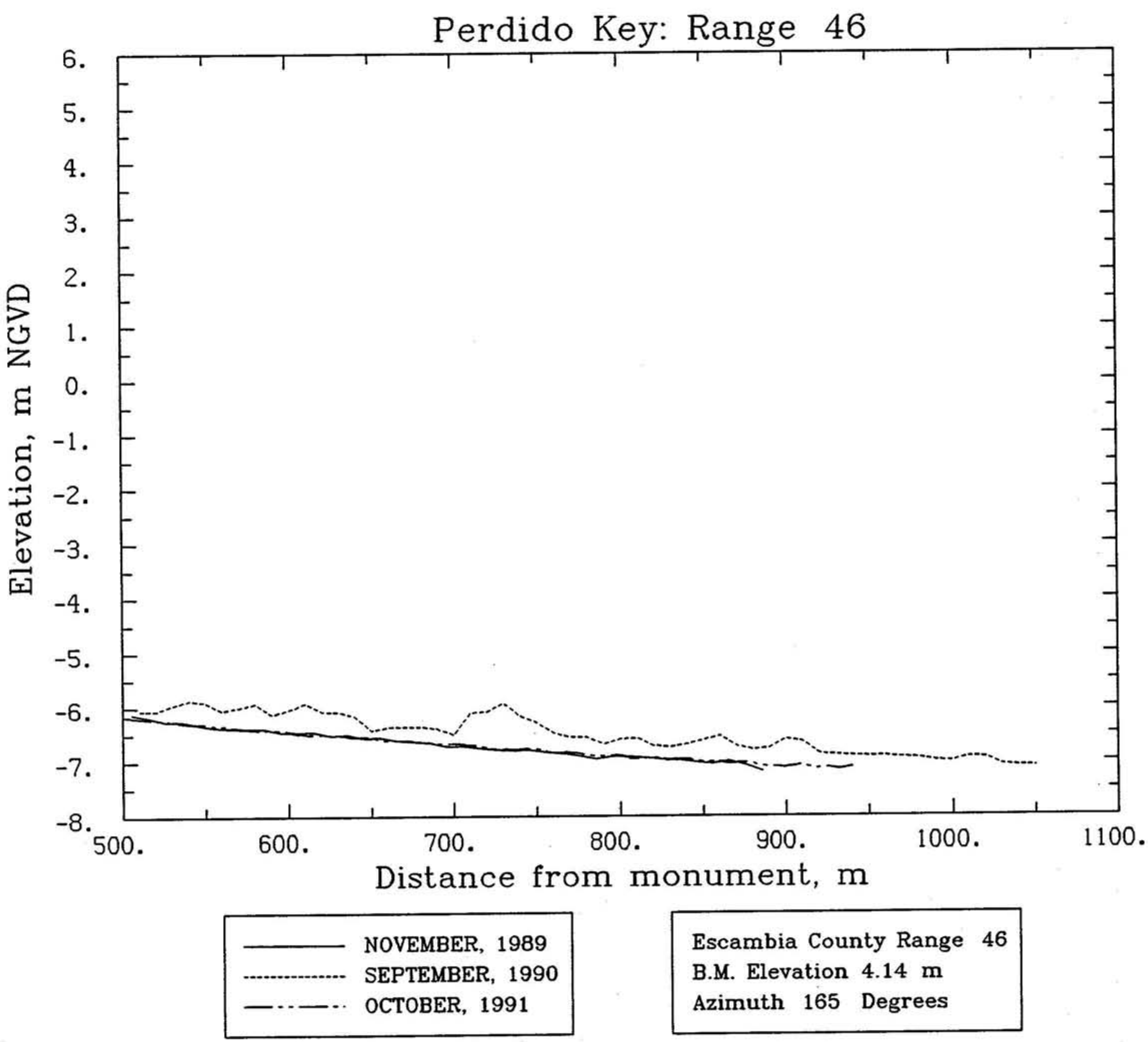
Elevation, m NGVD
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 45
B.M. Elevation 2.18 m
Azimuth 160 Degrees


Perdido Key: Range 46
Elevation, m NGVD
Distance from monument, m
6.
5.
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 46
B.M. Elevation 4.14 m
Azimuth 165 Degrees



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5.
4.
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2.
1.
0.
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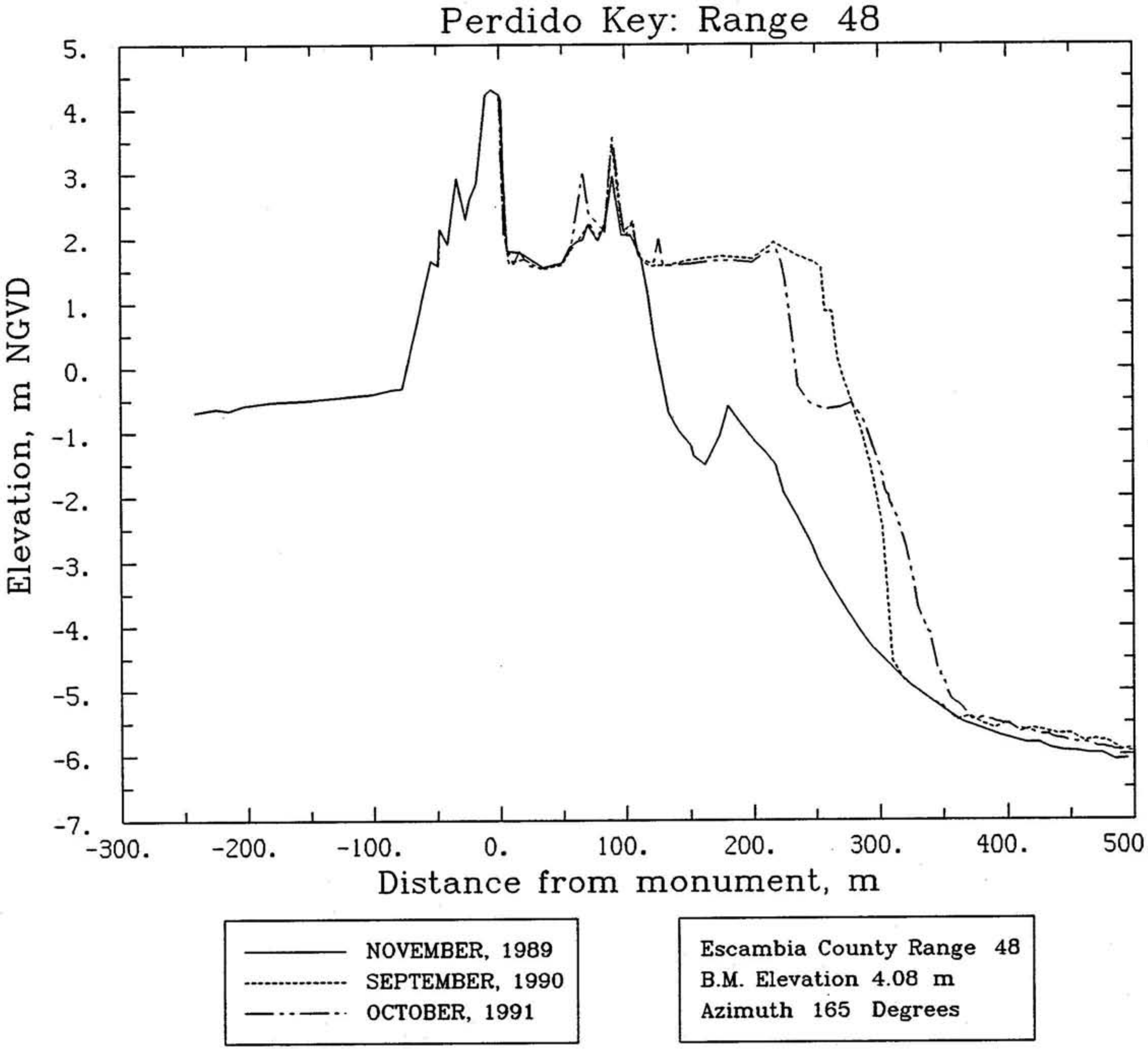
-4.
-5.
-6.
-7.
-8.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 46
B.M. Elevation 4.14 m
Azimuth 165 Degrees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-2.
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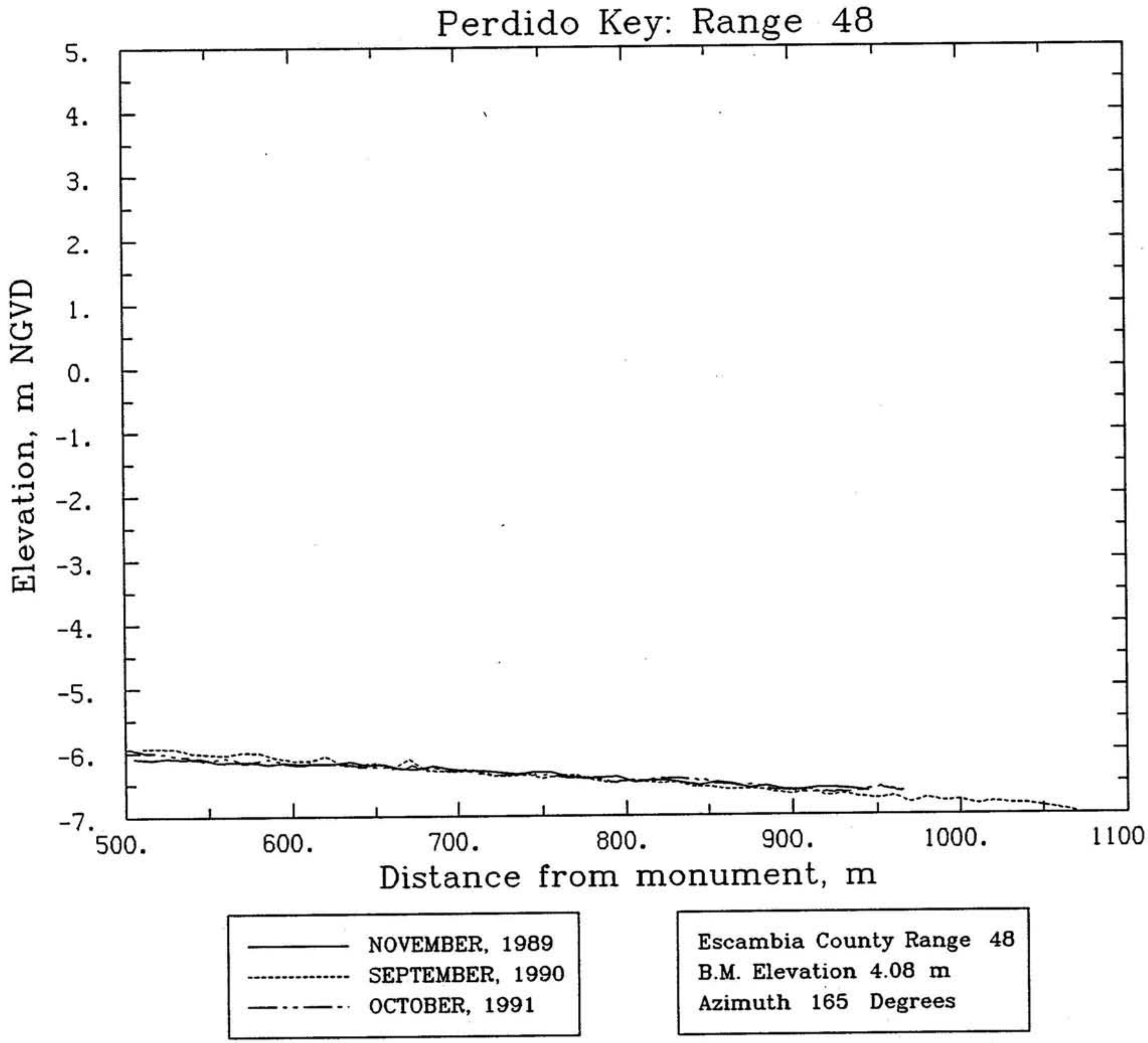
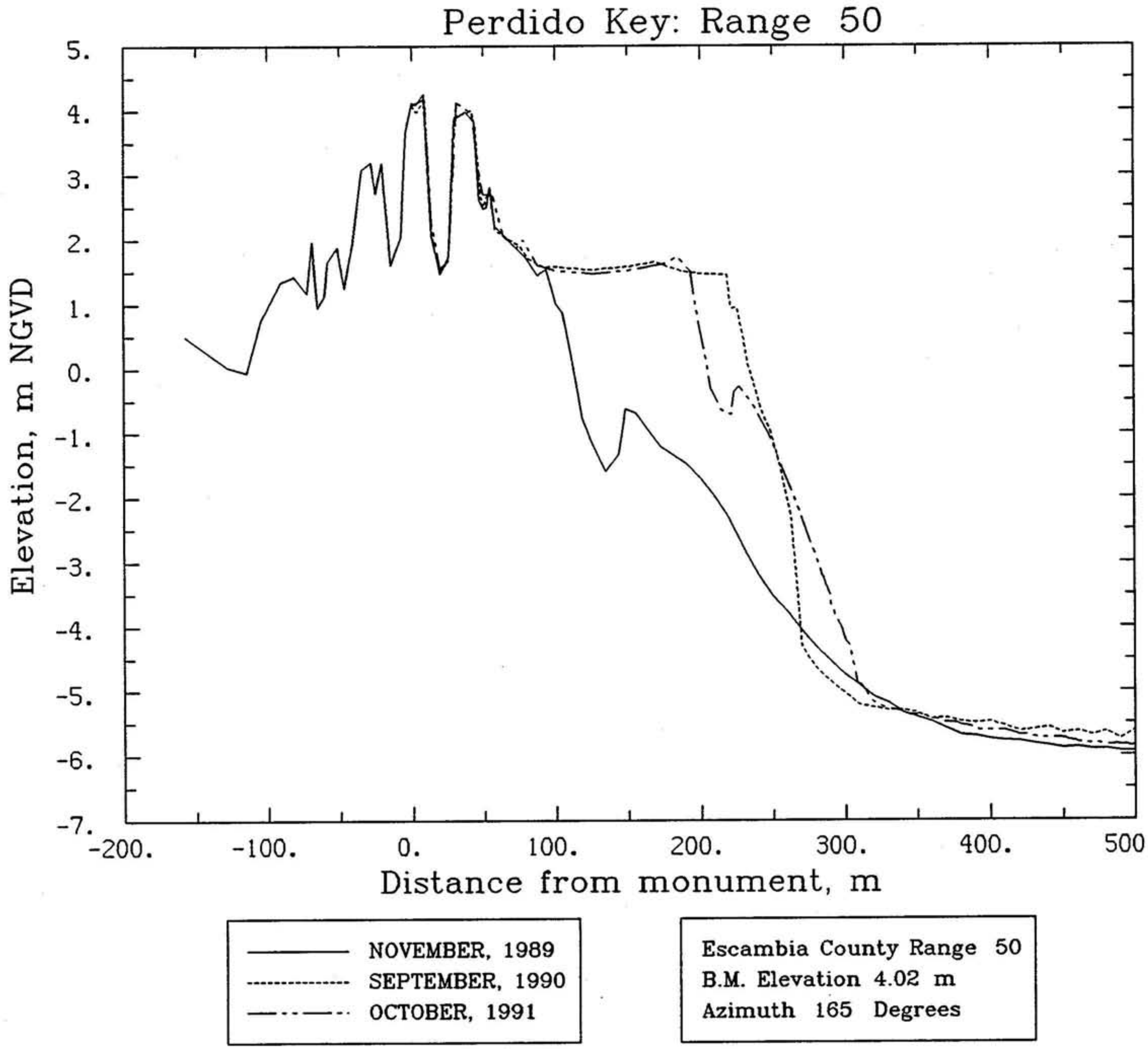
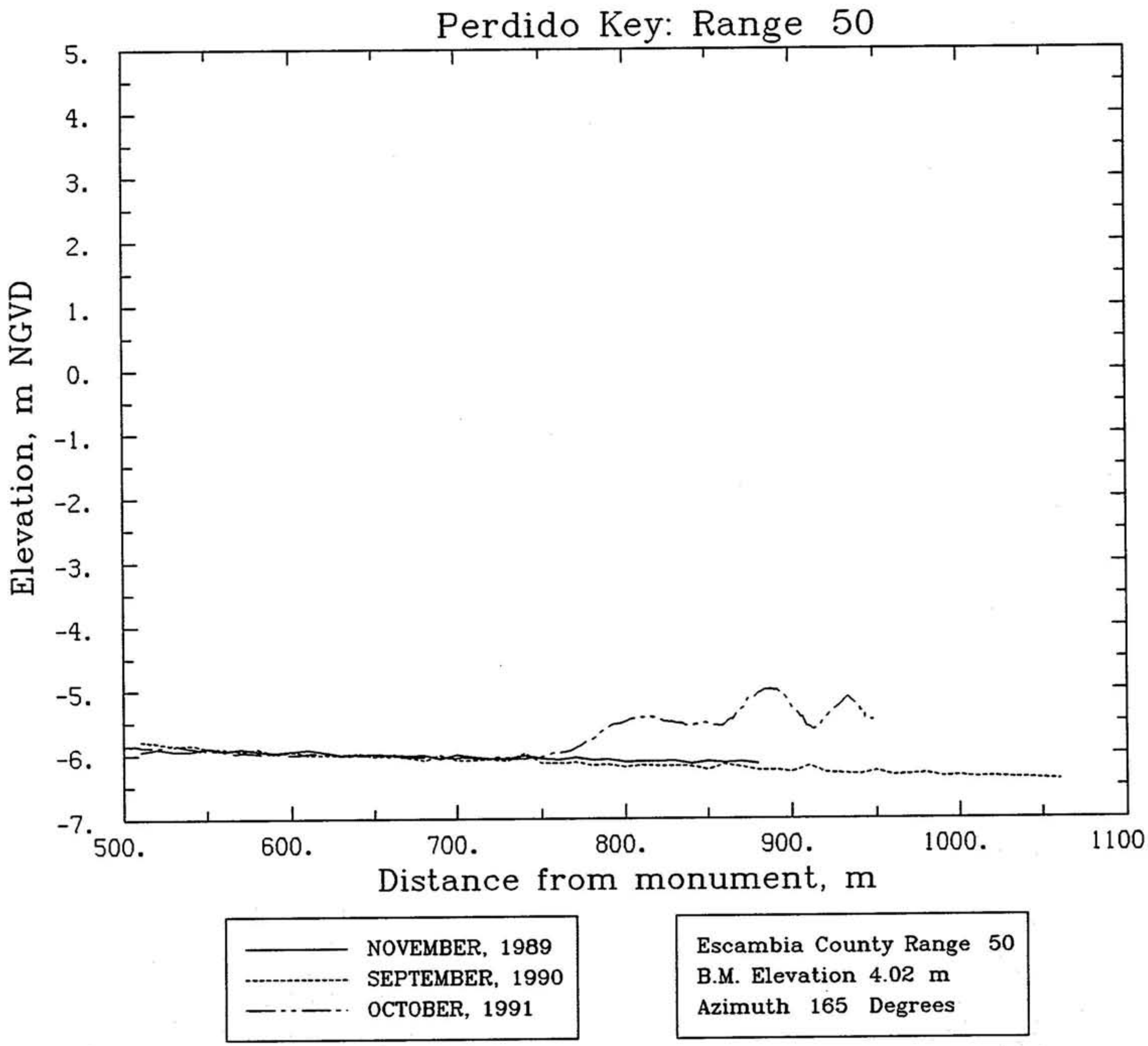
-5.
-6.
-7.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 48
B.M. Elevation 4.08 m
Azimuth 165 Degrees

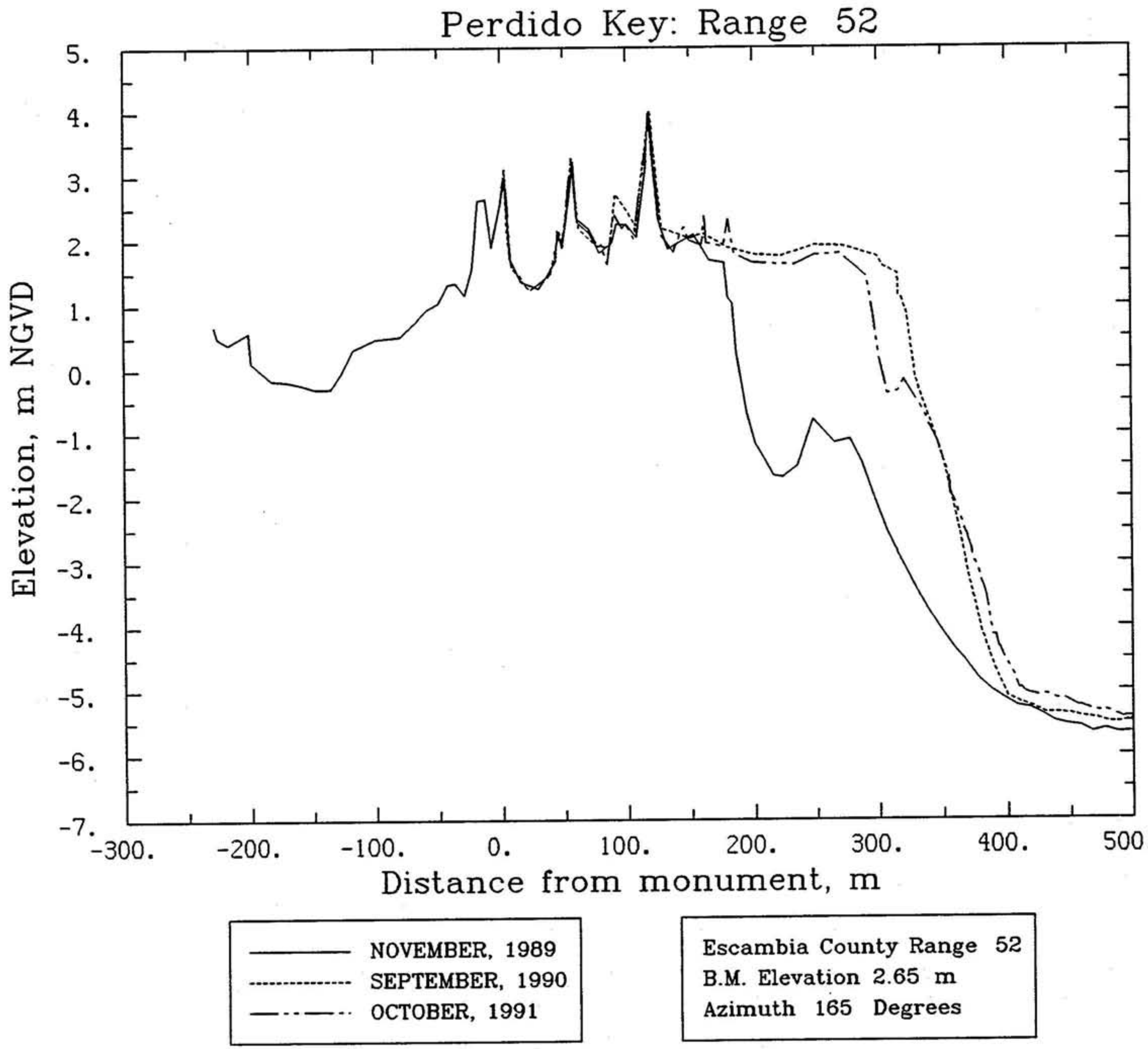


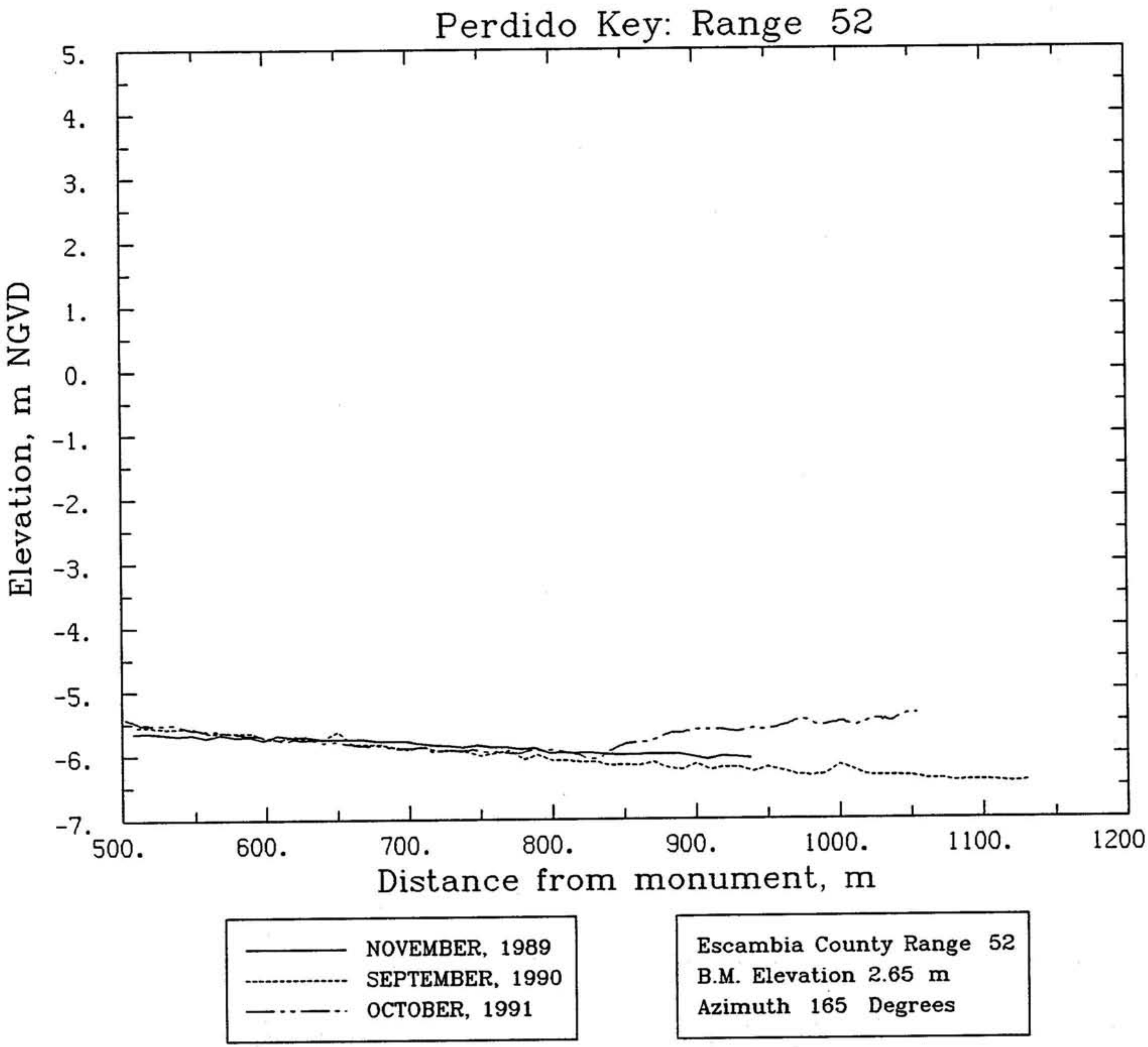
Perdido Key: Range 48
Elevation, m NGVD
5.
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 48
B.M. Elevation 4.08 m
Azimuth 165 Degrees


Perdido Key: Range 50
Elevation, m NGVD
5.
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 50
B.M. Elevation 4.02 m
Azimuth 165 Degrees

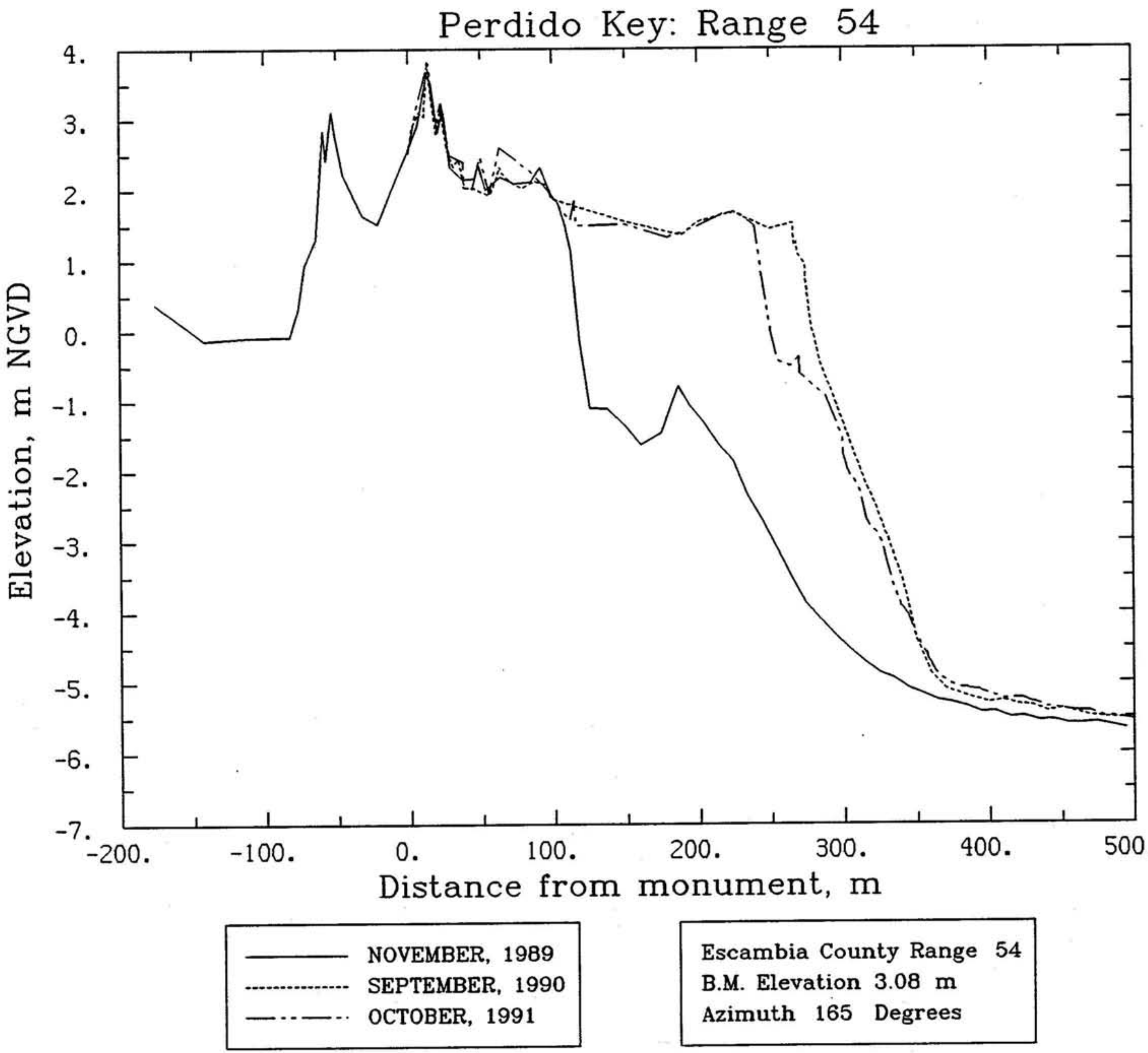


Perdido Key: Range 50
Elevation, m NGVD
5.
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 50
B.M. Elevation 4.02 m
Azimuth 165 Degrees

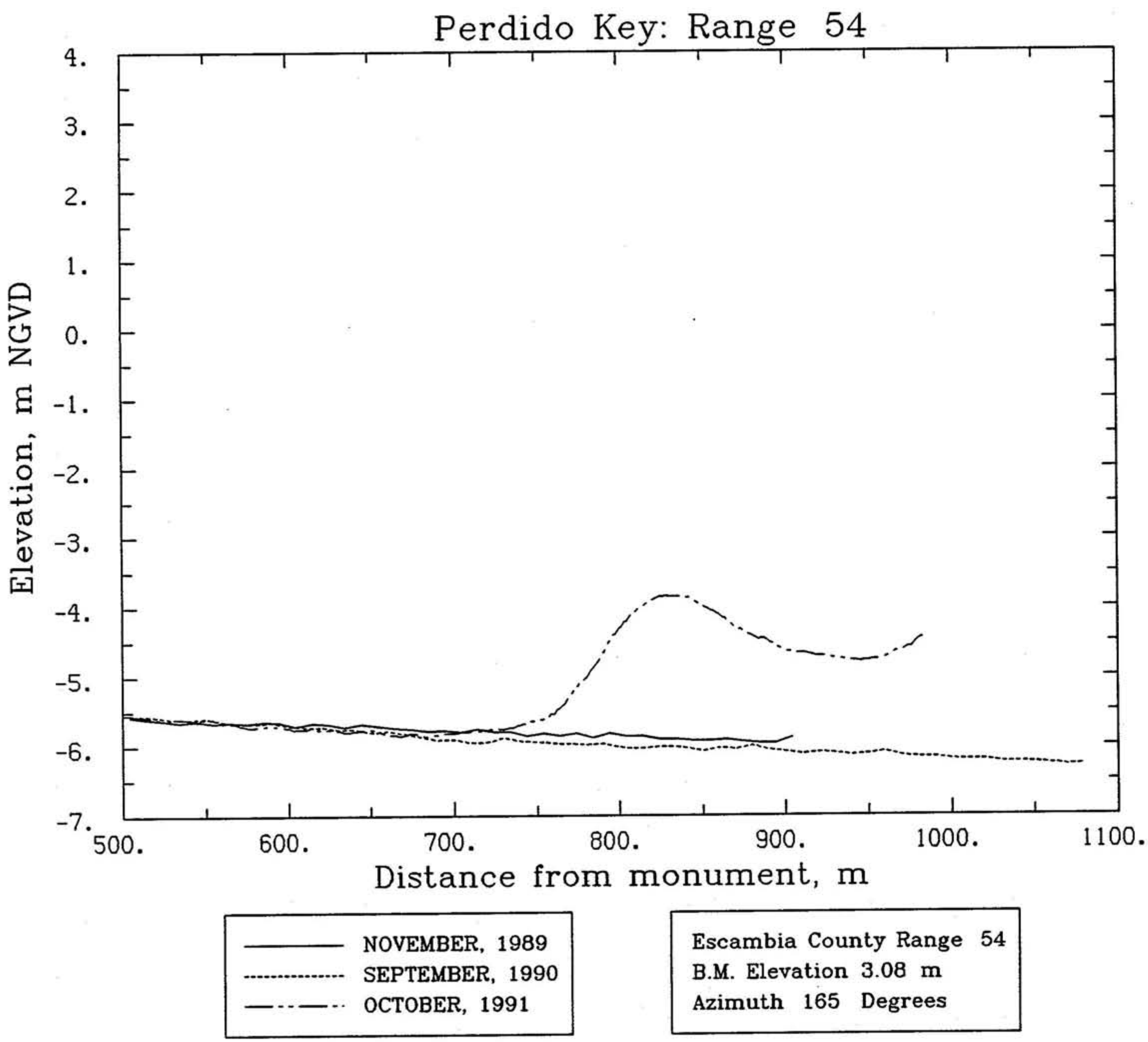

Perdido Key: Range 52
Elevation, m NGVD
Distance from monument, m
5.
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 52
B.M. Elevation 2.65 m
Azimuth 165 Degrees

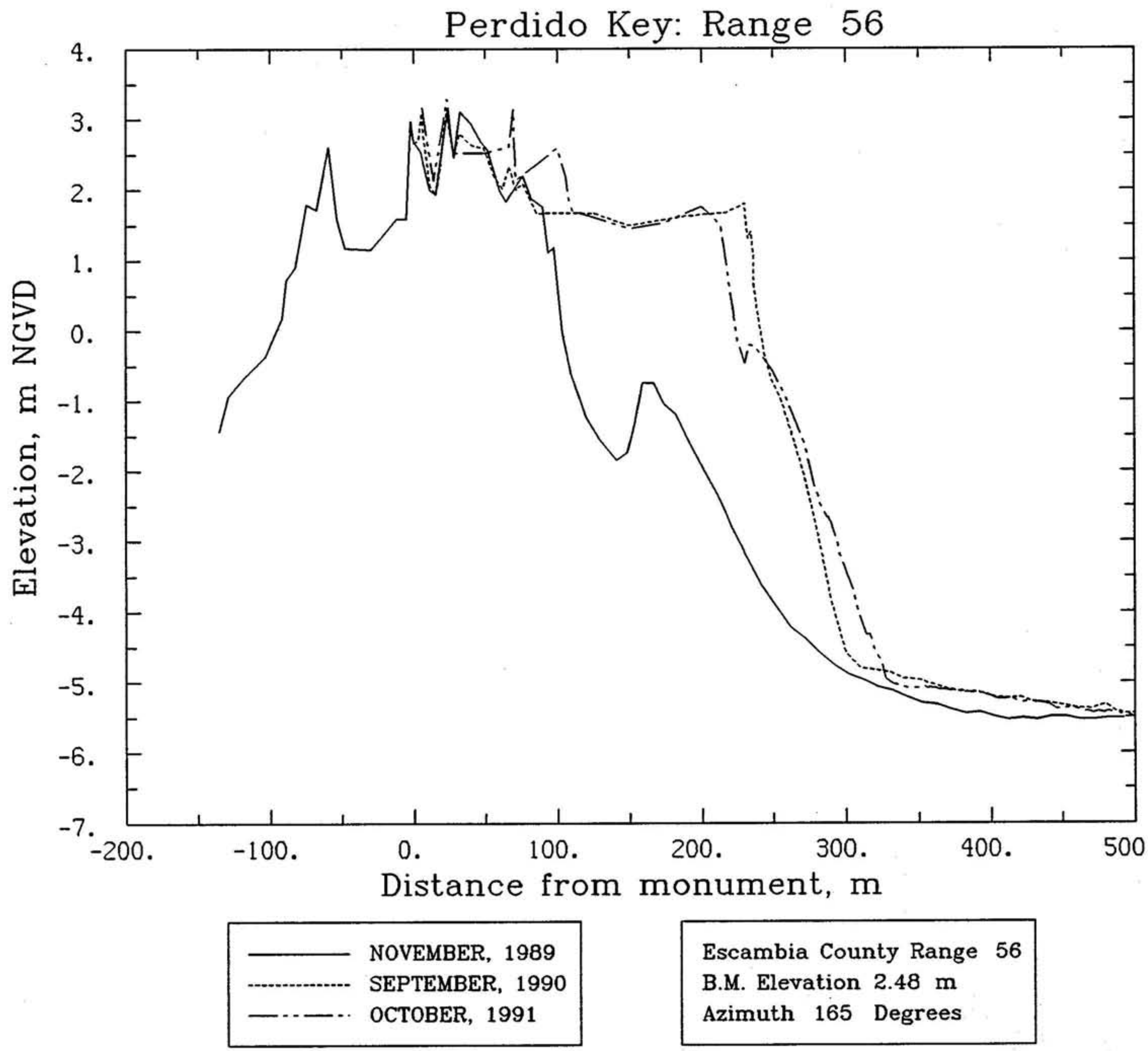


Perdido Key: Range 52
5.
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
Elevation, m NGVD
500.
600.
700.
800.
900.
1000.
1100.
1200.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 52
B.M. Elevation 2.65 m
Azimuth 165 Degrees

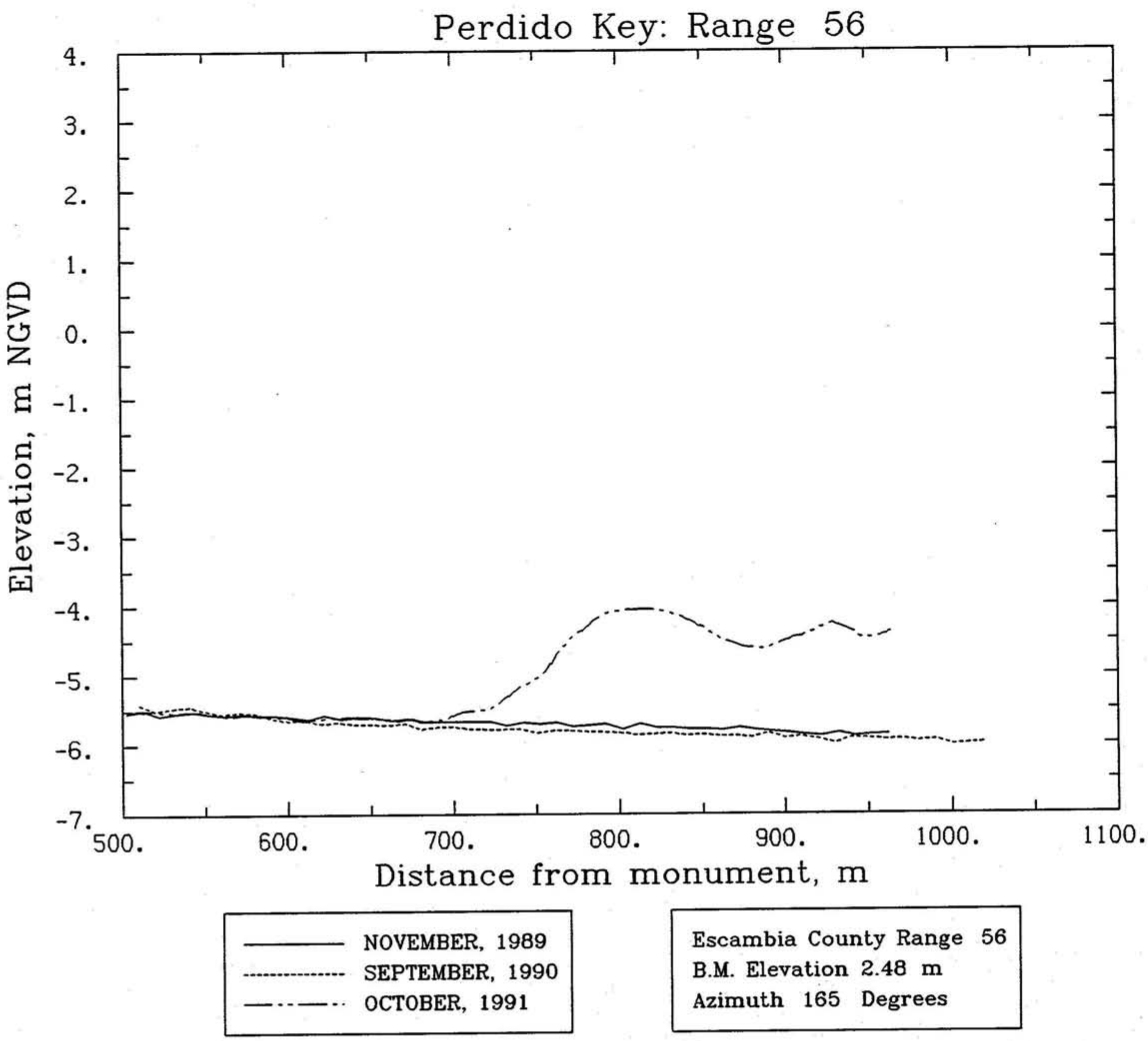


Perdido Key: Range 54
Elevation, m NGVD
Distance from monument, m
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-200.
-100.
0.
100.
200.
300.
400.
500.
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 54
B.M. Elevation 3.08 m
Azimuth 165 Degrees

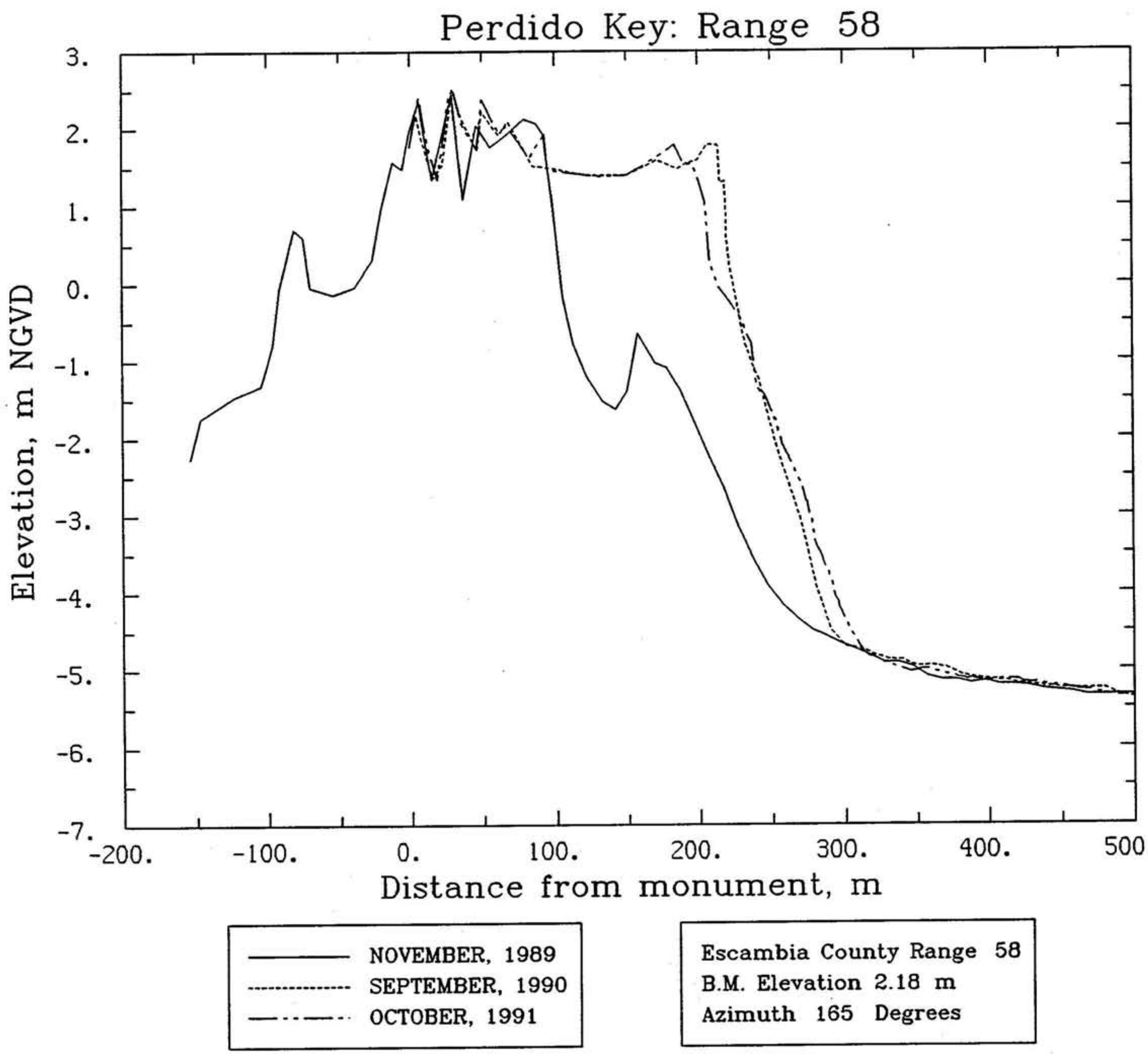

Perdido Key: Range 54
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 54
B.M. Elevation 3.08 m
Azimuth 165 Degrees

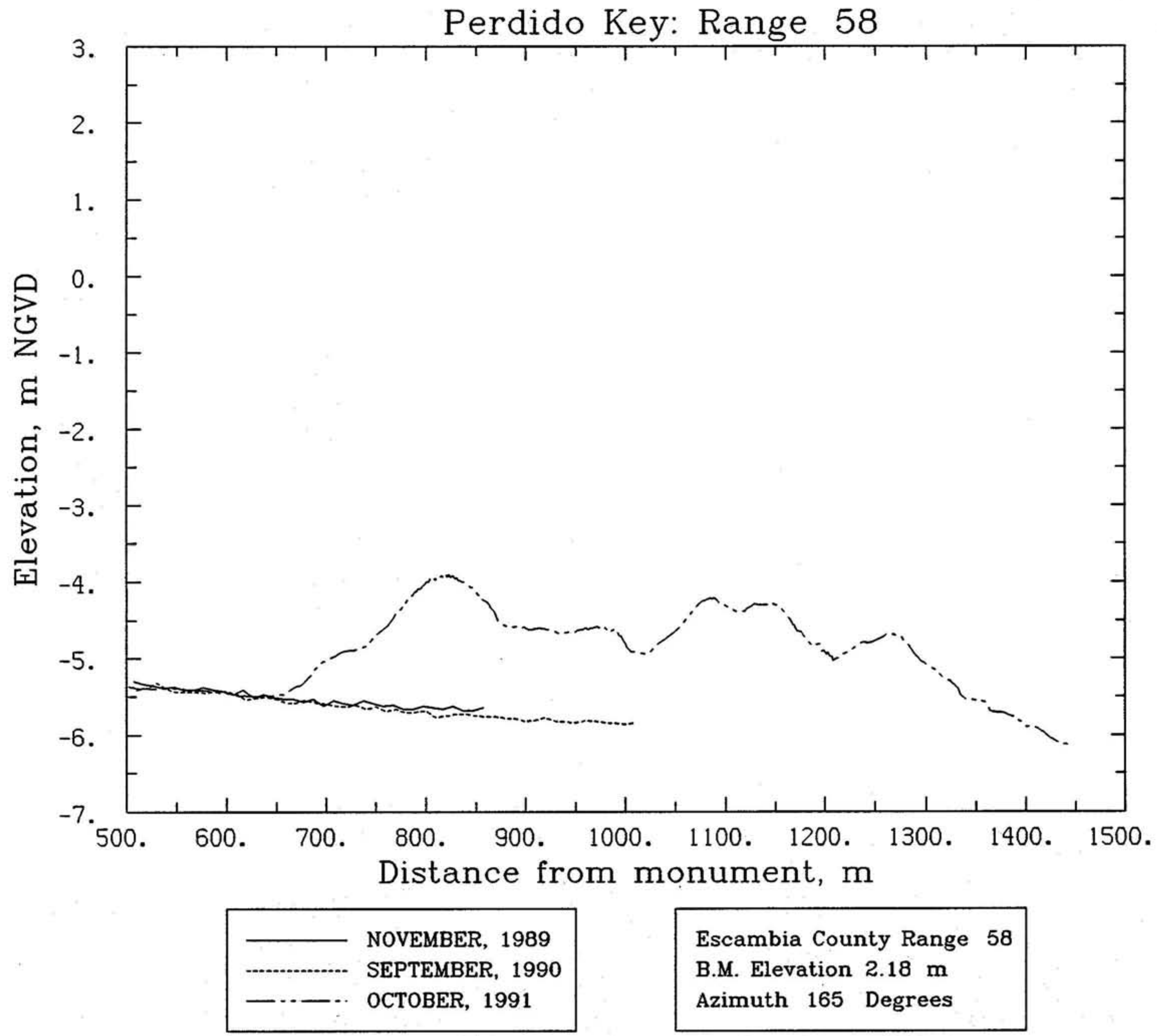


Perdido Key: Range 56
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 56
B.M. Elevation 2.48 m
Azimuth 165 Degrees

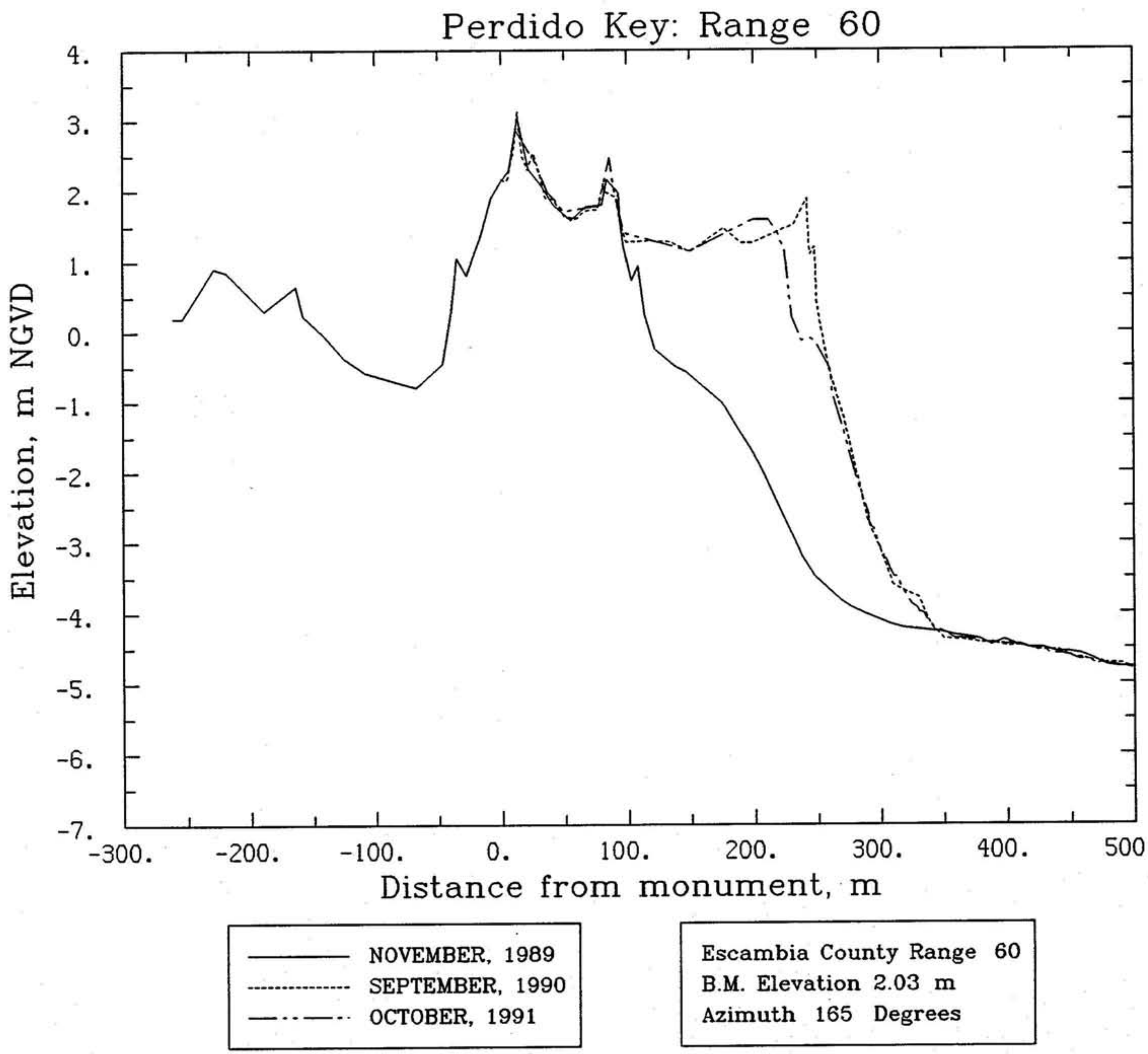


Perdido Key: Range 56
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 56
B.M. Elevation 2.48 m
Azimuth 165 Degrees

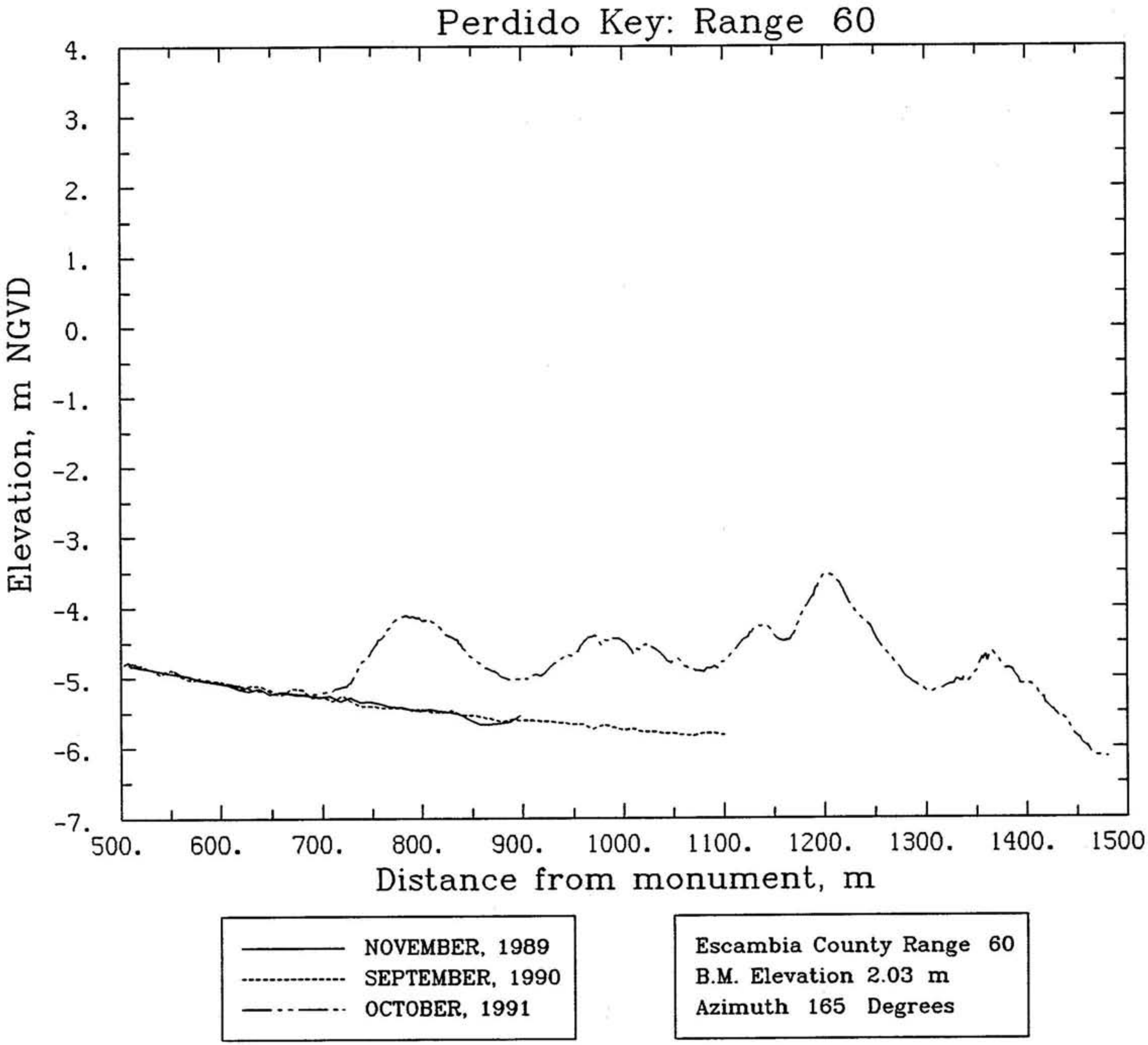

Perdido Key: Range 58
Elevation, m NGVD
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 58
B.M. Elevation 2.18 m
Azimuth 165 Degrees



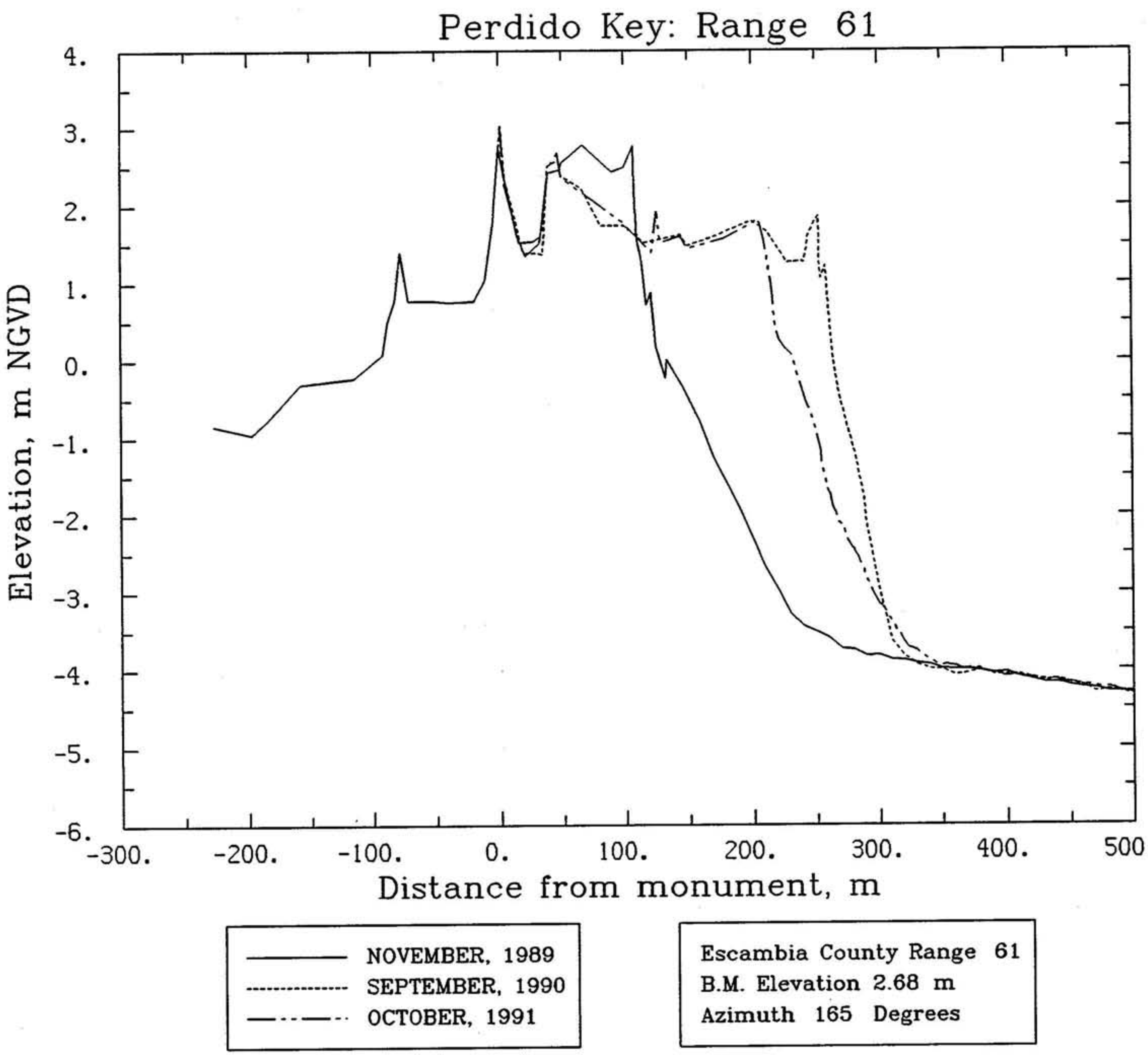
Perdido Key: Range 58
Elevation, m NGVD
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
500.
600.
700.
800.
900.
1000.
1100.
1200.
1300.
1400.
1500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 58
B.M. Elevation 2.18 m
Azimuth 165 Degrees



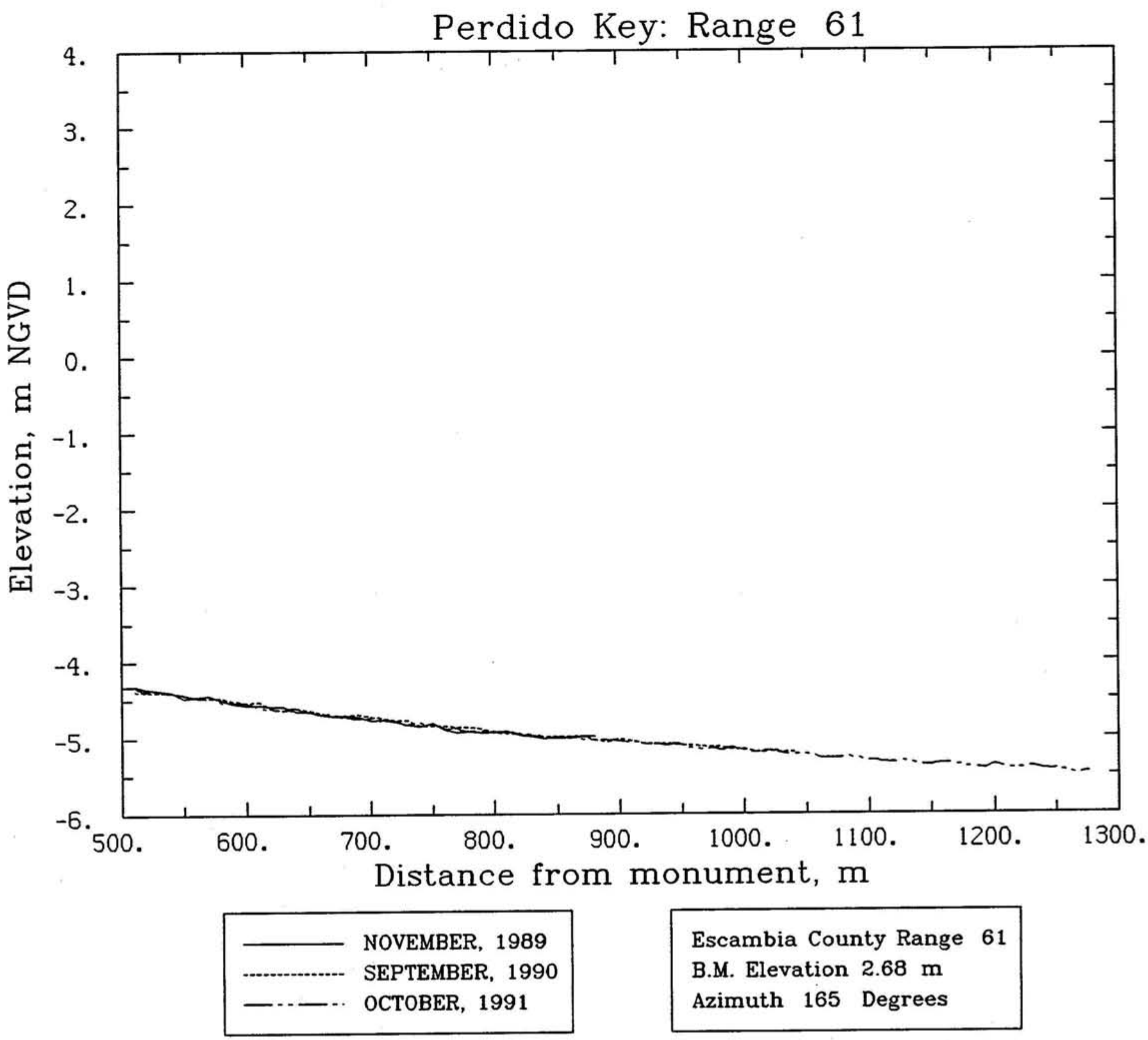
Perdido Key: Range 60
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 60
B.M. Elevation 2.03 m
Azimuth 165 Degrees

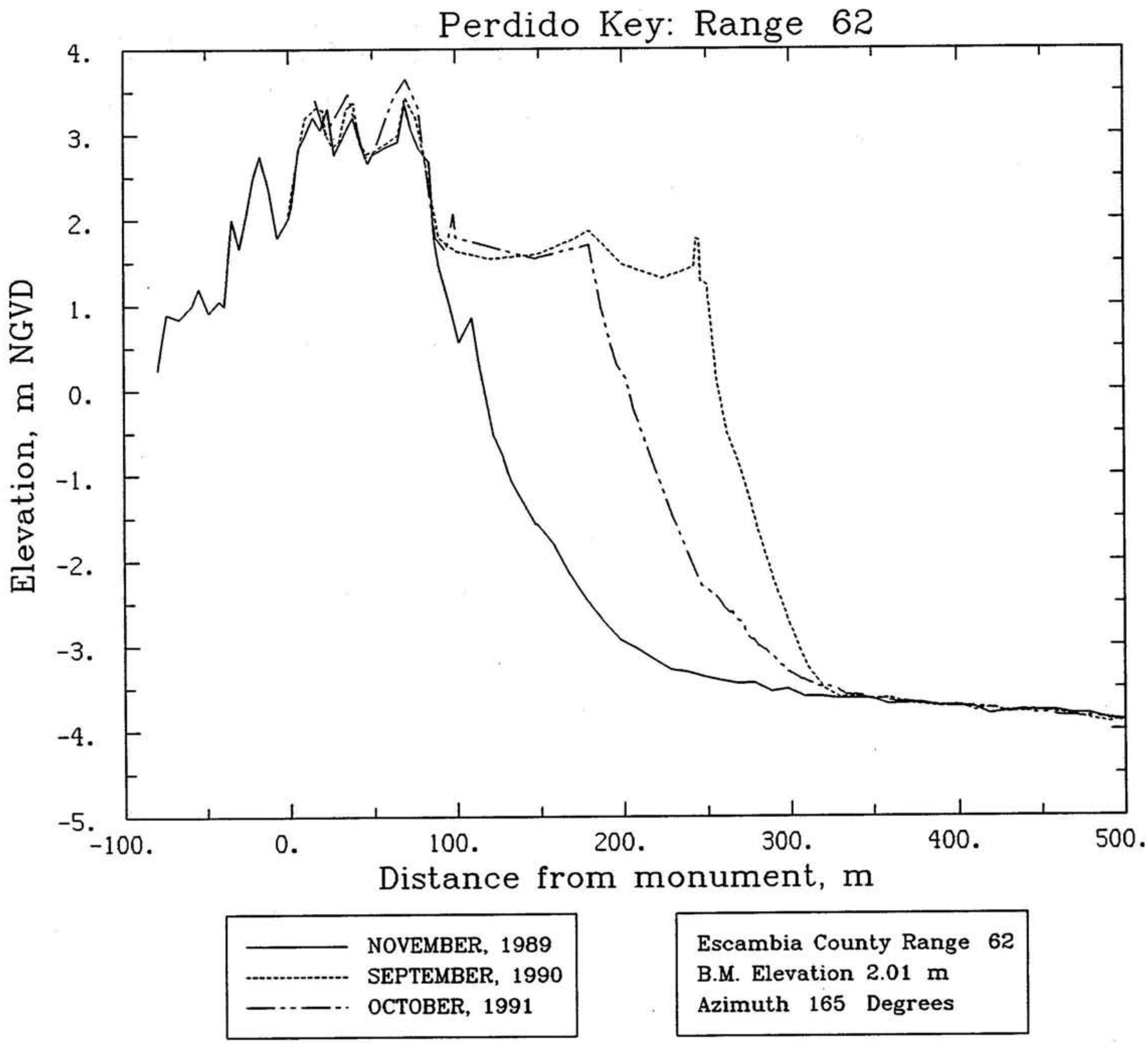


Perdido Key: Range 60
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
Elevation, m NGVD
500.
600.
700.
800.
900.
1000.
1100.
1200.
1300.
1400.
1500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 60
B.M. Elevation 2.03 m
Azimuth 165 Degrees

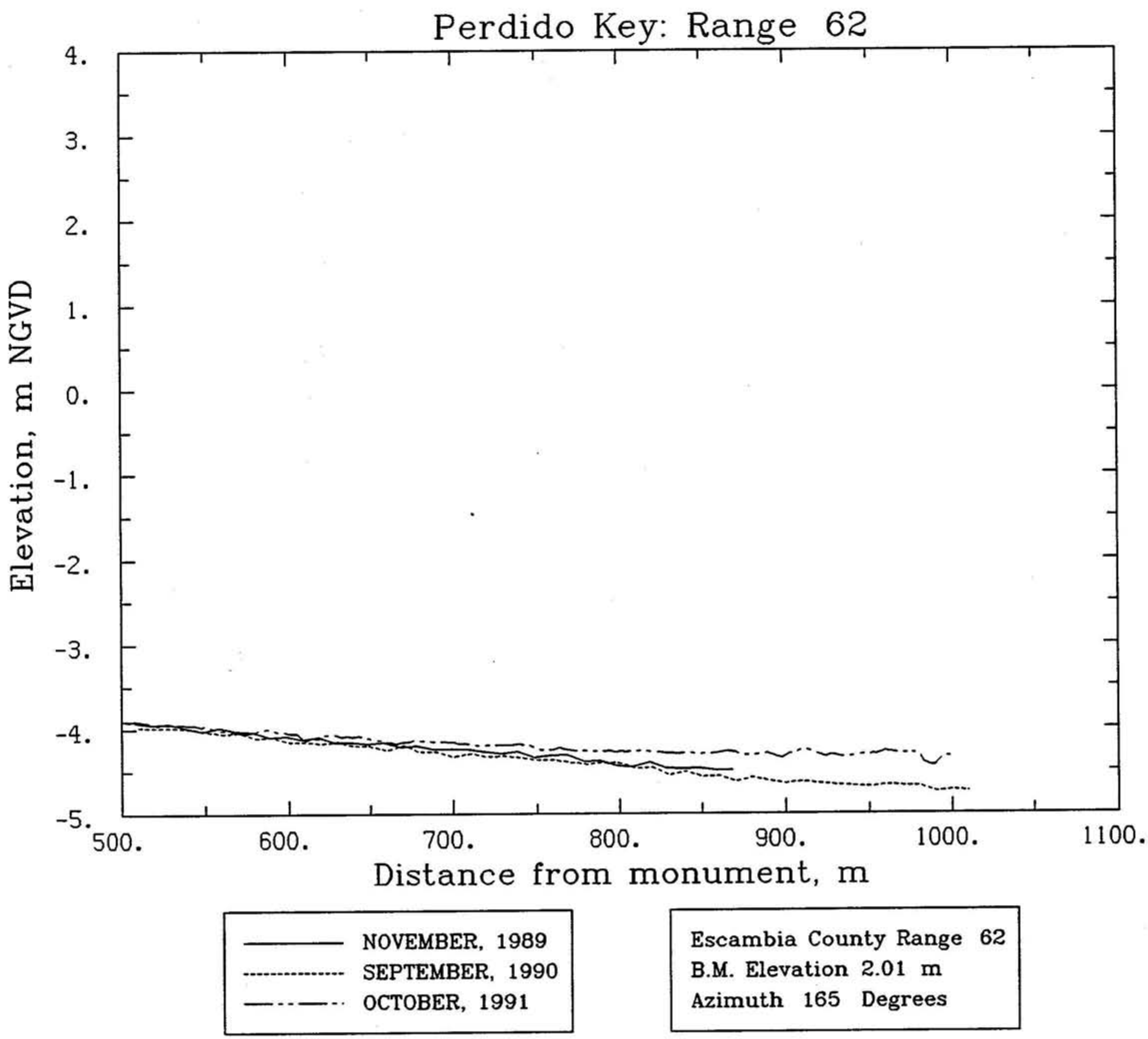


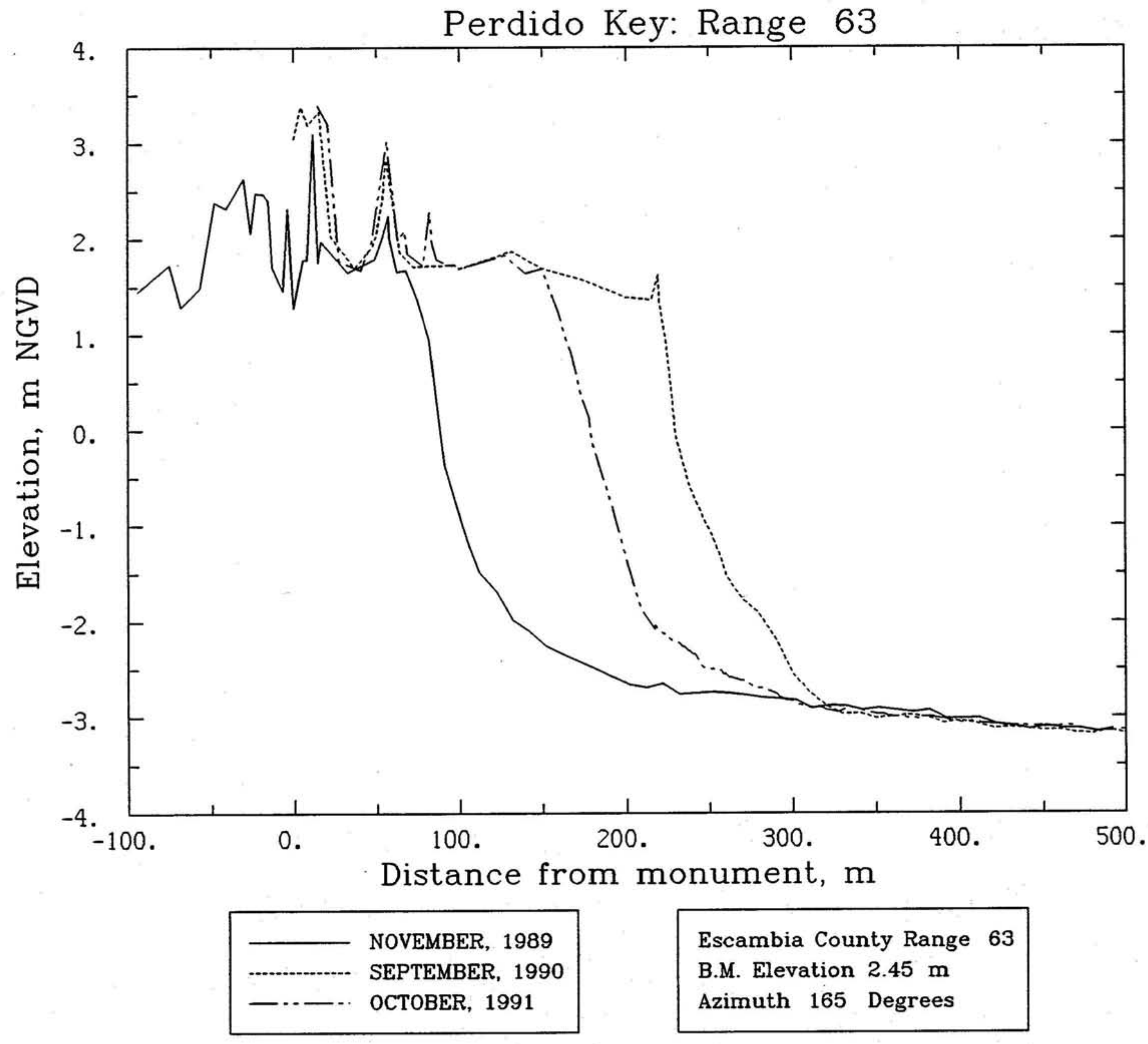
Perdido Key: Range 61
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-300.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 61
B.M. Elevation 2.68 m
Azimuth 165 Degrees


Perdido Key: Range 61
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
500.
600.
700.
800.
900.
1000.
1100.
1200.
1300.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 61
B.M. Elevation 2.68 m
Azimuth 165 Degrees



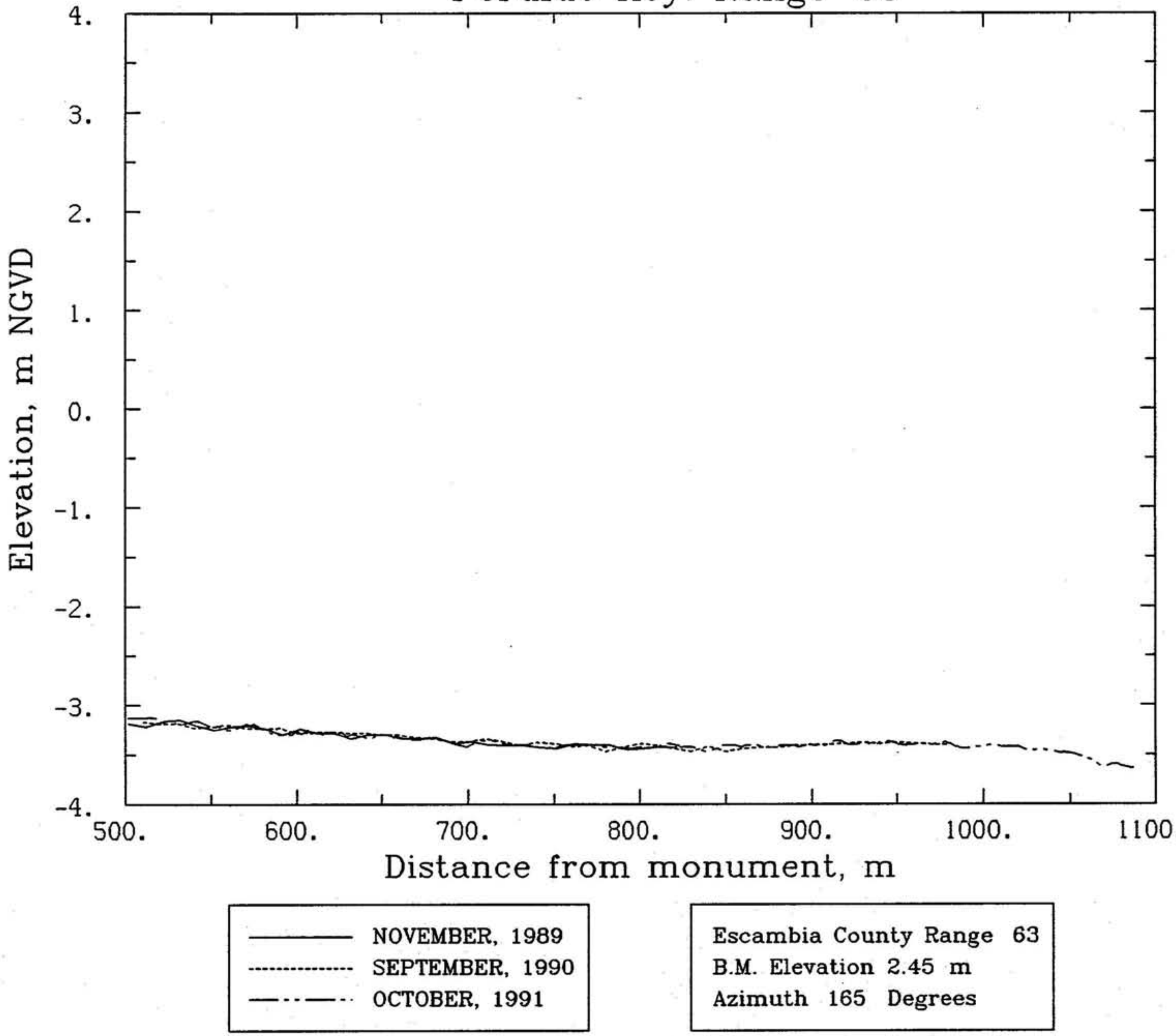
Perdido Key: Range 62
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 62
B.M. Elevation 2.01 m
Azimuth 165 Degrees

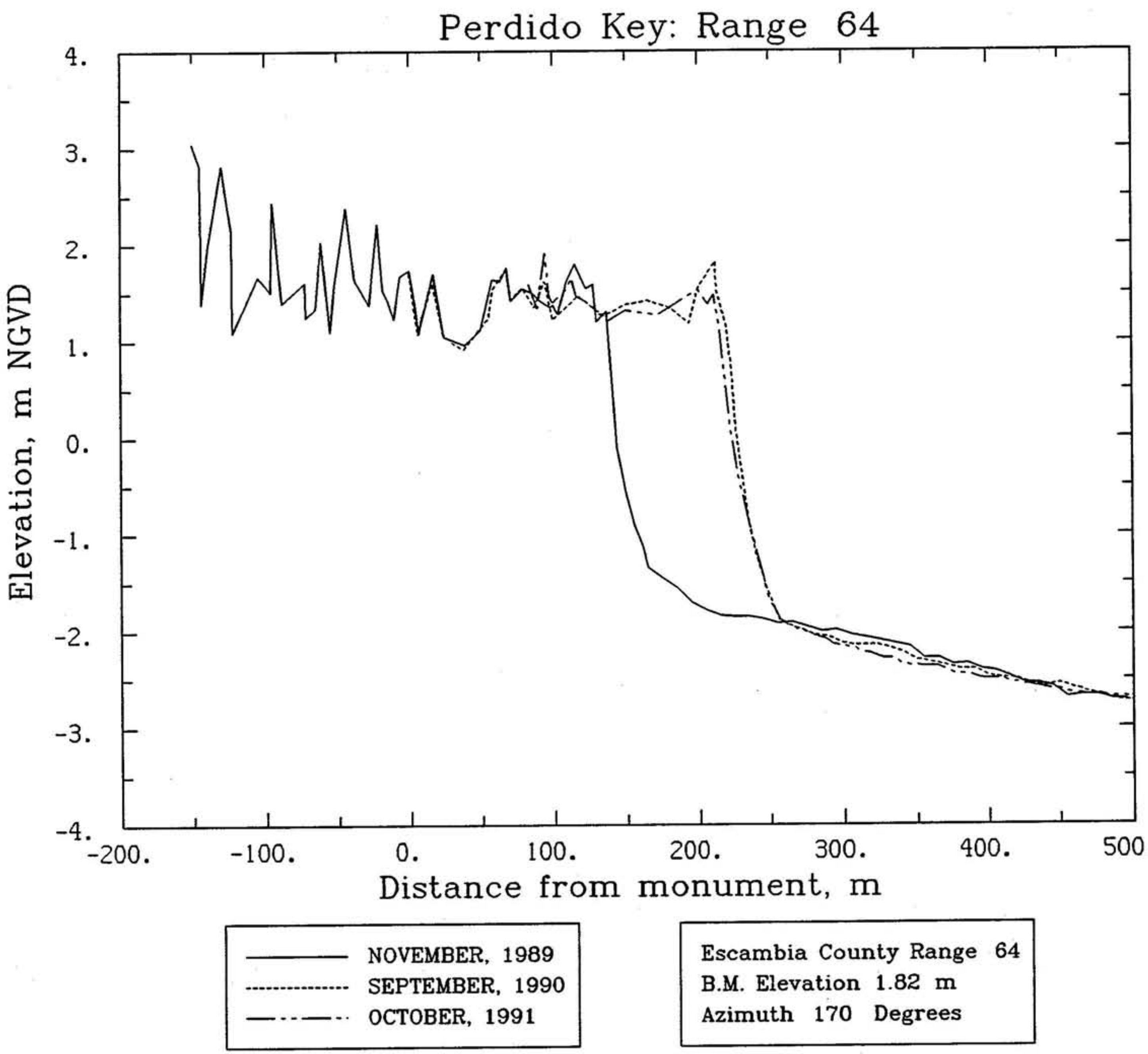

Perdido Key: Range 62
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 62
B.M. Elevation 2.01 m
Azimuth 165 Degrees

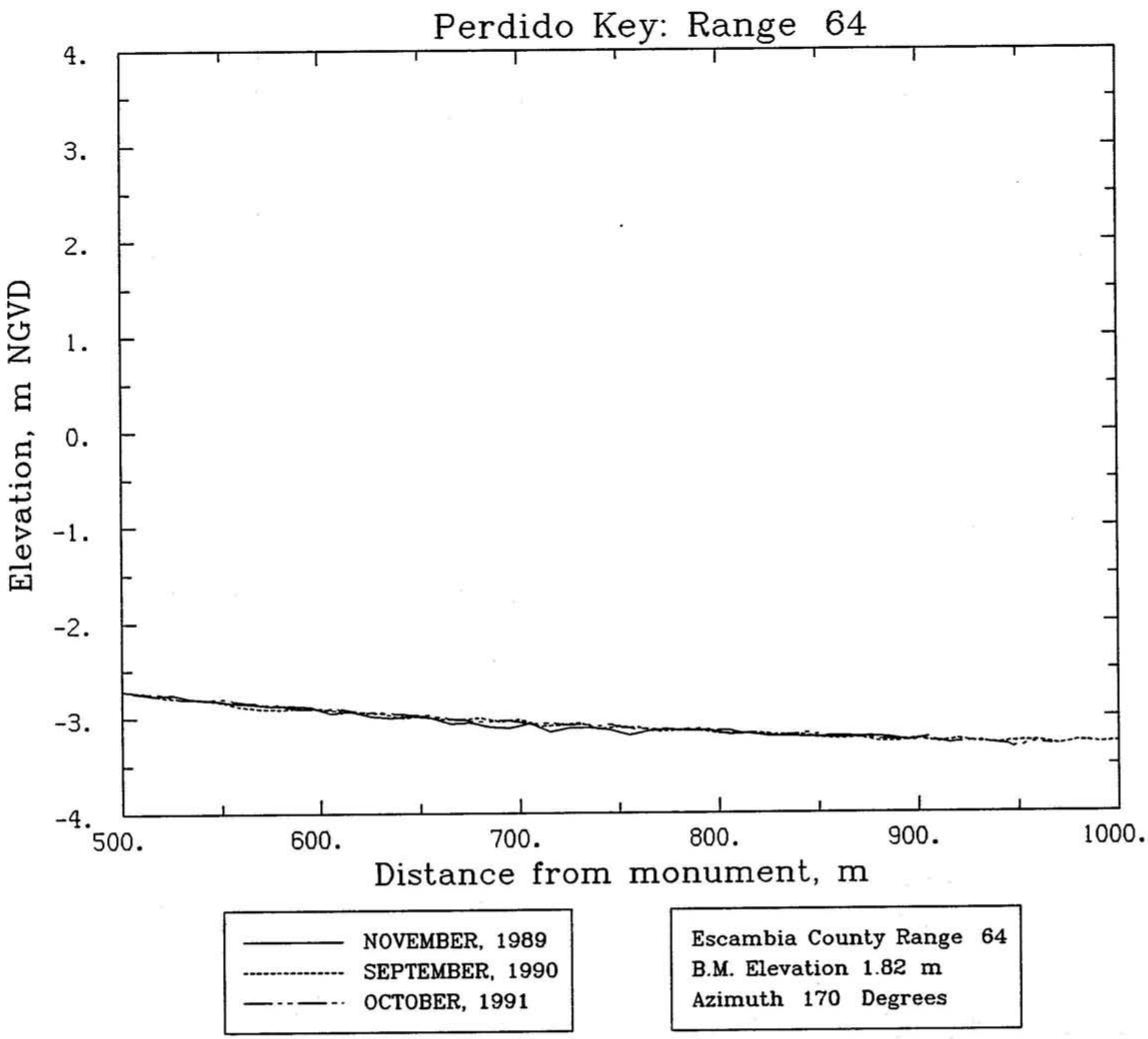


Perdido Key: Range 63
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
Elevation, m NGVD
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 63
B.M. Elevation 2.45 m
Azimuth 165 Degrees

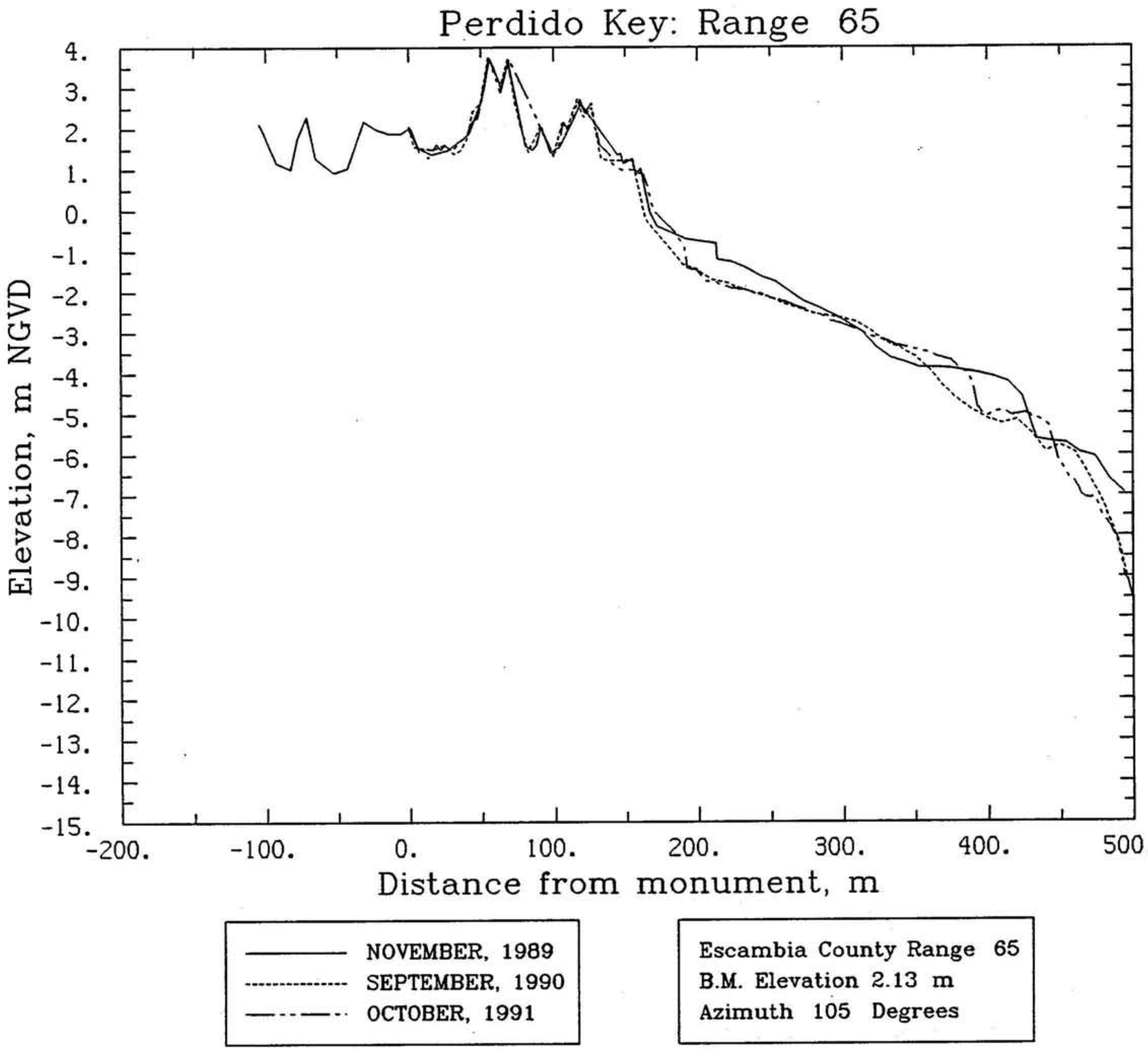
Perdido Key: Range 63

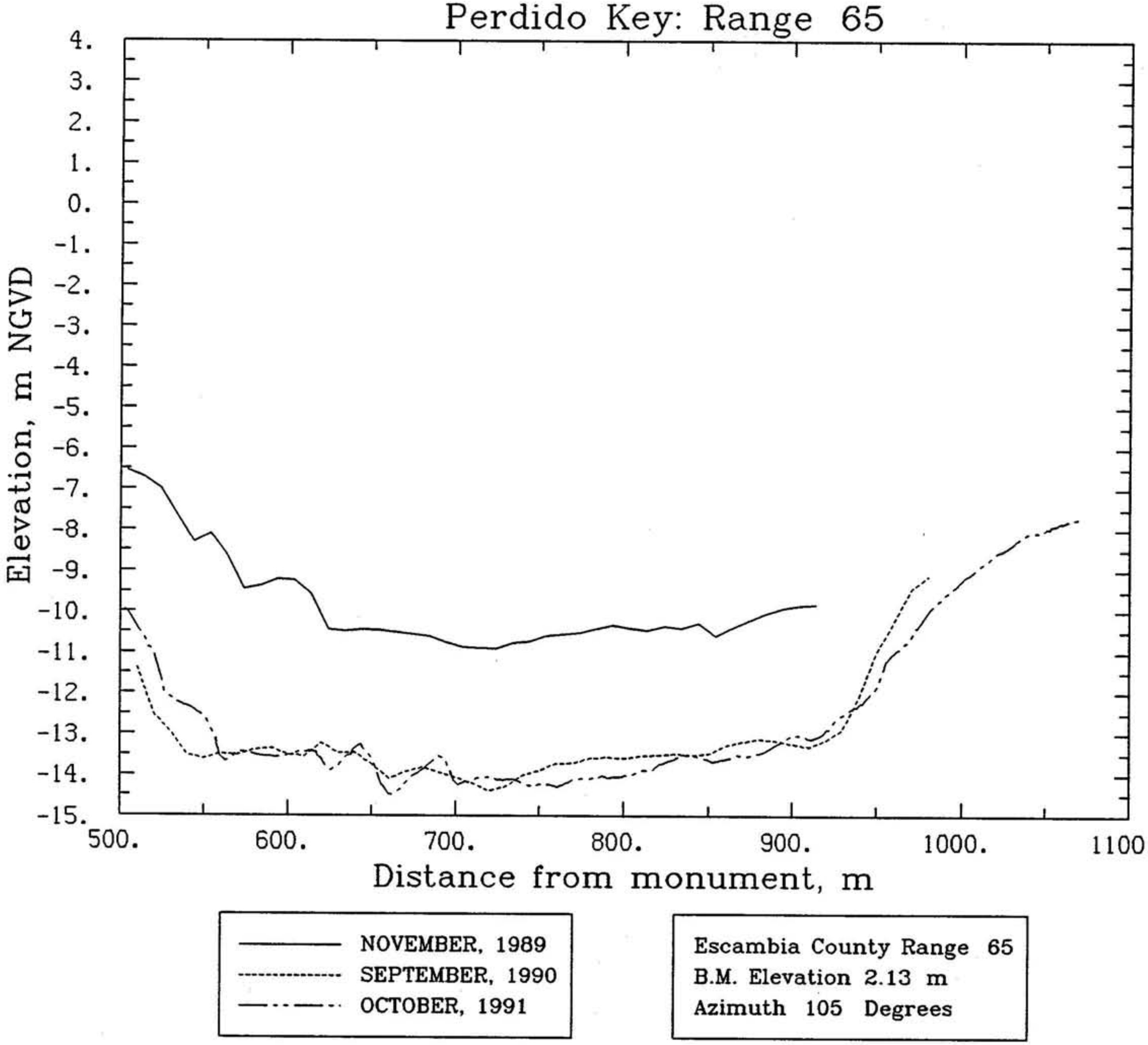


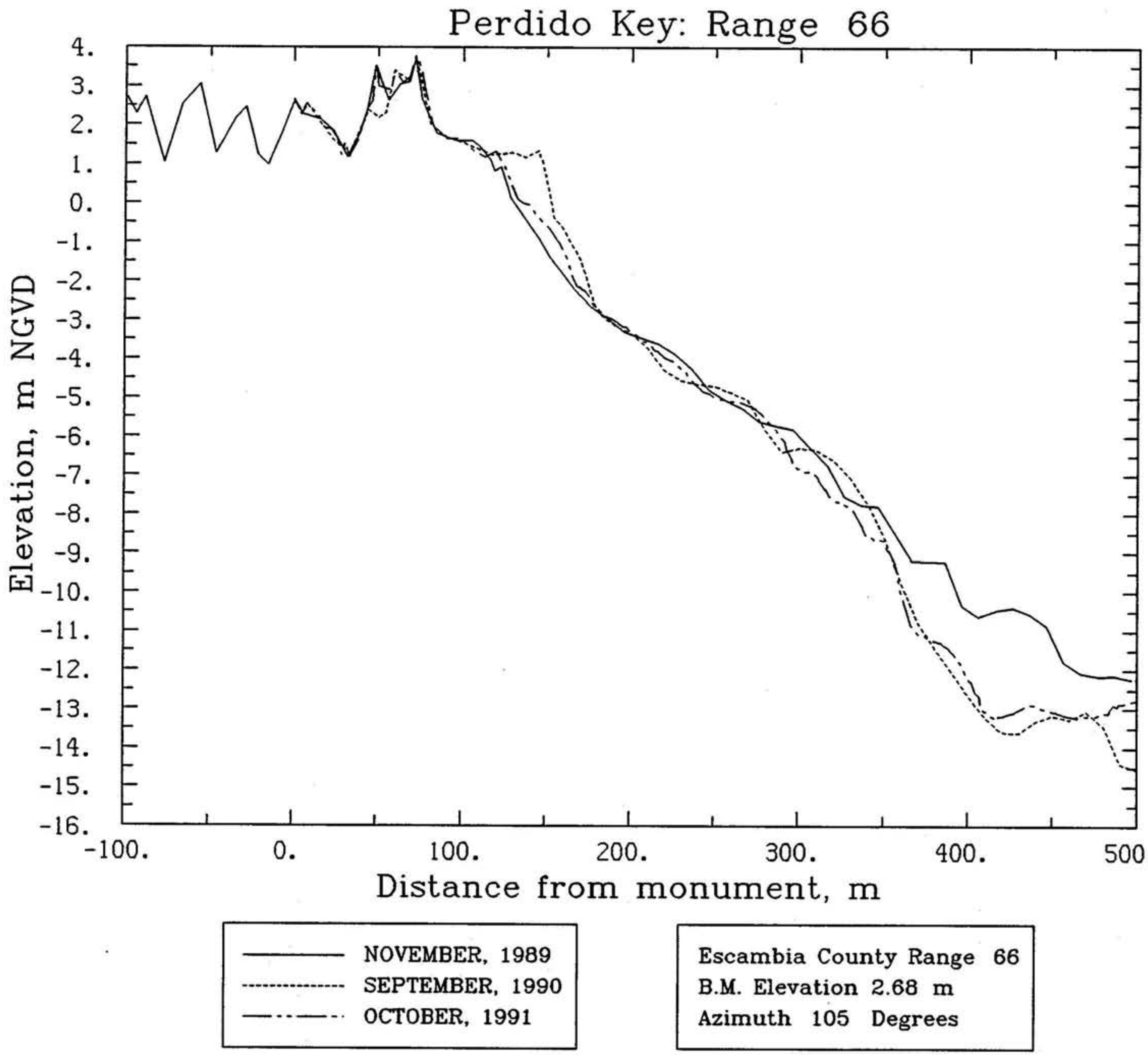

Perdido Key: Range 64
Elevation, m NGVD
Distance from monument, m
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-200.
-100.
0.
100.
200.
300.
400.
500.
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 64
B.M. Elevation 1.82 m
Azimuth 170 Degrees

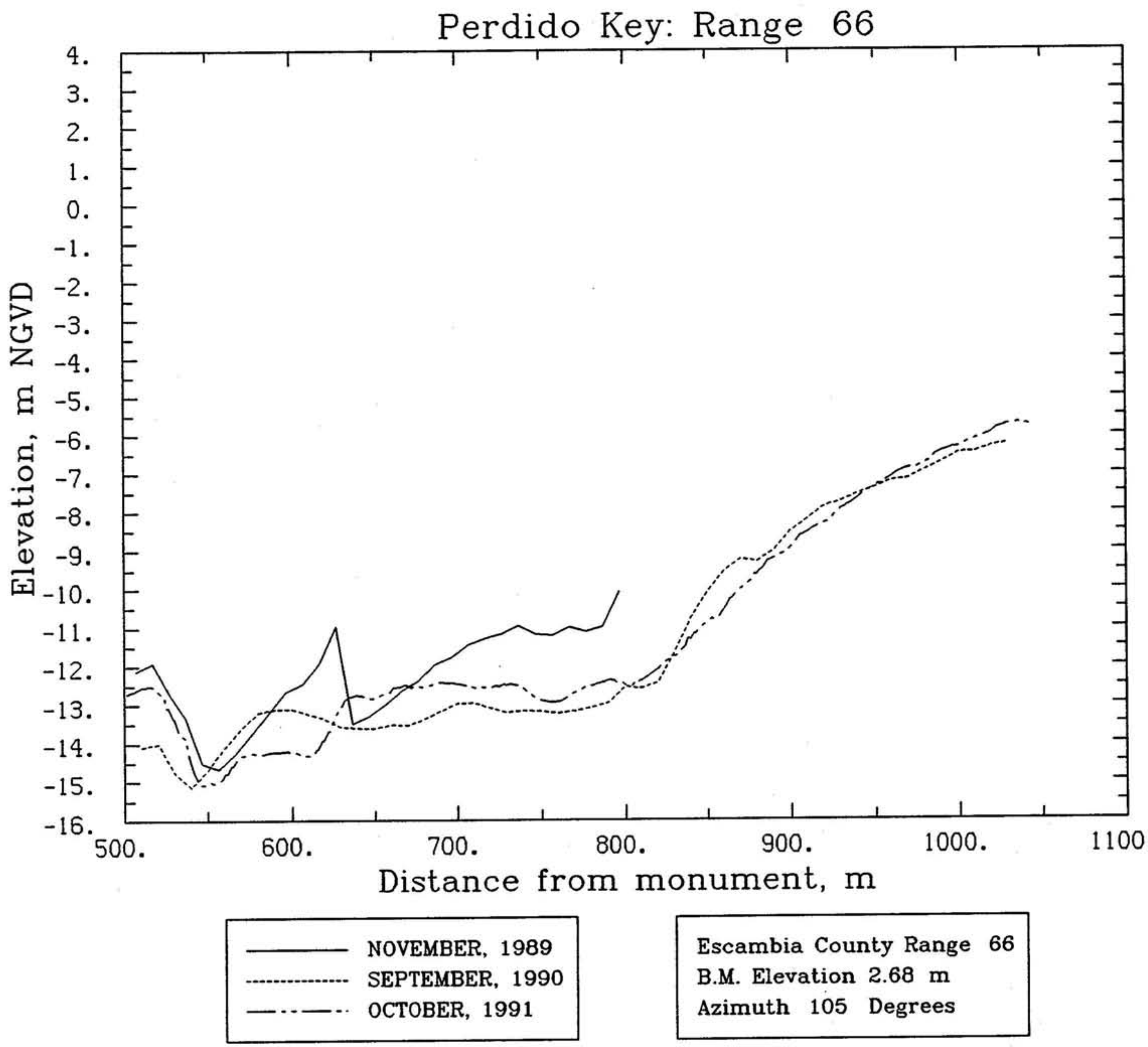


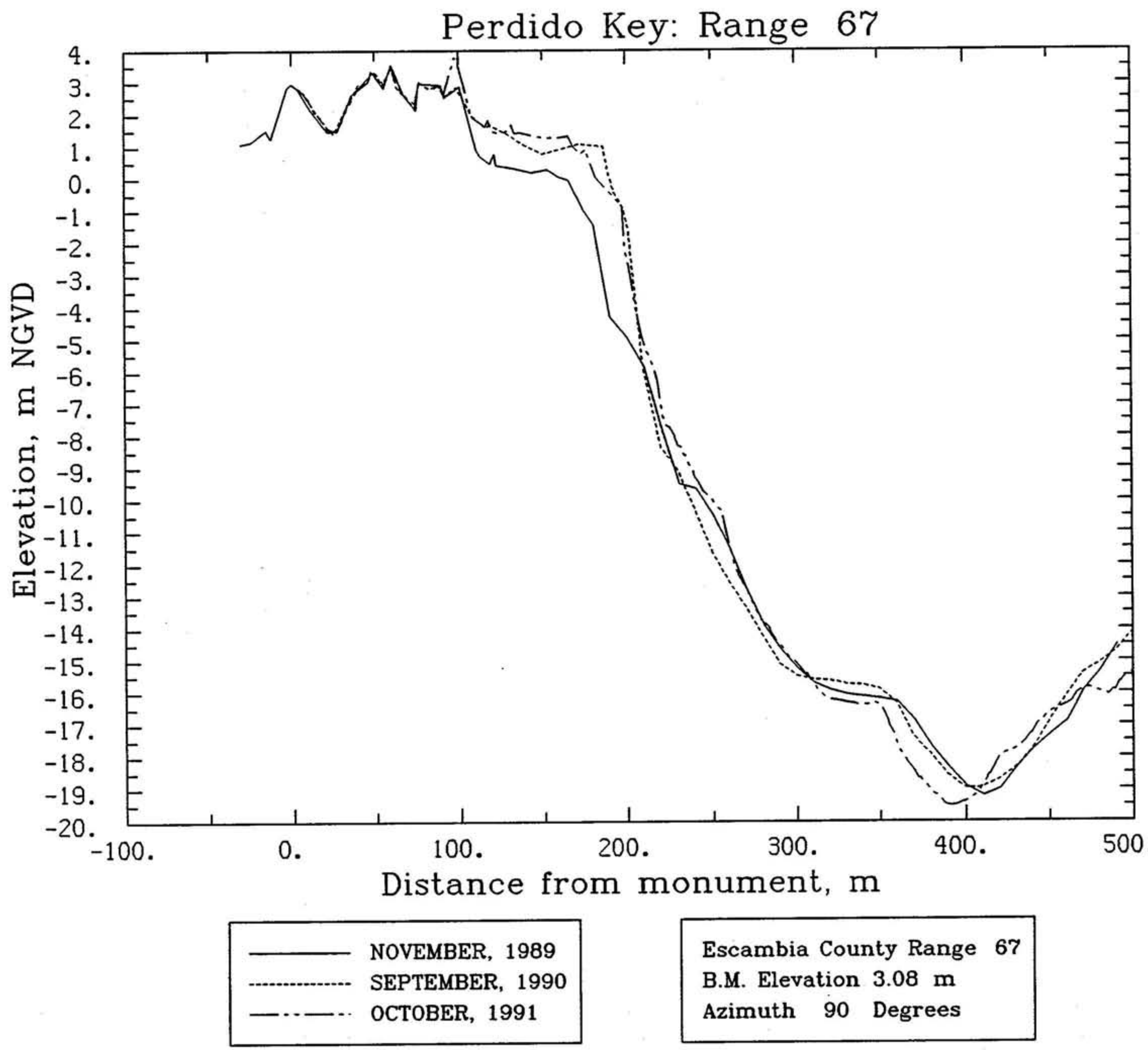
Perdido Key: Range 64
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
500.
600.
700.
800.
900.
1000.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 64
B.M. Elevation 1.82 m
Azimuth 170 Degrees

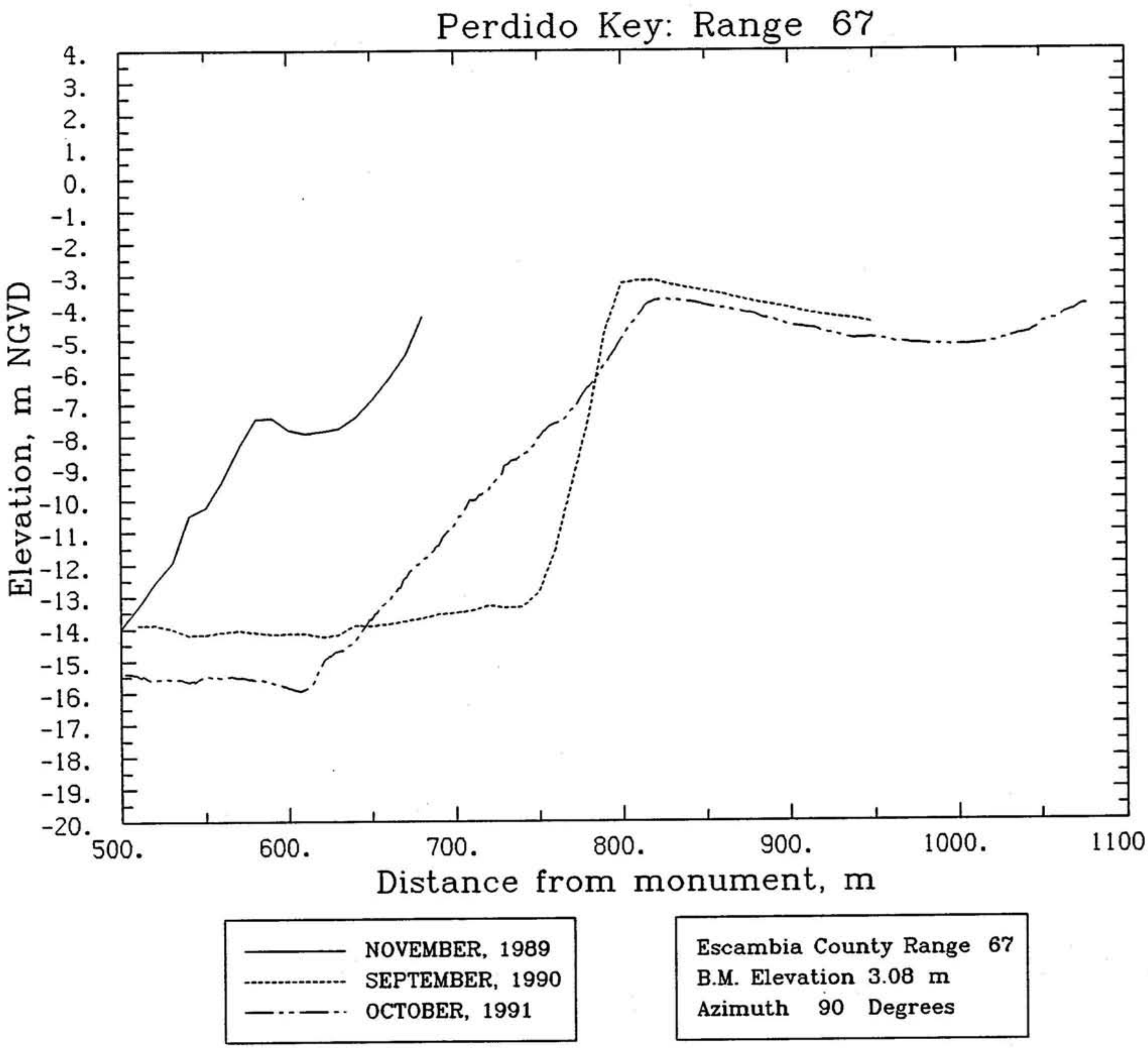

Perdido Key: Range 65
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
-9.
-10.
-11.
-12.
-13.
-14.
-15.
-200.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 65
B.M. Elevation 2.13 m
Azimuth 105 Degrees


Perdido Key: Range 65
Elevation, m NGVD
4. 3. 2. 1. 0. -1. -2. -3. -4. -5. -6. -7. -8. -9. -10. -11. -12. -13. -14. -15.
500. 600. 700. 800. 900. 1000. 1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 65
B.M. Elevation 2.13 m
Azimuth 105 Degrees


Perdido Key: Range 66
Elevation, m NGVD
Distance from monument, m
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
-9.
-10.
-11.
-12.
-13.
-14.
-15.
-16.
-100.
0.
100.
200.
300.
400.
500.
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 66
B.M. Elevation 2.68 m
Azimuth 105 Degrees


Perdido Key: Range 66
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
-9.
-10.
-11.
-12.
-13.
-14.
-15.
-16.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 66
B.M. Elevation 2.68 m
Azimuth 105 Degrees


Perdido Key: Range 67
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
-9.
-10.
-11.
-12.
-13.
-14.
-15.
-16.
-17.
-18.
-19.
-20.
-100.
0.
100.
200.
300.
400.
500.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 67
B.M. Elevation 3.08 m
Azimuth 90 Degrees



Perdido Key: Range 67
Elevation, m NGVD
4.
3.
2.
1.
0.
-1.
-2.
-3.
-4.
-5.
-6.
-7.
-8.
-9.
-10.
-11.
-12.
-13.
-14.
-15.
-16.
-17.
-18.
-19.
-20.
500.
600.
700.
800.
900.
1000.
1100.
Distance from monument, m
NOVEMBER, 1989
SEPTEMBER, 1990
OCTOBER, 1991
Escambia County Range 67
B.M. Elevation 3.08 m
Azimuth 90 Degrees

APPENDIX II

WAVE, CURRENT, AND TIDE DATA

From Offshore Gage

Representative Wave Period, Significant Wave Height, Central Direction, and Spreading Parameters

Magnitude and Direction of Mean Current, Tidal Stage

December, 1990 — February, 1992

Notes:
1) Mean wave direction, $\overline{\theta}$, is the direction that the wave is heading.
2) Mean current direction, θ_c, is the direction toward which the current is heading.
3) Horizontal axis denotes day of month.
4) Tidal datum is mean sea level.

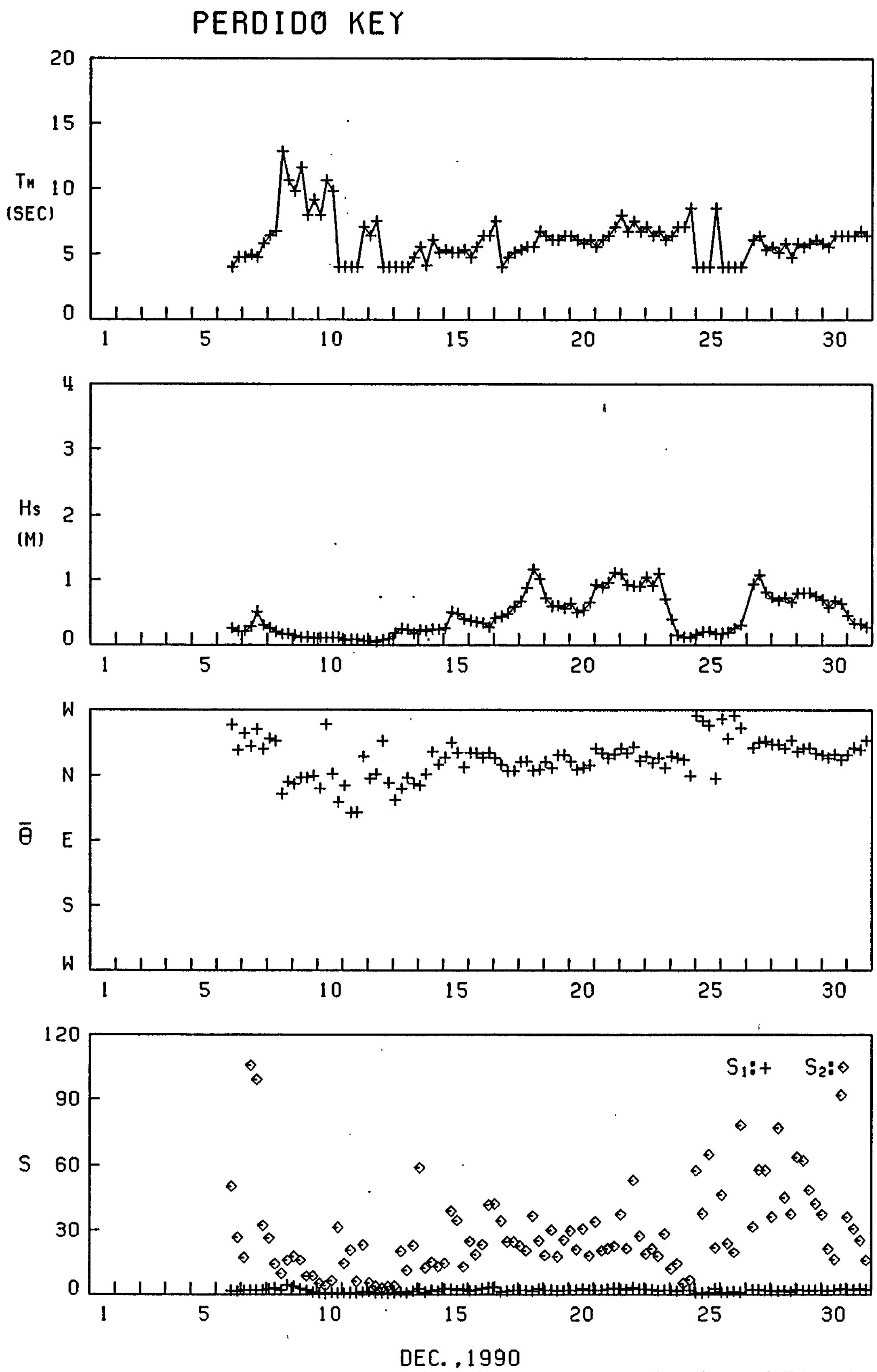


Figure II-1: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, December, 1990.

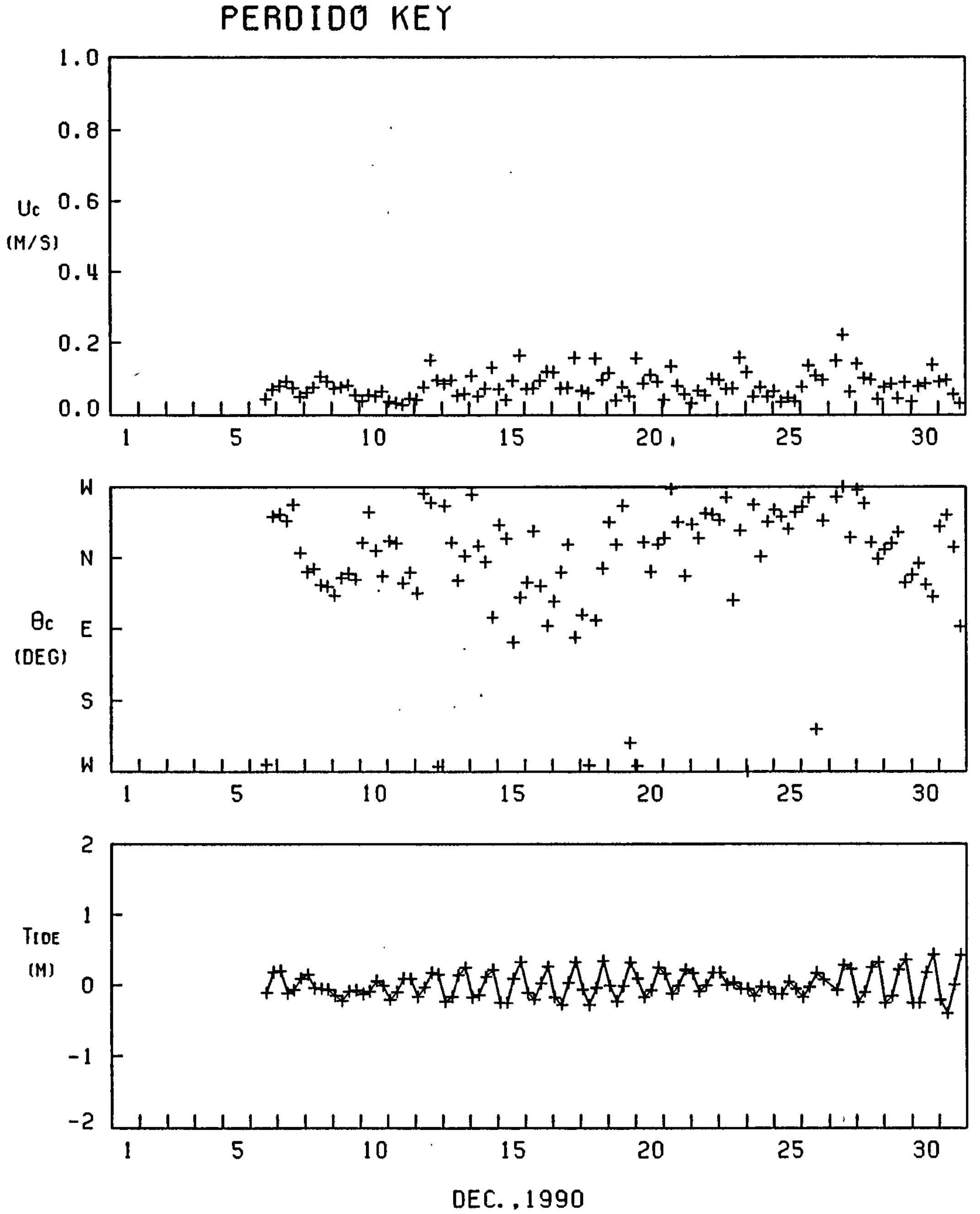


Figure II-2: Magnitude and Direction of Mean Current and Tidal Stage, December, 1990.

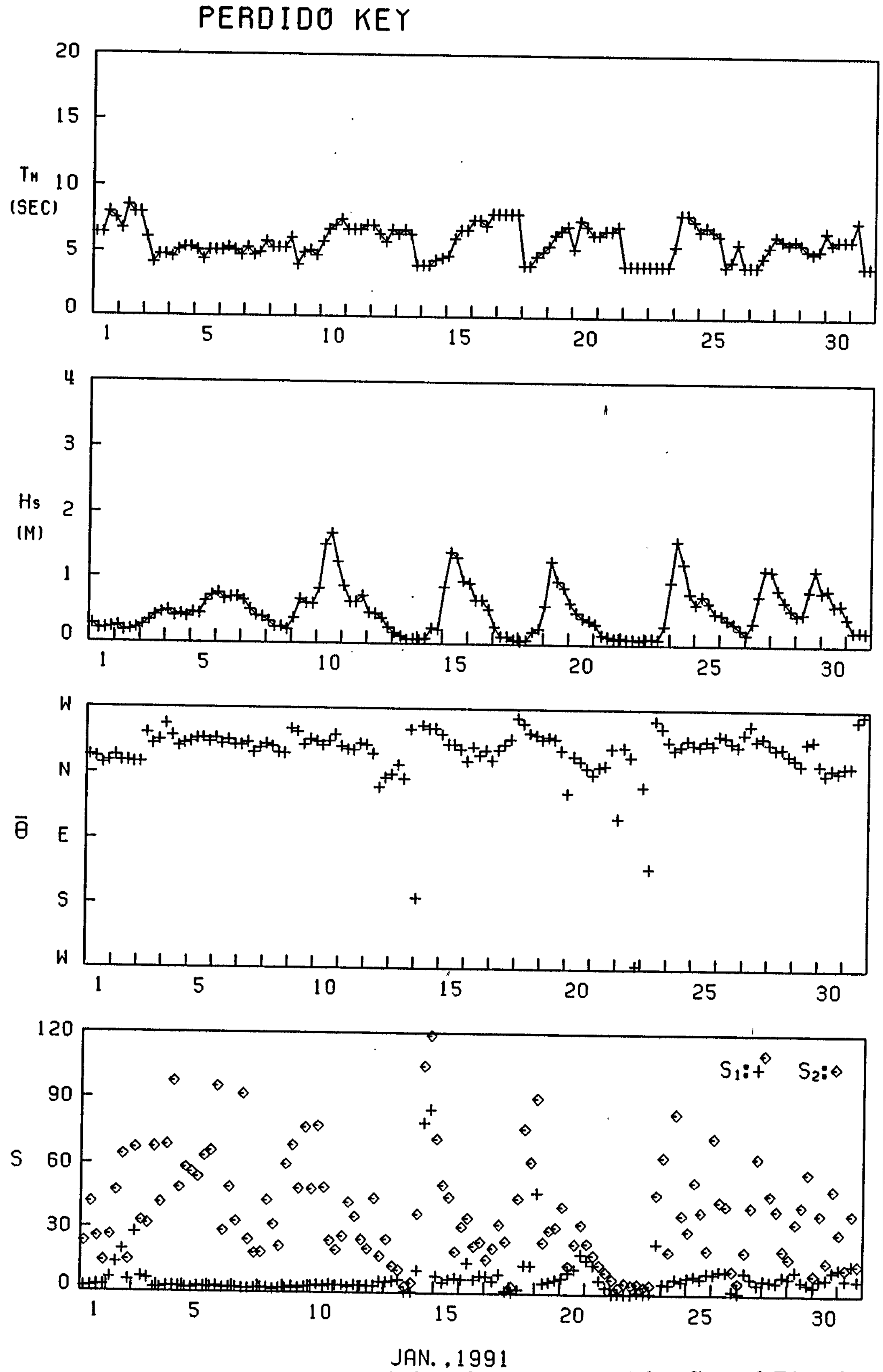


Figure II-3: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, January, 1991.

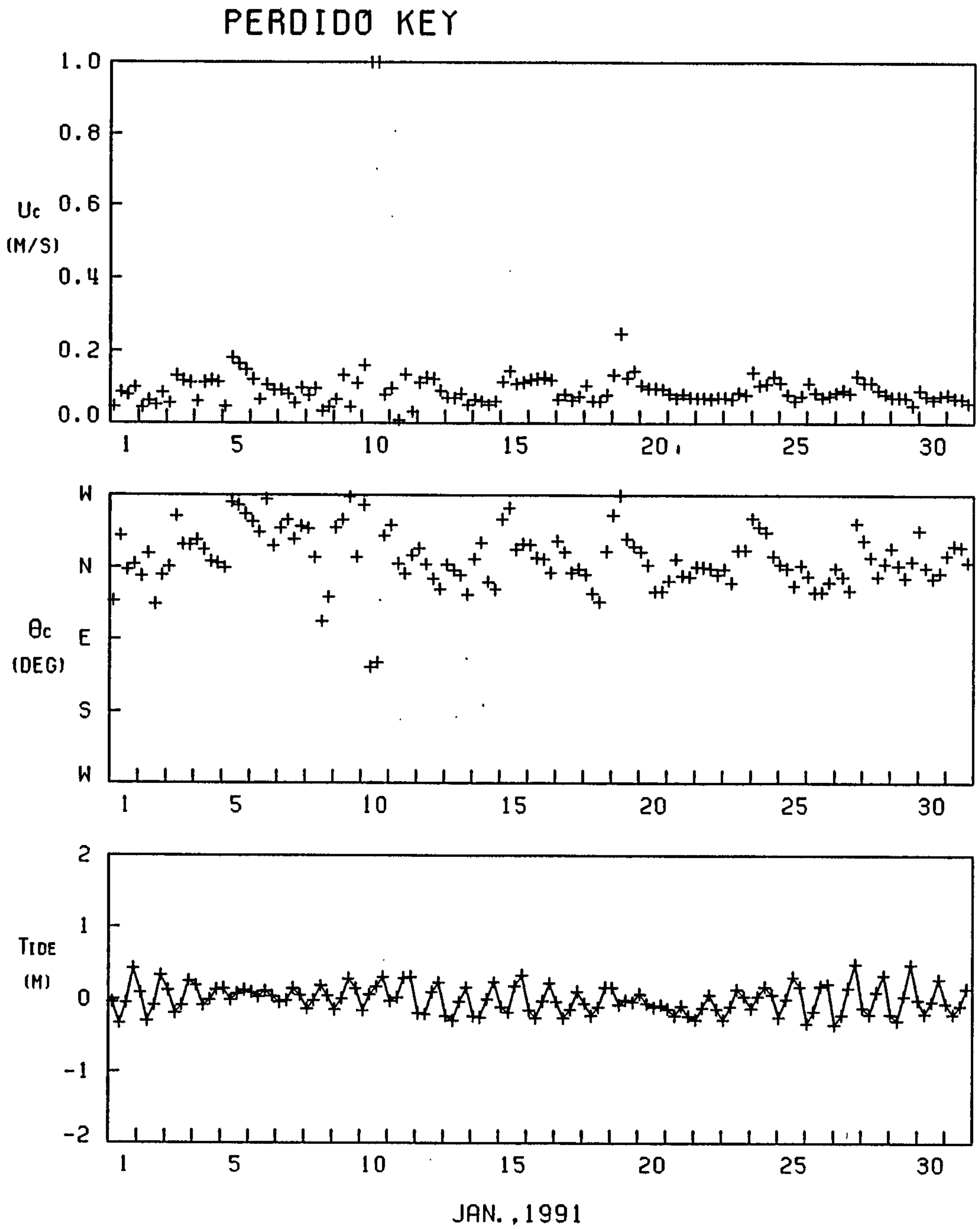


Figure II-4: Magnitude and Direction of Mean Current and Tidal Stage, January, 1991.

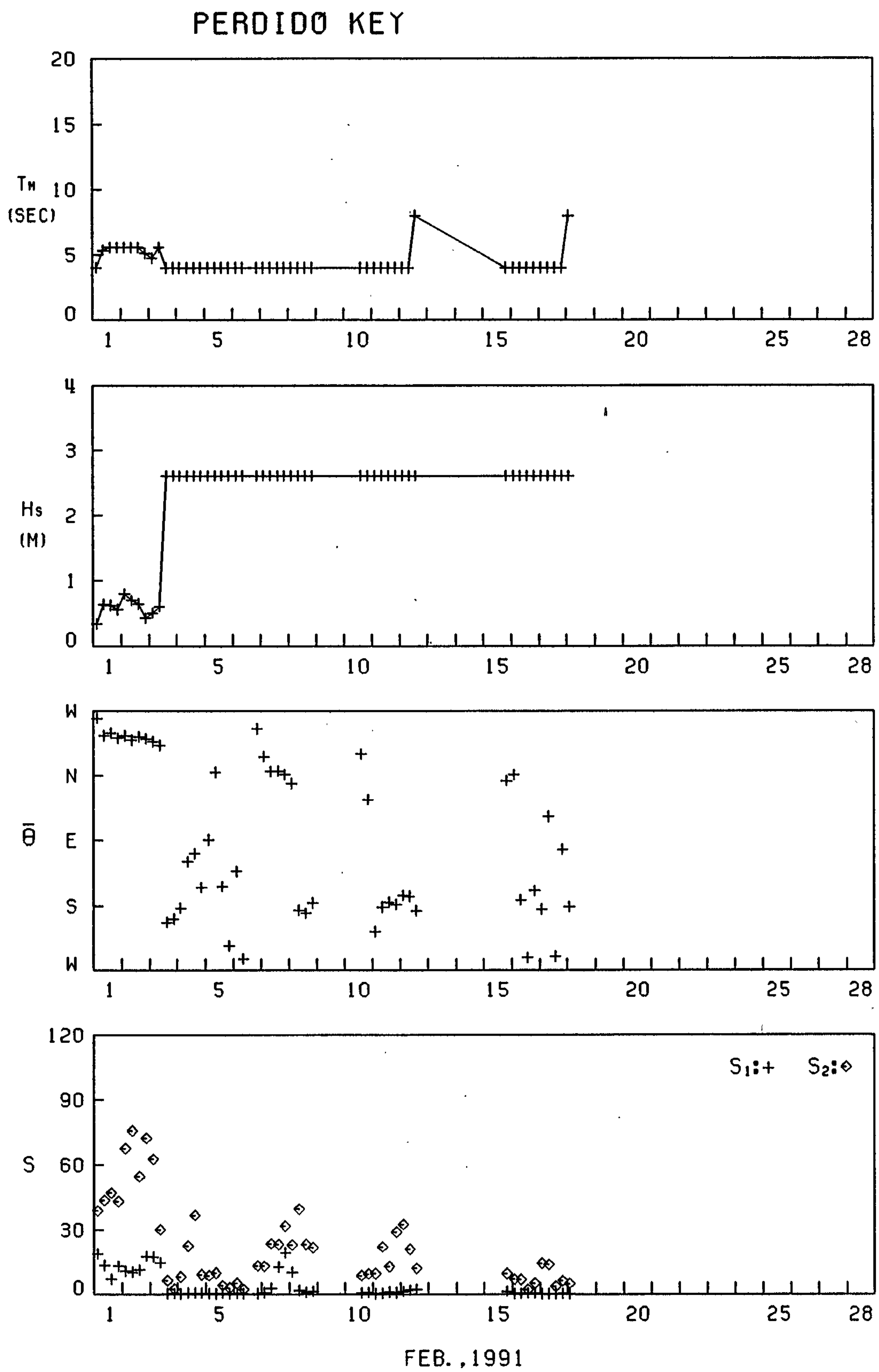


Figure II-5: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, February, 1991.

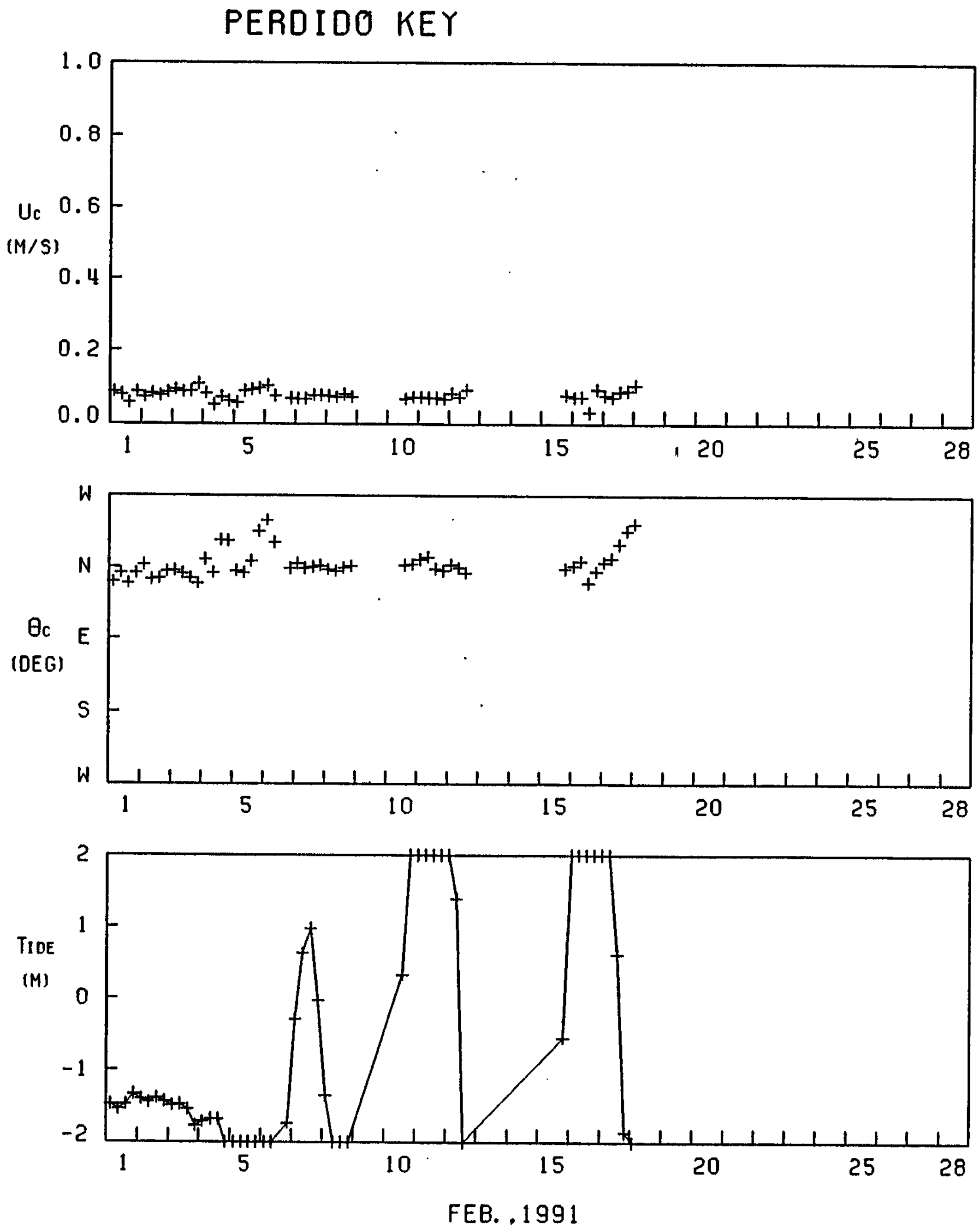


Figure II-6: Magnitude and Direction of Mean Current and Tidal Stage, February, 1991.

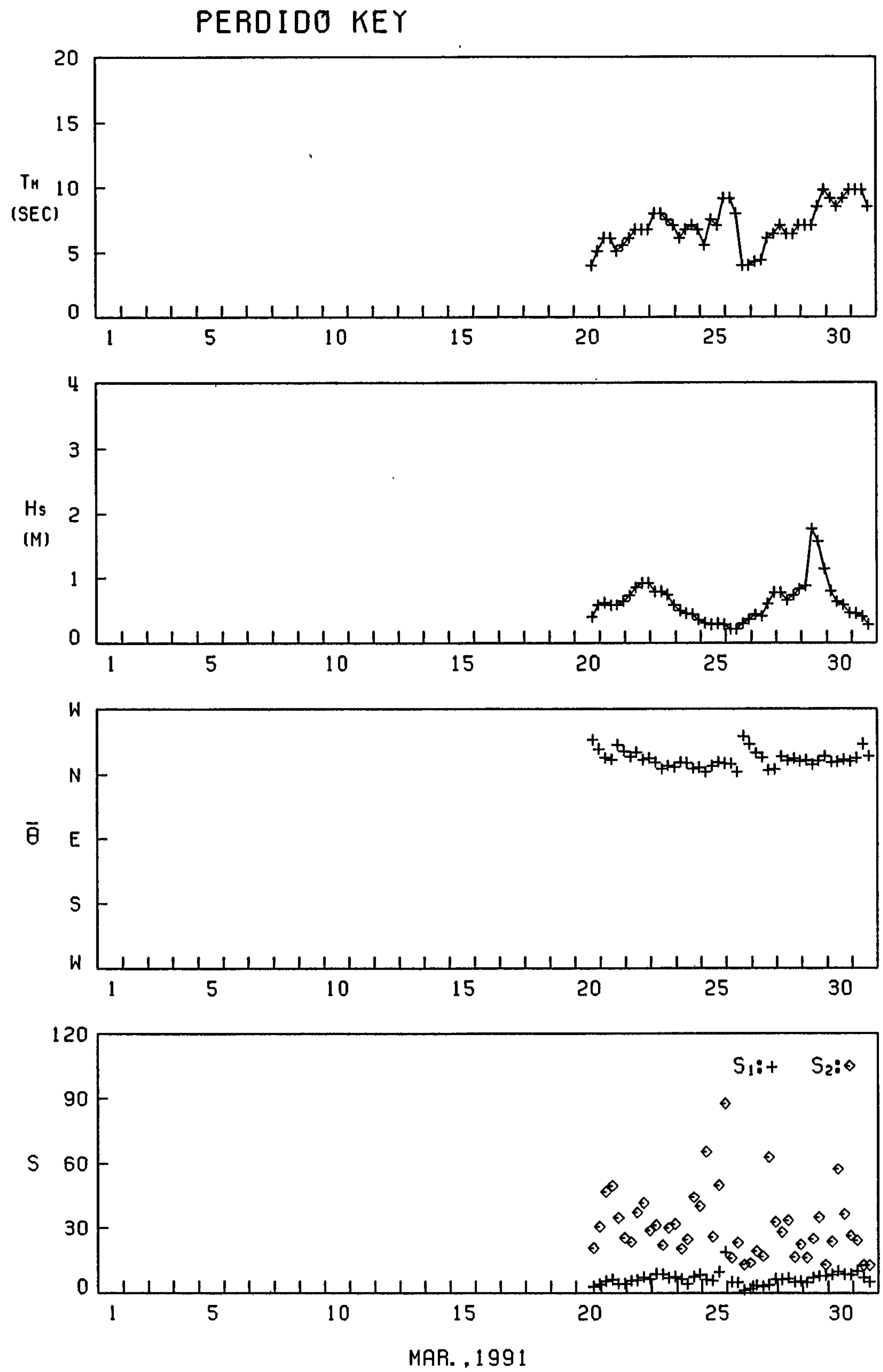


Figure II-7: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, March, 1991.

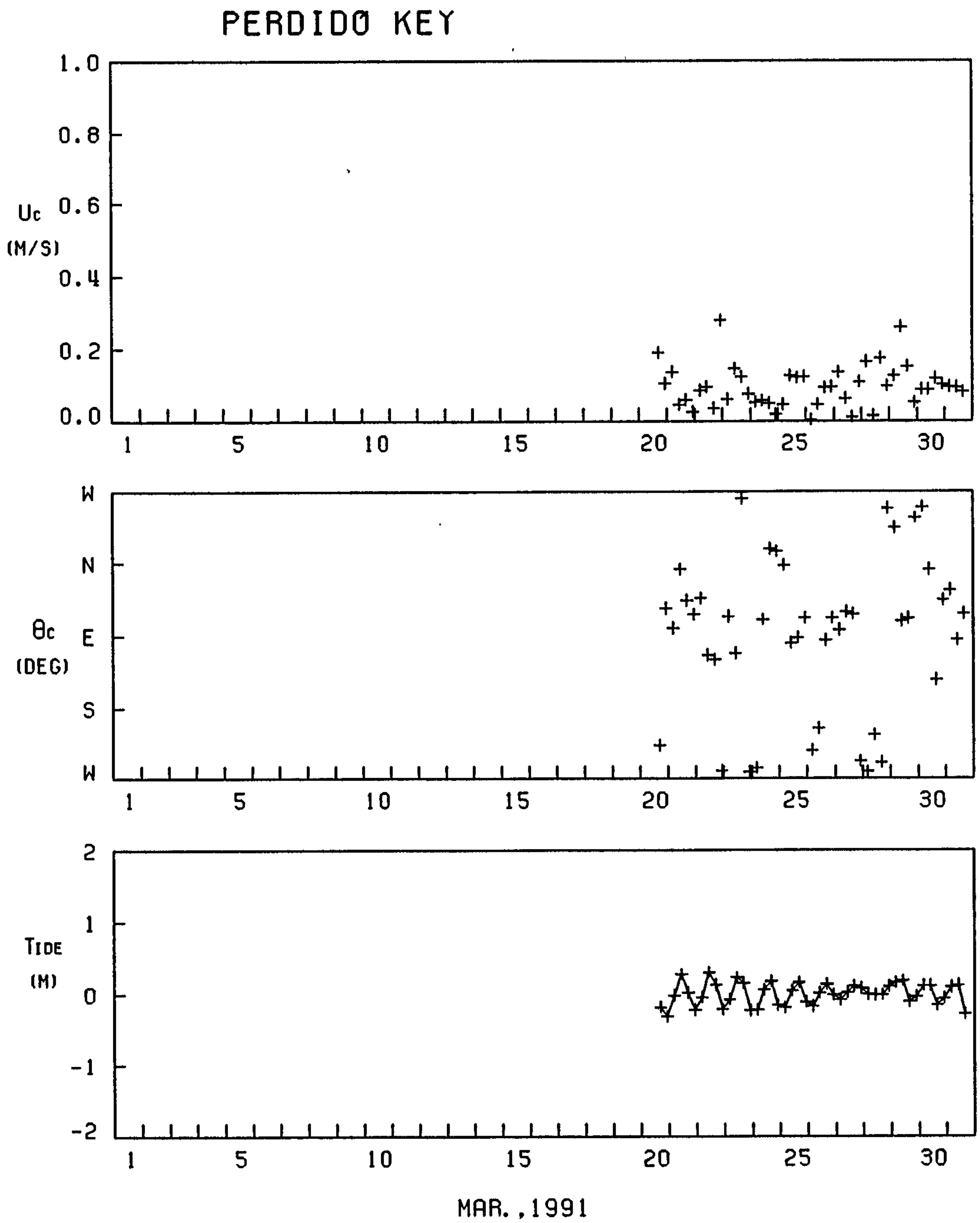


Figure II-8: Magnitude and Direction of Mean Current and Tidal Stage, March, 1991.

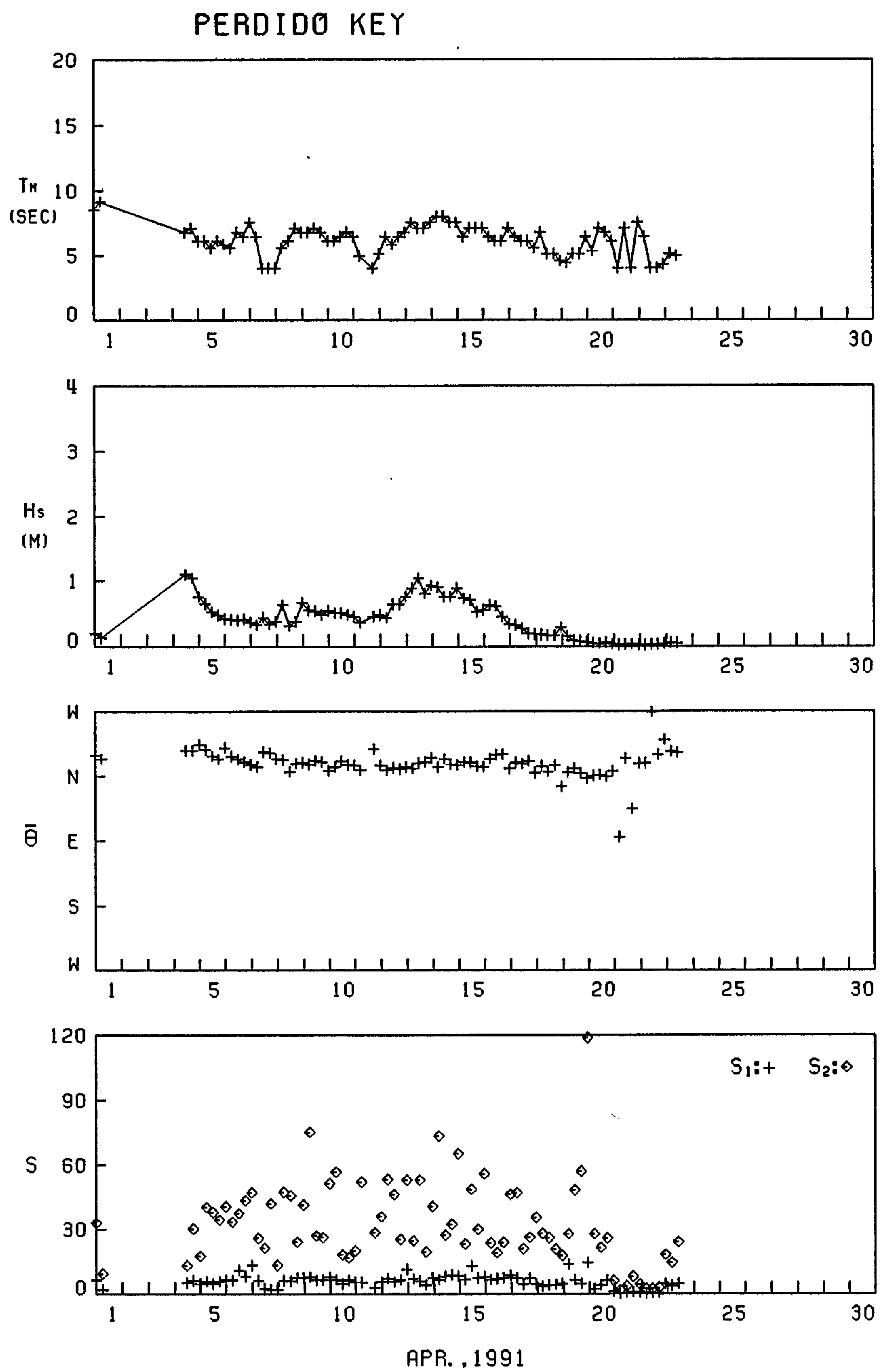


Figure II-9: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, April, 1991.

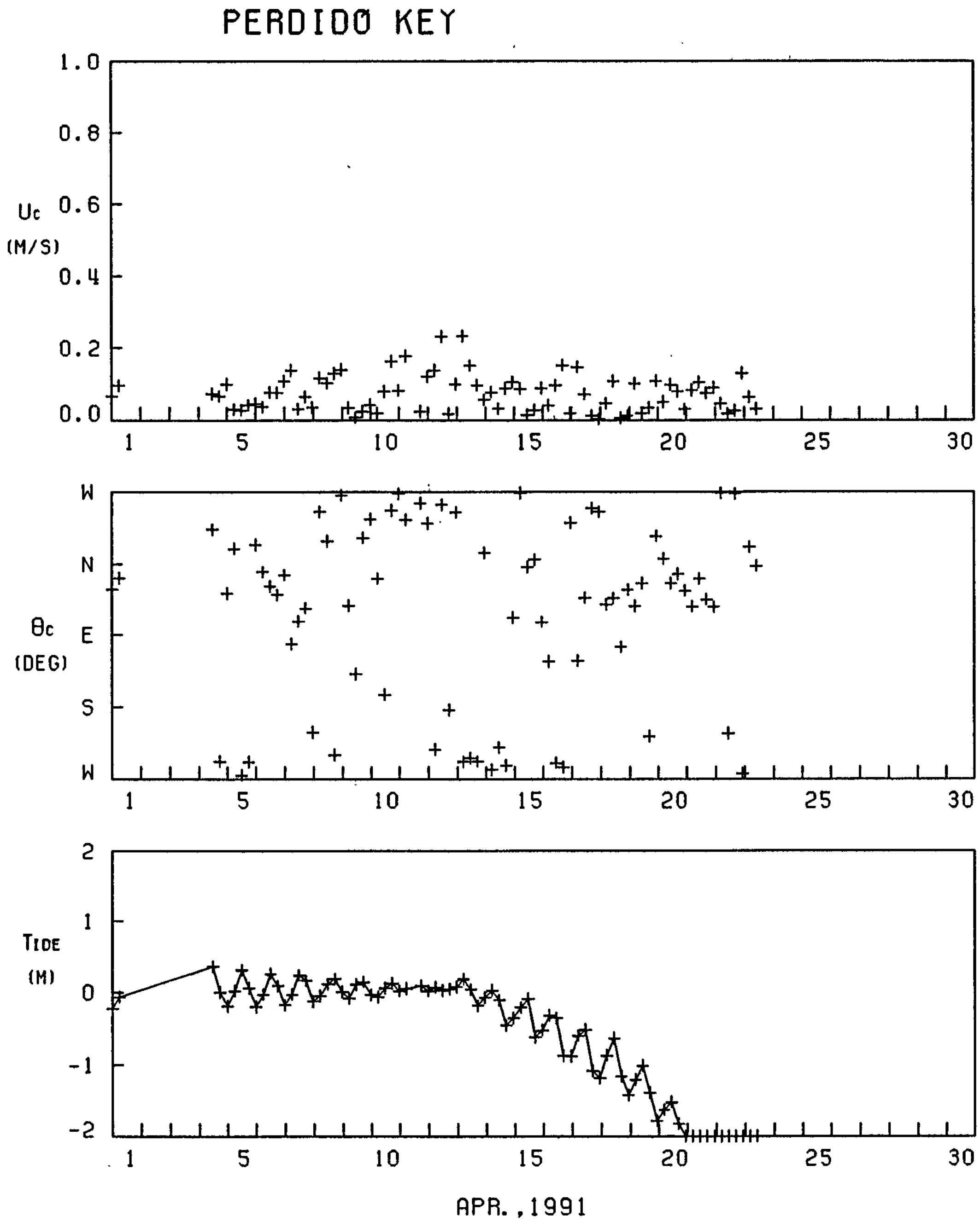


Figure II-10: Magnitude and Direction of Mean Current and Tidal Stage, April, 1991.

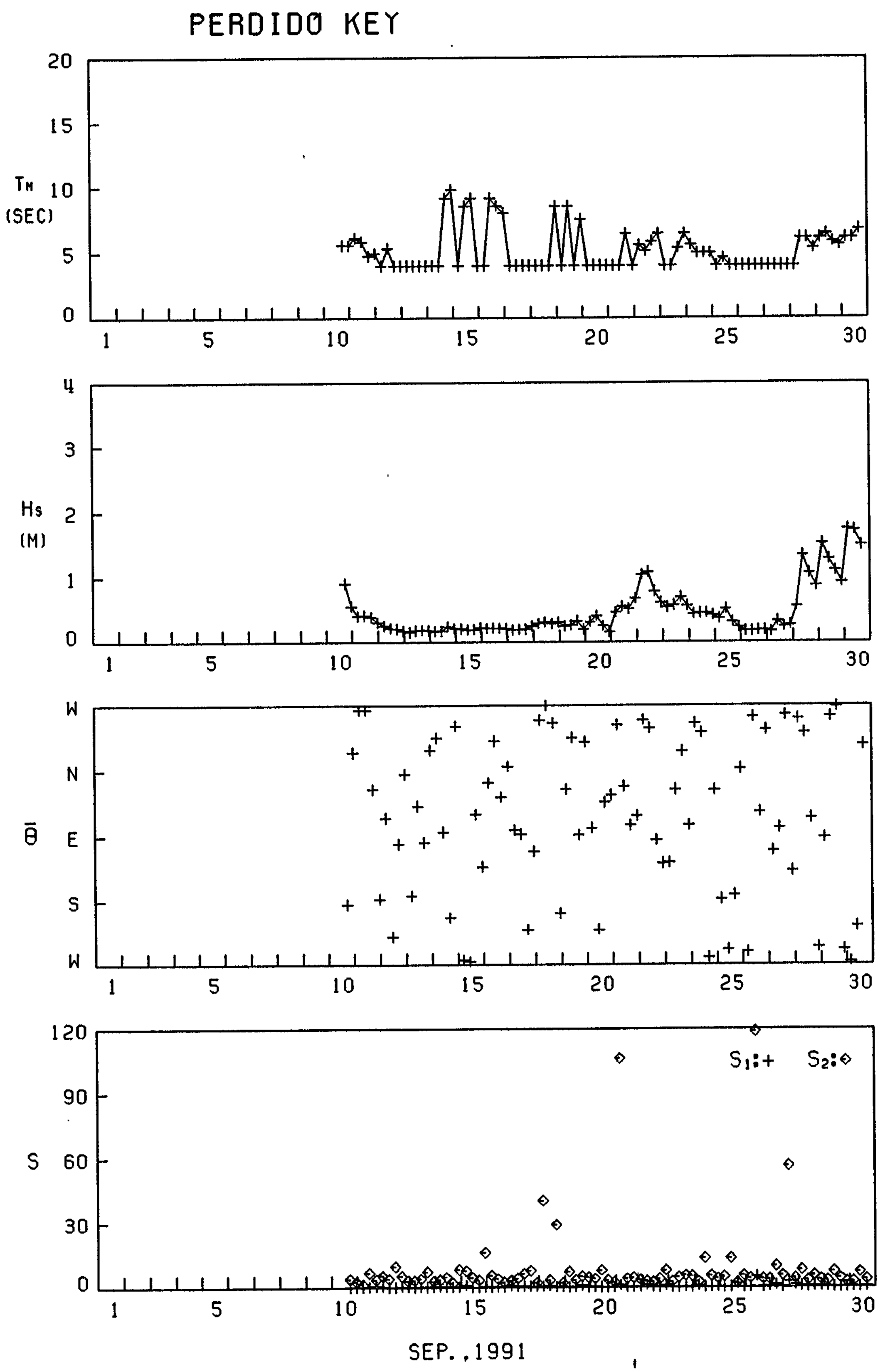


Figure II-11: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, September, 1991.

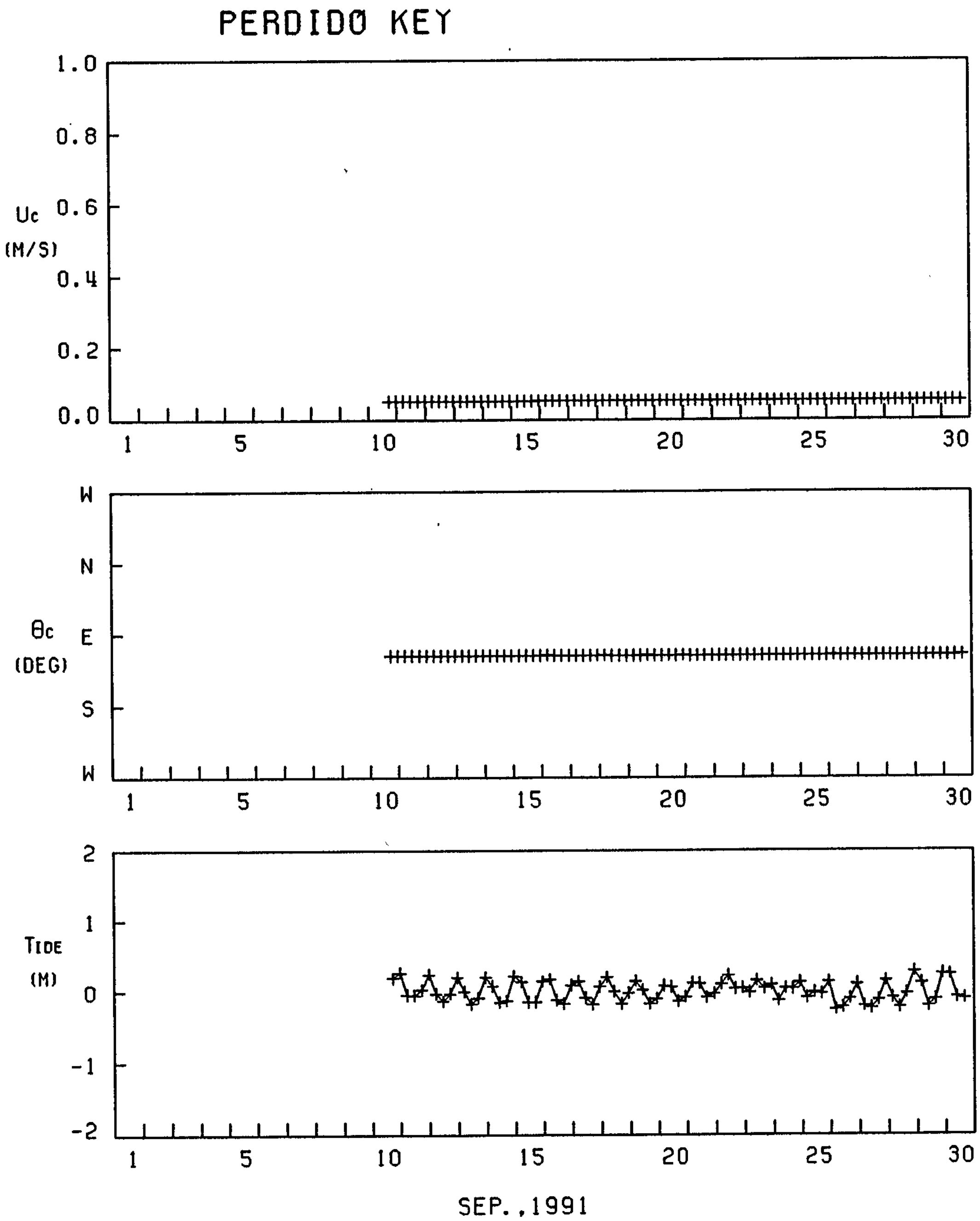


Figure II-12: Magnitude and Direction of Mean Current and Tidal Stage, September, 1991.

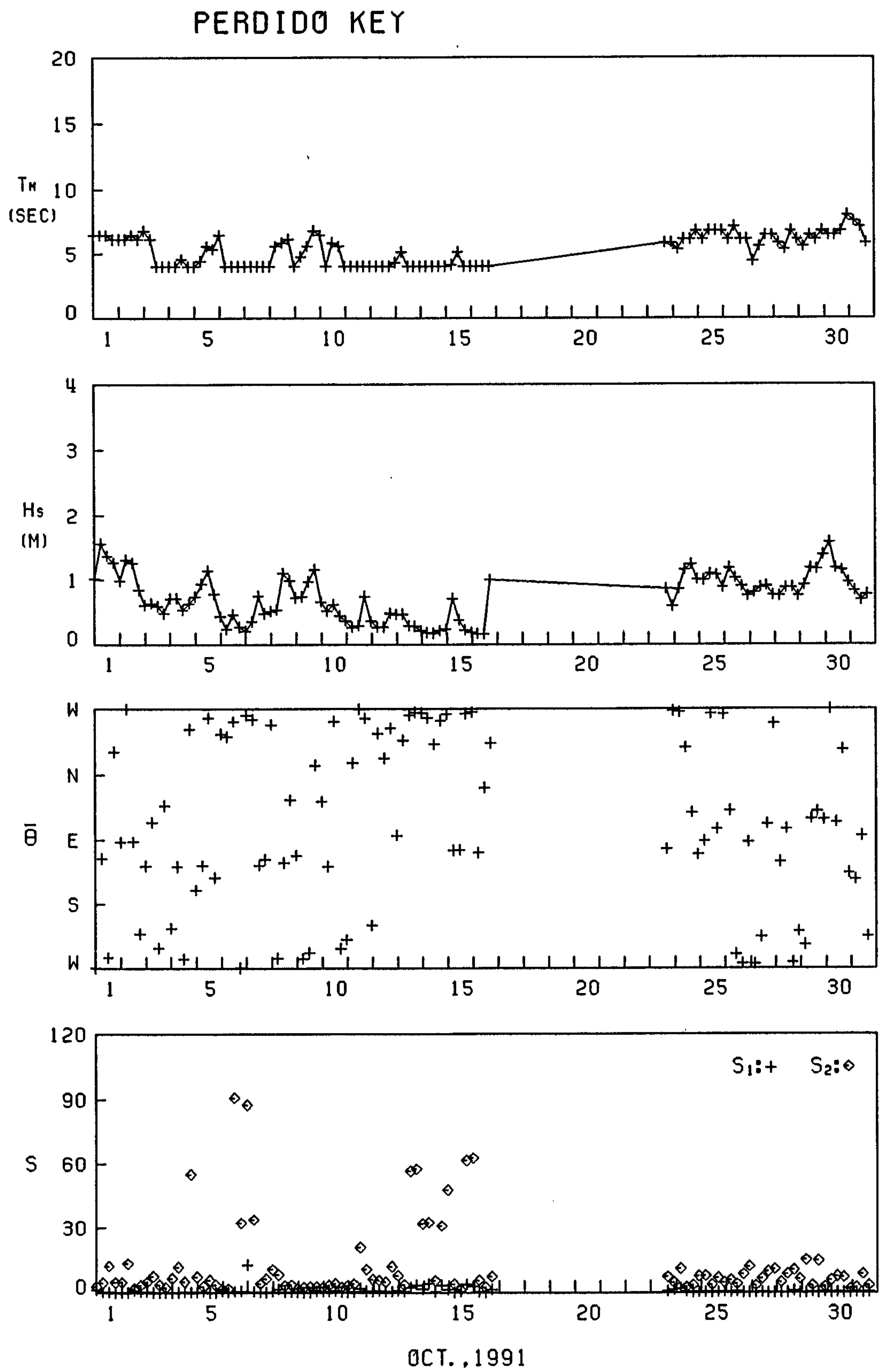


Figure II-13: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, October, 1991.

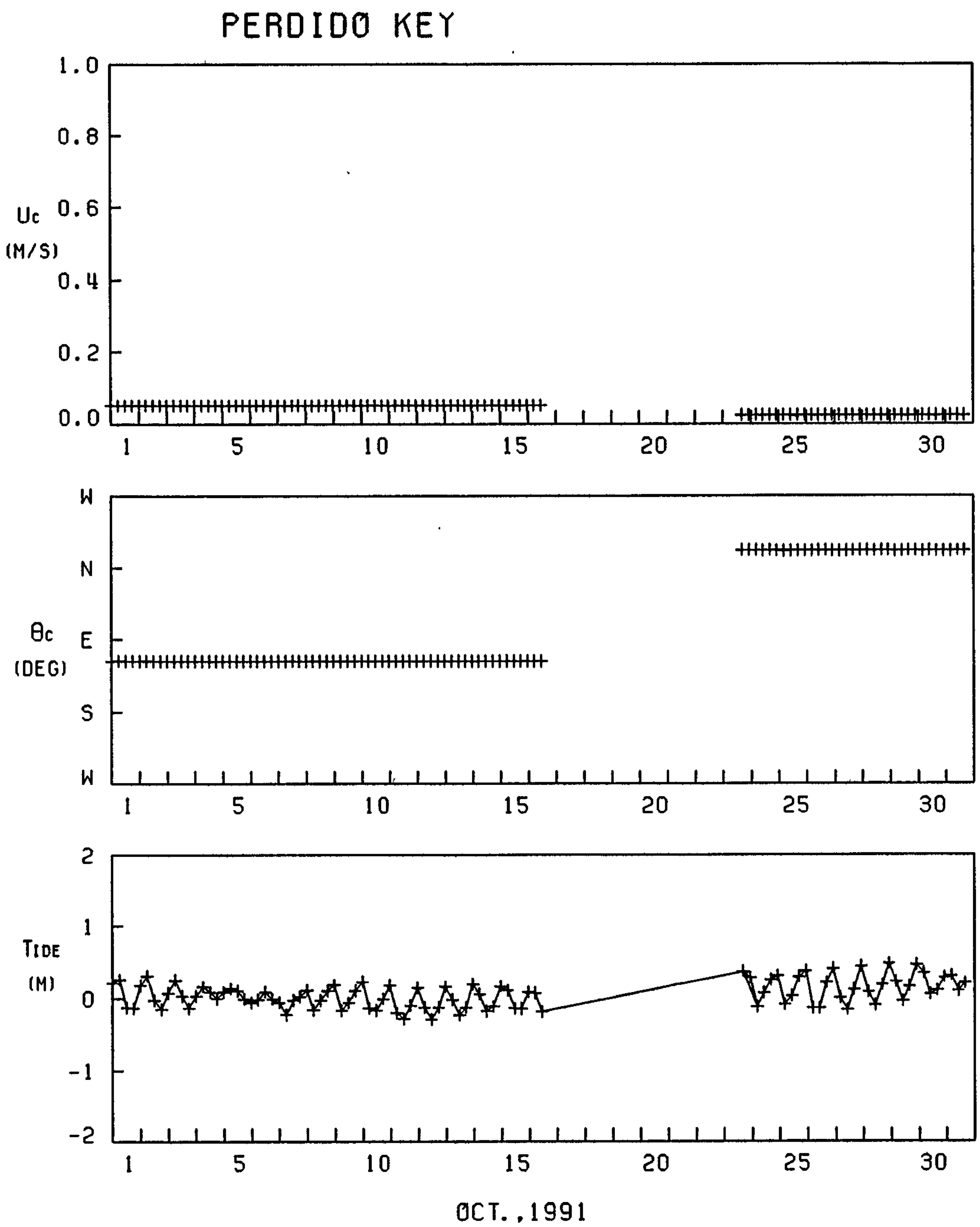


Figure II-14: Magnitude and Direction of Mean Current and Tidal Stage, October, 1991.

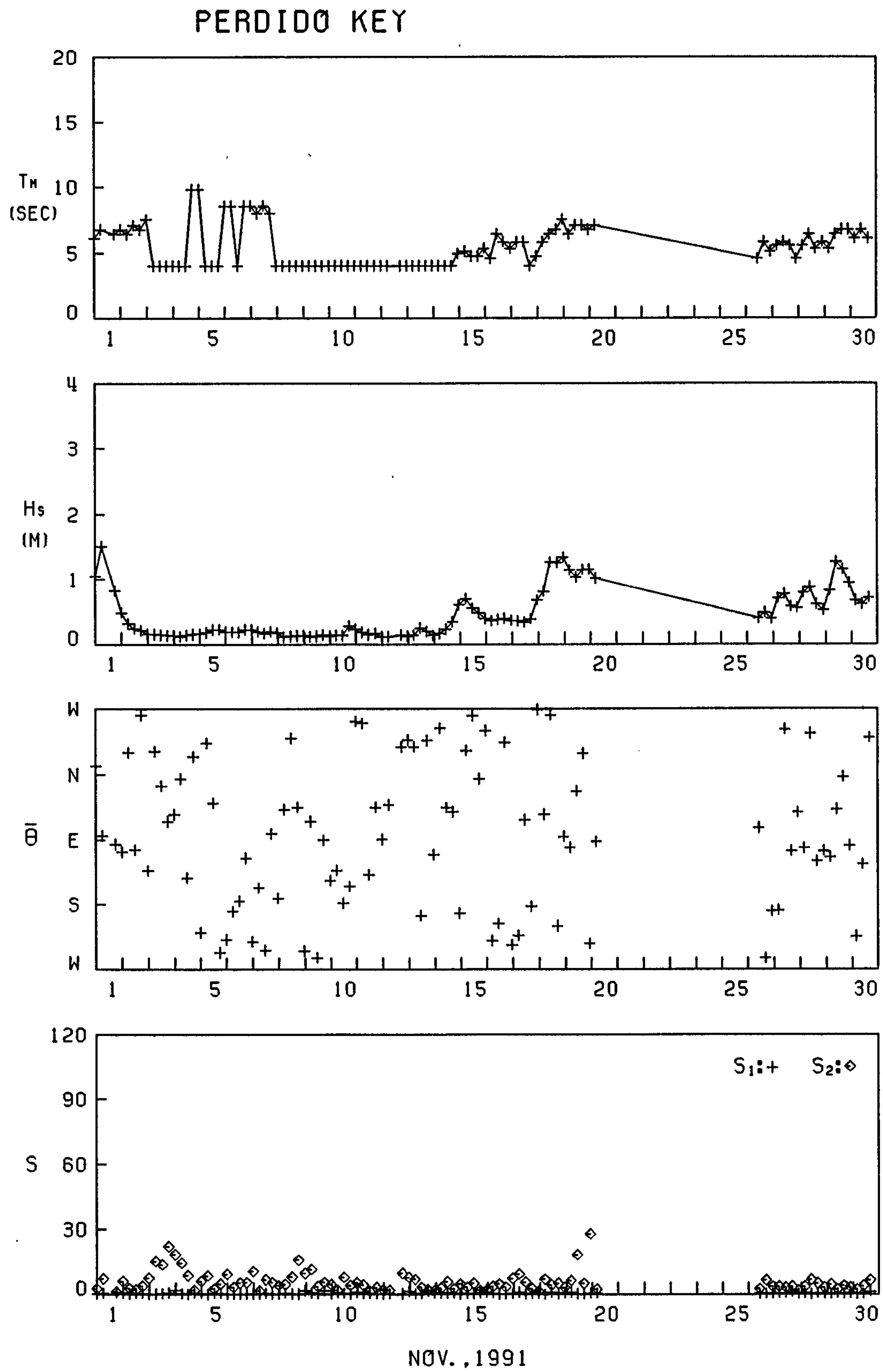


Figure II-15: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, November, 1991.

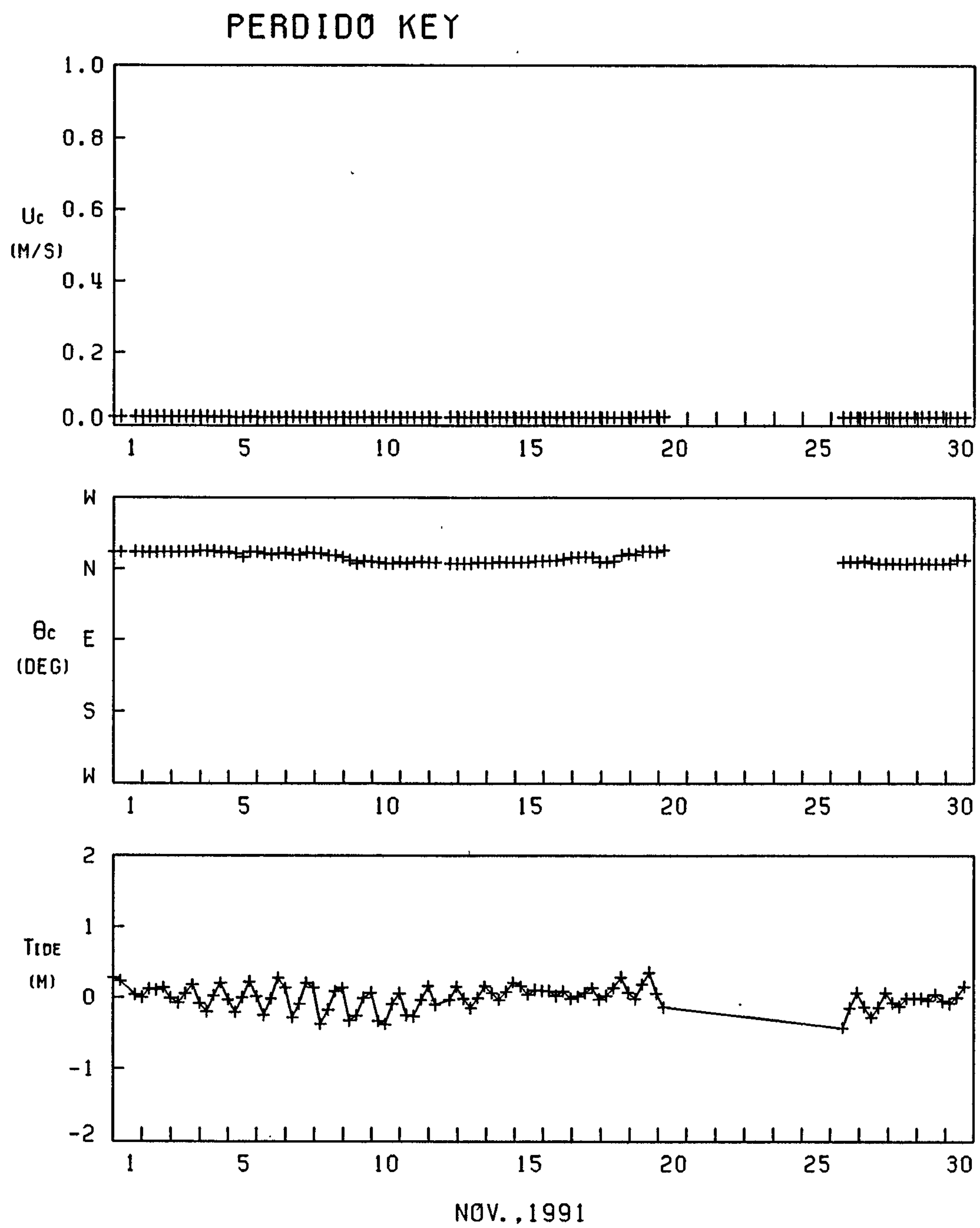


Figure II-16: Magnitude and Direction of Mean Current and Tidal Stage, November, 1991.

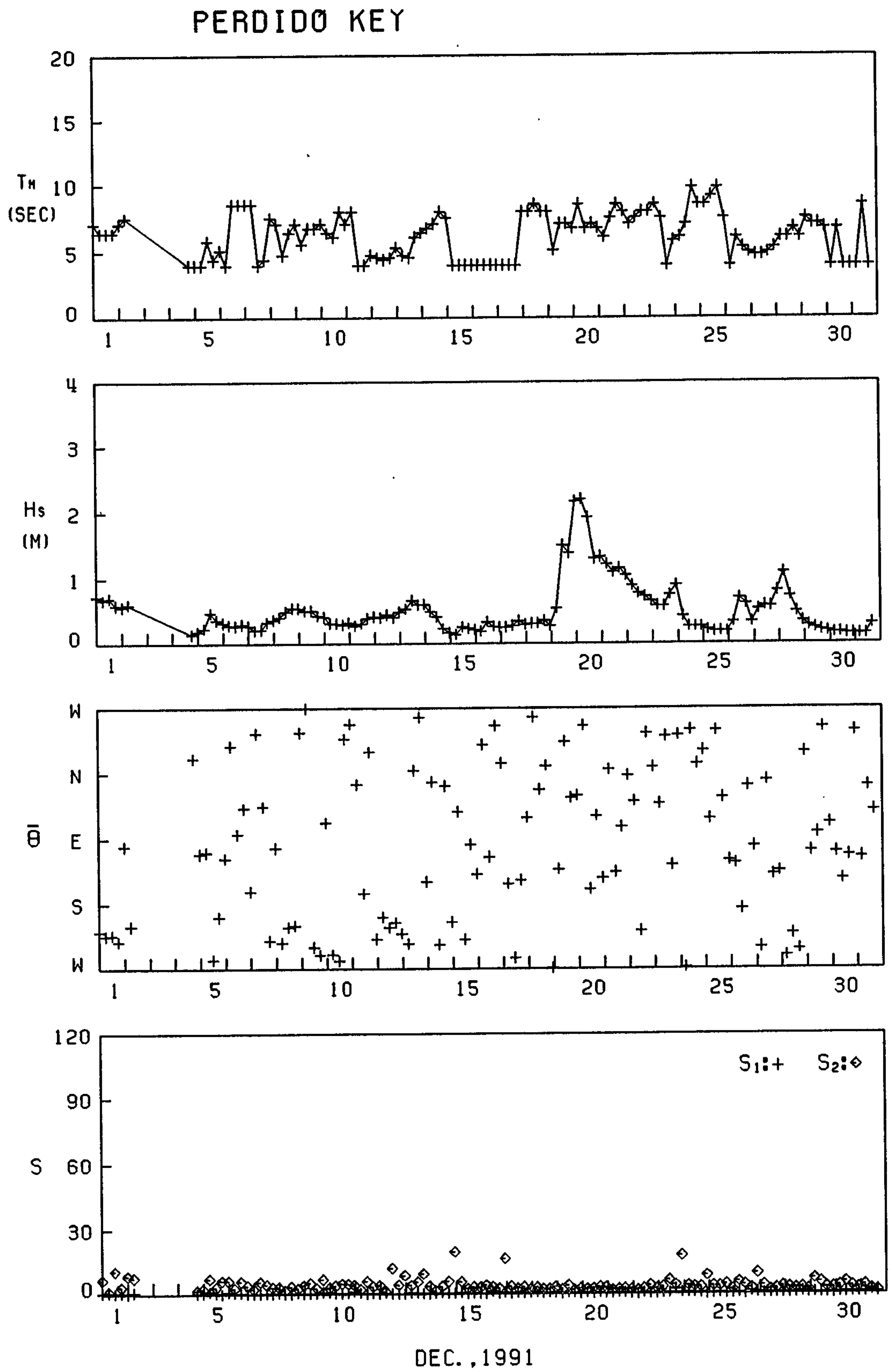


Figure II-17: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, December, 1991.

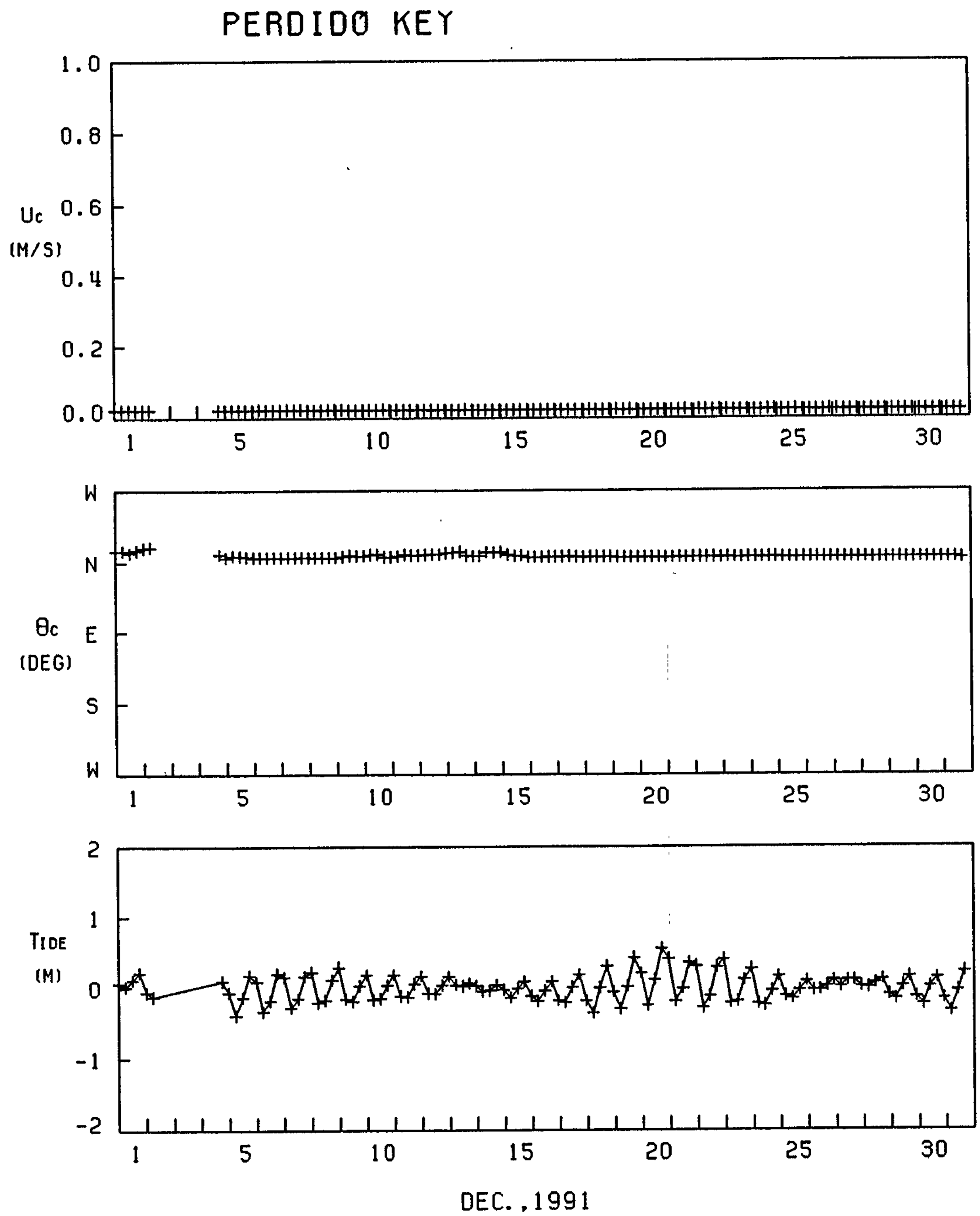


Figure II-18: Magnitude and Direction of Mean Current and Tidal Stage, December, 1991.

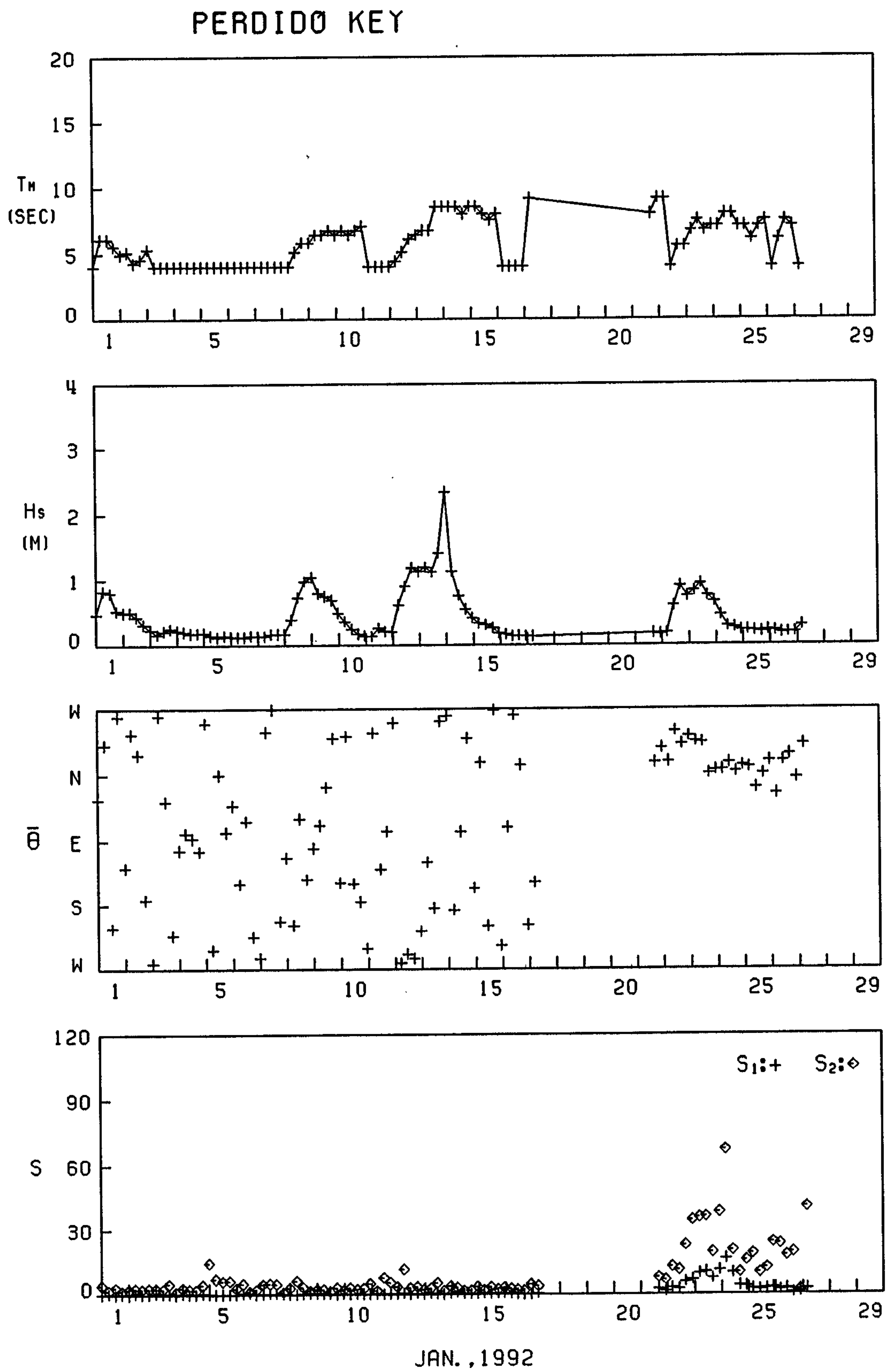


Figure II-19: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, January, 1992.

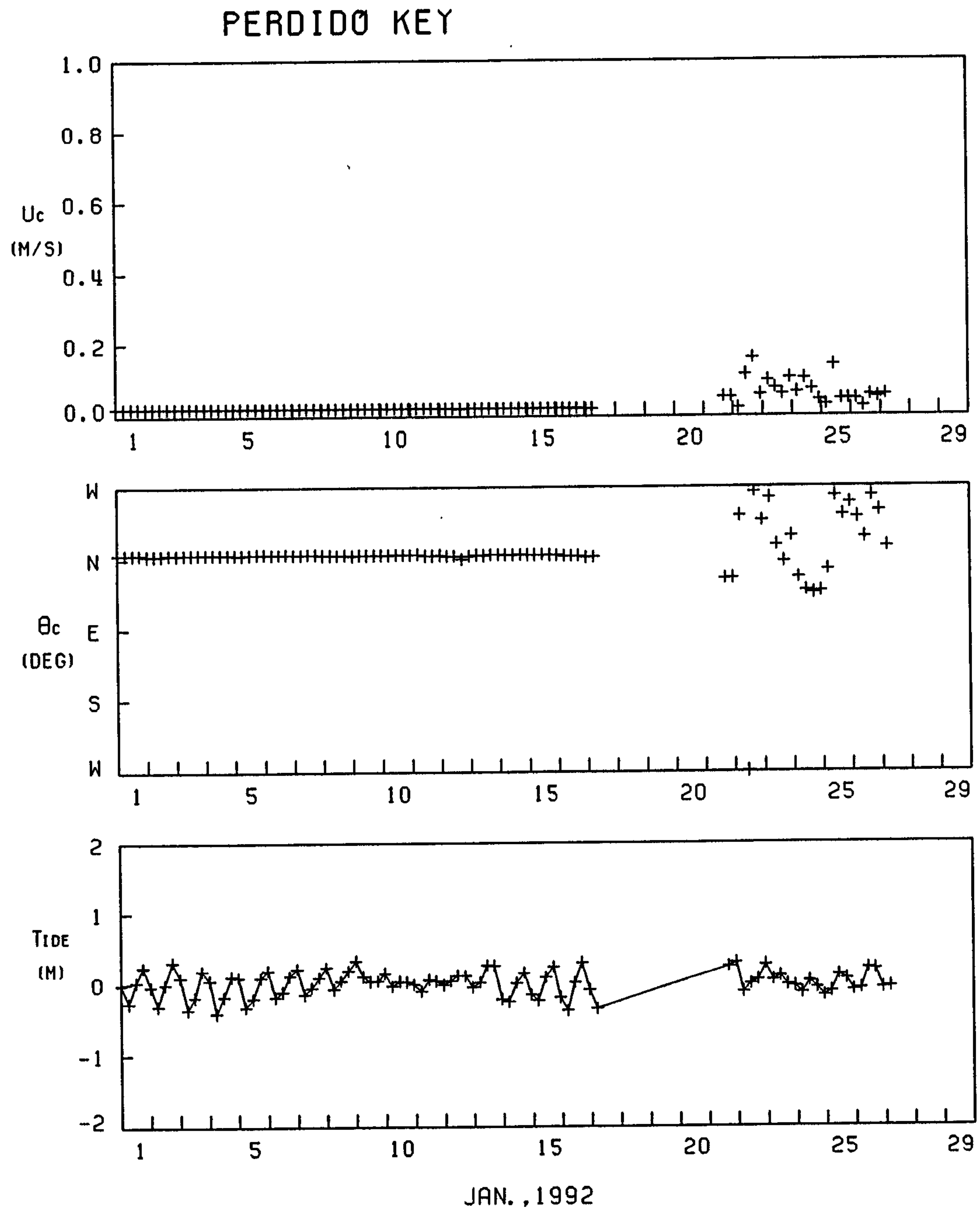


Figure II-20: Magnitude and Direction of Mean Current and Tidal Stage, January, 1992.

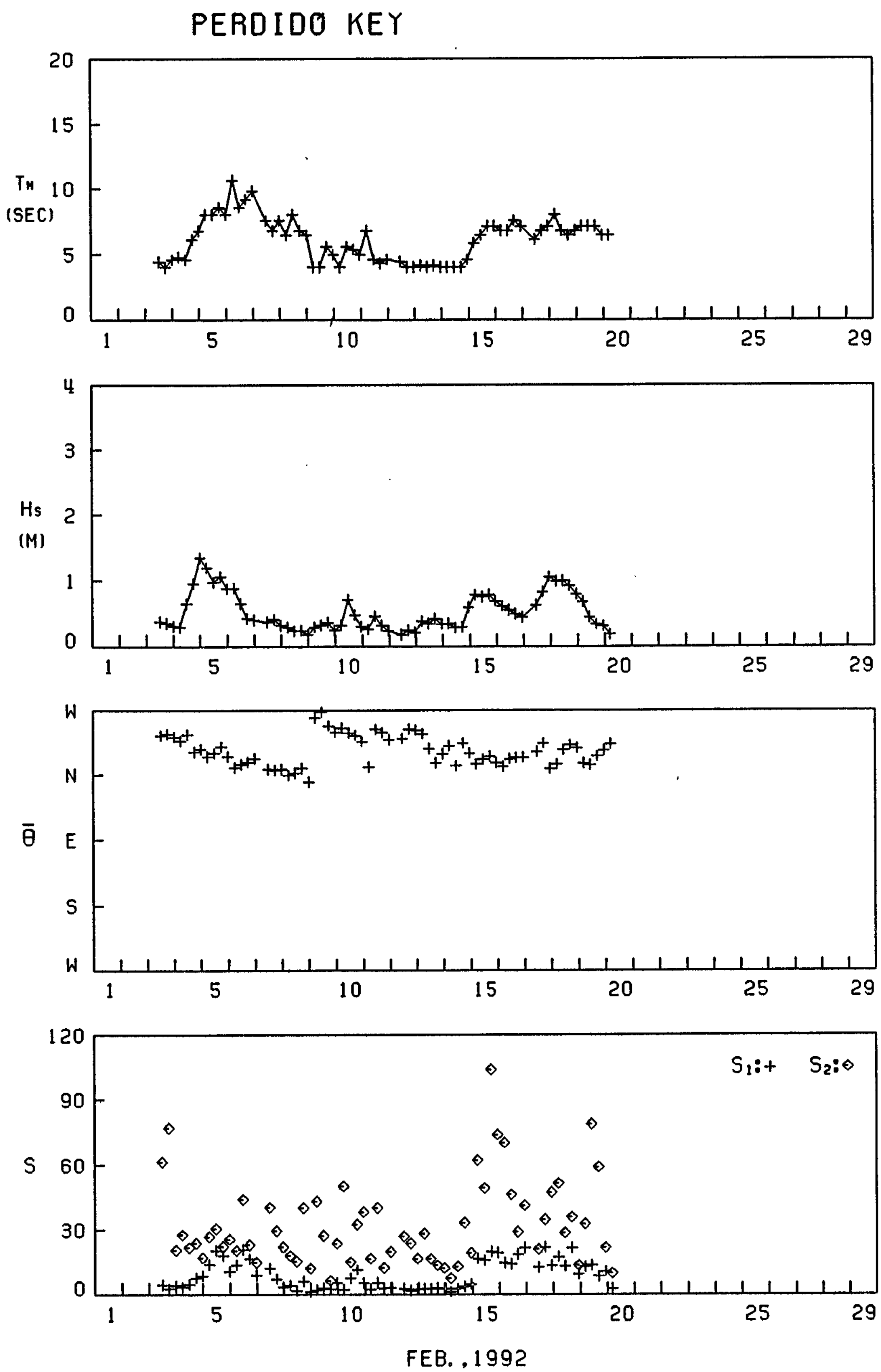


Figure II-21: Representative Wave Period, Significant Wave Height, Central Direction and Spreading Parameters, February, 1992.

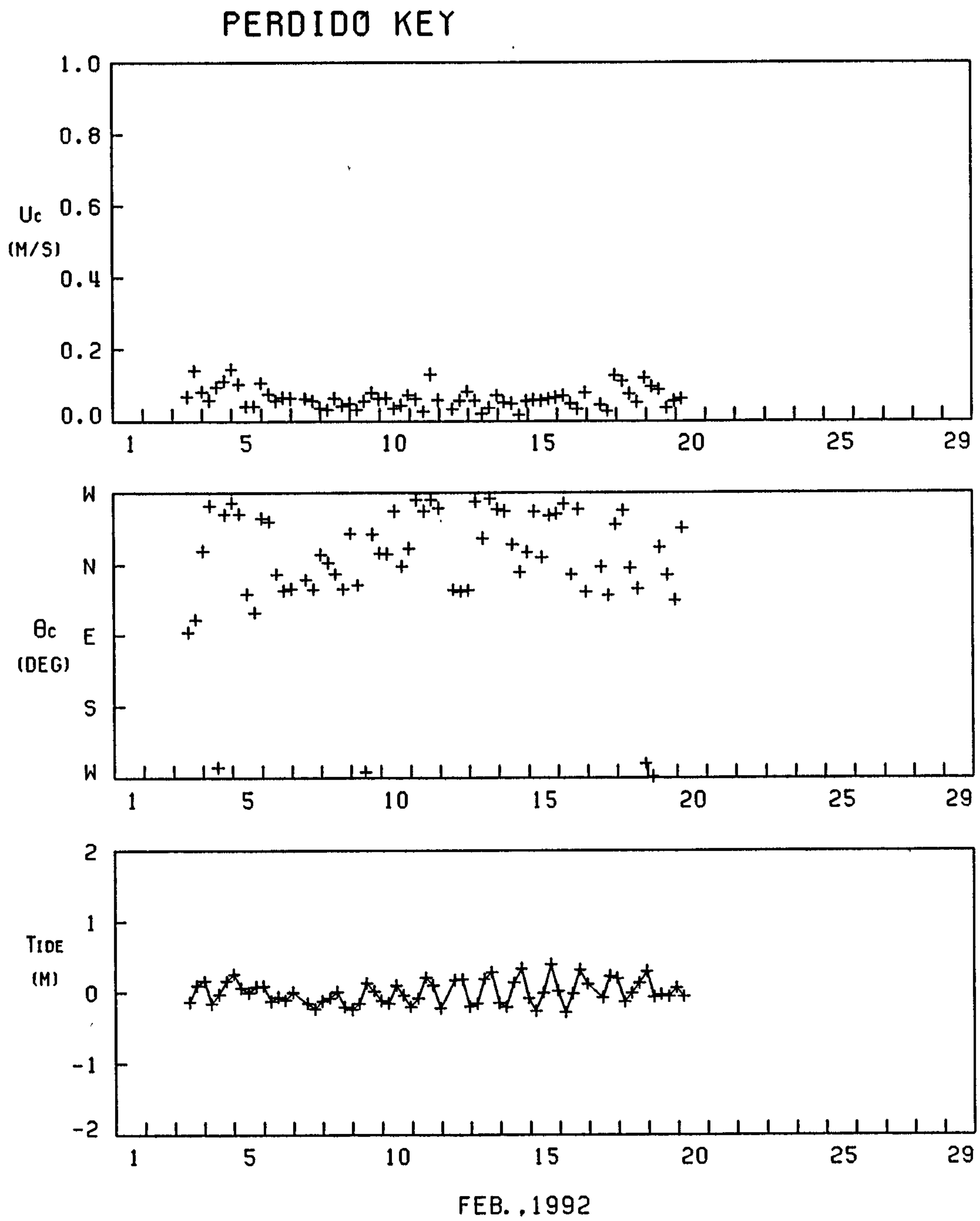


Figure II-22: Magnitude and Direction of Mean Current and Tidal Stage, February, 1992.

APPENDIX III

METEOROLOGICAL DATA

Wind Speed and Direction, Air Temperature, and Rainfall Rate

December, 1990 — February, 1992

Notes:
1) Time scale is in days; i.e. Day=7 denotes the end of the 7th day of the month.
2) Wind direction is the direction from which the wind originates, measured clockwise from magnetic north.
3) Data points plotted with dashed lines are from Pensacola weather station.

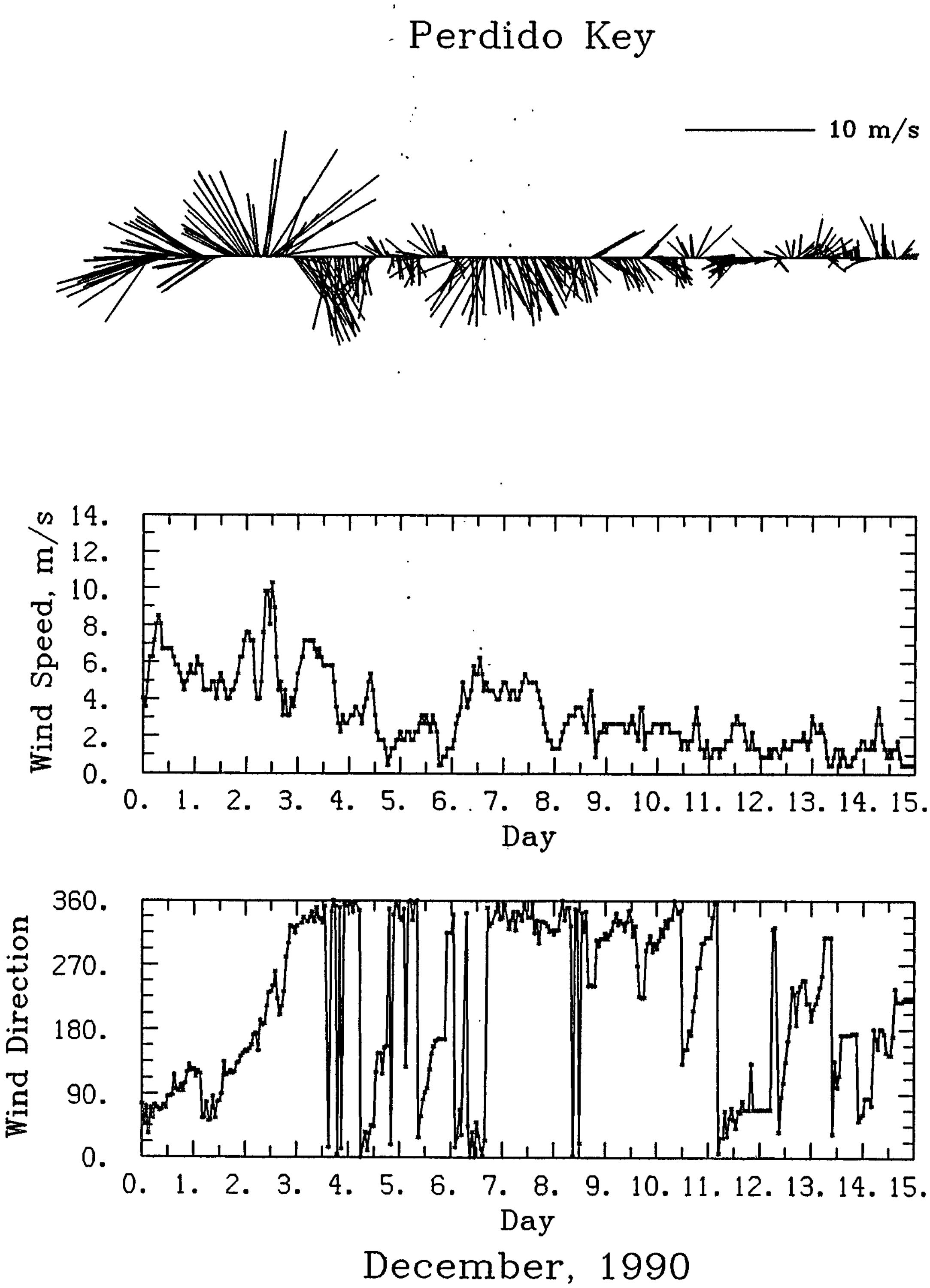


Figure III-1: Wind Speed and Direction, December 1–15, 1990.

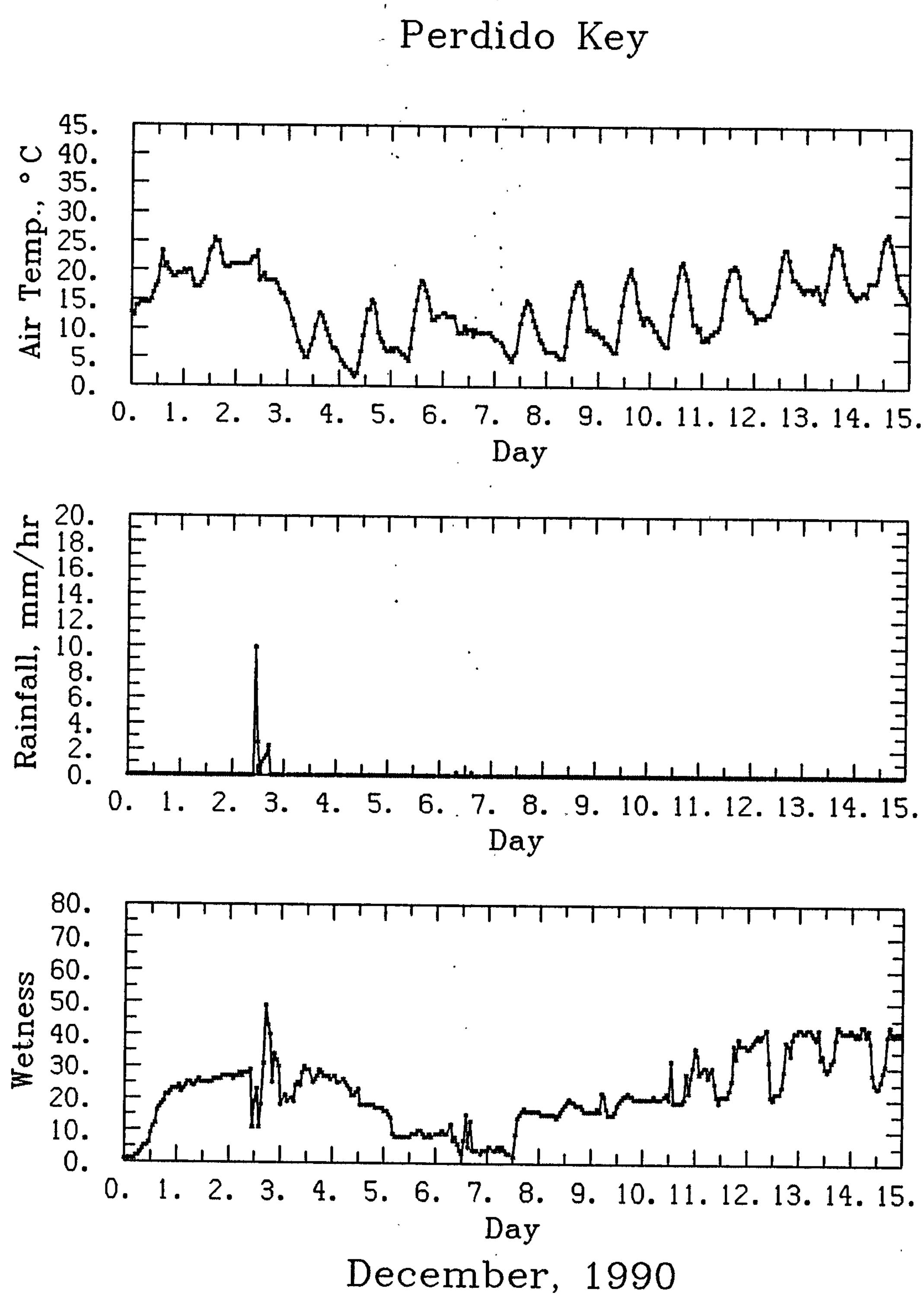


Figure III-2: Air Temperature, Rainfall Rate and Wetness, December 1–15, 1990.

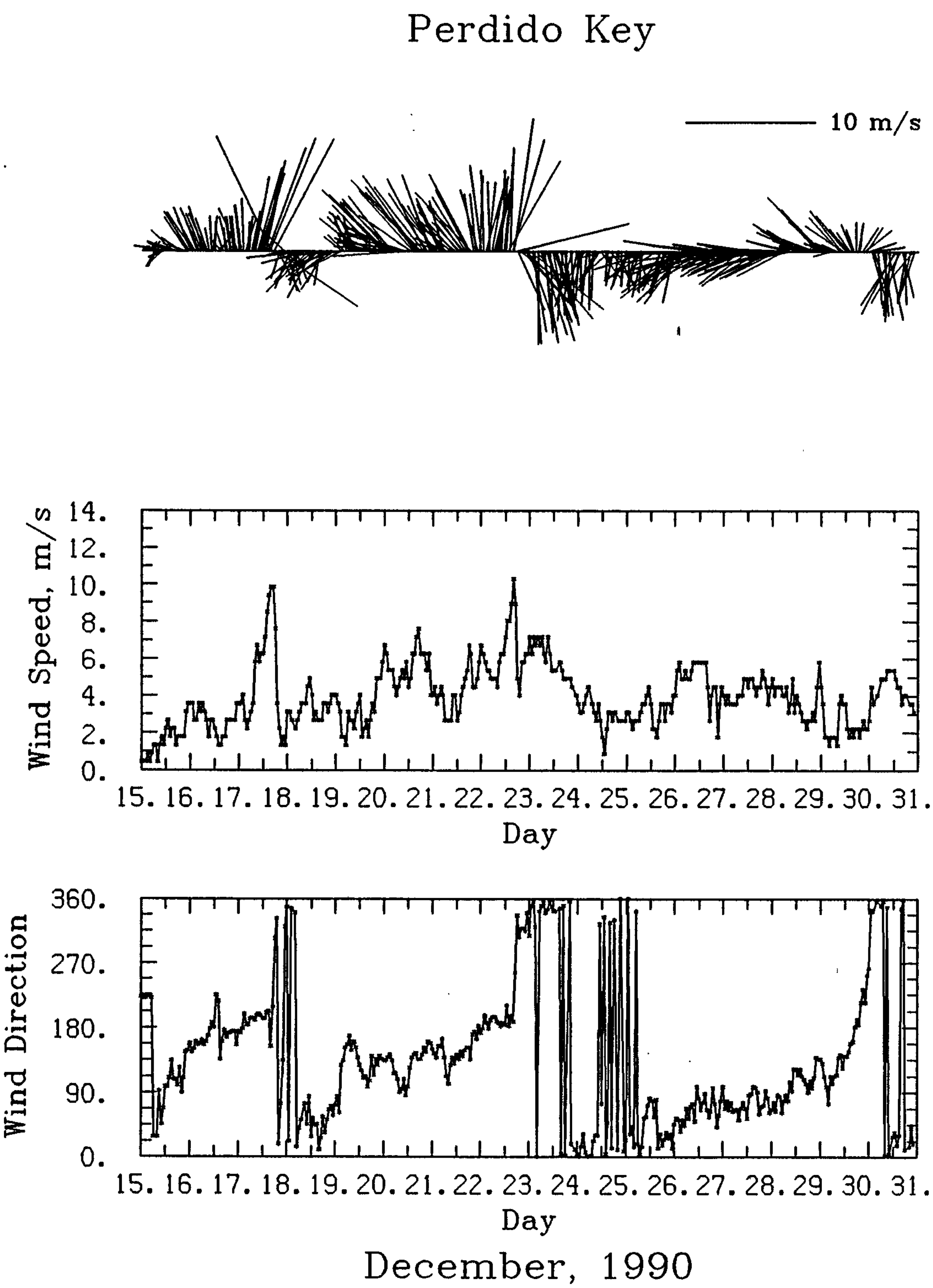


Figure III-3: Wind Speed and Direction, December 16–31, 1990.

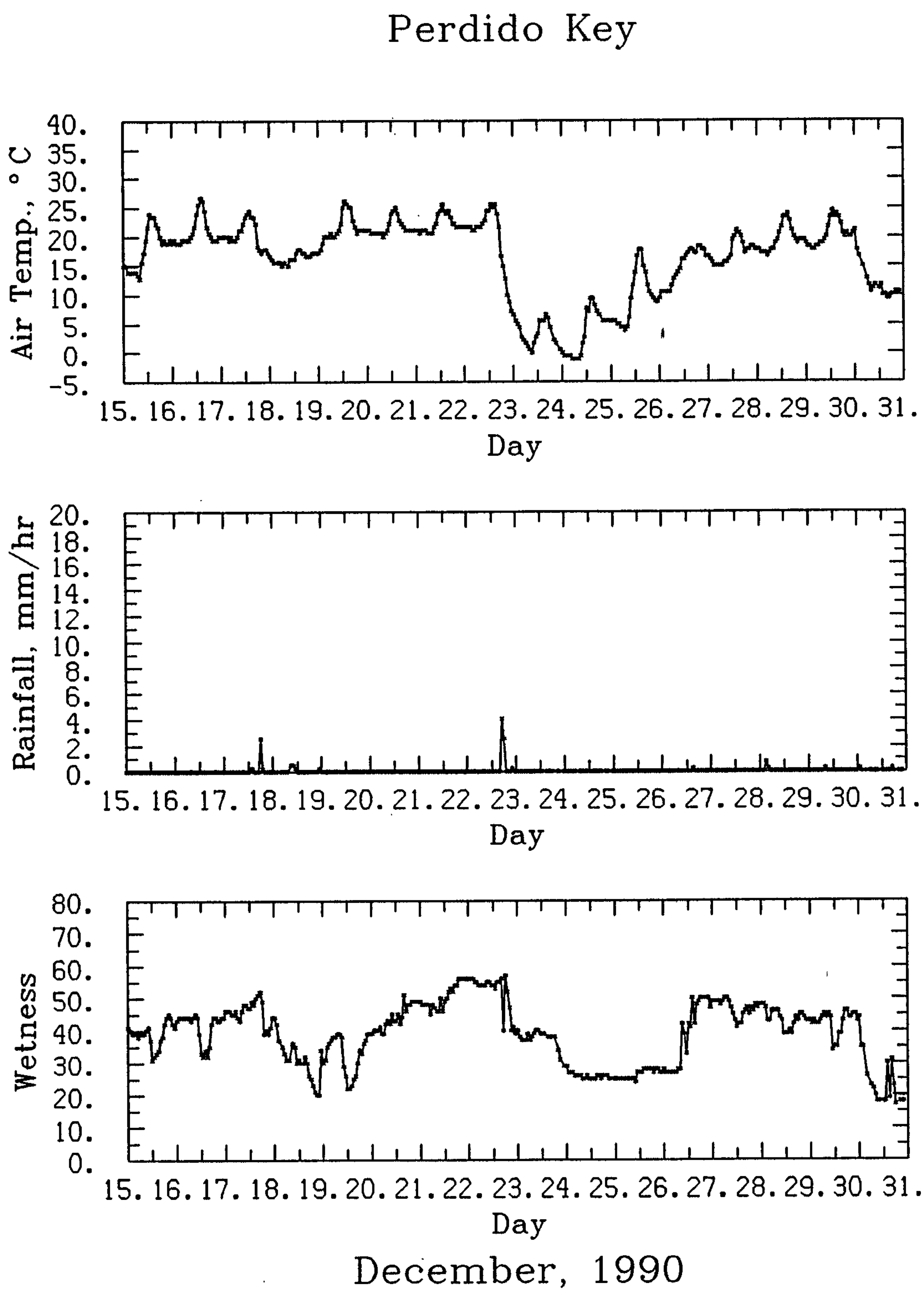


Figure III-4: Air Temperature, Rainfall Rate and Wetness, December 16–31, 1990.

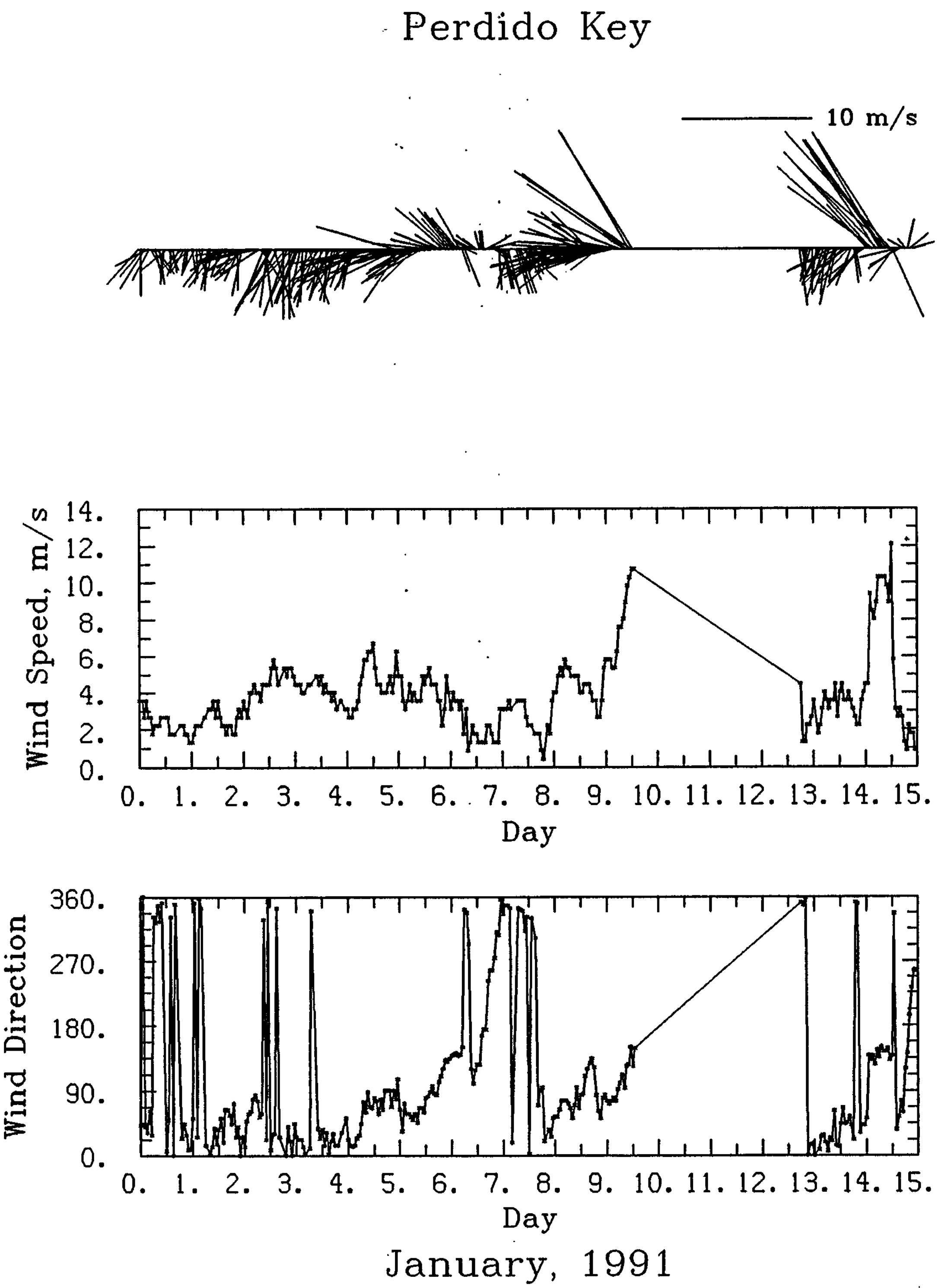


Figure III-5: Wind Speed and Direction, January 1–15, 1991.

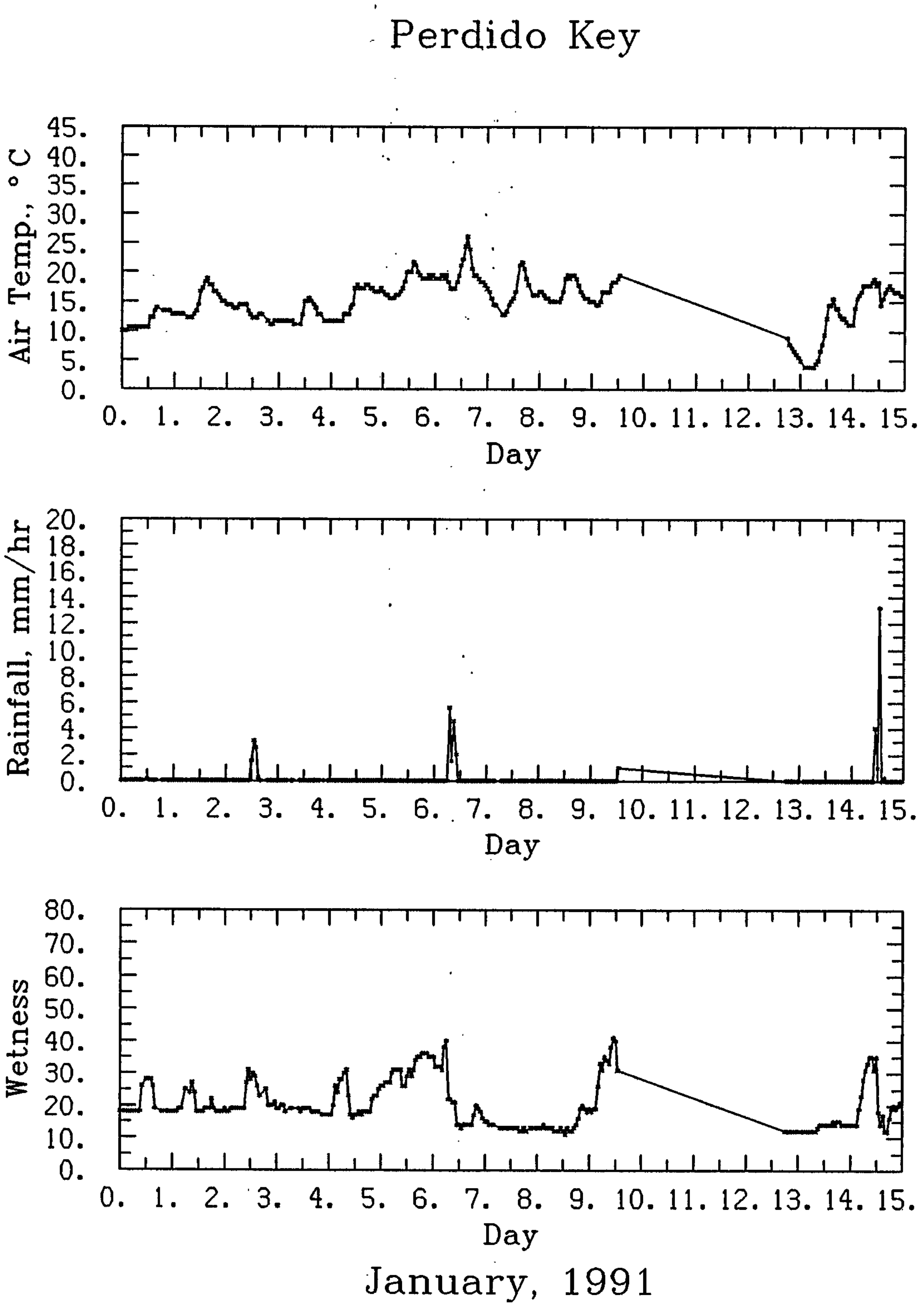


Figure III-6: Air Temperature, Rainfall Rate and Wetness, January 1–15, 1991.

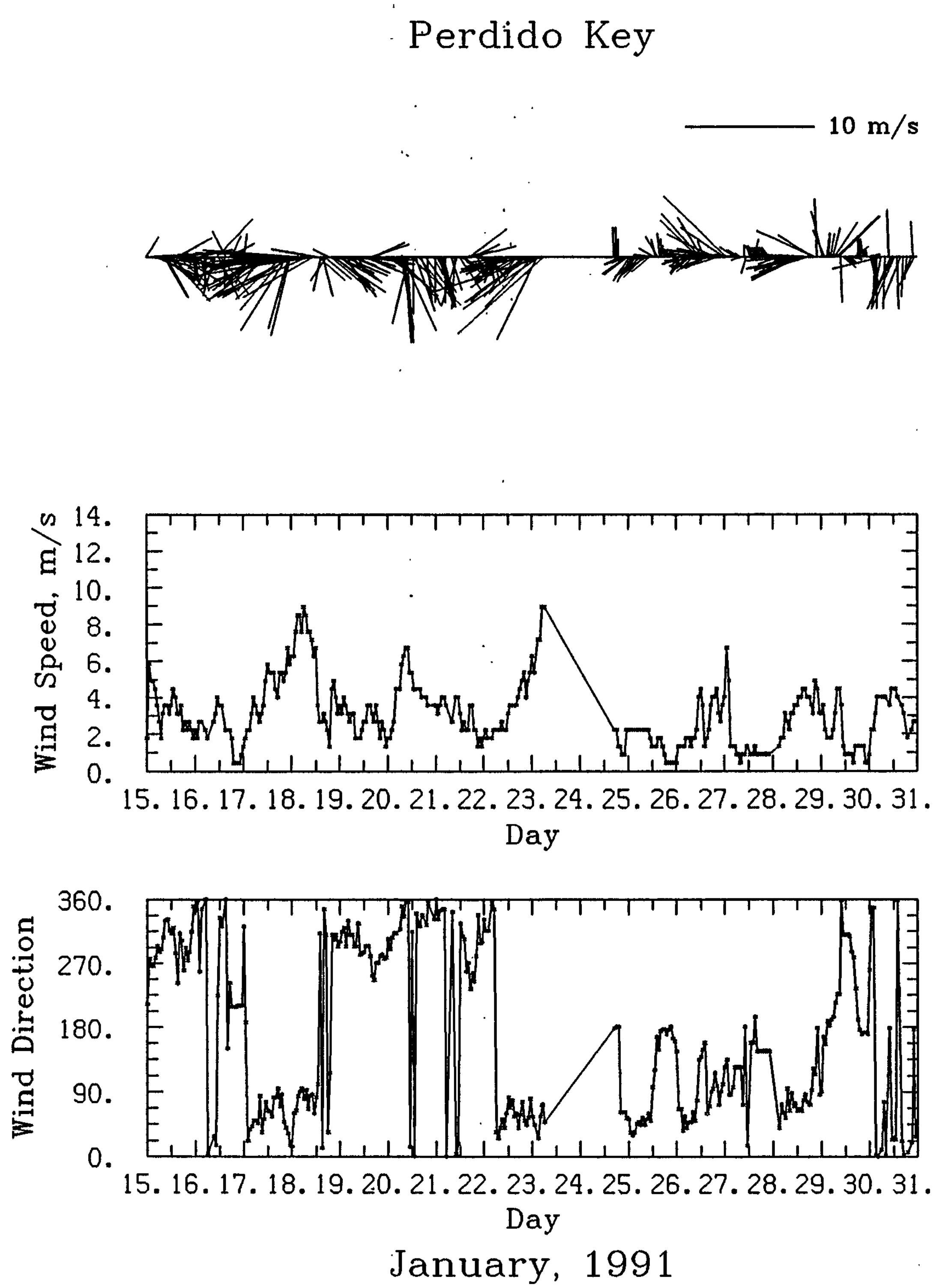


Figure III-7: Wind Speed and Direction, January 16–31, 1991.

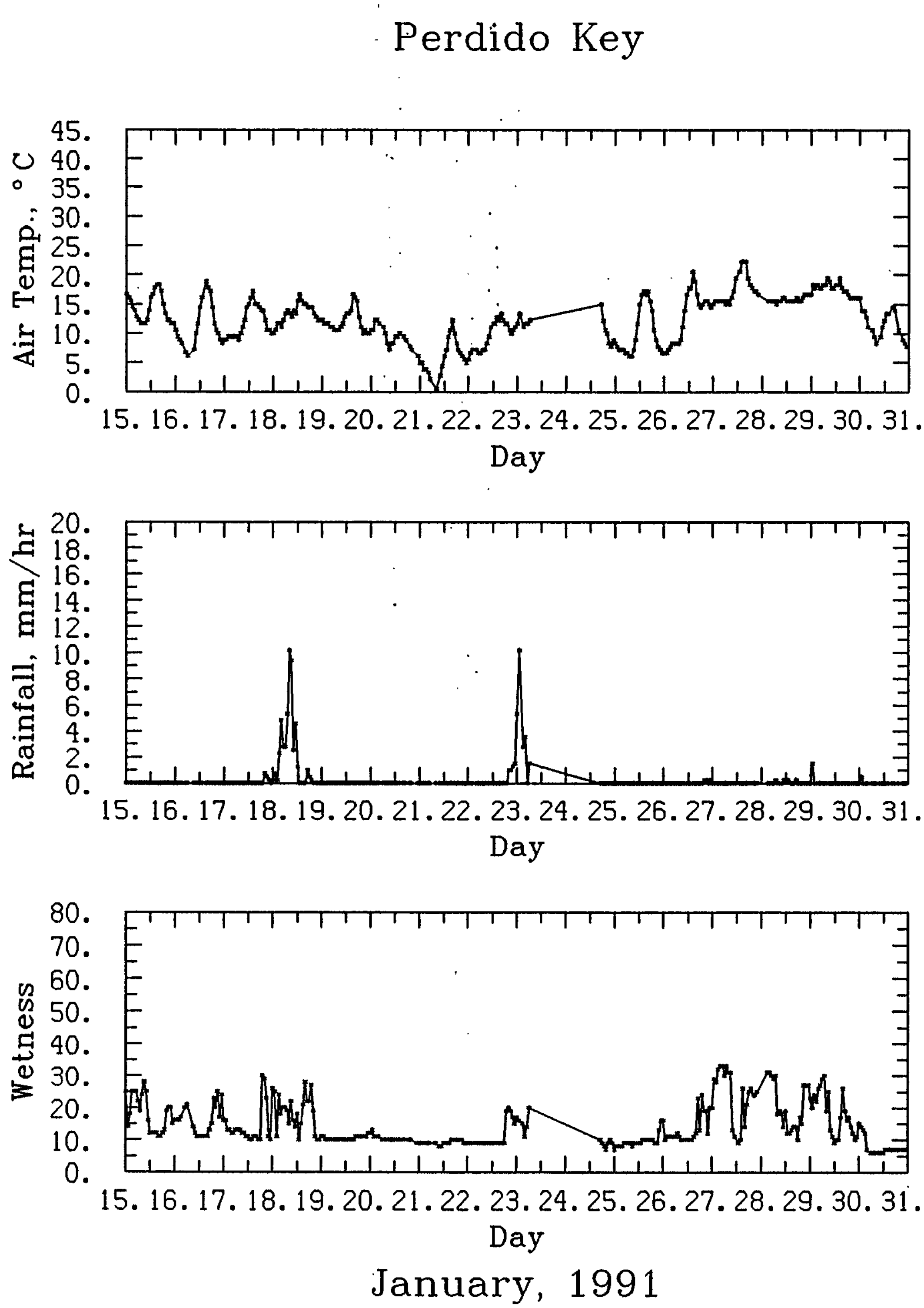


Figure III-8: Air Temperature, Rainfall Rate and Wetness, January 16–31, 1991.

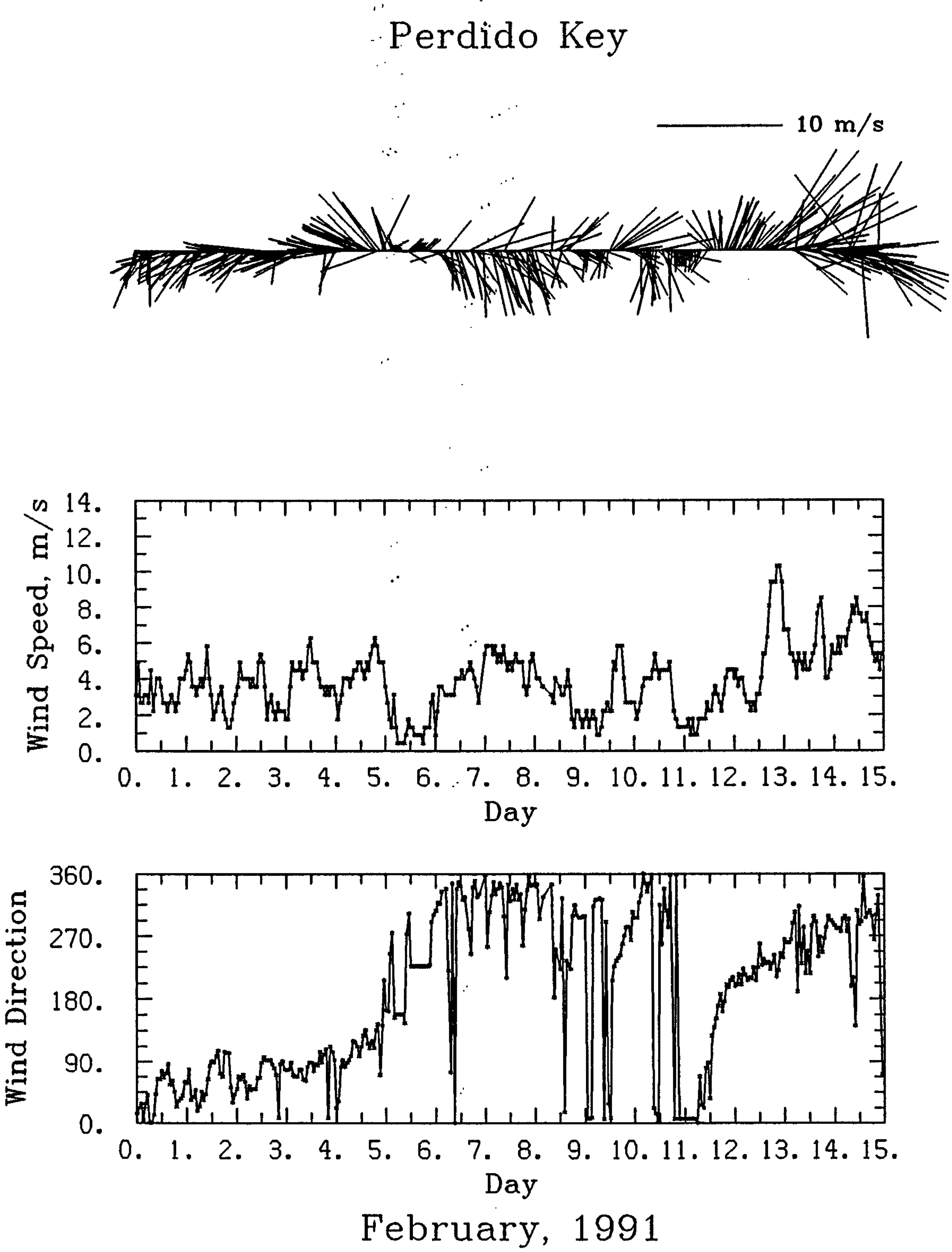


Figure III-9: Wind Speed and Direction, February 1–15, 1991.

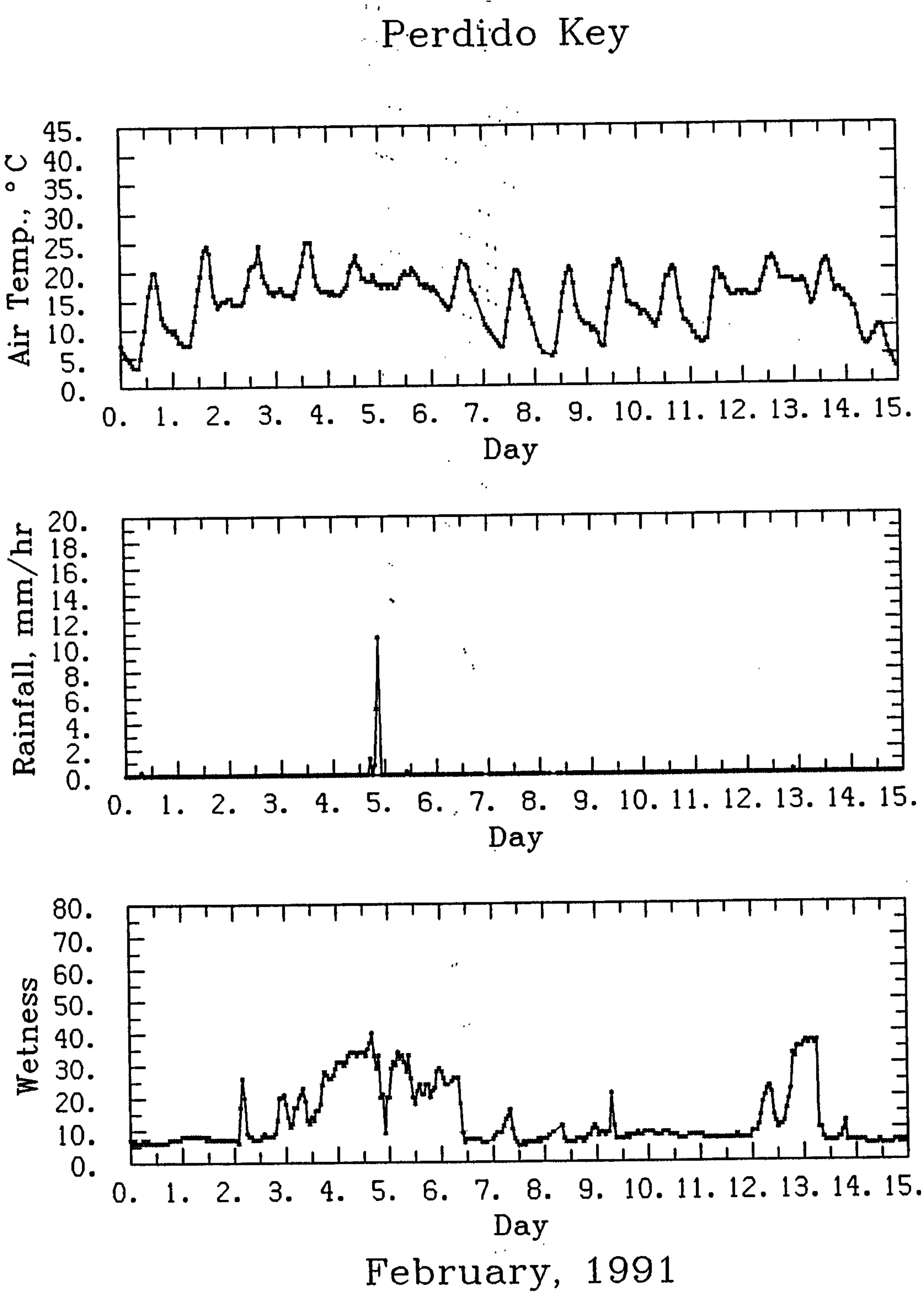


Figure III-10: Air Temperature, Rainfall Rate and Wetness, February 1–15, 1991.

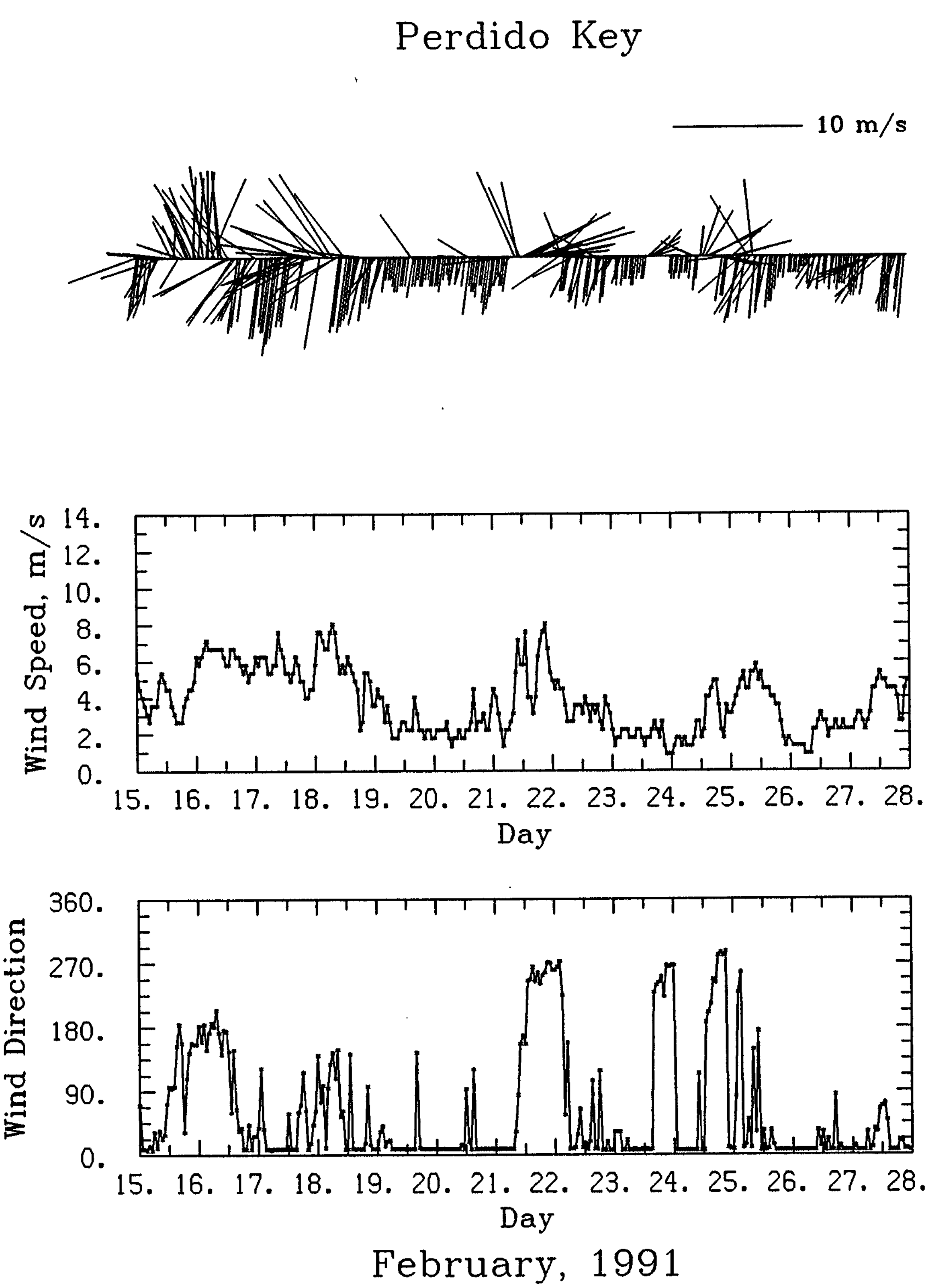


Figure III-11: Wind Speed and Direction, February 16–28, 1991.

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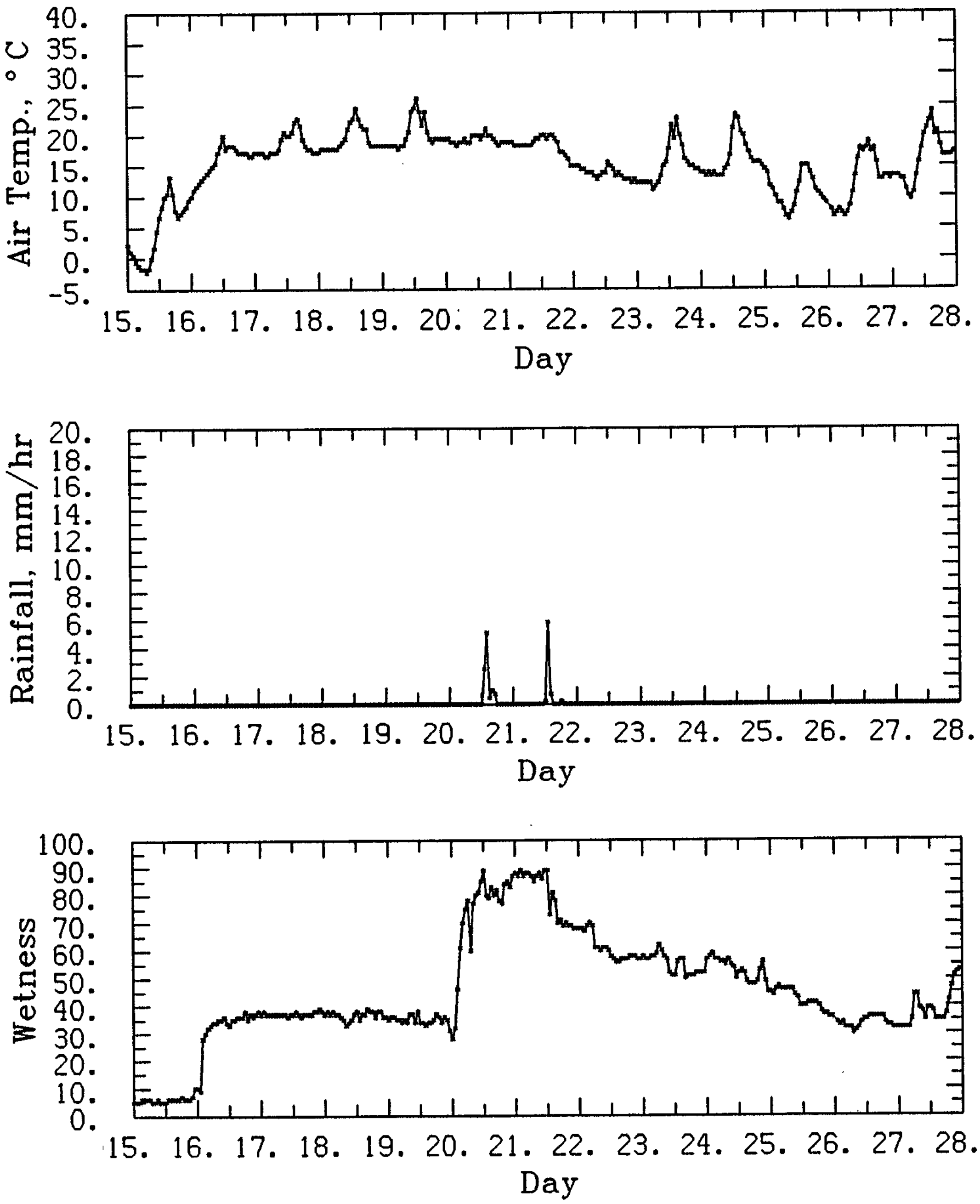

February, 1991

Figure III-12: Air Temperature, Rainfall Rate and Wetness, February 16–28, 1991.

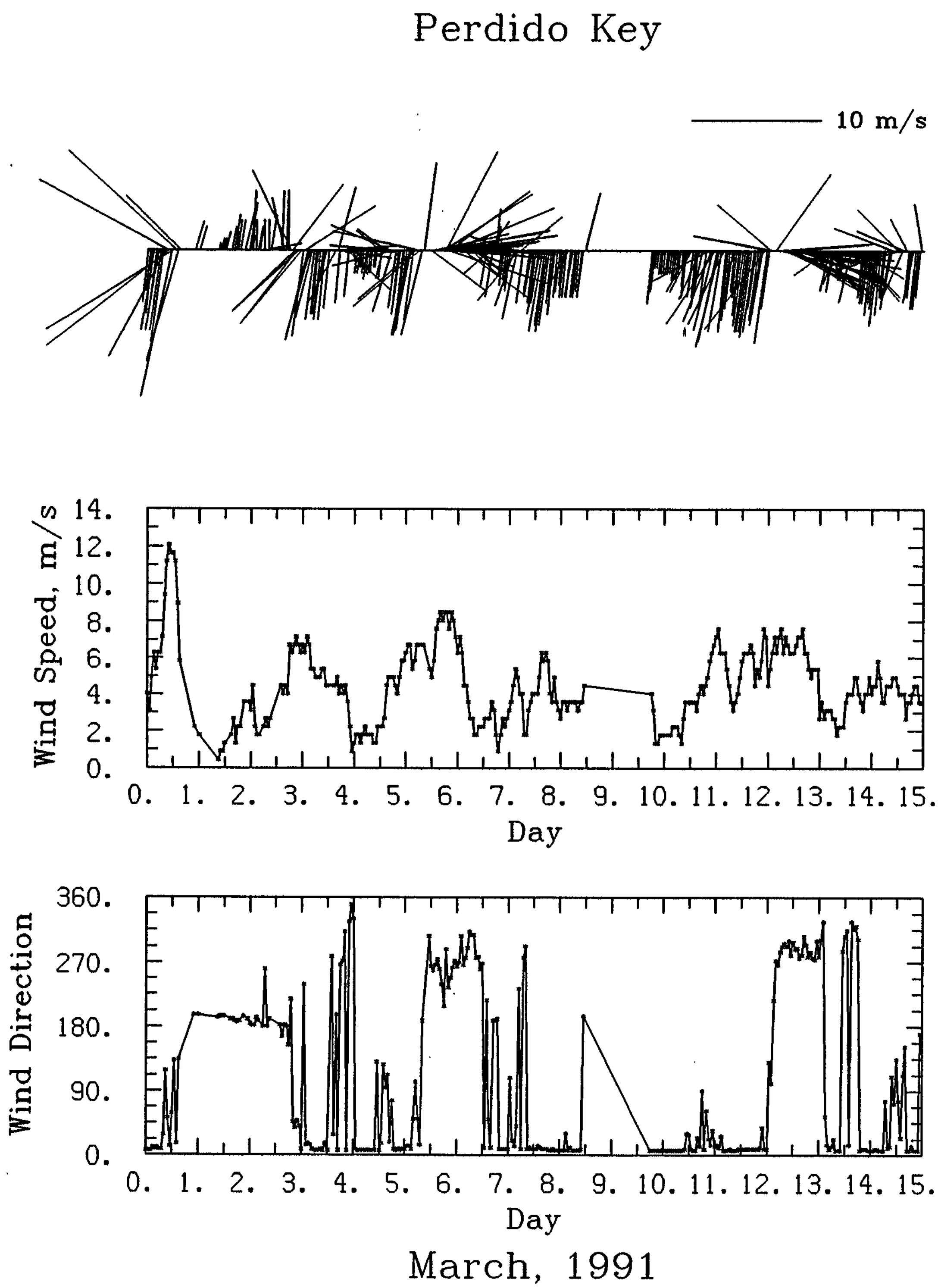

Figure III-13: Wind Speed and Direction, March 1–15, 1991.

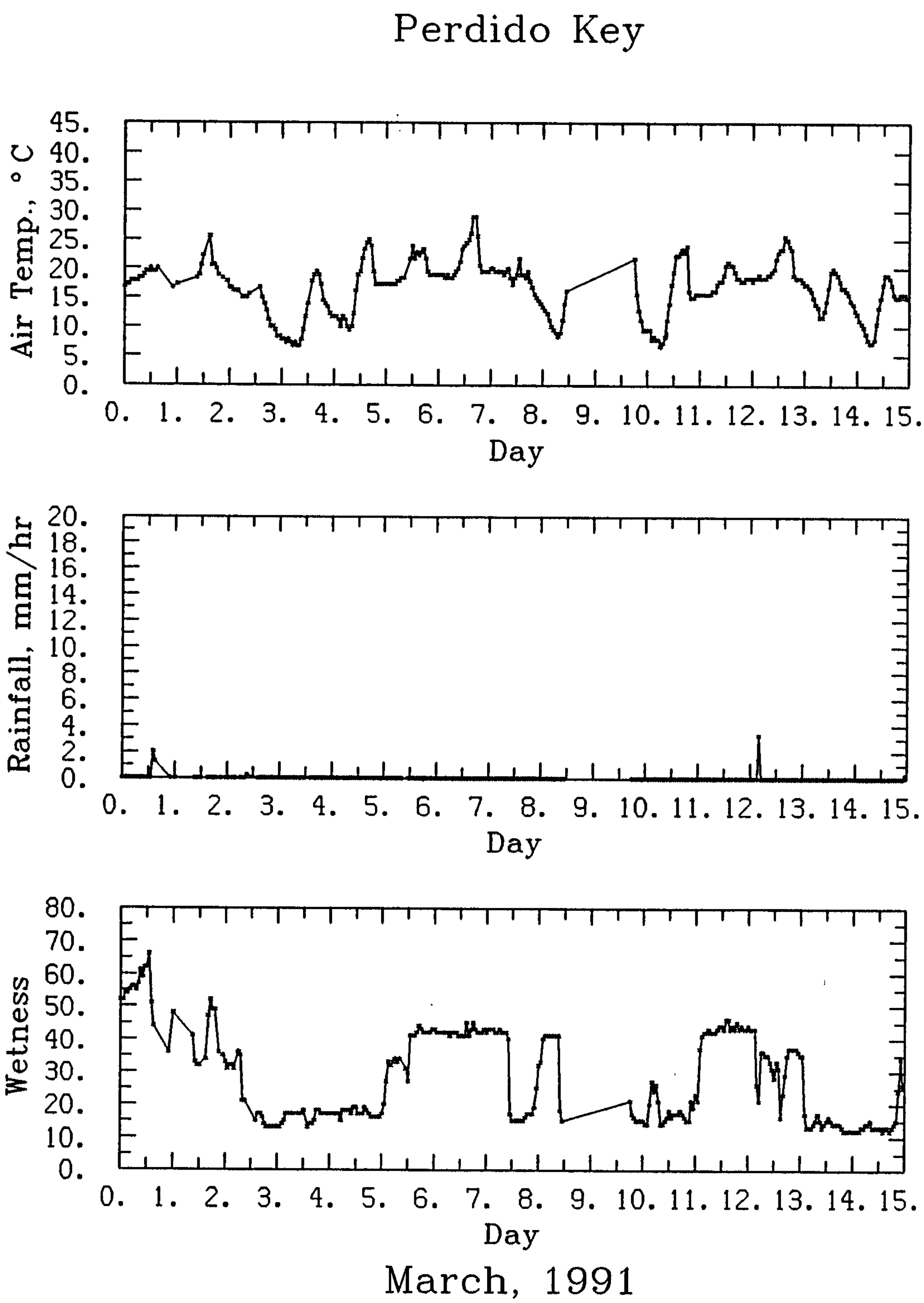

Figure III-14: Air Temperature, Rainfall Rate and Wetness, March 1–15, 1991.

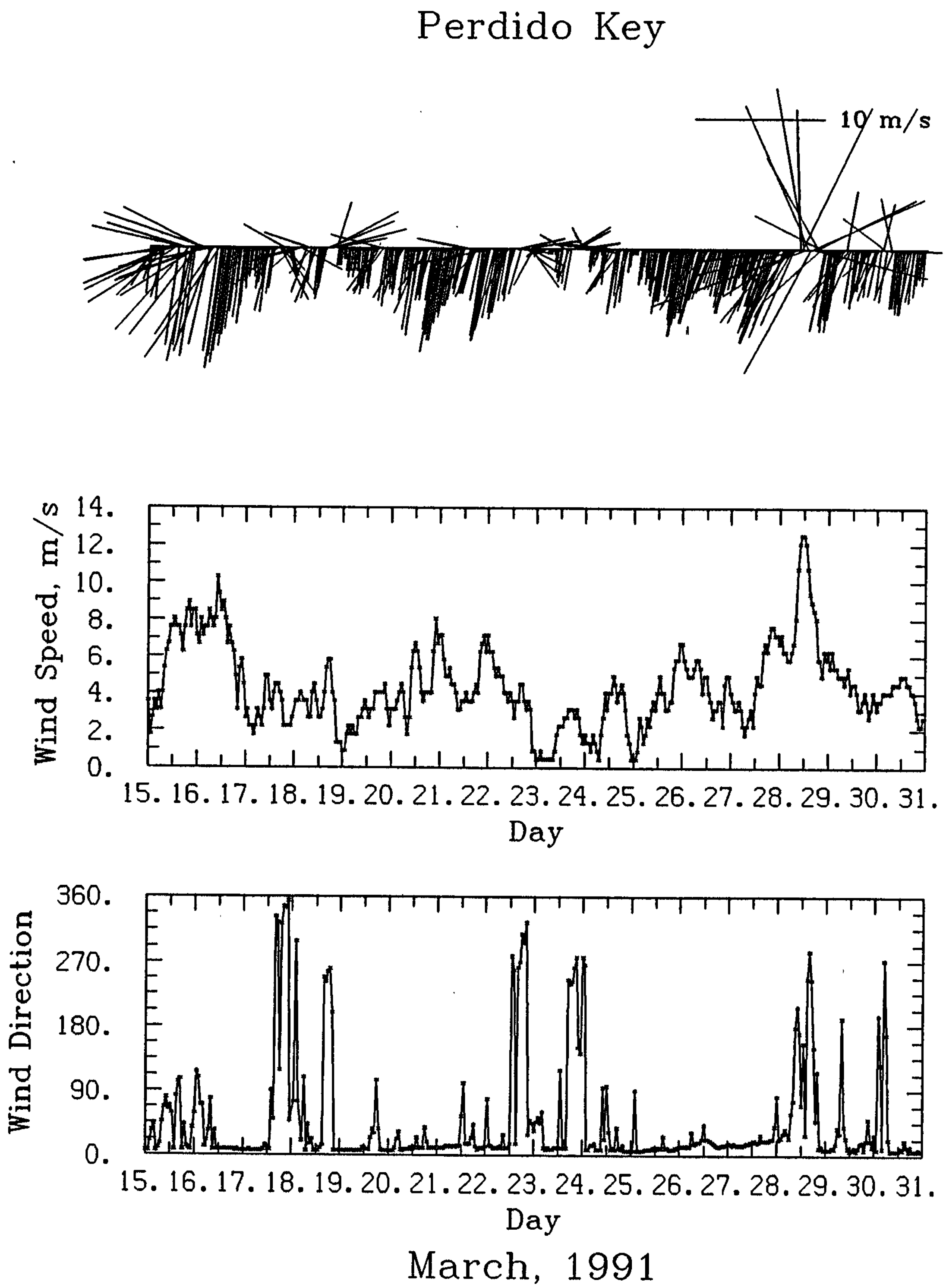

Figure III-15: Wind Speed and Direction, March 16–31, 1991.

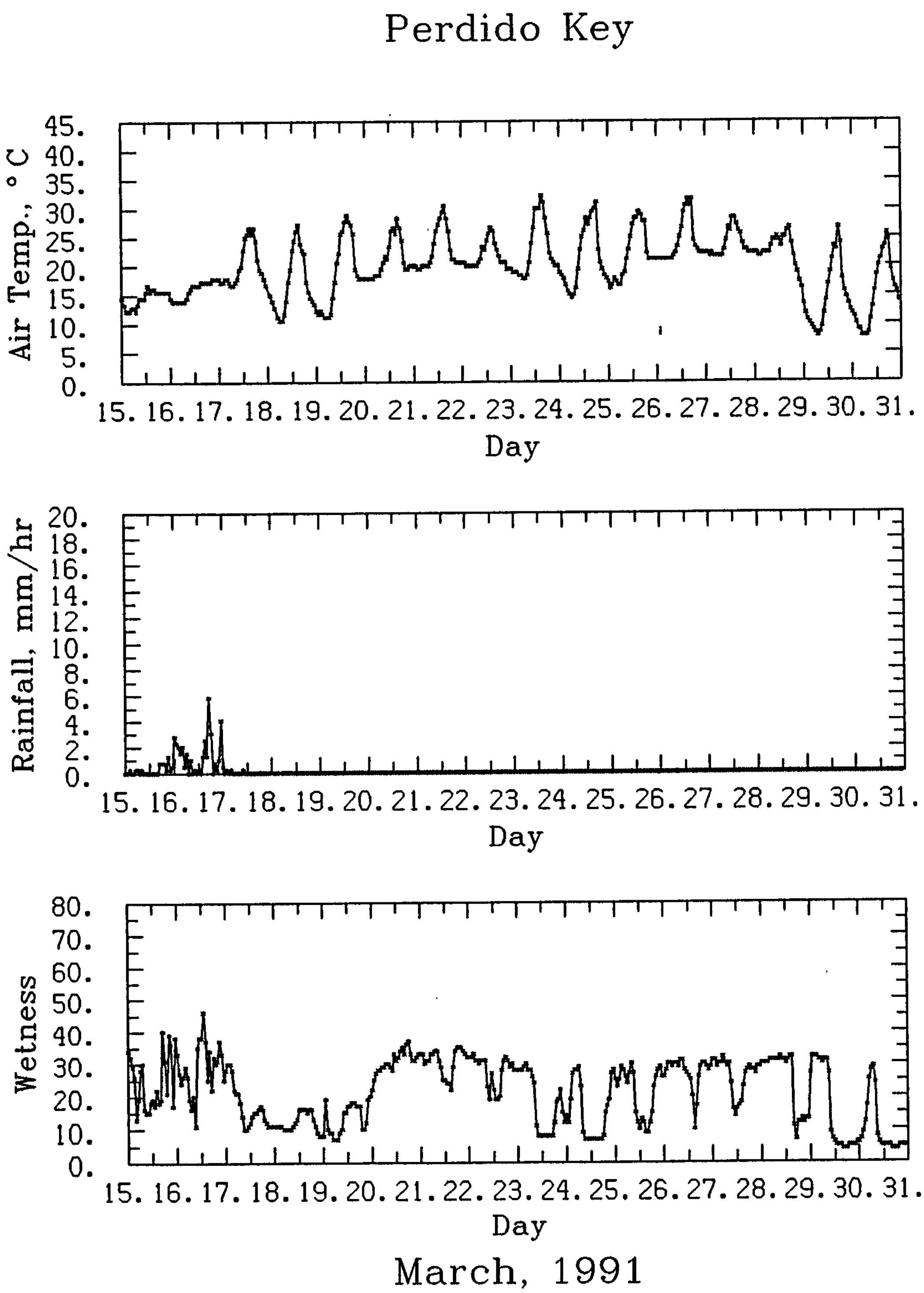

Figure III-16: Air Temperature, Rainfall Rate and Wetness, March 16–31, 1991.

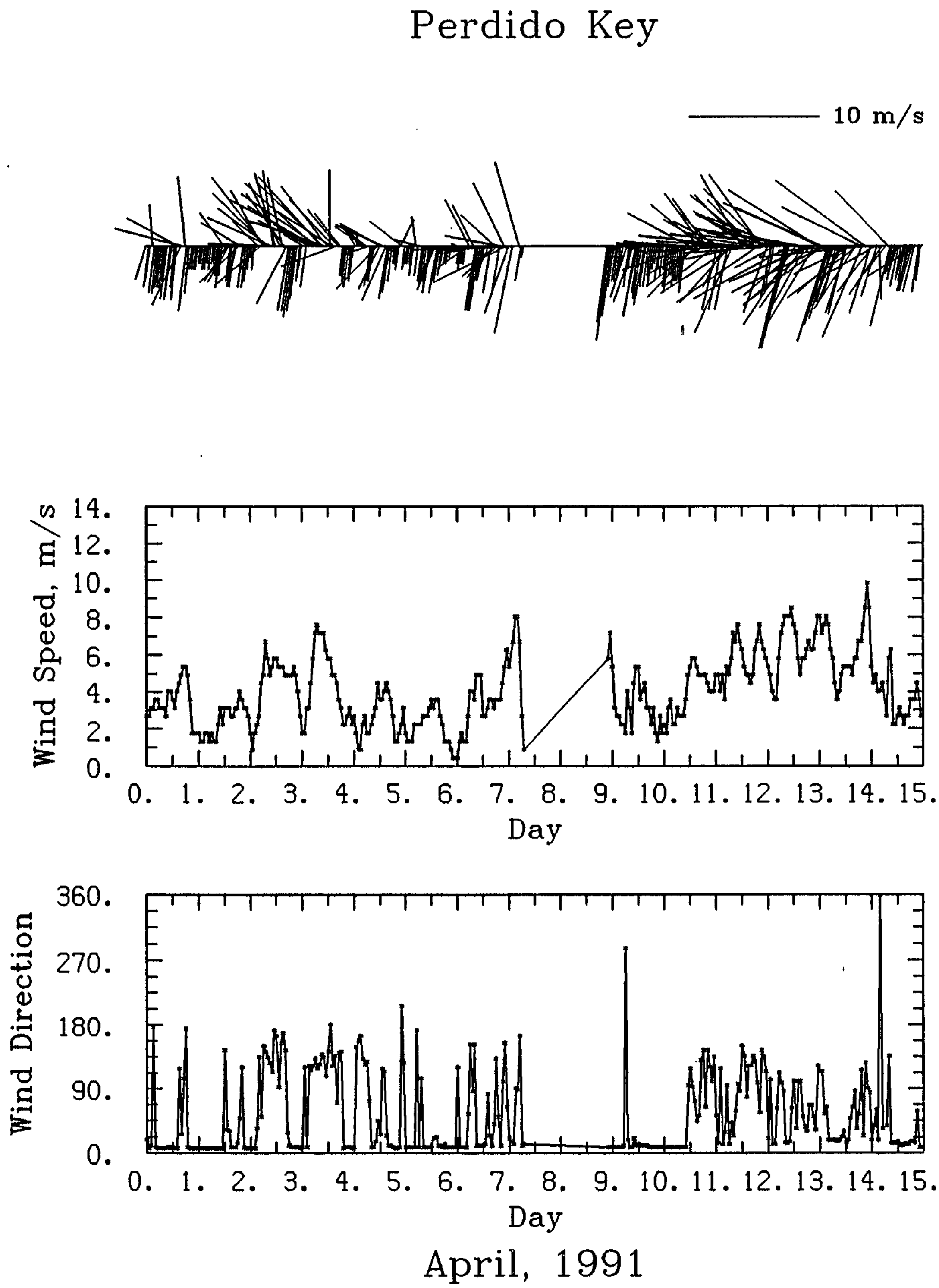

Figure III-17: Wind Speed and Direction, April 1–15, 1991.

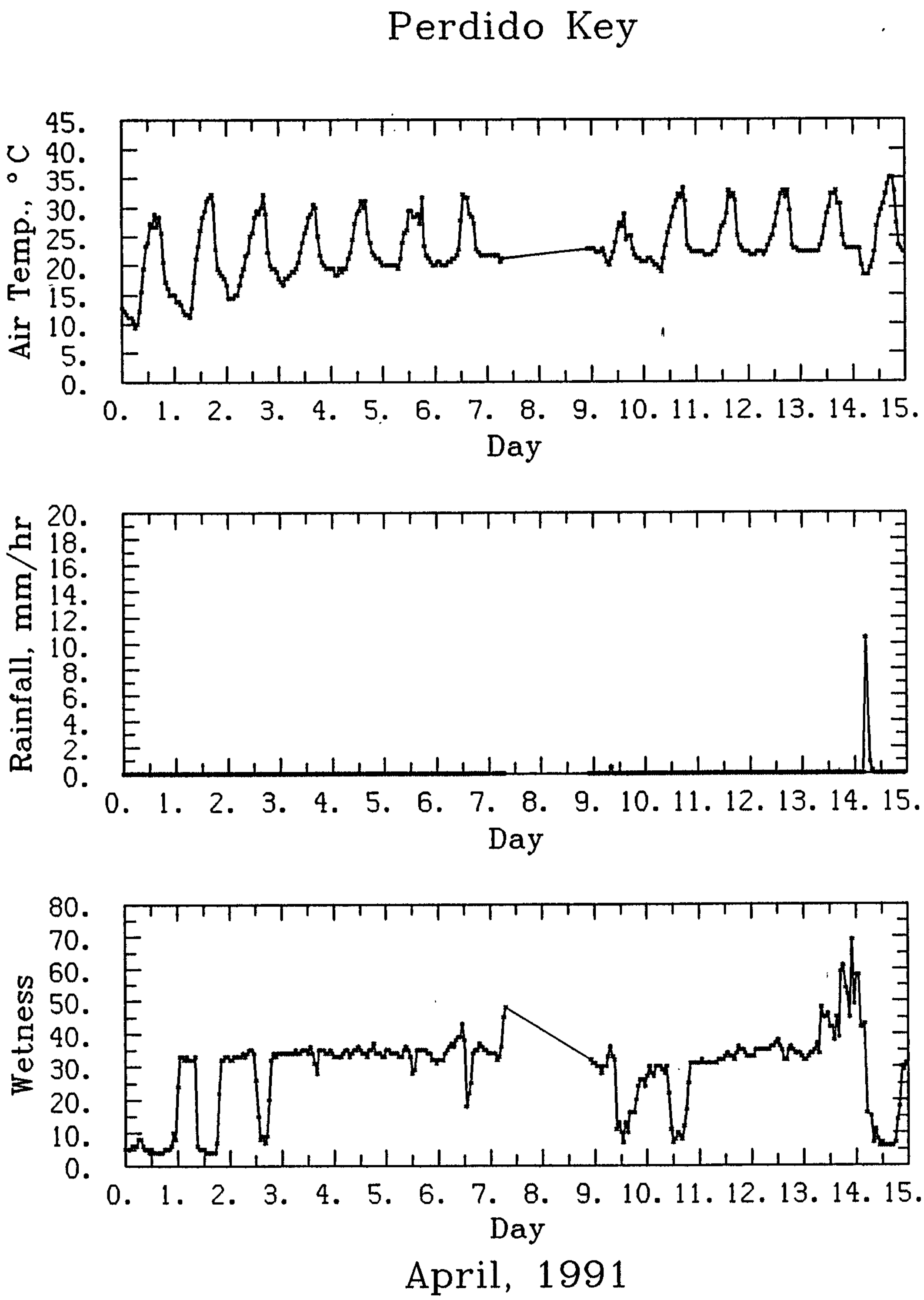

Figure III-18: Air Temperature, Rainfall Rate and Wetness, April 1–15, 1991.

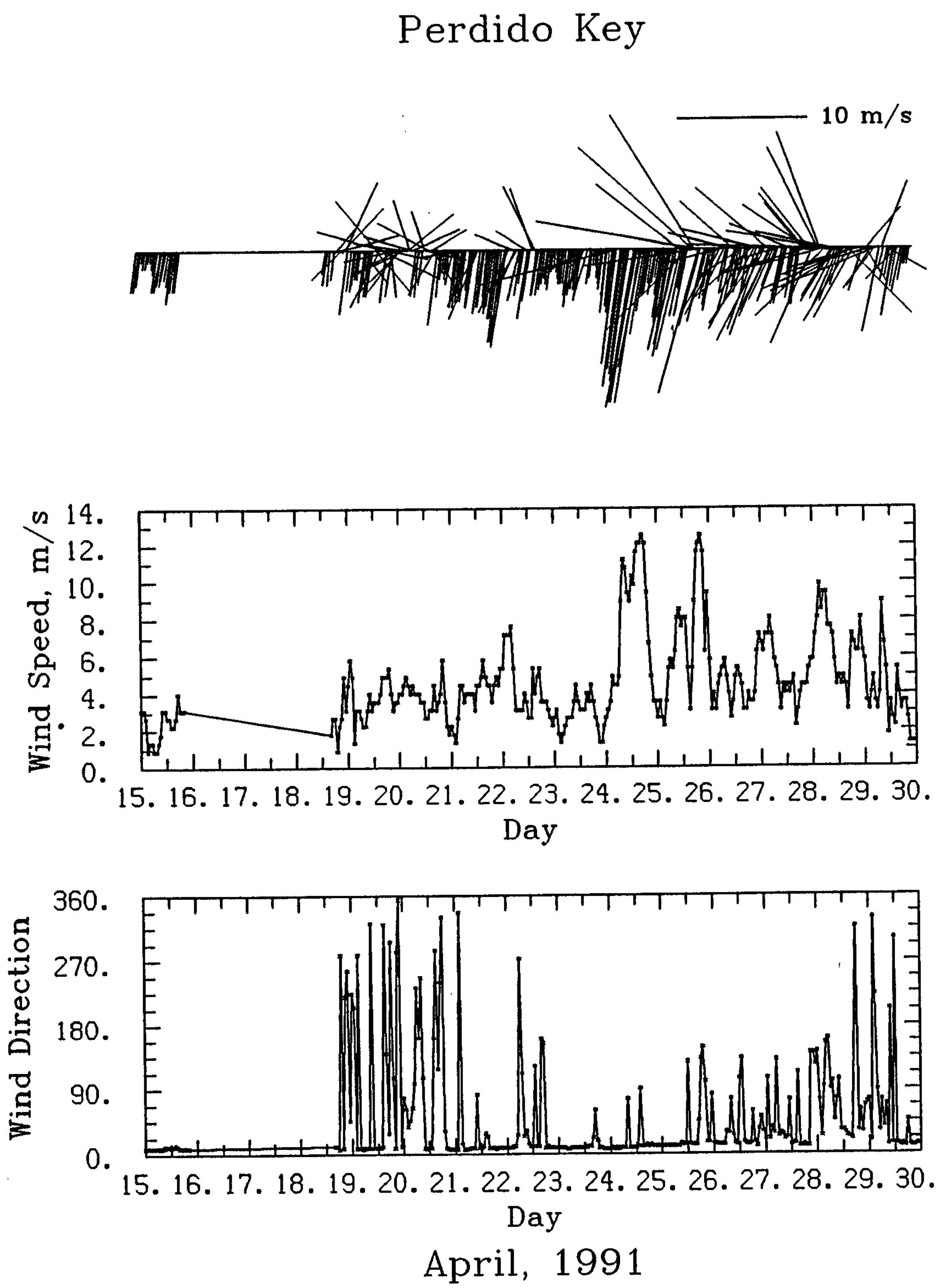

Figure III-19: Wind Speed and Direction, April 16–30, 1991.

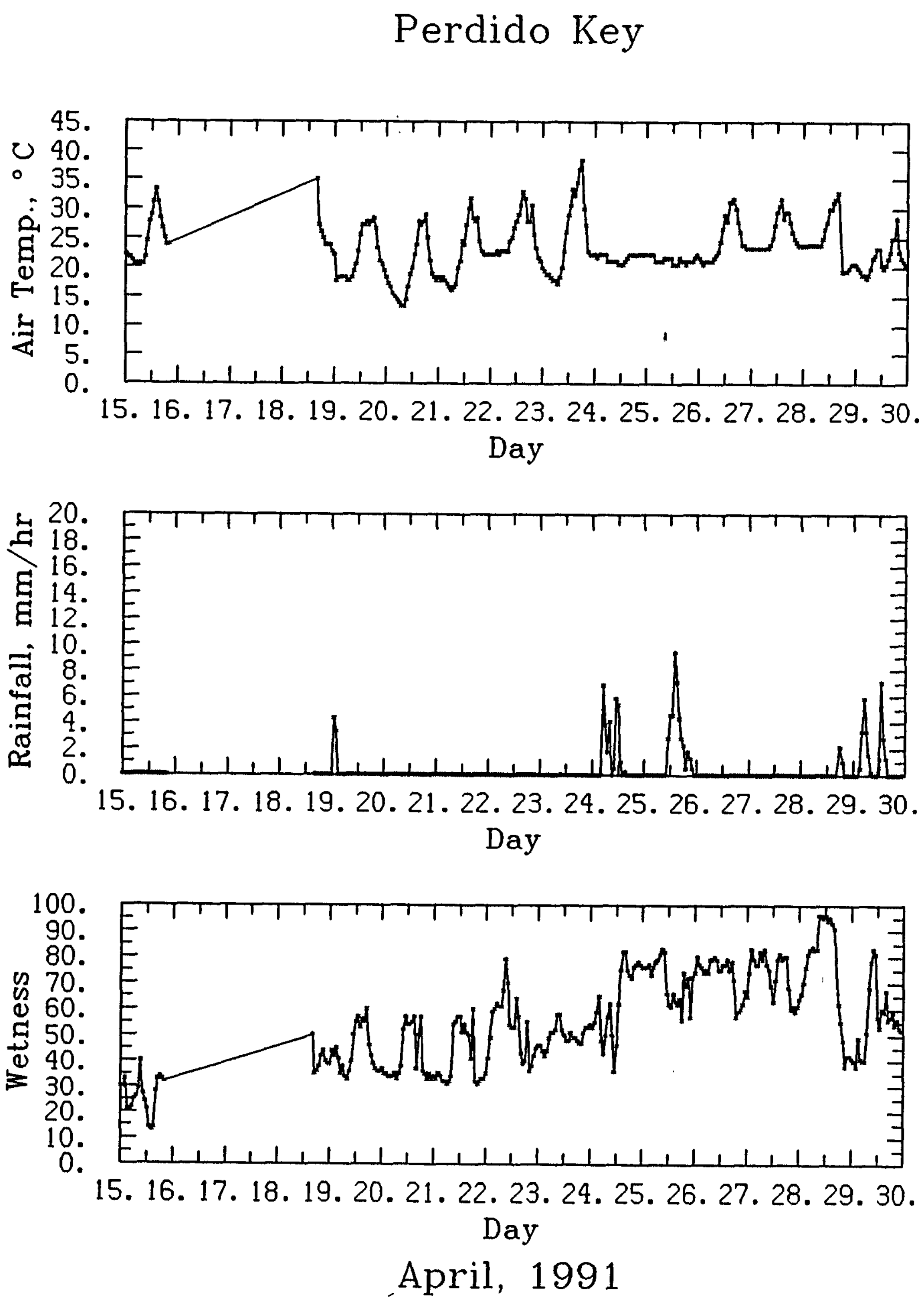

Figure III-20: Air Temperature, Rainfall Rate and Wetness, April 16–30, 1991.

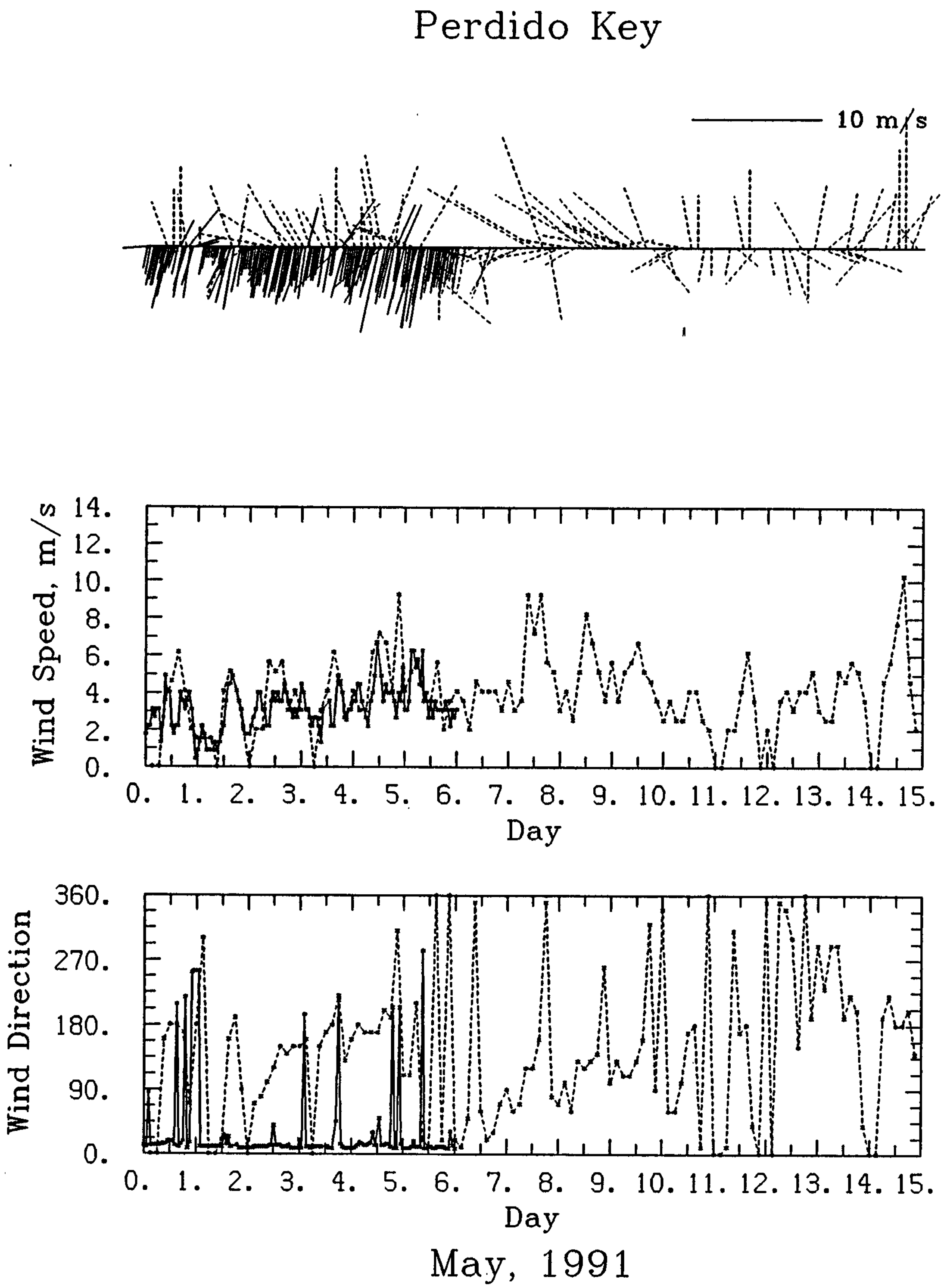

Figure III-21: Wind Speed and Direction, May 1–15, 1991.

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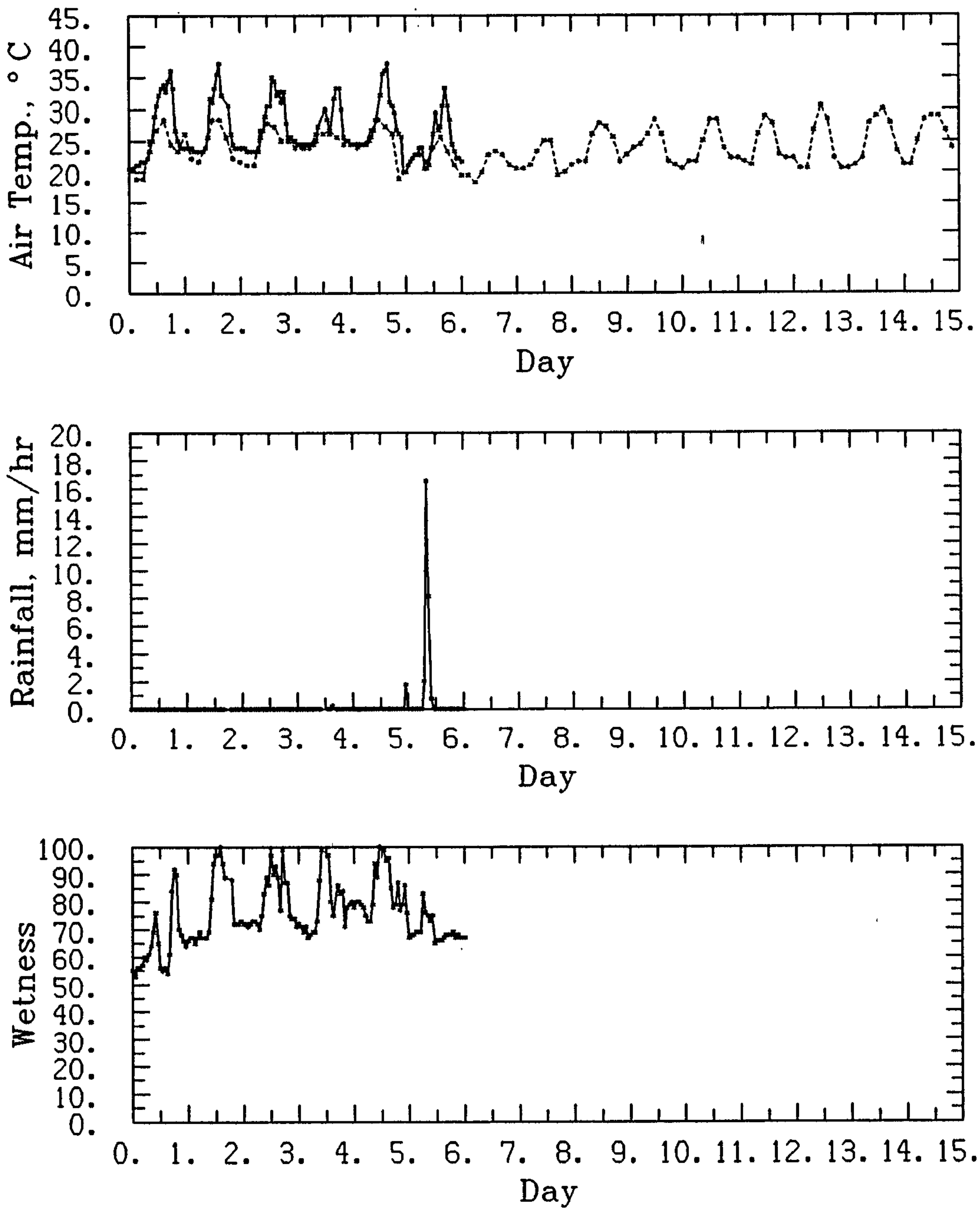

May, 1991

Figure III-22: Air Temperature, Rainfall Rate and Wetness, May 1–15, 1991.

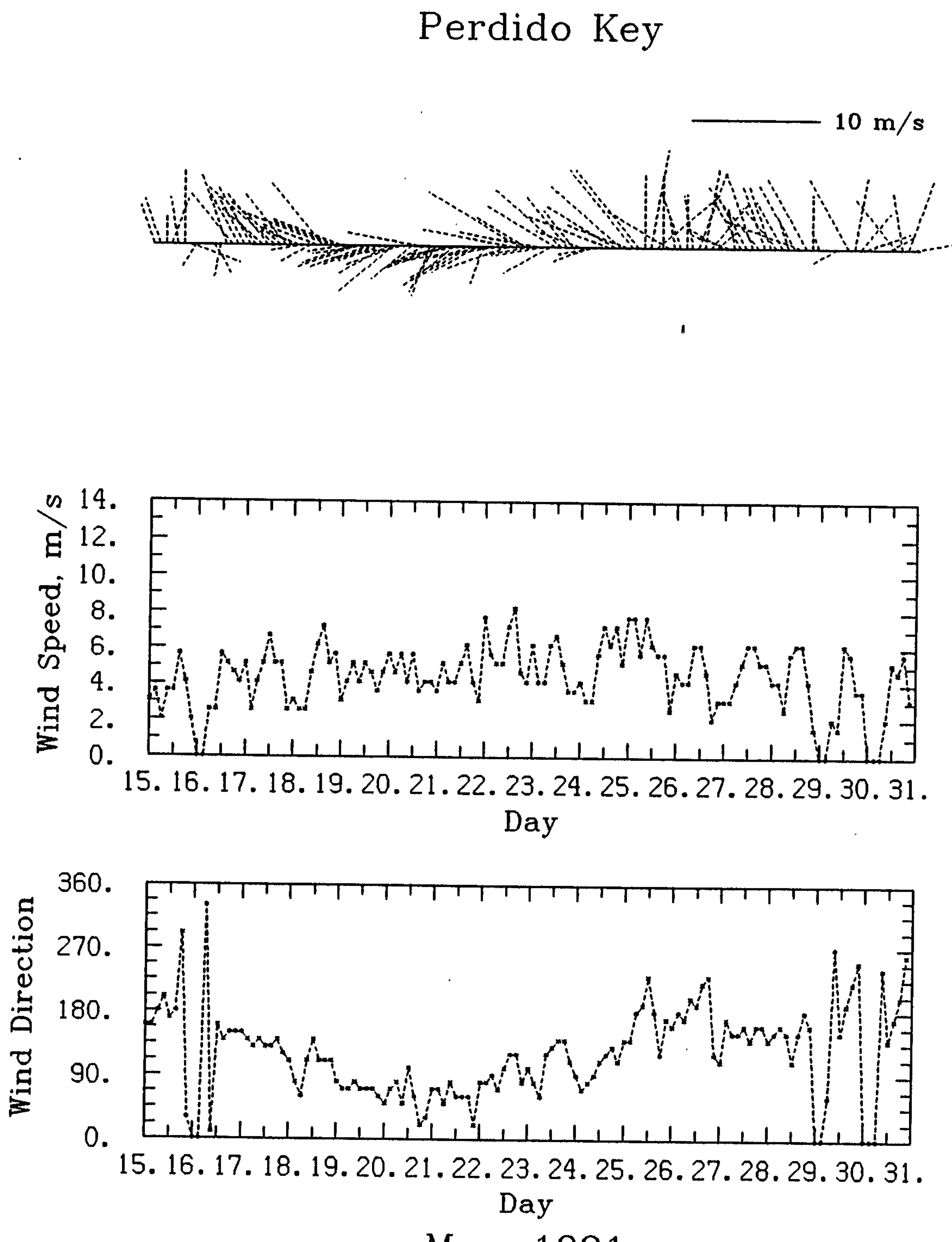

Figure III-23: Wind Speed and Direction, May 16–31, 1991.

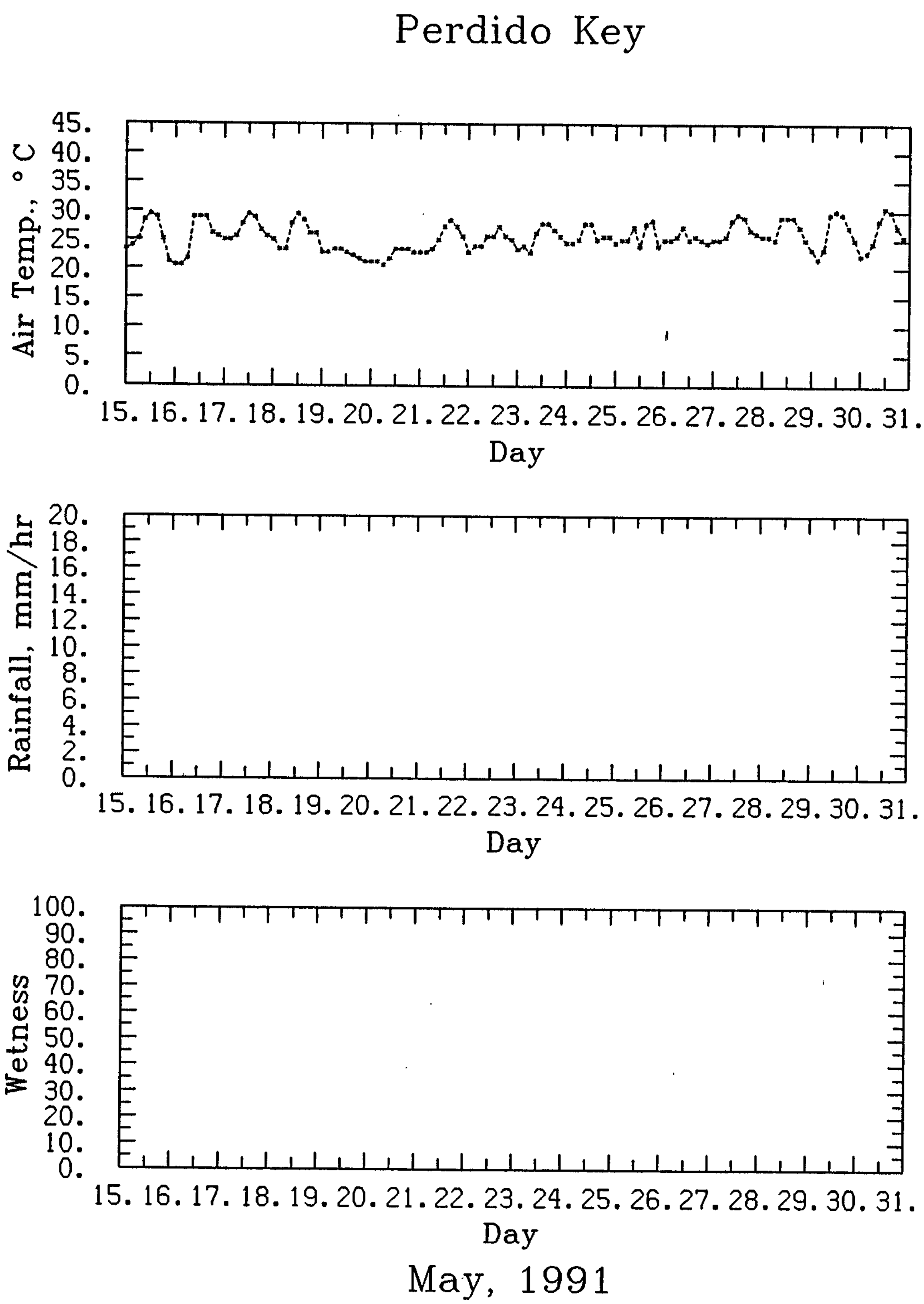

Figure III-24: Air Temperature, Rainfall Rate and Wetness, May 16–31, 1991.

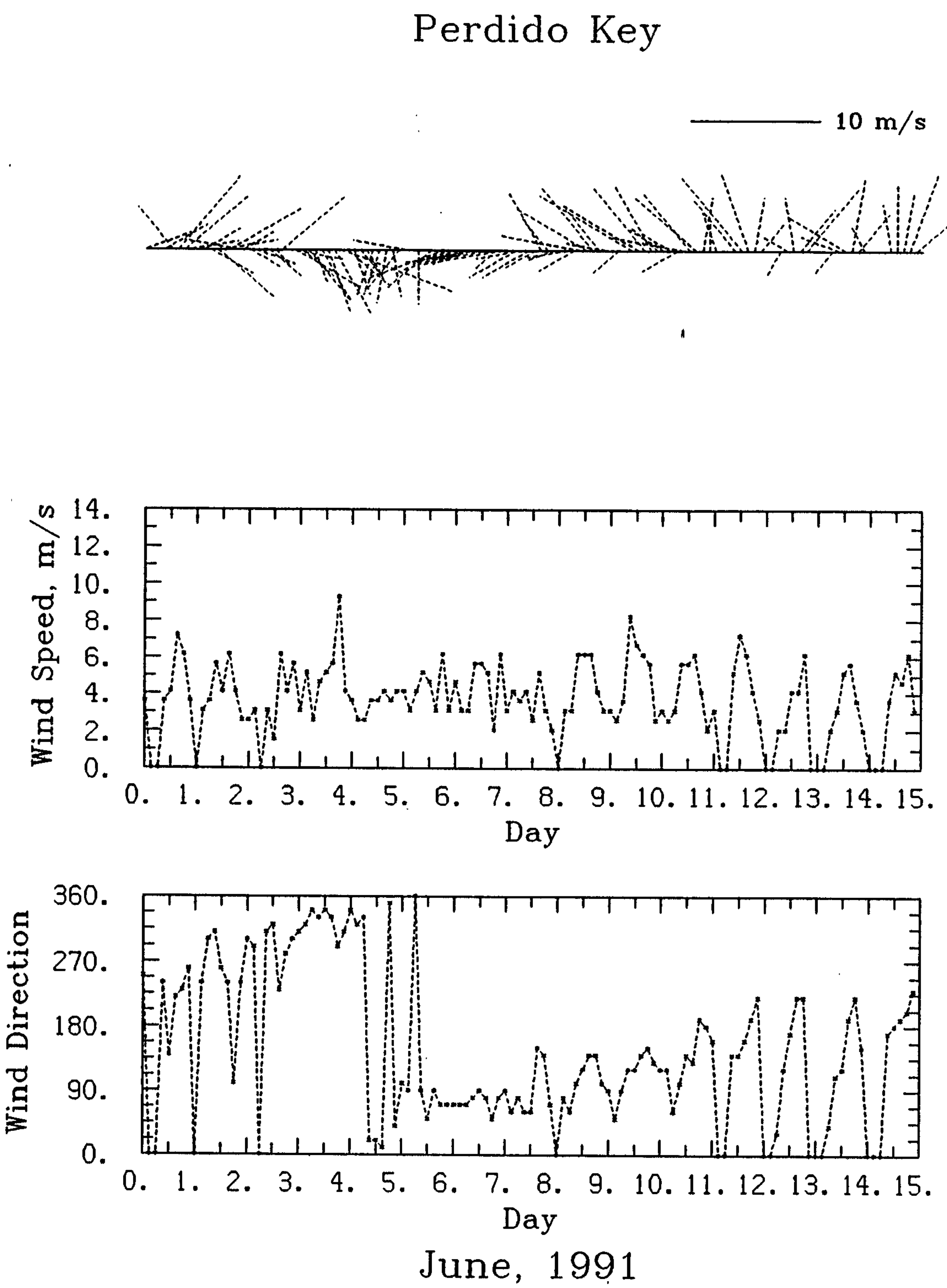

Figure III-25: Wind Speed and Direction, June 1–15, 1991.

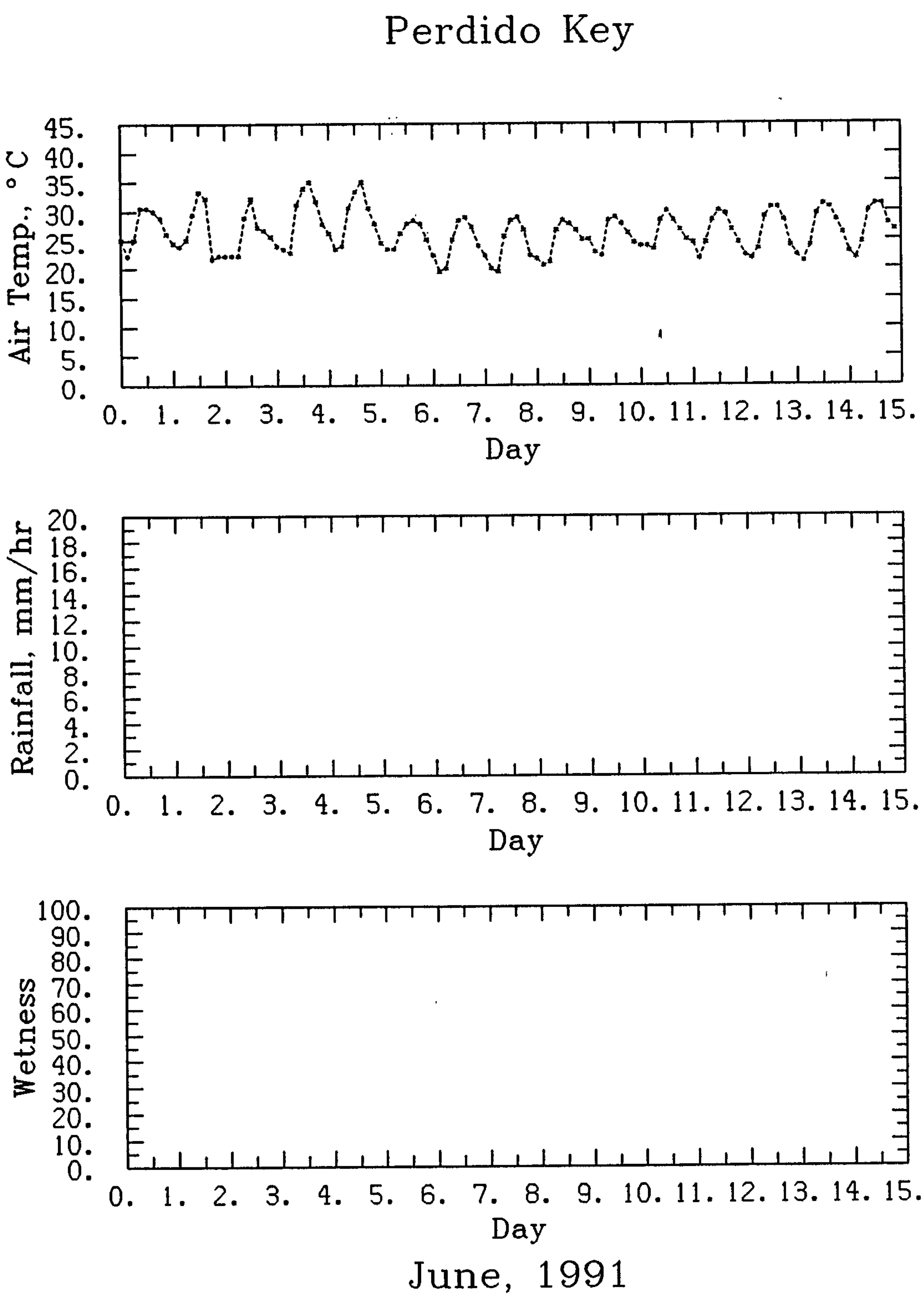

Figure III-26: Air Temperature, Rainfall Rate and Wetness, June 1–15, 1991.

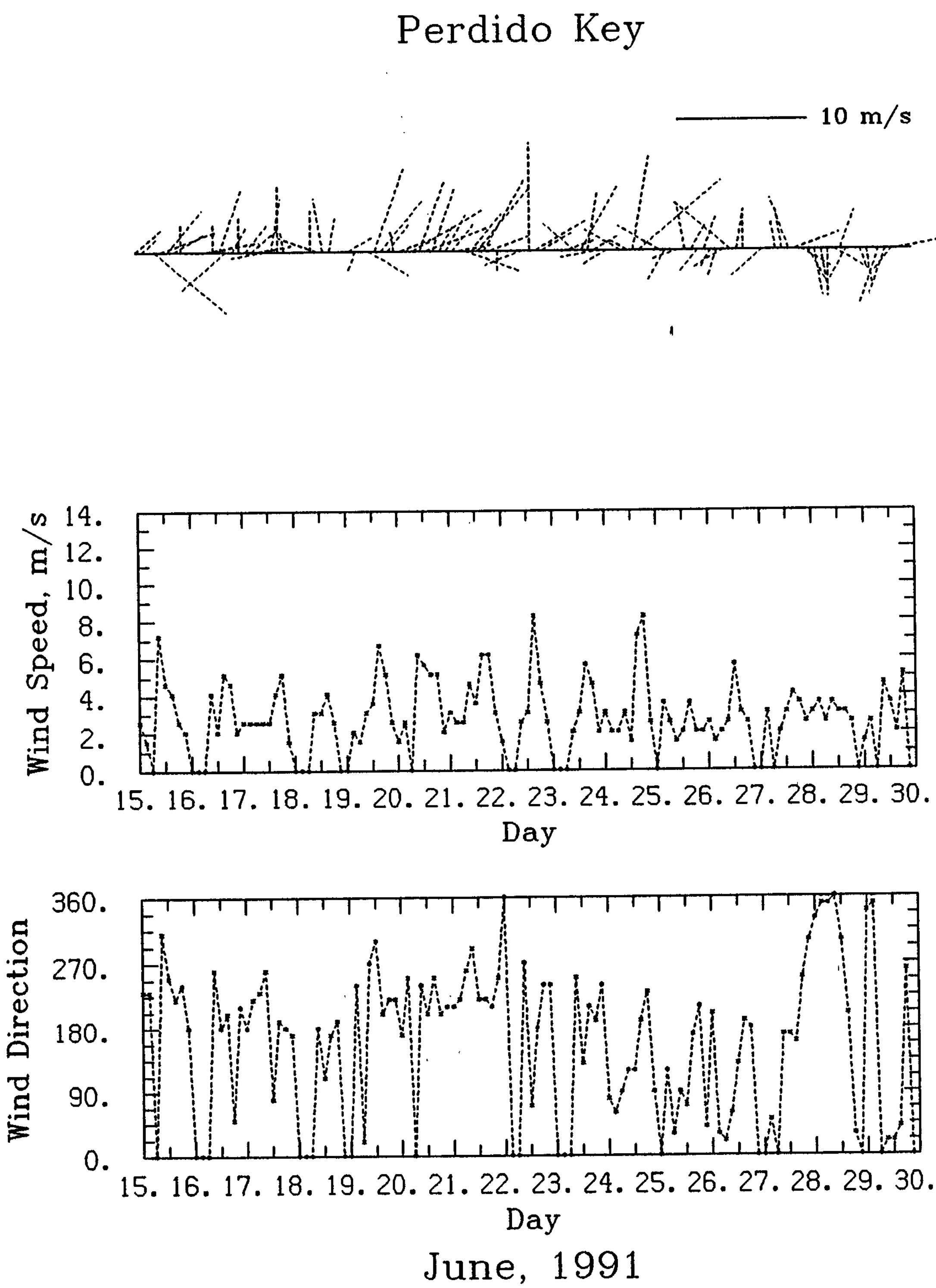

Figure III-27: Wind Speed and Direction, June 16–30, 1991.

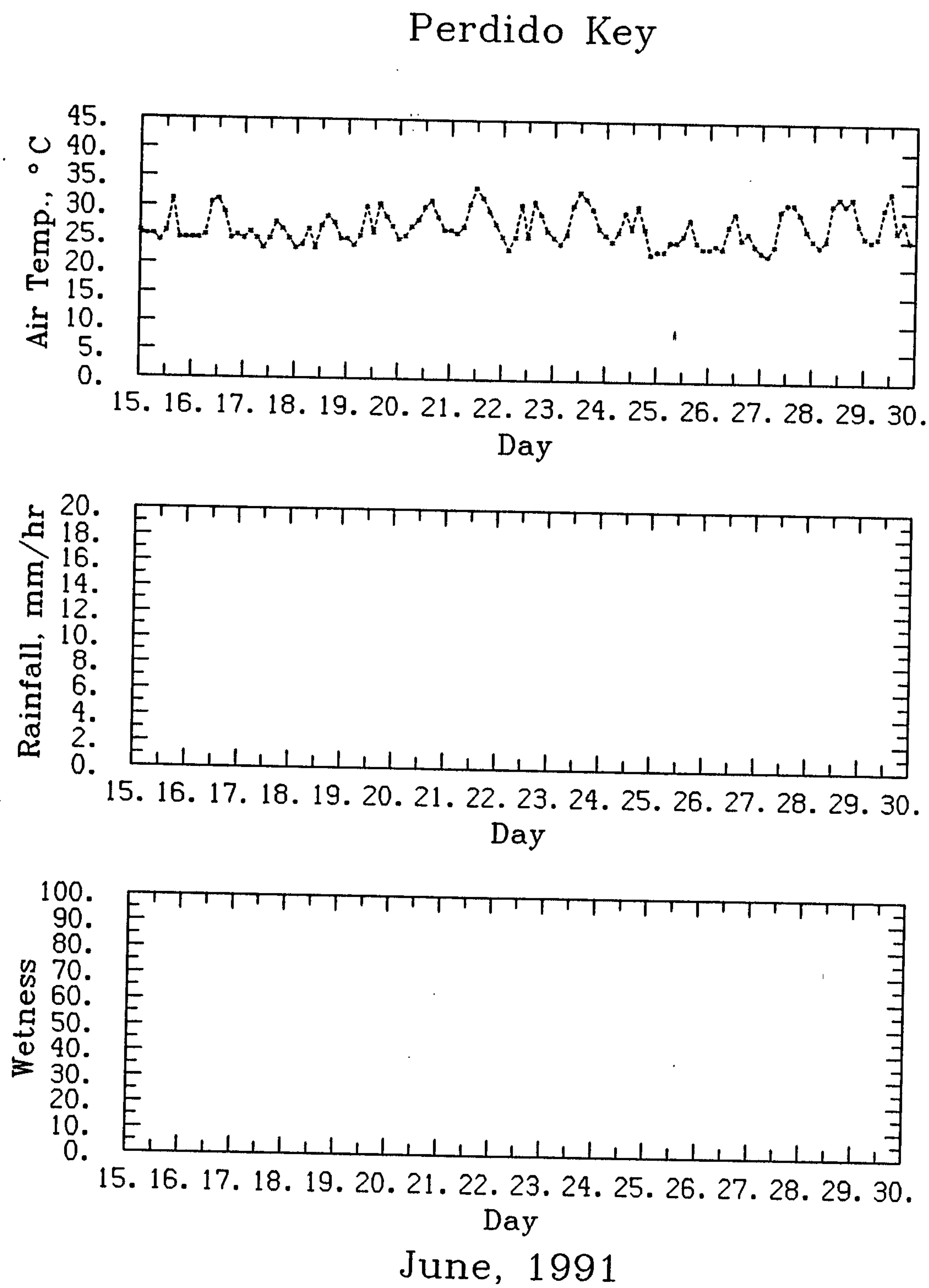

Figure III-28: Air Temperature, Rainfall Rate and Wetness, June 16–30, 1991.

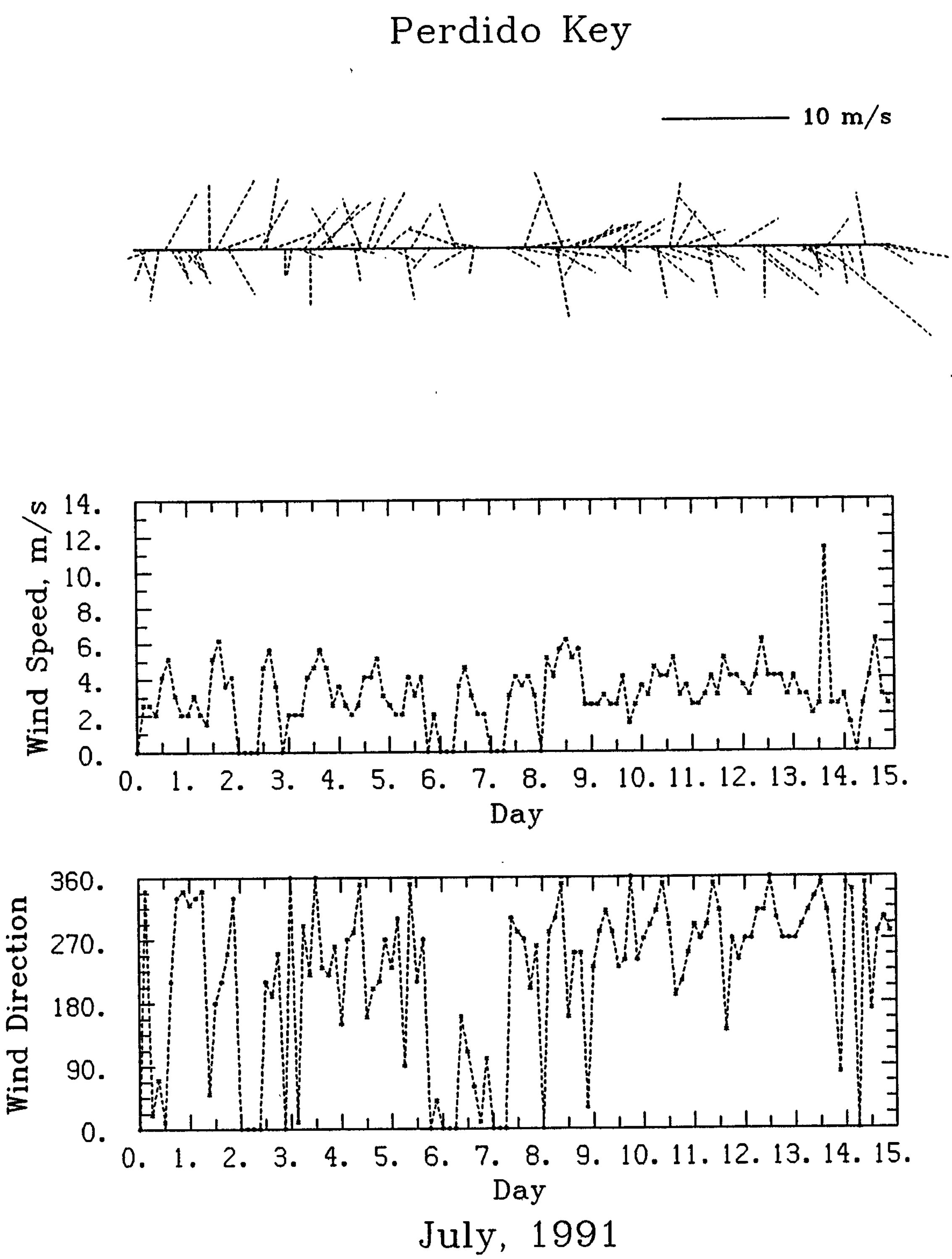

Figure III-29: Wind Speed and Direction, July 1–15, 1991.

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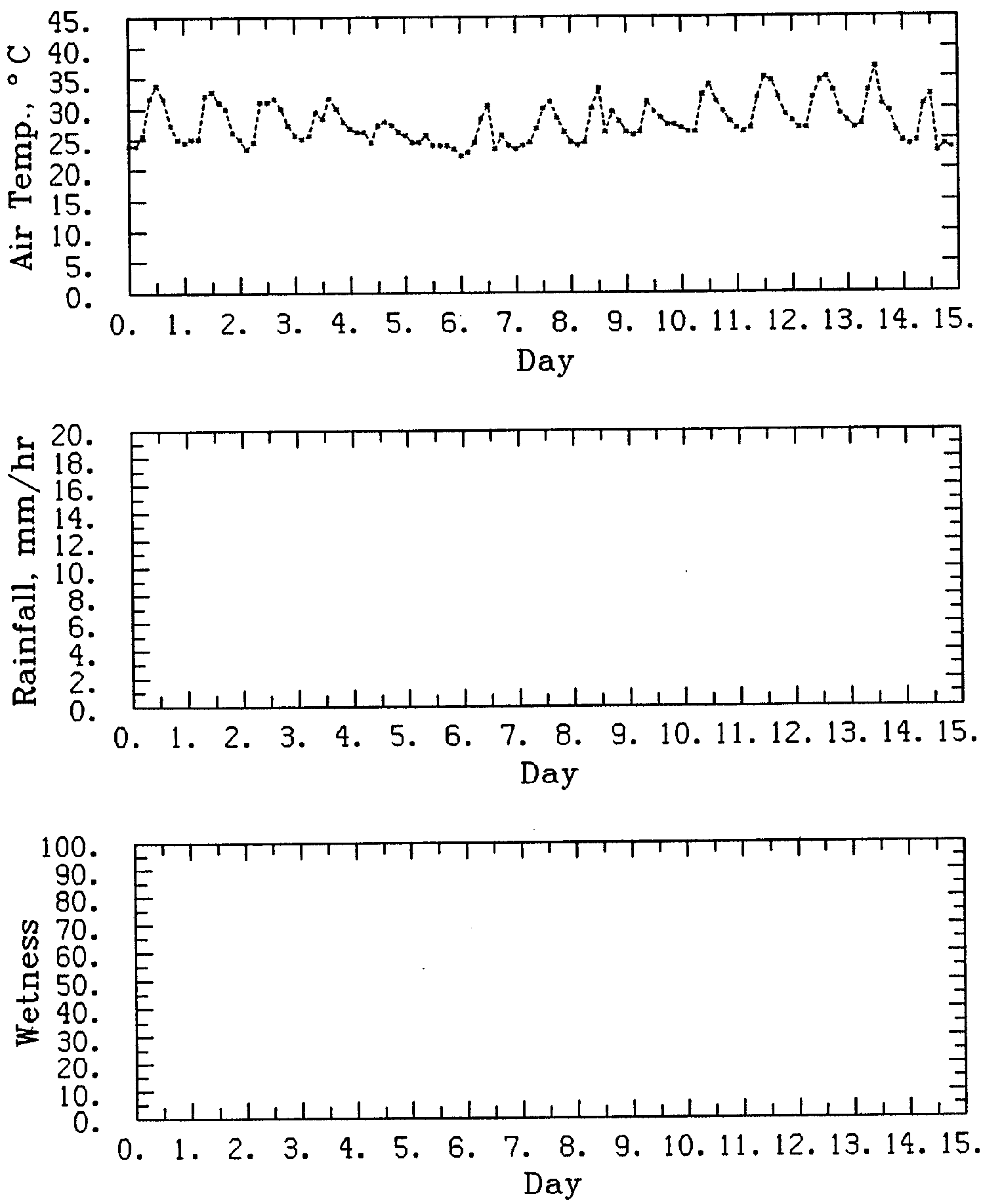


July, 1991

Figure III-30: Air Temperature, Rainfall Rate and Wetness, July 1–15, 1991.

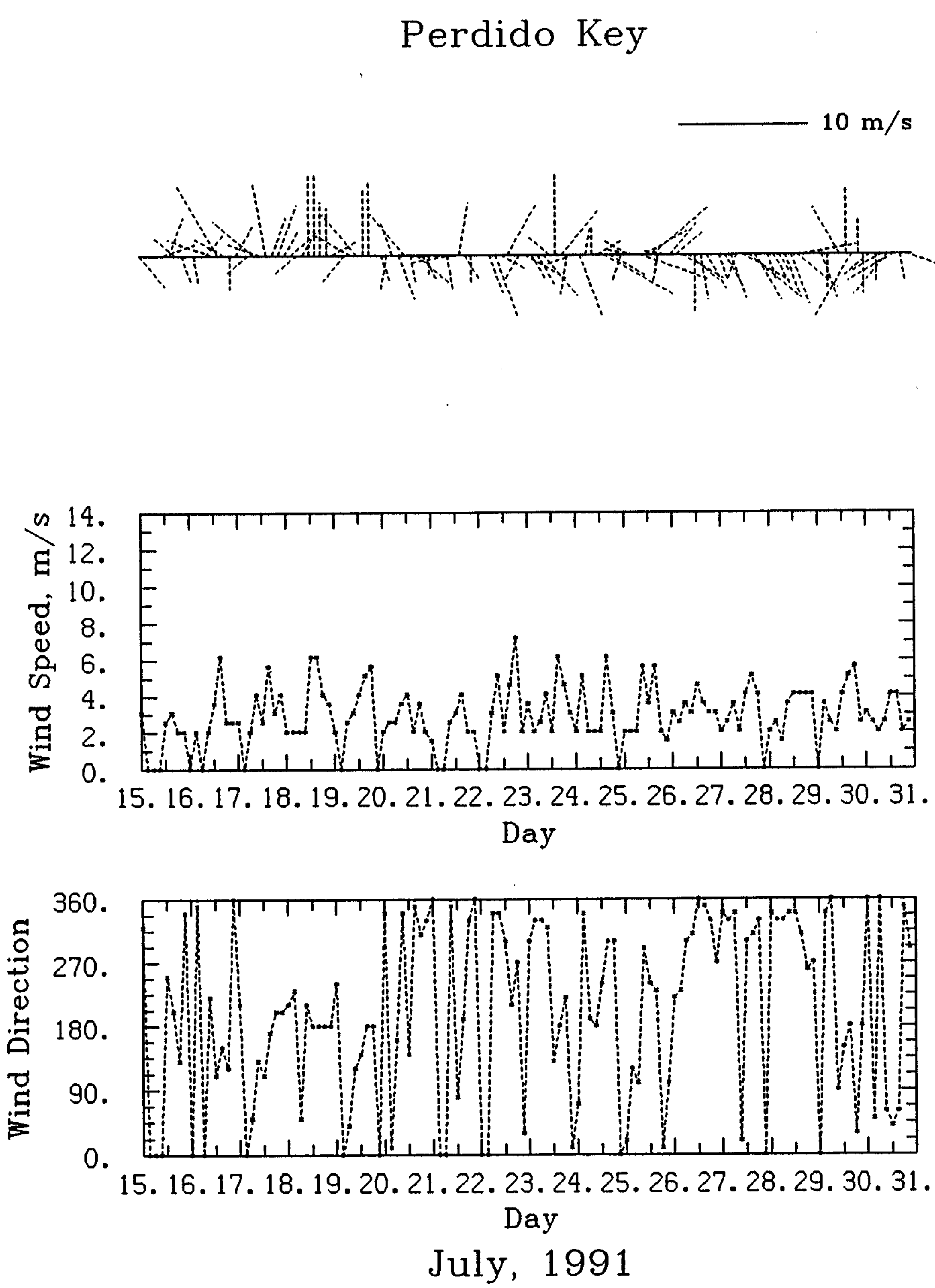


Figure III-31: Wind Speed and Direction, July 16–31, 1991.

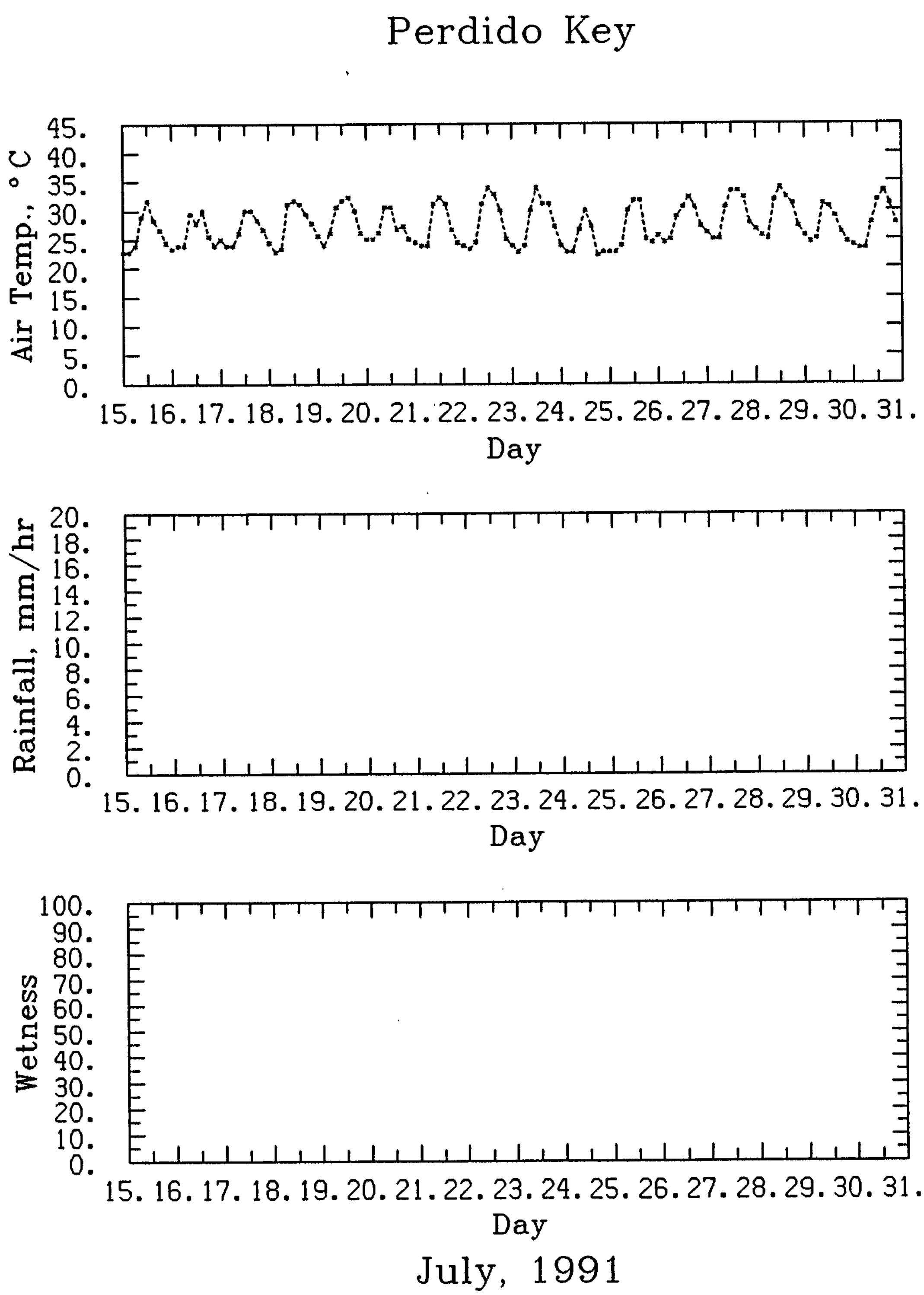


Figure III-32: Air Temperature, Rainfall Rate and Wetness, July 16–31, 1991.

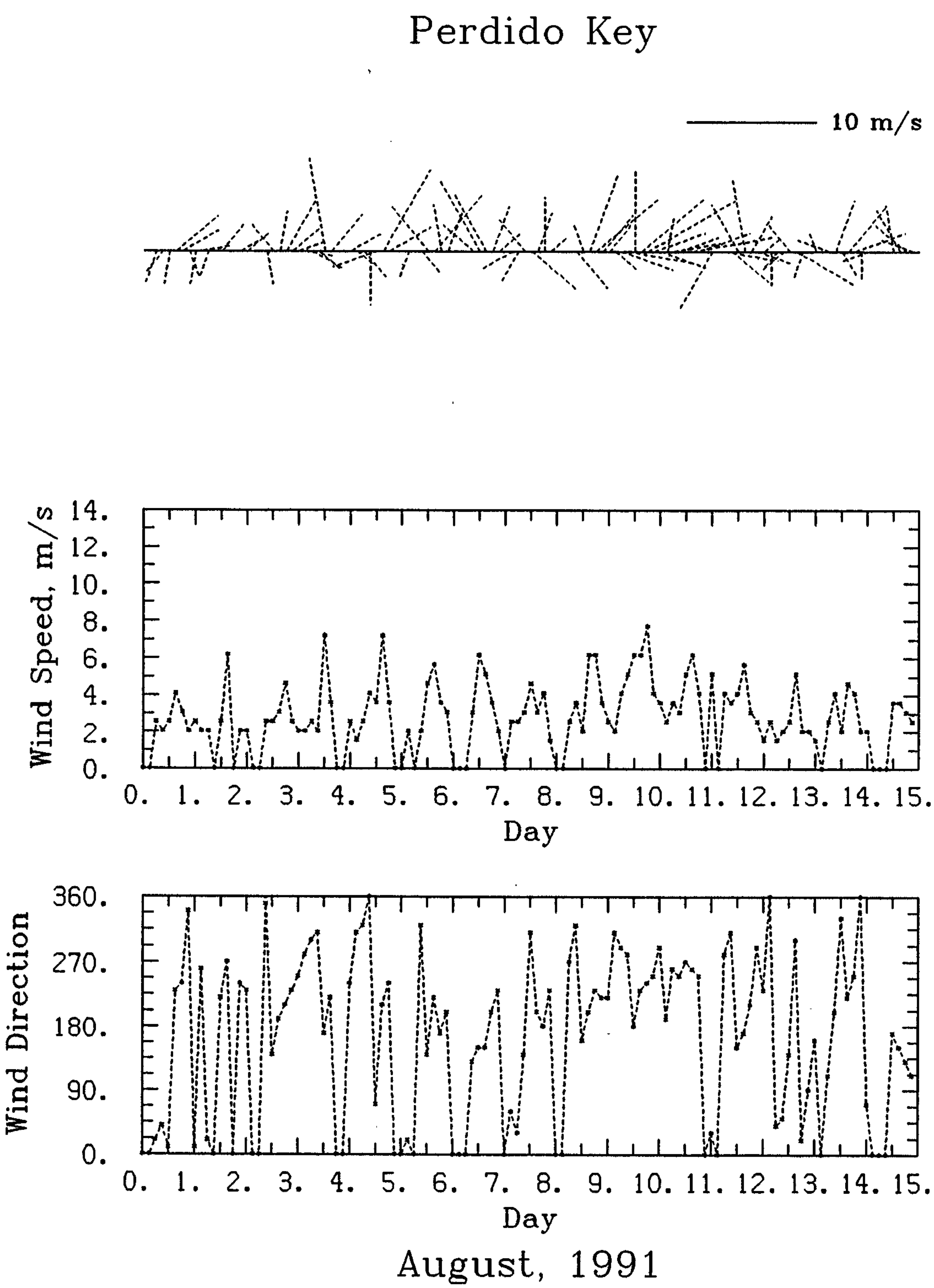


Figure III-33: Wind Speed and Direction, August 1–15, 1991.

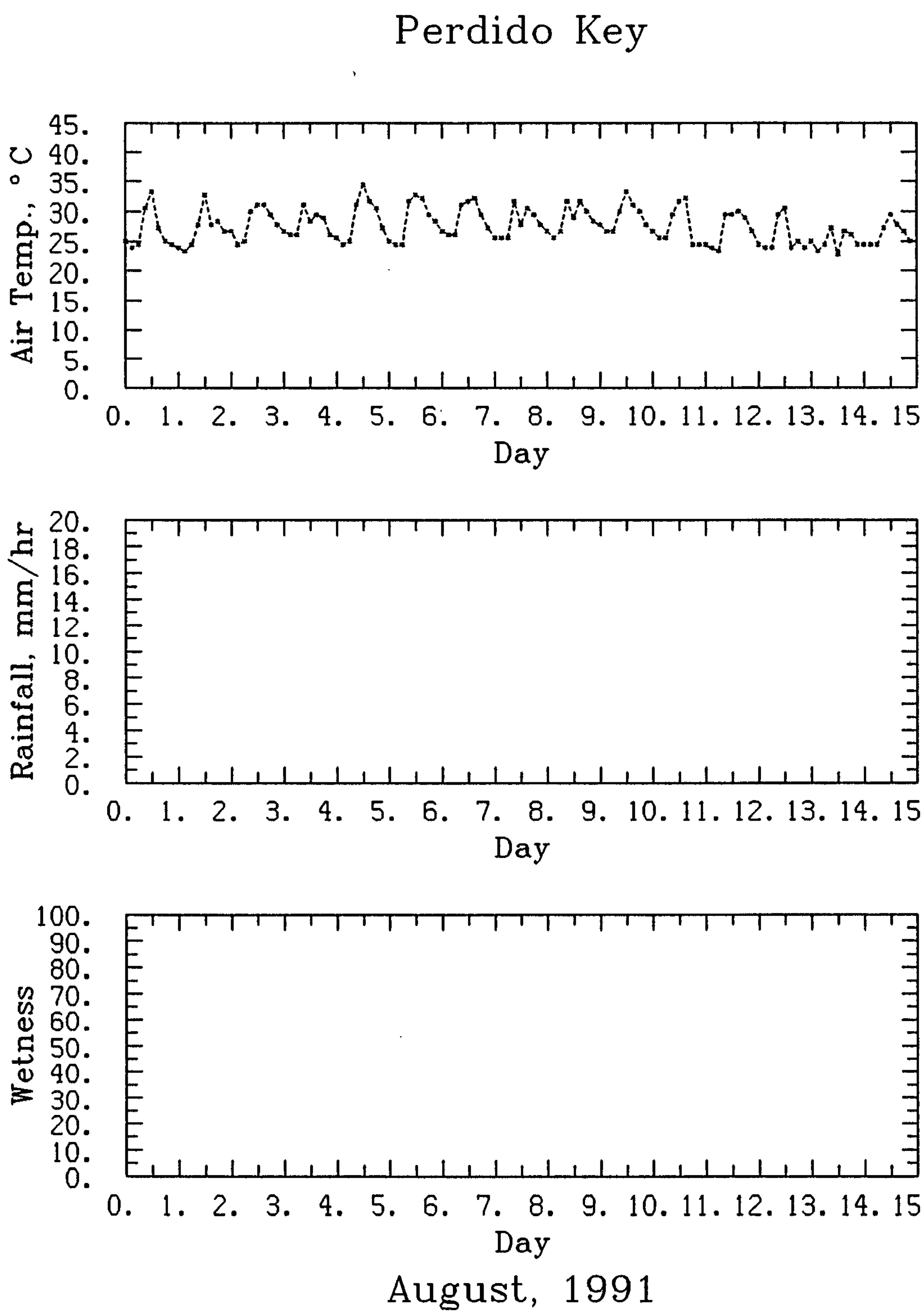


Figure III-34: Air Temperature, Rainfall Rate and Wetness, August 1–15, 1991.

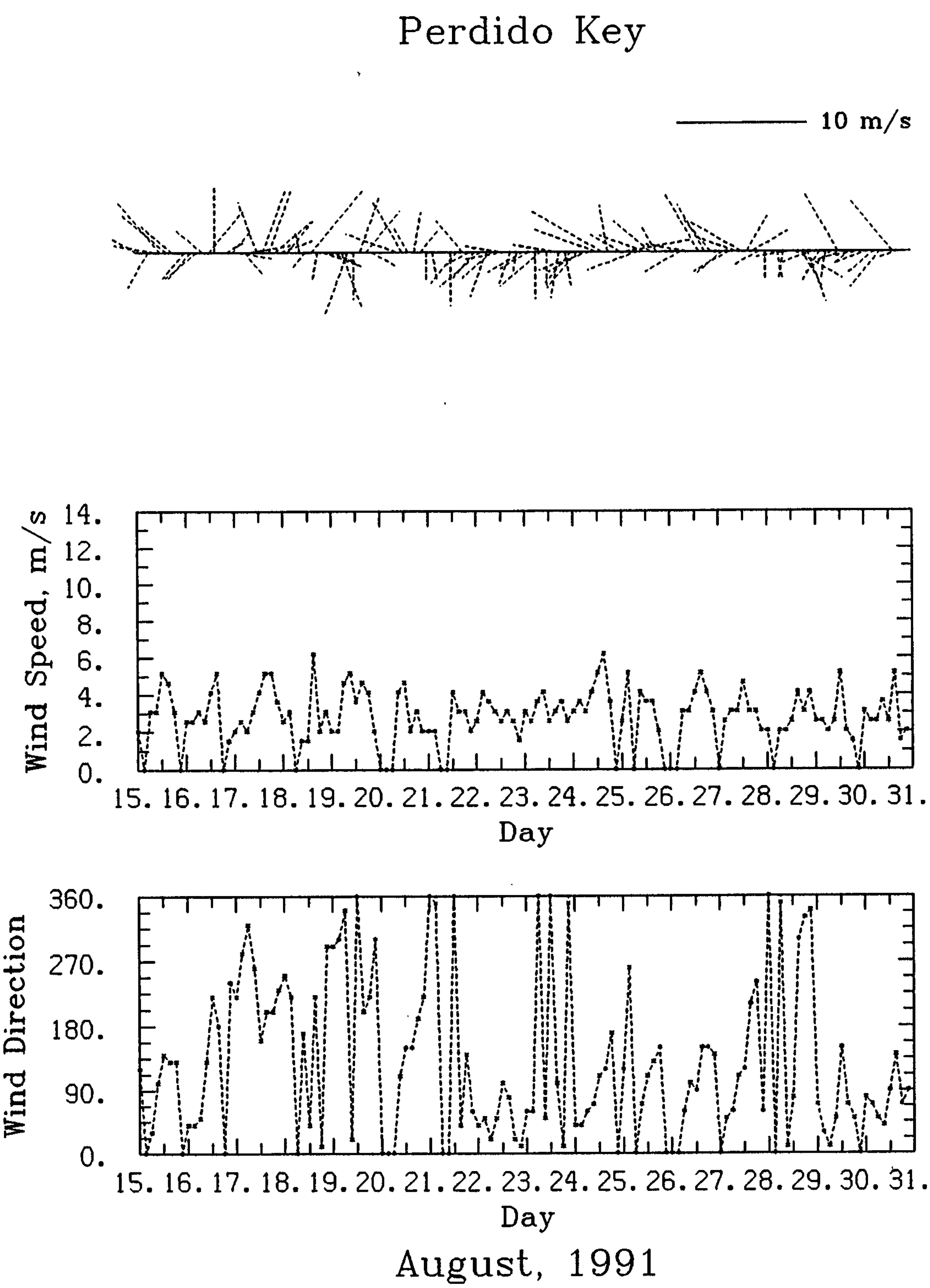


Figure III-35: Wind Speed and Direction, August 16–31, 1991.

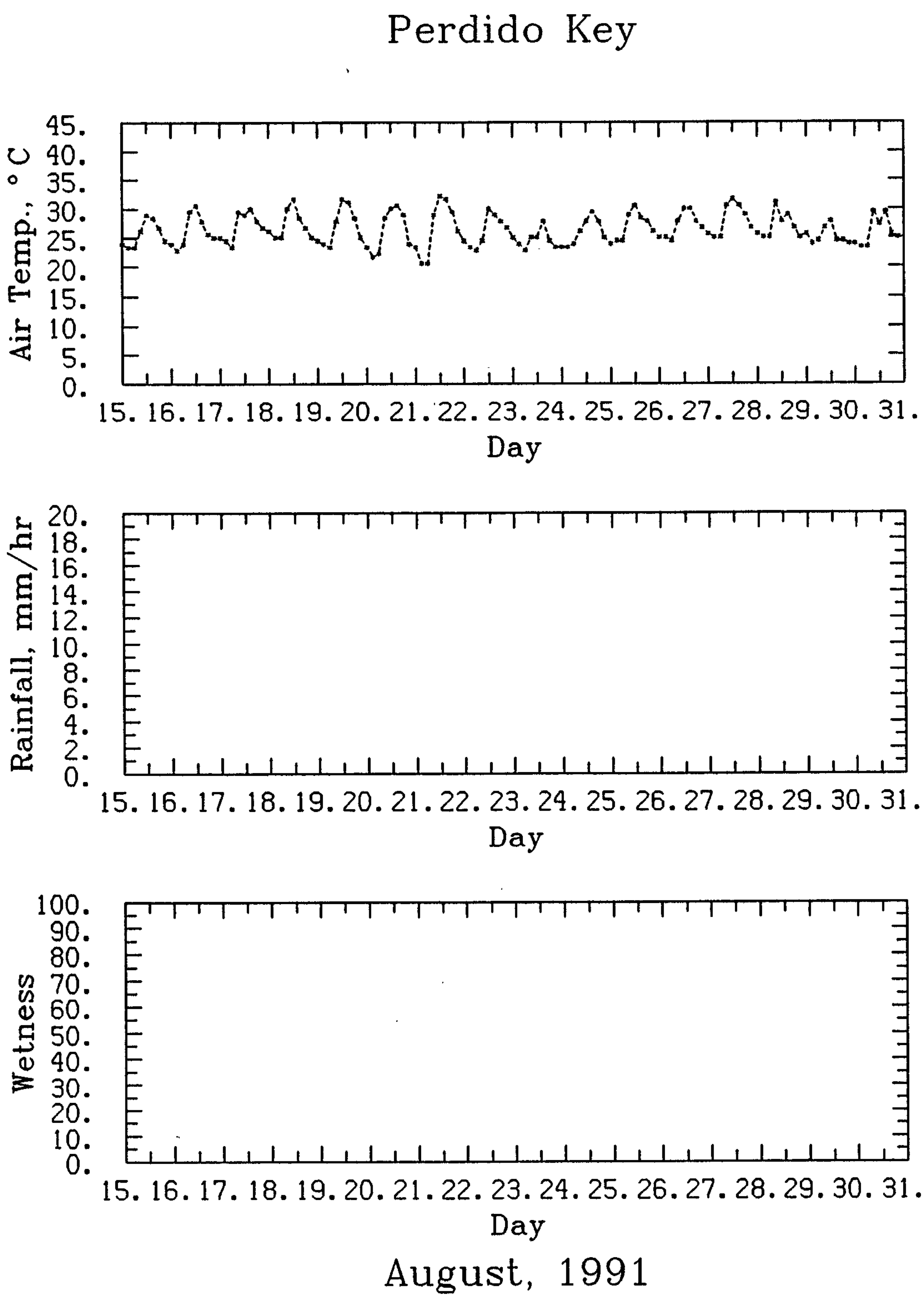


Figure III-36: Air Temperature, Rainfall Rate and Wetness, August 16–31, 1991.

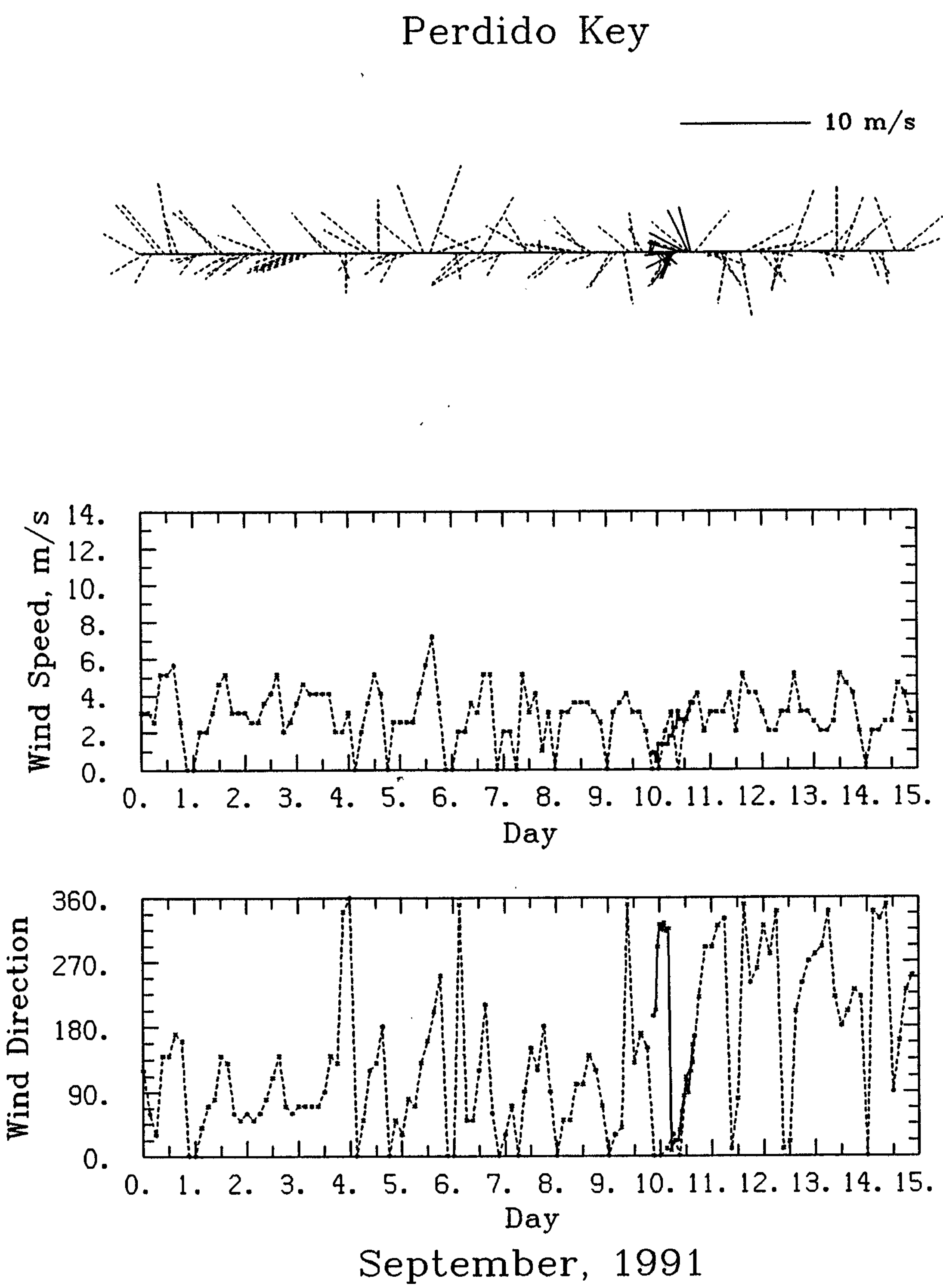


Figure III-37: Wind Speed and Direction, September 1–15, 1991.

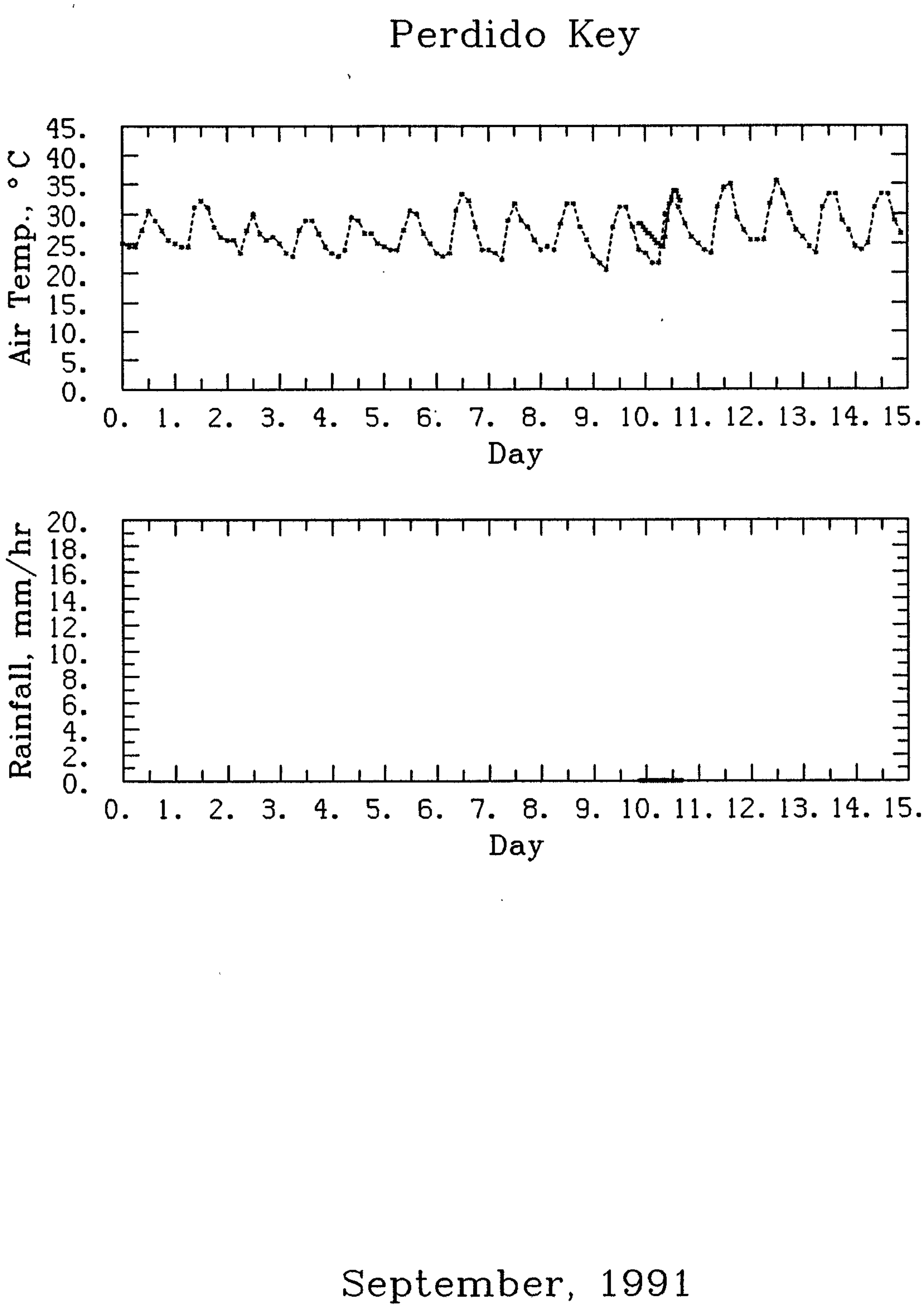


Figure III-38: Air Temperature and Rainfall Rate, September 1–15, 1991.

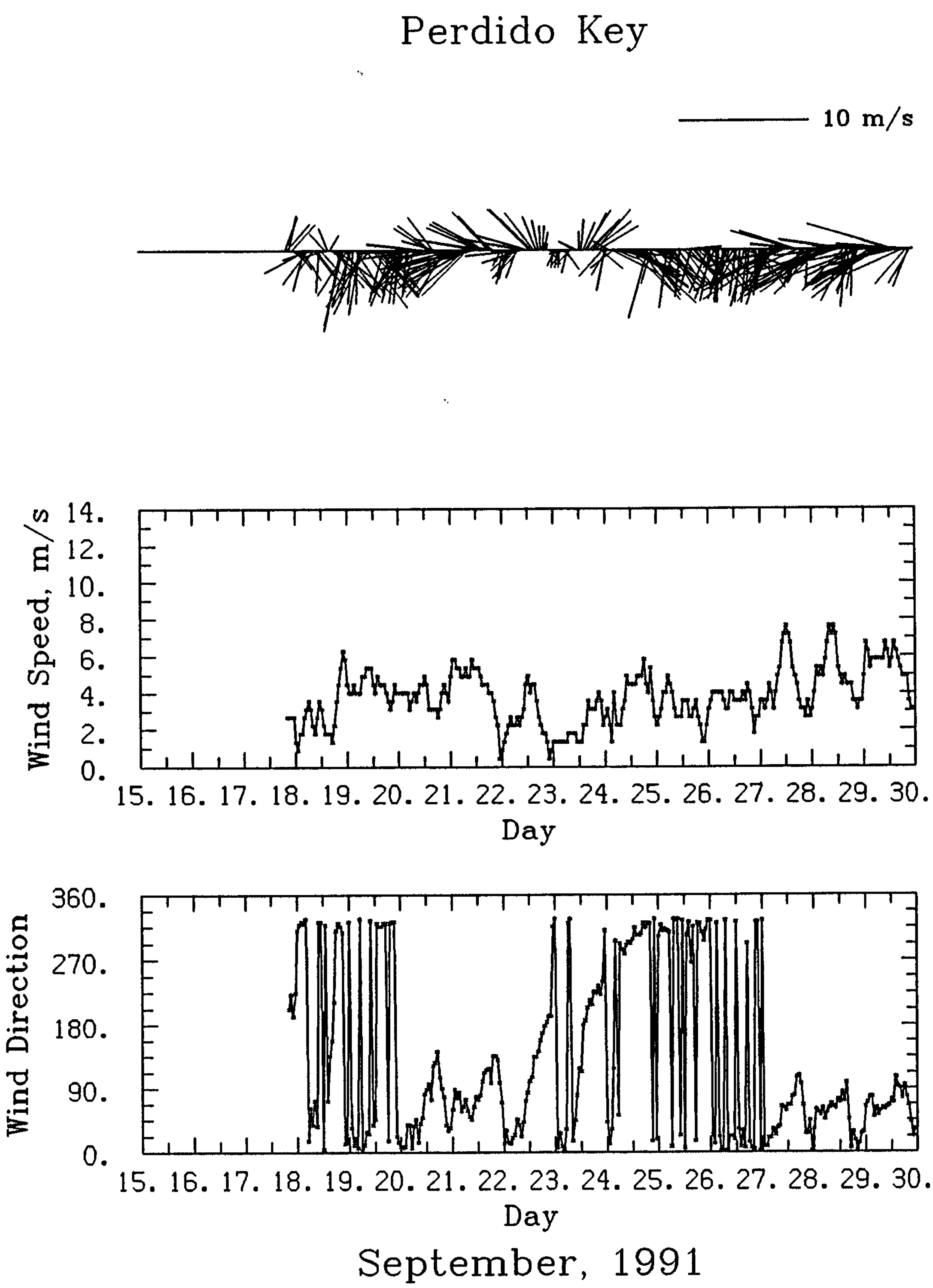


Figure III-39: Wind Speed and Direction, September 16–30, 1991.

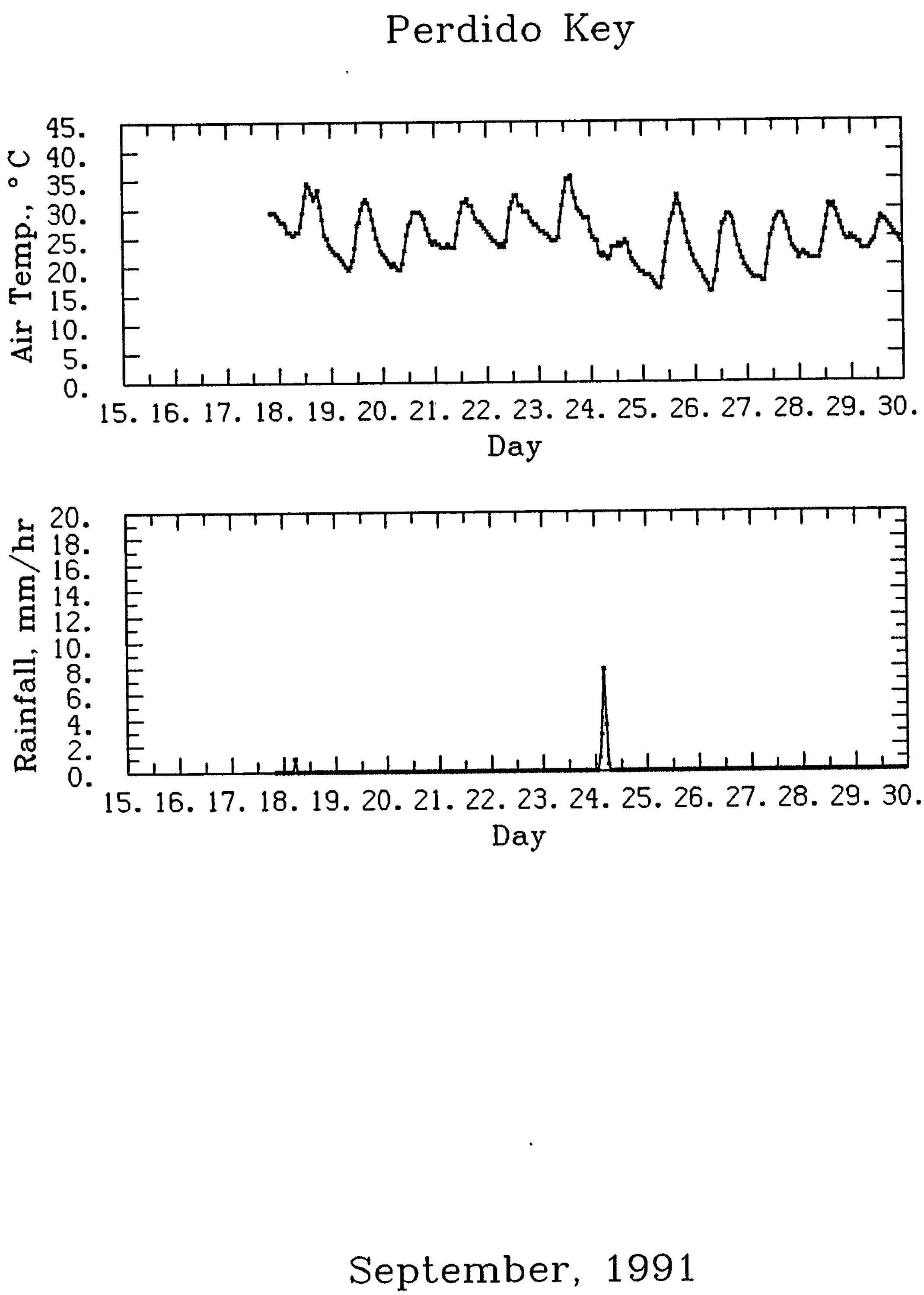


Figure III-40: Air Temperature and Rainfall Rate, September 16–30, 1991.

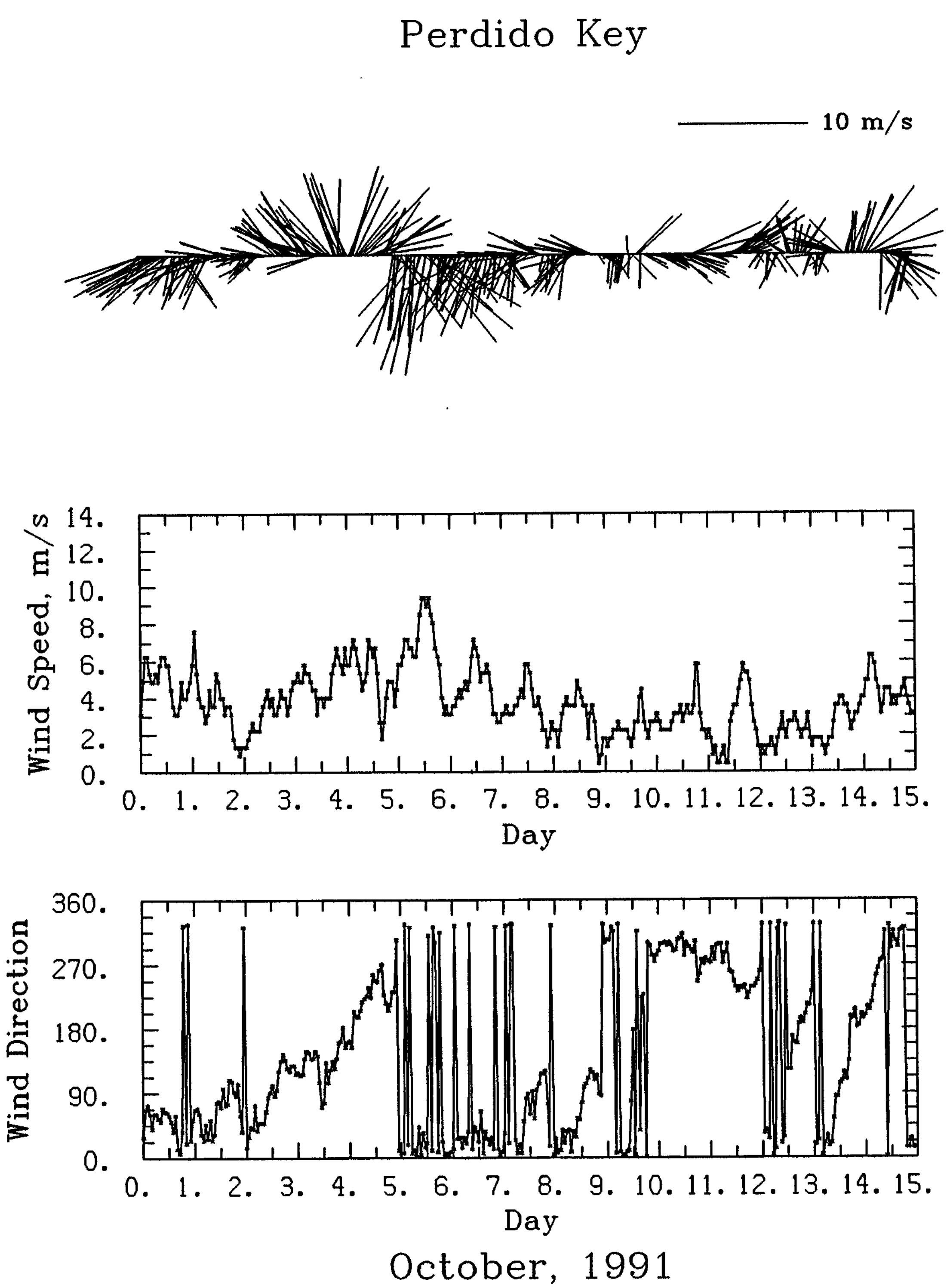


Figure III-41: Wind Speed and Direction, October 1–15, 1991.

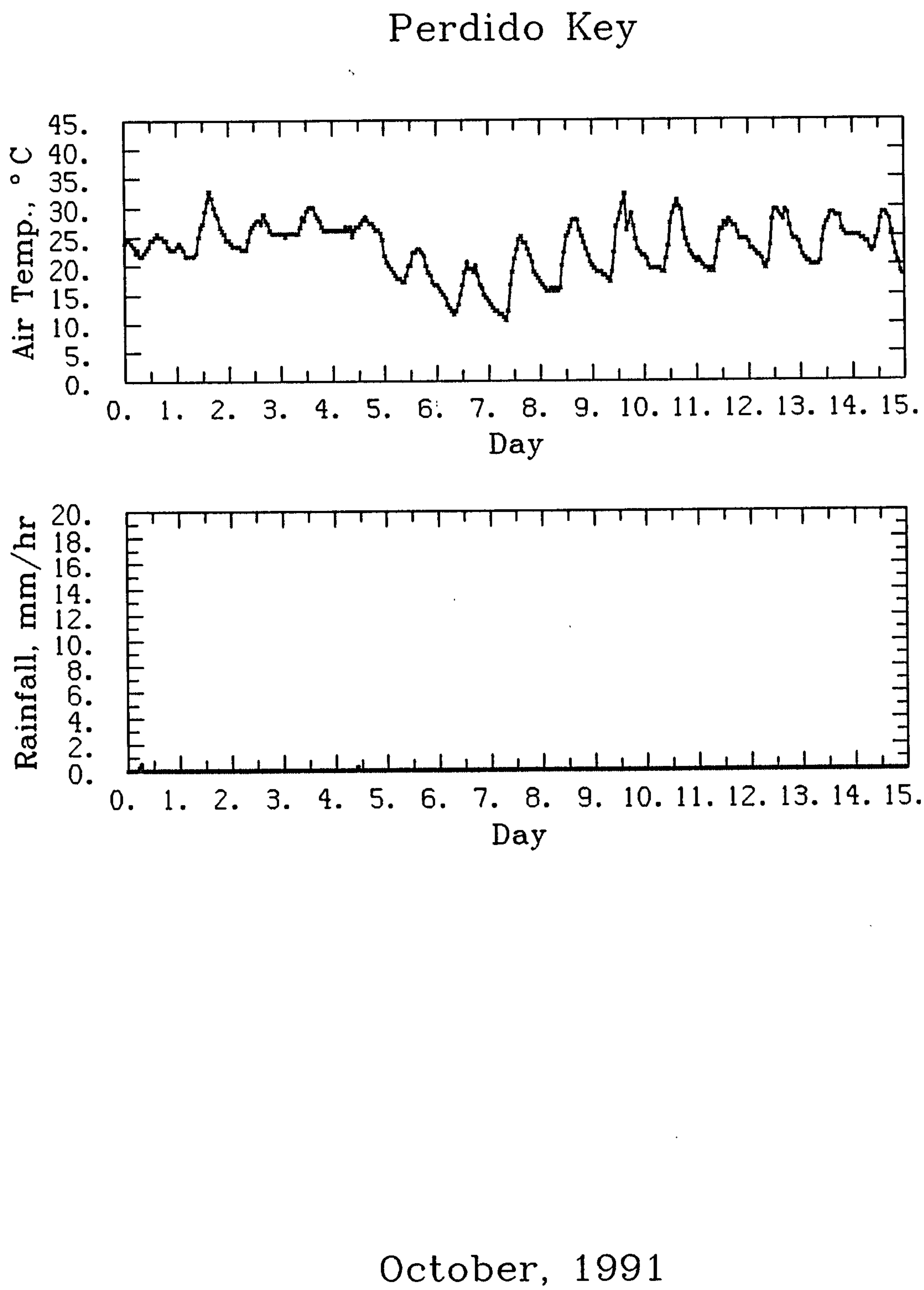


Figure III-42: Air Temperature and Rainfall Rate, October 1–15, 1991.

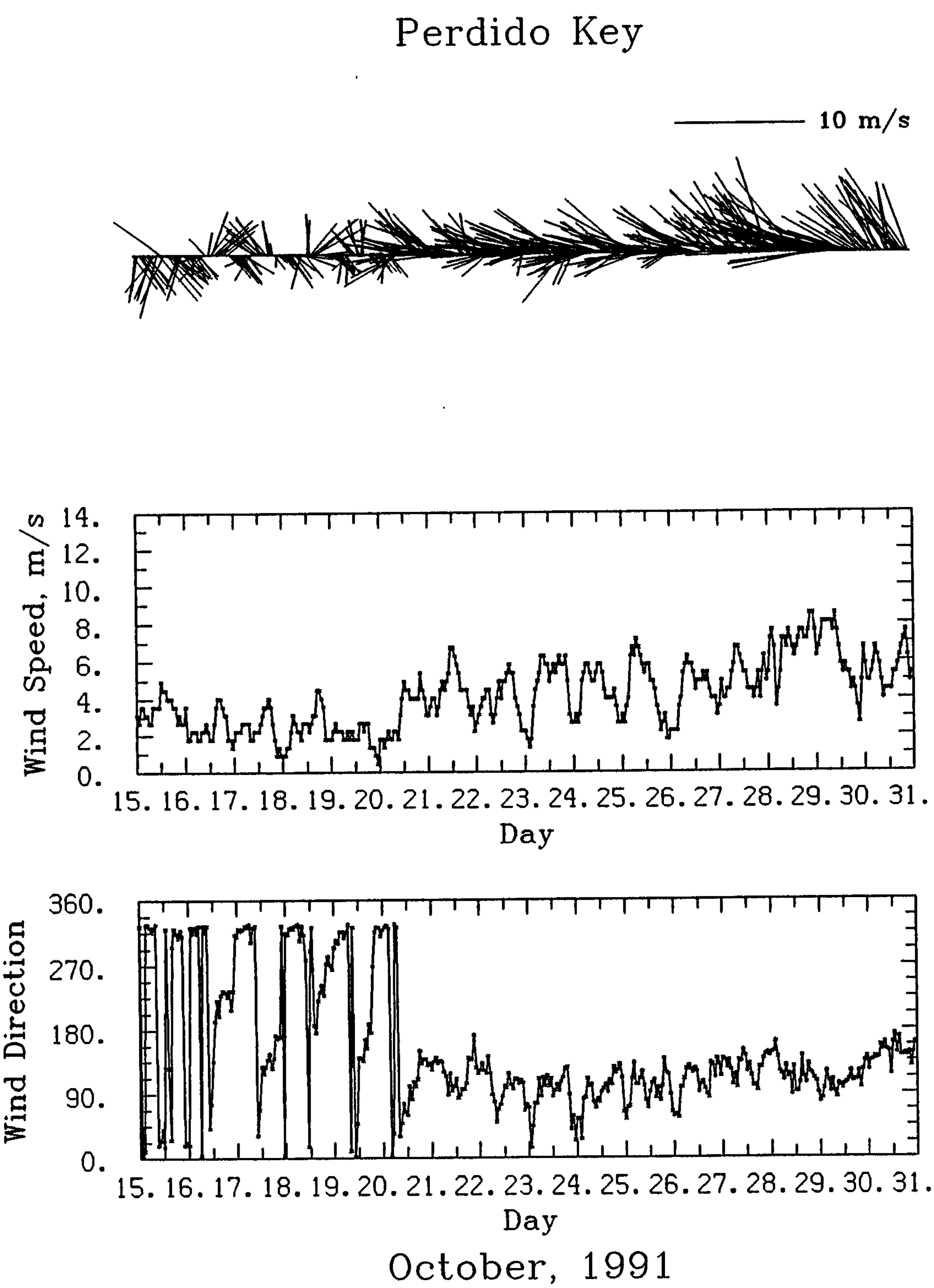


Figure III-43: Wind Speed and Direction, October 16–31, 1991.

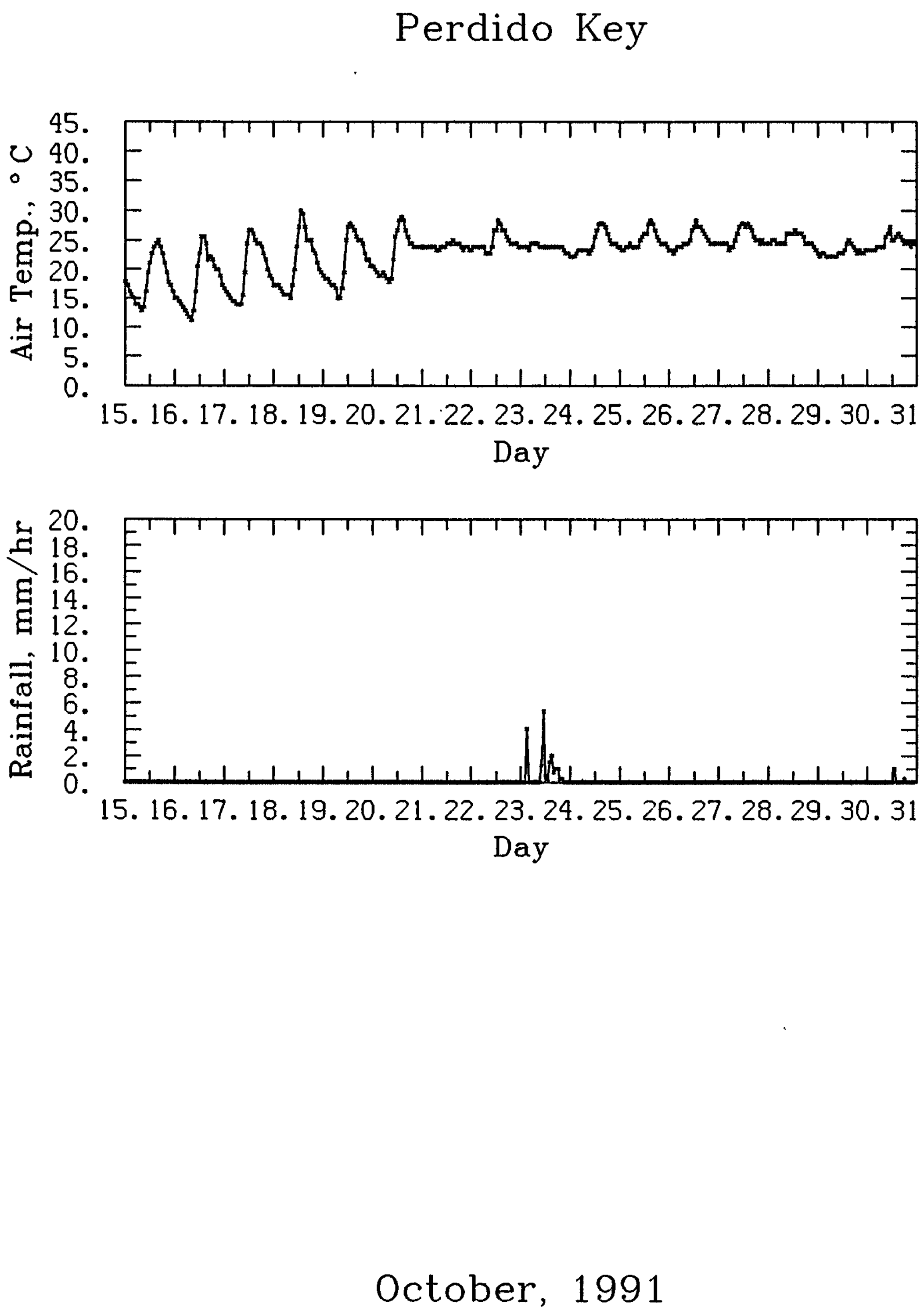


Figure III-44: Air Temperature and Rainfall Rate, October 16–31, 1991.

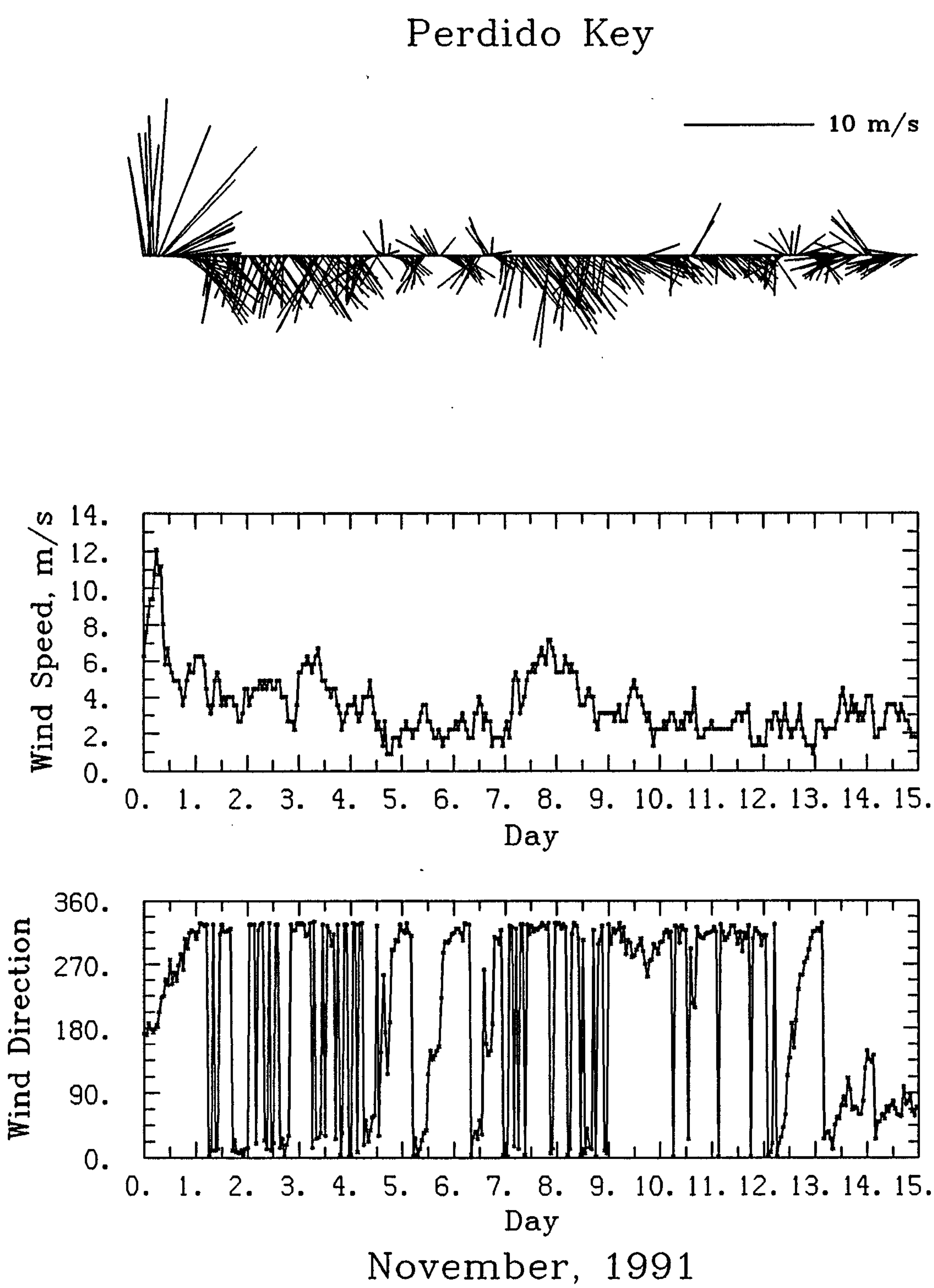


Figure III-45: Wind Speed and Direction, November 1–15, 1991.

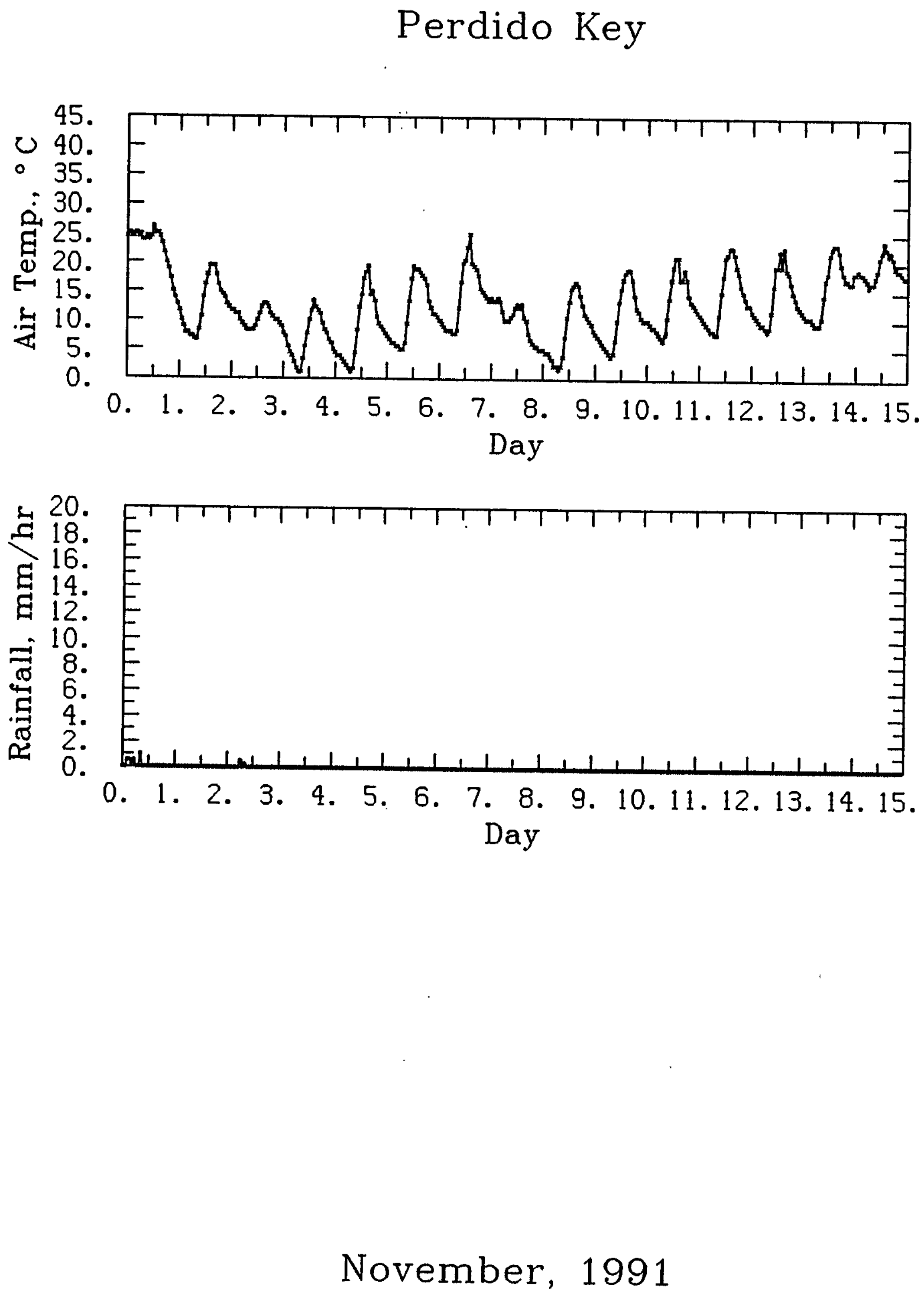


Figure III-46: Air Temperature and Rainfall Rate, November 1–15, 1991.

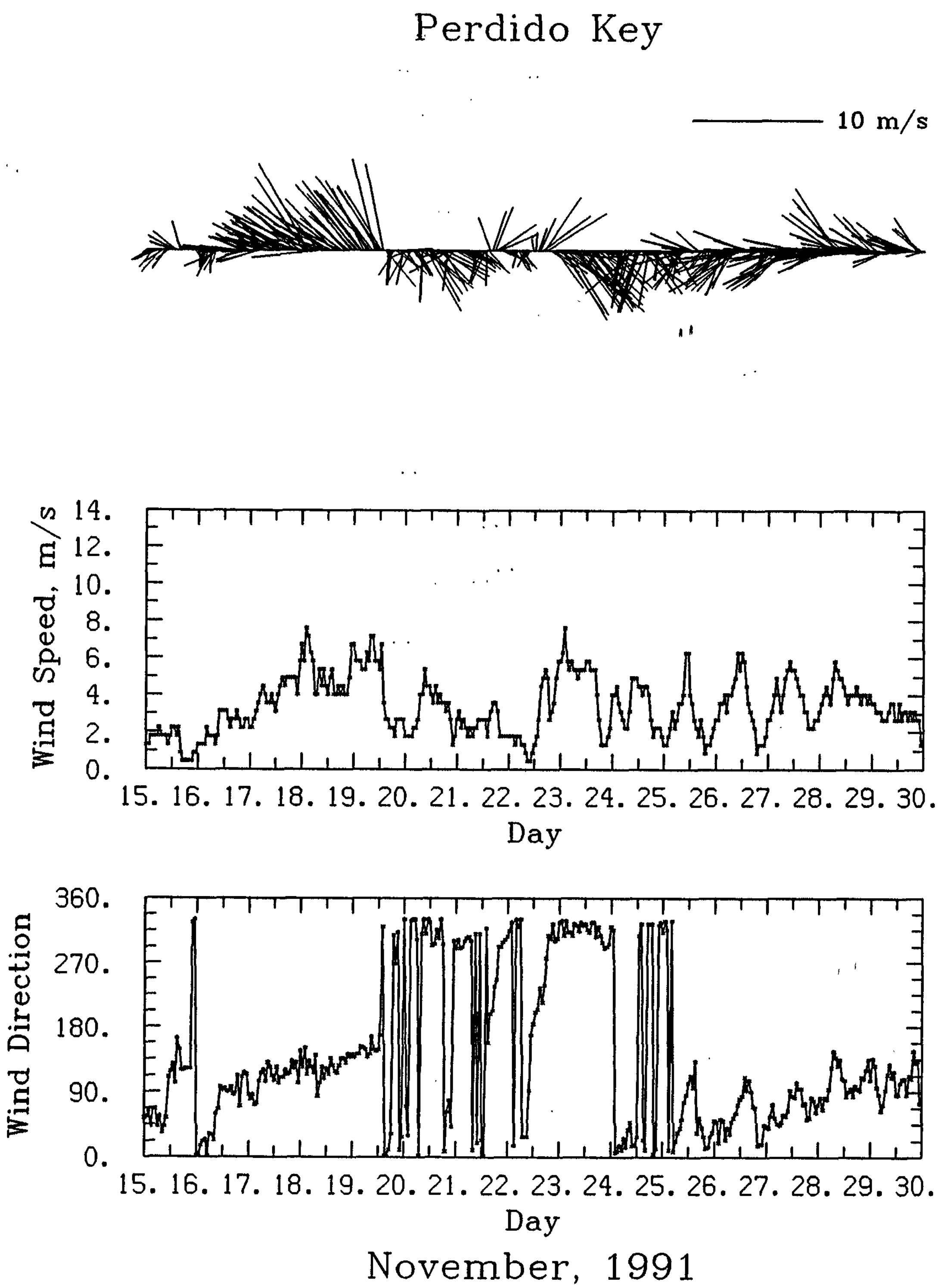


Figure III-47: Wind Speed and Direction, November 16–30, 1991.

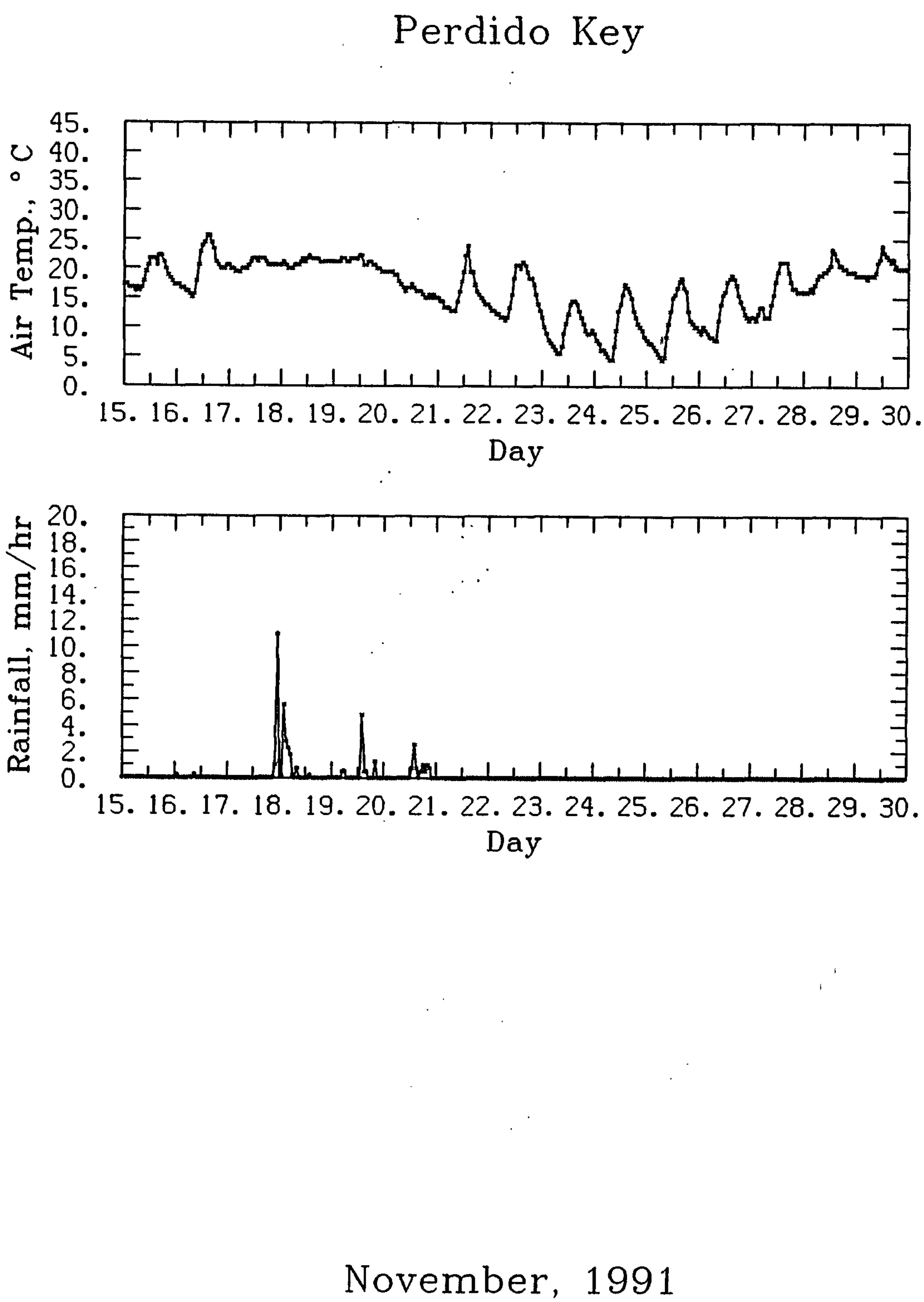


Figure III-48: Air Temperature and Rainfall Rate, November 16–30, 1991.

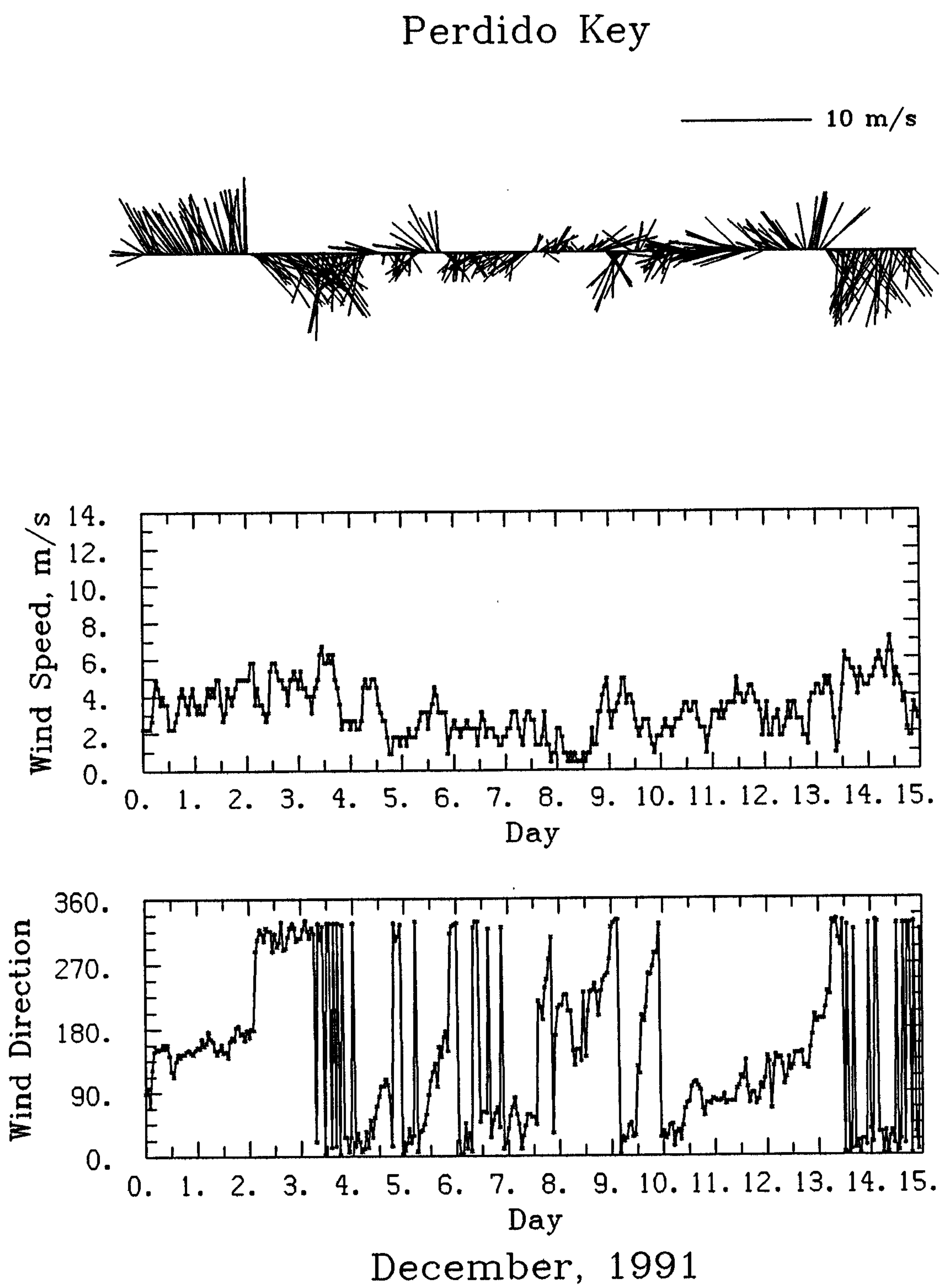


Figure III-49: Wind Speed and Direction, December 1–15, 1991.

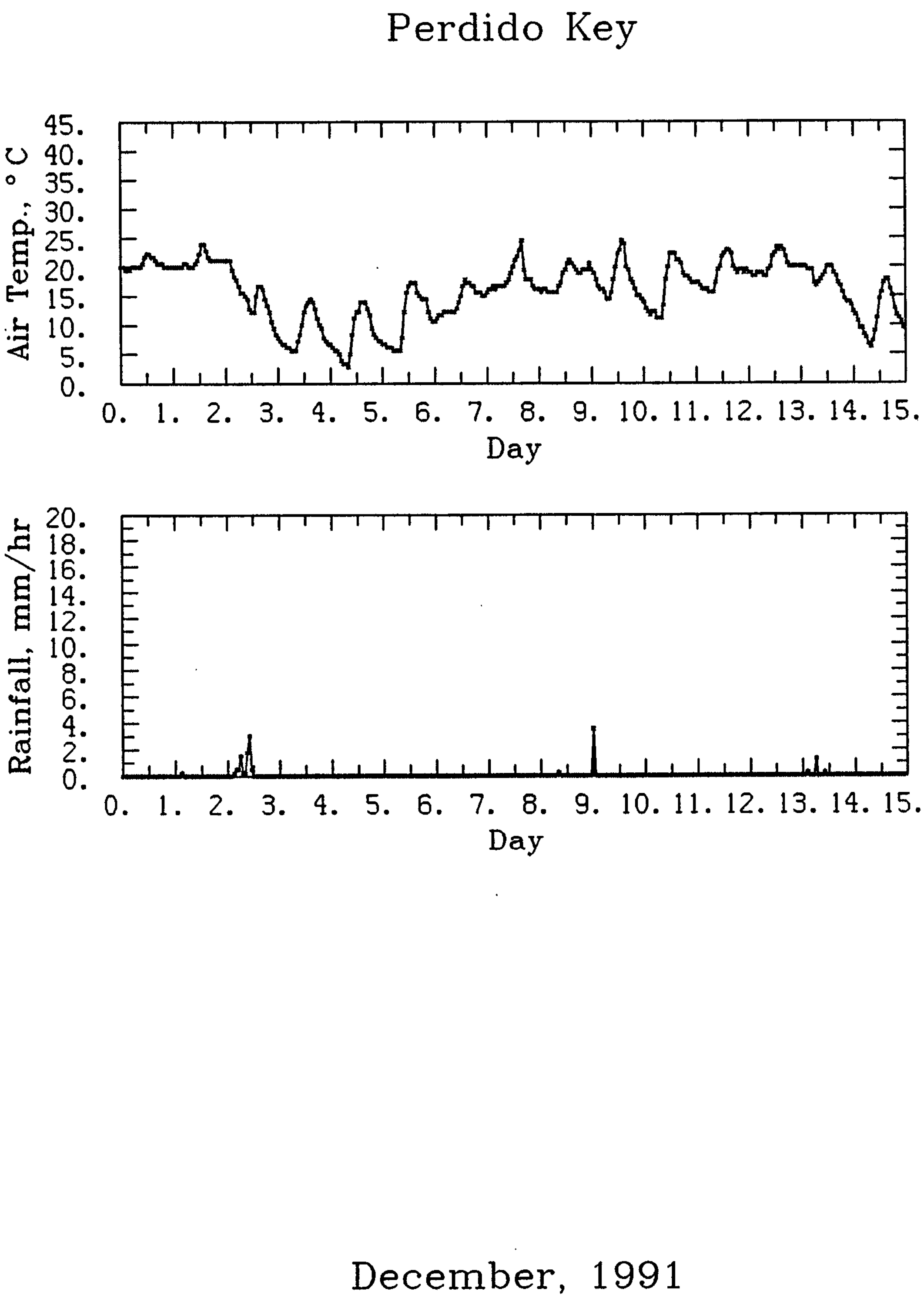


Figure III-50: Air Temperature and Rainfall Rate, December 1–15, 1991.

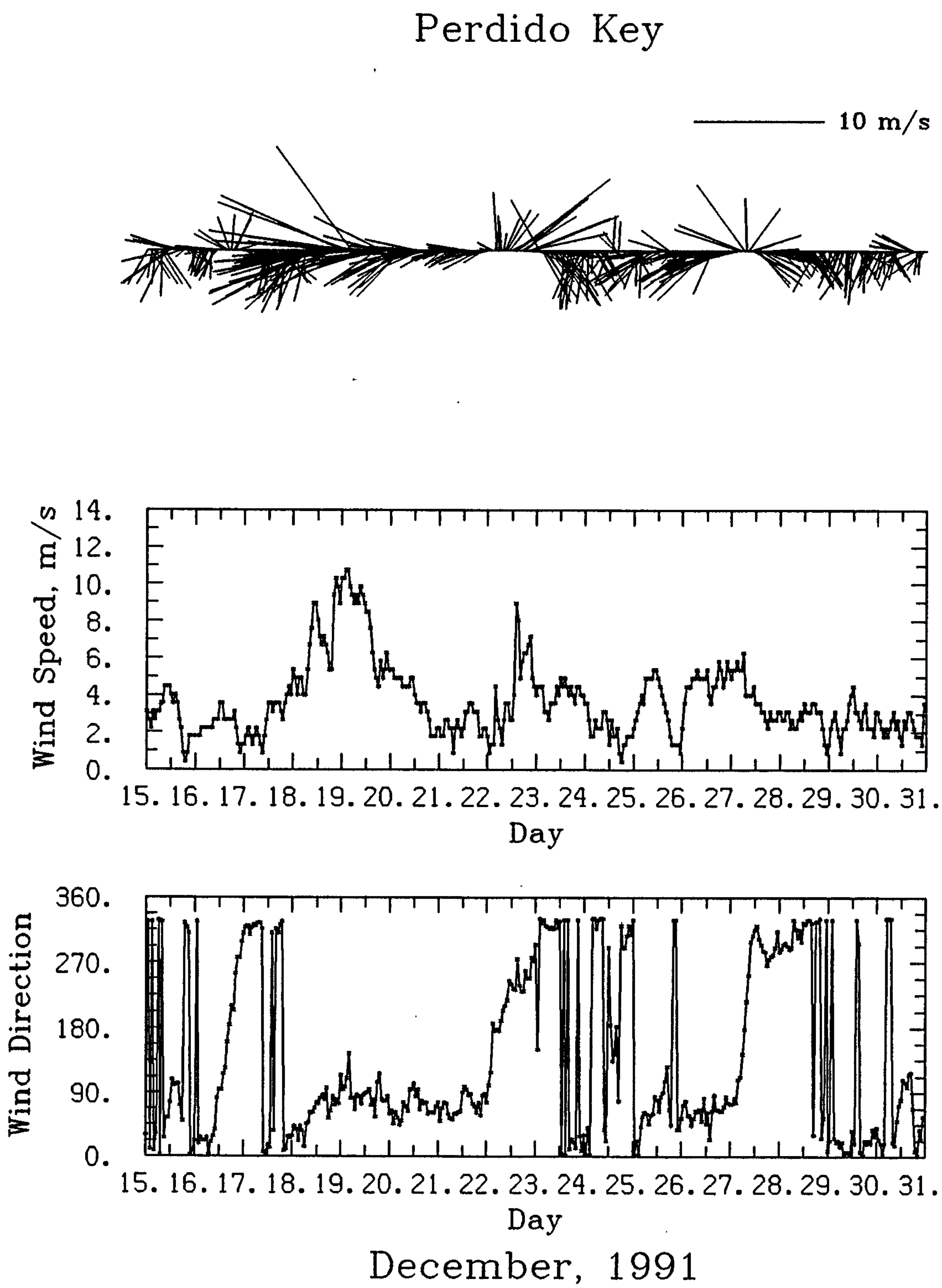
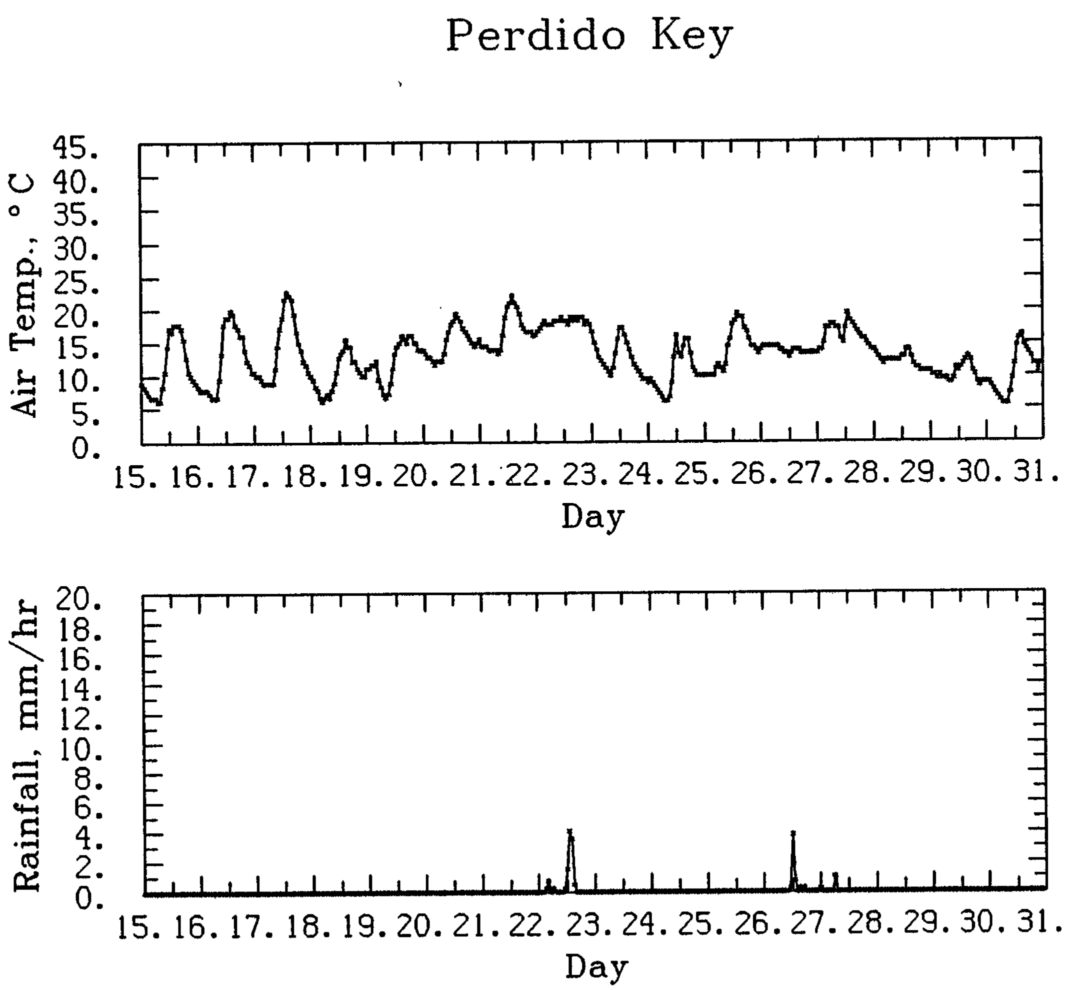


Figure III-51: Wind Speed and Direction, December 16–31, 1991.



December, 1991

Figure III-52: Air Temperature and Rainfall Rate, December 16–31, 1991.

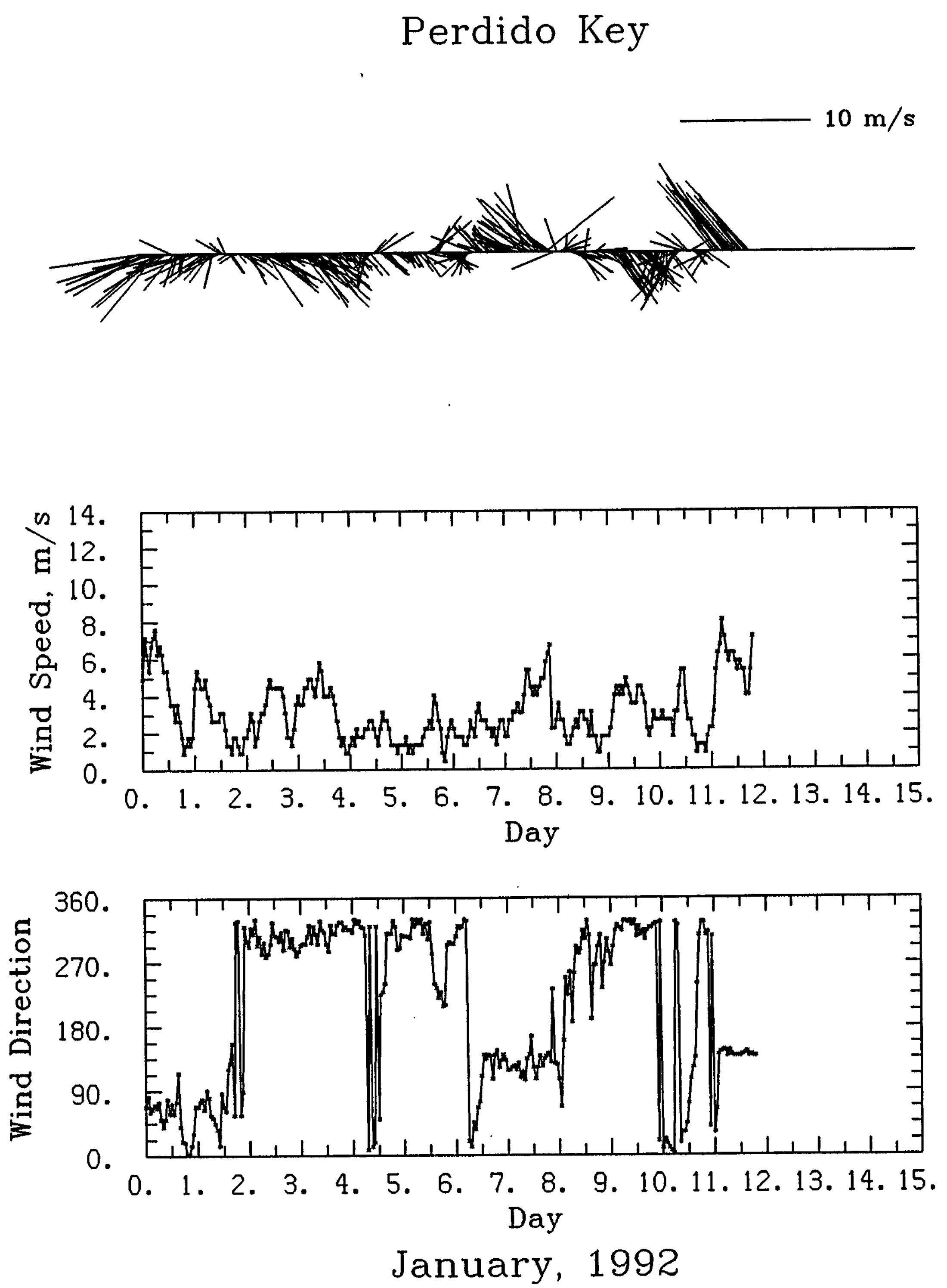
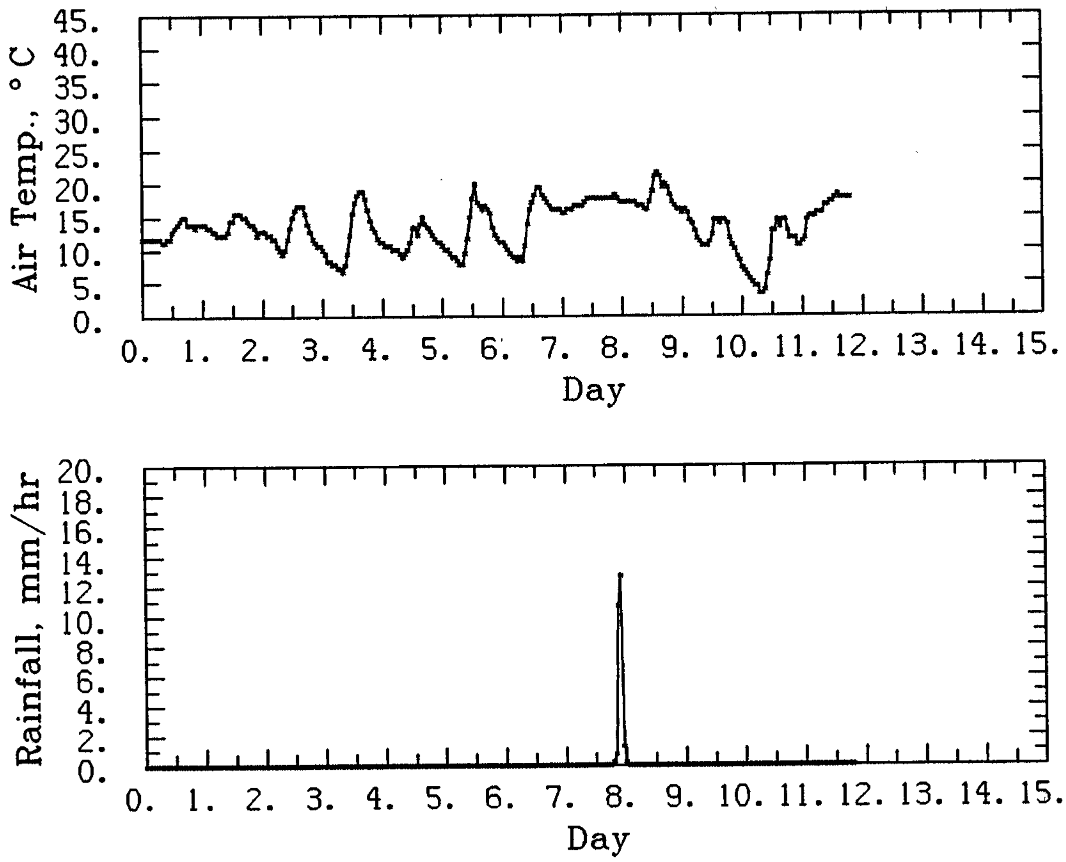


Figure III-53: Wind Speed and Direction, January 1–15, 1992.

Perdido Key



January, 1992

Figure III-54: Air Temperature and Rainfall Rate, January 1–15, 1992.

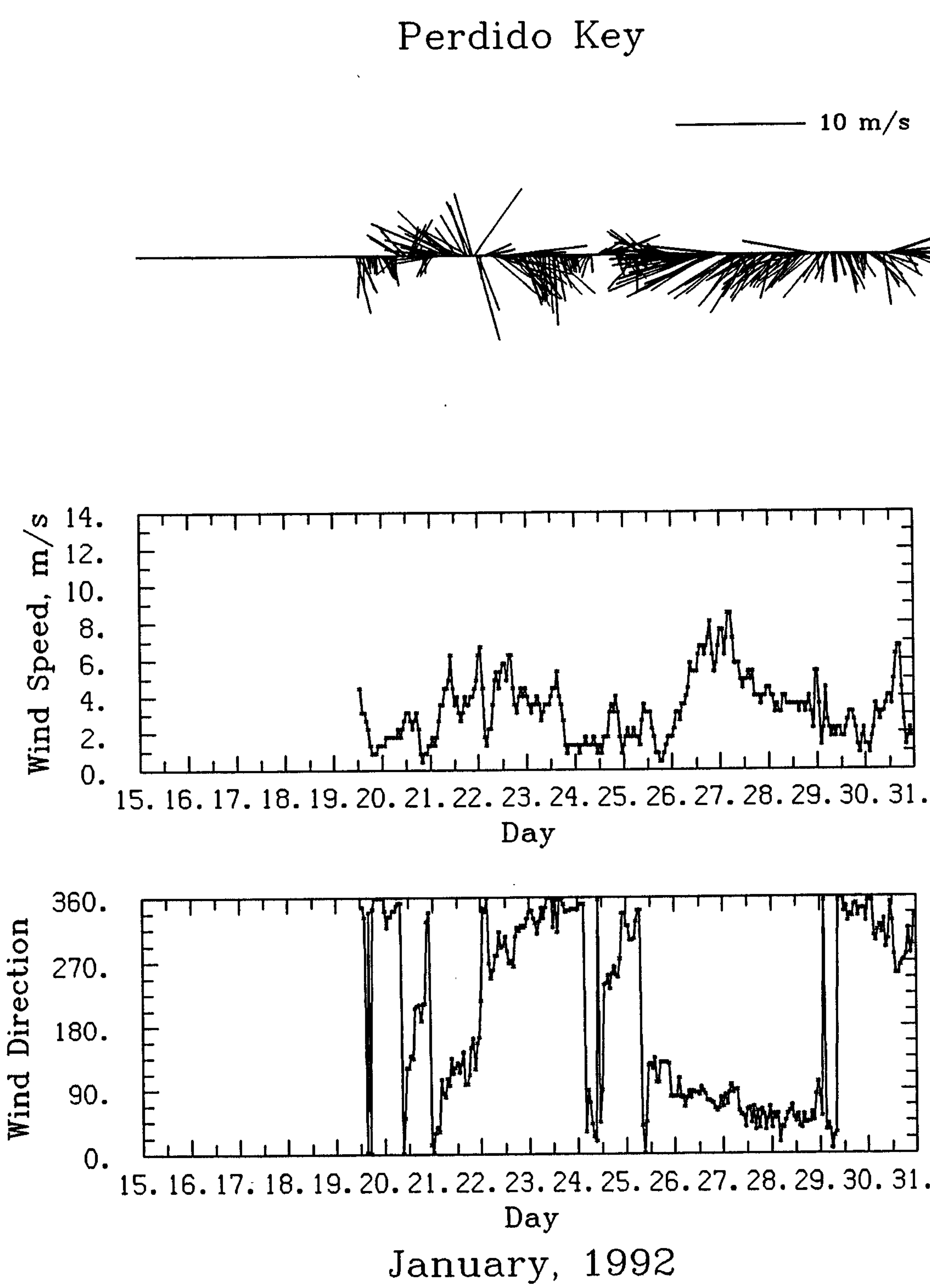
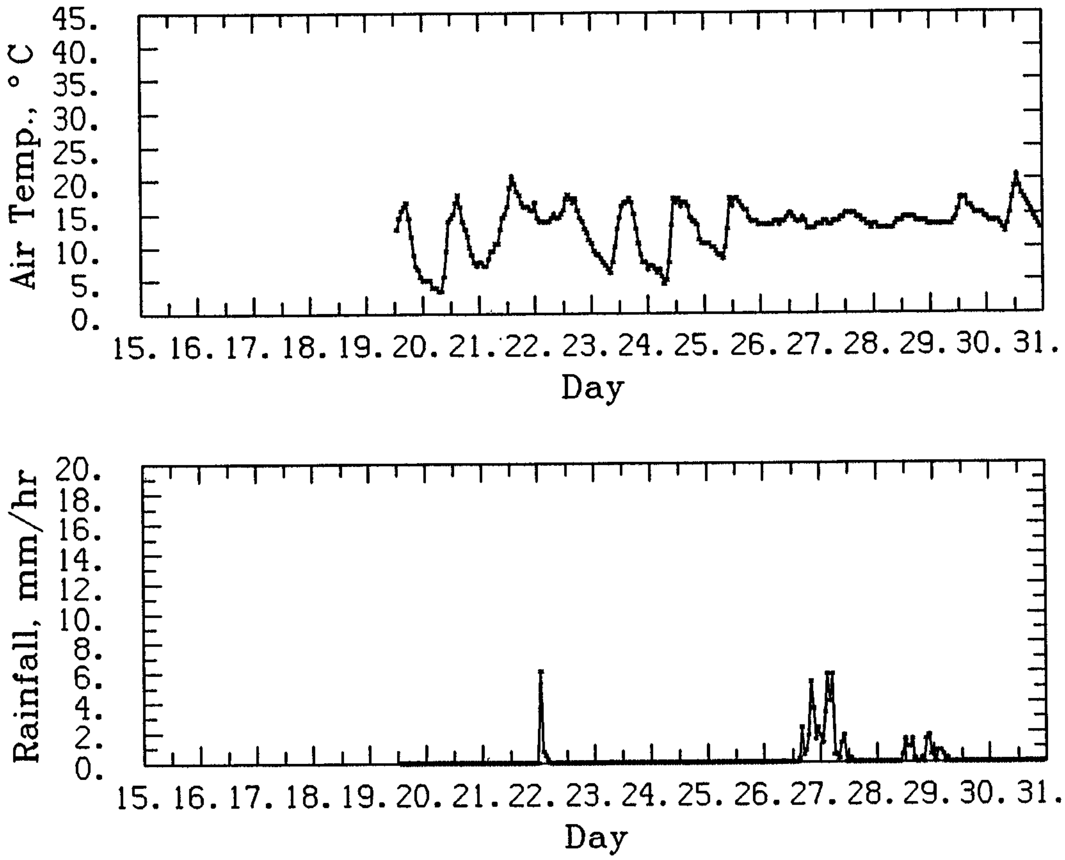


Figure III-55: Wind Speed and Direction, January 16–31, 1992.

Perdido Key



January, 1992

Figure III-56: Air Temperature and Rainfall Rate, January 16–31, 1992.

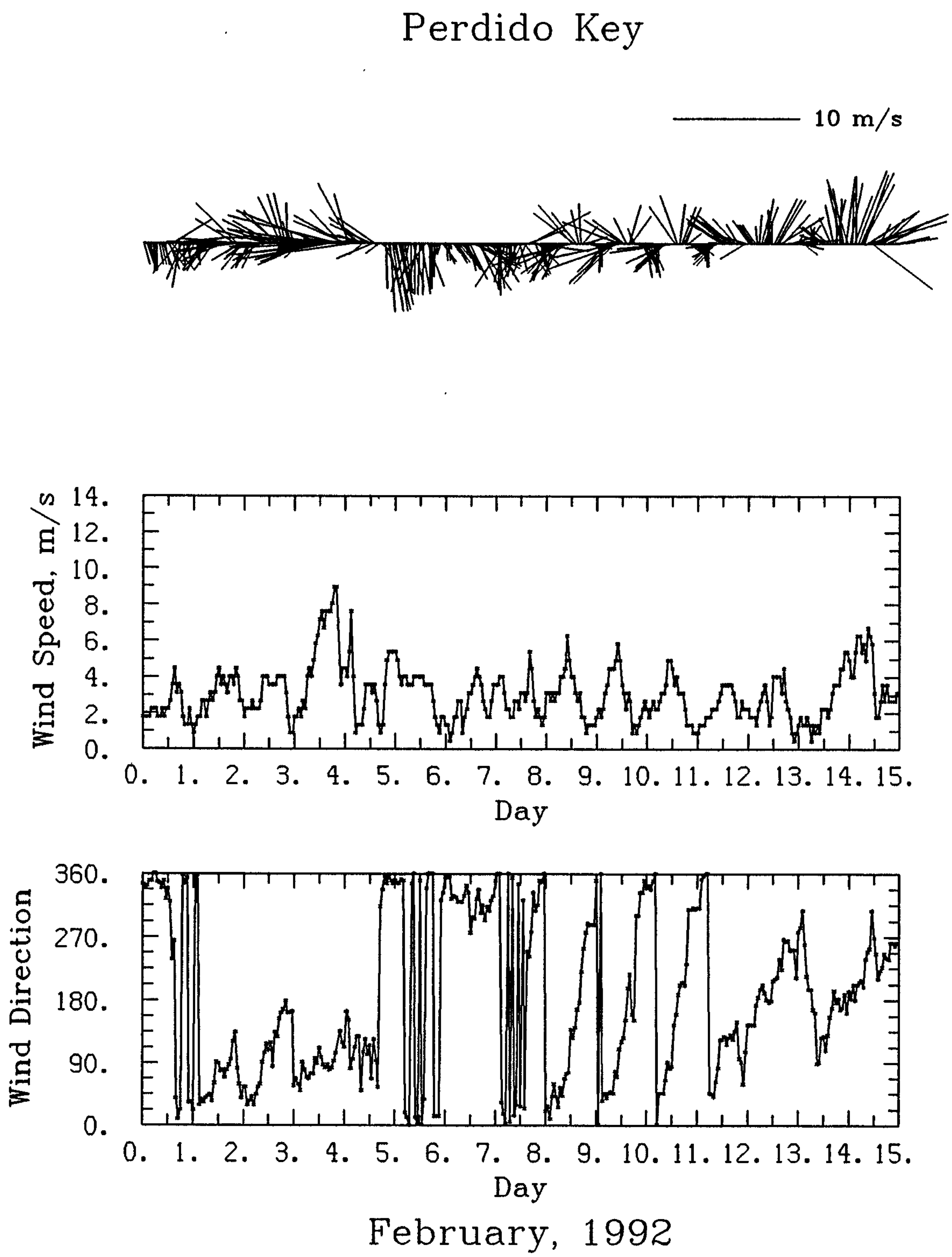


Figure III-57: Wind Speed and Direction, February 1–15, 1992.

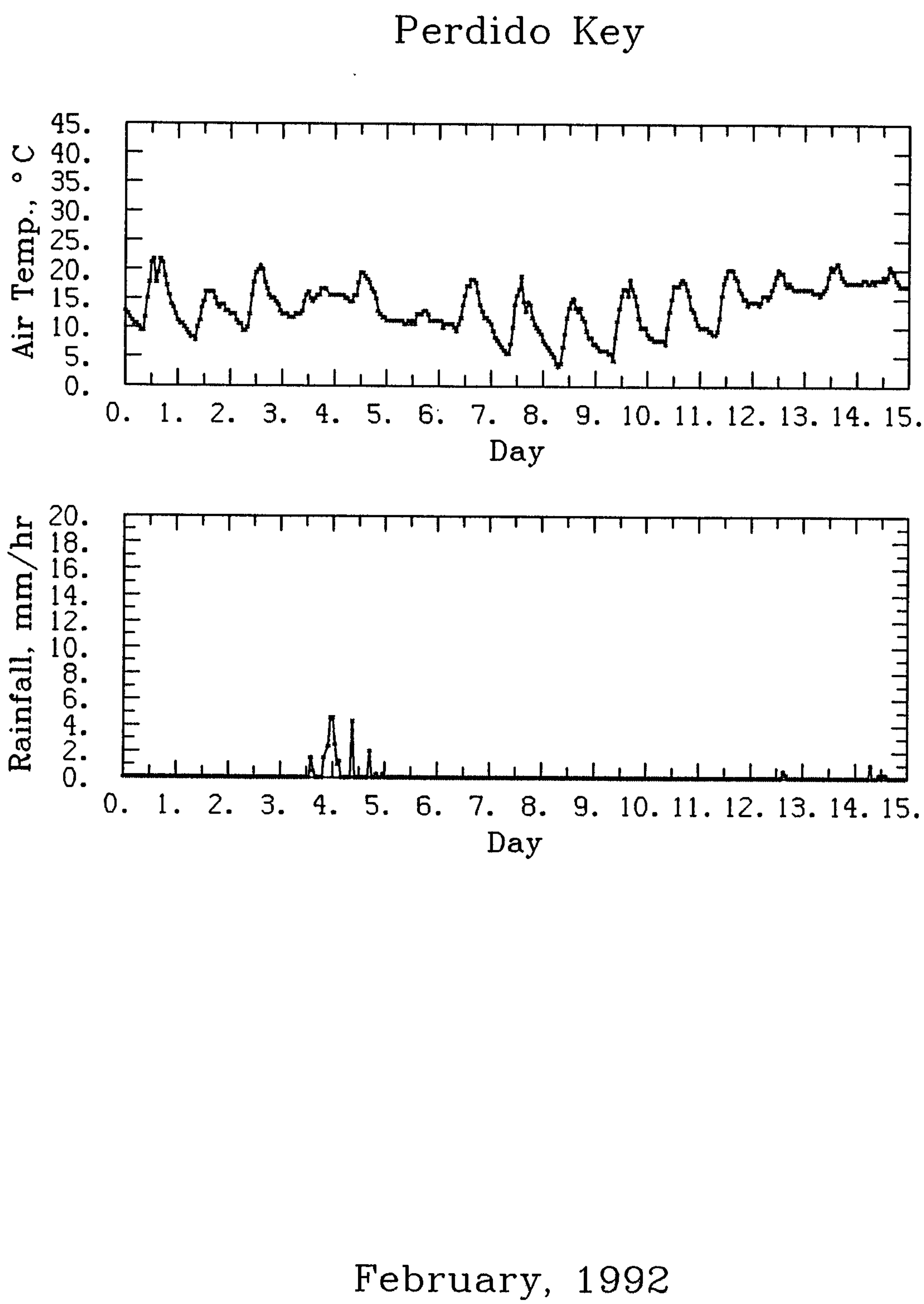


Figure III-58: Air Temperature and Rainfall Rate, February 1–15, 1992.

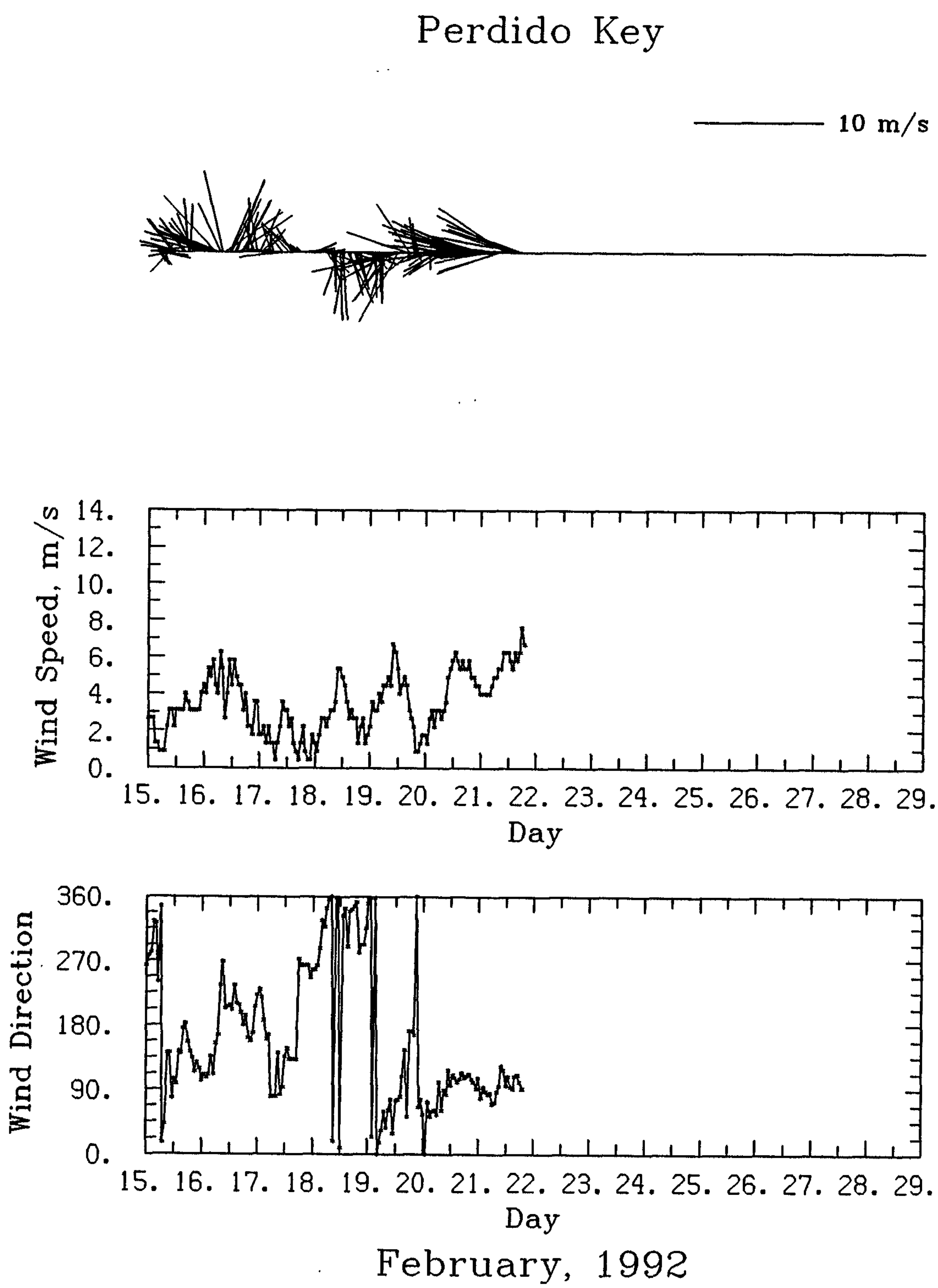


Figure III-59: Wind Speed and Direction, February 16–29, 1992.

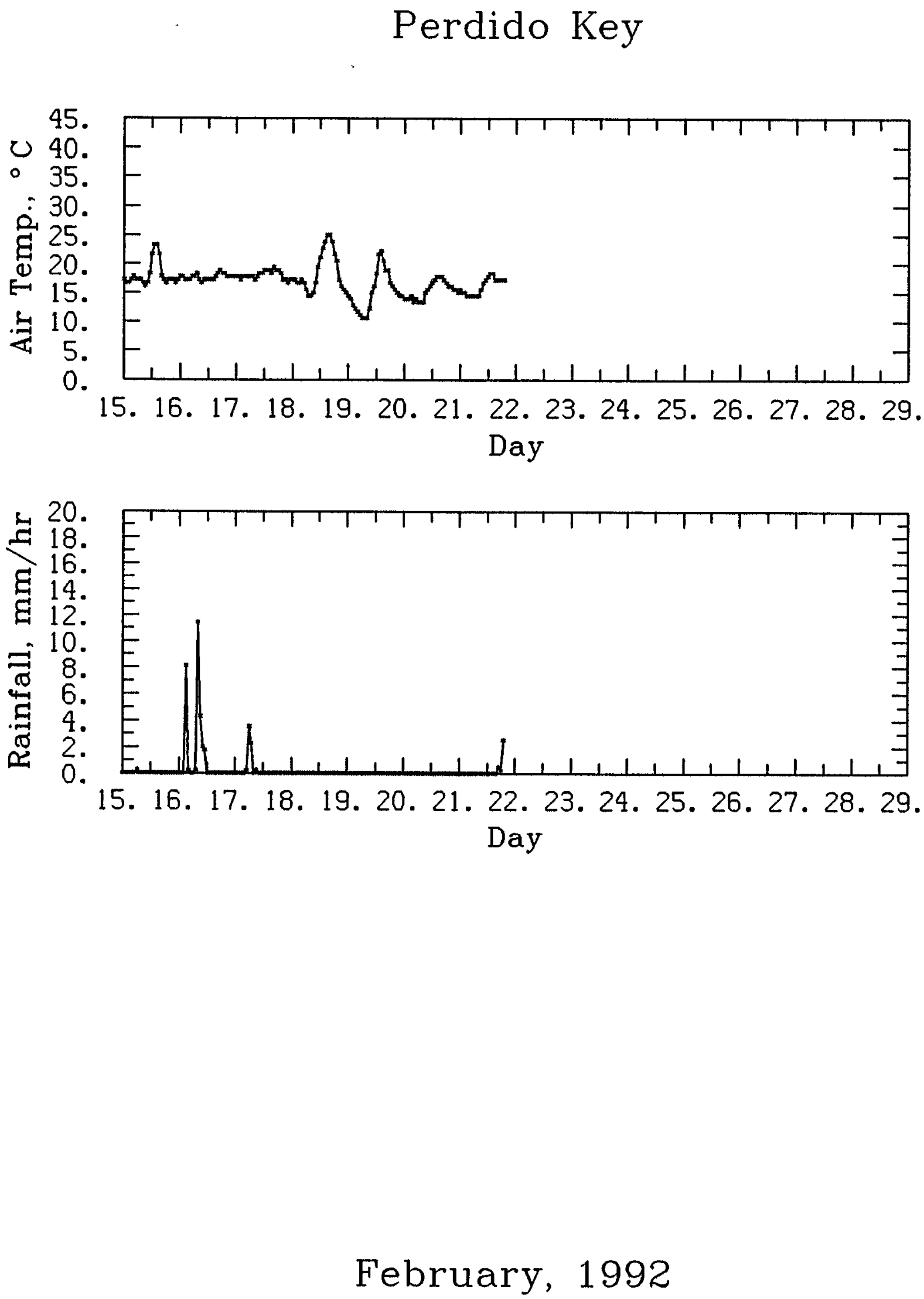


Figure III-60: Air Temperature and Rainfall Rate, February 16–29, 1992.

APPENDIX IV

ADDITIONAL TIDE DATA

From Ft. Pickens Pier, Santa Rosa Island

January — July, 1991

Notes:
1) Time scale is in days; i.e. Day=7 denotes the end of the 7th day of the month.
2) Tidal stage is referenced to National Geodetic Vertical Datum (NGVD).

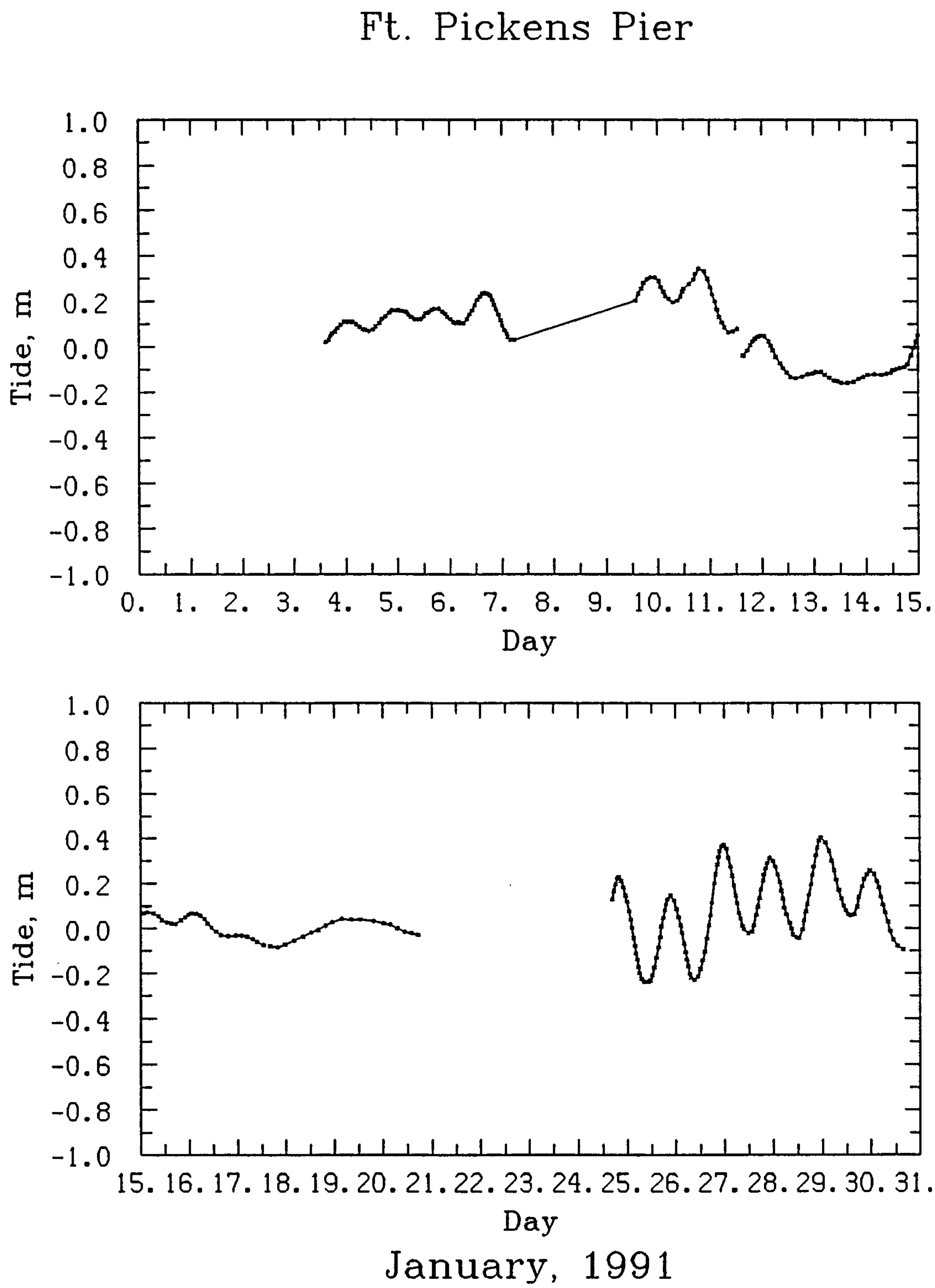


Figure IV-1: Tidal Stage, January, 1991.

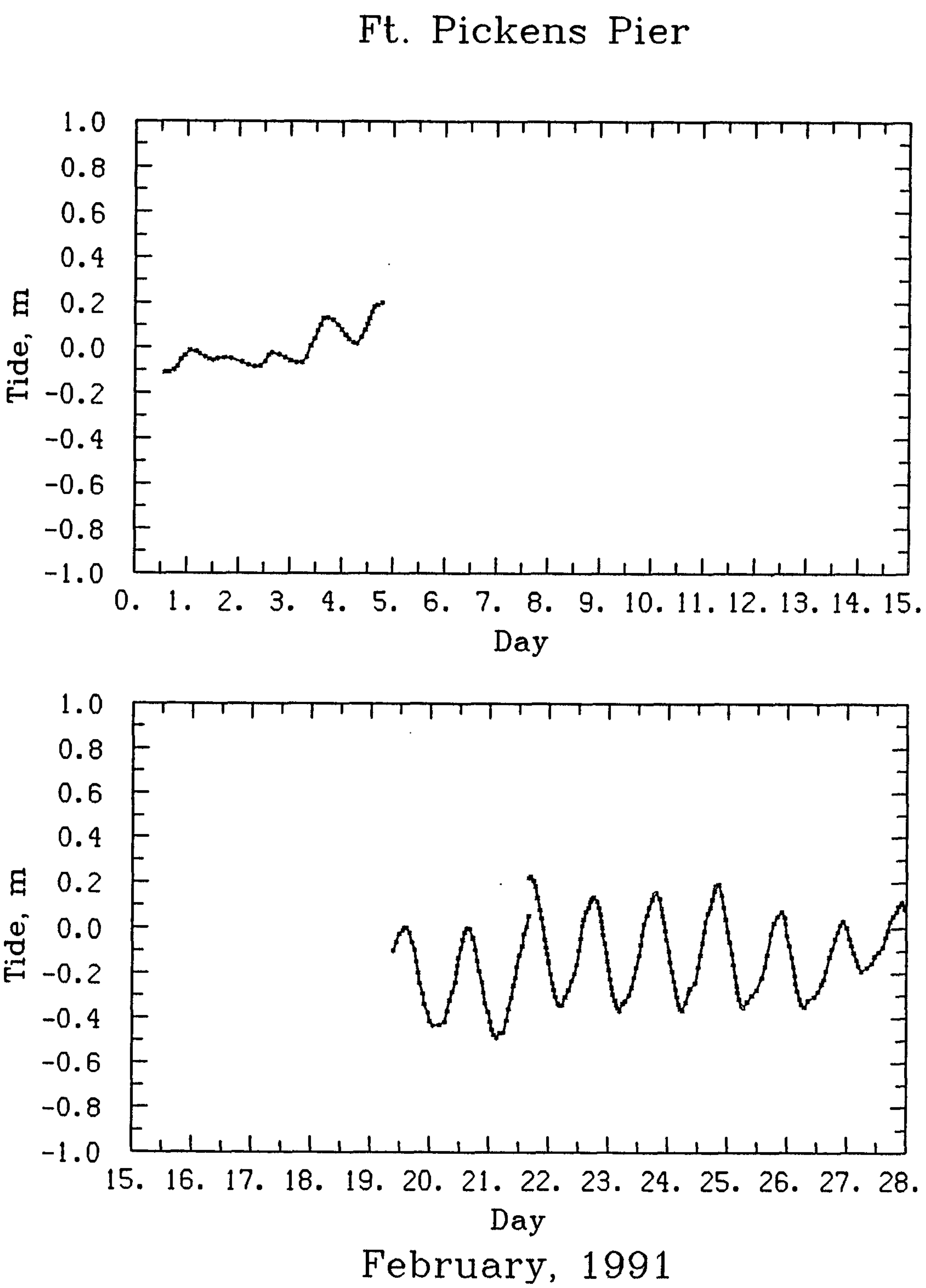


Figure IV-2: Tidal Stage, February, 1991.

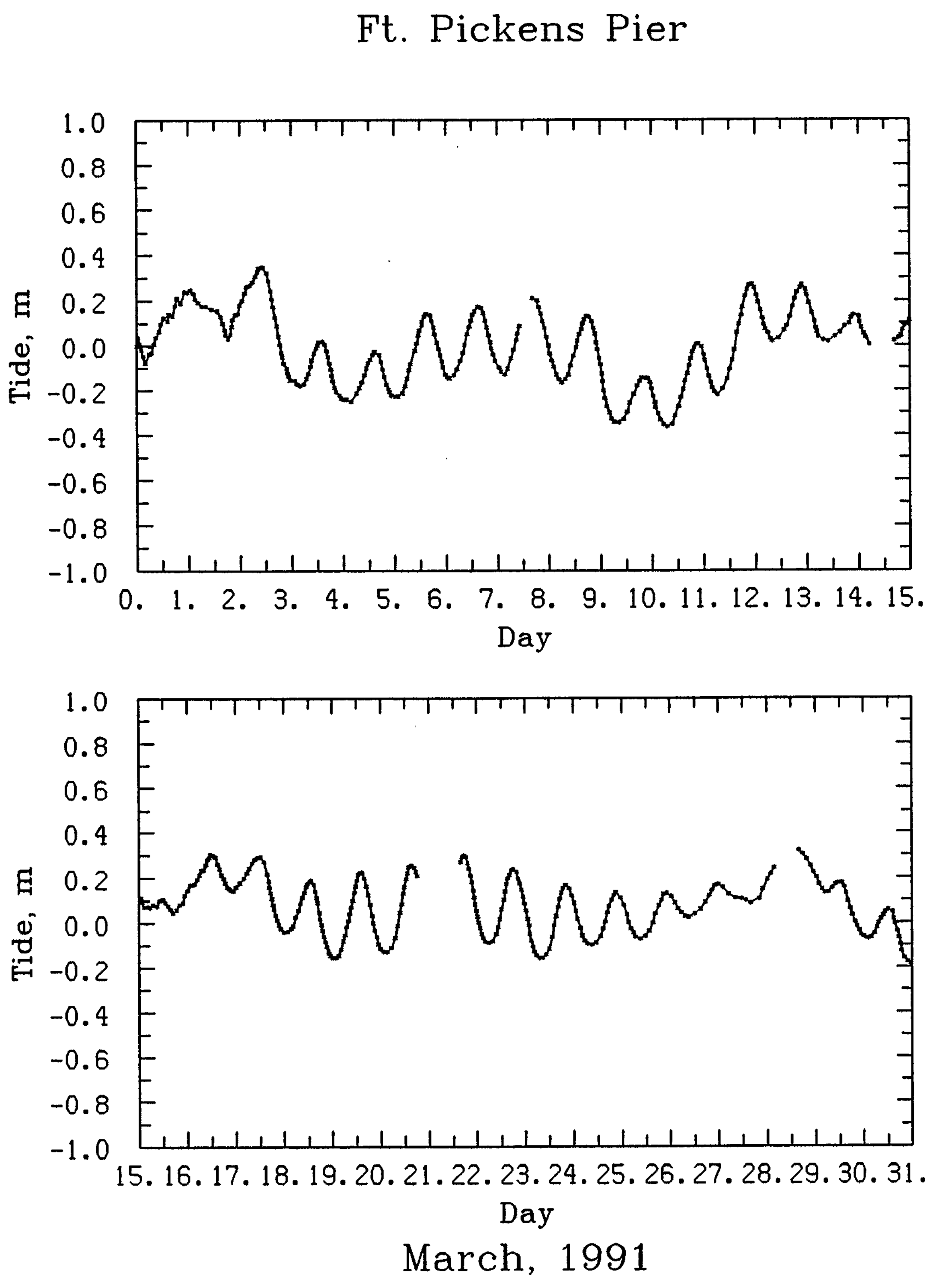


Figure IV-3: Tidal Stage, March, 1991.

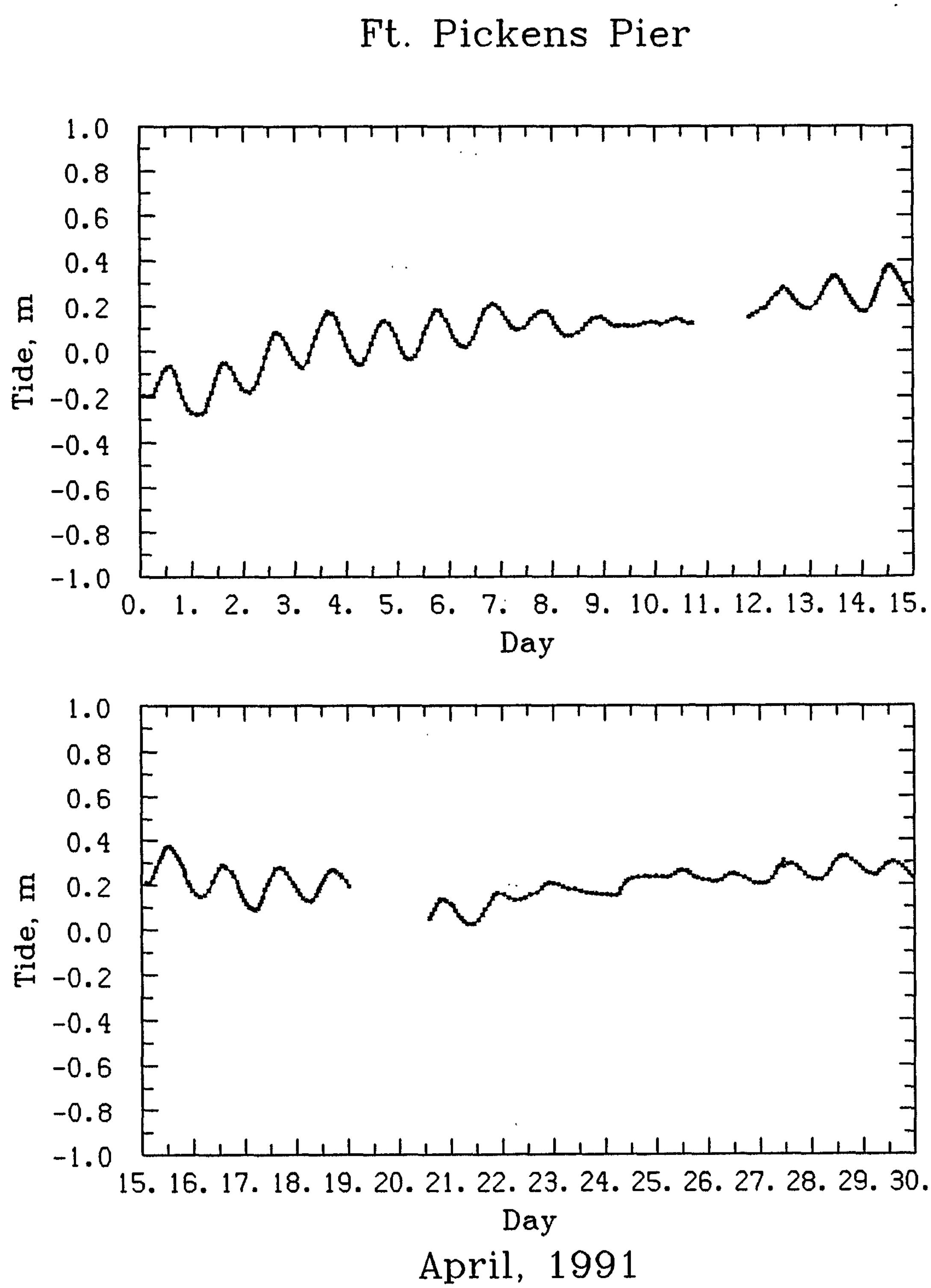


Figure IV-4: Tidal Stage, April, 1991.

APPENDIX V

SEDIMENT GRAIN SIZE DISTRIBUTIONS AND STATISTICS

Notes:
1) All reported numerical values for grain size statistics are based on samples collected 9/91 and 10/91.
2) Filename indicates location and depth of sample; e.g. R251M.GLF denotes R–25, 1 m depth, gulf side, R45BCH.GLF denotes R–45, beachface, gulf side, etc.

Perdido Key: October, 1991, sand samples
Note: The following samples were re-analyzed after wet sieving to remove the fine fraction:
R408M.GLF, R425M.GLF, R488M.GLF, R505M.GLF, R615M.GLF

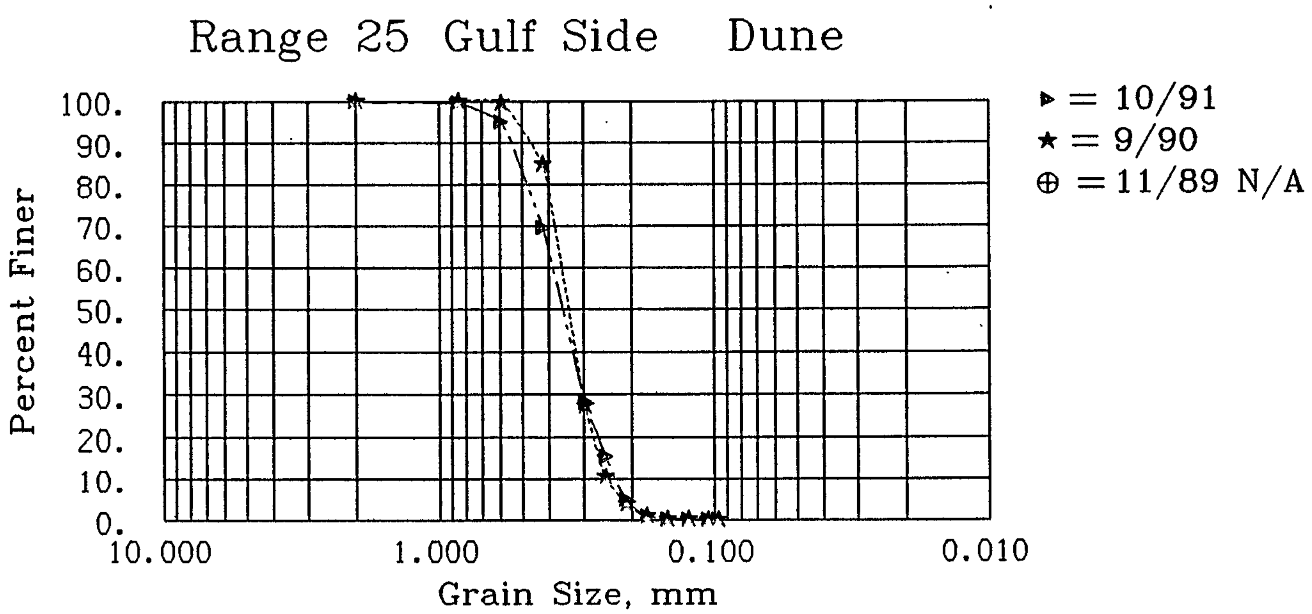
File	Total	D50	Dmean	S.I.	Skew	Kurtosis
R251M.GLF	258.350	0.378	0.395	0.448	-0.145	0.874
R252M.GLF	204.200	0.213	0.218	0.384	-0.087	0.850
R25BCH.GLF	193.226	0.329	0.317	0.347	0.158	0.743
R25BERM.GLF	237.300	0.344	0.336	0.366	0.095	0.897
R25DUNE.GLF	246.330	0.356	0.359	0.511	-0.020	0.468
R25MID.GLF	291.800	0.320	0.300	0.384	0.243	0.467
R271M.GLF	238.950	0.310	0.300	0.469	0.102	0.749
R272M.GLF	252.020	0.292	0.283	0.449	0.105	0.456
R27BCH.GLF	205.630	0.329	0.315	0.337	0.189	0.597
R27BERM.GLF	206.710	0.326	0.314	0.337	0.161	0.624
R27DUNE.GLF	221.570	0.373	0.389	0.378	-0.166	0.780
R27MID.GLF	240.920	0.303	0.289	0.396	0.171	0.448
R301M.GLF	231.500	0.363	0.371	0.487	-0.062	0.705
R302M.GLF	241.150	0.270	0.278	0.447	-0.105	0.550
R305M.GLF	197.470	0.323	0.313	0.457	0.098	0.737
R308M.GLF	292.100	0.448	0.409	0.779	0.166	0.772
R30BCH.GLF	245.190	0.319	0.305	0.346	0.194	0.403
R30BERM.GLF	241.930	0.287	0.288	0.380	-0.012	0.450
R30DUNE.GLF	261.400	0.319	0.312	0.445	0.080	0.744
R30MID.GLF	258.800	0.306	0.292	0.405	0.164	0.441
R311M.GLF	253.620	0.347	0.343	0.430	0.040	0.691
R312M.GLF	202.490	0.280	0.286	0.488	-0.064	0.674
R31BCH.GLF	207.293	0.284	0.289	0.363	-0.066	0.445
R31BERM.GLF	272.040	0.325	0.307	0.370	0.228	0.586
R31DUNE.GLF	235.030	0.331	0.318	0.394	0.146	0.807
R31MID.GLF	277.490	0.319	0.302	0.378	0.200	0.507
R321M.GLF	217.940	0.355	0.358	0.496	-0.026	0.698
R322M.GLF	275.790	0.259	0.260	0.424	-0.015	0.470
R325M.GLF	279.200	0.340	0.327	0.524	0.103	0.625
R328M.GLF	236.400	0.380	0.394	0.601	-0.089	1.121
R32BCH.GLF	211.620	0.310	0.300	0.394	0.126	0.593
R32BERM.GLF	283.650	0.322	0.303	0.403	0.213	0.726
R32DUNE.GLF	238.970	0.364	0.372	0.428	-0.070	0.663
R32MID.GLF	261.456	0.350	0.346	0.487	0.034	0.550
R331M.GLF	208.450	0.370	0.386	0.403	-0.151	0.691
R332M.GLF	322.800	0.308	0.292	0.433	0.178	0.594
R33BCH.GLF	205.710	0.333	0.319	0.328	0.189	0.740
R33BERM.GLF	255.270	0.327	0.306	0.379	0.252	0.643
R33DUNE.GLF	277.040	0.335	0.312	0.402	0.251	0.813
R33MID.GLF	280.820	0.385	0.402	0.383	-0.164	0.637
R341M.GLF	223.420	0.352	0.352	0.410	-0.001	0.737
R342M.GLF	220.780	0.311	0.296	0.488	0.144	0.674
R345M.GLF	232.460	0.372	0.383	0.577	-0.071	0.793
R348M.GLF	209.120	0.279	0.286	0.439	-0.092	0.670
R34BCH.GLF	195.040	0.309	0.300	0.358	0.116	0.427
R34BERM.GLF	211.780	0.314	0.300	0.378	0.173	0.466
R34DUNE.GLF	263.970	0.317	0.307	0.412	0.113	0.746
R34MID.GLF	269.550	0.318	0.299	0.389	0.234	0.427

File (10/91)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R351M.GLF	241.650	0.307	0.297	0.446	0.112	0.722
R352M.GLF	275.480	0.298	0.294	0.478	0.042	0.724
R35BCH.GLF	191.480	0.332	0.321	0.323	0.152	0.774
R35BERM.GLF	224.900	0.379	0.383	0.481	-0.027	0.579
R35DUNE.GLF	241.510	0.324	0.313	0.344	0.144	0.653
R35MID.GLF	254.950	0.327	0.310	0.343	0.235	0.532
R361M.GLF	229.840	0.314	0.302	0.436	0.130	0.786
R362M.GLF	291.600	0.301	0.293	0.467	0.083	0.710
R365M.GLF	286.650	0.335	0.323	0.560	0.091	0.591
R368M.GLF	216.300	0.345	0.343	0.553	0.016	0.578
R36BCH.GLF	278.866	0.312	0.319	0.316	-0.102	0.818
R36BERM.GLF	250.530	0.349	0.341	0.305	0.111	1.114
R36DUNE.GLF	281.490	0.336	0.323	0.369	0.152	0.886
R36MID.GLF	320.800	0.362	0.375	0.374	-0.137	0.850
R371M.GLF	233.760	0.342	0.335	0.425	0.074	0.760
R372M.GLF	309.100	0.257	0.260	0.486	-0.028	0.436
R37BCH.GLF	204.600	0.345	0.338	0.275	0.109	1.086
R37BERM.GLF	276.920	0.347	0.339	0.354	0.089	0.942
R37DUNE.GLF	252.270	0.338	0.326	0.319	0.160	0.900
R37MID.GLF	206.870	0.333	0.319	0.331	0.200	0.723
R382M.GLF	261.000	0.289	0.287	0.494	0.016	0.645
R385M.GLF	258.350	0.330	0.320	0.583	0.074	0.490
R388M.GLF	248.550	0.348	0.336	0.647	0.079	0.603
R38BCH.GLF	258.880	0.360	0.374	0.324	-0.160	0.876
R38BERM.GLF	261.880	0.348	0.348	0.227	0.000	1.494
R38DUNE.GLF	250.760	0.359	0.371	0.382	-0.115	0.762
R38MID.GLF	253.930	0.365	0.381	0.355	-0.178	0.810
R391M.GLF	216.790	0.379	0.399	0.431	-0.169	0.917
R392M.GLF	221.654	0.246	0.260	0.478	-0.165	0.512
R39BCH.GLF	241.050	0.387	0.402	0.364	-0.152	0.508
R39BERM.GLF	247.640	0.376	0.394	0.385	-0.177	0.677
R39DUNE.GLF	310.022	0.371	0.390	0.363	-0.198	0.778
R39MID.GLF	291.010	0.356	0.356	0.229	0.000	1.388
R401M.GLF	228.860	0.348	0.342	0.411	0.067	0.767
R402M.GLF	268.700	0.267	0.271	0.499	-0.050	0.595
R405M.GLF	261.400	0.332	0.324	0.496	0.070	0.639
R408M.GLF	87.665	0.297	0.292	0.476	0.049	0.767
R40BCH.GLF	259.640	0.328	0.314	0.374	0.170	0.774
R40BERM.GLF	253.003	0.447	0.435	0.415	0.100	0.771
R40DUNE.GLF	277.590	0.336	0.316	0.396	0.215	0.918
R40MID.GLF	275.400	0.363	0.373	0.453	-0.089	0.887
R411M.GLF	222.395	0.275	0.286	0.437	-0.127	0.611
R412M.GLF	210.940	0.297	0.285	0.558	0.110	0.660
R41BCH.GLF	267.640	0.360	0.371	0.305	-0.144	1.010
R41BERM.GLF	250.290	0.346	0.336	0.315	0.144	1.088
R41DUNE.GLF	247.150	0.337	0.323	0.362	0.172	0.885
R41MID.GLF	264.800	0.296	0.285	0.469	0.113	0.624
R421M.GLF	268.810	0.278	0.289	0.520	-0.102	0.641
R422M.GLF	230.120	0.306	0.285	0.551	0.192	0.645
R425M.GLF	38.930	0.210	0.279	0.409	-0.991	0.939
R428M.GLF	234.700	0.367	0.397	0.773	-0.148	0.016
R42BCH.GLF	254.910	0.484	0.464	0.351	0.176	0.893

File (10/91)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R42BERM.GLF	271.800	0.346	0.338	0.394	0.082	0.860
R42DUNE.GLF	240.833	0.340	0.329	0.335	0.145	0.988
R42MID.GLF	277.500	0.368	0.379	0.489	-0.088	0.884
R431M.GLF	219.547	0.233	0.256	0.461	-0.285	0.640
R432M.GLF	233.700	0.294	0.283	0.582	0.101	0.618
R435M.GLF	266.200	0.266	0.271	0.565	-0.052	0.723
R438M.GLF	262.500	0.341	0.340	0.476	0.011	0.889
R43BCH.GLF	237.780	0.462	0.442	0.402	0.161	0.759
R43BERM.GLF	222.000	0.338	0.330	0.558	0.065	0.588
R43DUNE.GLF	251.150	0.338	0.324	0.426	0.140	0.787
R43MID.GLF	259.350	0.320	0.302	0.392	0.212	0.668
R441M.GLF	227.920	0.277	0.284	0.428	-0.087	0.581
R442M.GLF	226.200	0.266	0.273	0.487	-0.075	0.612
R445M.GLF	301.900	0.330	0.323	0.576	0.058	1.133
R448M.GLF	287.200	0.375	0.388	0.498	-0.094	1.208
R44BCH.GLF	204.480	0.369	0.386	0.357	-0.179	0.690
R44BERM.GLF	202.770	0.397	0.409	0.395	-0.107	0.557
R44DUNE.GLF	249.960	0.346	0.338	0.530	0.063	0.554
R44MID.GLF	293.400	0.355	0.359	0.594	-0.025	0.767
R451M.GLF	222.280	0.318	0.307	0.399	0.125	0.750
R452M.GLF	265.400	0.296	0.286	0.509	0.104	0.677
R455M.GLF	261.660	0.267	0.273	0.497	-0.065	0.677
R458M.GLF	211.650	0.218	0.231	0.612	-0.137	0.543
R45BCH.GLF	275.030	0.417	0.417	0.391	-0.003	0.521
R45BERM.GLF	269.740	0.325	0.305	0.391	0.235	0.686
R45DUNE.GLF	226.280	0.336	0.331	0.475	0.048	0.704
R45MID.GLF	272.200	0.355	0.355	0.530	-0.002	0.685
R461M.GLF	218.677	0.294	0.290	0.392	0.055	0.429
R462M.GLF	244.550	0.304	0.299	0.530	0.051	0.630
R465M.GLF	268.650	0.244	0.257	0.537	-0.146	0.715
R468M.GLF	160.900	0.266	0.273	0.565	-0.068	0.766
R46BCH.GLF	227.870	0.426	0.416	0.399	0.080	0.546
R46BERM.GLF	261.040	0.371	0.388	0.375	-0.177	0.766
R46DUNE.GLF	265.850	0.345	0.347	0.574	-0.018	0.693
R46MID.GLF	262.300	0.316	0.312	0.577	0.031	0.630
R481M.GLF	248.430	0.320	0.305	0.413	0.162	0.741
R482M.GLF	267.570	0.269	0.274	0.467	-0.064	0.413
R485M.GLF	220.950	0.288	0.283	0.521	0.051	0.716
R488M.GLF	47.600	0.294	0.277	0.518	0.168	0.666
R48BCH.GLF	210.400	0.407	0.415	0.404	-0.076	0.684
R48BERM.GLF	327.330	0.375	0.393	0.369	-0.181	0.719
R48DUNE.GLF	240.390	0.348	0.341	0.344	0.093	0.965
R48MID.GLF	282.300	0.353	0.353	0.533	0.000	0.724
R501M.GLF	247.720	0.358	0.363	0.406	-0.049	0.745
R502M.GLF	237.650	0.311	0.305	0.569	0.043	0.507
R505M.GLF	53.130	0.282	0.266	0.615	0.133	0.477
R508M.GLF	342.800	0.315	0.294	0.495	0.192	0.745
R50BCH.GLF	268.830	0.361	0.373	0.317	-0.156	0.885
R50BERM.GLF	275.680	0.396	0.404	0.381	-0.077	0.598
R50DUNE.GLF	247.650	0.344	0.335	0.470	0.084	0.628
R50MID.GLF	296.200	0.317	0.307	0.502	0.087	0.660
R521M.GLF	216.340	0.365	0.381	0.336	-0.188	0.869

File (10/91)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R522M.GLF	248.790	0.327	0.314	0.549	0.106	0.531
R525M.GLF	264.700	0.326	0.314	0.566	0.095	0.774
R528M.GLF	189.900	0.308	0.291	0.579	0.147	0.660
R52BCH.GLF	269.940	0.481	0.461	0.326	0.189	0.878
R52BERM.GLF	286.100	0.315	0.299	0.434	0.168	0.771
R52DUNE.GLF	266.200	0.329	0.311	0.417	0.192	0.805
R52MID.GLF	227.150	0.378	0.366	0.615	0.078	0.940
R541M.GLF	254.690	0.369	0.387	0.355	-0.186	0.721
R542M.GLF	255.250	0.328	0.315	0.621	0.090	0.542
R545M.GLF	242.000	0.312	0.292	0.513	0.187	0.746
R548M.GLF	234.400	0.252	0.257	0.523	-0.060	0.480
R54BCH.GLF	262.040	0.363	0.379	0.343	-0.181	0.870
R54BERM.GLF	246.380	0.350	0.349	0.401	0.011	0.803
R54DUNE.GLF	264.180	0.331	0.318	0.346	0.168	0.835
R54MID.GLF	202.100	0.329	0.310	0.469	0.188	0.802
R561M.GLF	290.263	0.441	0.421	0.420	0.156	0.779
R562M.GLF	269.160	0.308	0.303	0.418	0.046	0.748
R565M.GLF	214.460	0.278	0.278	0.505	0.003	0.648
R568M.GLF	206.750	0.355	0.348	0.622	0.046	0.626
R56BCH.GLF	255.560	0.363	0.378	0.346	-0.177	0.777
R56BERM.GLF	218.950	0.476	0.464	0.472	0.078	0.711
R56DUNE.GLF	254.900	0.381	0.390	0.500	-0.062	0.814
R56MID.GLF	277.750	0.370	0.366	0.577	0.026	0.761
R581M.GLF	285.880	0.374	0.390	0.444	-0.133	0.693
R582M.GLF	237.110	0.327	0.338	0.581	-0.081	0.667
R585M.GLF	215.600	0.332	0.324	0.593	0.064	0.559
R588M.GLF	212.050	0.226	0.238	0.574	-0.134	0.747
R58BCH.GLF	202.825	0.329	0.318	0.369	0.136	0.767
R58BERM.GLF	276.460	0.399	0.410	0.381	-0.105	0.494
R58DUNE.GLF	207.400	0.441	0.429	0.466	0.089	0.850
R58MID.GLF	254.900	0.369	0.372	0.529	-0.022	0.740
R601M.GLF	291.000	0.360	0.369	0.454	-0.076	0.736
R602M.GLF	263.380	0.275	0.284	0.458	-0.097	0.627
R605M.GLF	268.880	0.281	0.270	0.605	0.094	0.561
R608M.GLF	269.100	0.223	0.237	0.520	-0.160	0.514
R60BCH.GLF	272.550	0.347	0.340	0.370	0.078	0.843
R60BERM.GLF	237.900	0.443	0.429	0.399	0.119	0.694
R60DUNE.GLF	275.400	0.398	0.408	0.435	-0.083	0.902
R60MID.GLF	256.300	0.356	0.353	0.569	0.020	0.735
R611M.GLF	269.370	0.386	0.402	0.464	-0.126	0.896
R612M.GLF	232.110	0.264	0.274	0.474	-0.116	0.499
R615M.GLF	53.100	0.252	0.256	0.614	-0.036	0.578
R618M.GLF	271.930	0.241	0.253	0.579	-0.120	0.501
R61BCH.GLF	268.208	0.503	0.502	0.448	0.002	0.623
R61BERM.GLF	242.950	0.362	0.369	0.442	-0.065	0.620
R61DUNE.GLF	260.530	0.343	0.334	0.383	0.095	0.822
R61MID.GLF	274.900	0.330	0.312	0.415	0.197	0.882
R621M.GLF	242.660	0.404	0.413	0.527	-0.062	0.830
R622M.GLF	262.700	0.297	0.287	0.515	0.090	0.618
R625M.GLF	249.410	0.235	0.256	0.548	-0.217	0.571
R628M.GLF	219.800	0.211	0.235	0.510	-0.298	0.477
R62BCH.GLF	234.934	0.350	0.351	0.447	-0.015	0.613

File (10/91)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R62BERM.GLF	259.310	0.385	0.399	0.412	-0.126	0.635
R62DUNE.GLF	255.900	0.310	0.295	0.459	0.163	0.656
R62MID.GLF	251.450	0.364	0.372	0.470	-0.067	0.709
R631M.GLF	259.160	0.367	0.376	0.530	-0.073	0.733
R632M.GLF	253.210	0.271	0.275	0.487	-0.047	0.569
R635M.GLF	211.130	0.257	0.271	0.493	-0.157	0.587
R638M.GLF	260.050	0.253	0.264	0.492	-0.129	0.526
R63BCH.GLF	218.930	0.300	0.294	0.428	0.075	0.638
R63BERM.GLF	277.470	0.328	0.312	0.404	0.178	0.954
R63DUNE.GLF	239.910	0.345	0.339	0.452	0.060	0.708
R63MID.GLF	232.900	0.333	0.329	0.538	0.030	0.569
R641M.GLF	239.440	0.277	0.279	0.478	-0.024	0.583
R642M.GLF	203.850	0.249	0.270	0.520	-0.223	0.684
R645M.GLF	292.400	0.263	0.269	0.512	-0.061	0.582
R648M.GLF	215.000	0.251	0.265	0.496	-0.151	0.558
R64BCH.GLF	211.100	0.303	0.295	0.423	0.096	0.624
R64BERM.GLF	173.990	0.317	0.303	0.395	0.169	0.710
R64DUNE.GLF	243.040	0.335	0.331	0.483	0.038	0.668
R64MID.GLF	259.490	0.393	0.403	0.406	-0.089	0.678
R651M.GLF	216.130	0.272	0.275	0.506	-0.030	0.615
R652M.GLF	226.260	0.234	0.245	0.419	-0.157	0.609
R655M.GLF	202.840	0.354	0.356	0.308	-0.026	1.143
R658M.GLF	311.000	0.316	0.288	0.530	0.260	0.692
R65BCH.GLF	223.615	0.258	0.265	0.408	-0.097	0.432
R65BERM.GLF	277.810	0.317	0.302	0.366	0.190	0.477
R65DUNE.GLF	236.950	0.246	0.255	0.413	-0.133	0.522
R65MID.GLF	213.710	0.279	0.279	0.415	-0.001	0.421
R661M.GLF	210.720	0.342	0.338	0.497	0.039	0.573
R662M.GLF	270.910	0.259	0.265	0.462	-0.070	0.414
R665M.GLF	261.050	0.311	0.321	0.556	-0.081	0.709
R668M.GLF	274.580	0.386	0.399	0.413	-0.114	0.754
R66BCH.GLF	239.020	0.338	0.330	0.420	0.086	0.704
R66BERM.GLF	231.380	0.407	0.412	0.437	-0.040	0.839
R66DUNE.GLF	270.670	0.311	0.293	0.411	0.213	0.437
R66MID.GLF	268.160	0.252	0.262	0.431	-0.125	0.426
R671M.GLF	247.230	0.340	0.336	0.482	0.029	0.606
R672M.GLF	236.280	0.325	0.313	0.419	0.131	0.747
R675M.GLF	257.070	0.368	0.386	0.401	-0.168	0.713
R678M.GLF	187.239	0.372	0.392	0.378	-0.205	0.721
R67BCH.GLF	352.220	0.357	0.361	0.401	-0.042	0.742
R67BERM.GLF	203.120	0.447	0.433	0.442	0.105	0.853
R67DUNE.GLF	226.320	0.310	0.300	0.406	0.107	0.675
R67MID.GLF	229.210	0.305	0.292	0.406	0.153	0.420



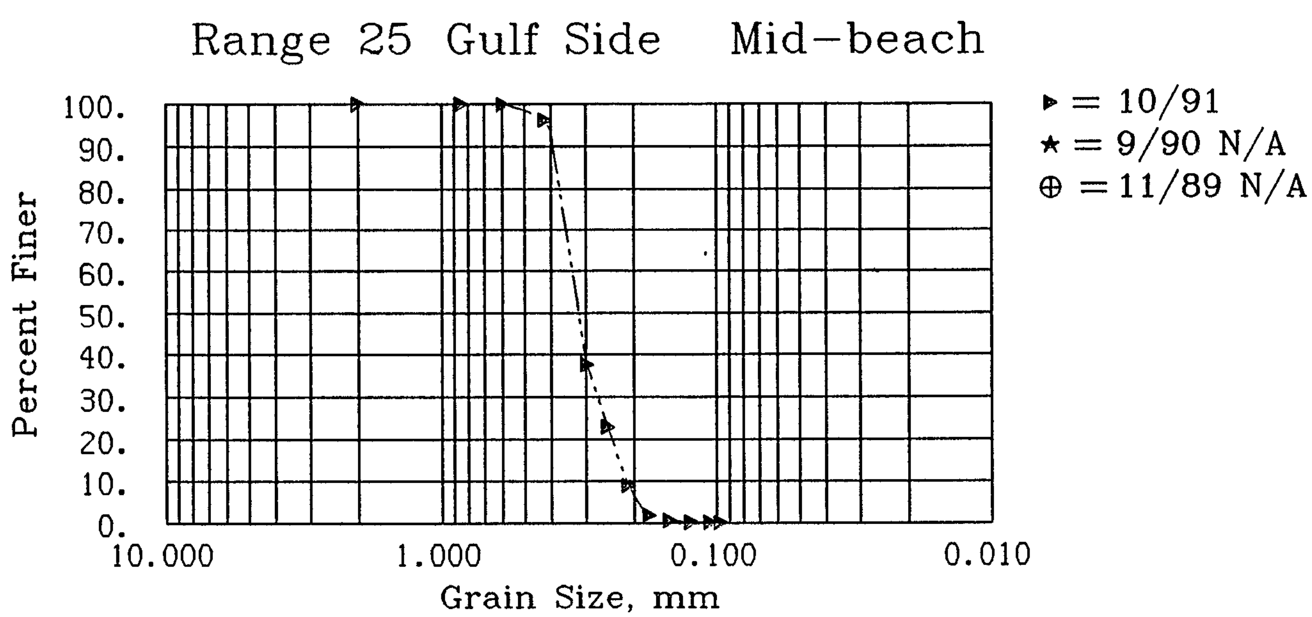
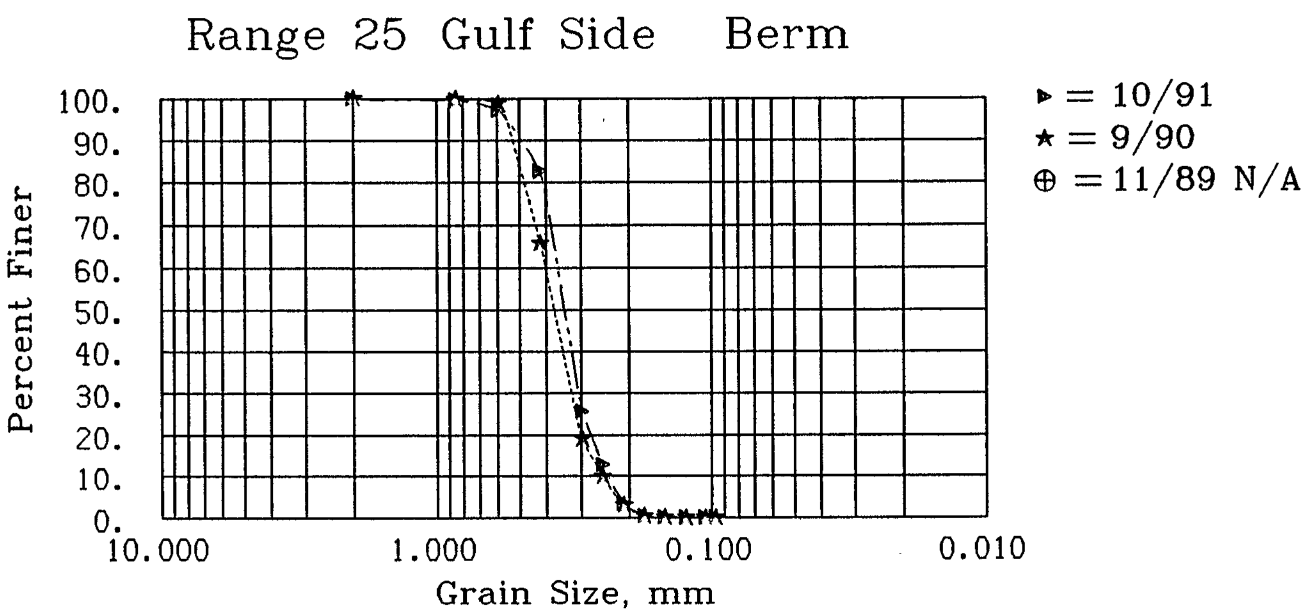


Figure V-1: Grain Size Distributions for Range 25, Dune and Mid-Beach Positions.



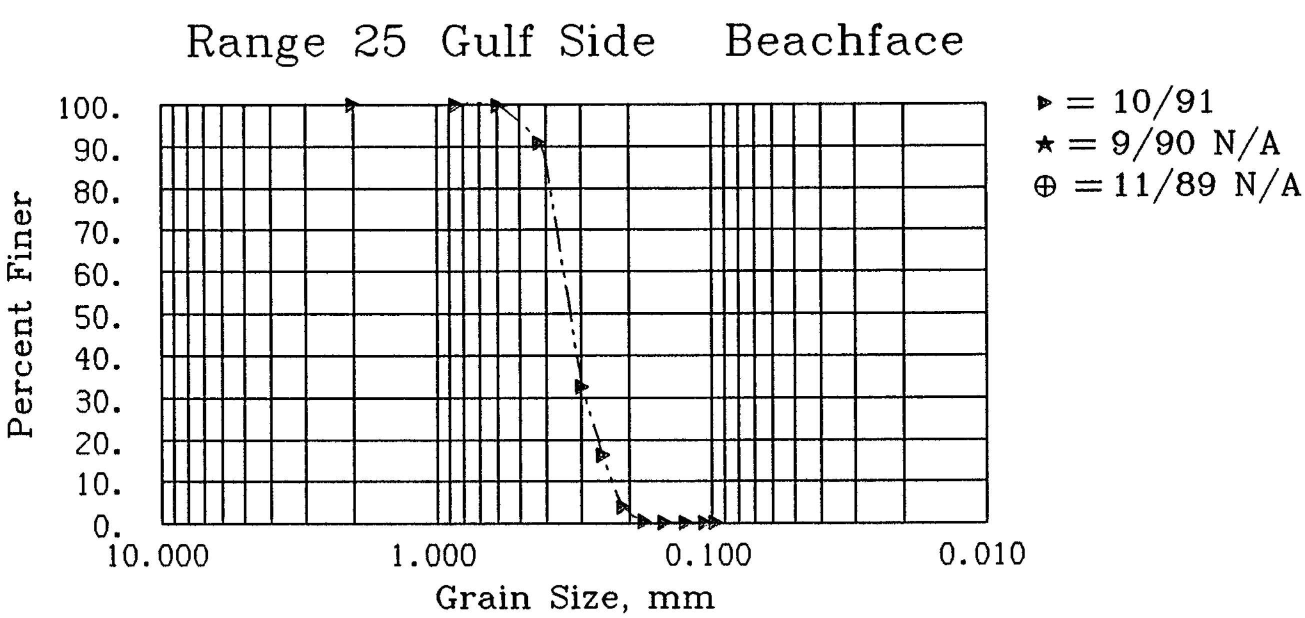
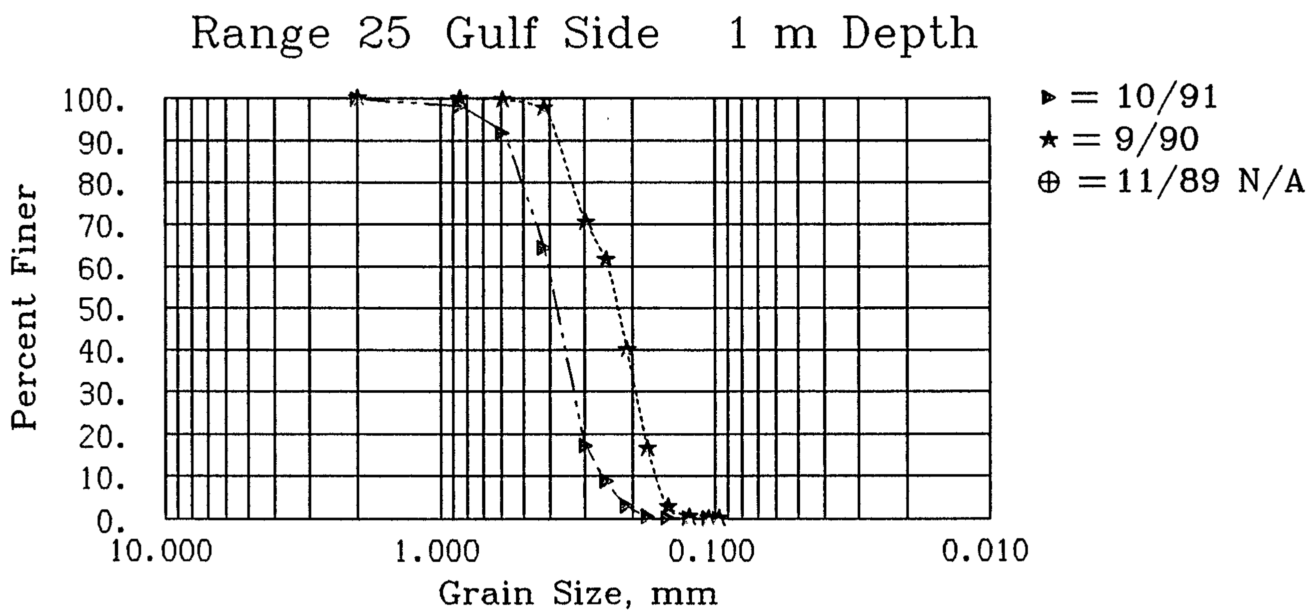


Figure V-2: Grain Size Distributions for Range 25, Berm and Beachface Positions.



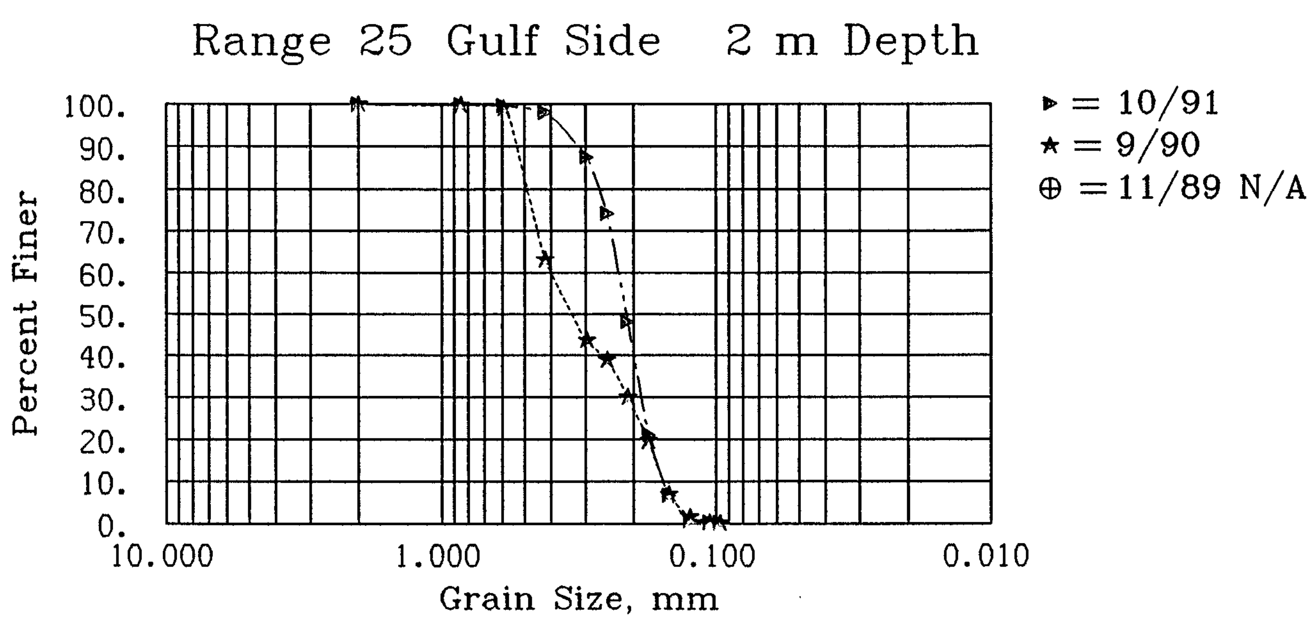
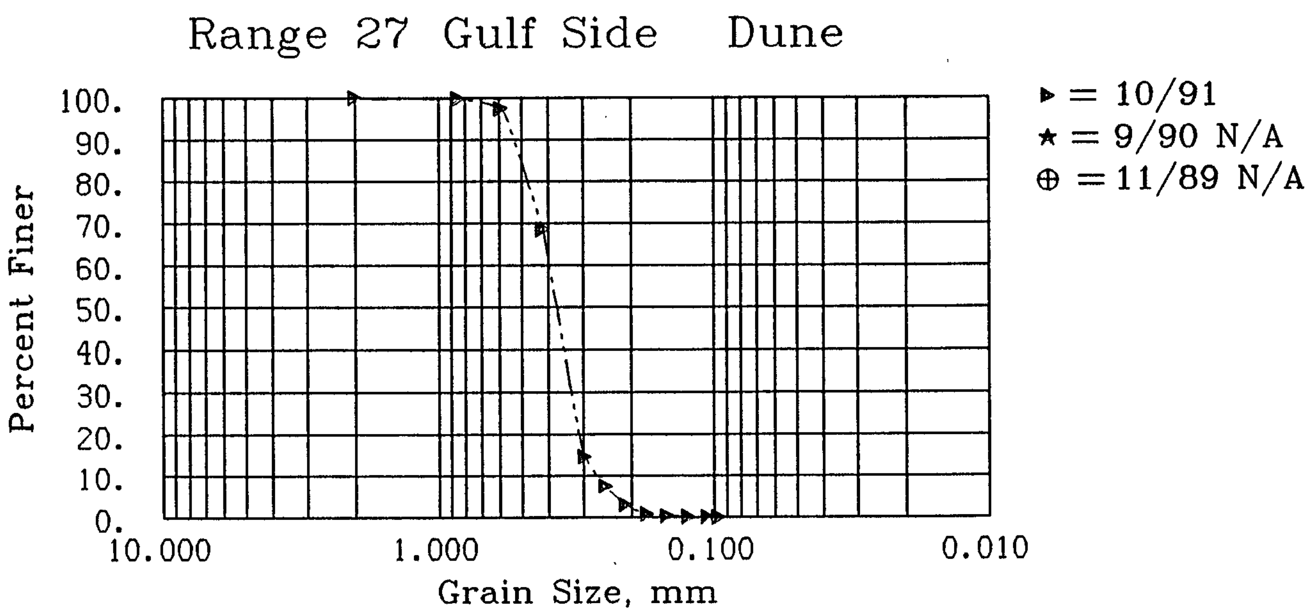


Figure V-3: Grain Size Distributions for Range 25, 1 m Depth and 2 m Depth Positions.



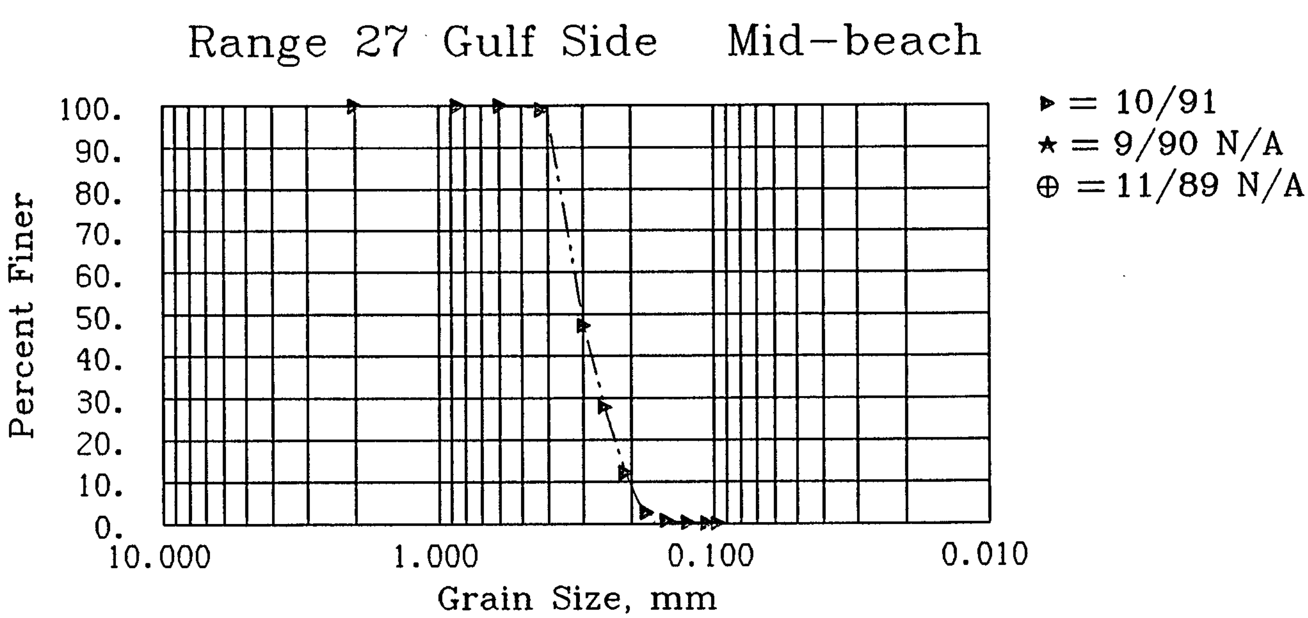
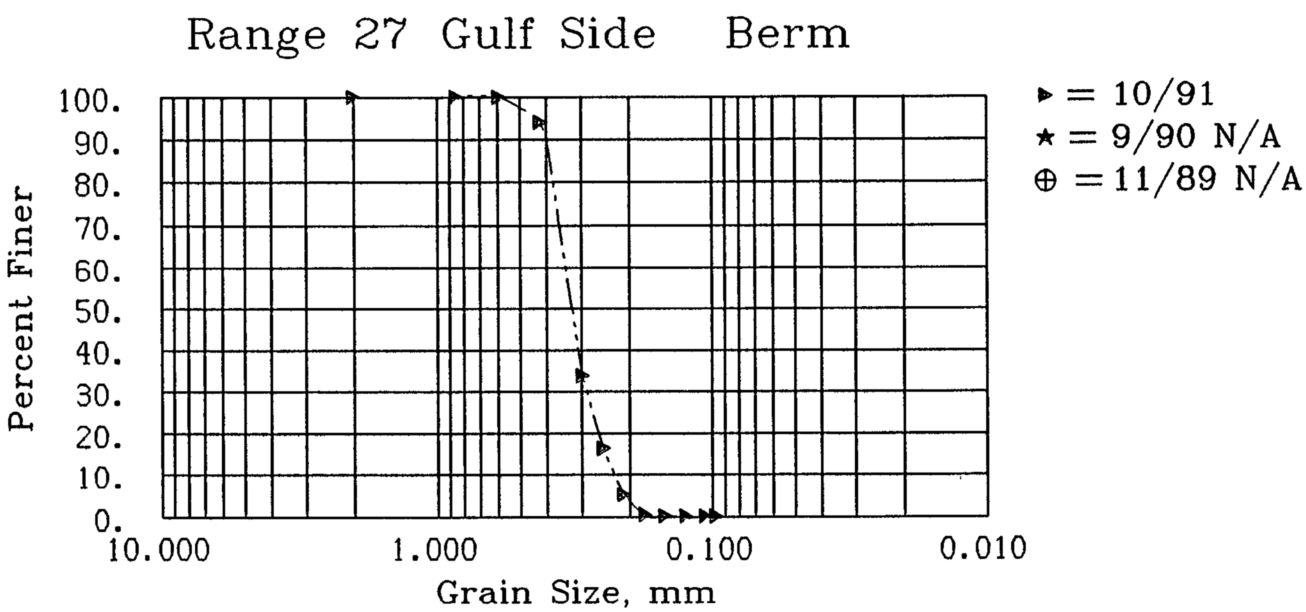


Figure V-4: Grain Size Distributions for Range 27, Dune and Mid–Beach Positions.



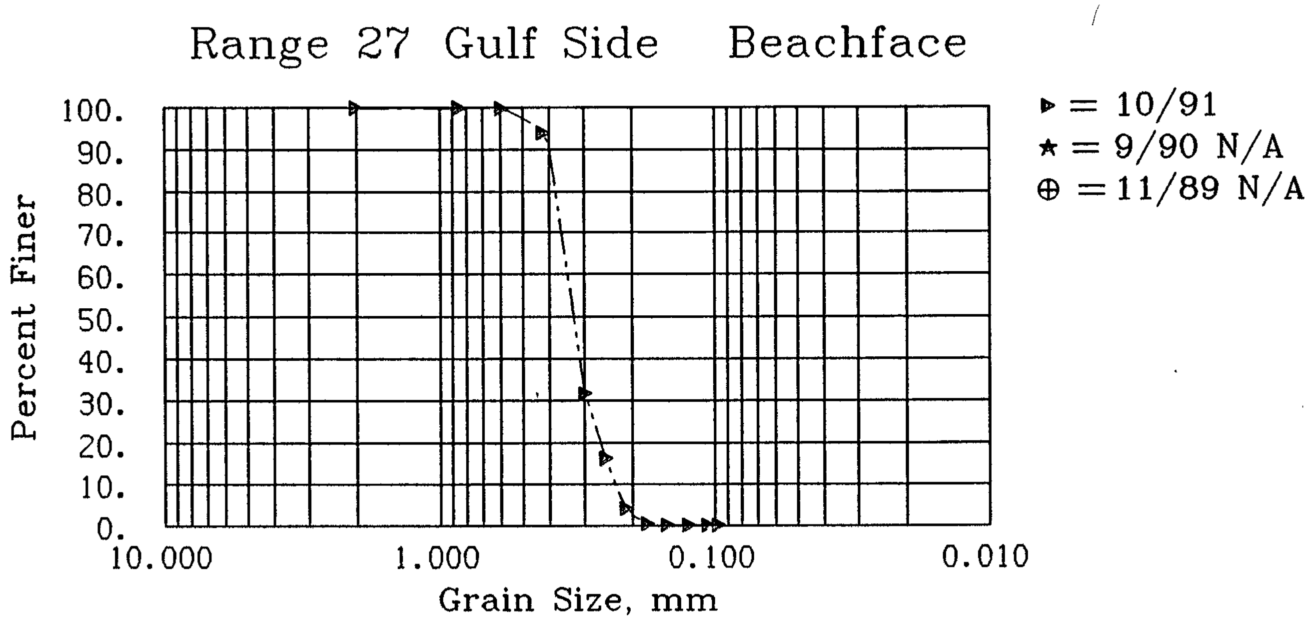
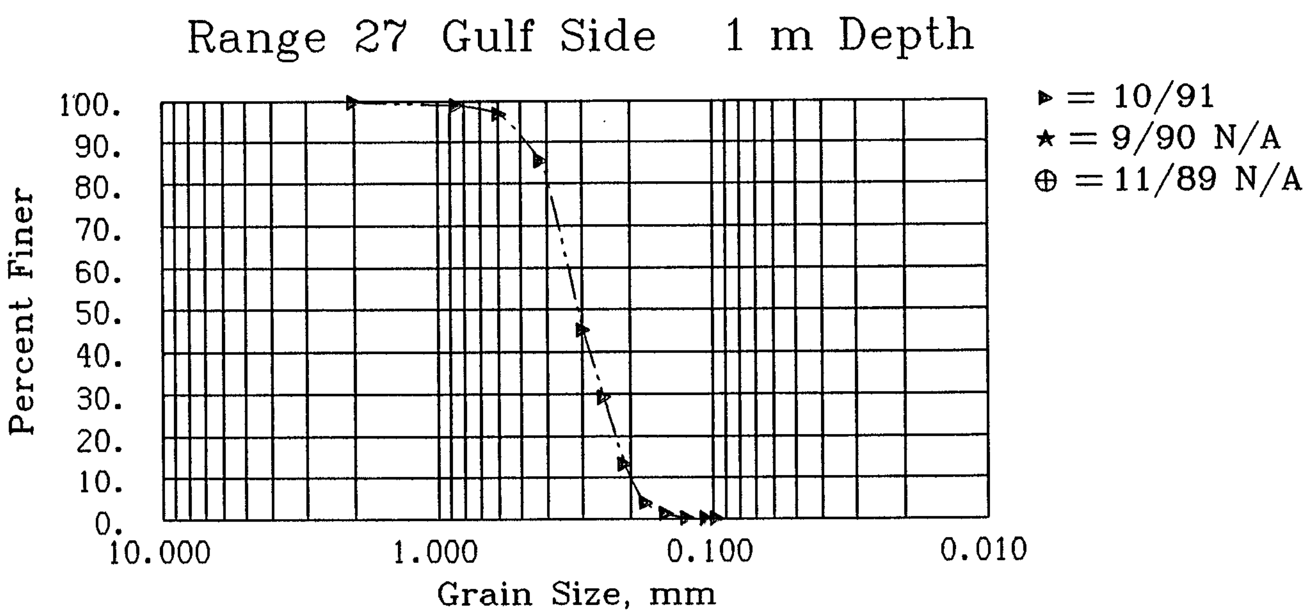


Figure V-5: Grain Size Distributions for Range 27, Berm and Beachface Positions.



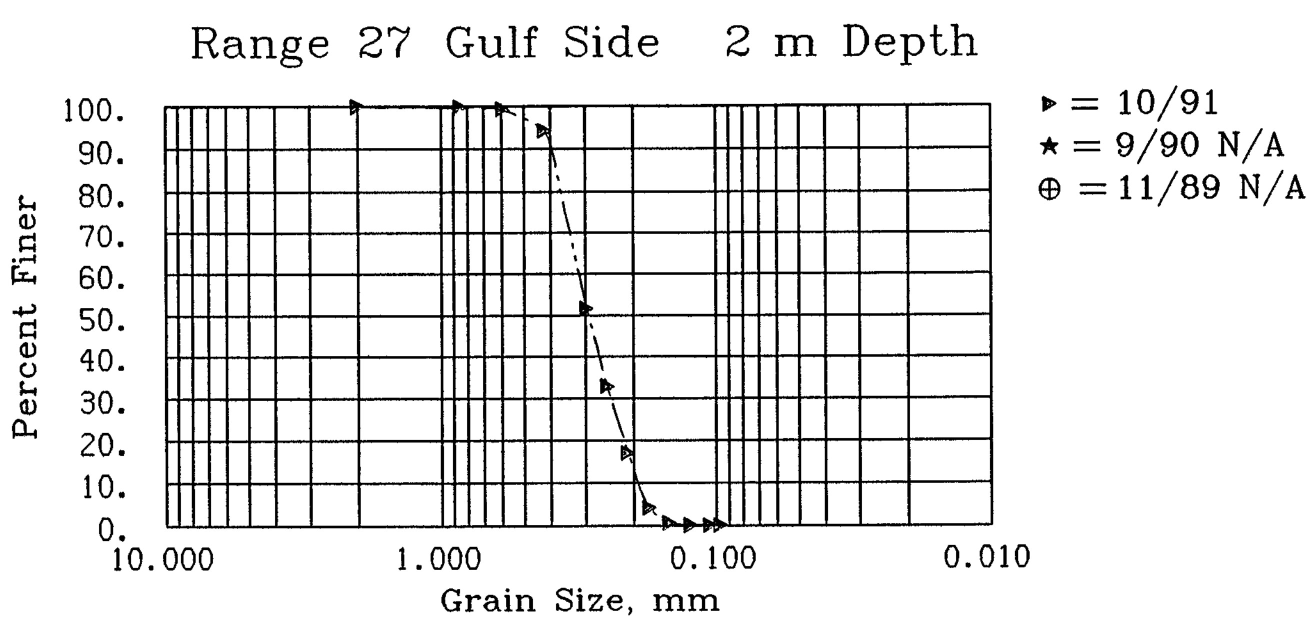
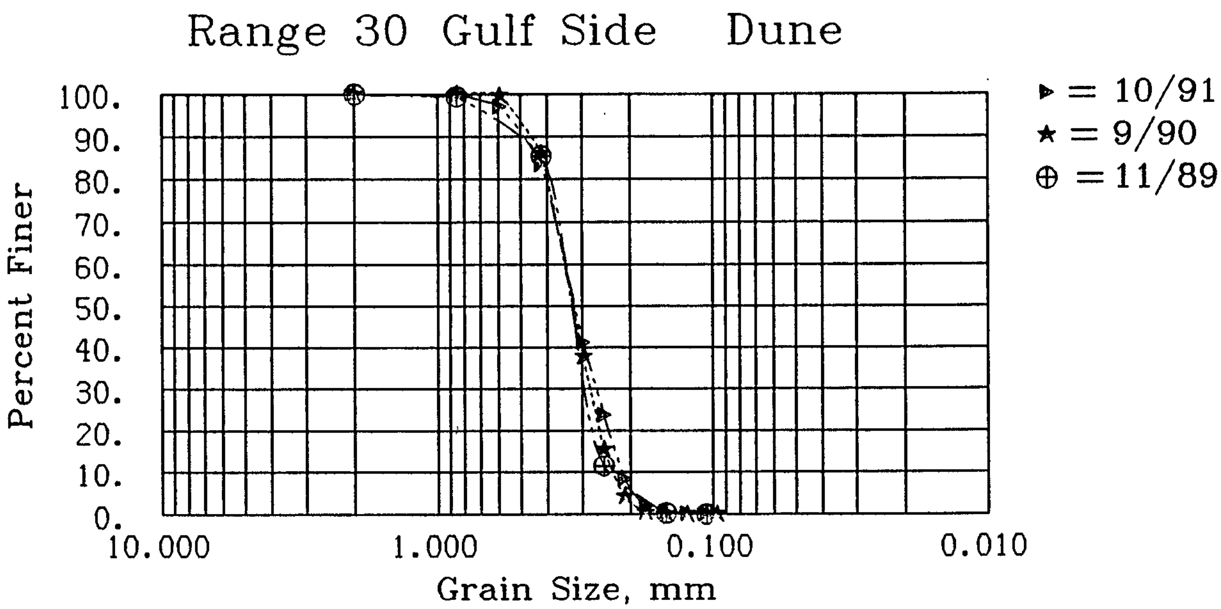


Figure V-6: Grain Size Distributions for Range 27, 1 m Depth and 2 m Depth Positions.



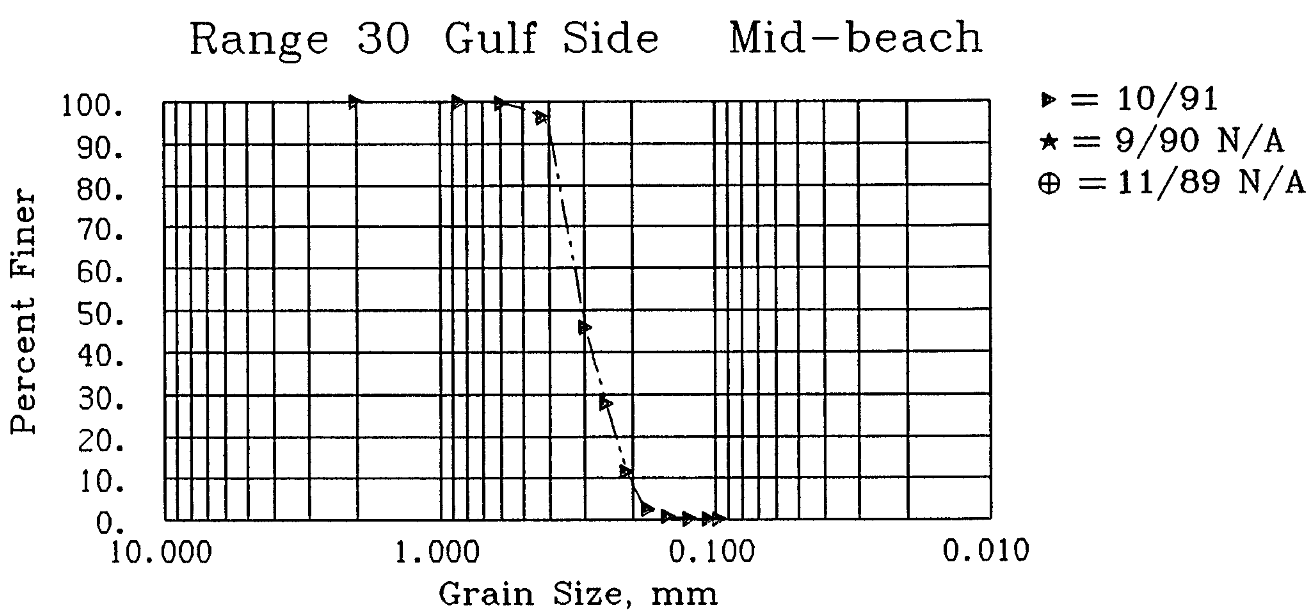
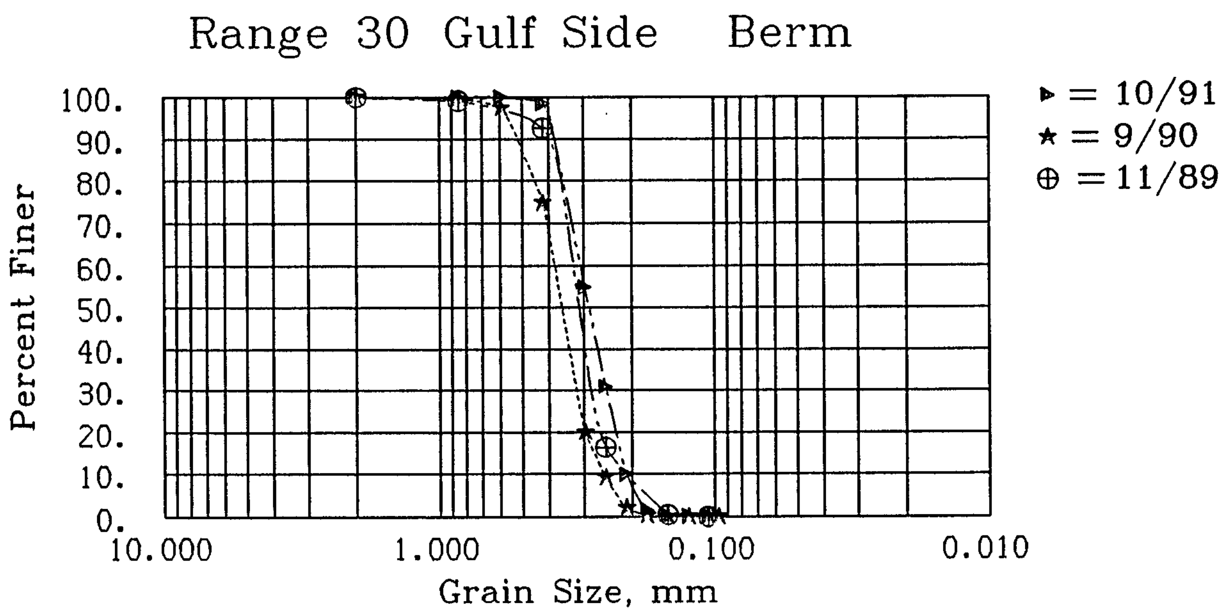


Figure V-7: Grain Size Distributions for Range 30, Dune and Mid–Beach Positions.



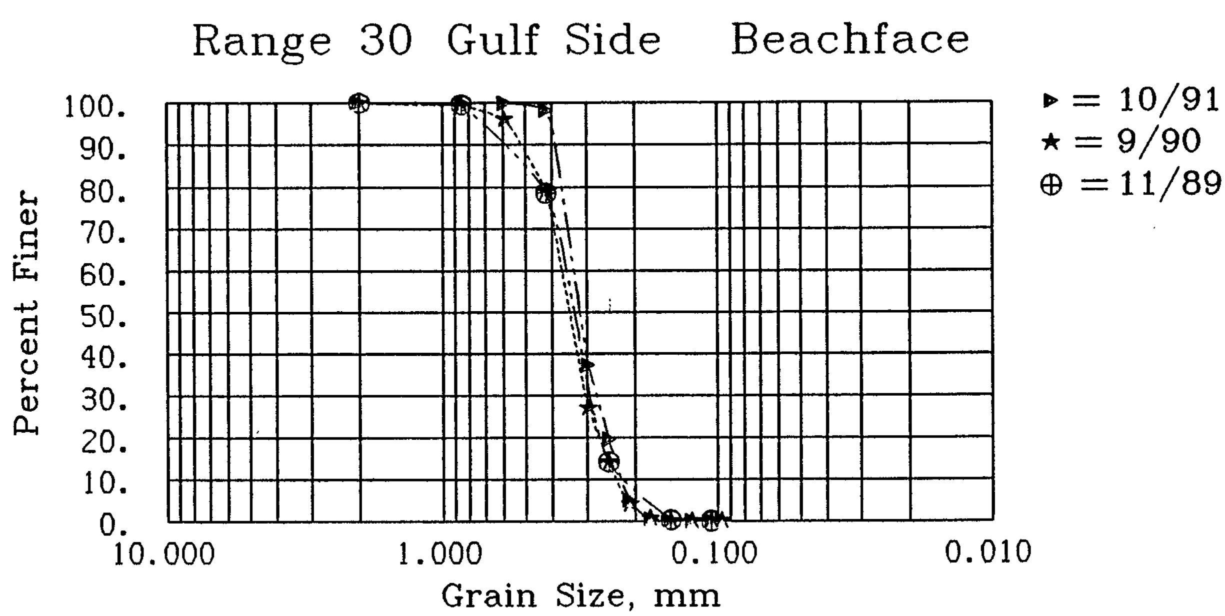
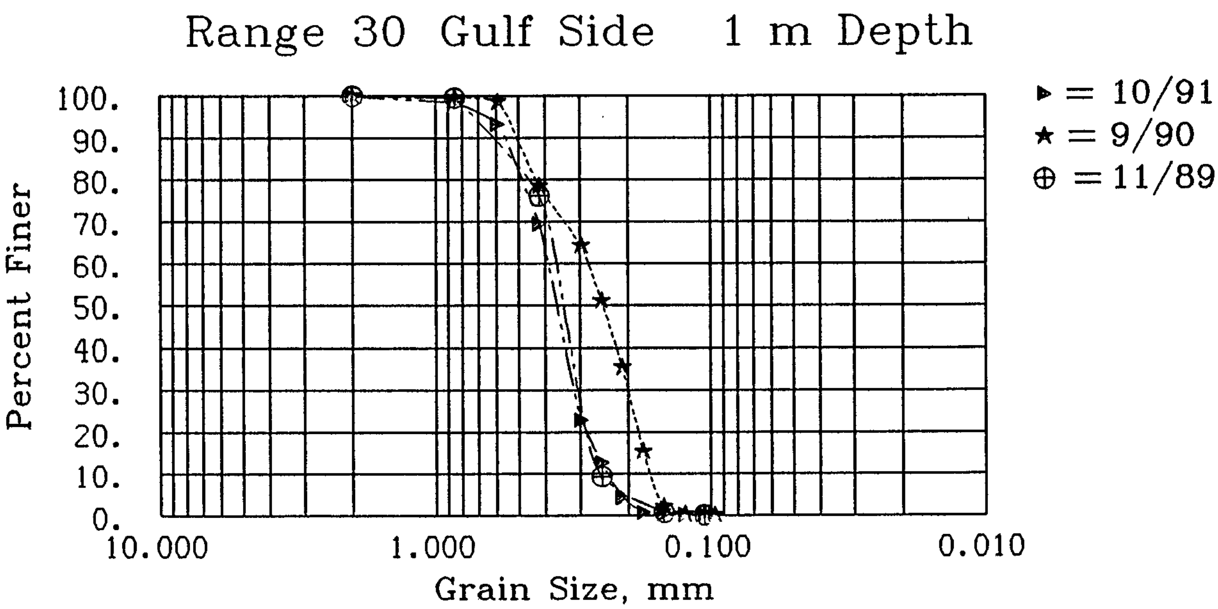


Figure V-8: Grain Size Distributions for Range 30, Berm and Beachface Positions.



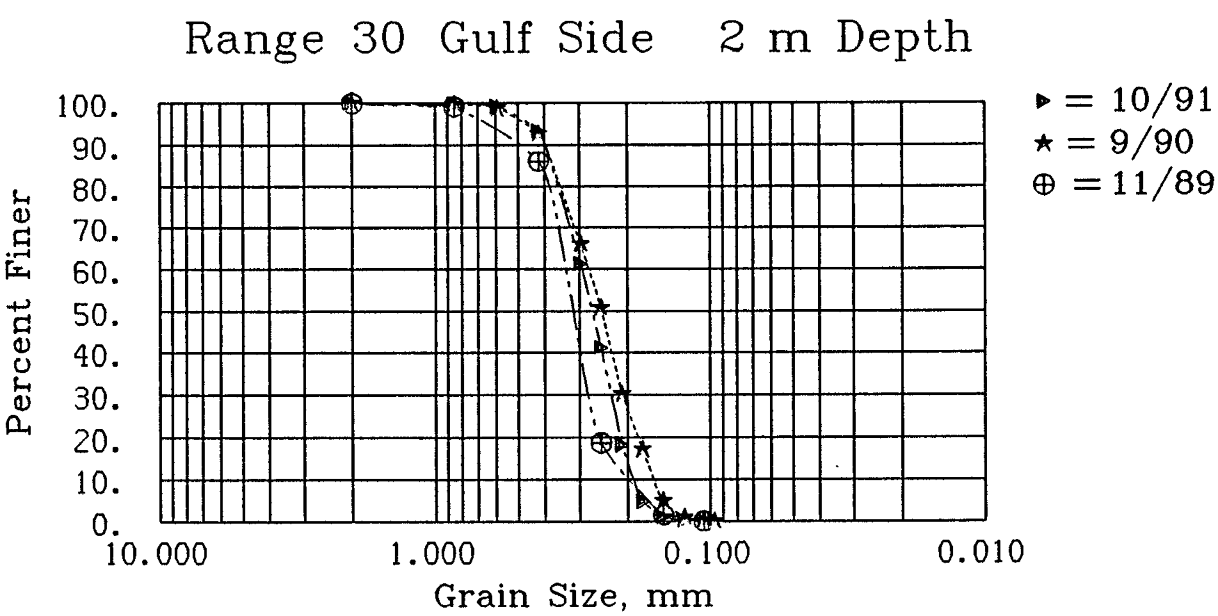
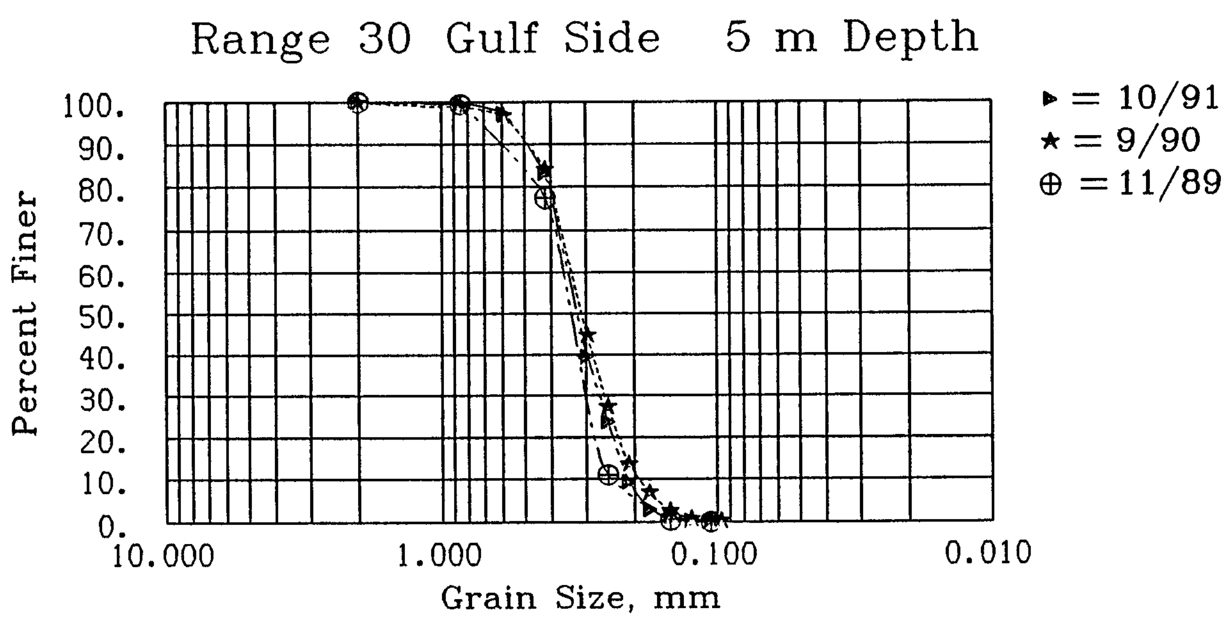


Figure V-9: Grain Size Distributions for Range 30, 1 m and 2 m Depth Positions.



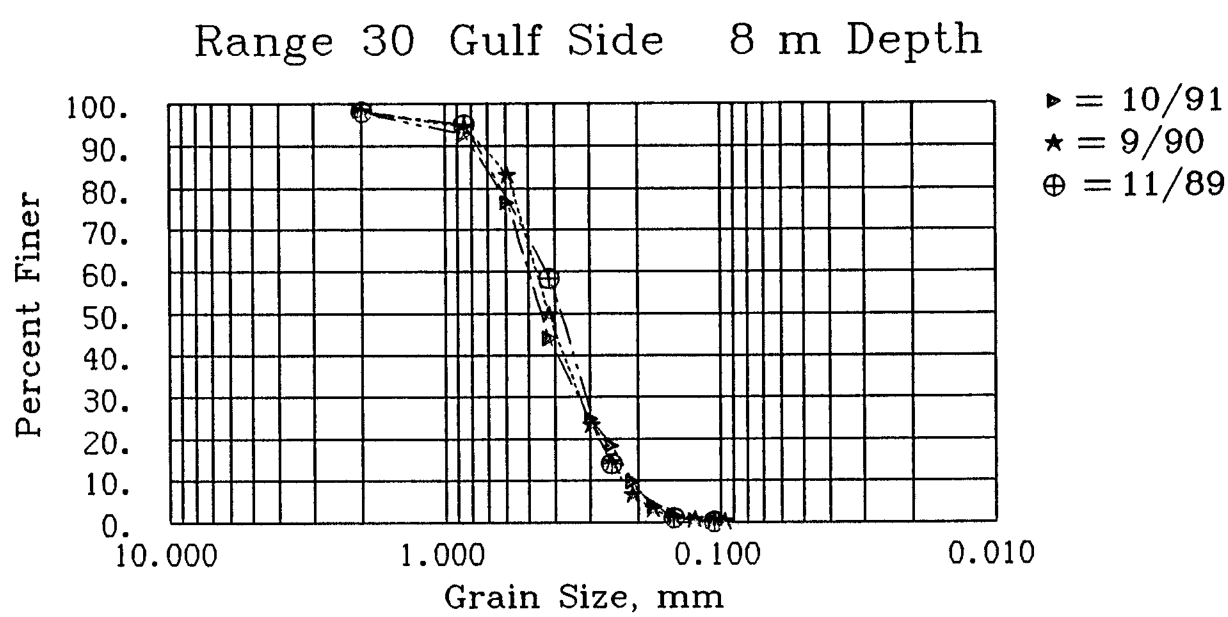


Figure V-10: Grain Size Distributions for Range 30, 5 m Depth and 8 m Depth Positions.

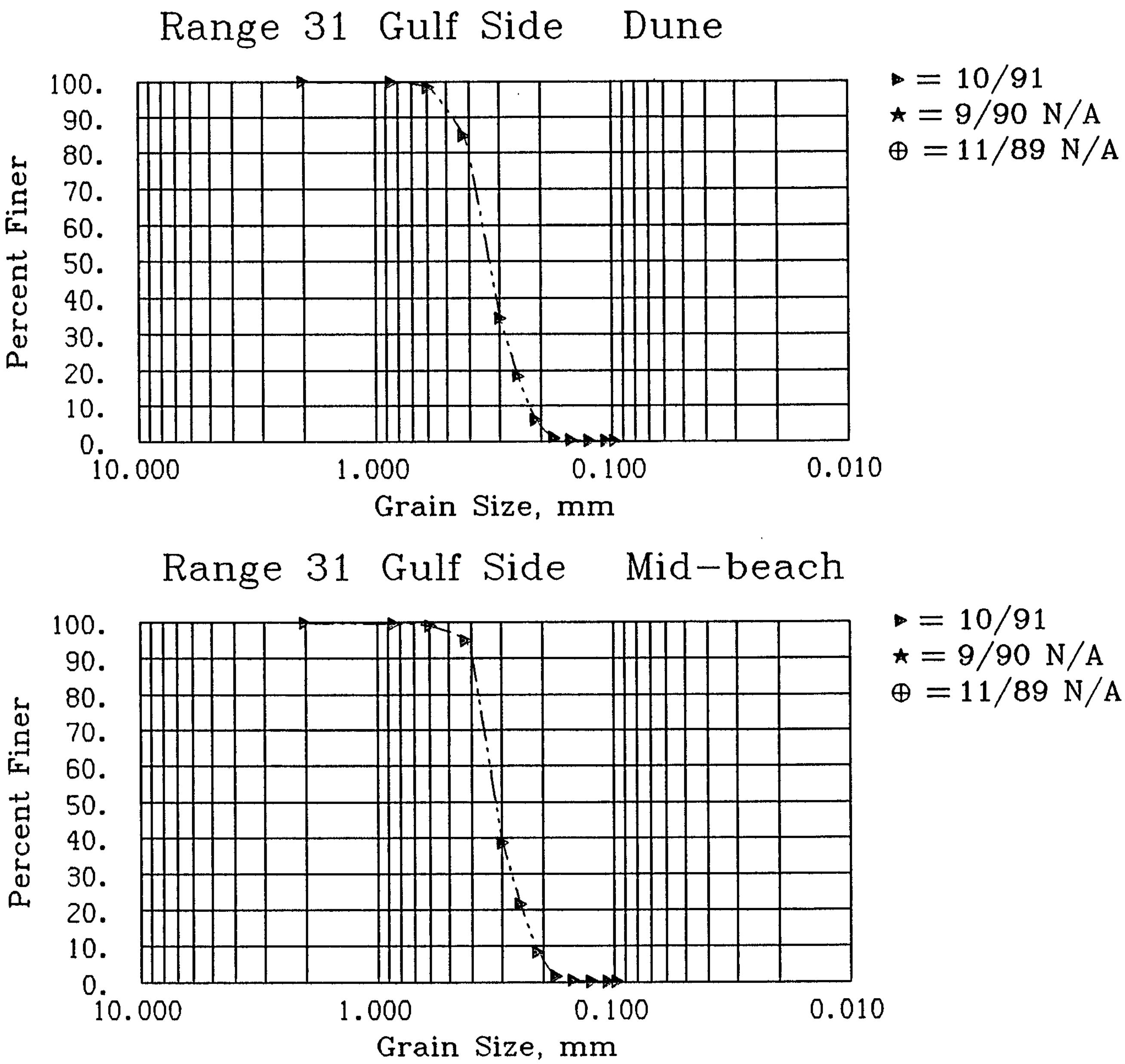
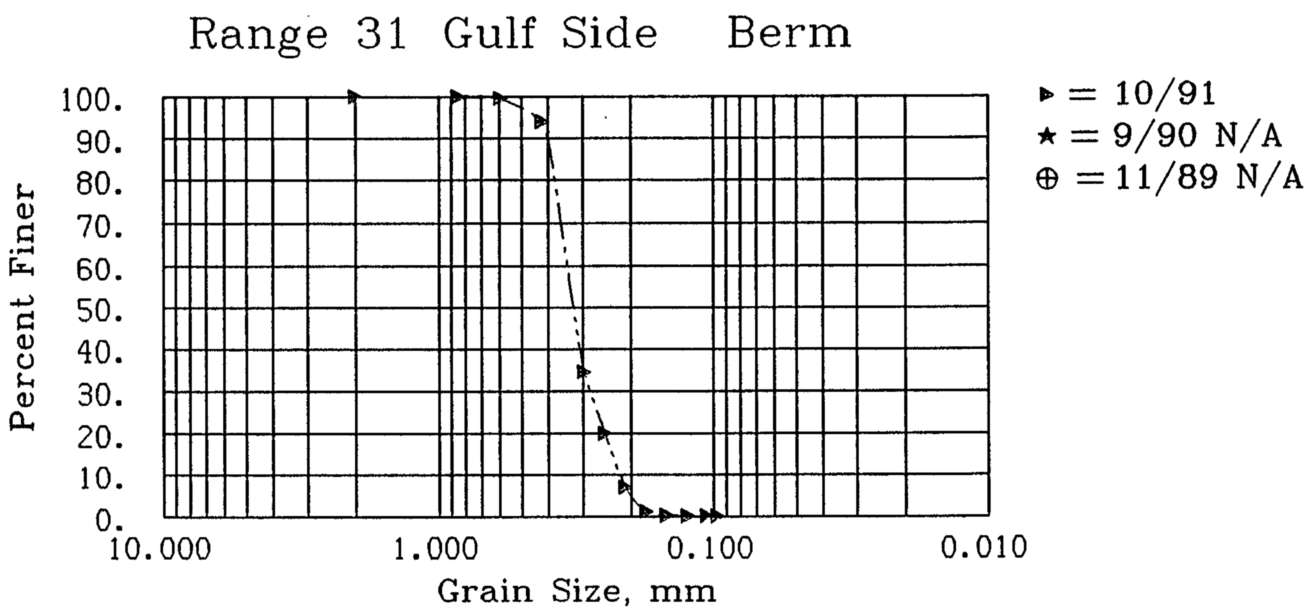


Figure V-11: Grain Size Distributions for Range 31, Dune and Mid–Beach Positions.



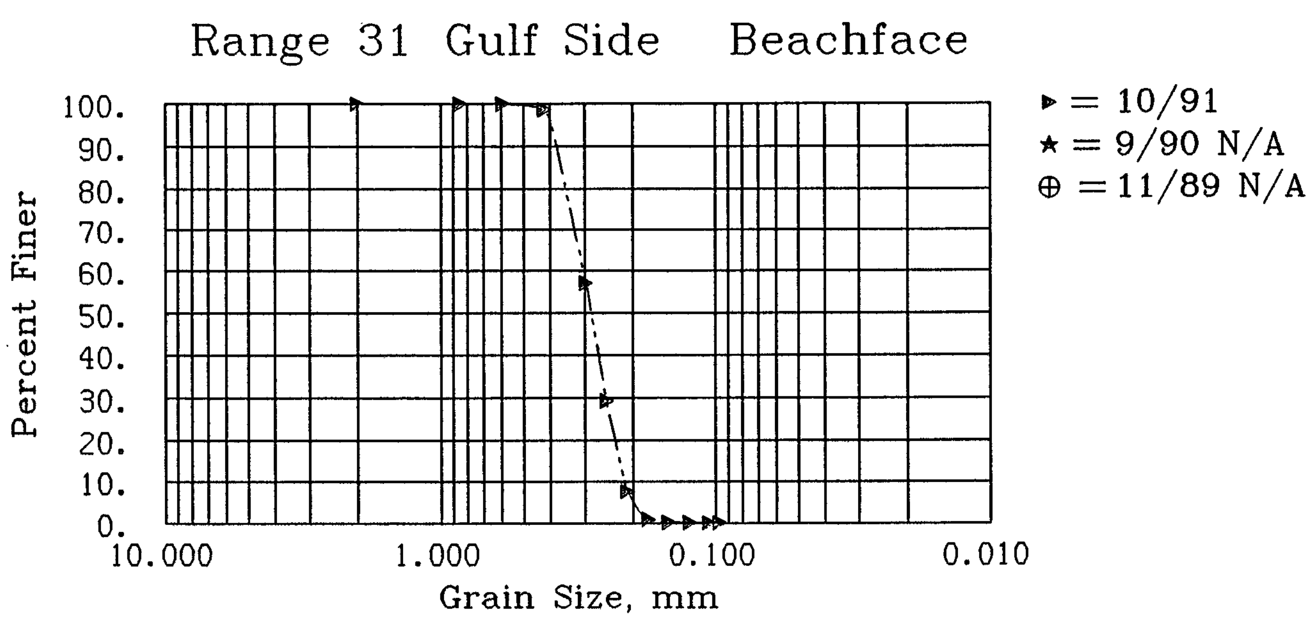
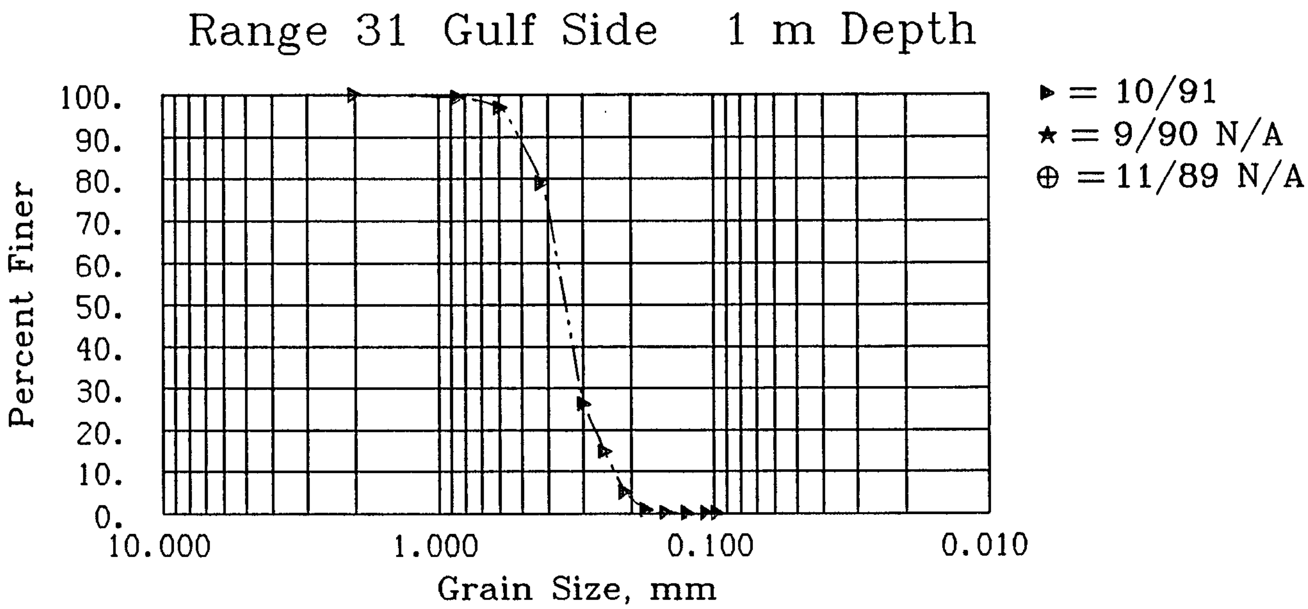


Figure V-12: Grain Size Distributions for Range 31, Berm and Beachface Positions.



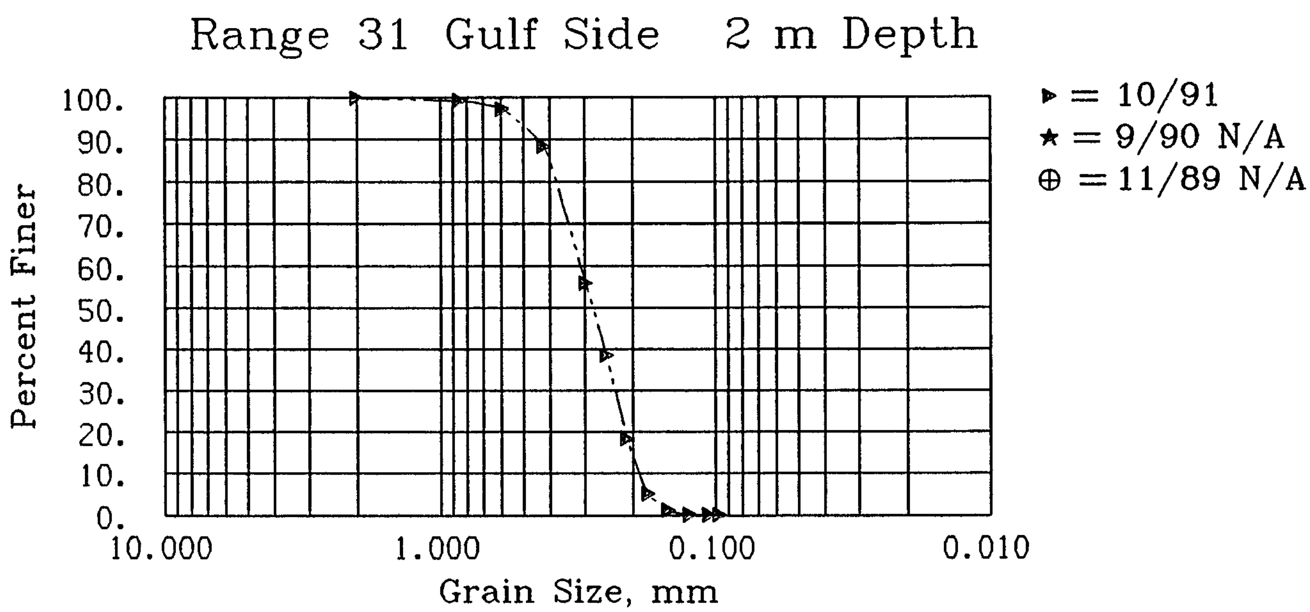
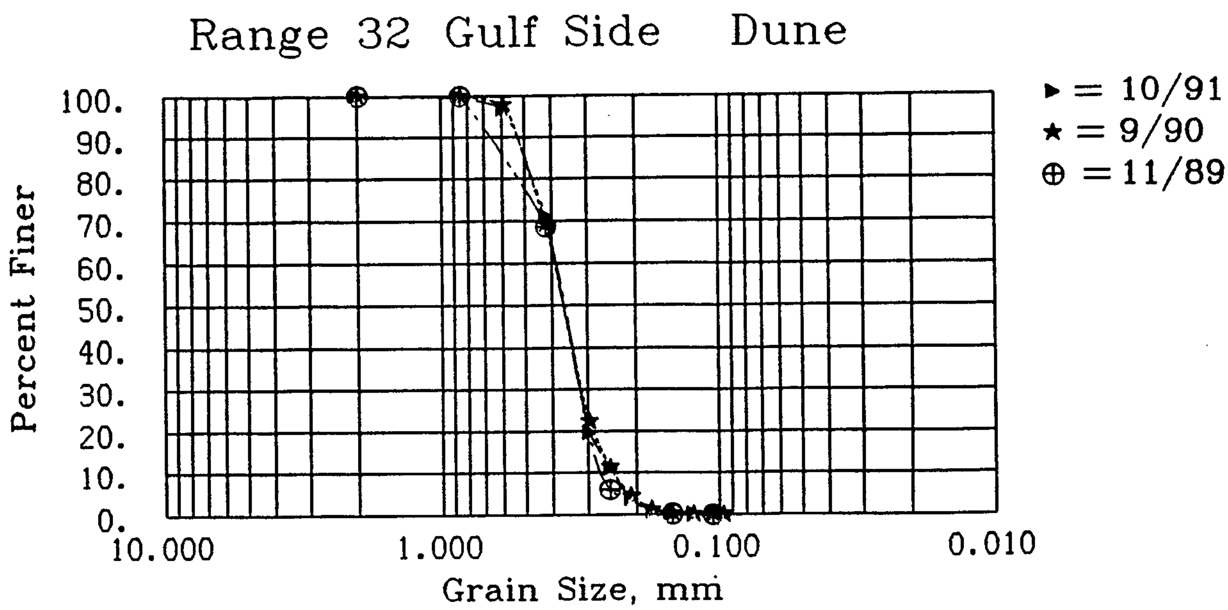


Figure V-13: Grain Size Distributions for Range 31, 1 m Depth and 2 m Depth Positions.



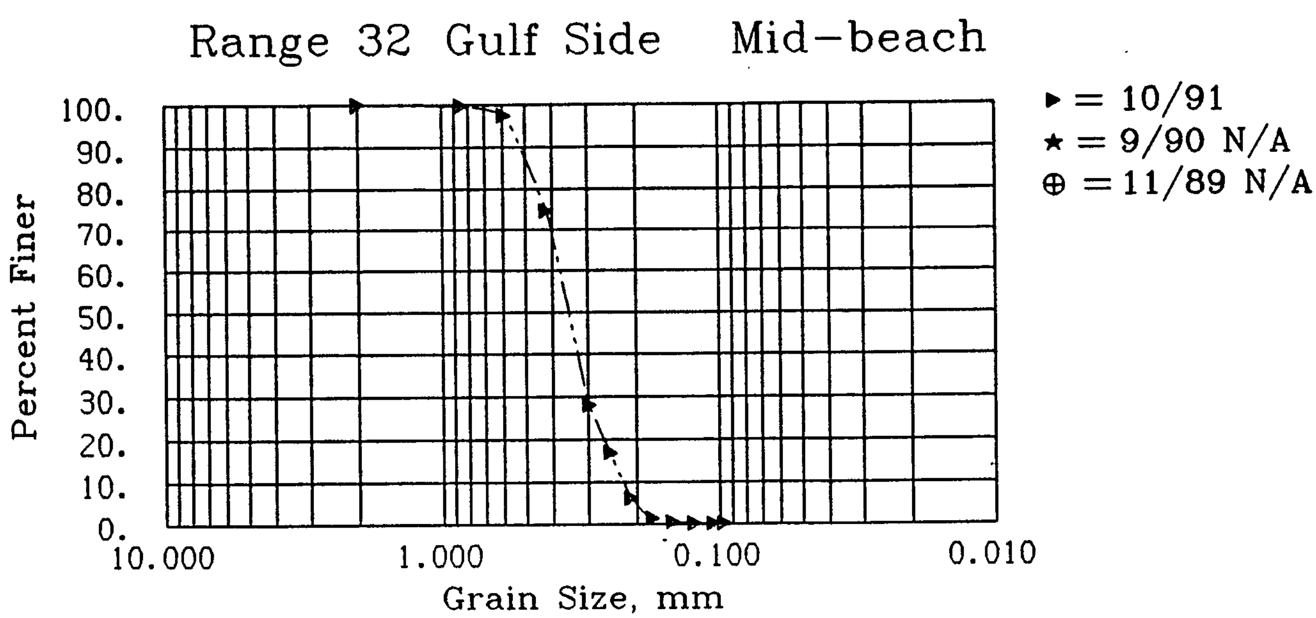
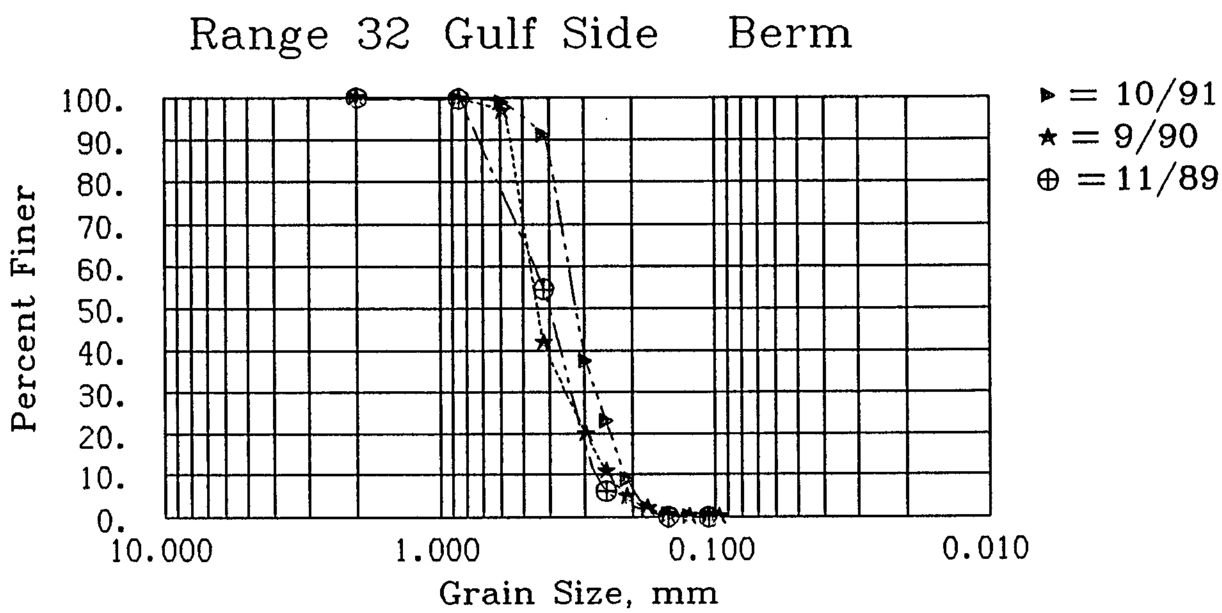


Figure V-14: Grain Size Distributions for Range 32, Dune and Mid–Beach Positions.



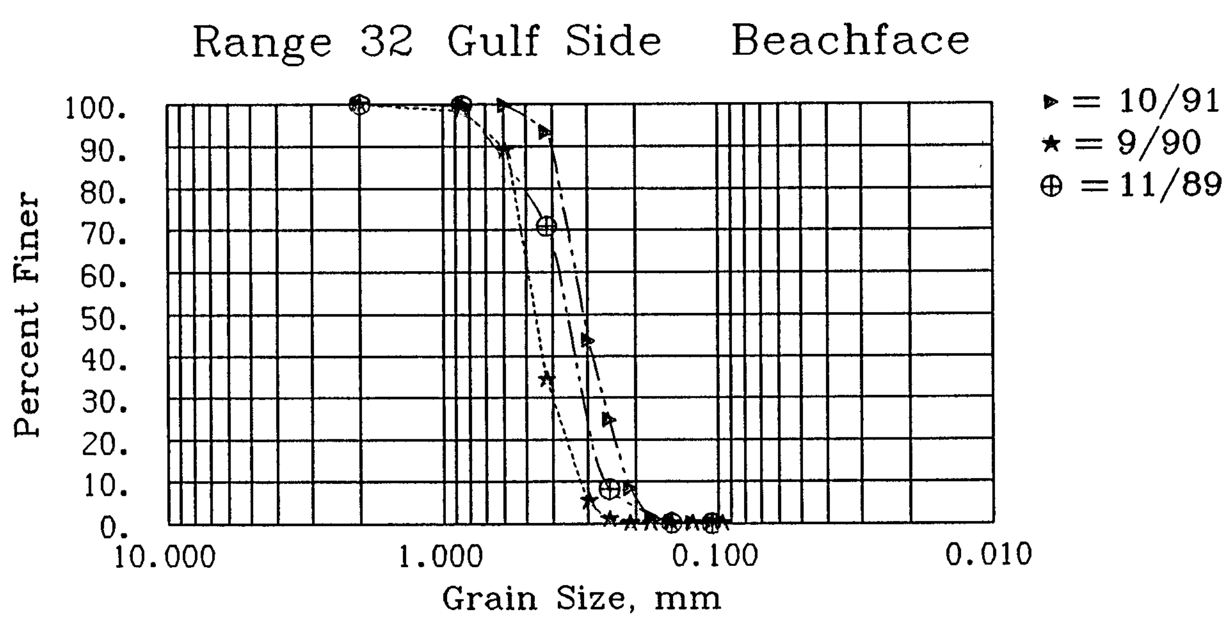
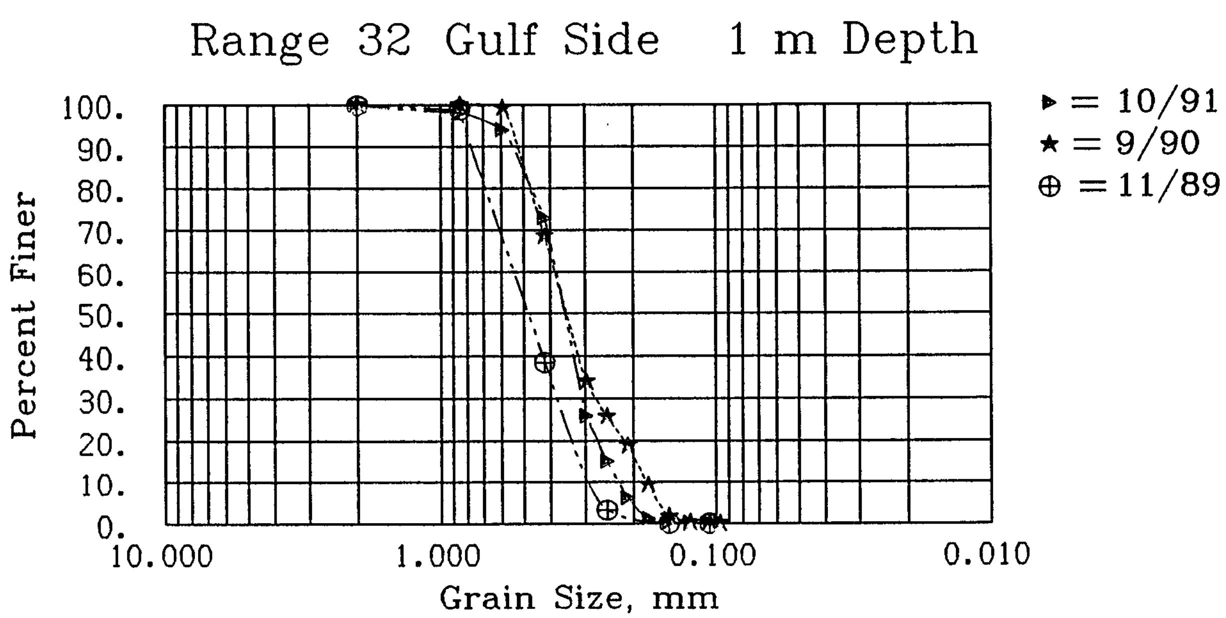


Figure V-15: Grain Size Distributions for Range 32, Berm and Beachface Positions.



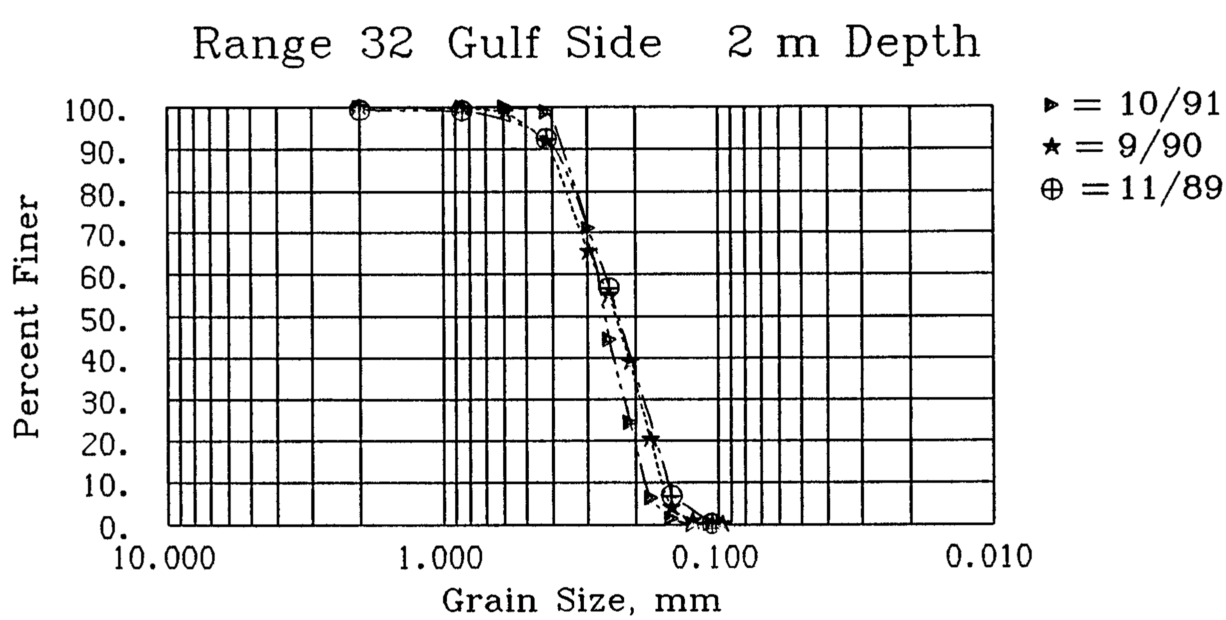
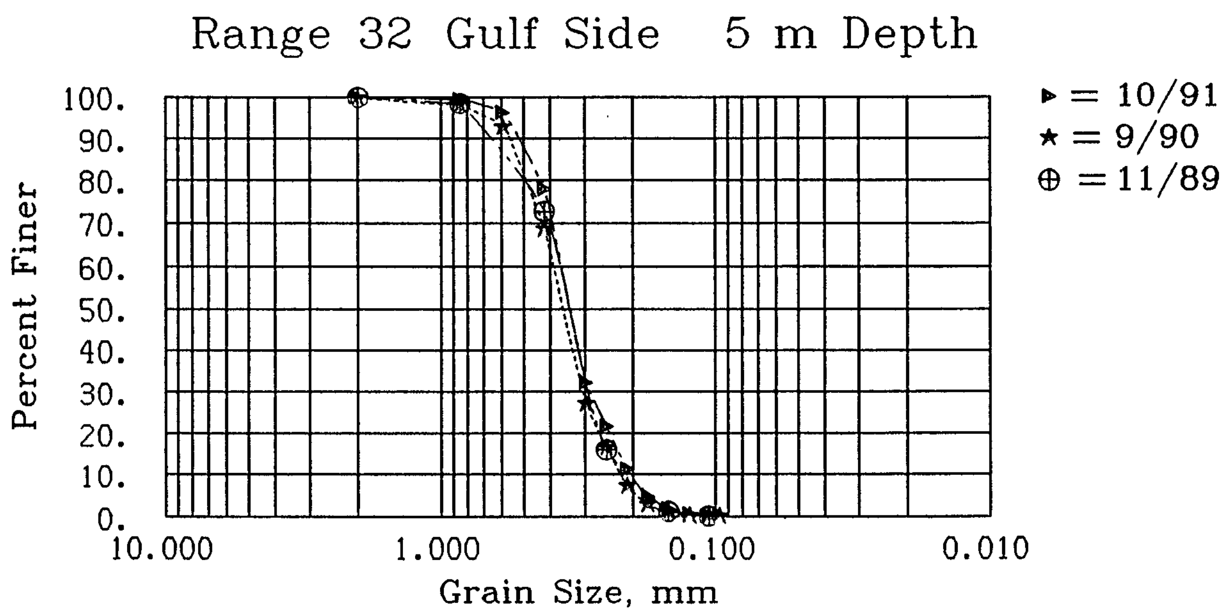


Figure V-16: Grain Size Distributions for Range 32, 1 m and 2 m Depth Positions.



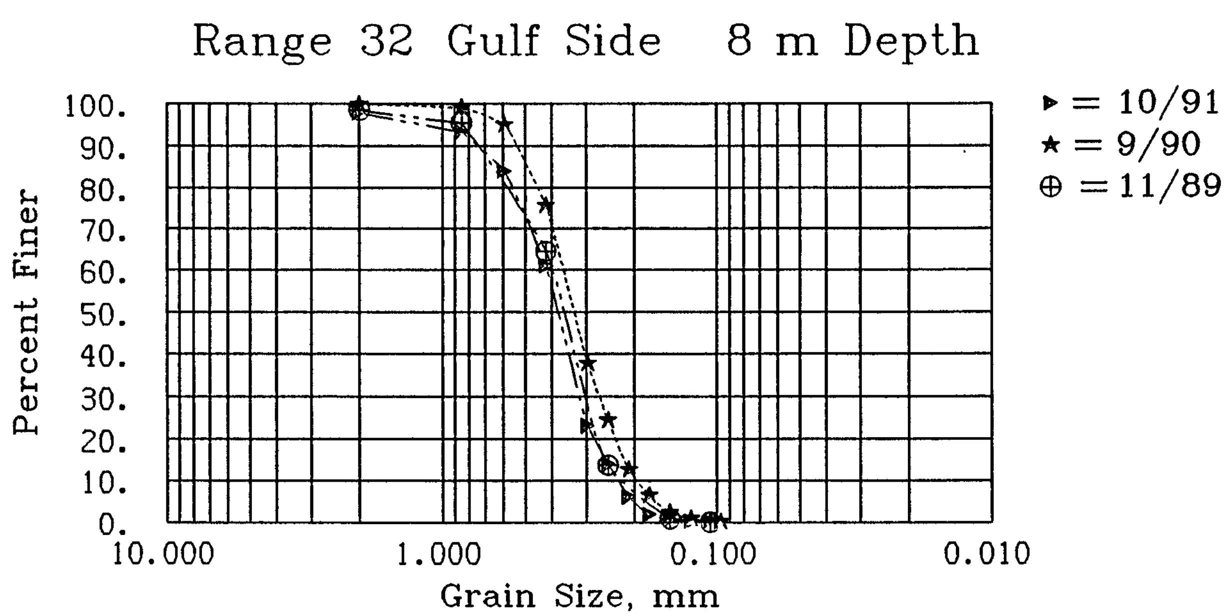


Figure V-17: Grain Size Distributions for Range 32, 5 m Depth and 8 m Depth Positions.

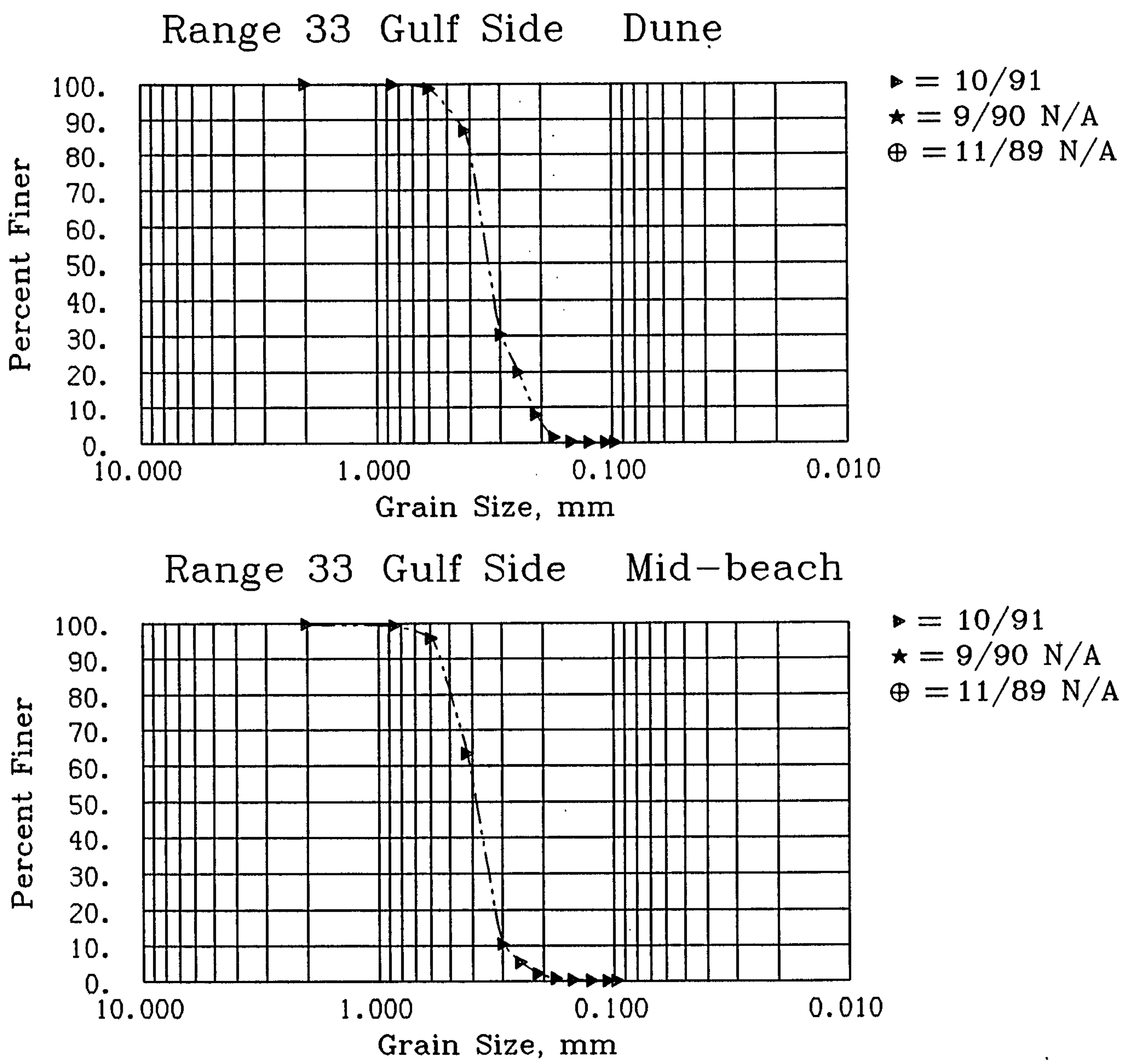
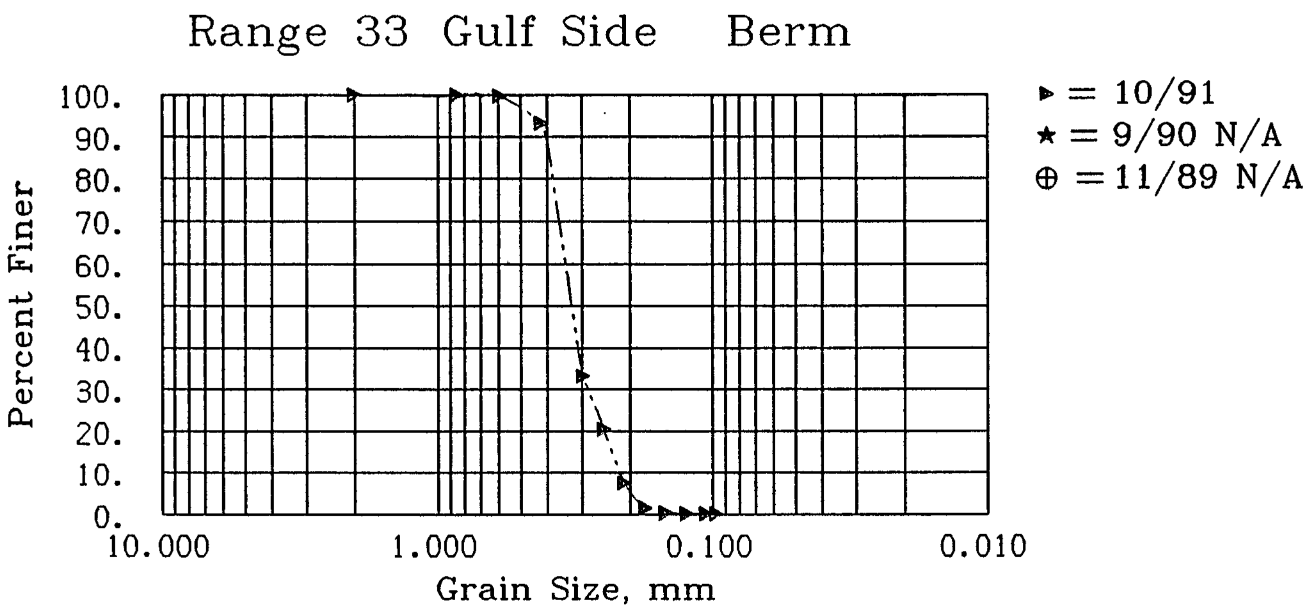


Figure V-18: Grain Size Distributions for Range 33, Dune and Mid–Beach Positions.



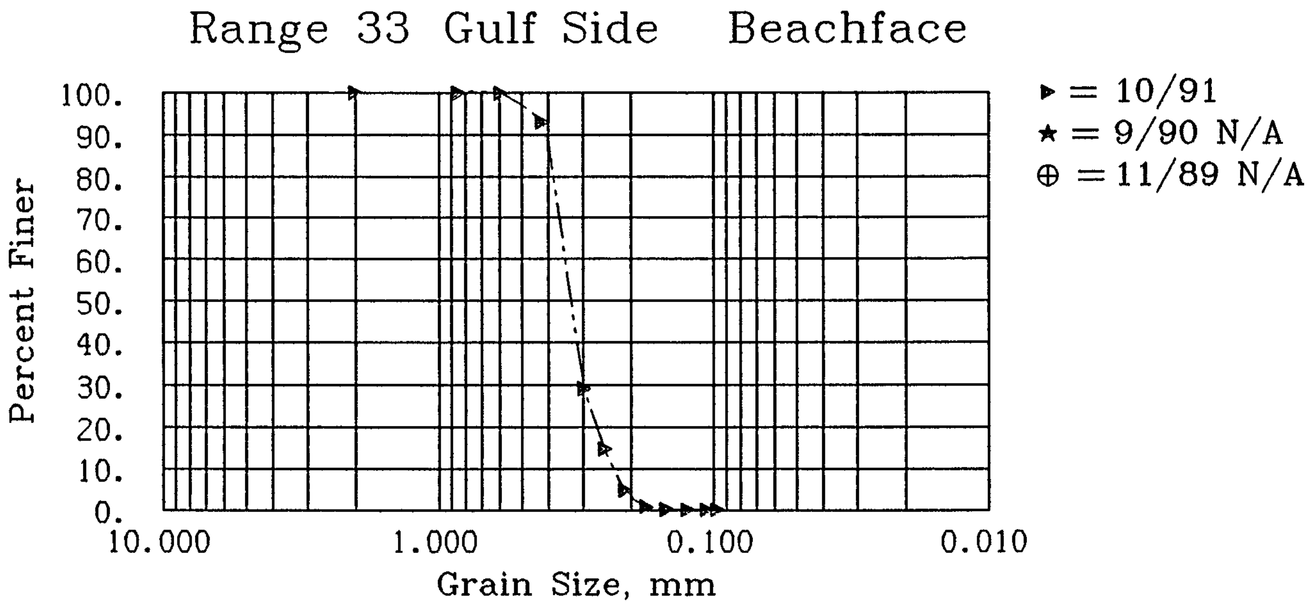
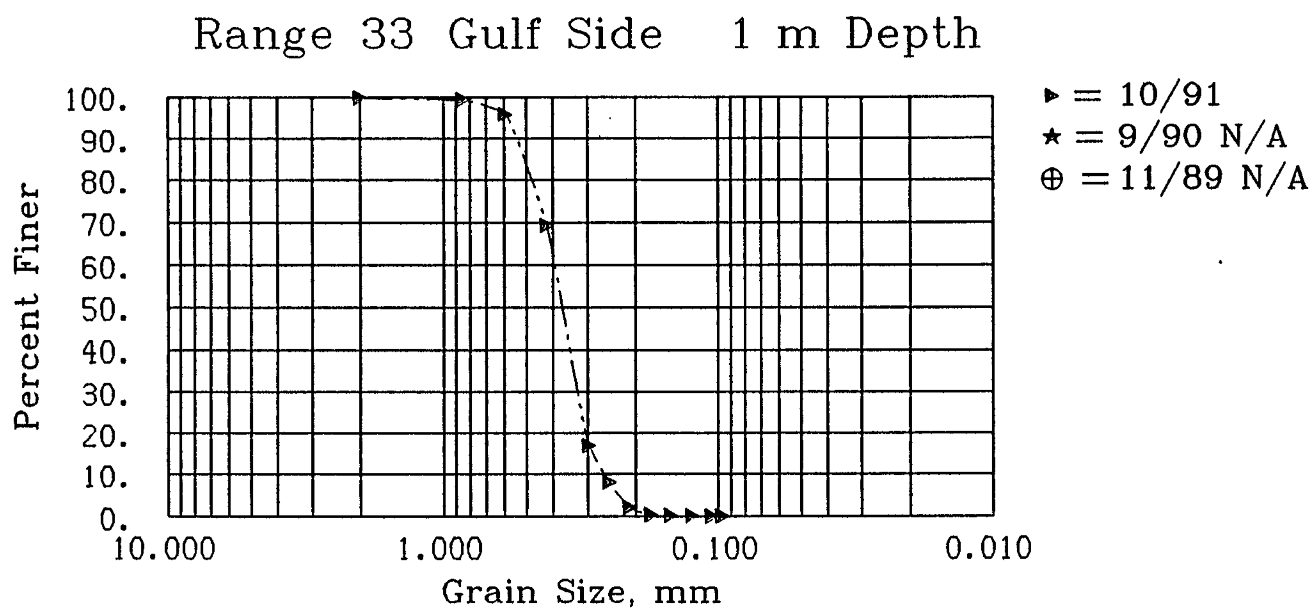


Figure V-19: Grain Size Distributions for Range 33, Berm and Beachface Positions.



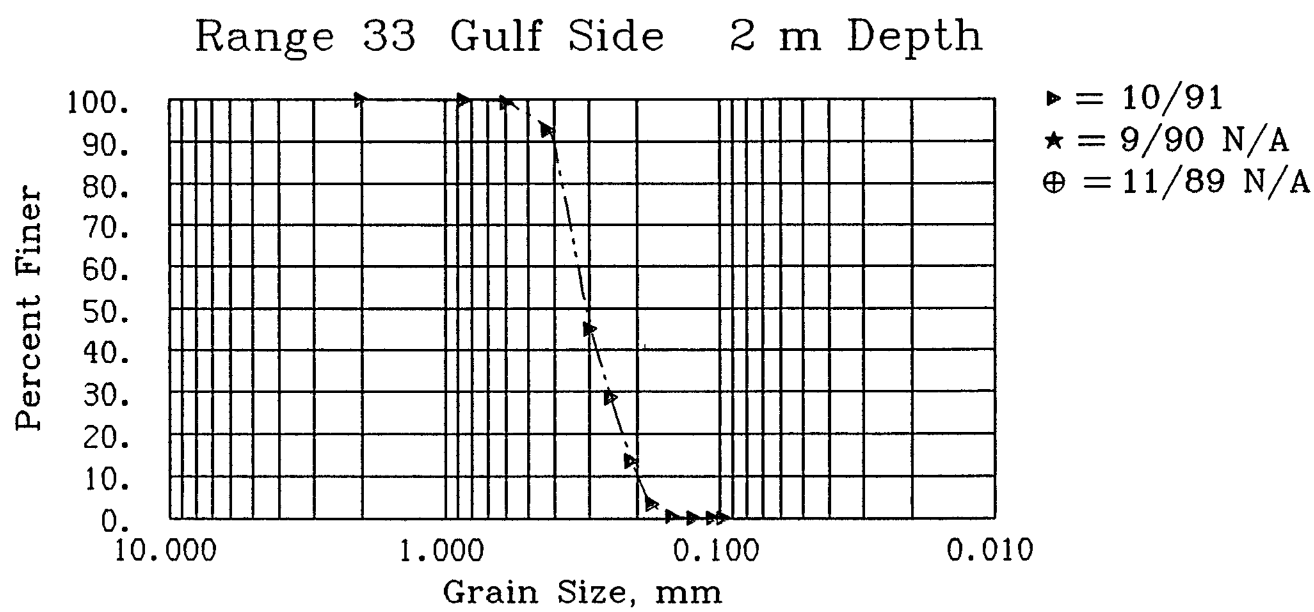
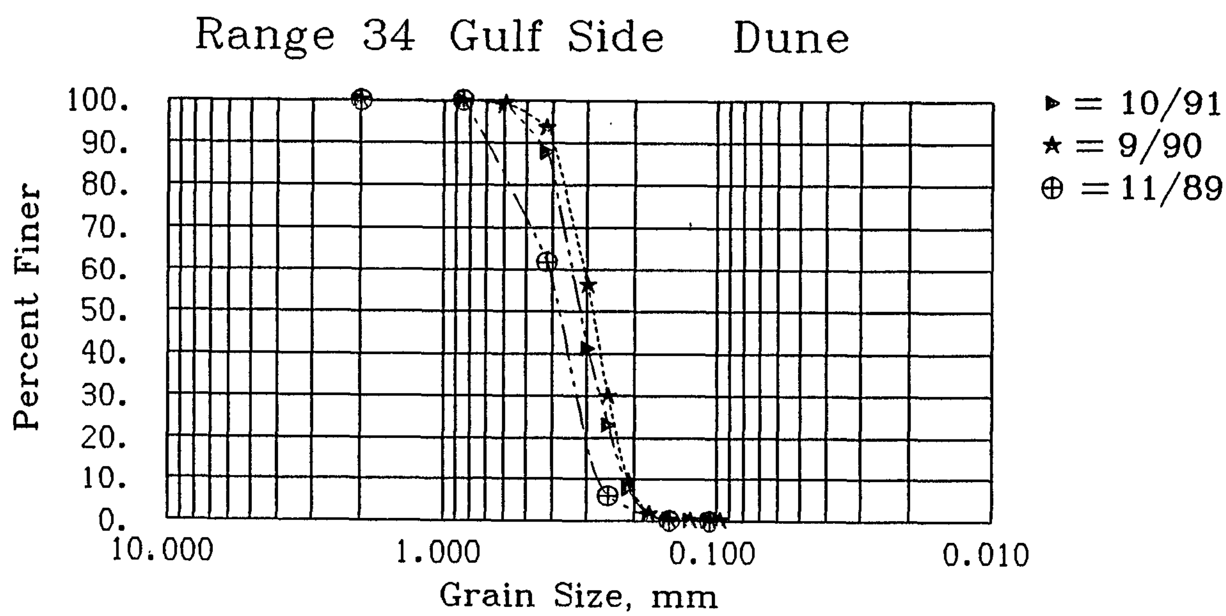


Figure V-20: Grain Size Distributions for Range 33, 1 m Depth and 2 m Depth Positions.



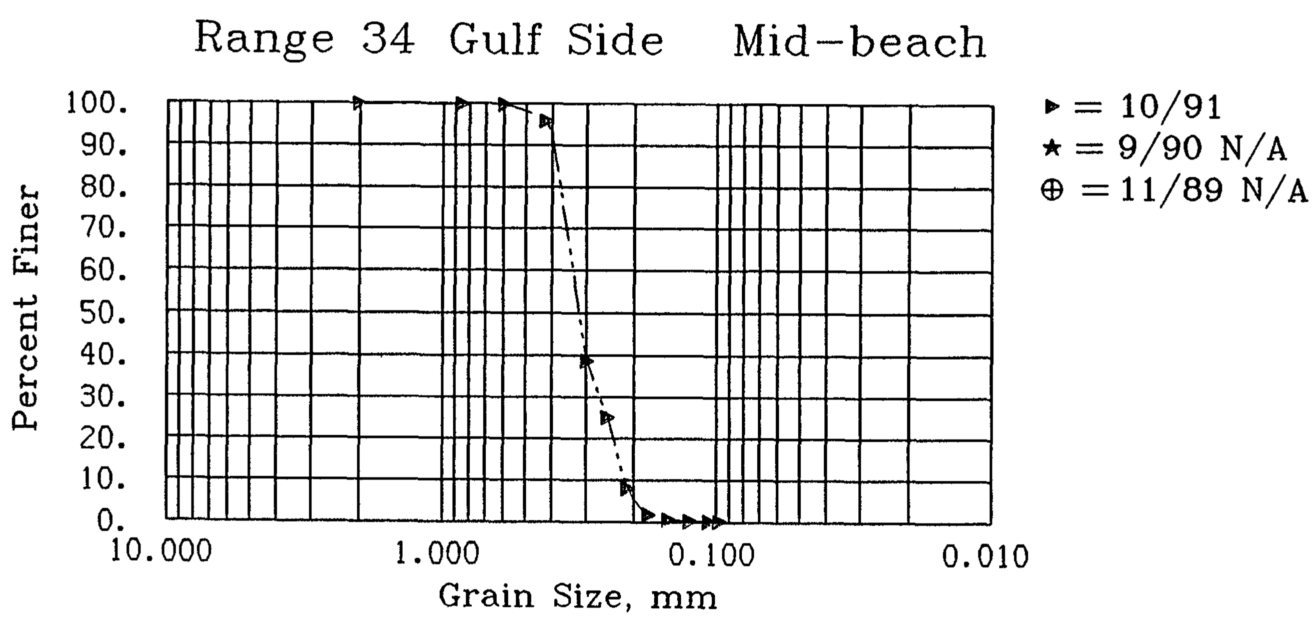
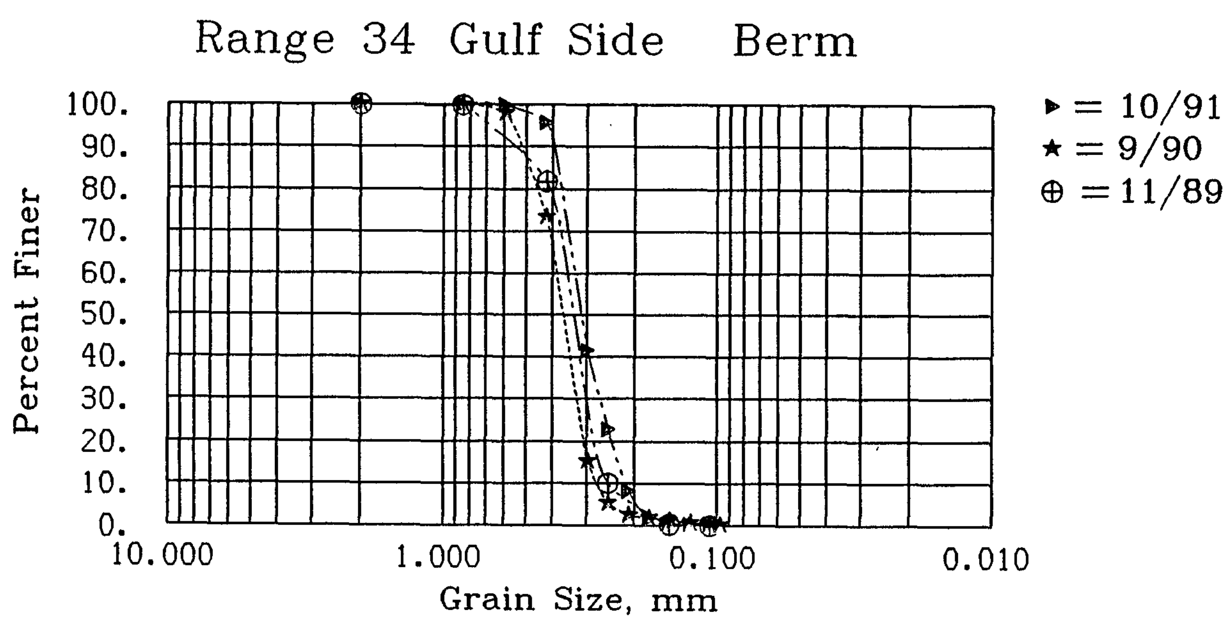


Figure V-21: Grain Size Distributions for Range 34, Dune and Mid-Beach Positions.



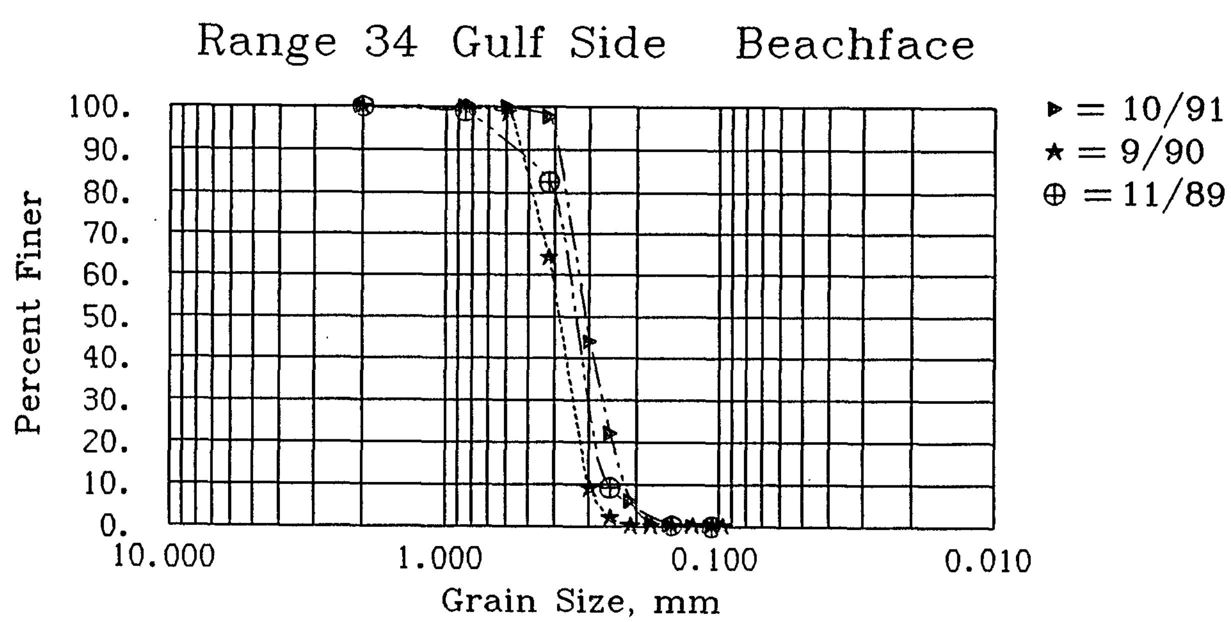
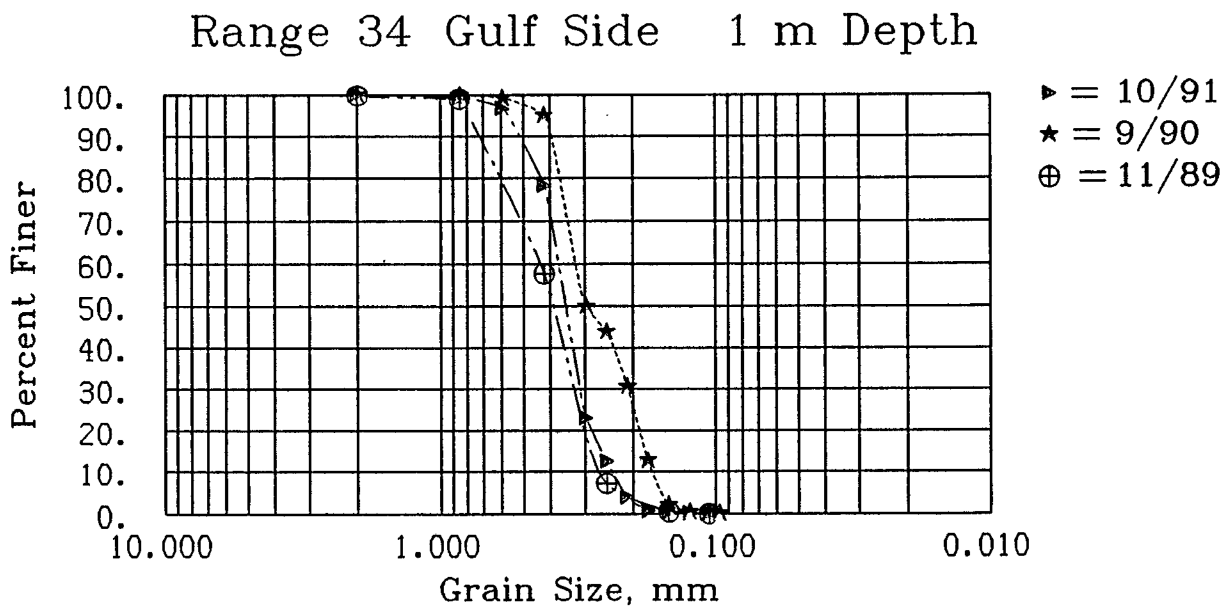


Figure V-22: Grain Size Distributions for Range 34, Berm and Beachface Positions.



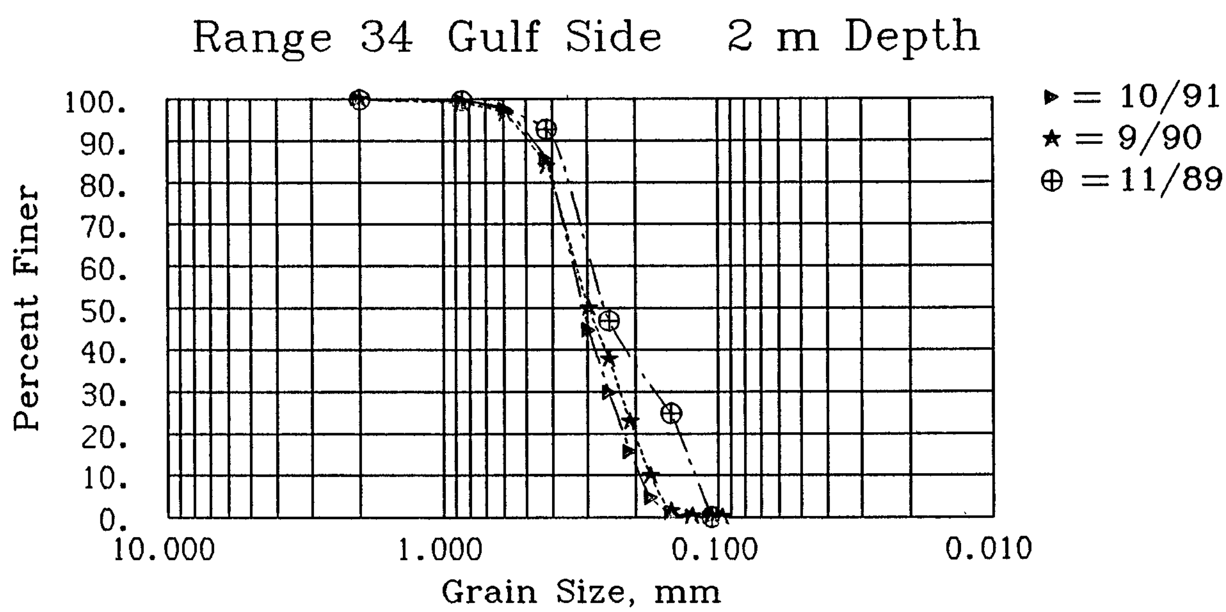
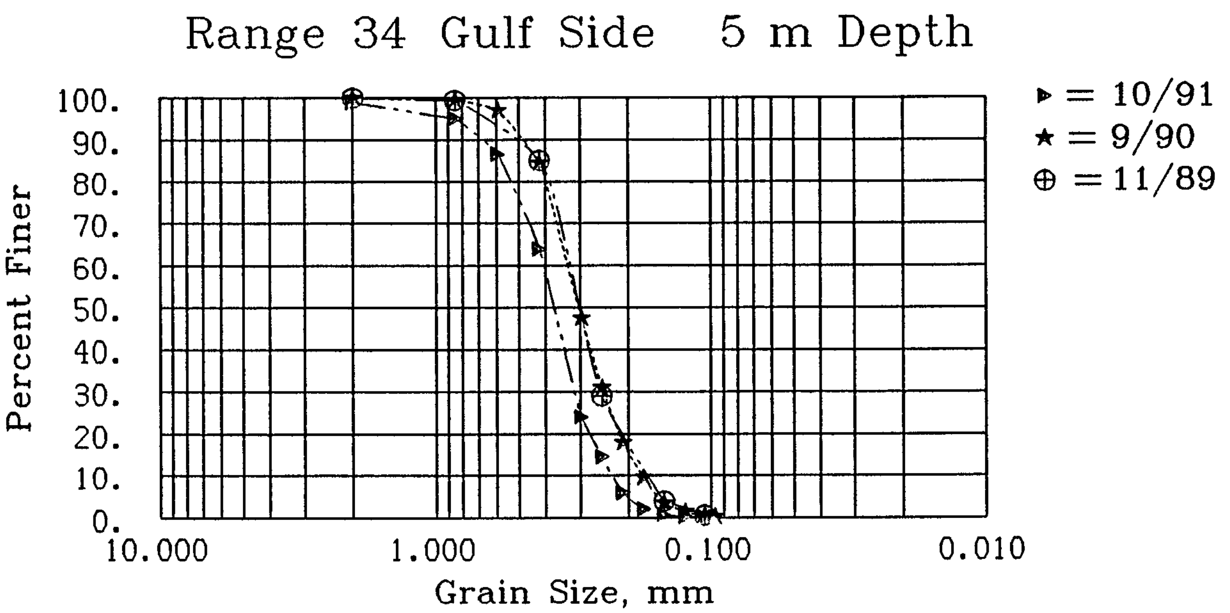


Figure V-23: Grain Size Distributions for Range 34, 1 m and 2 m Depth Positions.



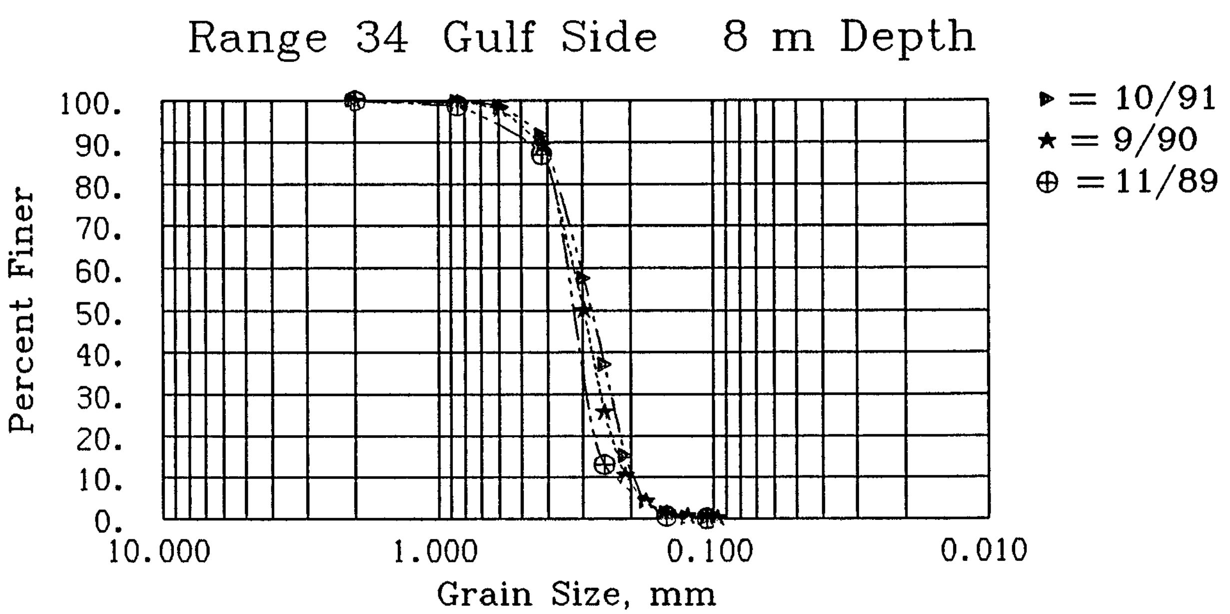
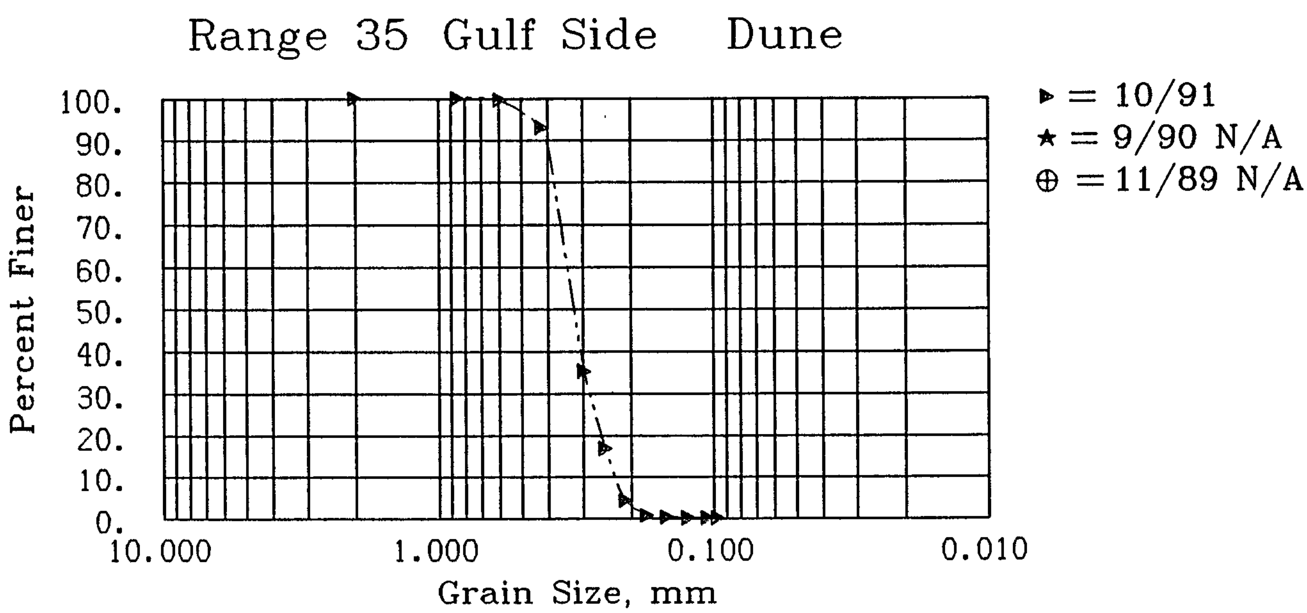


Figure V-24: Grain Size Distributions for Range 34, 5 m Depth and 8 m Depth Positions.



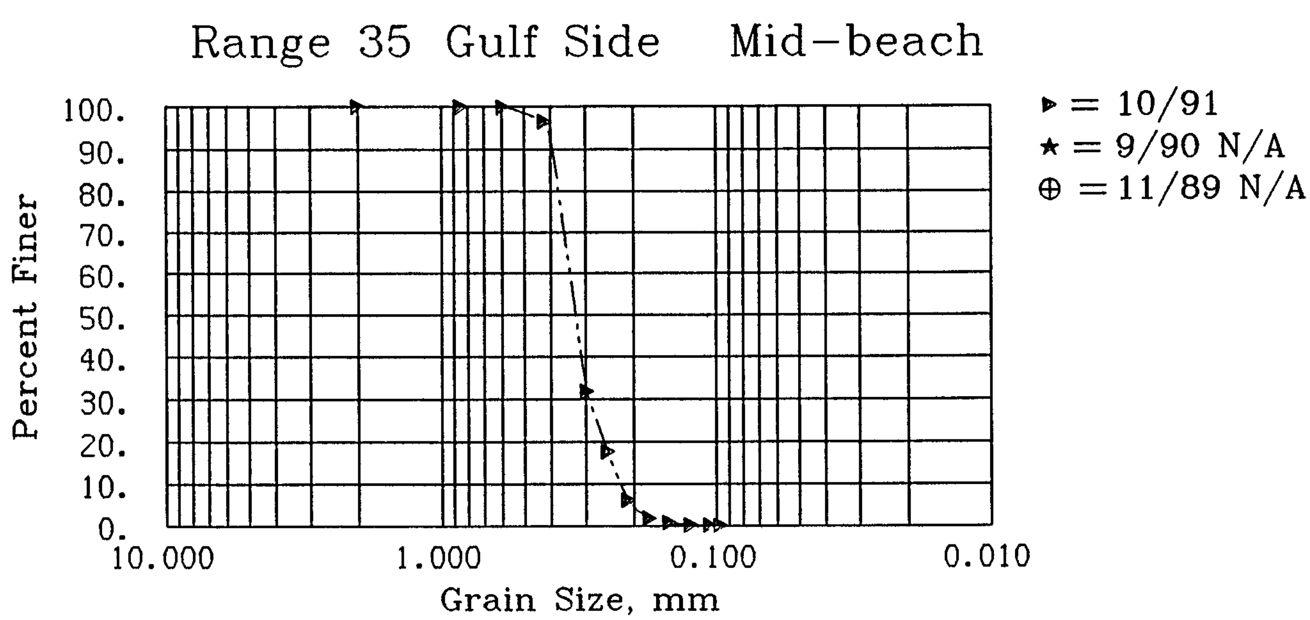
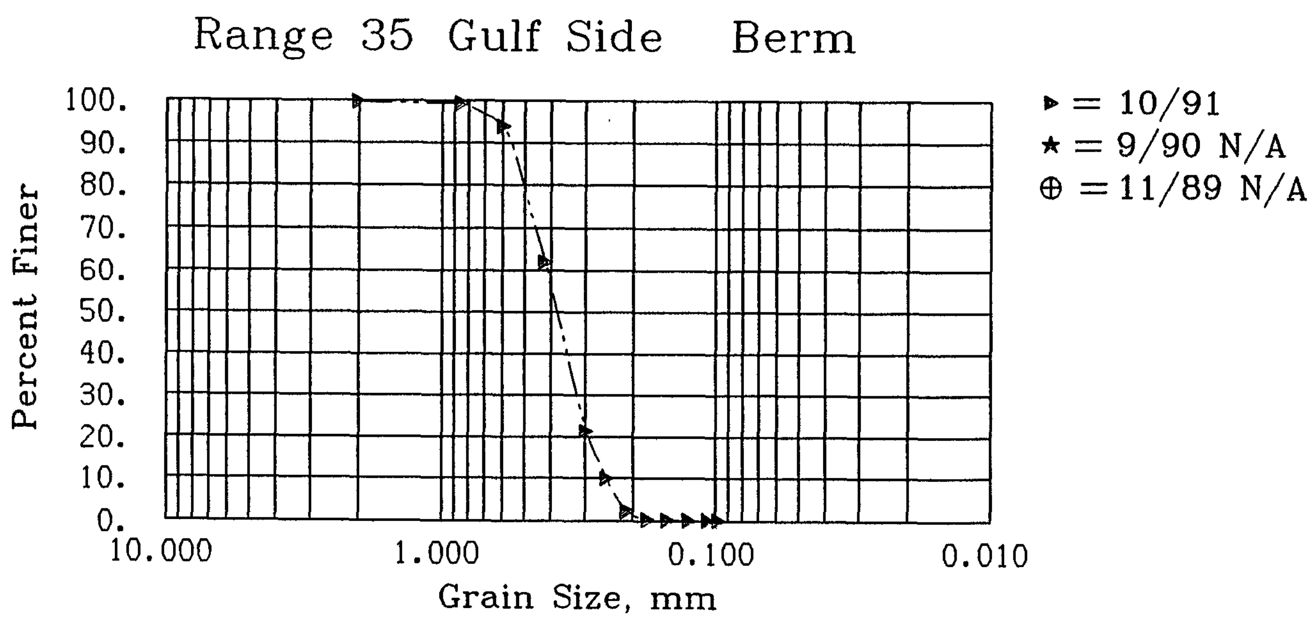


Figure V-25: Grain Size Distributions for Range 35, Dune and Mid–Beach Positions.



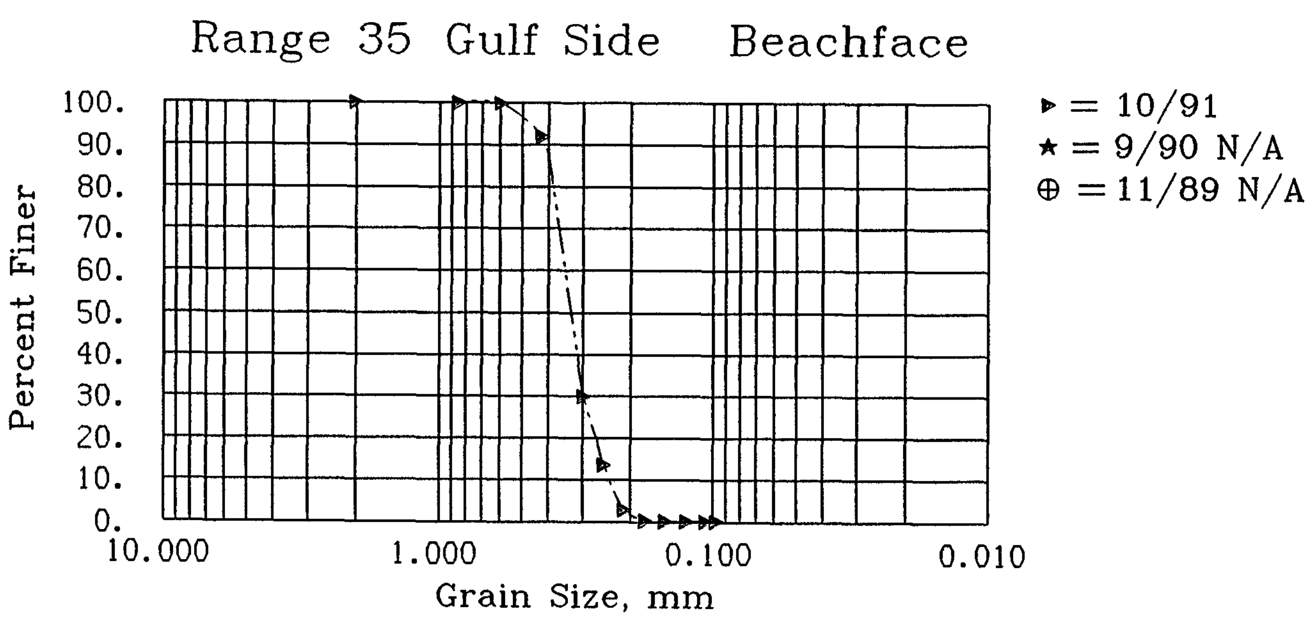
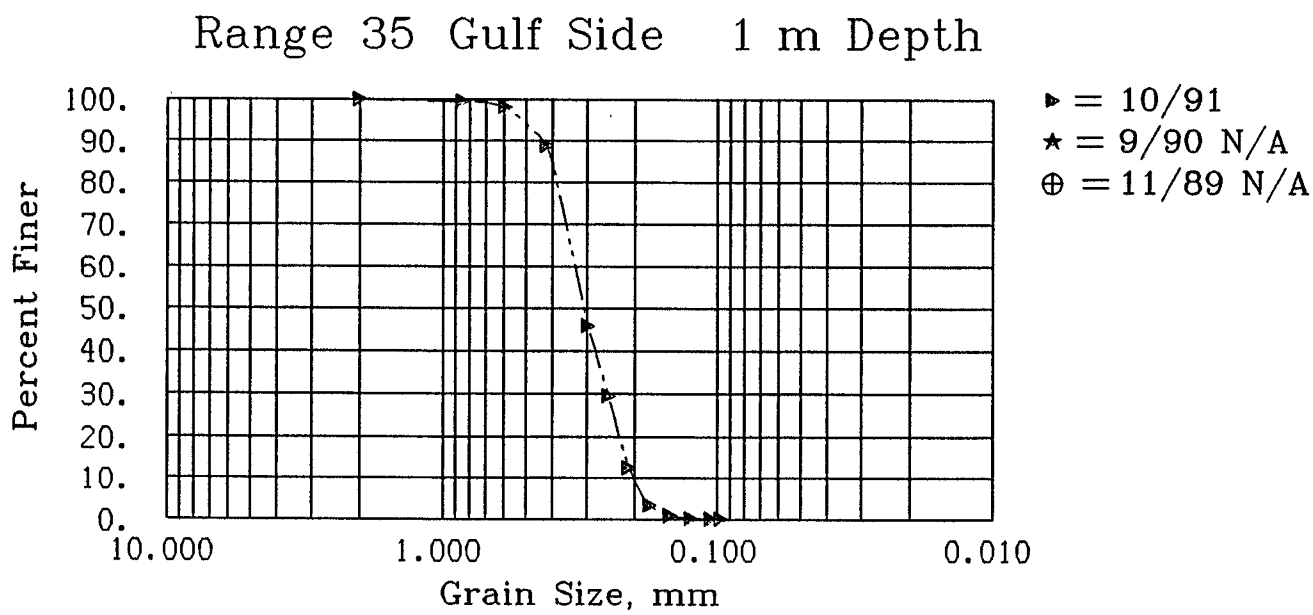


Figure V-26: Grain Size Distributions for Range 35, Berm and Beachface Positions.



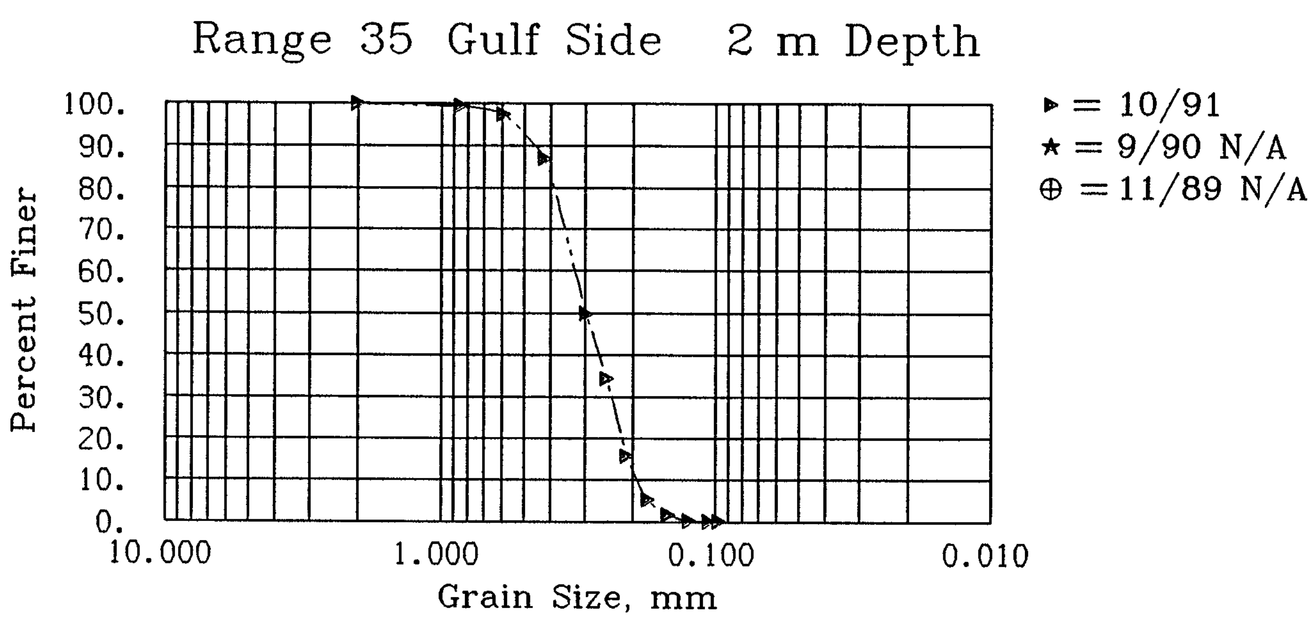
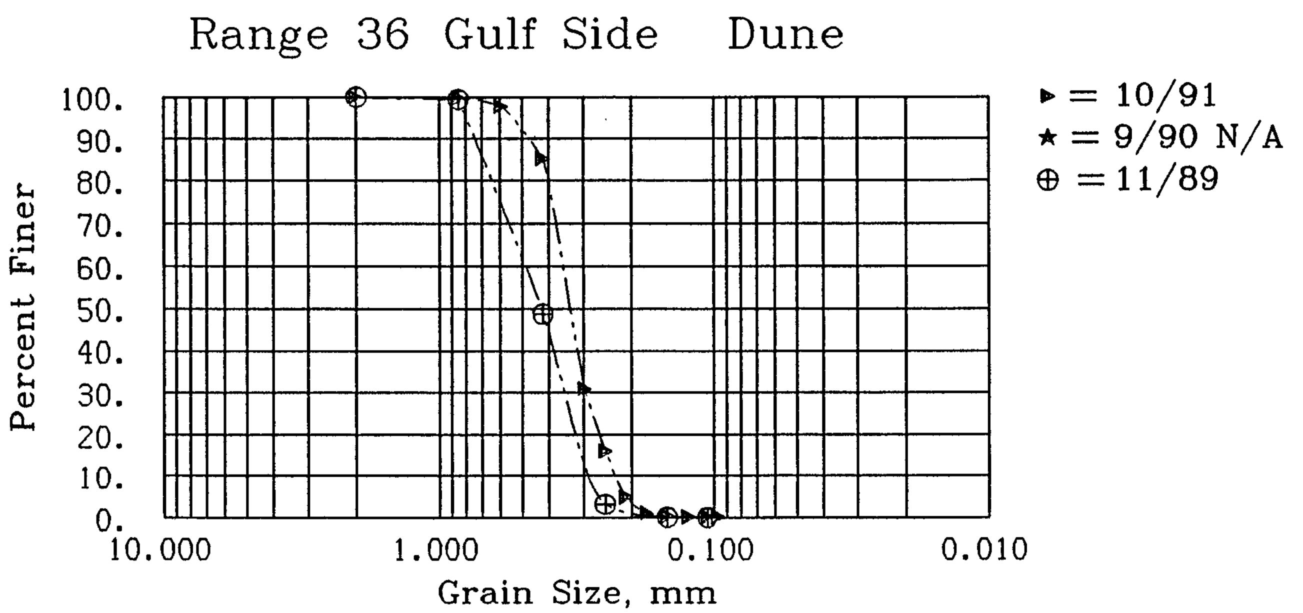


Figure V-27: Grain Size Distributions for Range 35, 1 m Depth and 2 m Depth Positions.



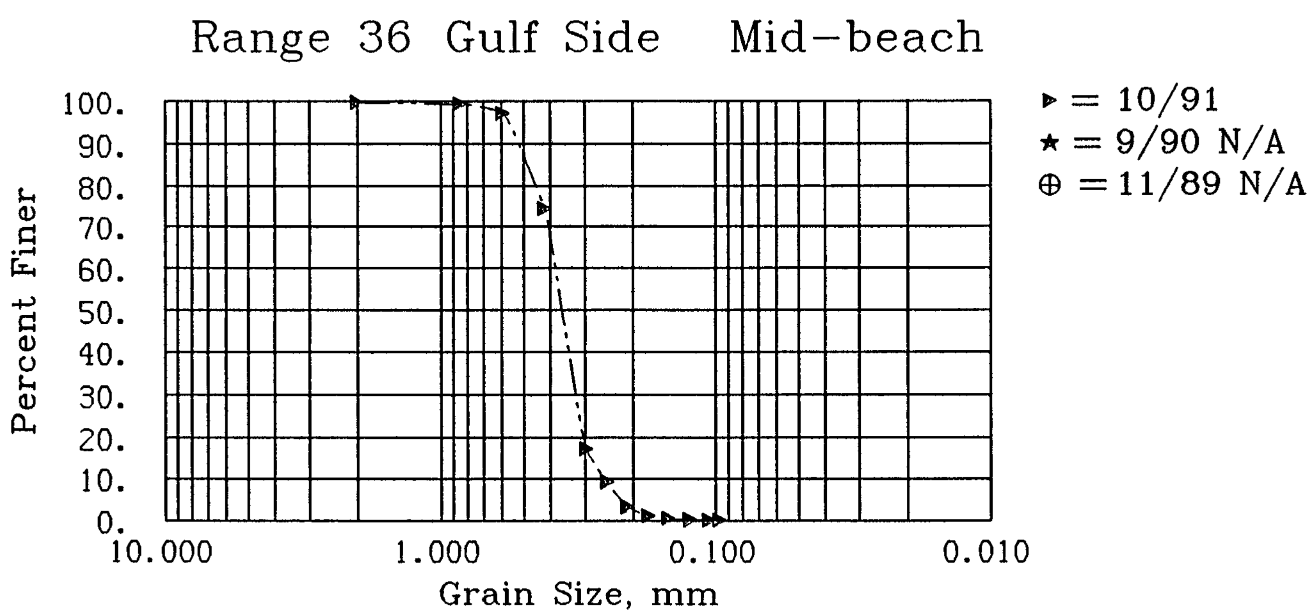
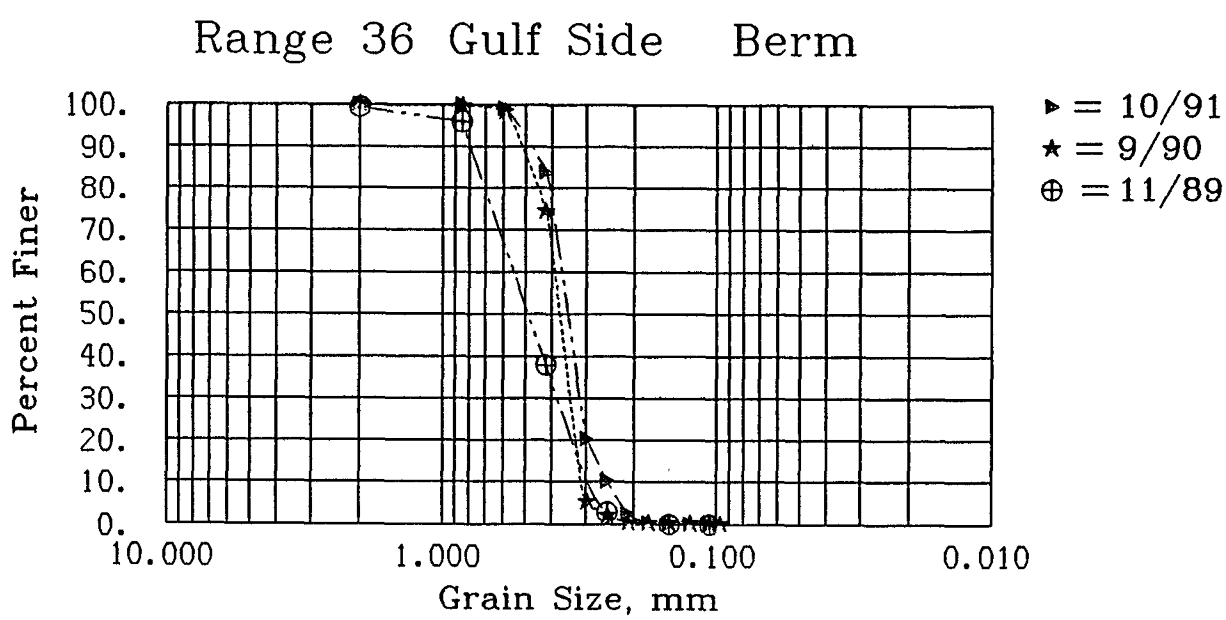


Figure V-28: Grain Size Distributions for Range 36, Dune and Mid–Beach Positions.



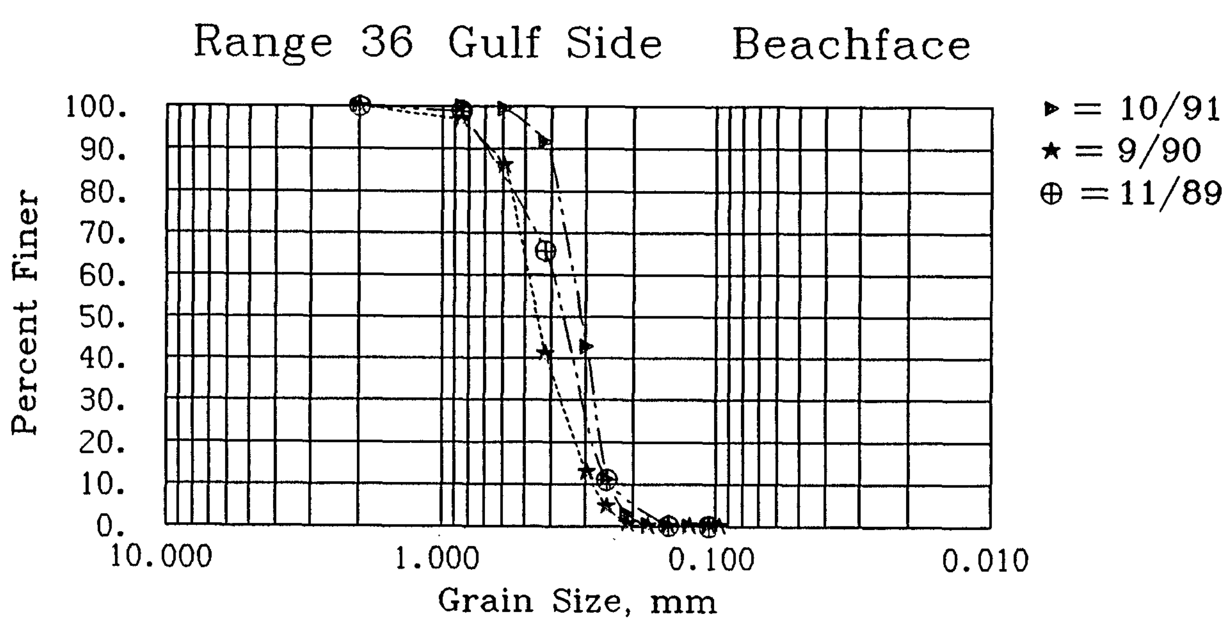
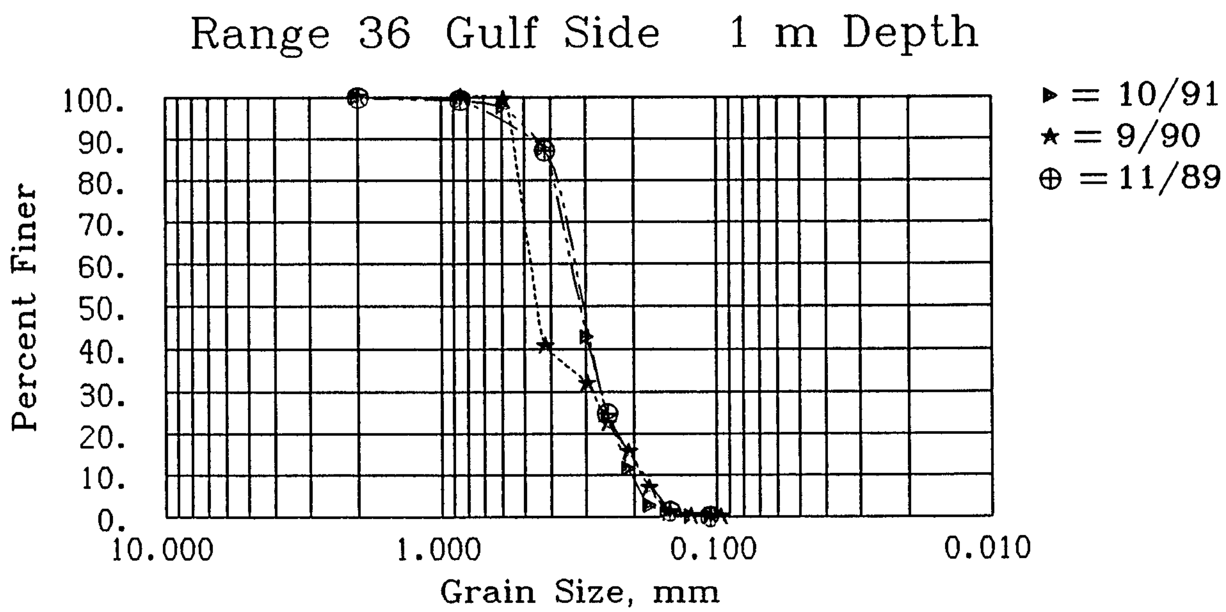


Figure V-29: Grain Size Distributions for Range 36, Berm and Beachface Positions.



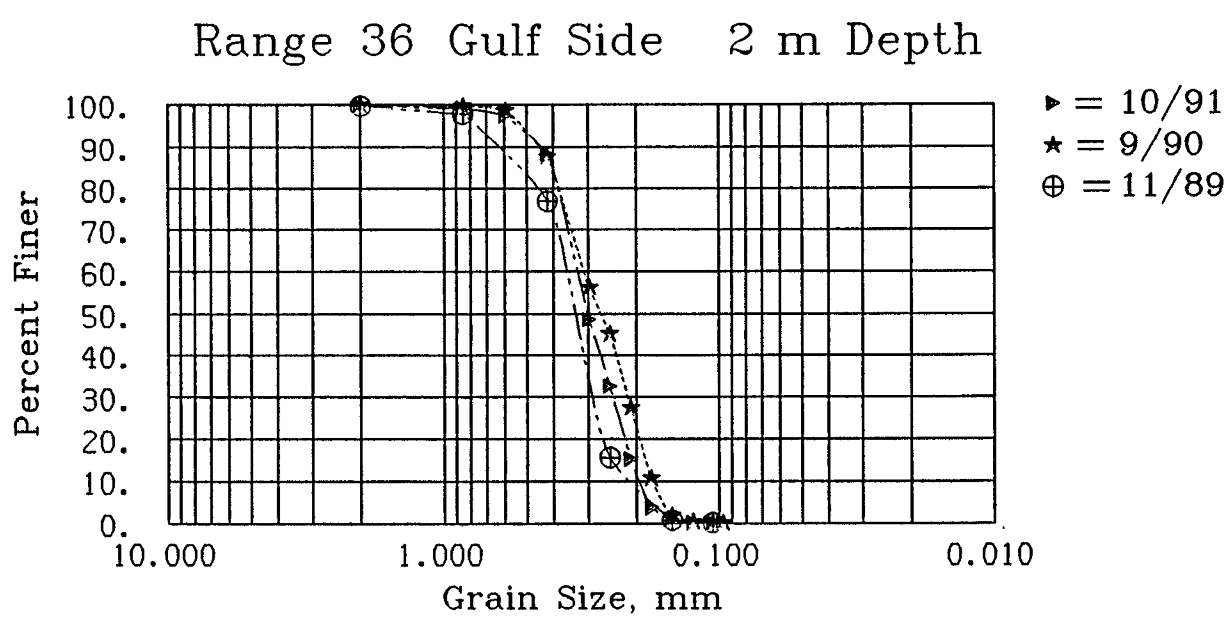
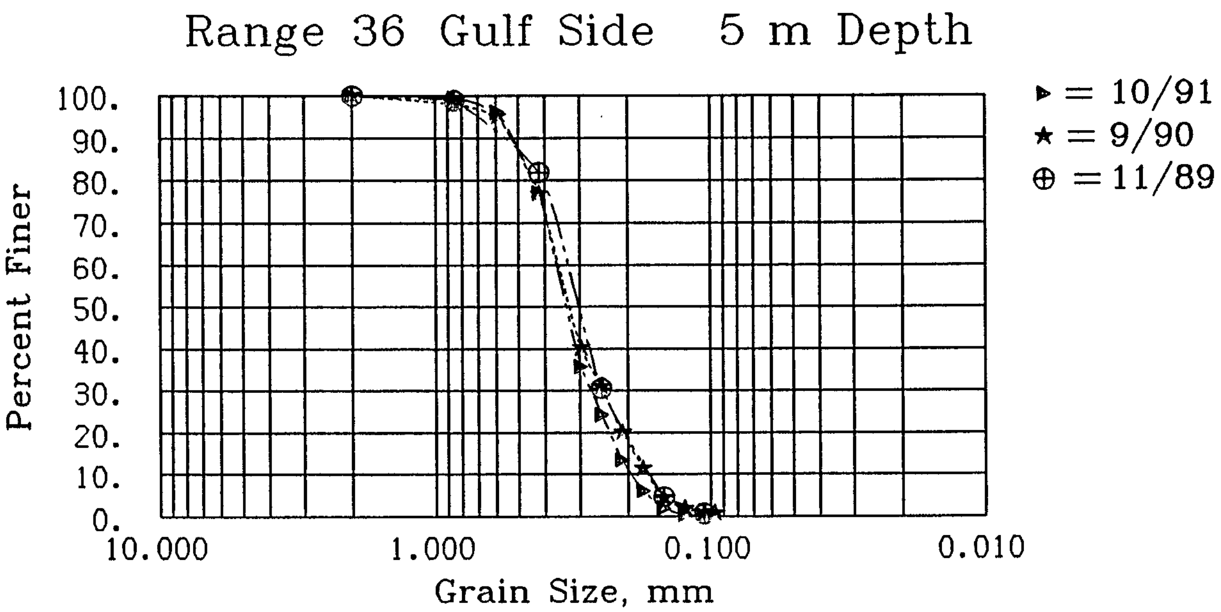


Figure V-30: Grain Size Distributions for Range 36, 1 m and 2 m Depth Positions.



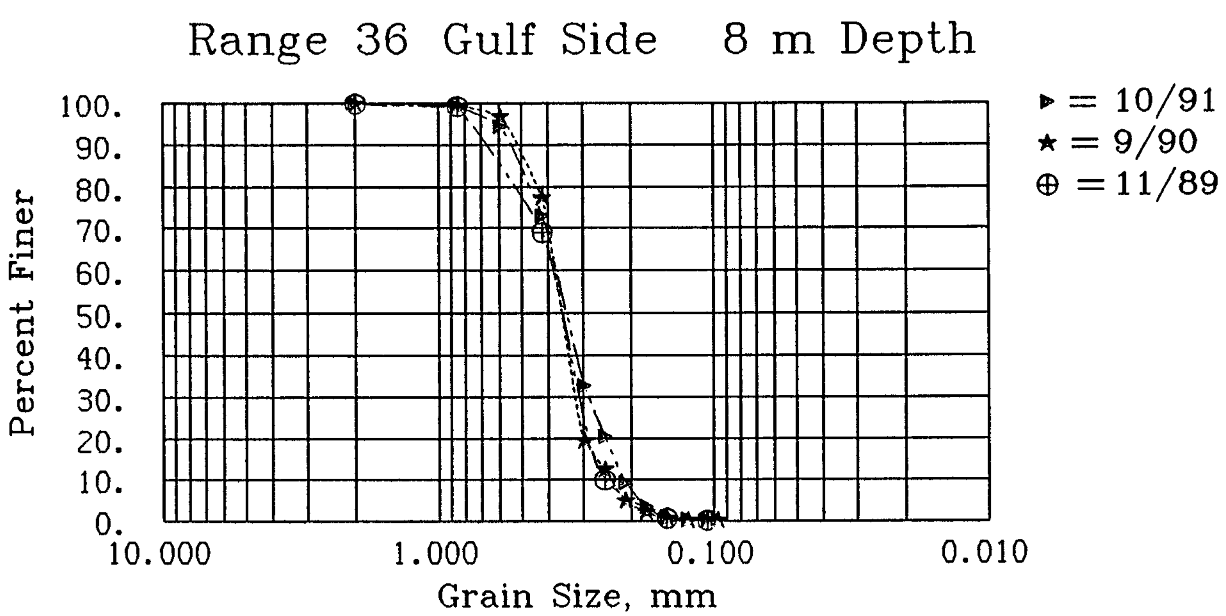
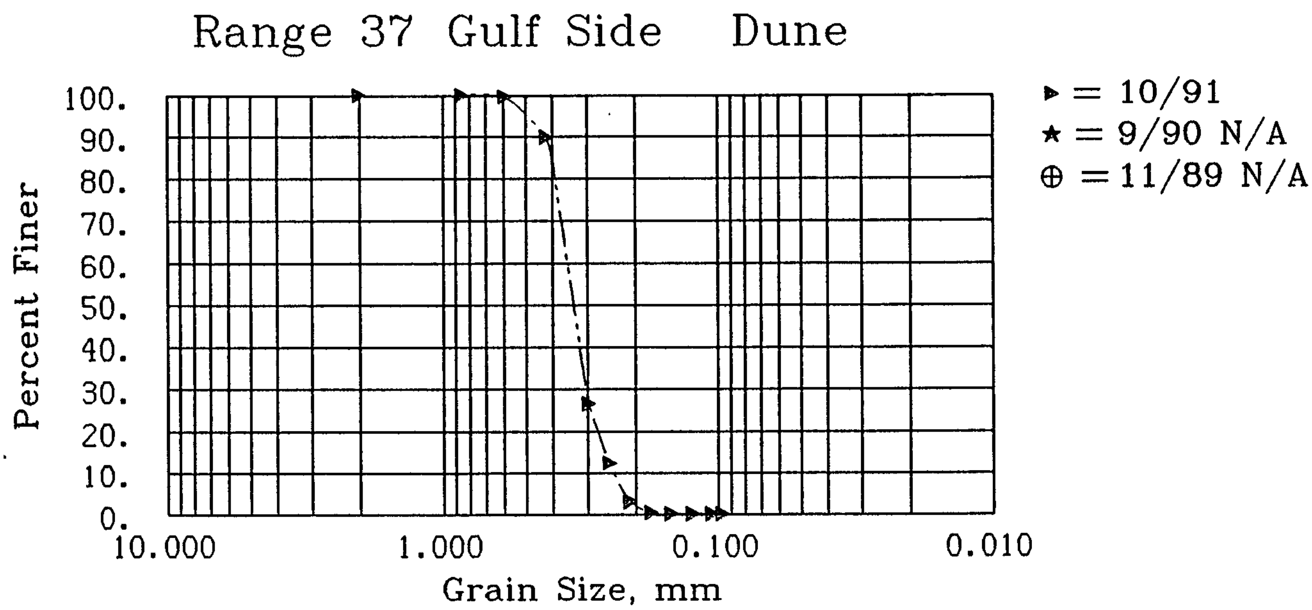


Figure V-31: Grain Size Distributions for Range 36, 5 m Depth and 8 m Depth Positions.



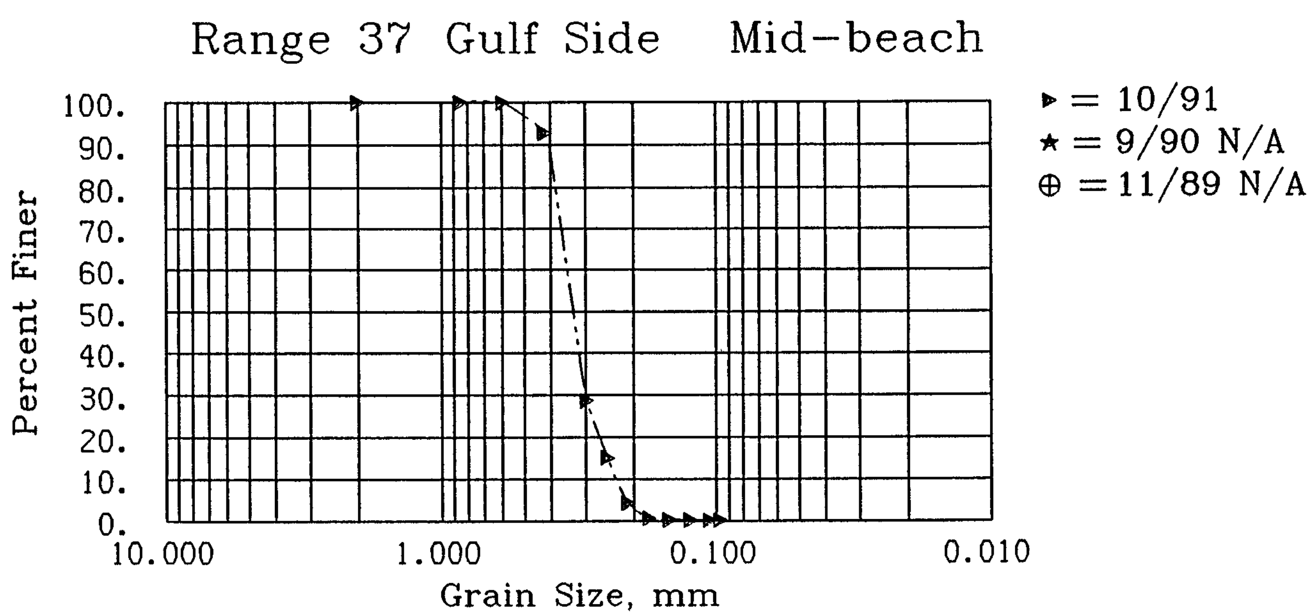
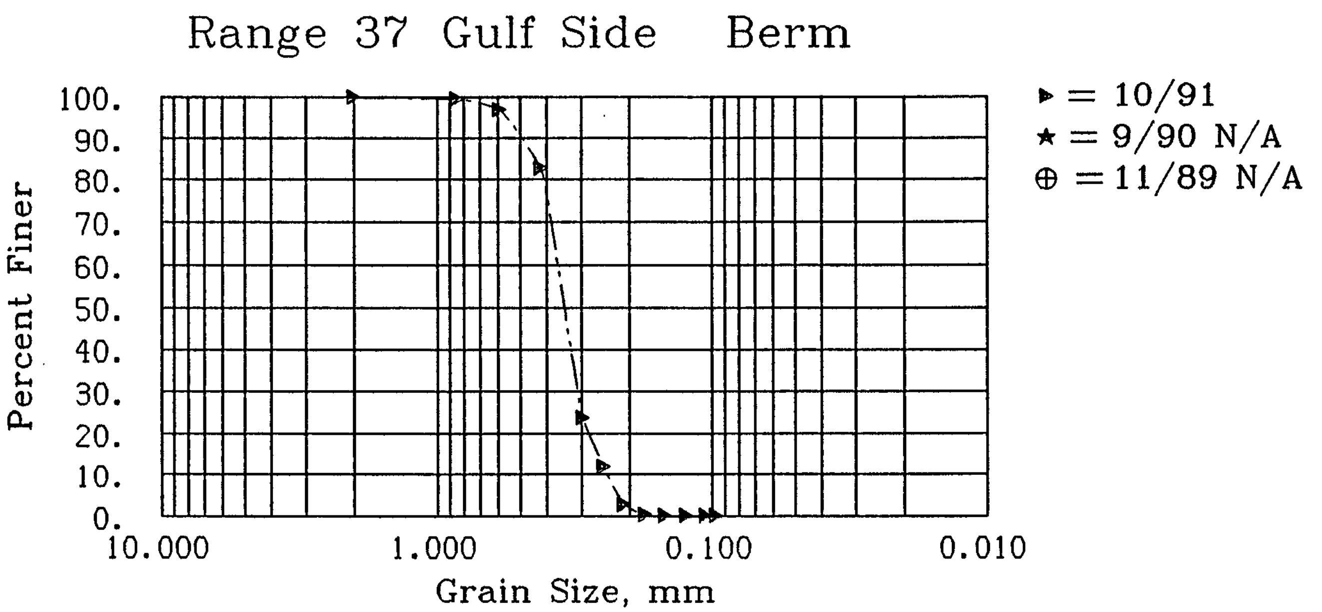


Figure V-32: Grain Size Distributions for Range 37, Dune and Mid-Beach Positions.



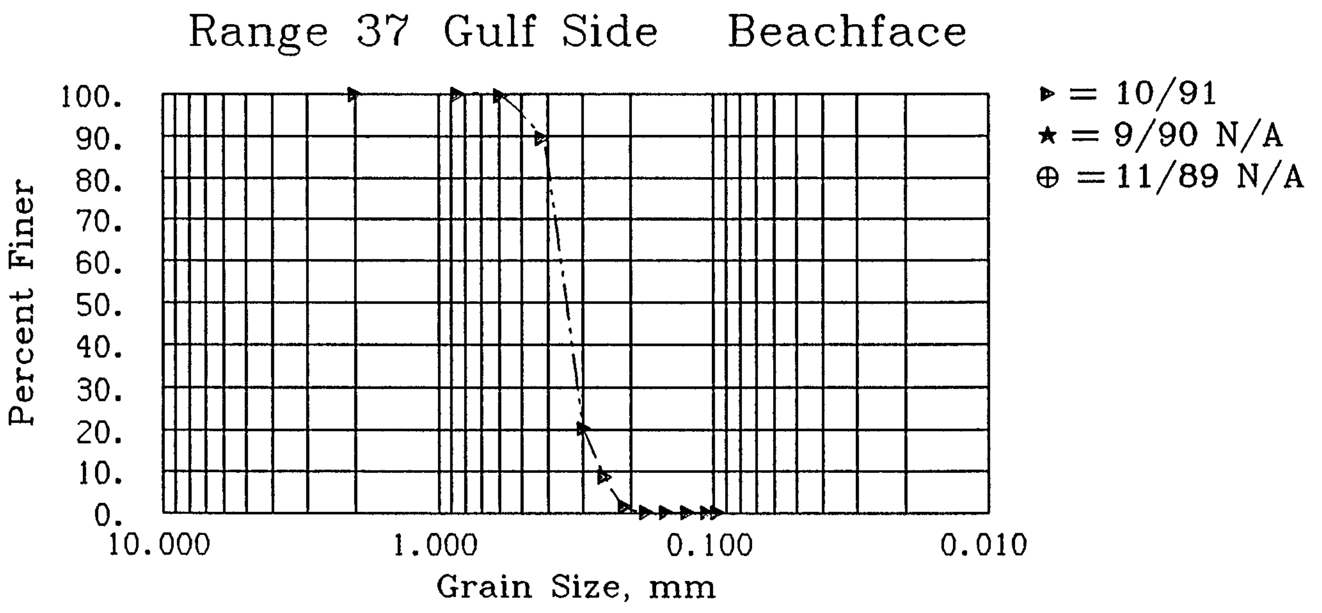
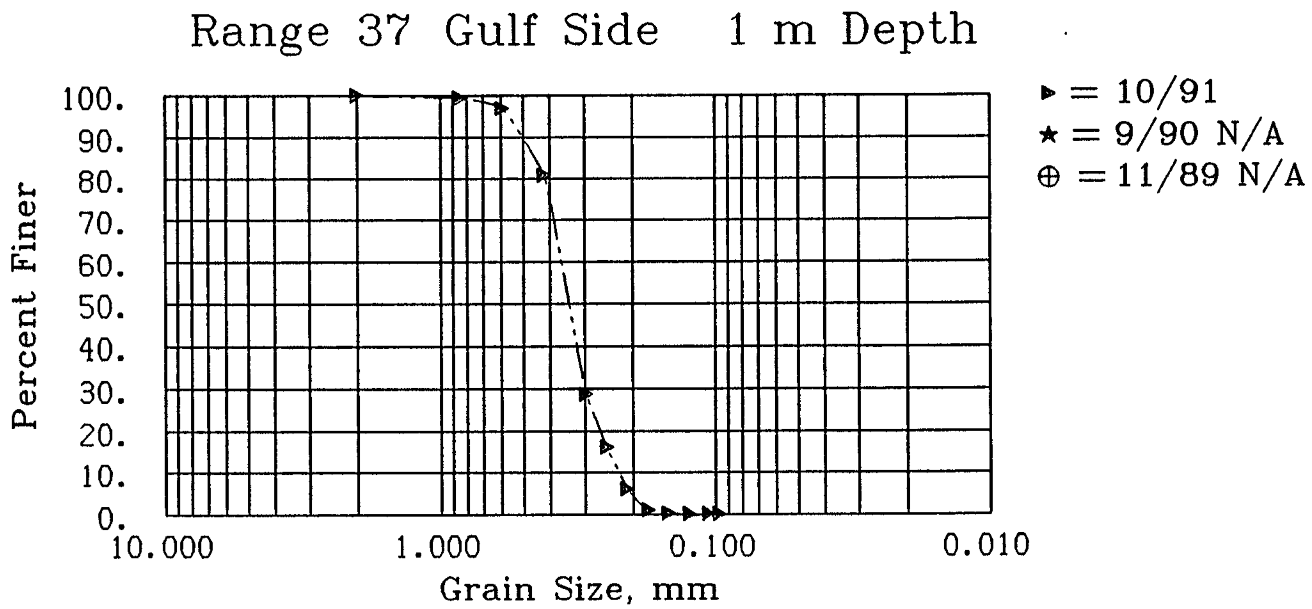


Figure V-33: Grain Size Distributions for Range 37, Berm and Beachface Positions.



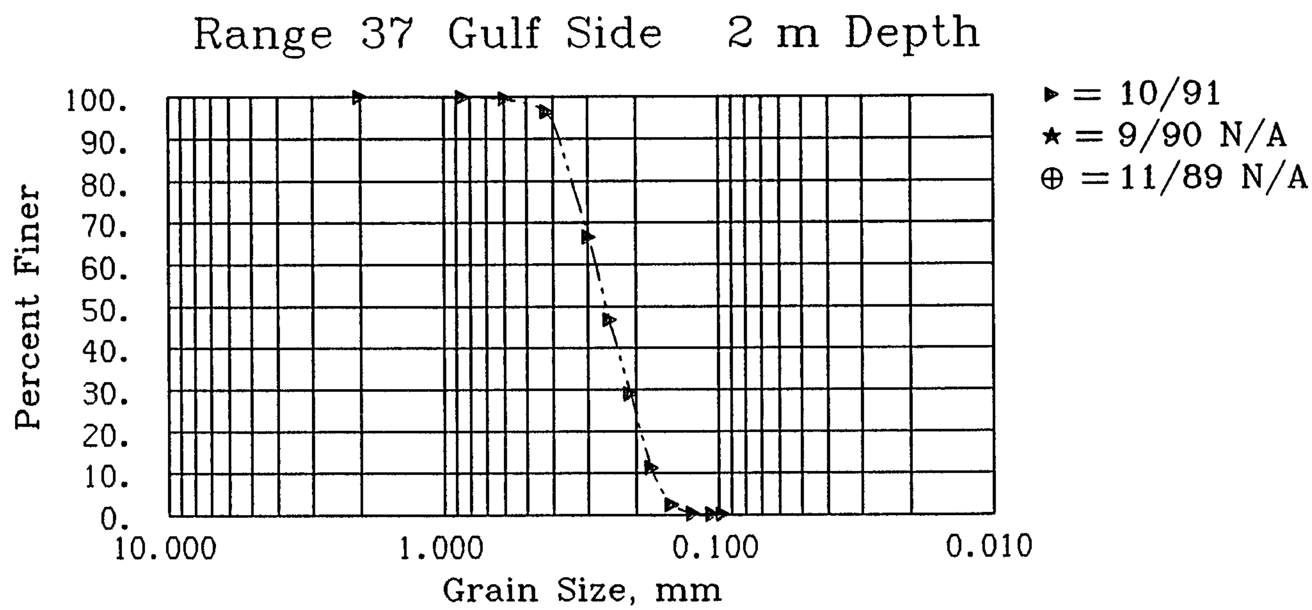
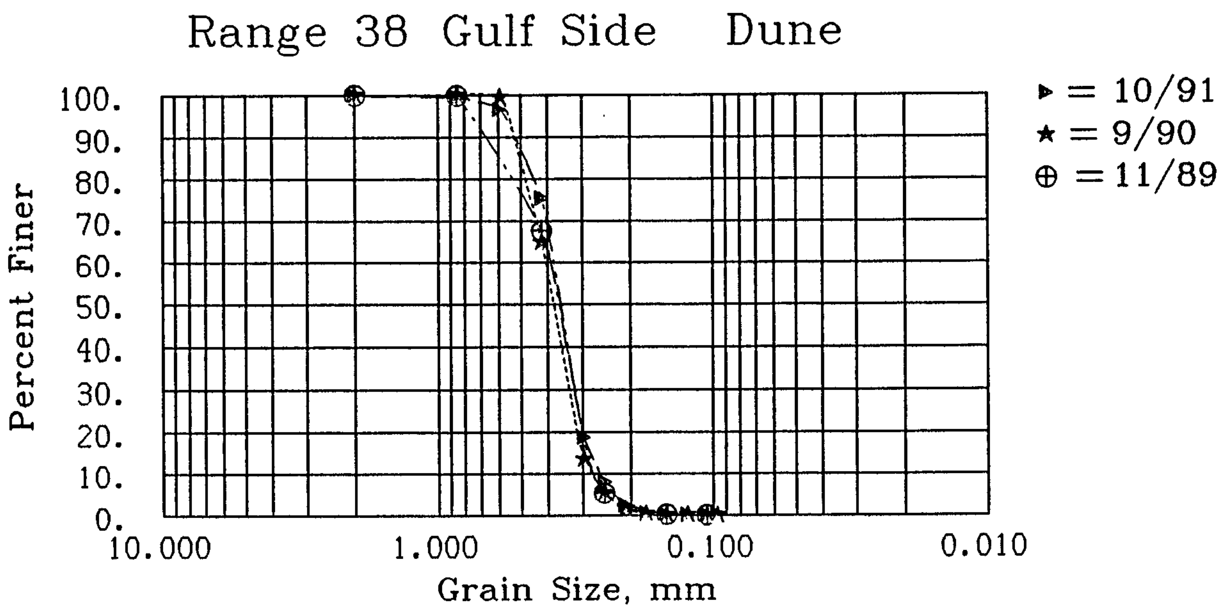


Figure V-34: Grain Size Distributions for Range 37, 1 m Depth and 2 m Depth Positions.



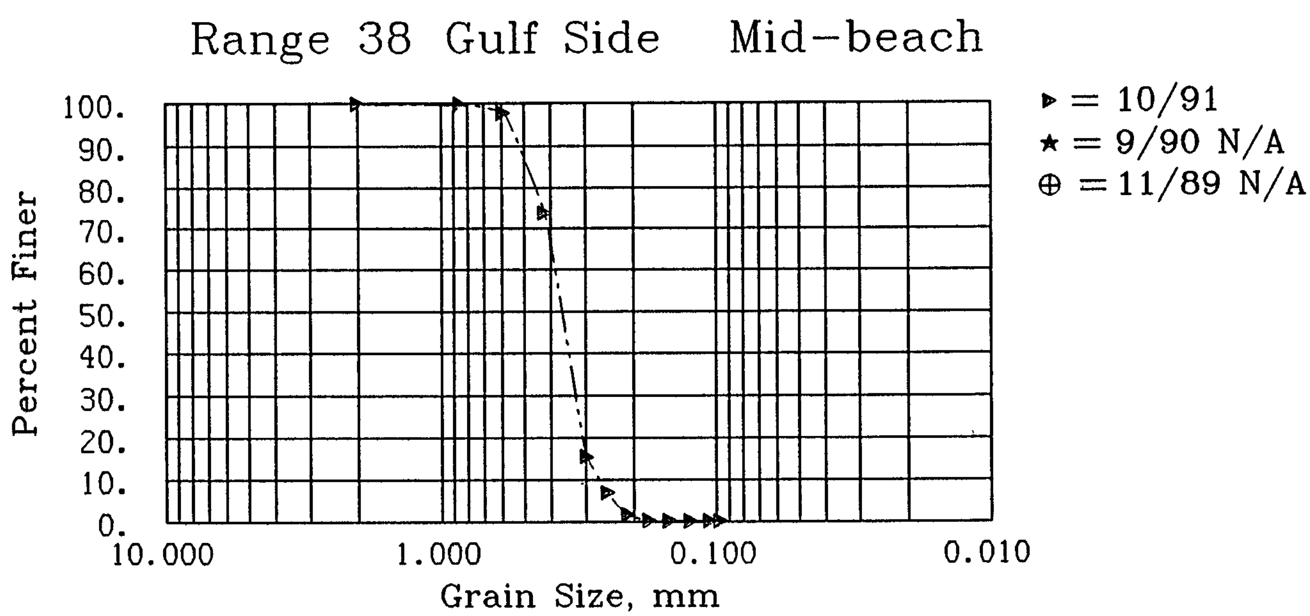
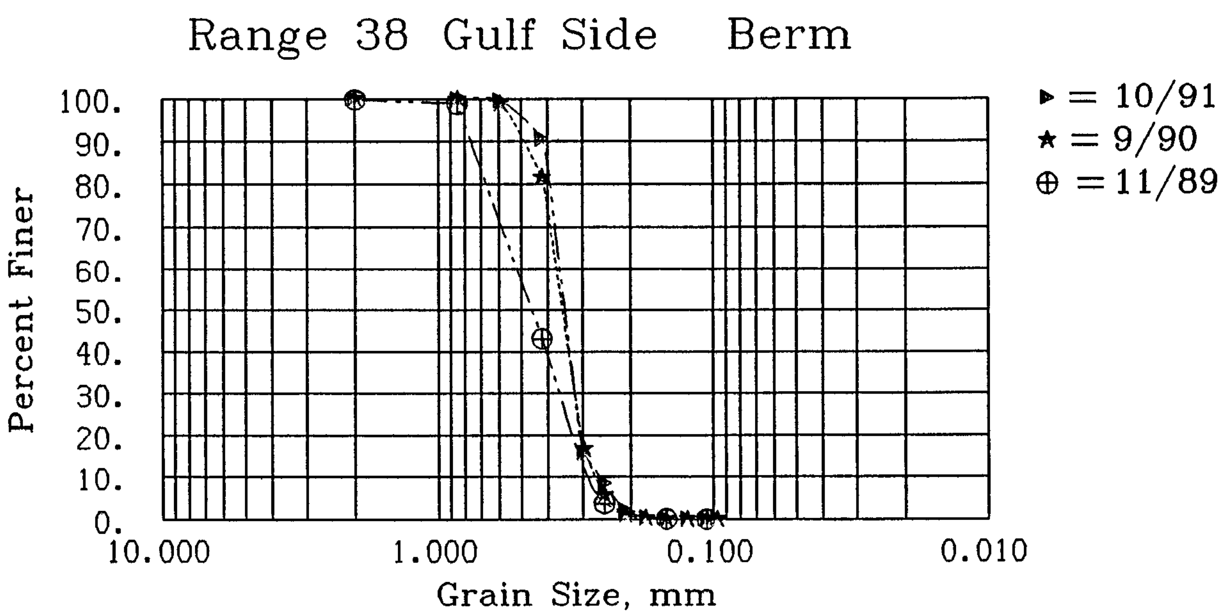


Figure V-35: Grain Size Distributions for Range 38, Dune and Mid–Beach Positions.



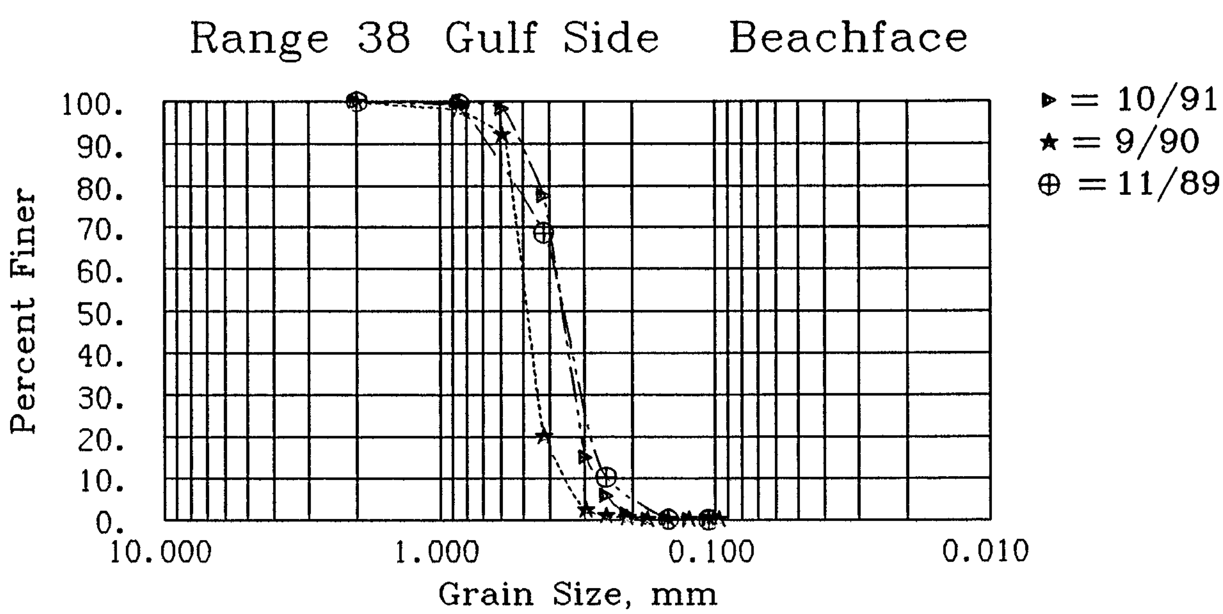
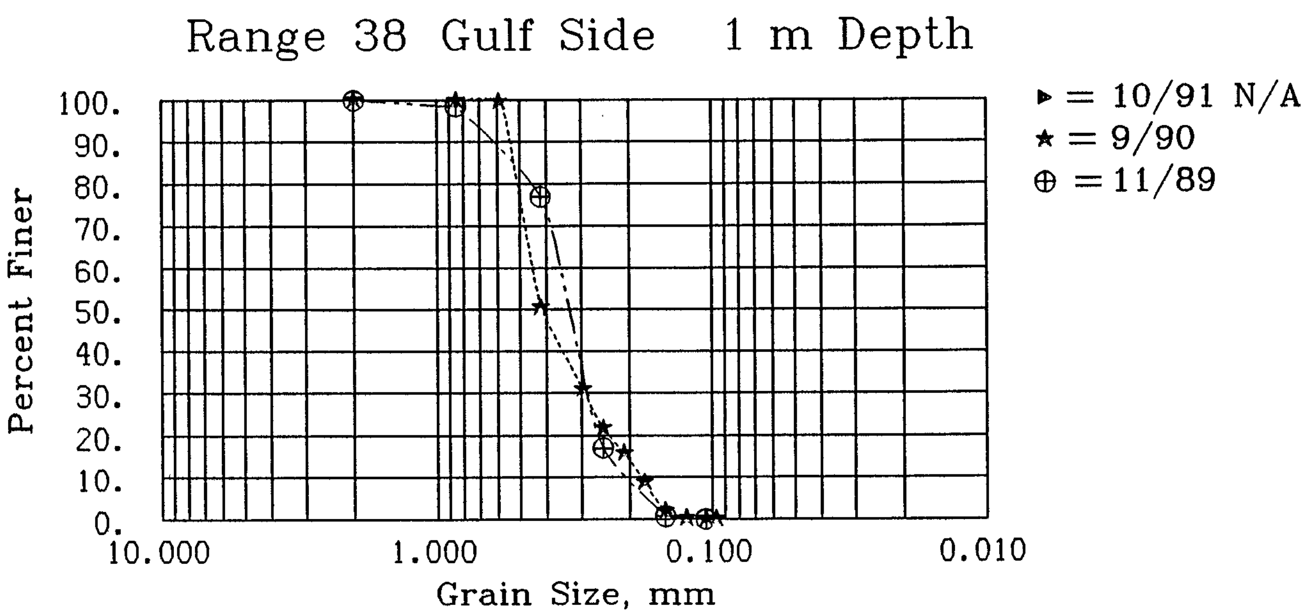


Figure V-36: Grain Size Distributions for Range 38, Berm and Beachface Positions.



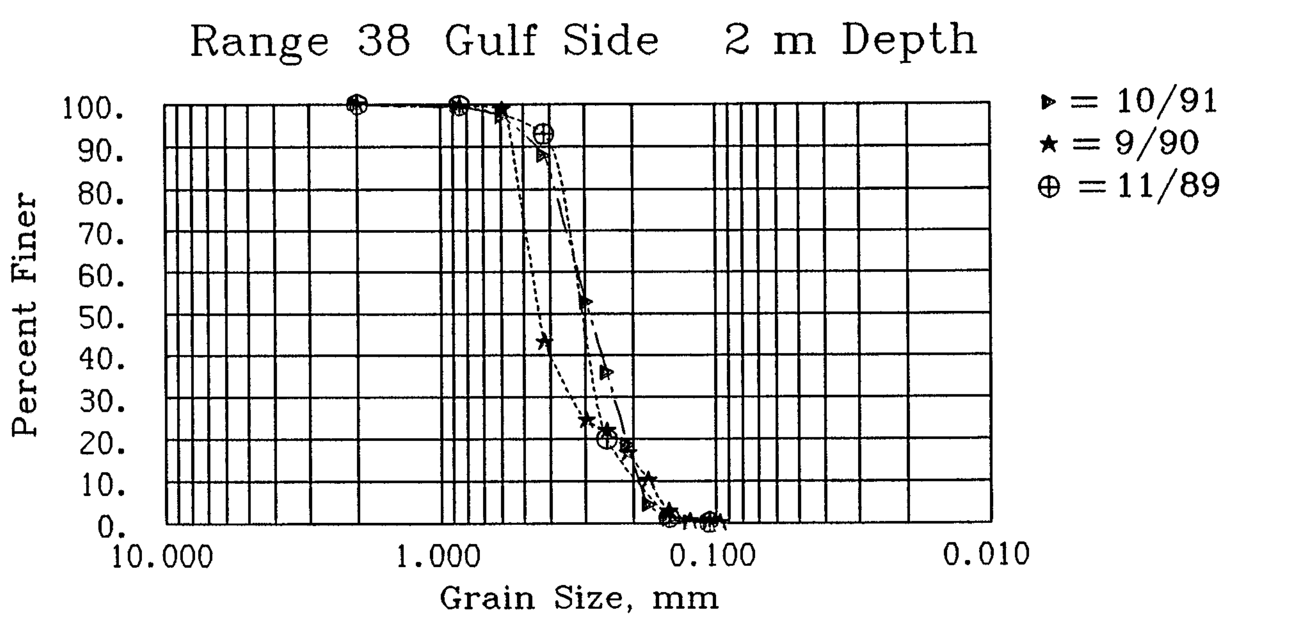
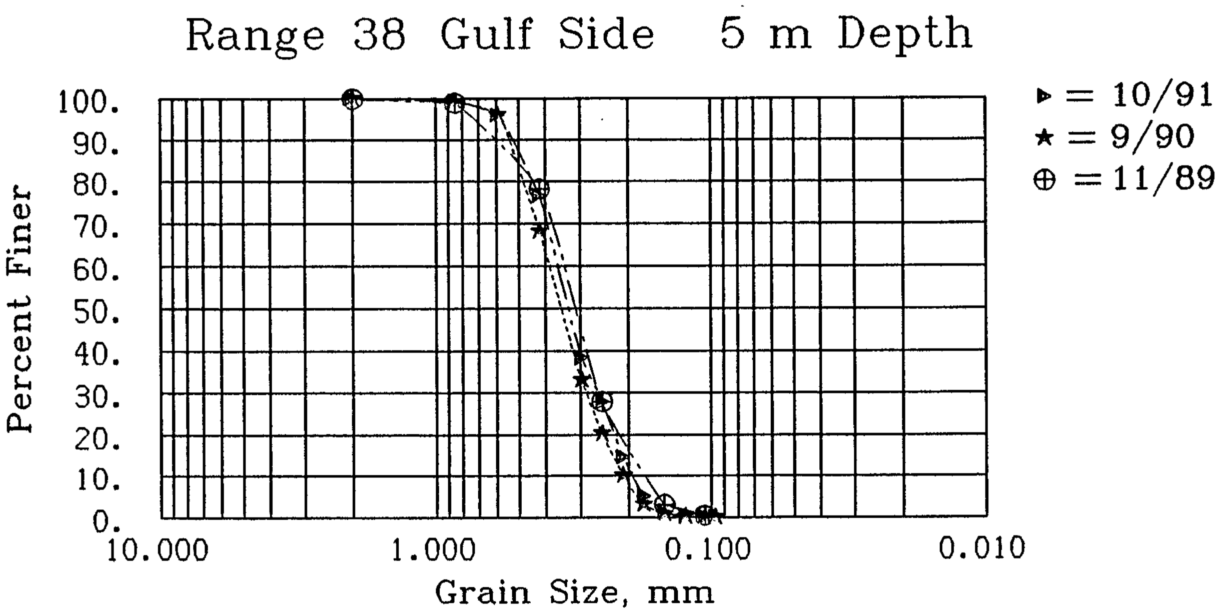


Figure V-37: Grain Size Distributions for Range 38, 1 m and 2 m Depth Positions.



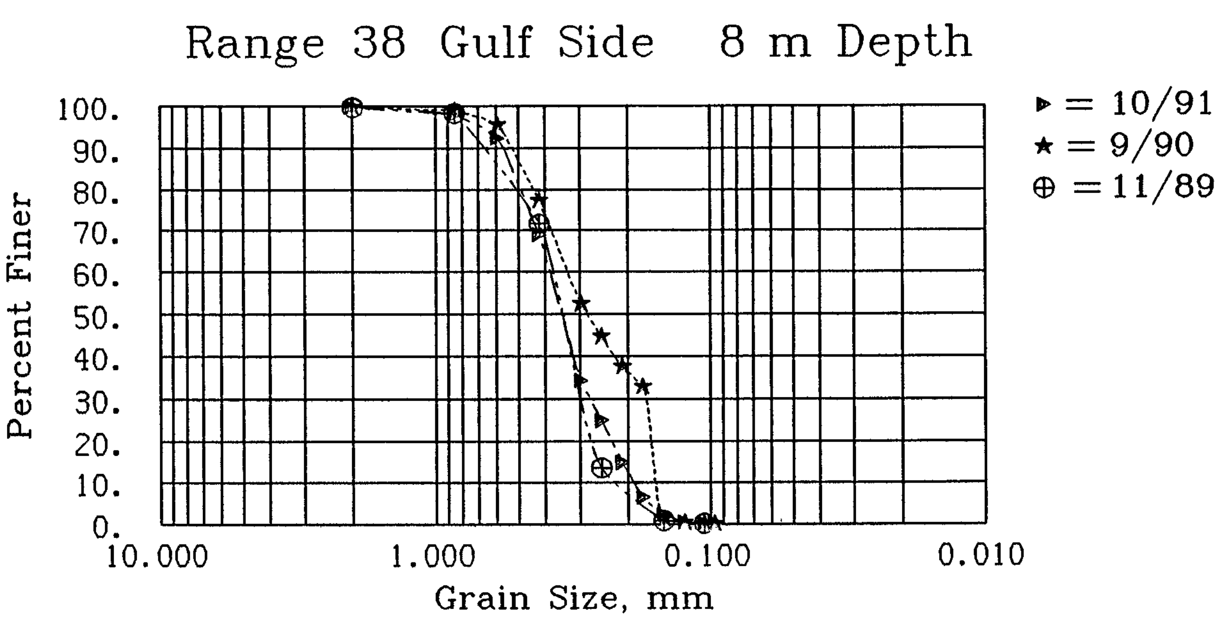
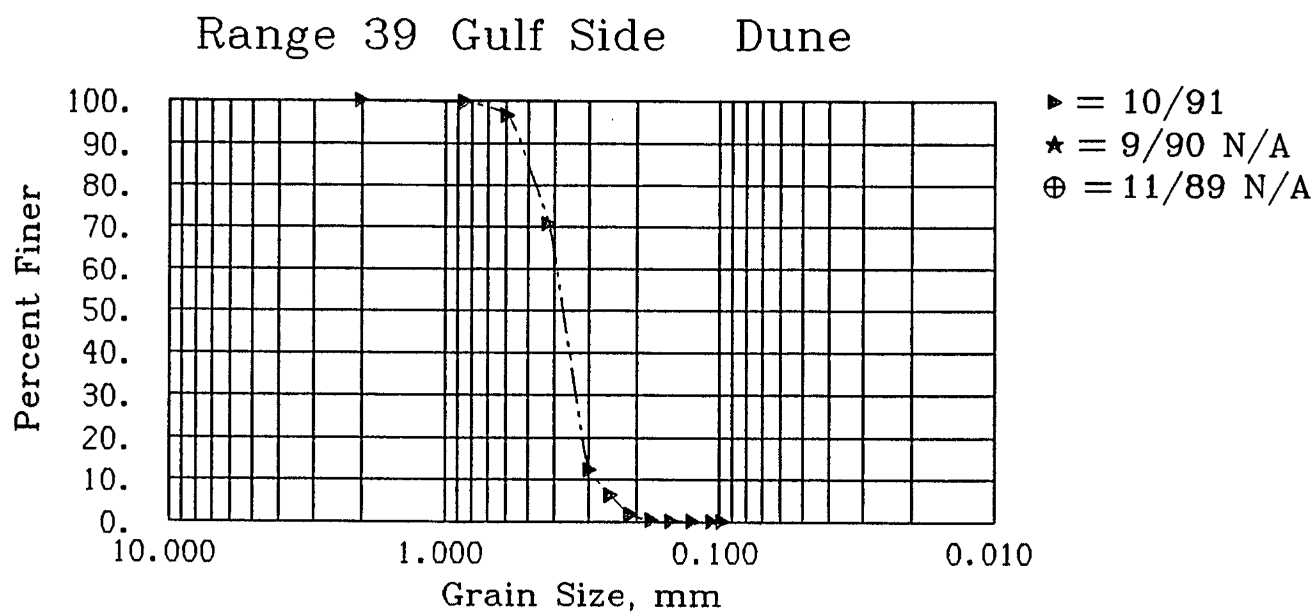


Figure V-38: Grain Size Distributions for Range 38, 5 m Depth and 8 m Depth Positions.



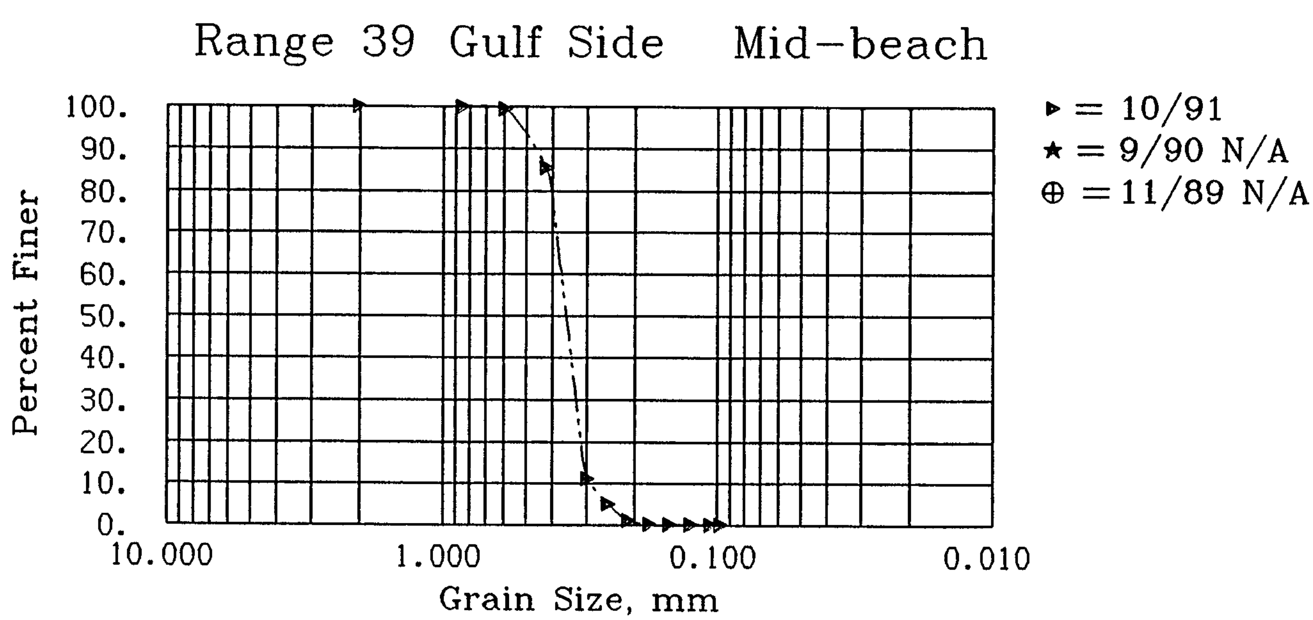
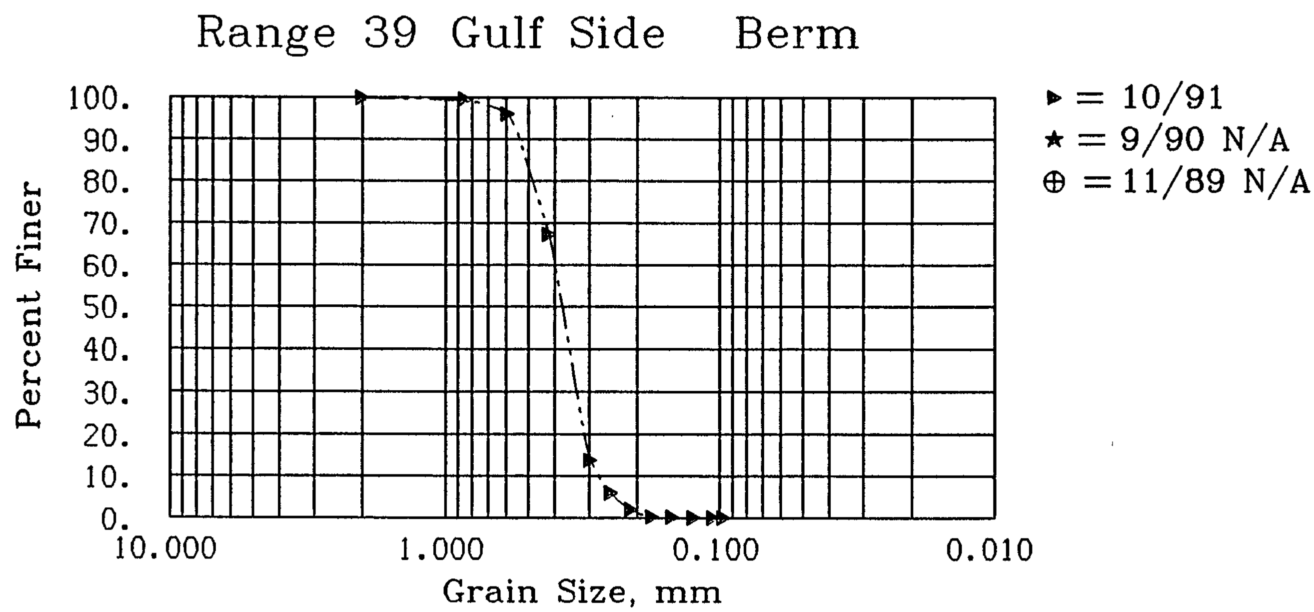


Figure V-39: Grain Size Distributions for Range 39, Dune and Mid-Beach Positions.



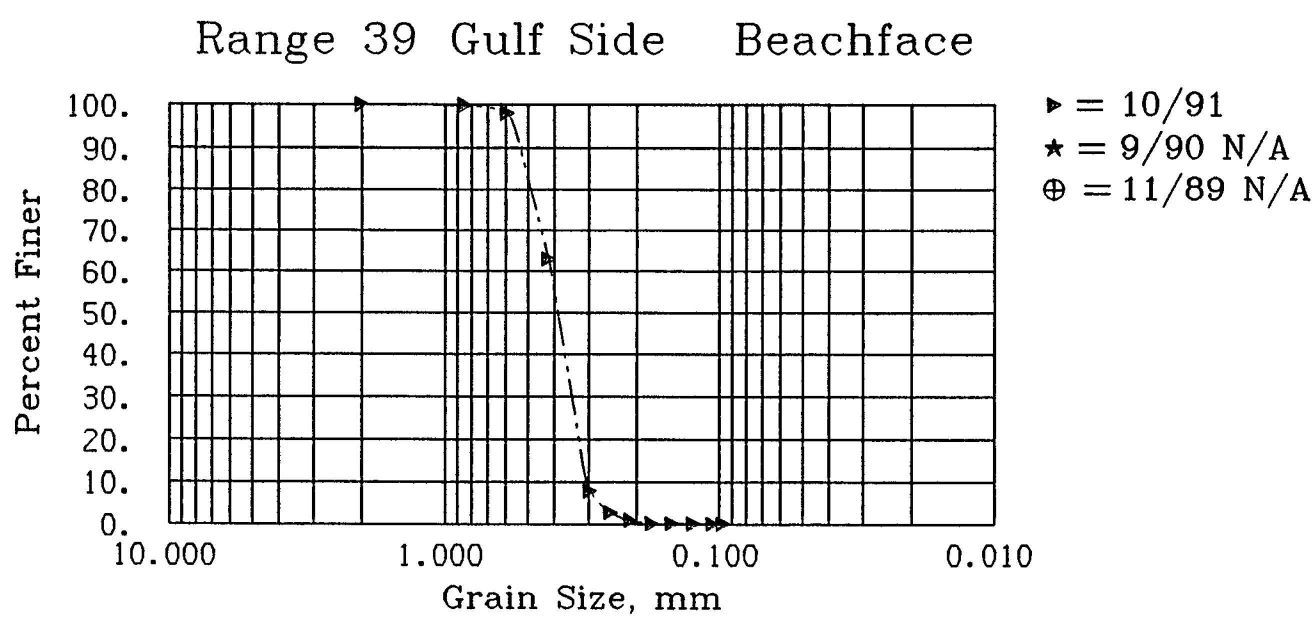
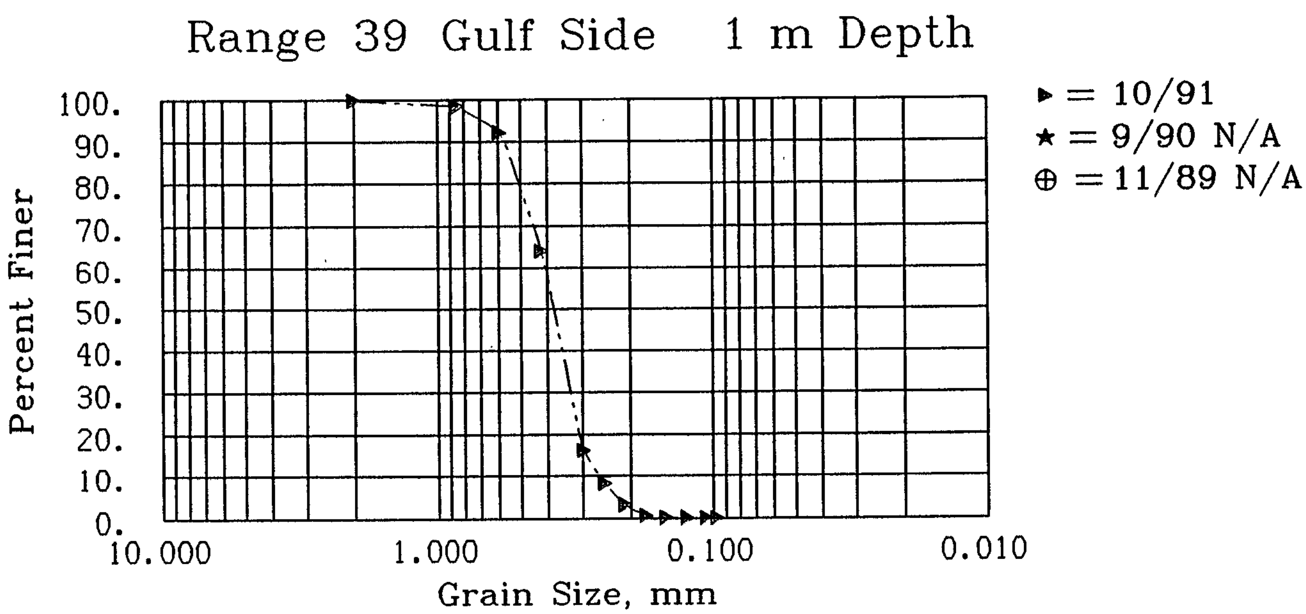


Figure V-40: Grain Size Distributions for Range 39, Berm and Beachface Positions.



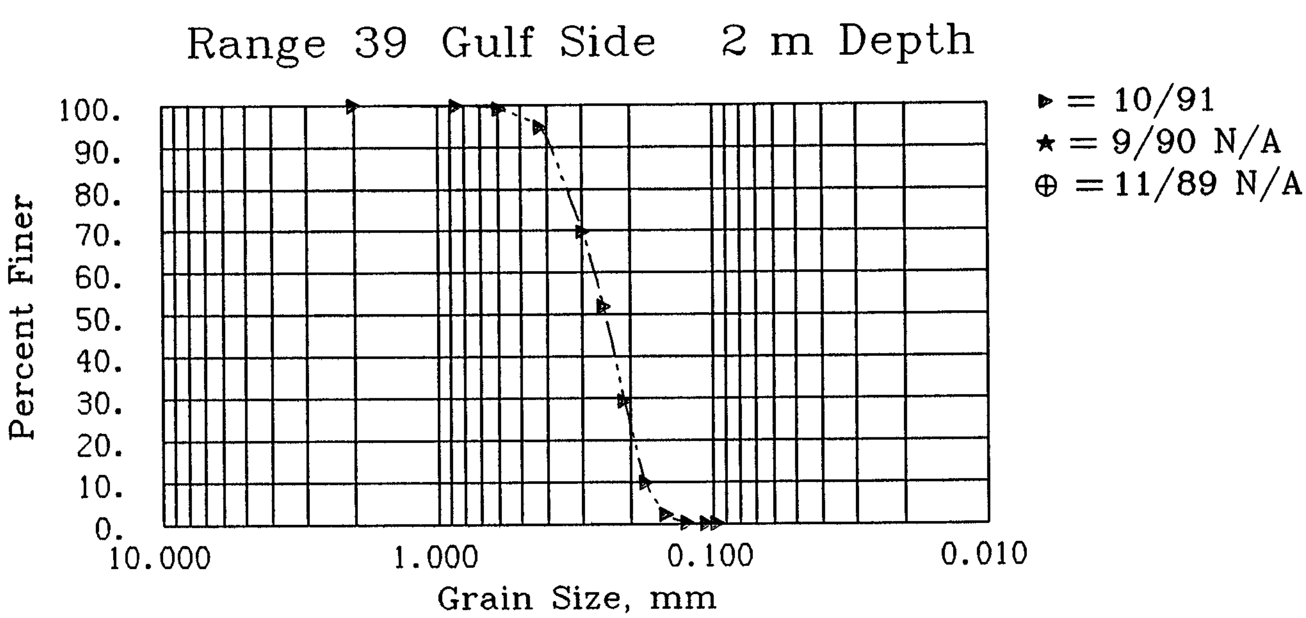
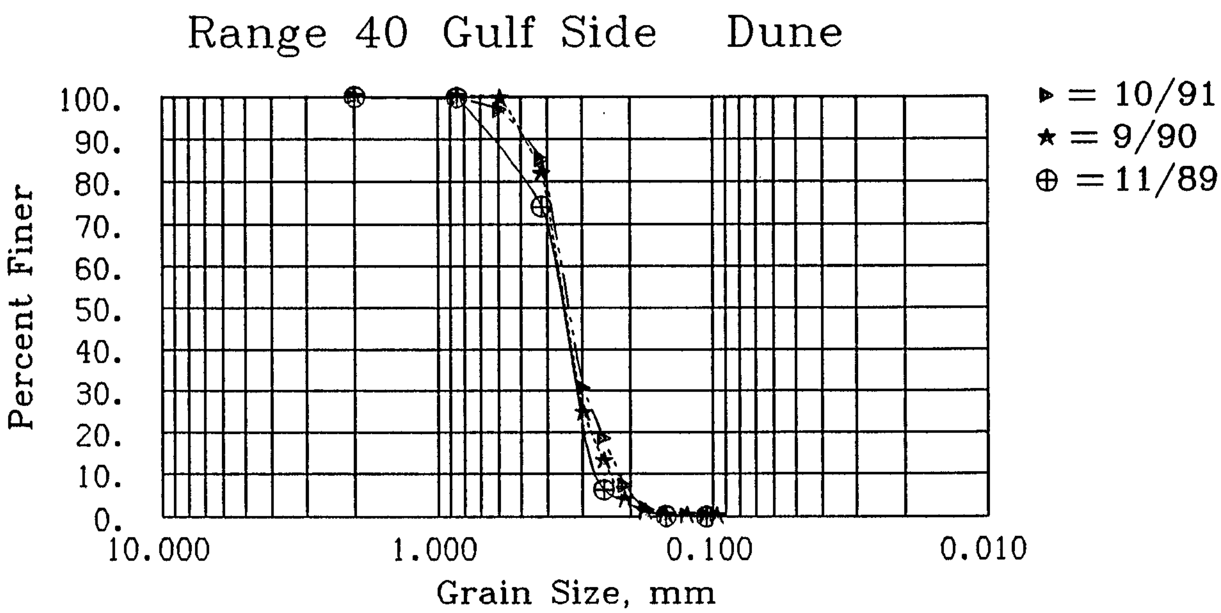


Figure V-41: Grain Size Distributions for Range 39, 1 m Depth and 2 m Depth Positions.



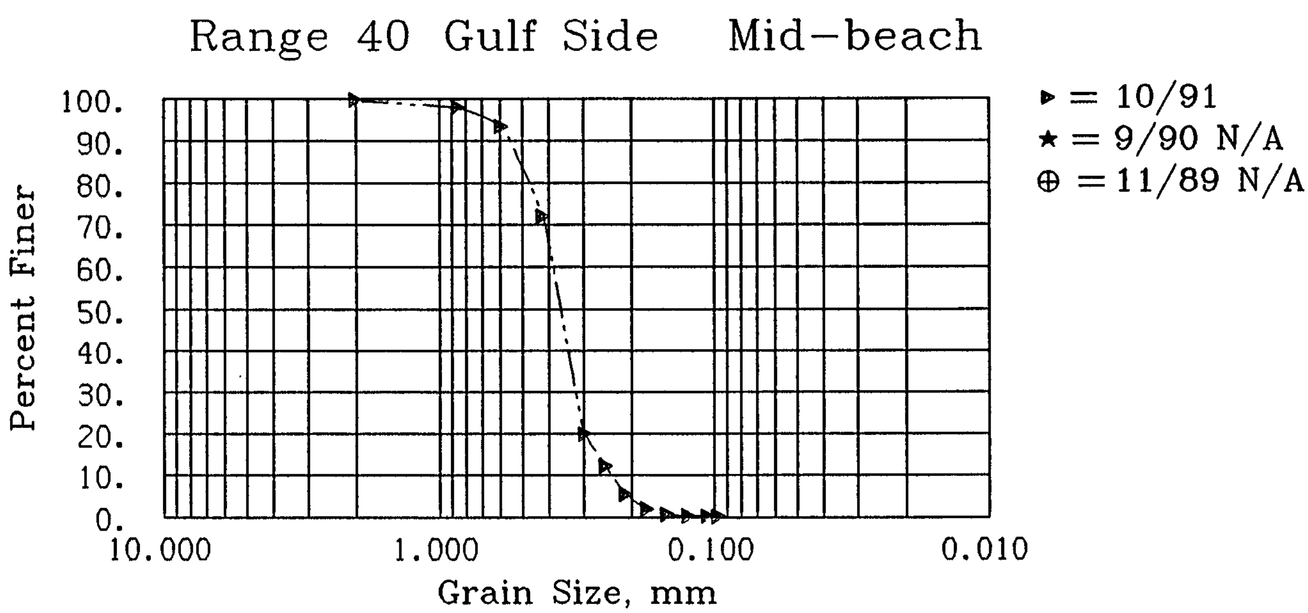
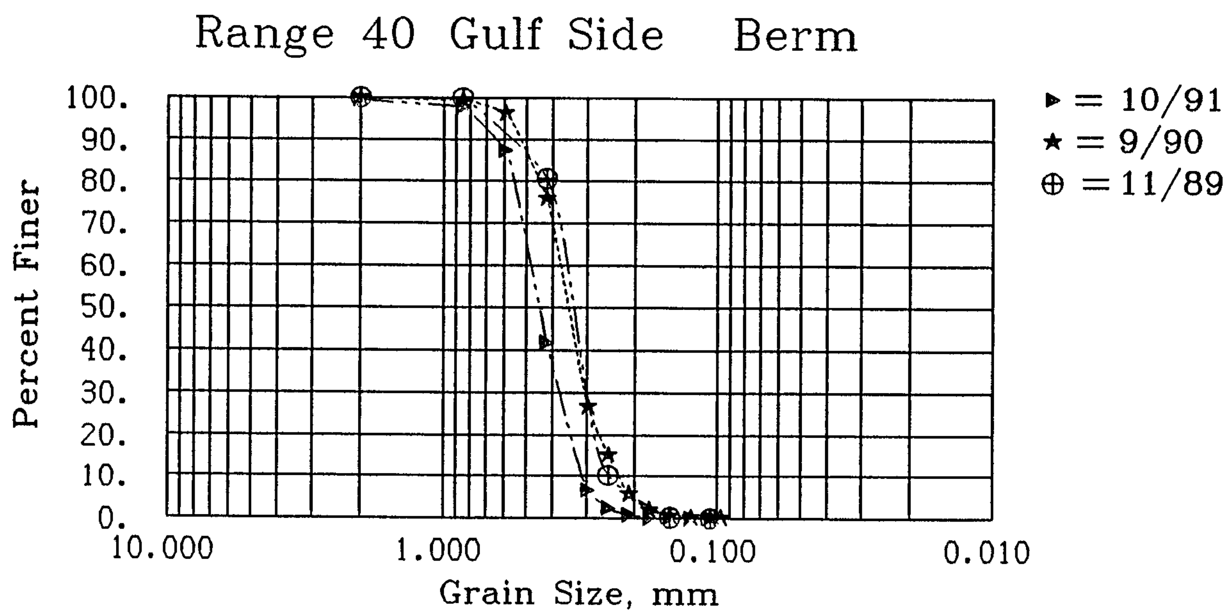


Figure V-42: Grain Size Distributions for Range 40, Dune and Mid–Beach Positions.



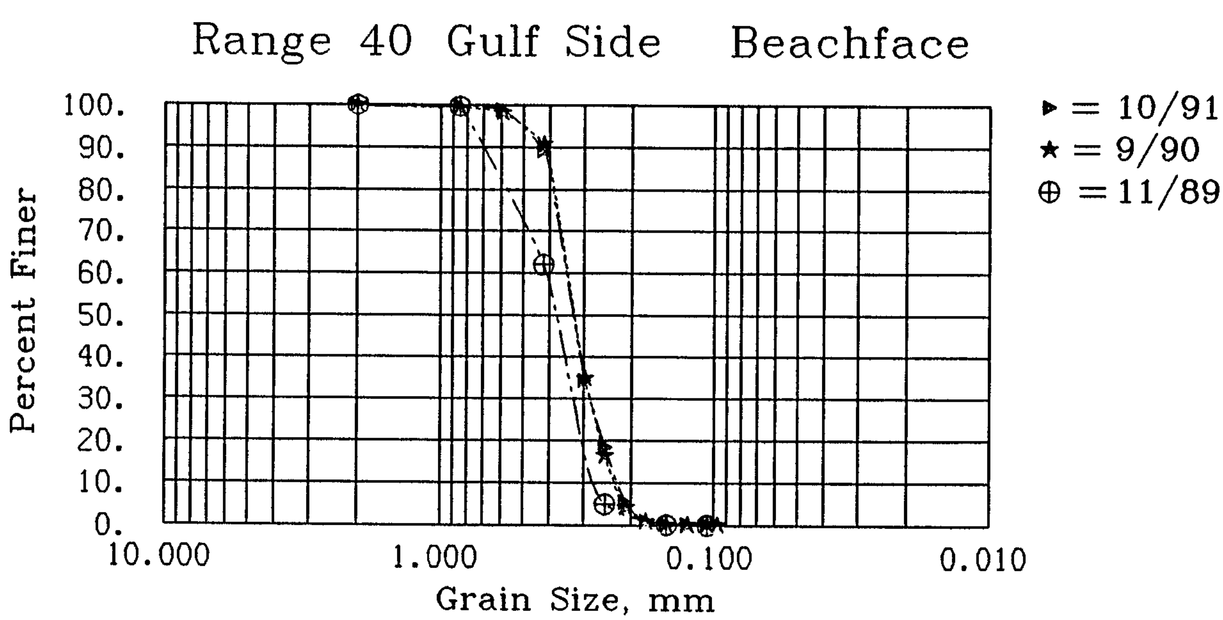
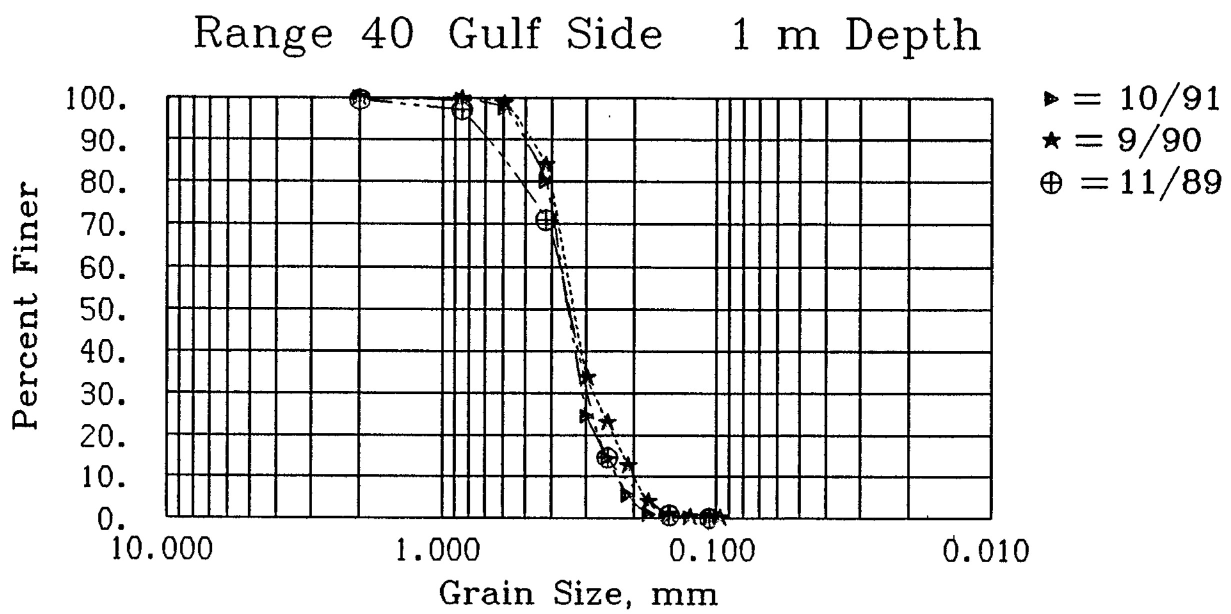


Figure V-43: Grain Size Distributions for Range 40, Berm and Beachface Positions.



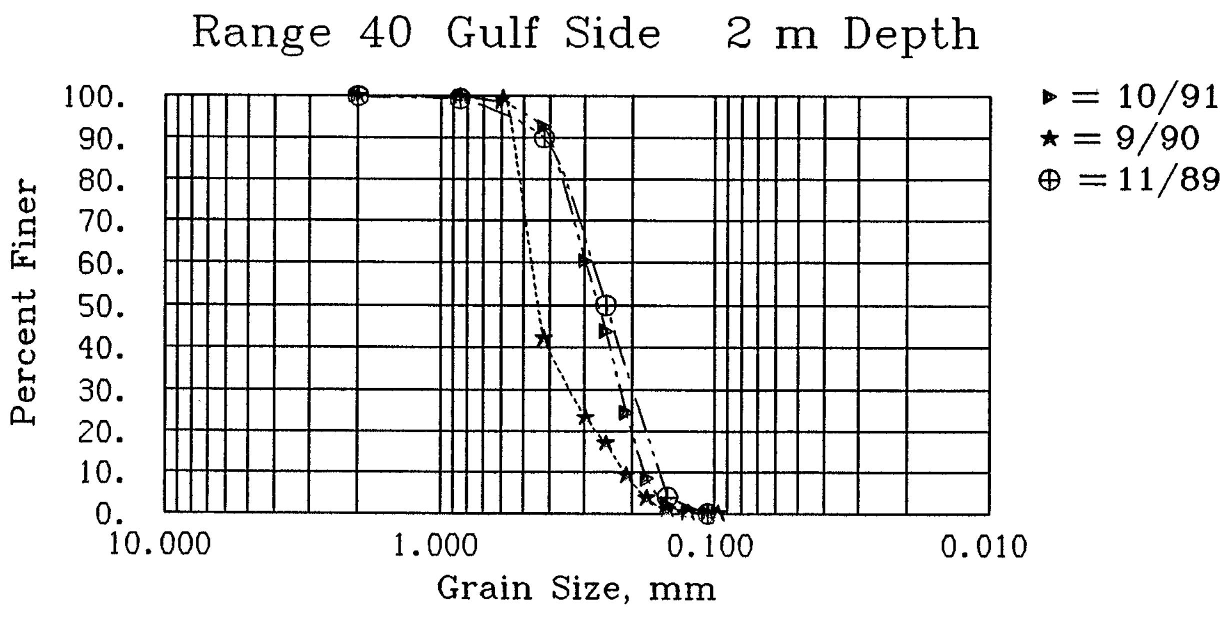
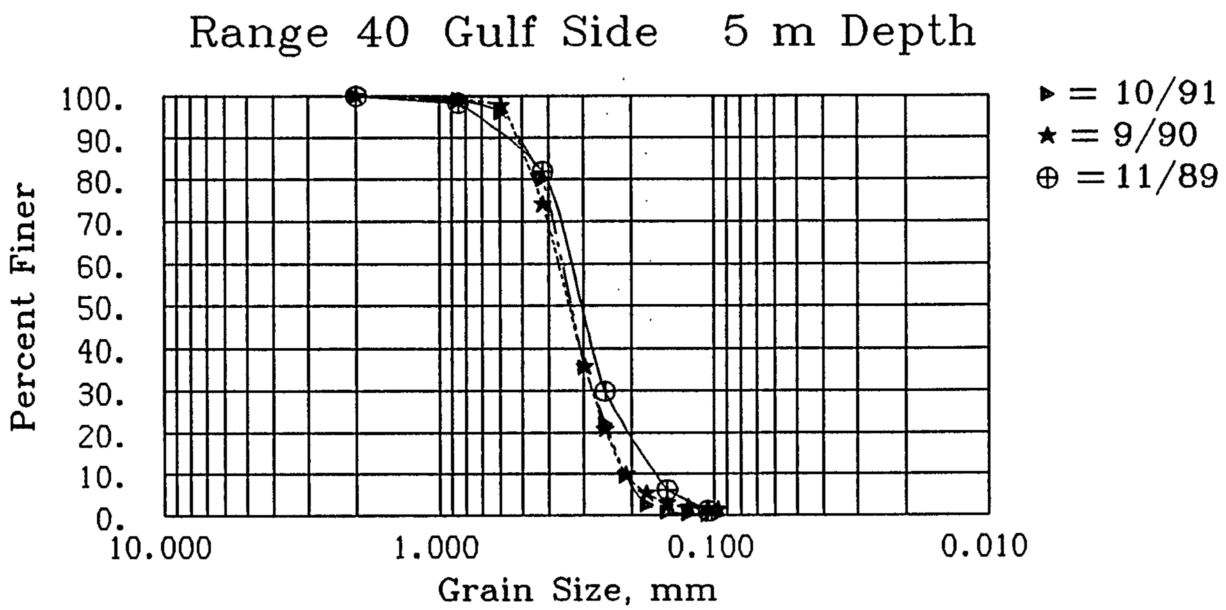


Figure V-44: Grain Size Distributions for Range 40, 1 m and 2 m Depth Positions.



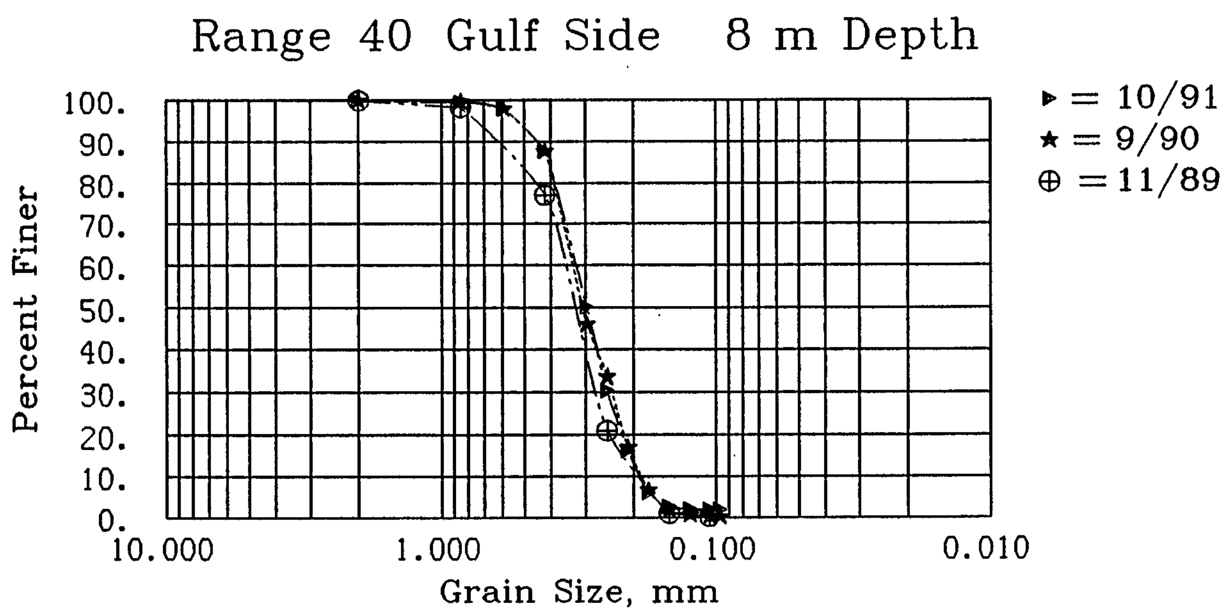
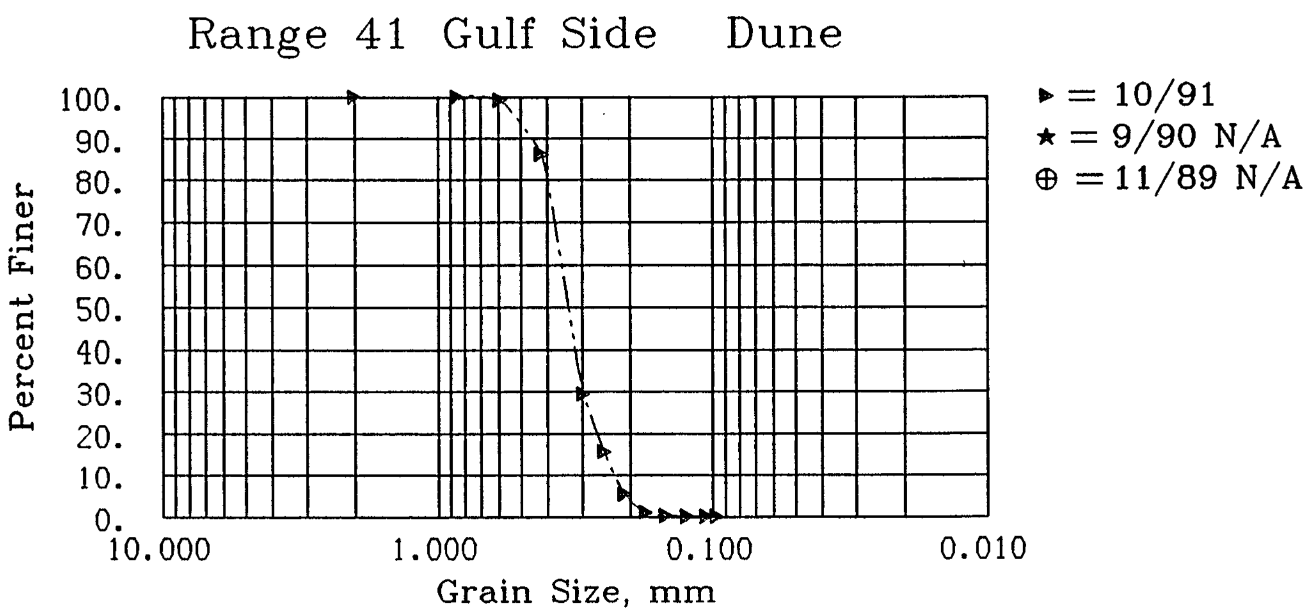


Figure V-45: Grain Size Distributions for Range 40, 5 m Depth and 8 m Depth Positions.



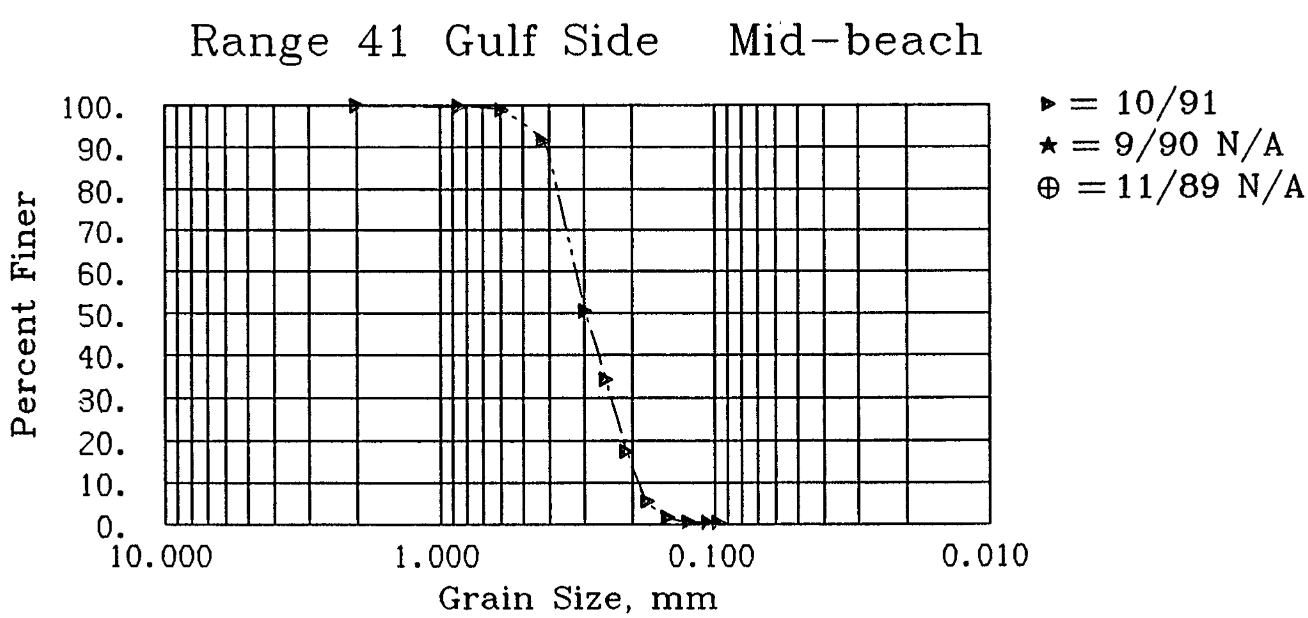
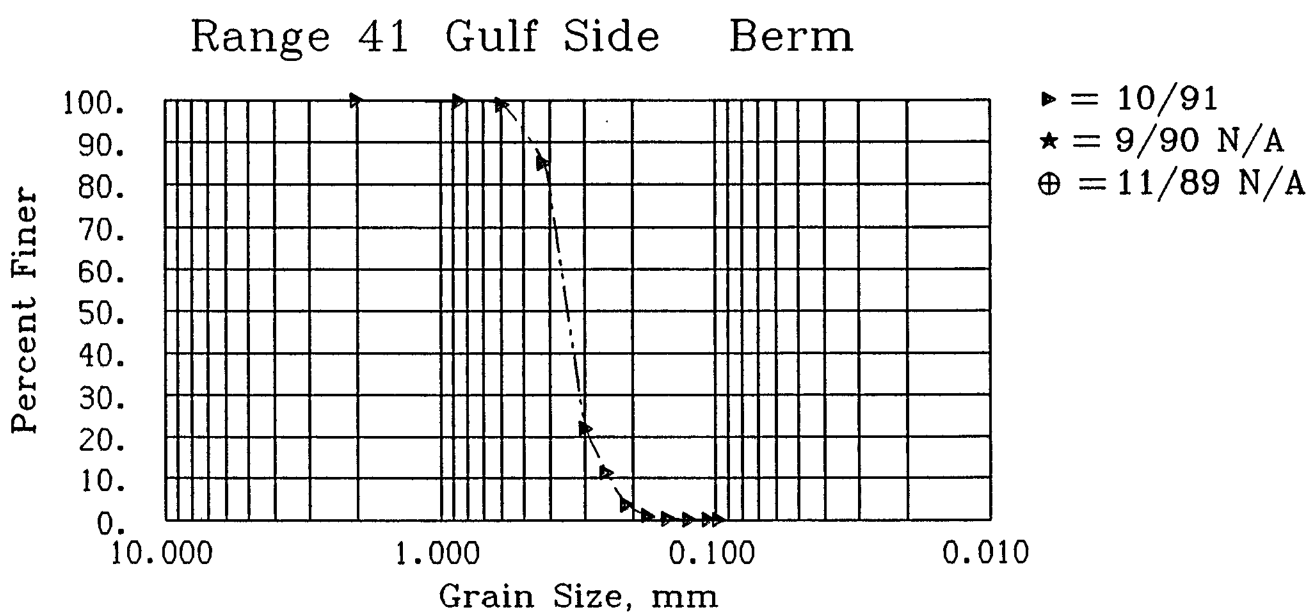


Figure V-46: Grain Size Distributions for Range 41, Dune and Mid–Beach Positions.



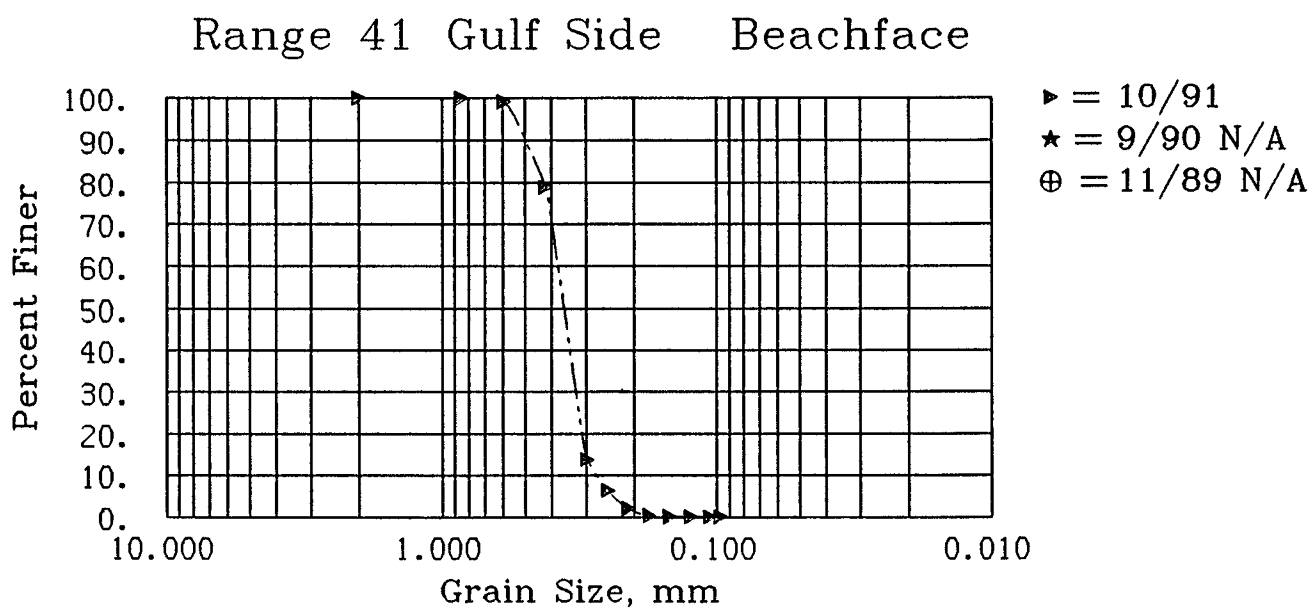
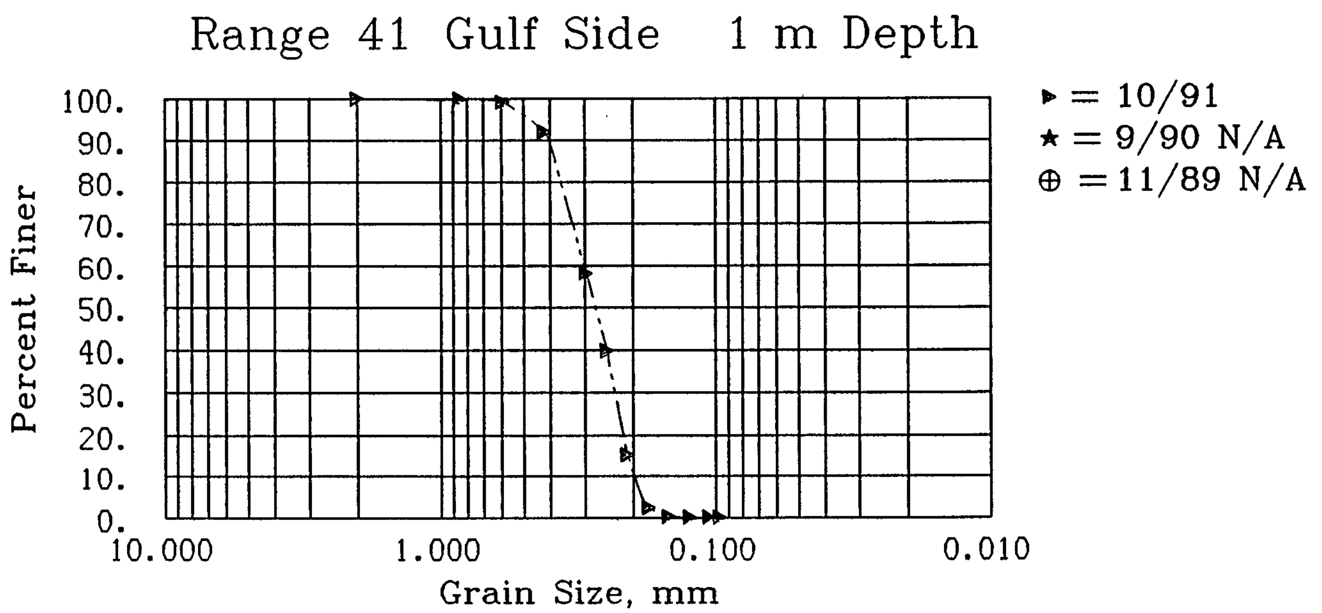


Figure V-47: Grain Size Distributions for Range 41, Berm and Beachface Positions.



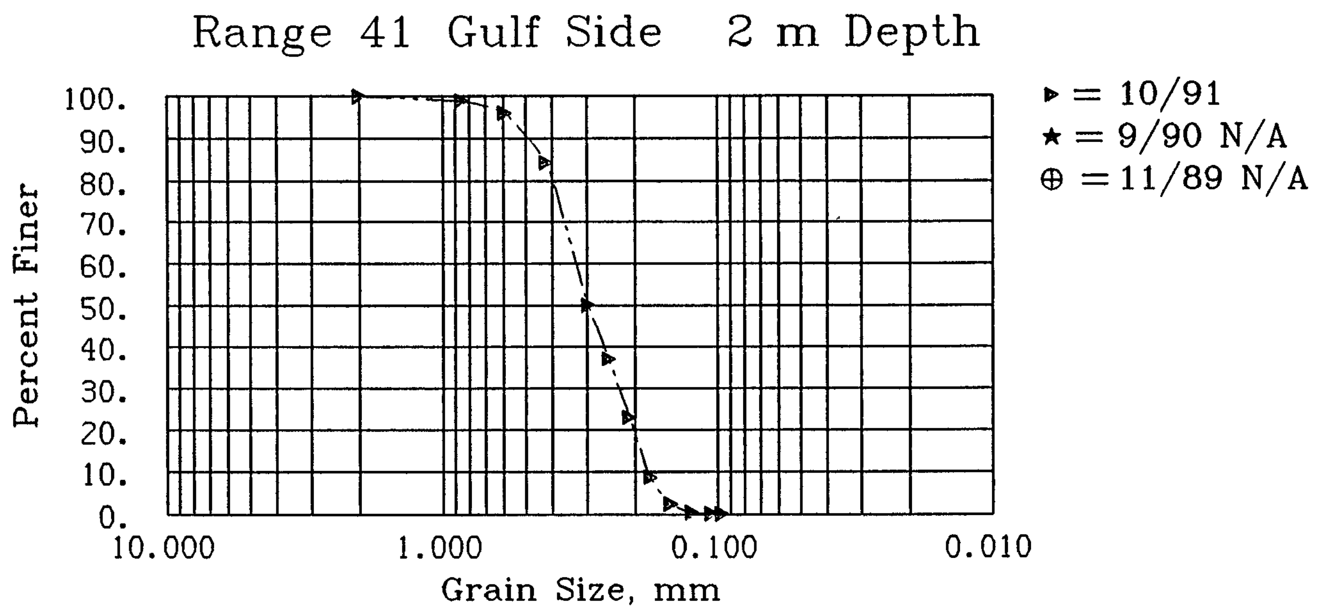
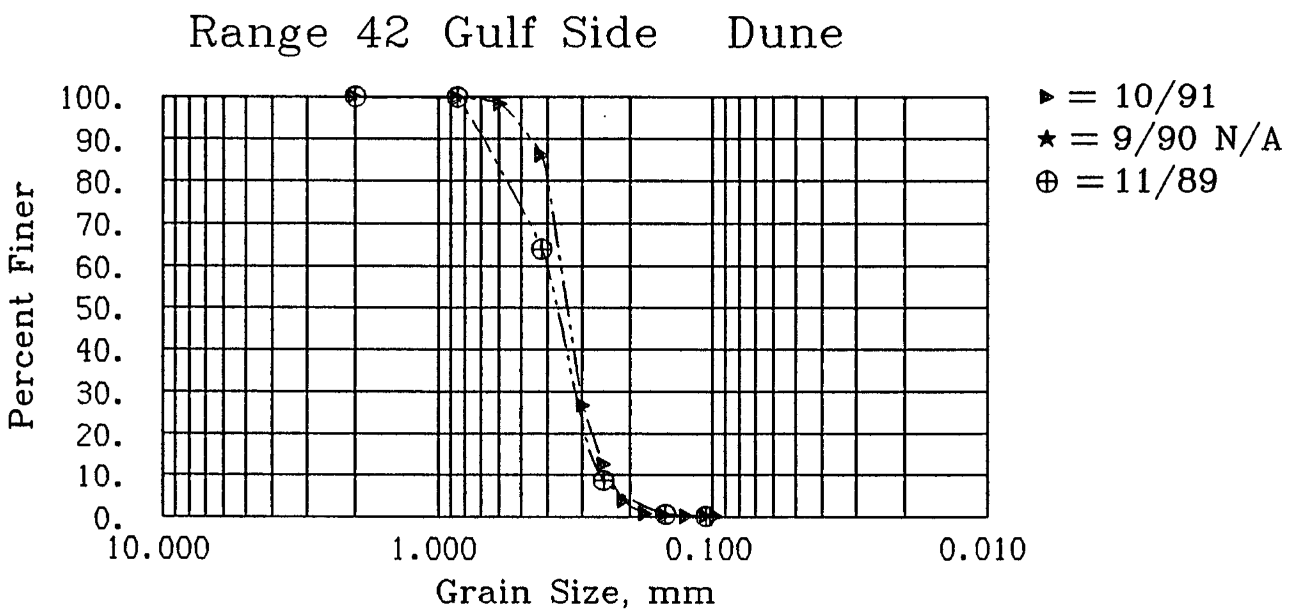


Figure V-48: Grain Size Distributions for Range 41, 1 m Depth and 2 m Depth Positions.



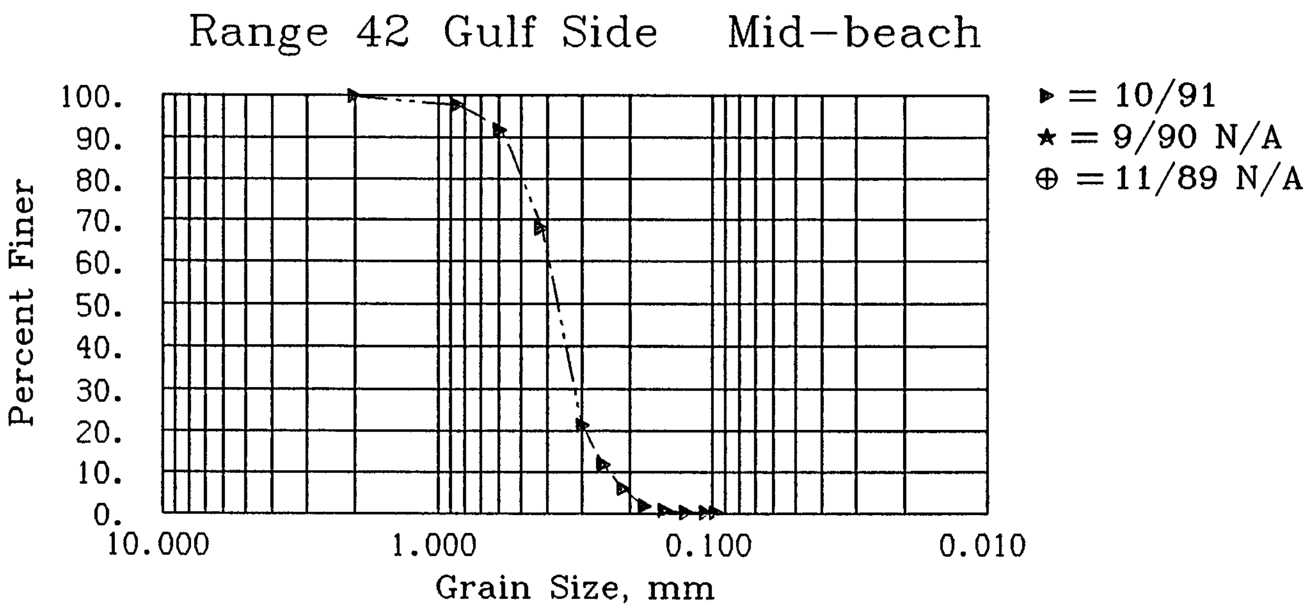
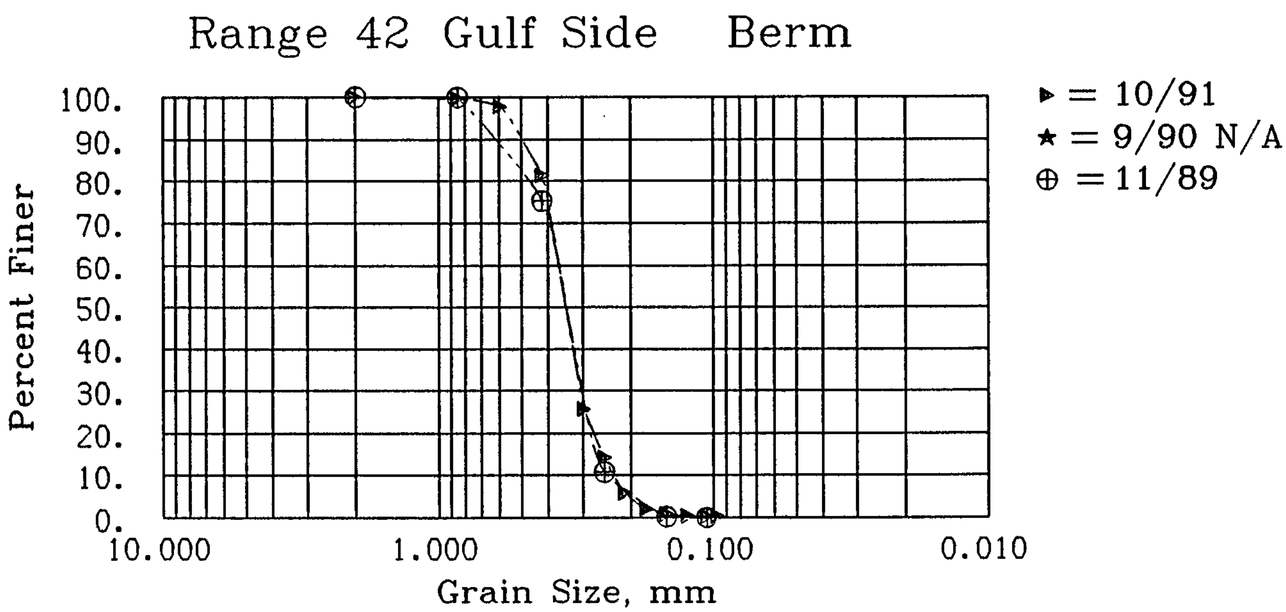


Figure V-49: Grain Size Distributions for Range 42, Dune and Mid–Beach Positions.



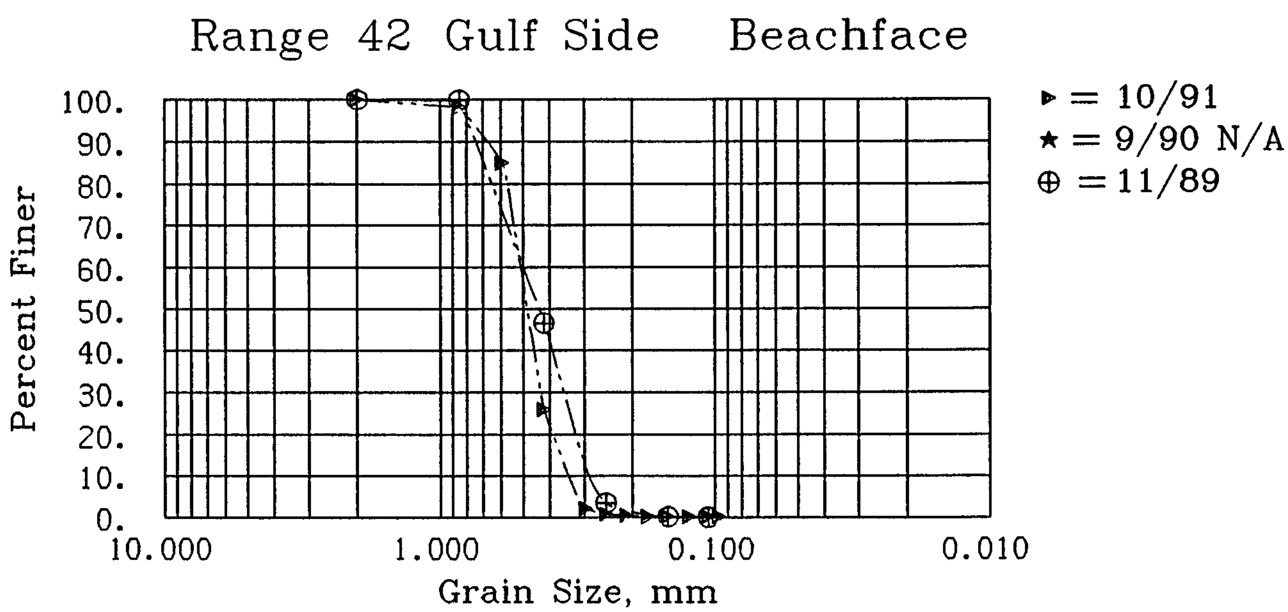
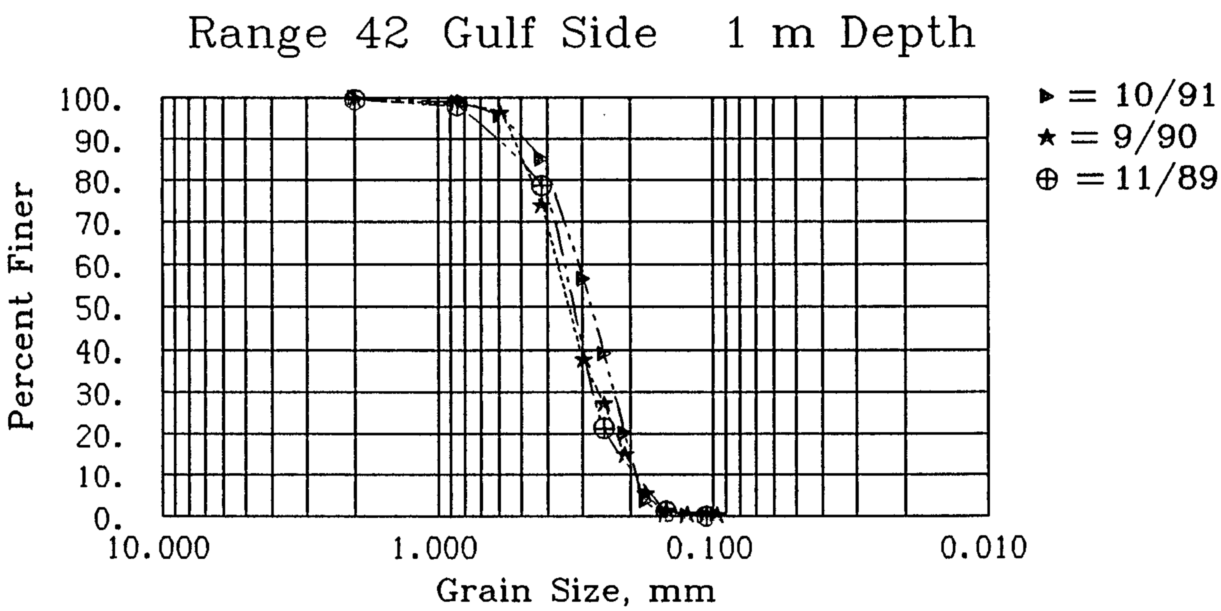


Figure V-50: Grain Size Distributions for Range 42, Berm and Beachface Positions.



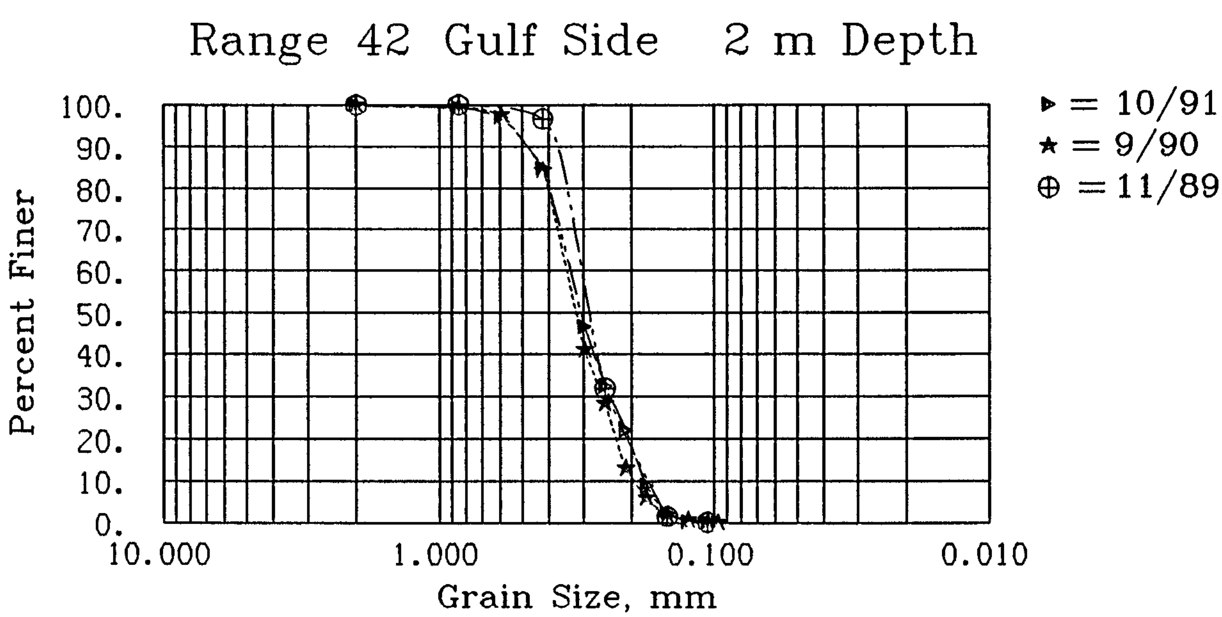


Figure V-51: Grain Size Distributions for Range 42, 1 m and 2 m Depth Positions.

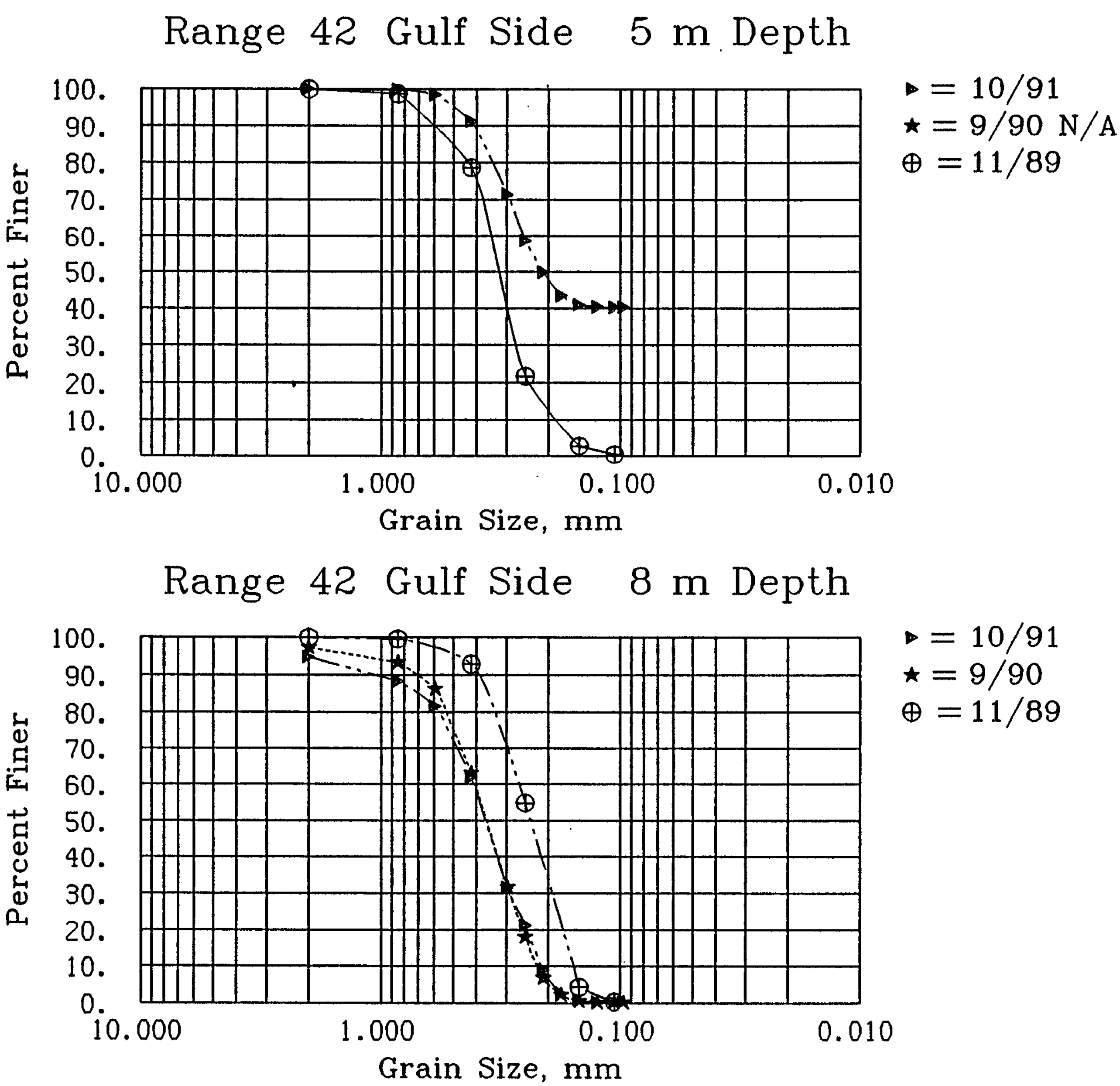
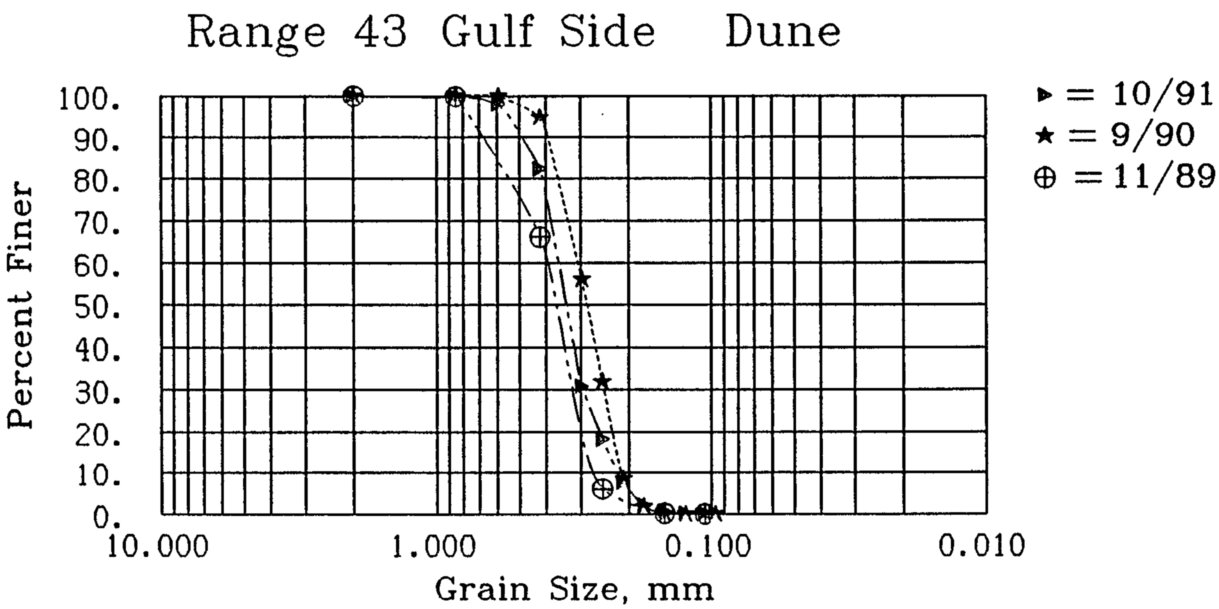


Figure V-52: Grain Size Distributions for Range 42, 5 m Depth and 8 m Depth Positions.



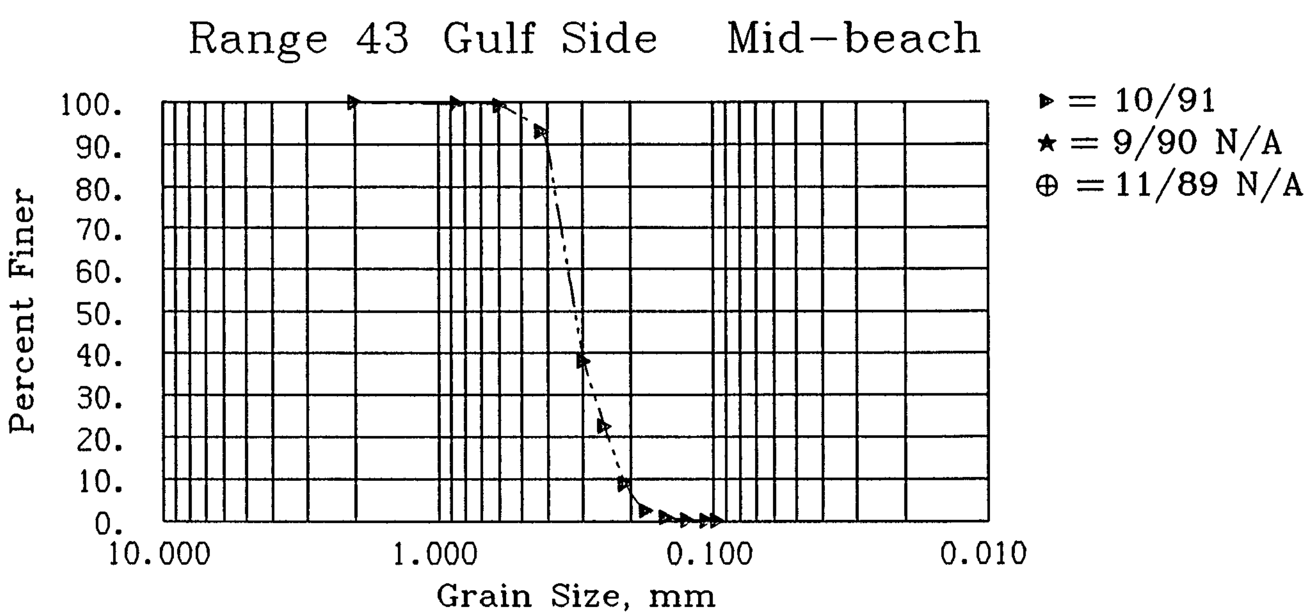
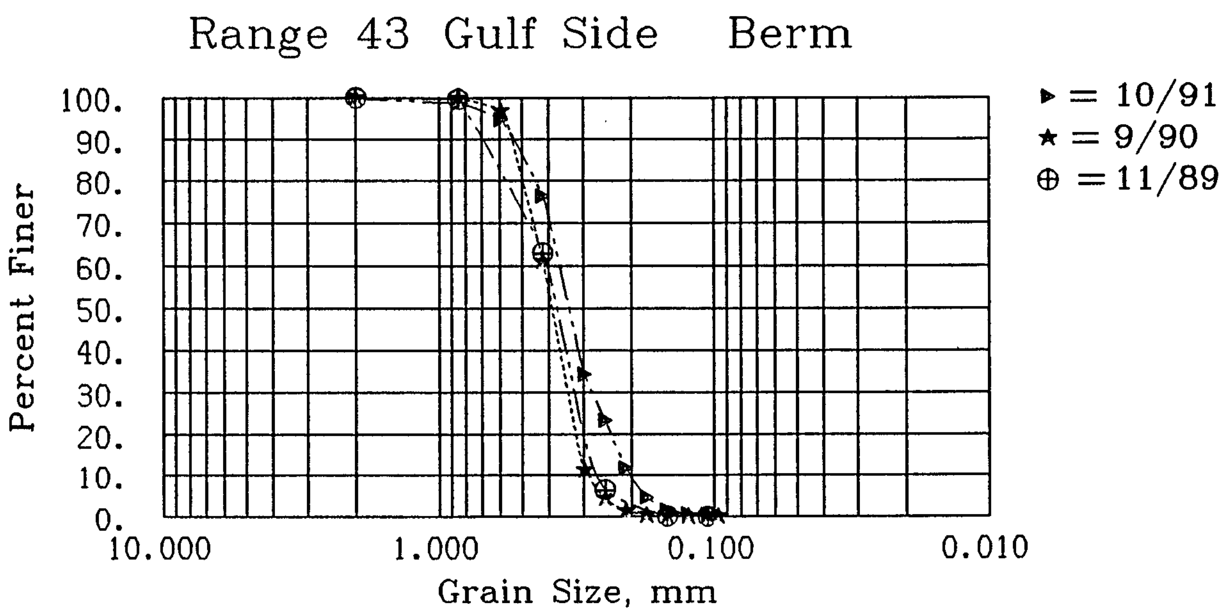


Figure V-53: Grain Size Distributions for Range 43, Dune and Mid-Beach Positions.



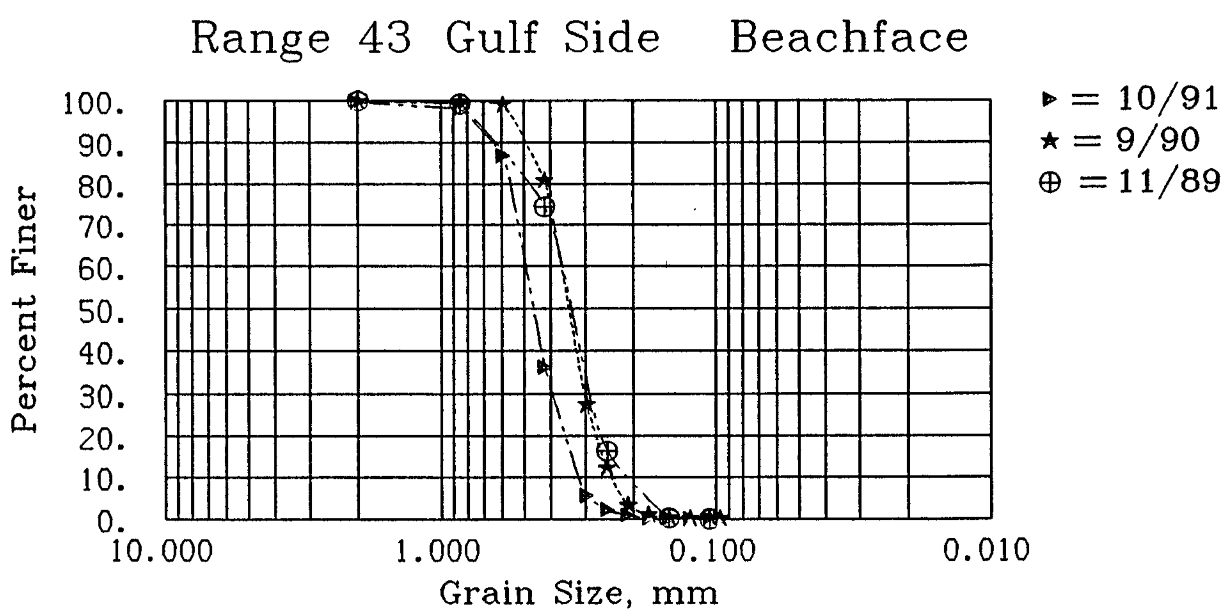
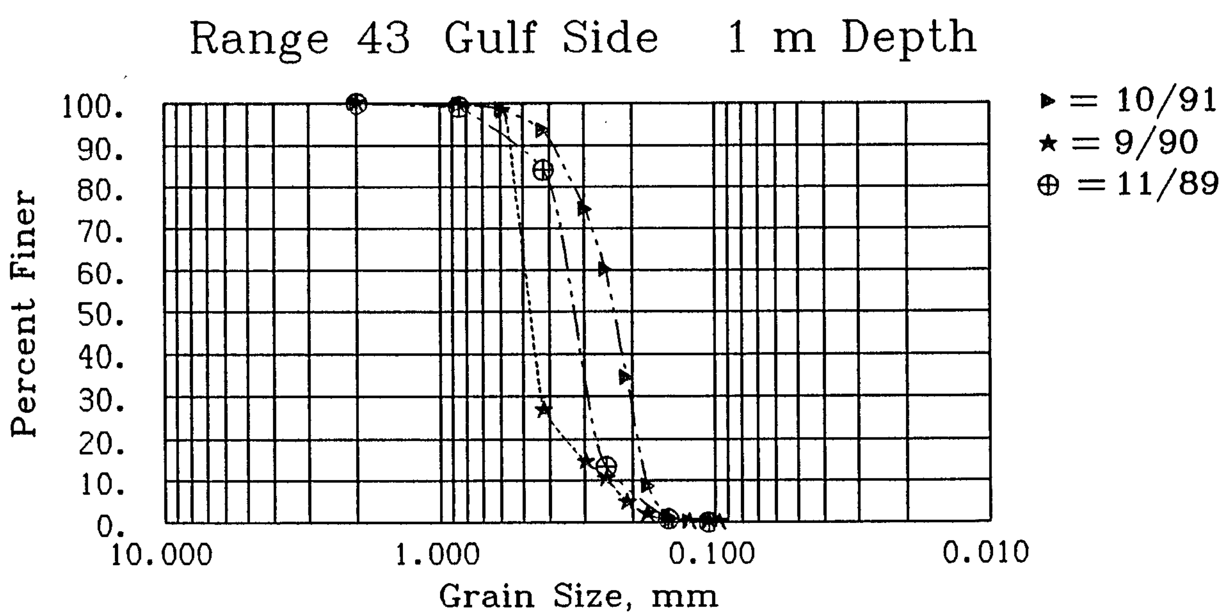


Figure V-54: Grain Size Distributions for Range 43, Berm and Beachface Positions.



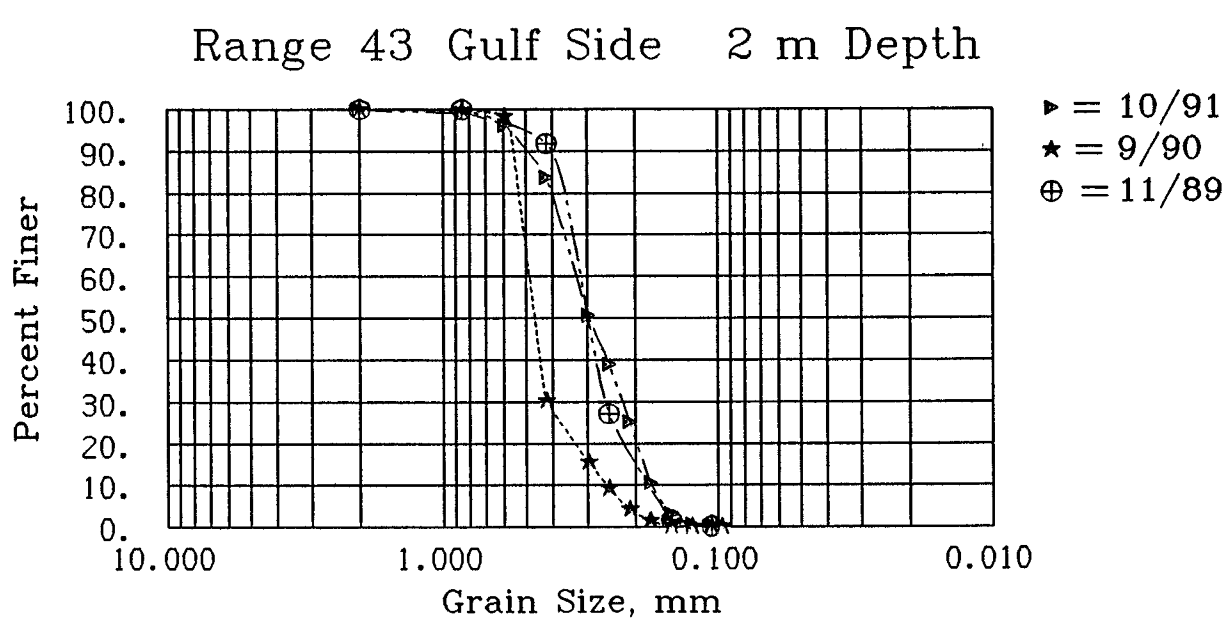
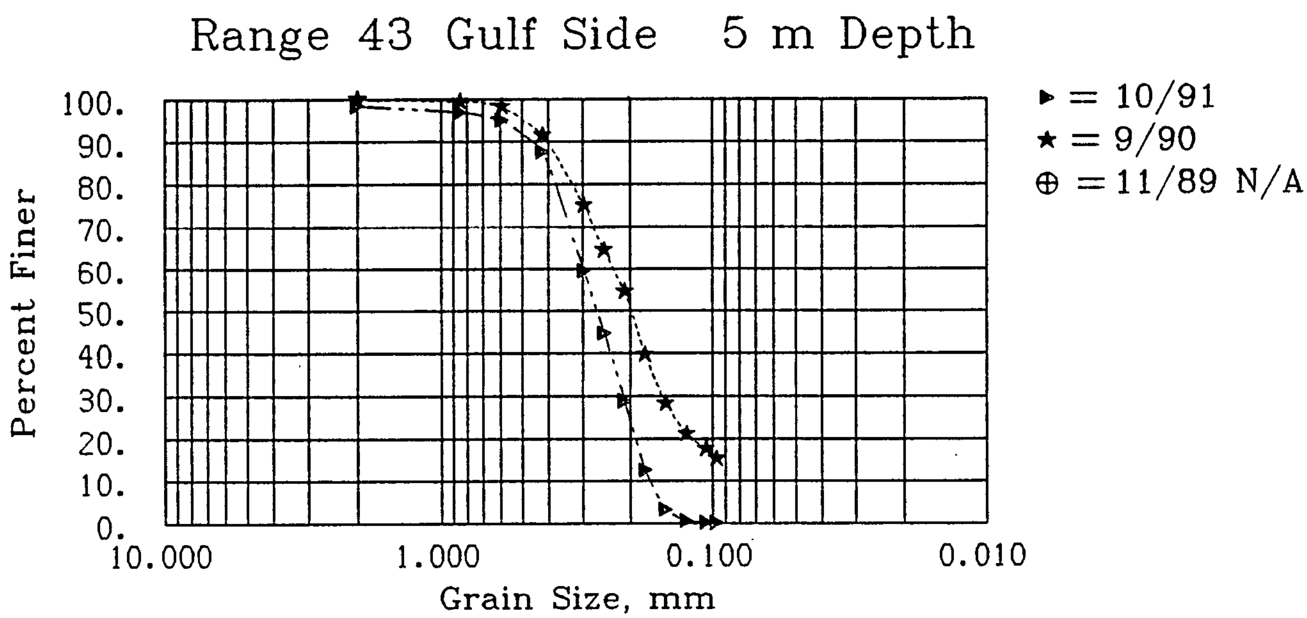


Figure V-55: Grain Size Distributions for Range 43, 1 m and 2 m Depth Positions.



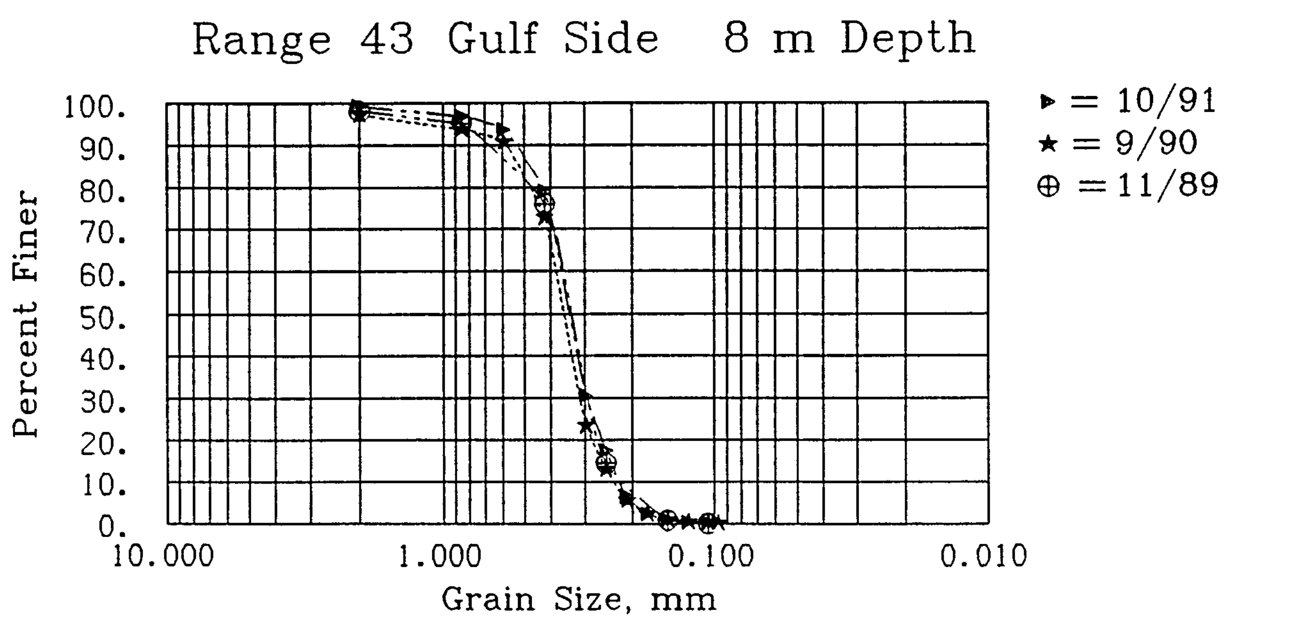


Figure V-56: Grain Size Distributions for Range 43, 5 m Depth and 8 m Depth Positions.

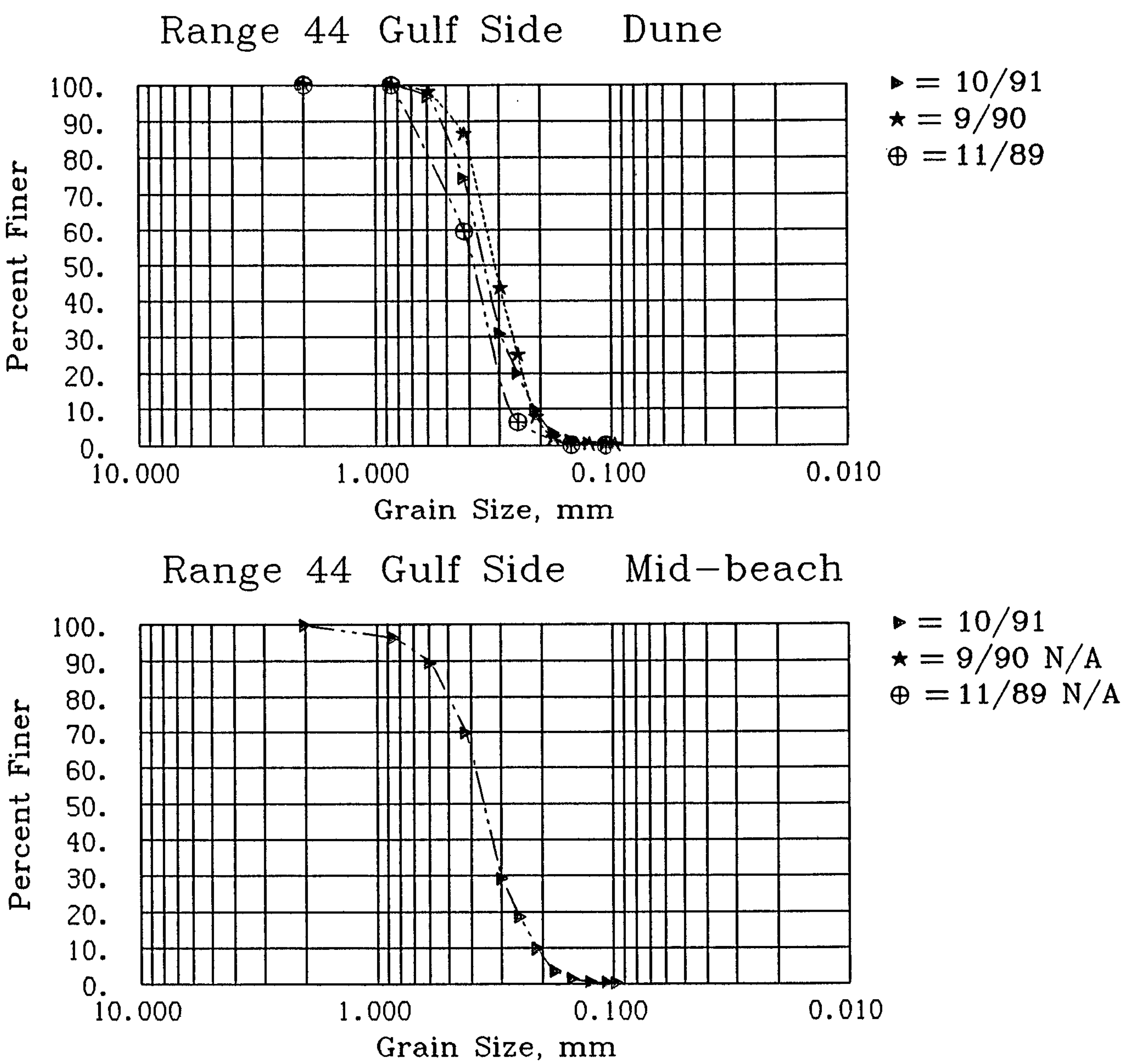
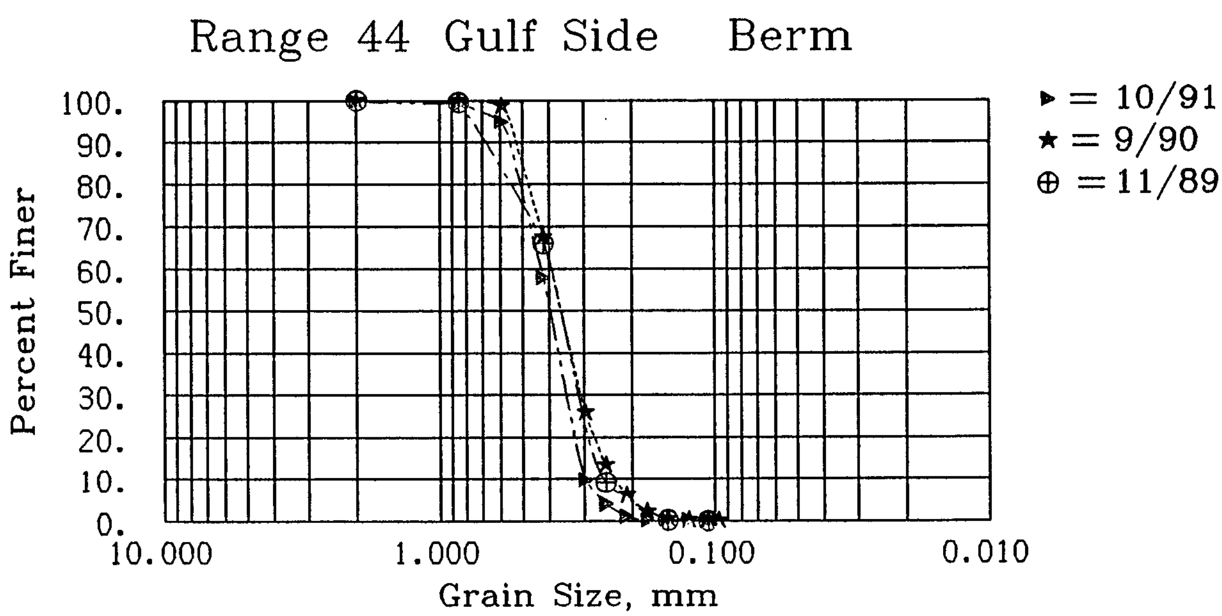


Figure V-57: Grain Size Distributions for Range 44, Dune and Mid–Beach Positions.



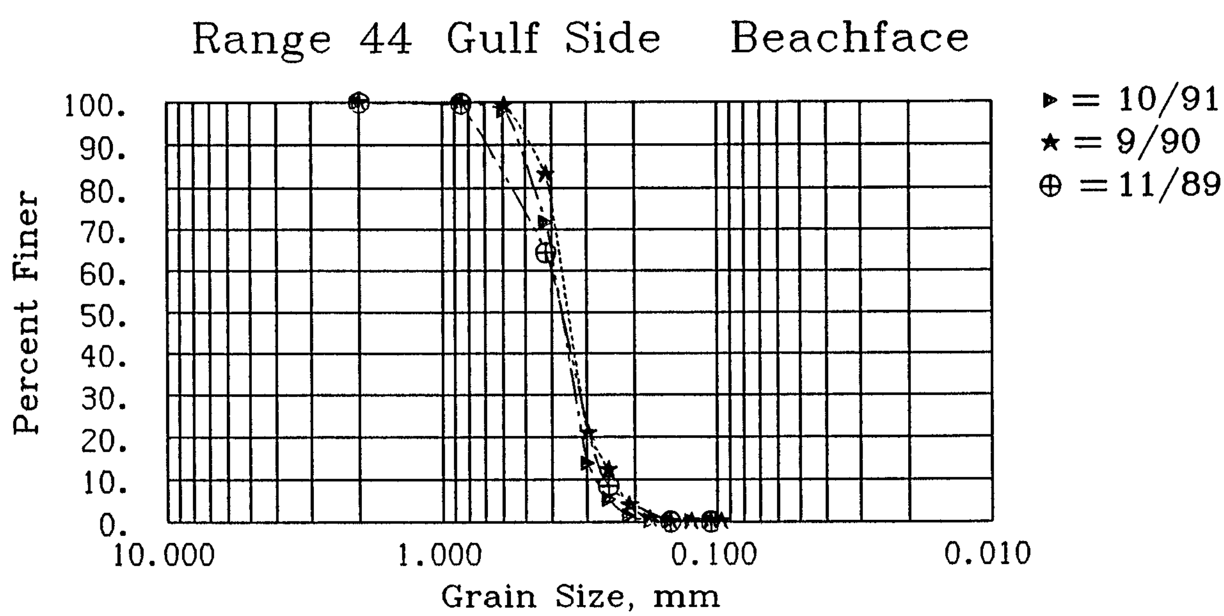
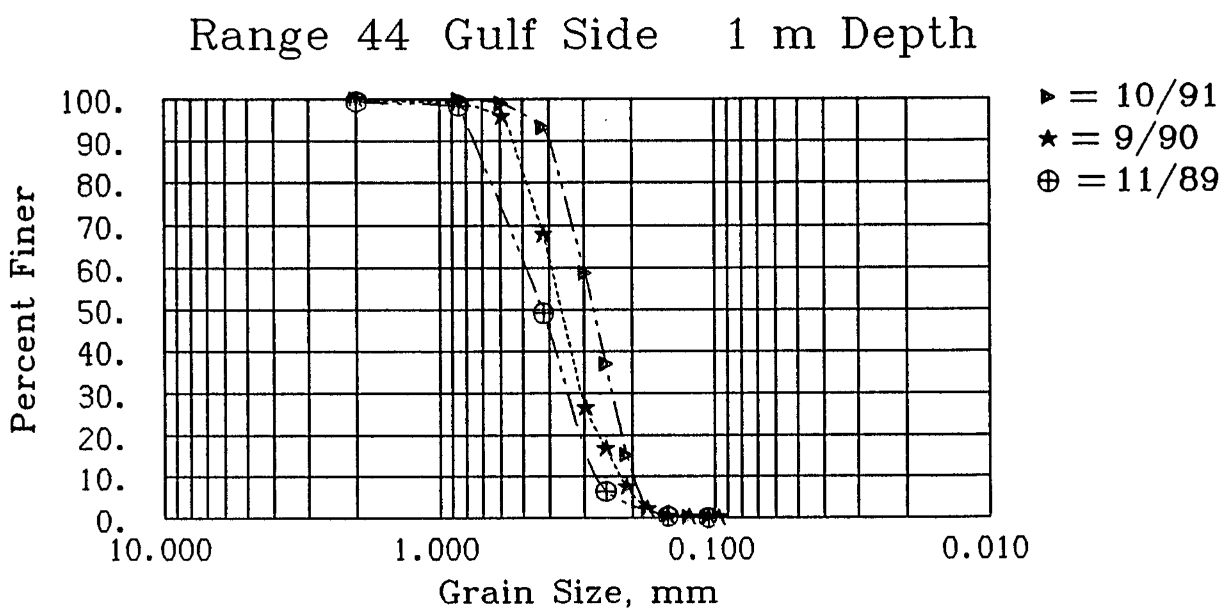


Figure V-58: Grain Size Distributions for Range 44, Berm and Beachface Positions.



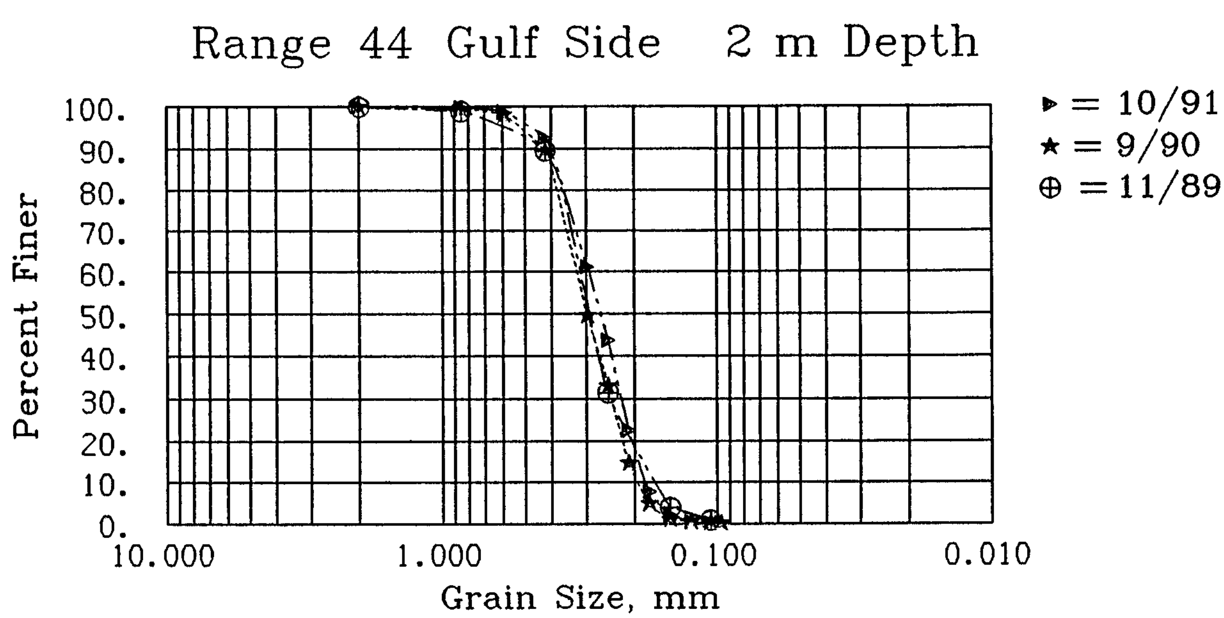
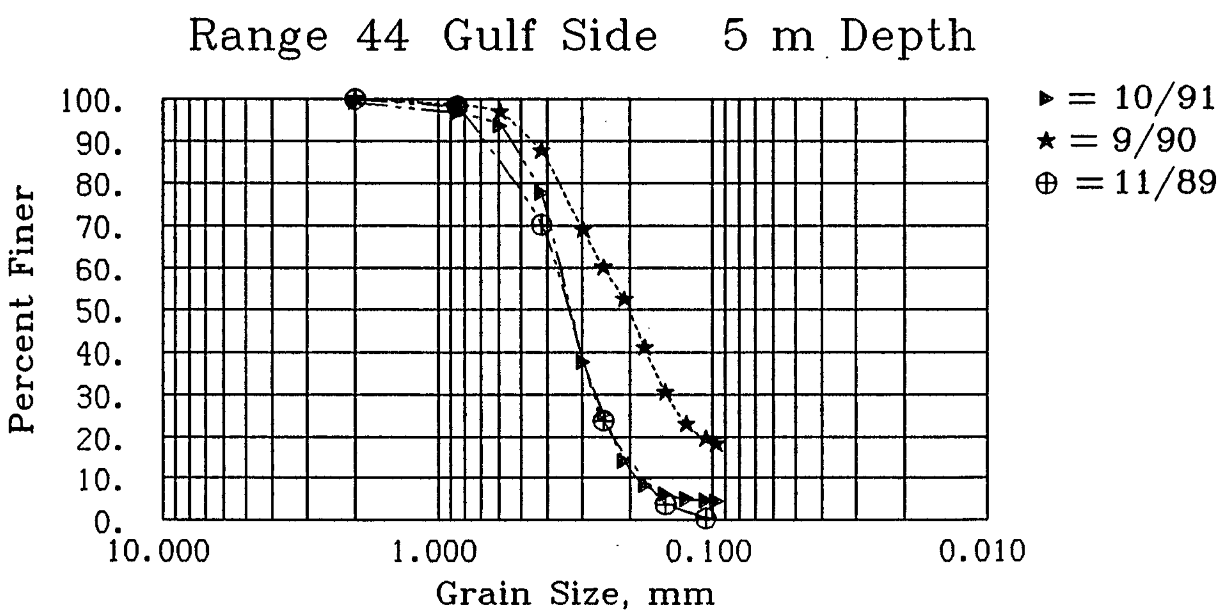


Figure V-59: Grain Size Distributions for Range 44, 1 m and 2 m Depth Positions.



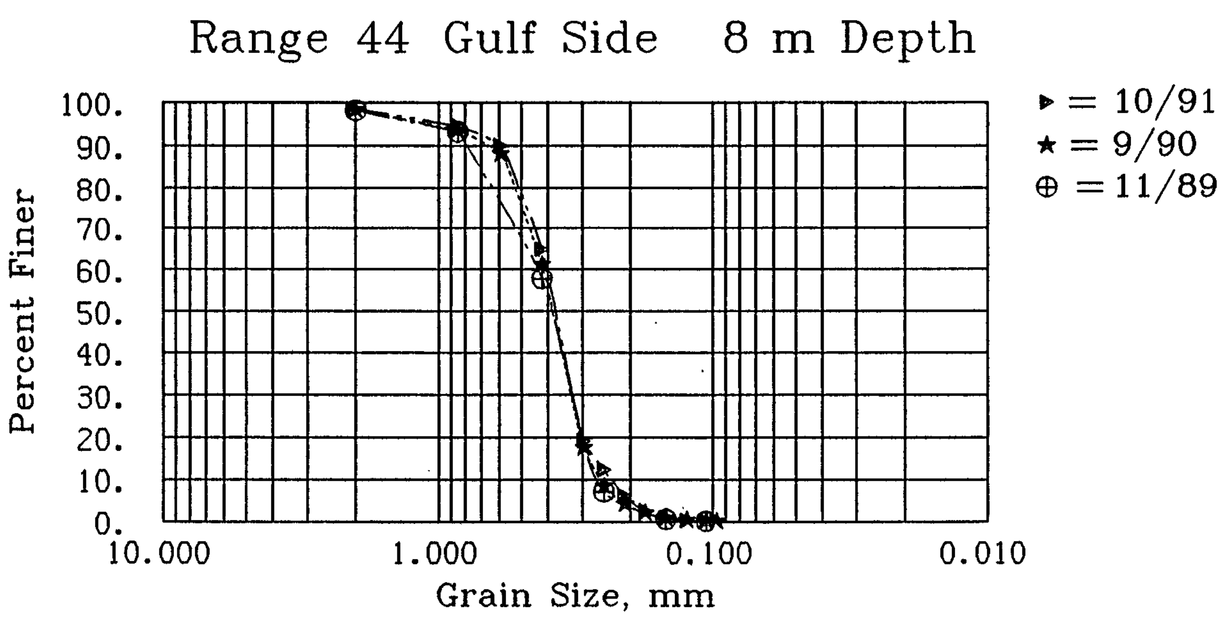
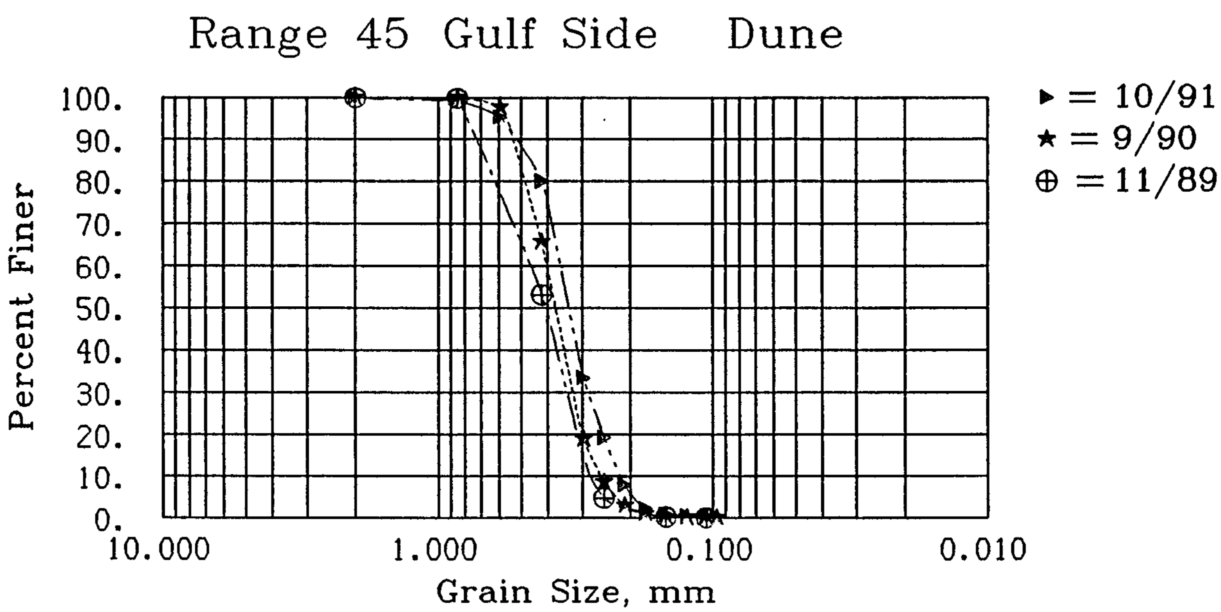


Figure V-60: Grain Size Distributions for Range 44, 5 m Depth and 8 m Depth Positions.



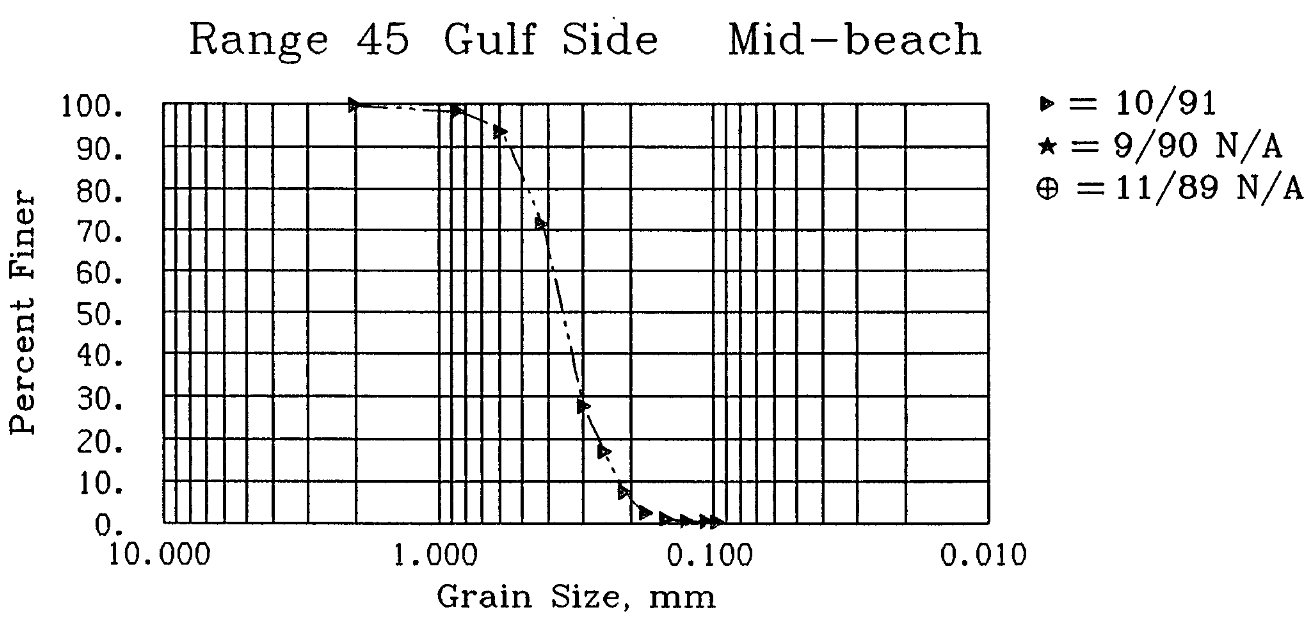
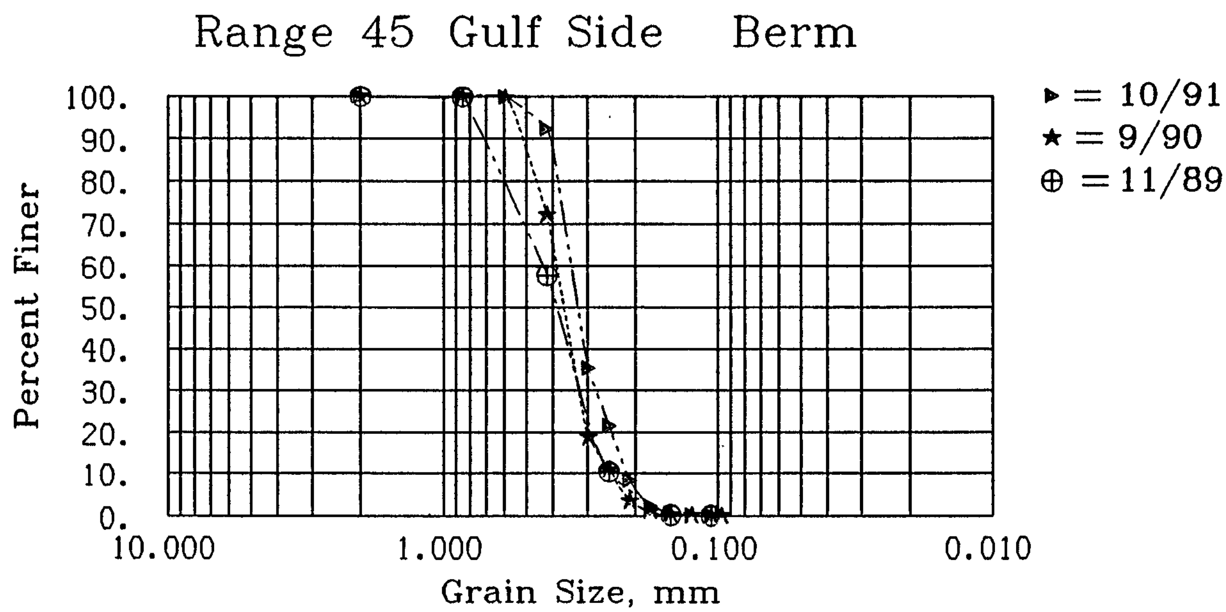


Figure V-61: Grain Size Distributions for Range 45, Dune and Mid–Beach Positions.



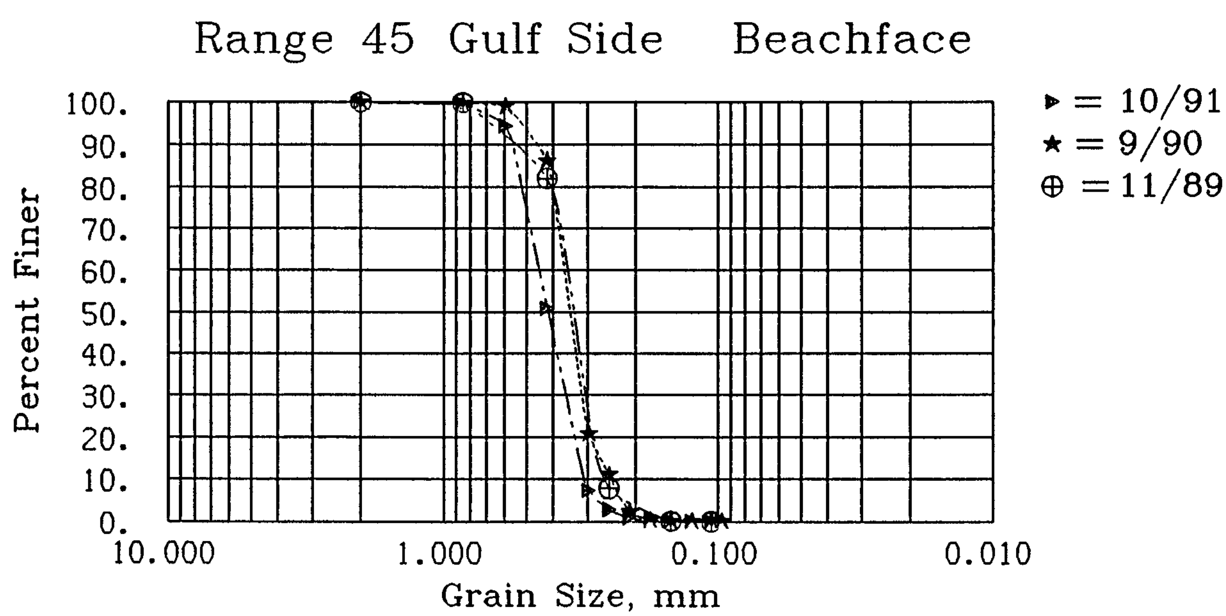
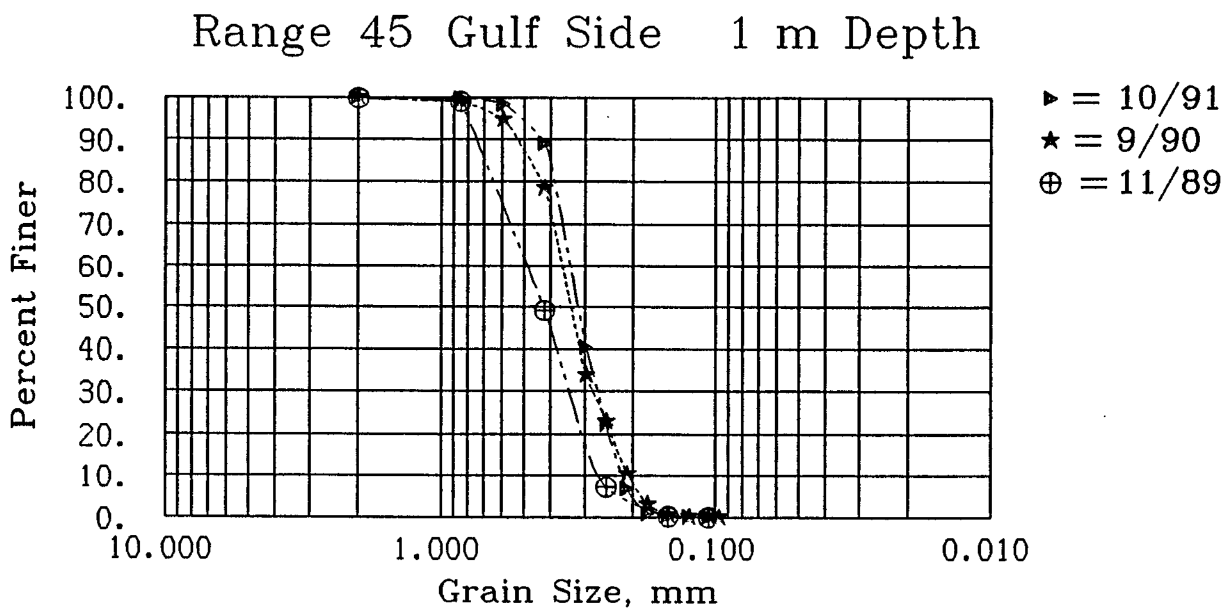


Figure V-62: Grain Size Distributions for Range 45, Berm and Beachface Positions.



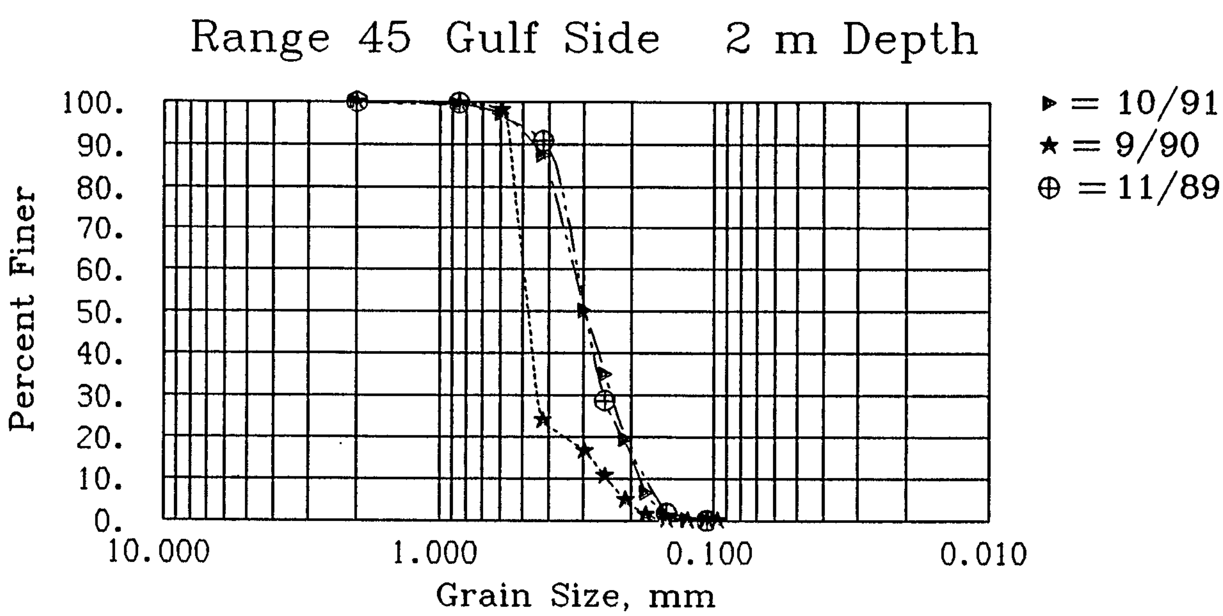
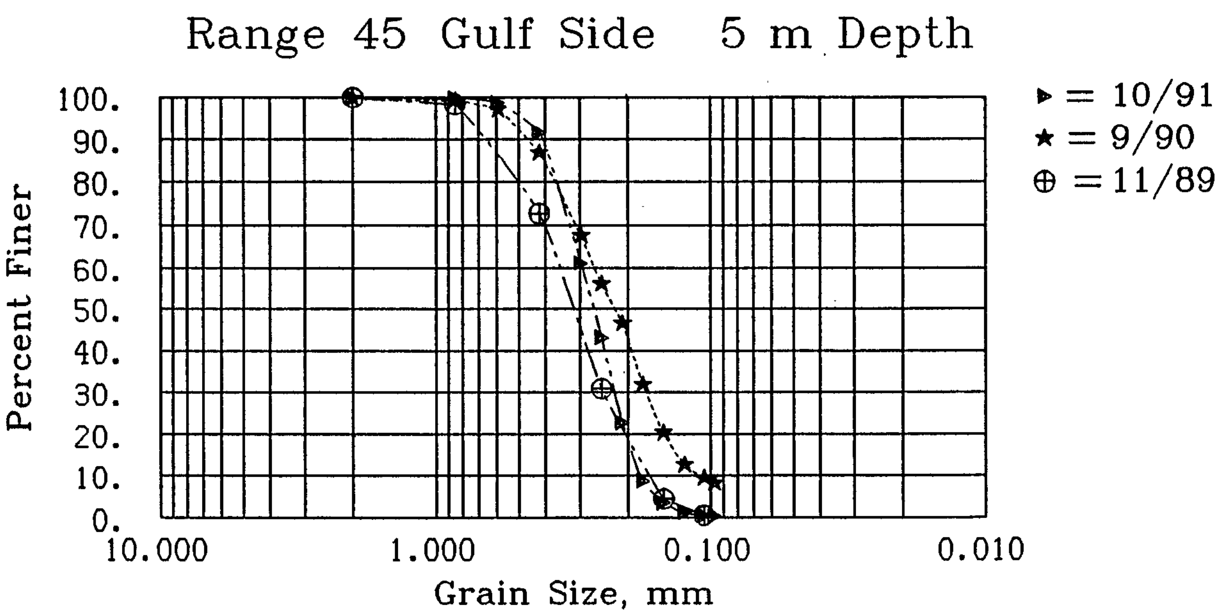


Figure V-63: Grain Size Distributions for Range 45, 1 m and 2 m Depth Positions.



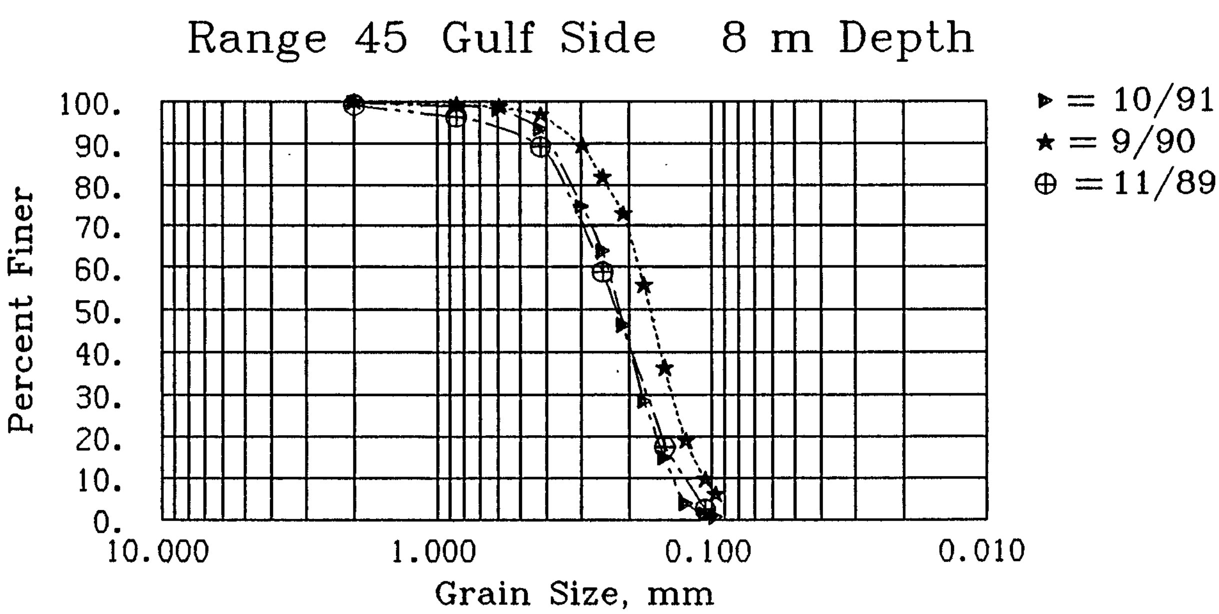
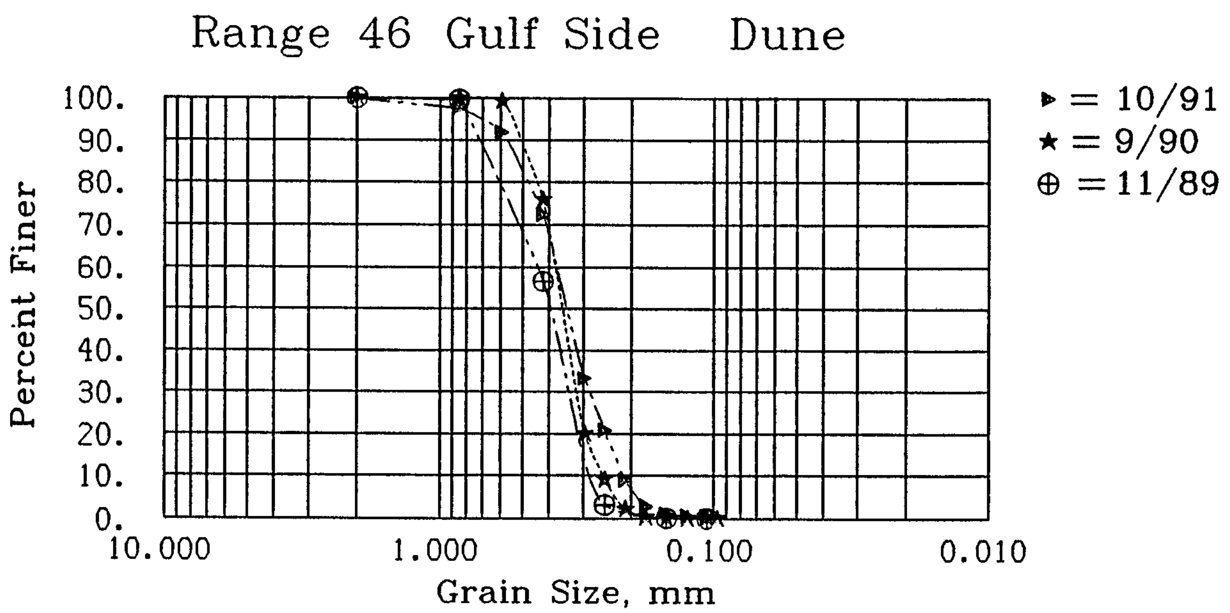


Figure V-64: Grain Size Distributions for Range 45, 5 m Depth and 8 m Depth Positions.



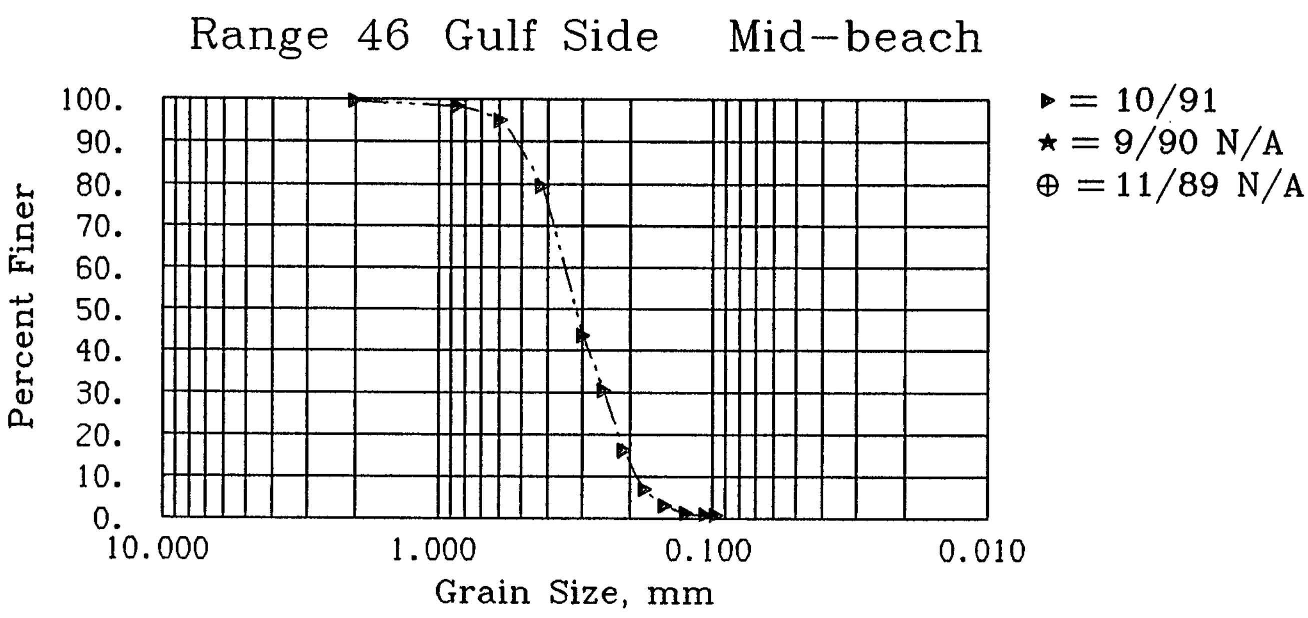
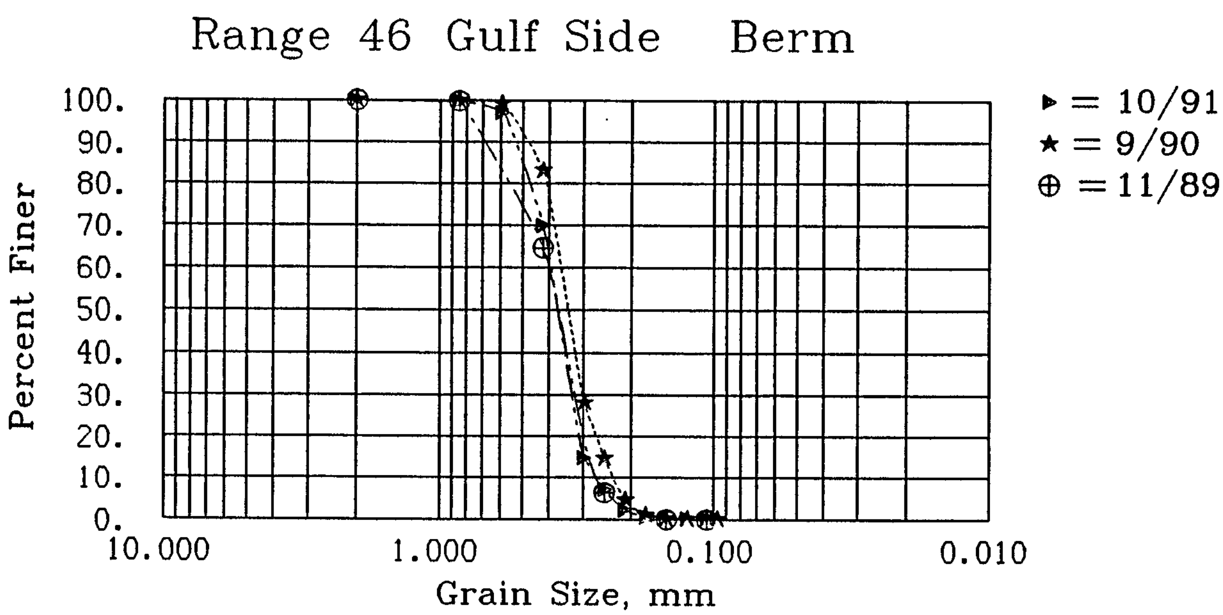


Figure V-65: Grain Size Distributions for Range 46, Dune and Mid–Beach Positions.



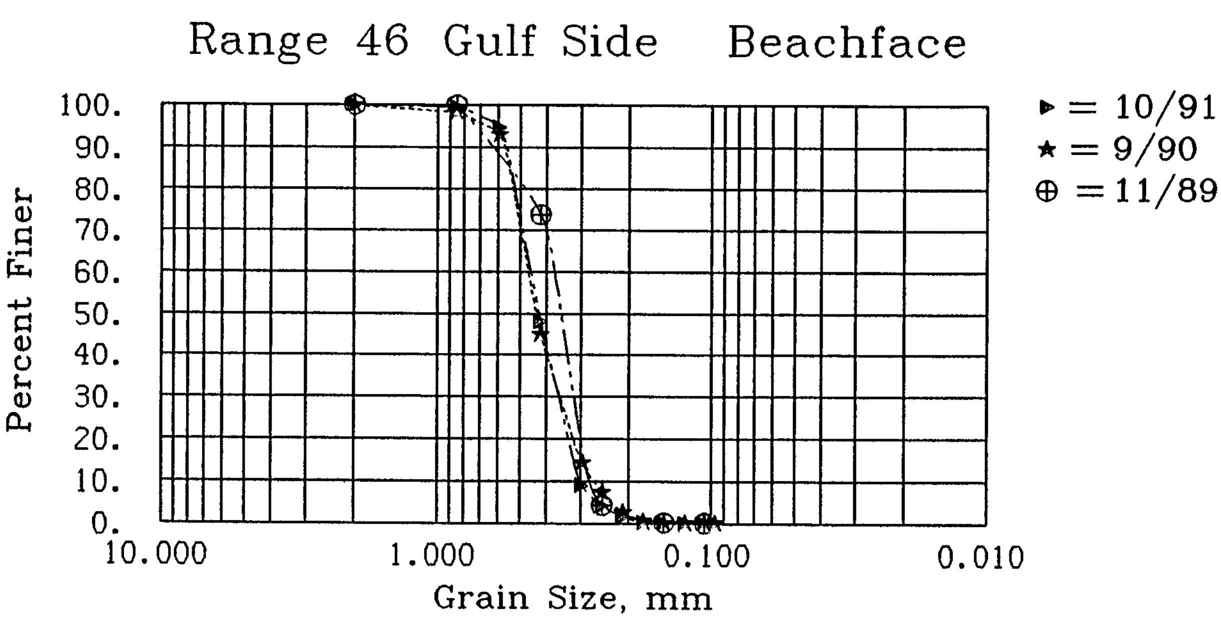
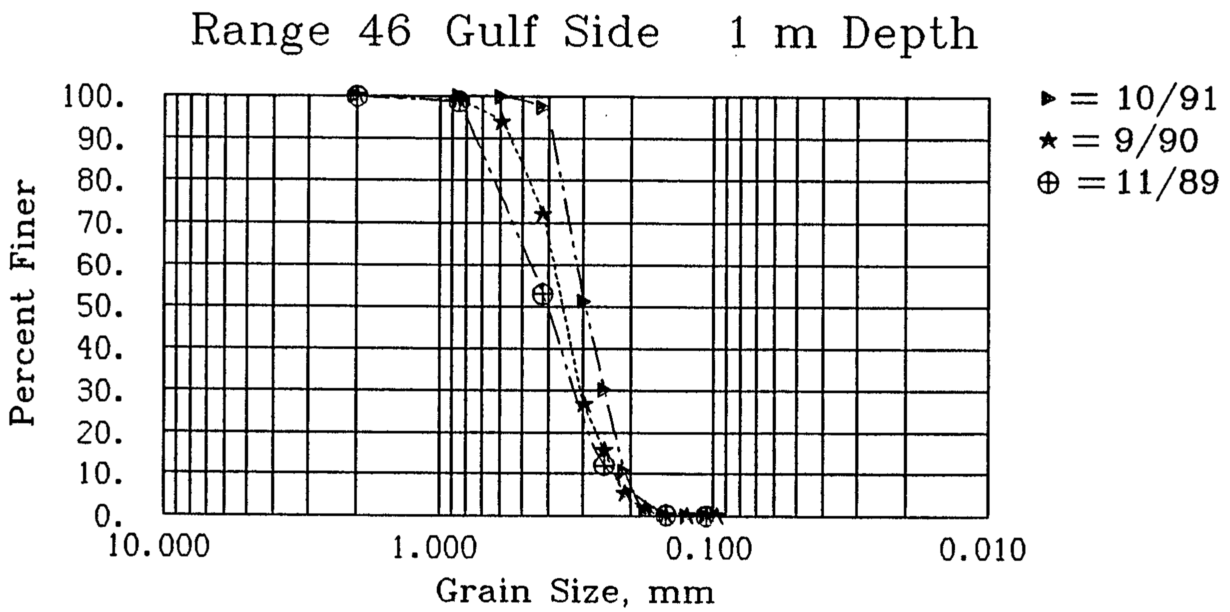


Figure V-66: Grain Size Distributions for Range 46, Berm and Beachface Positions.



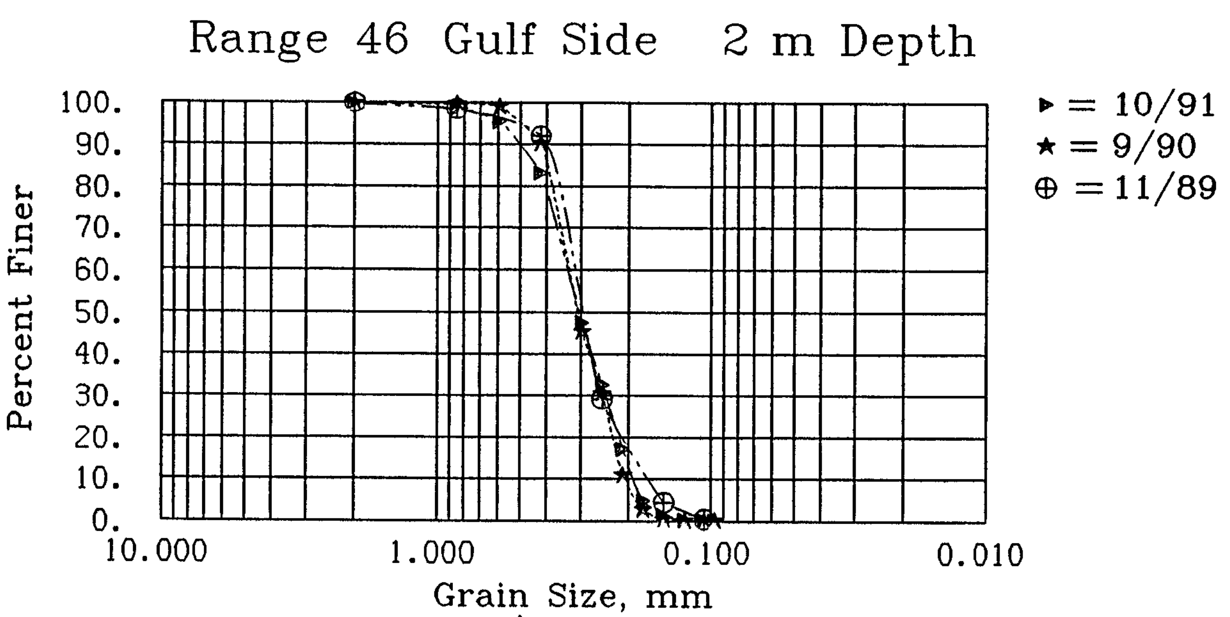
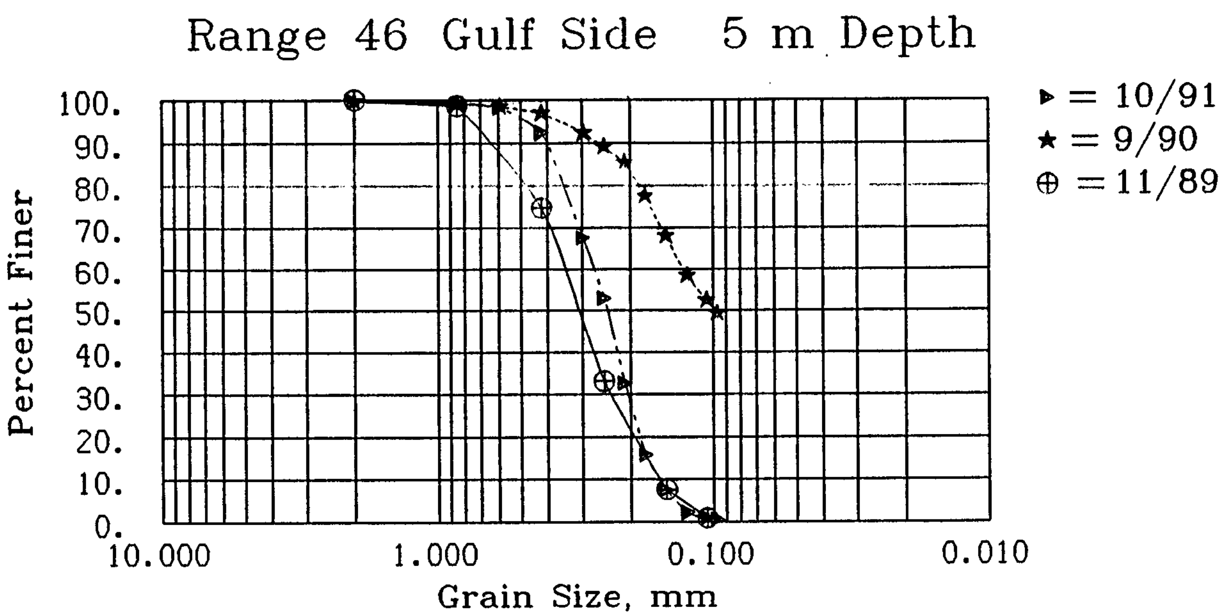


Figure V-67: Grain Size Distributions for Range 46, 1 m and 2 m Depth Positions.



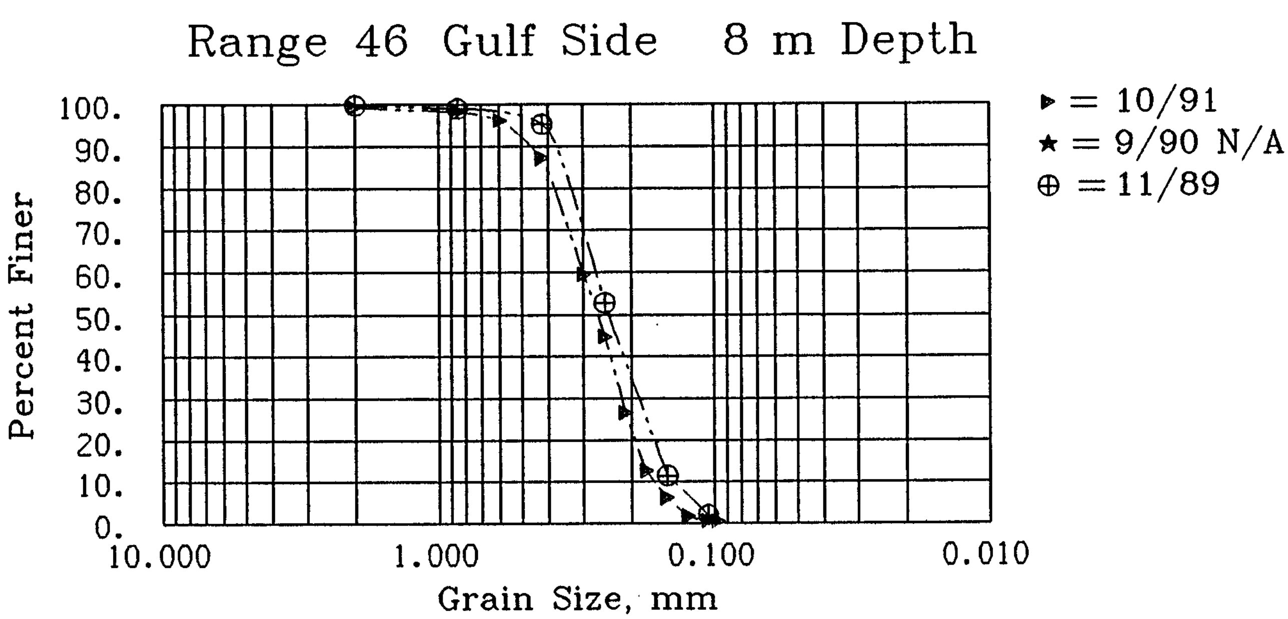


Figure V-68: Grain Size Distributions for Range 46, 5 m Depth and 8 m Depth Positions.

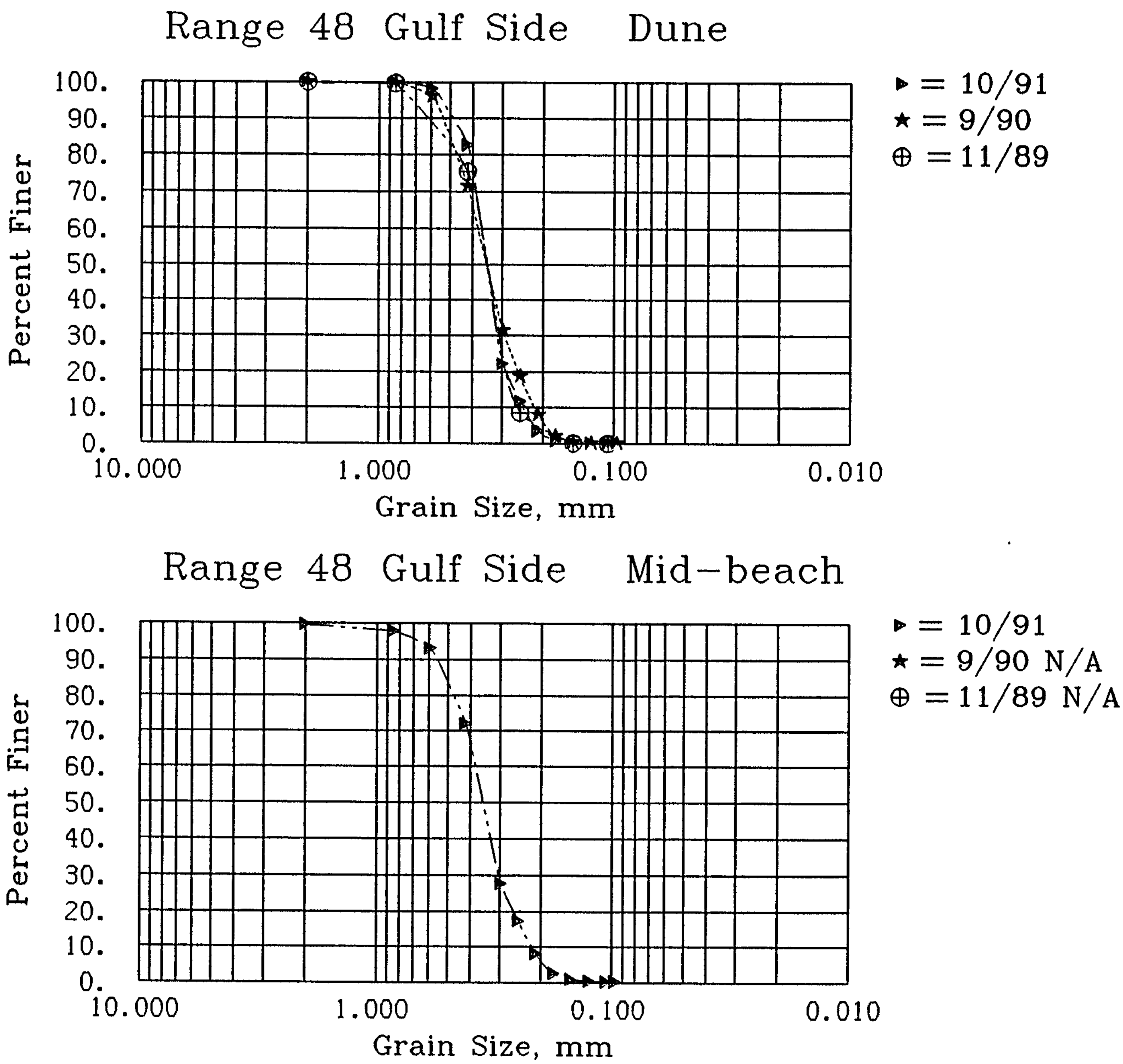
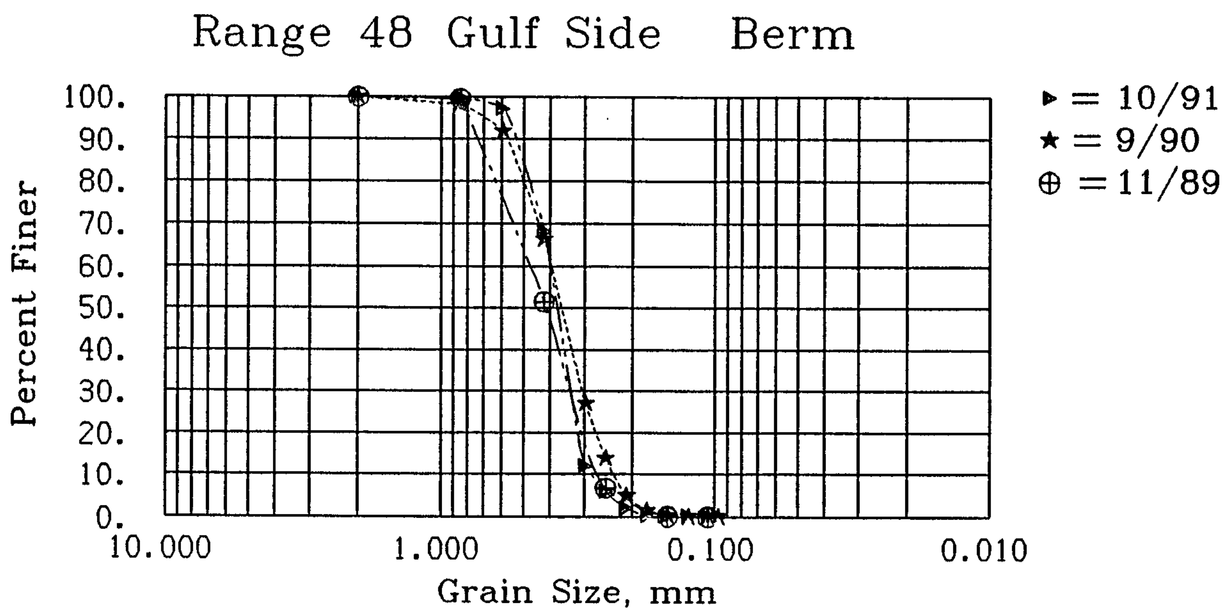


Figure V-69: Grain Size Distributions for Range 48, Dune and Mid–Beach Positions.



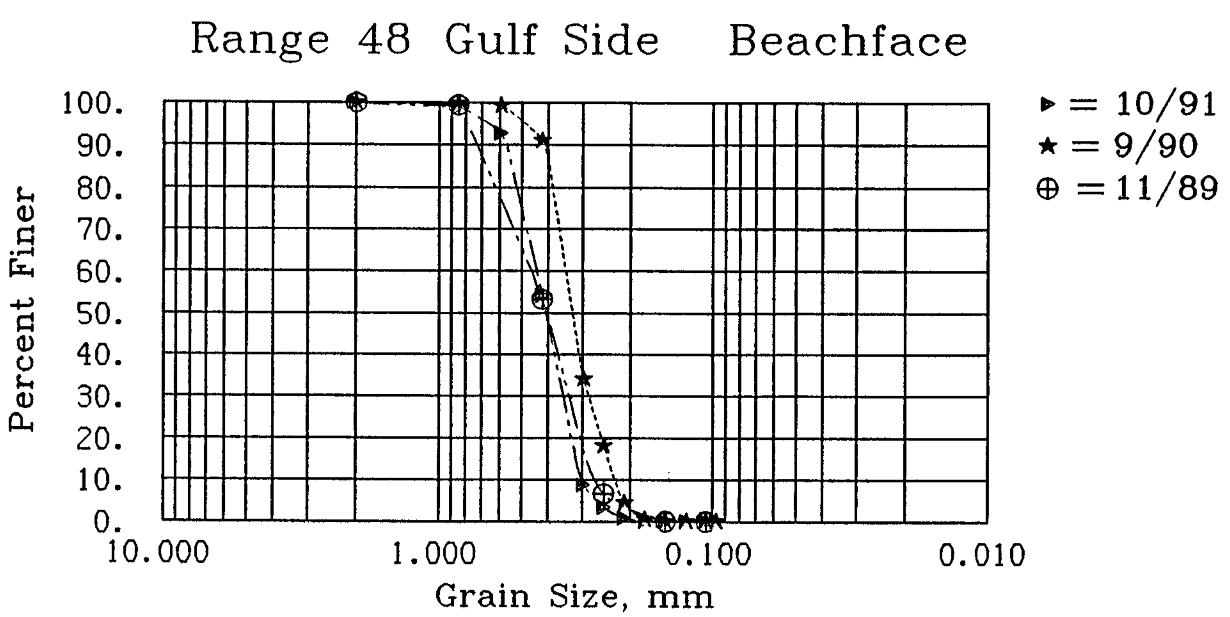
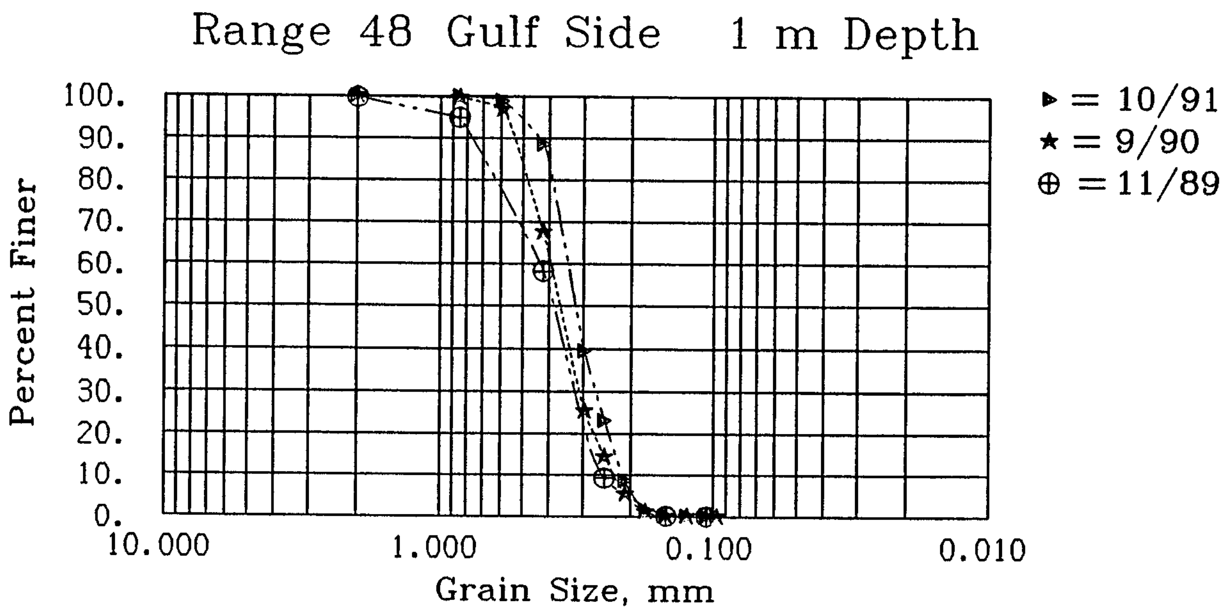


Figure V-70: Grain Size Distributions for Range 48, Berm and Beachface Positions.



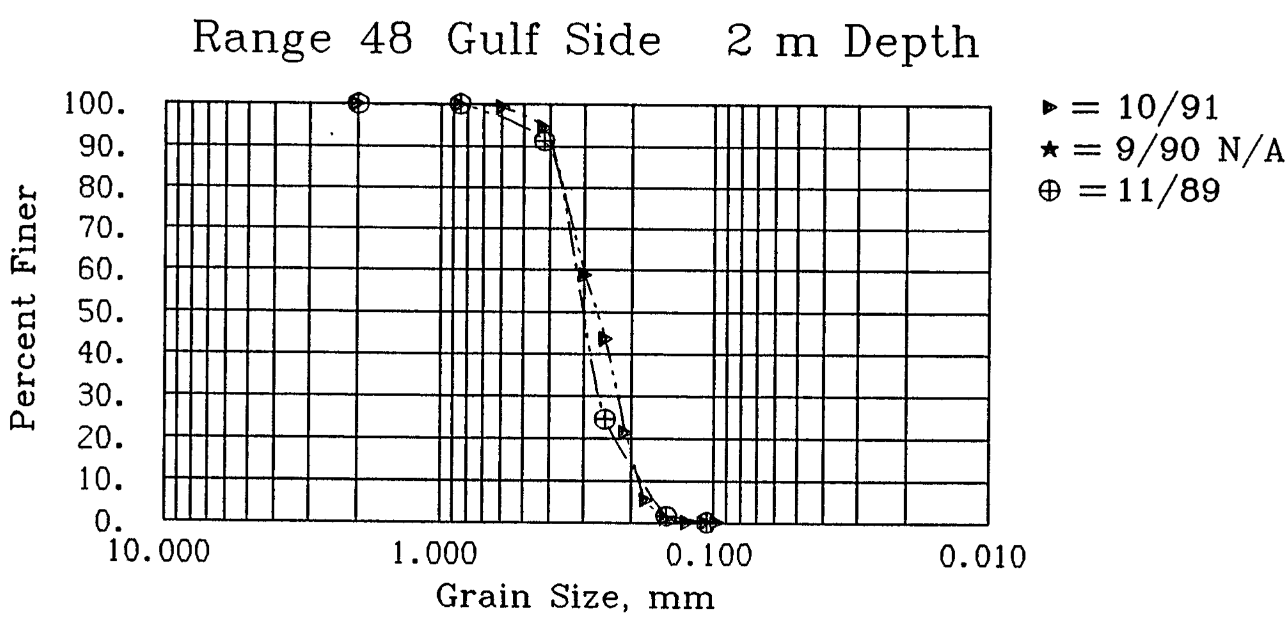
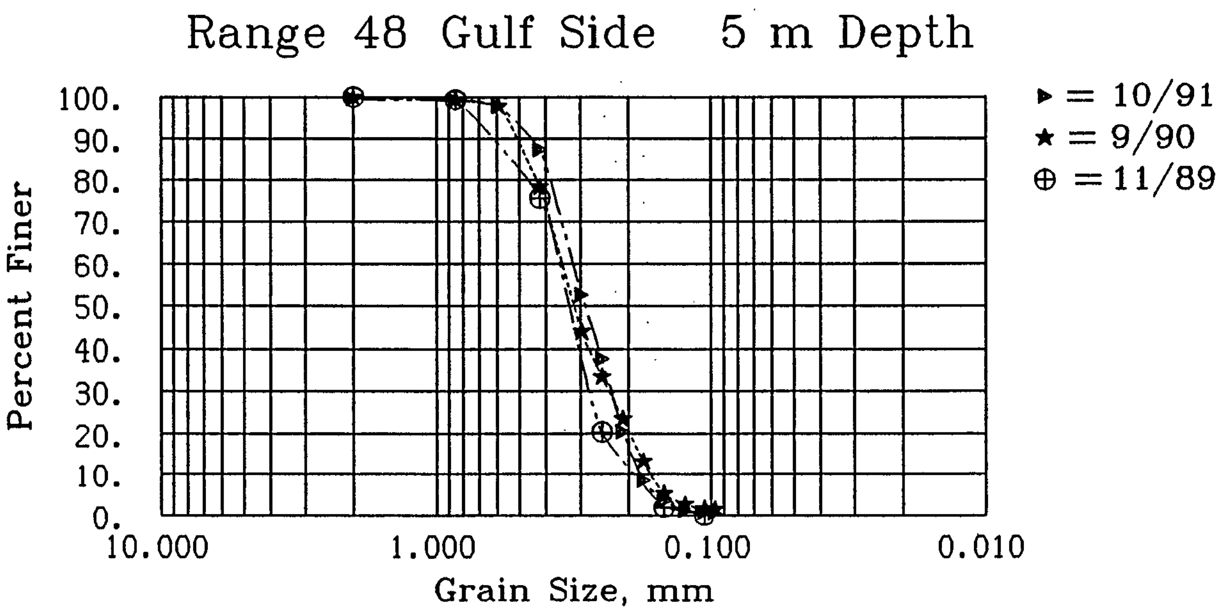


Figure V-71: Grain Size Distributions for Range 48, 1 m and 2 m Depth Positions.



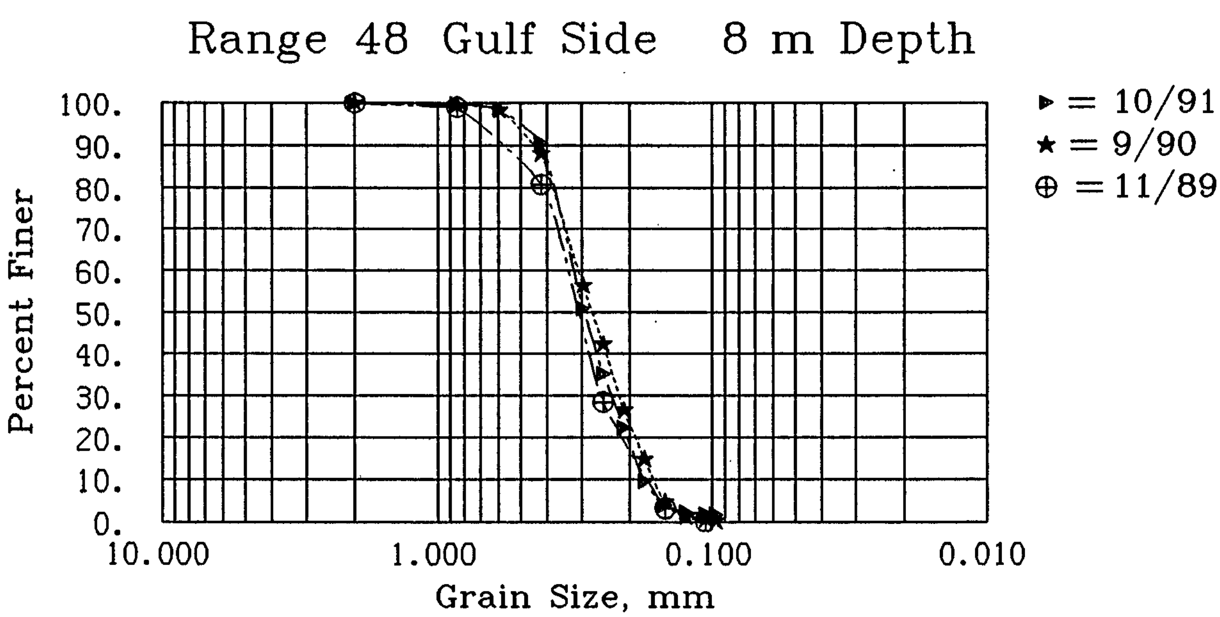
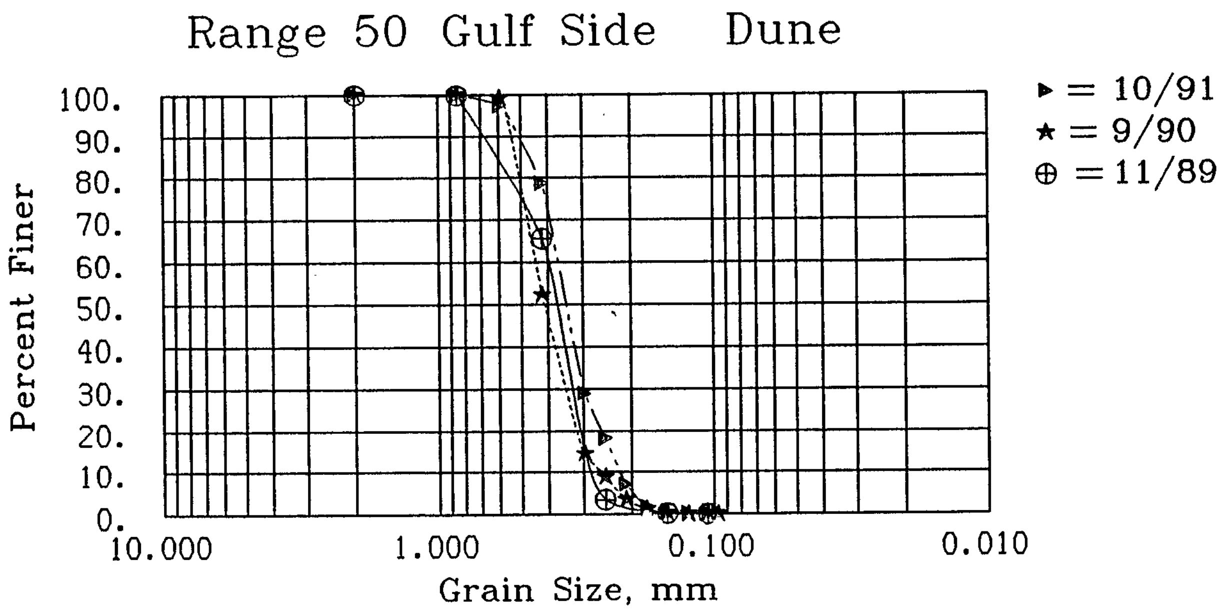


Figure V-72: Grain Size Distributions for Range 48, 5 m Depth and 8 m Depth Positions.



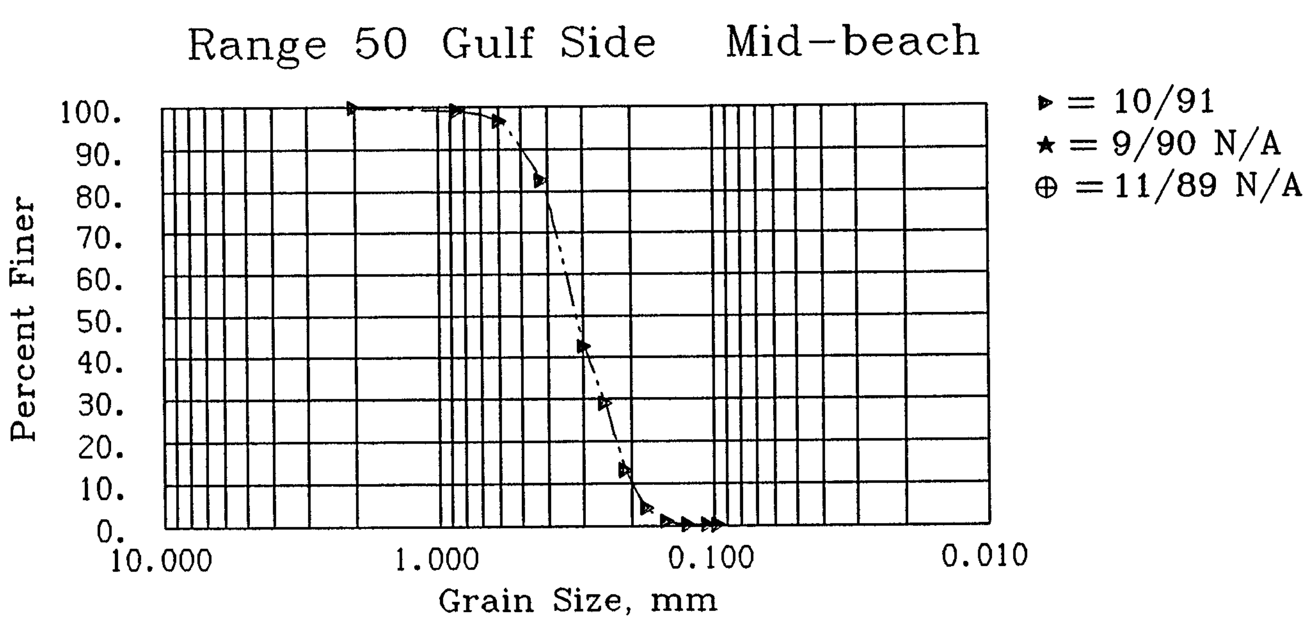
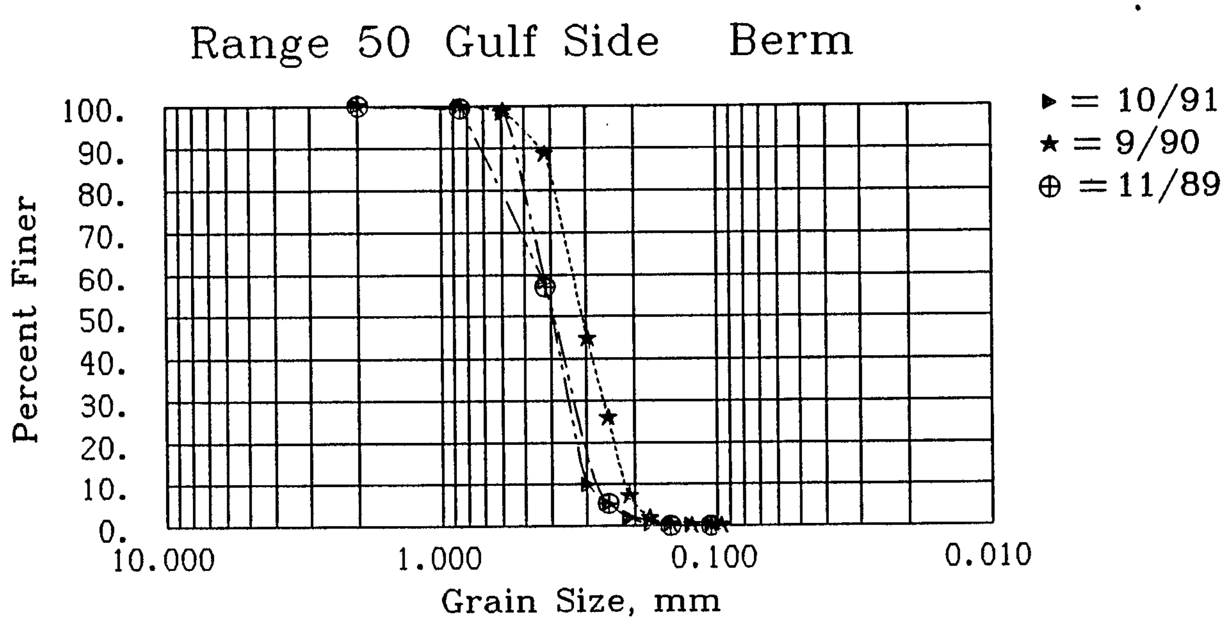


Figure V-73: Grain Size Distributions for Range 50, Dune and Mid-Beach Positions.



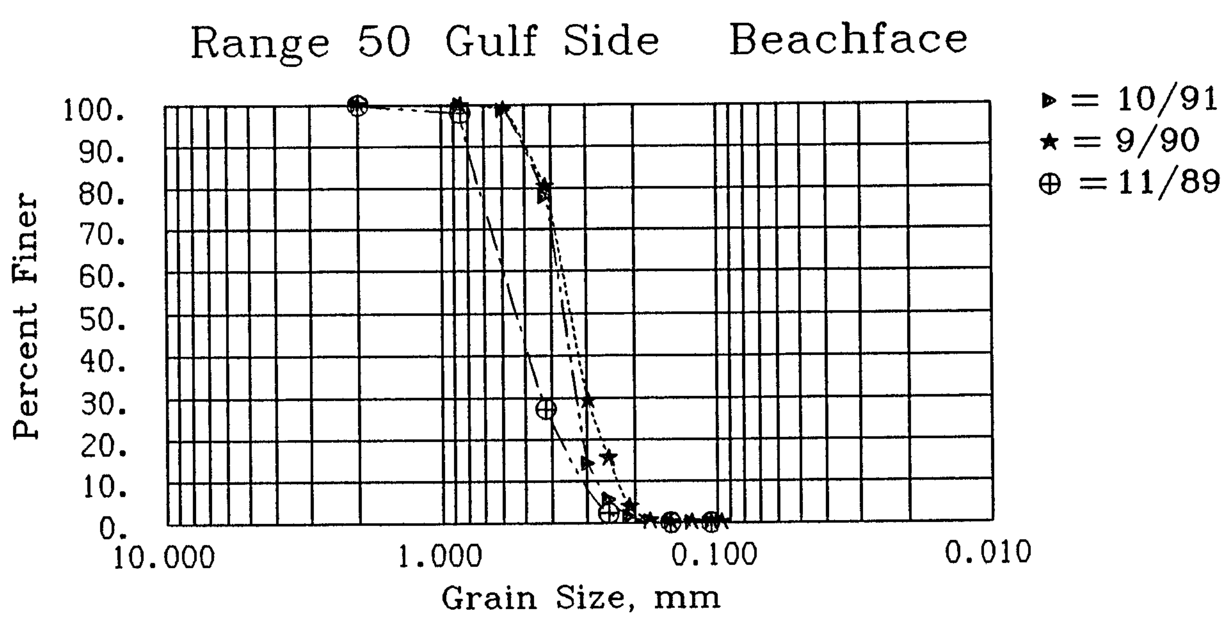


Figure V-74: Grain Size Distributions for Range 50, Berm and Beachface Positions.

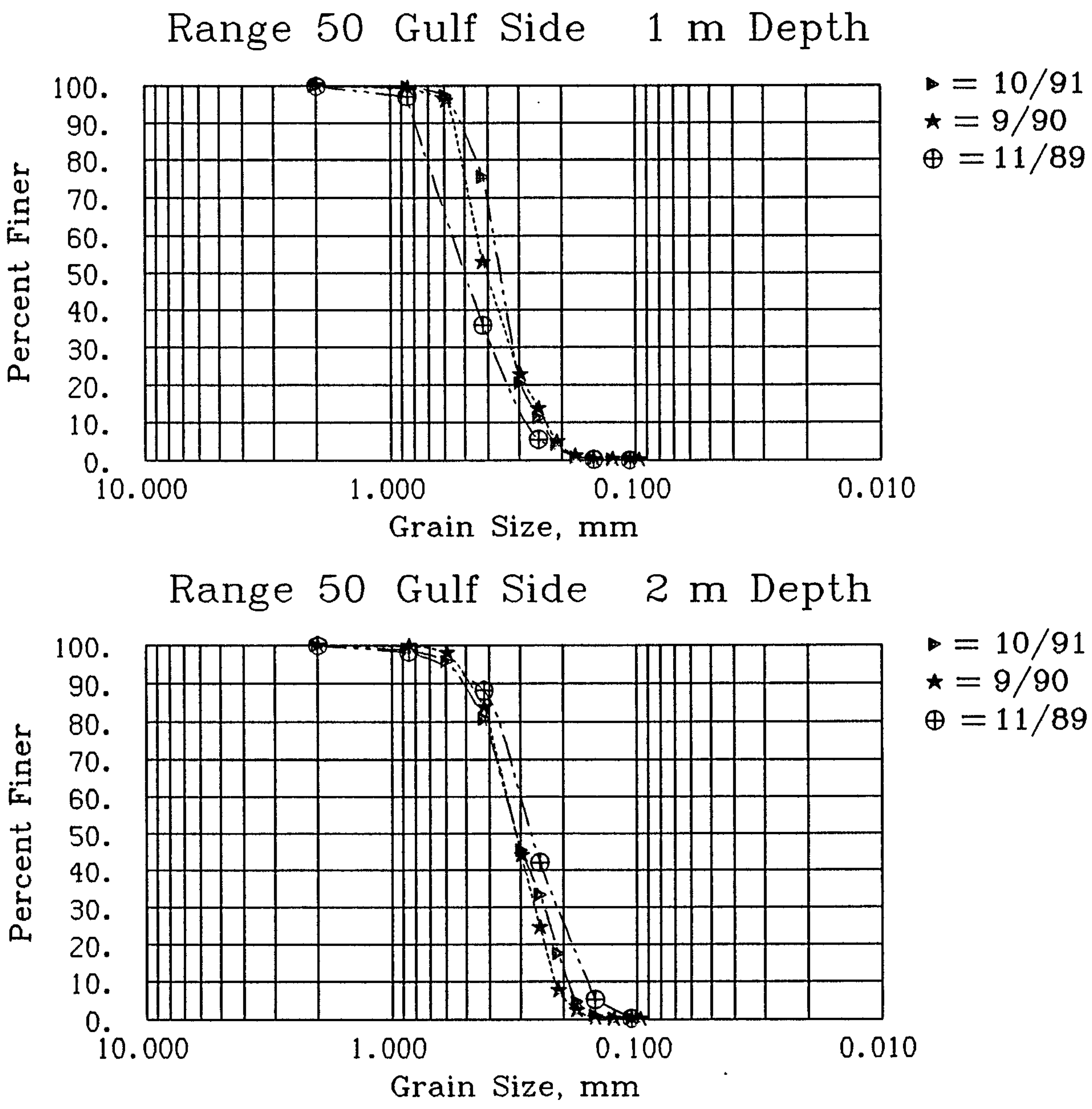
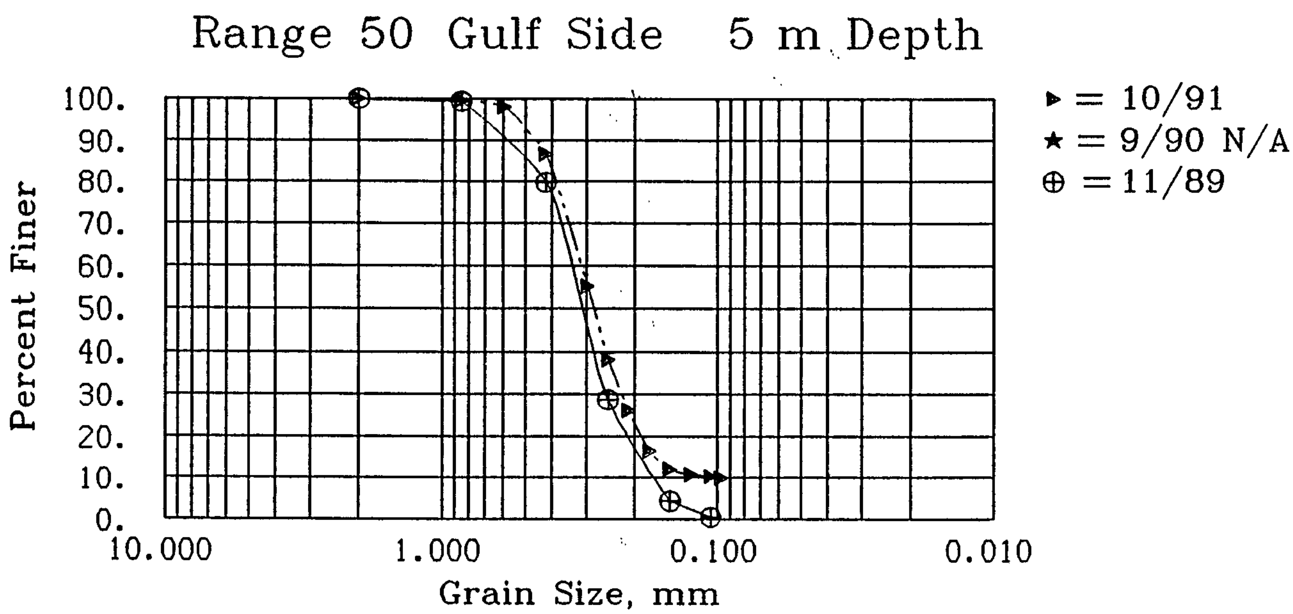


Figure V-75: Grain Size Distributions for Range 50, 1 m and 2 m Depth Positions.



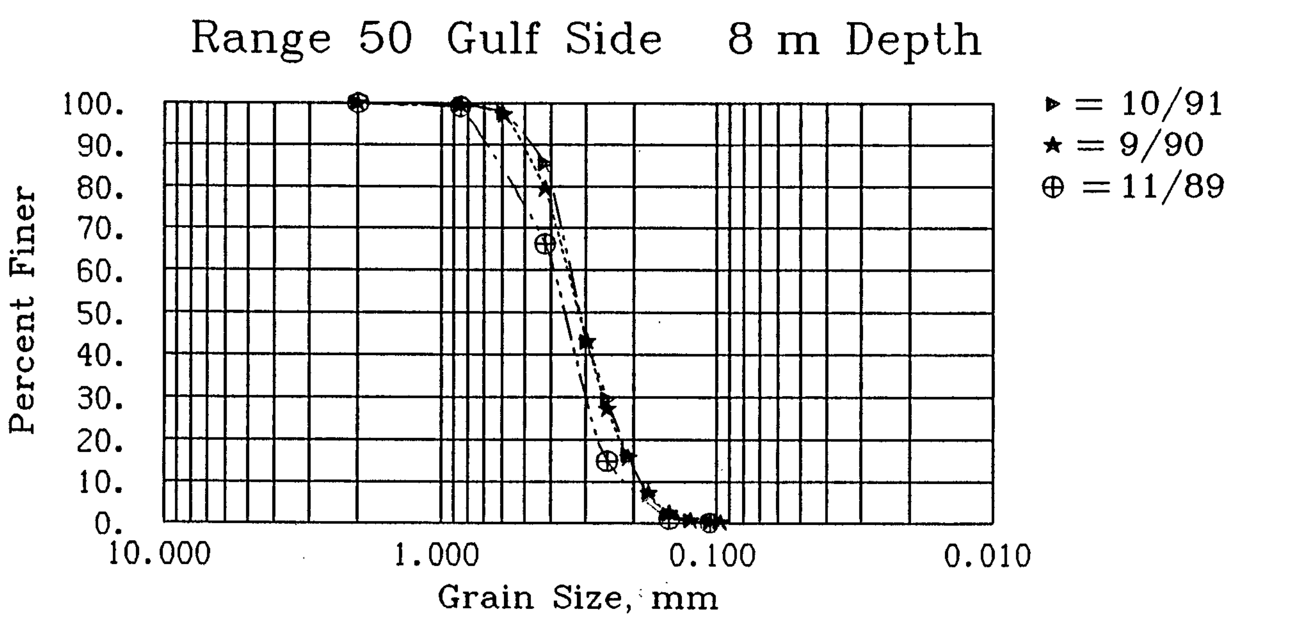
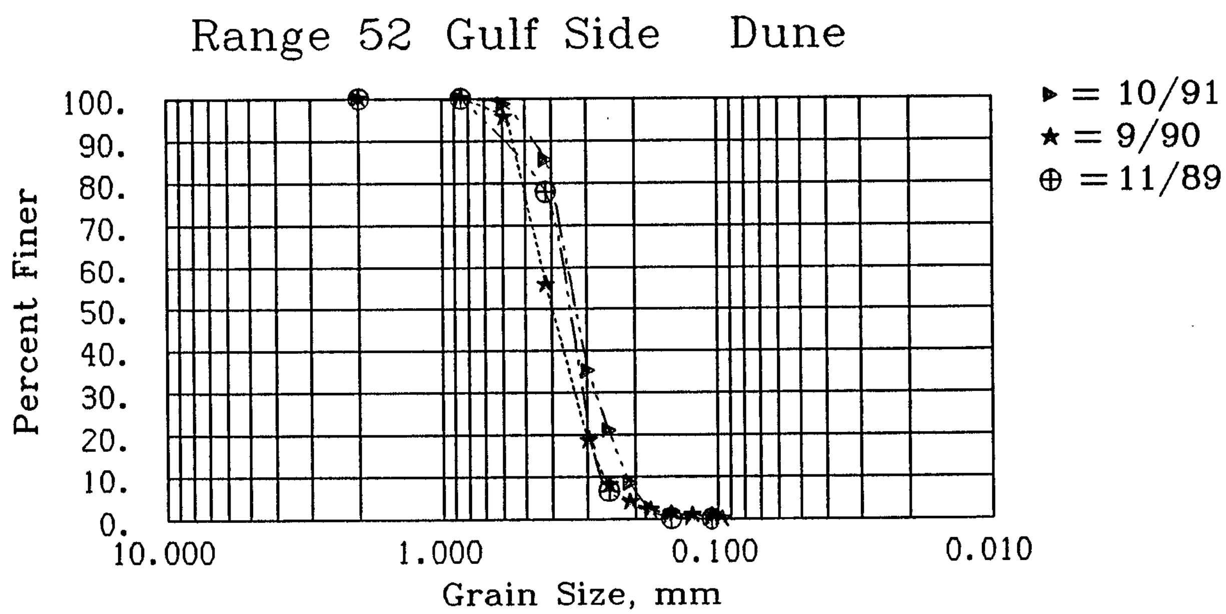


Figure V-76: Grain Size Distributions for Range 50, 5 m Depth and 8 m Depth Positions.



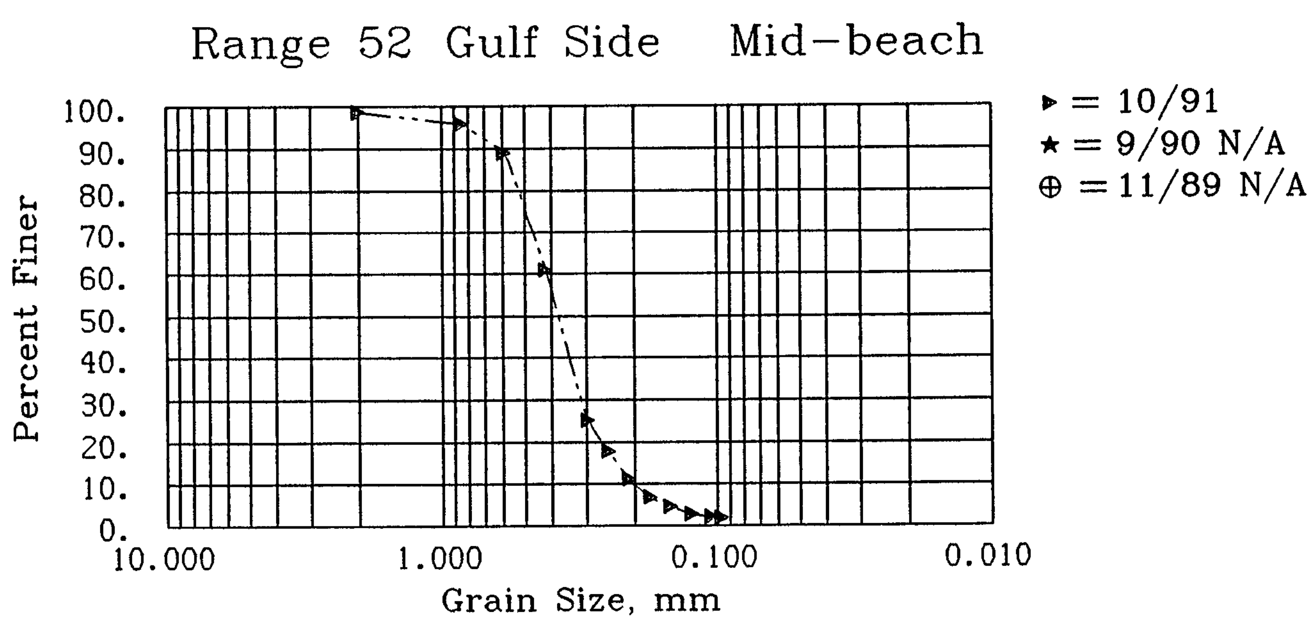
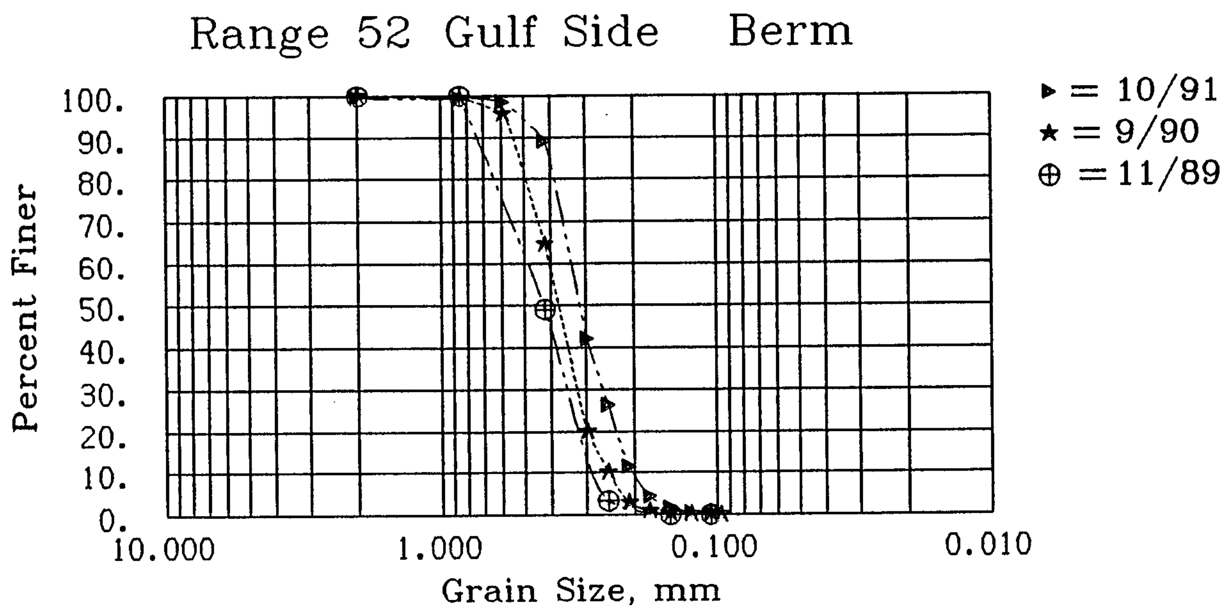


Figure V-77: Grain Size Distributions for Range 52, Dune and Mid–Beach Positions.



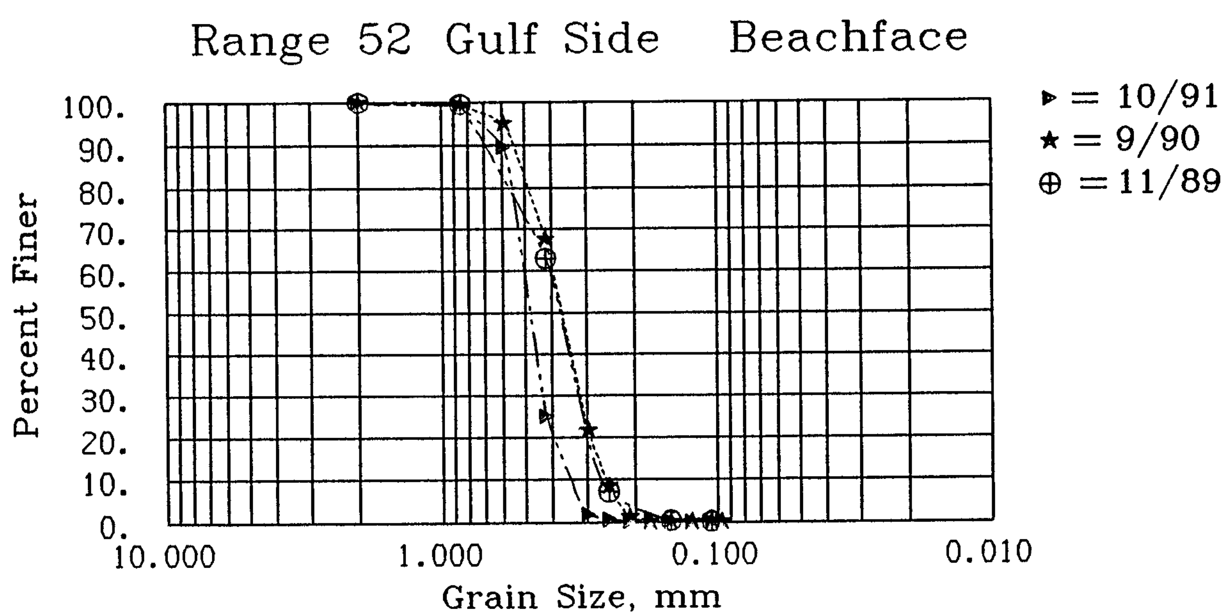
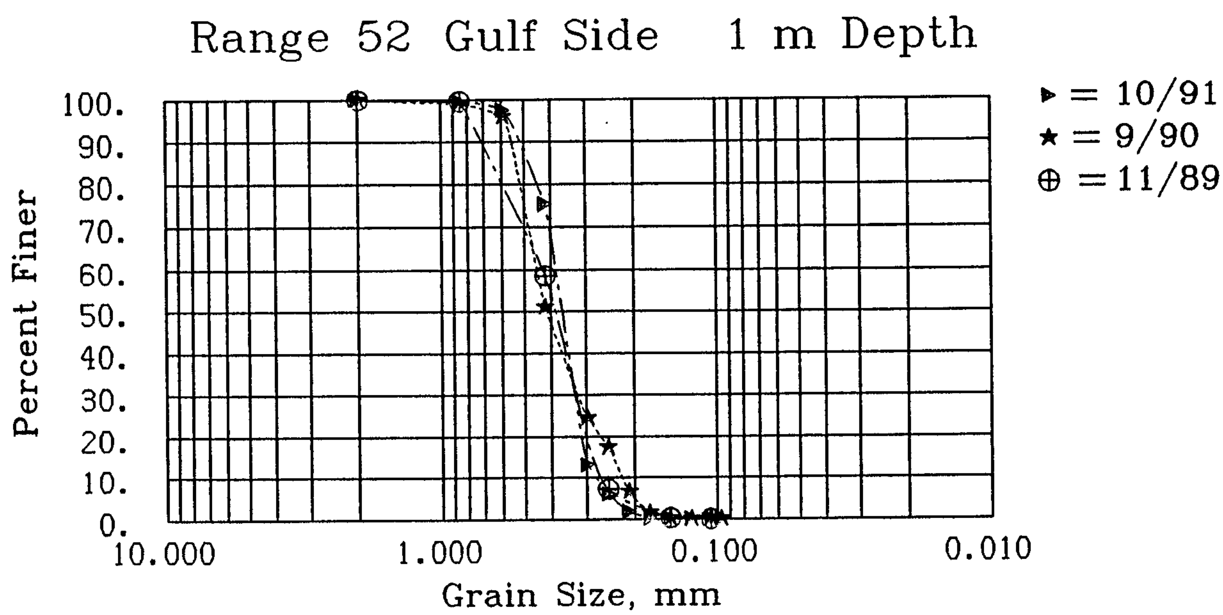


Figure V-78: Grain Size Distributions for Range 52, Berm and Beachface Positions.



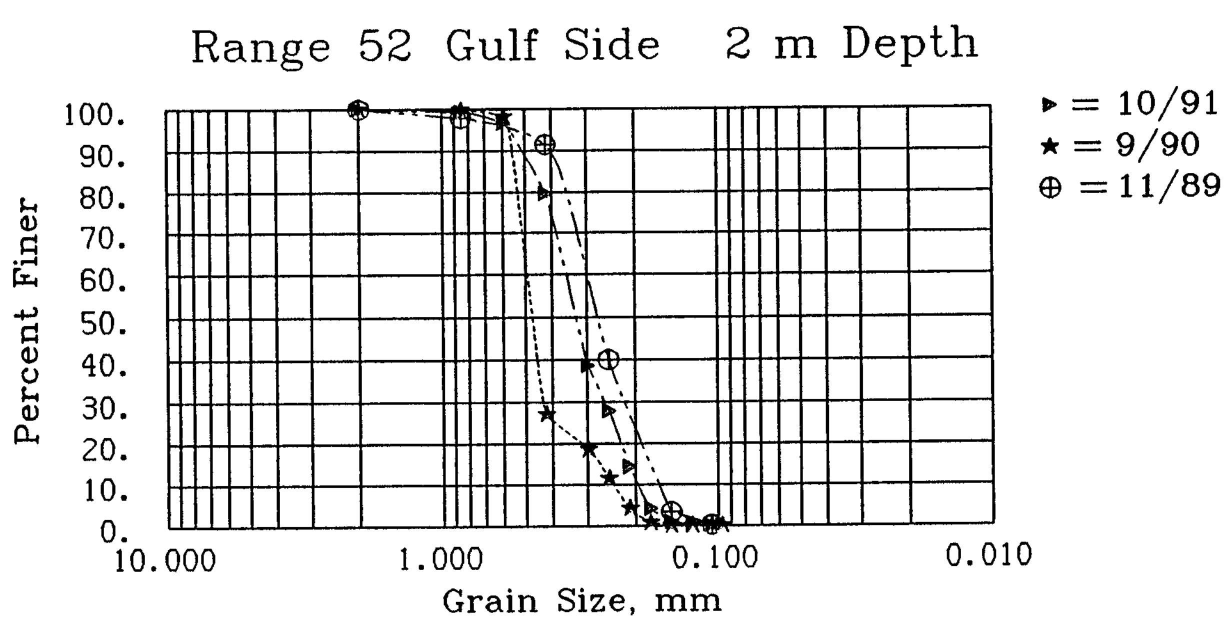
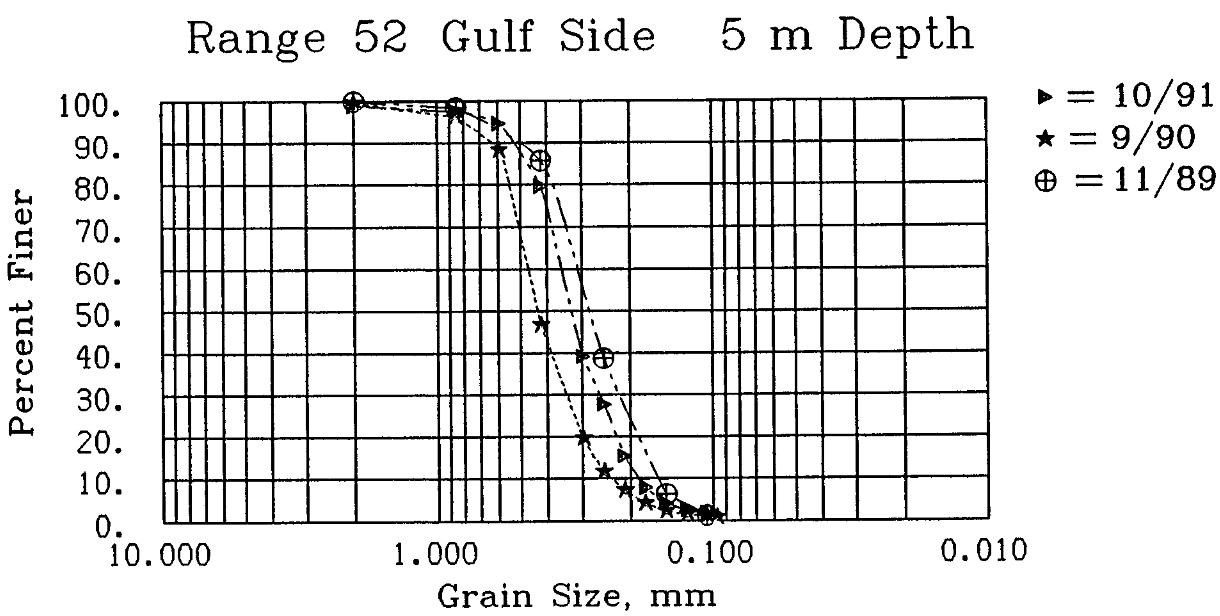


Figure V-79: Grain Size Distributions for Range 52, 1 m and 2 m Depth Positions.



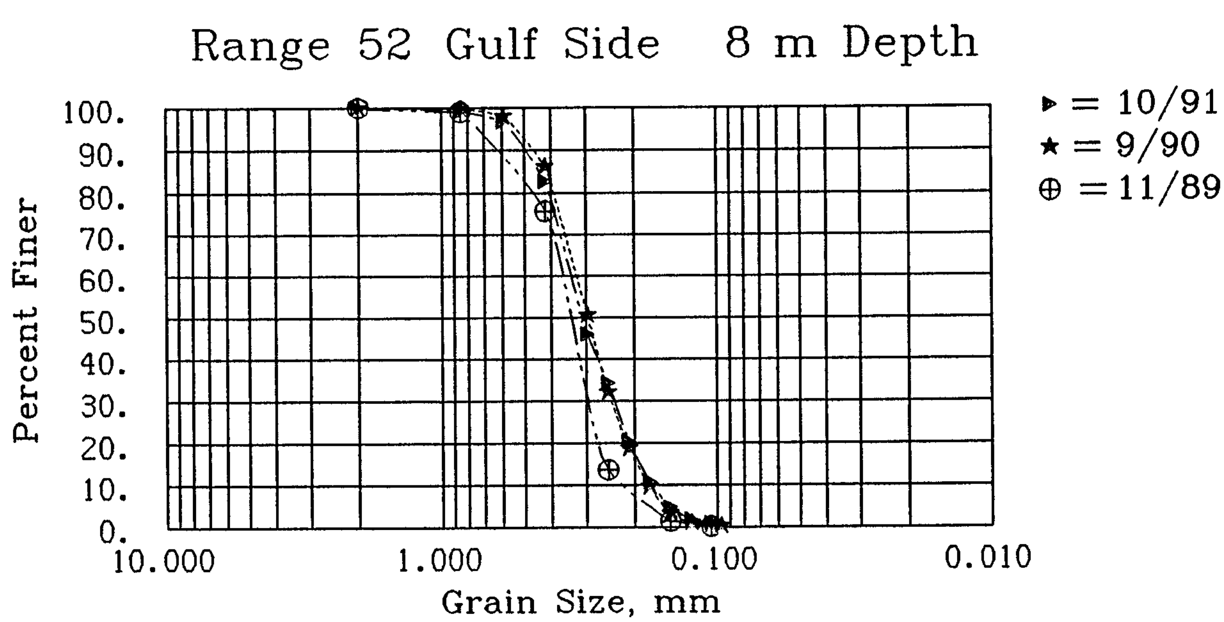
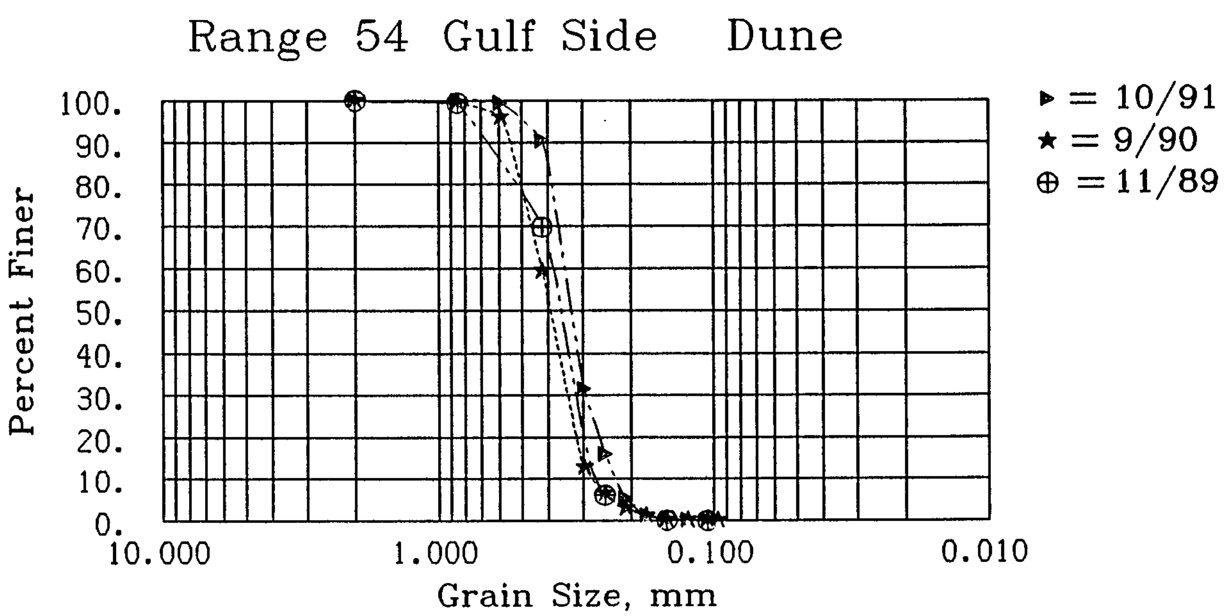


Figure V-80: Grain Size Distributions for Range 52, 5 m Depth and 8 m Depth Positions.



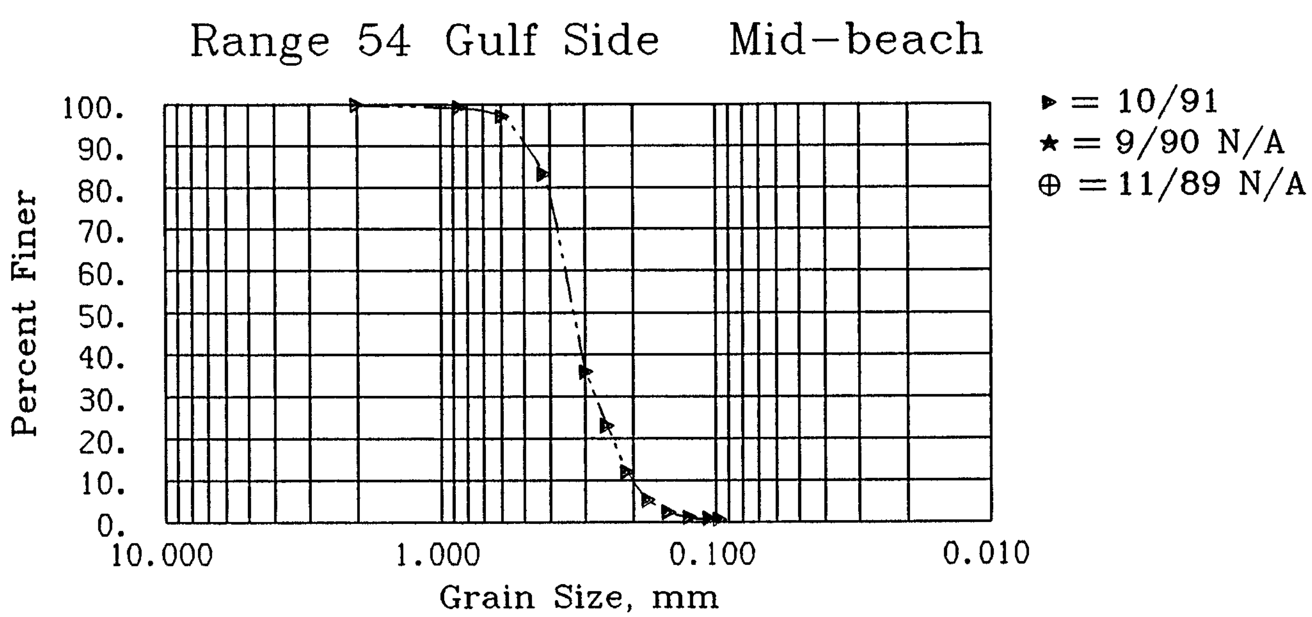
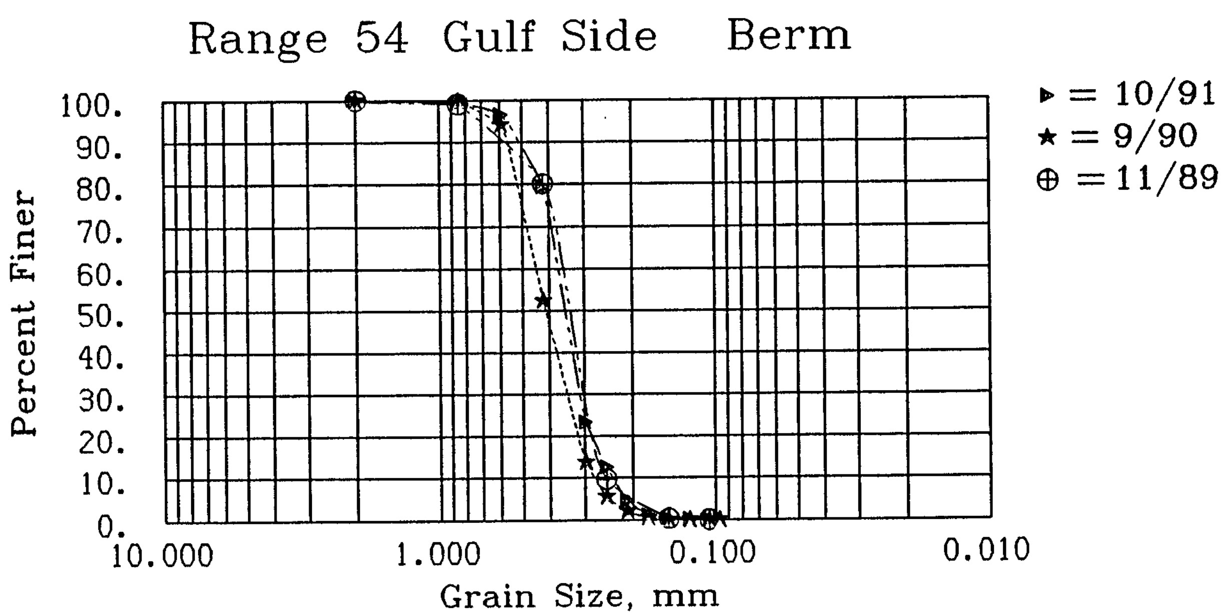


Figure V-81: Grain Size Distributions for Range 54, Dune and Mid–Beach Positions.



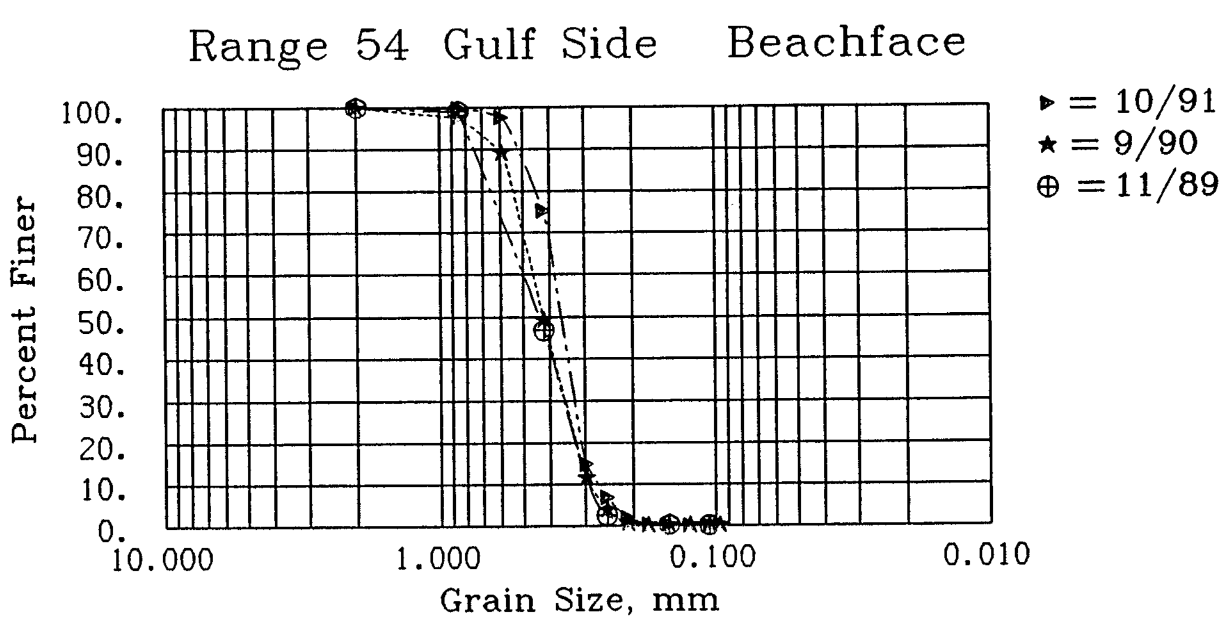
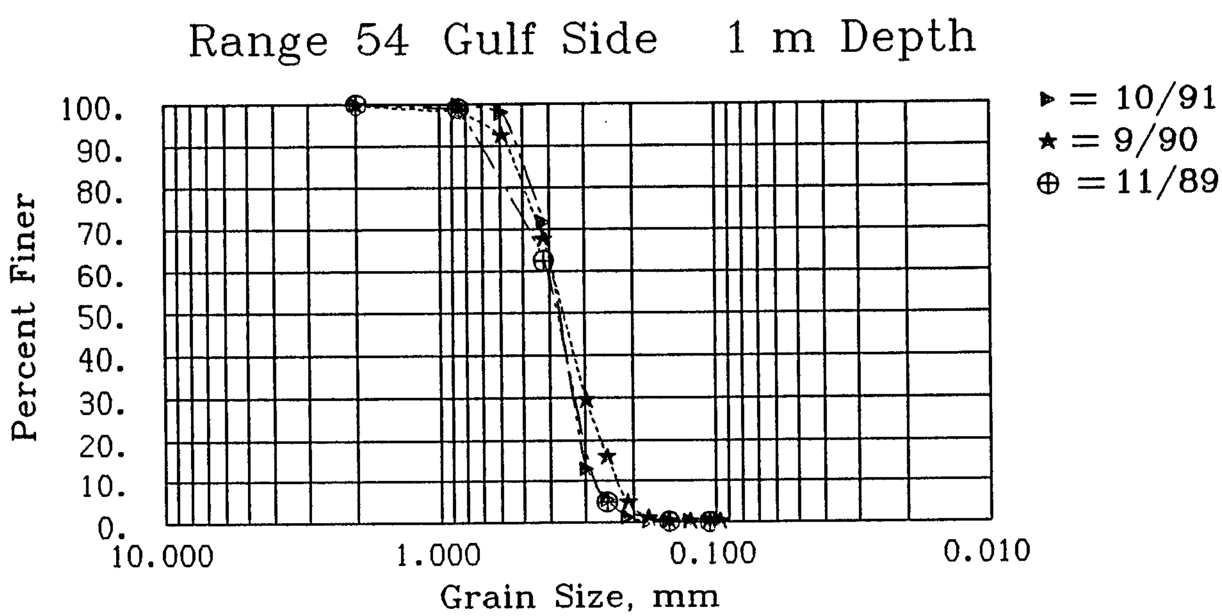


Figure V-82: Grain Size Distributions for Range 54, Berm and Beachface Positions.



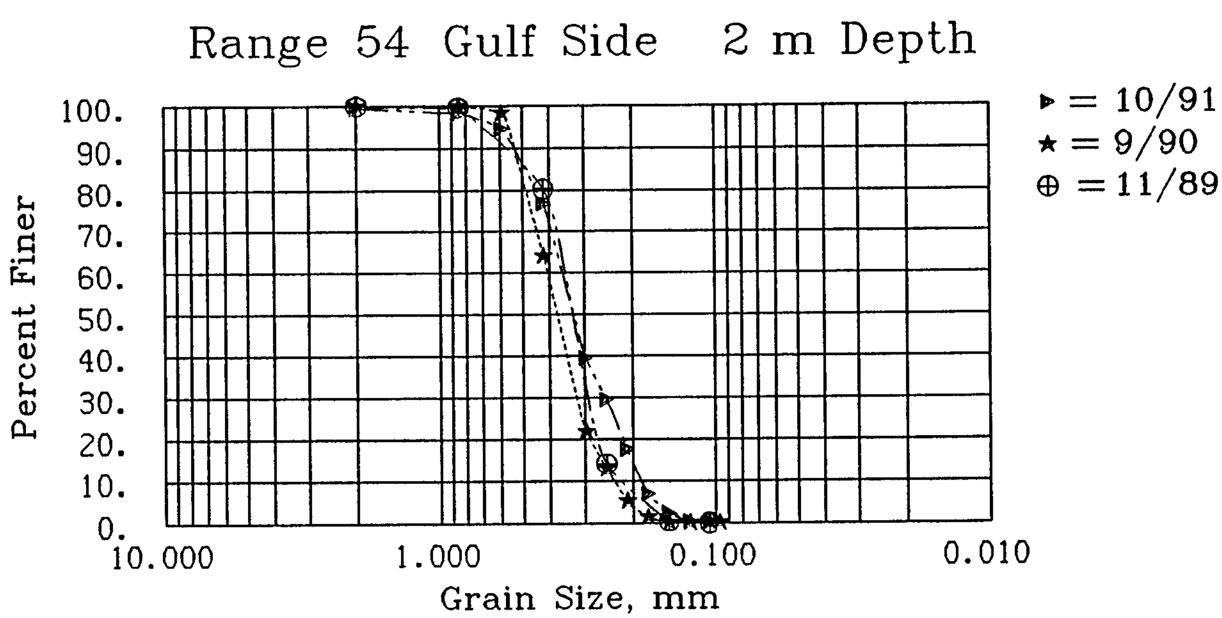
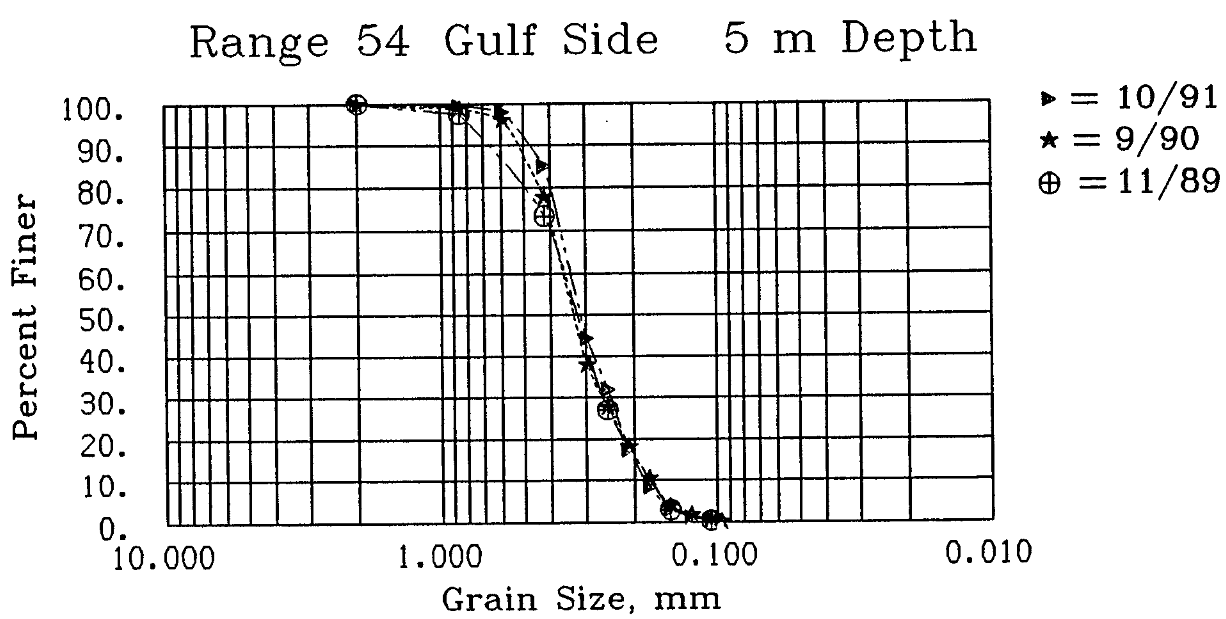


Figure V-83: Grain Size Distributions for Range 54, 1 m and 2 m Depth Positions.



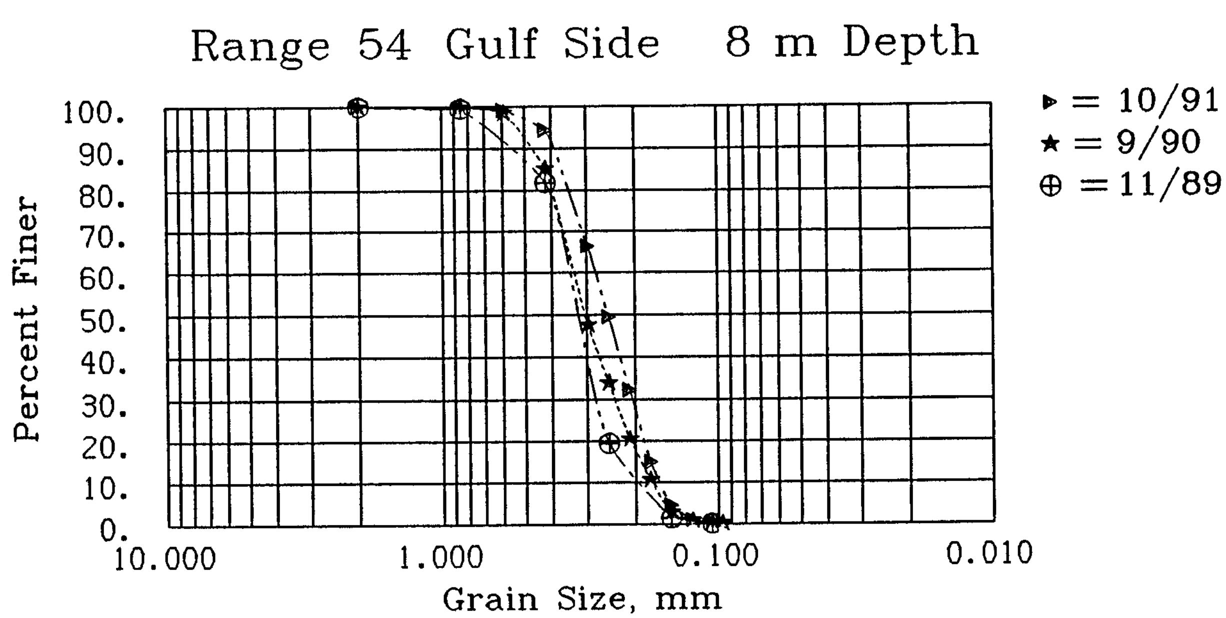
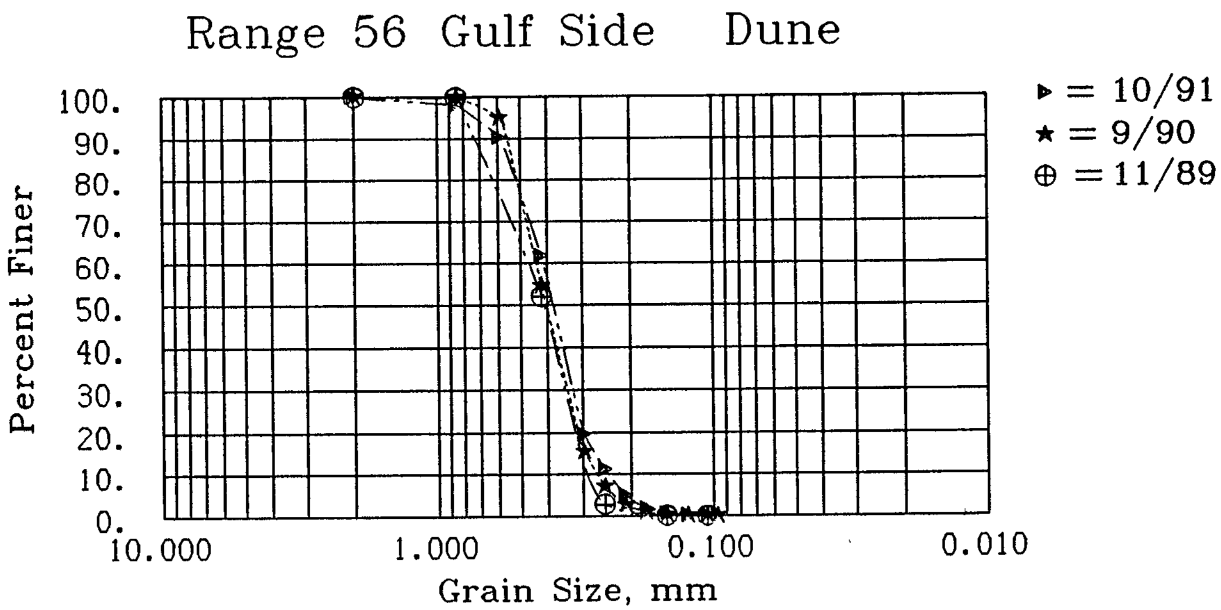


Figure V-84: Grain Size Distributions for Range 54, 5 m Depth and 8 m Depth Positions.



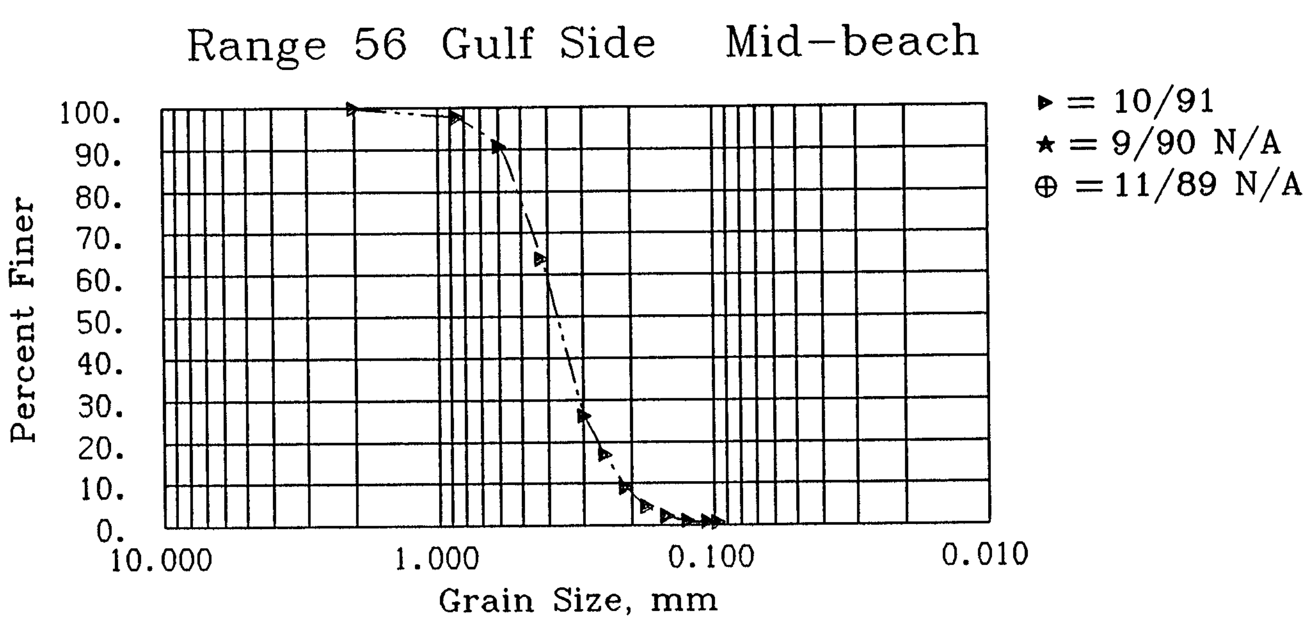
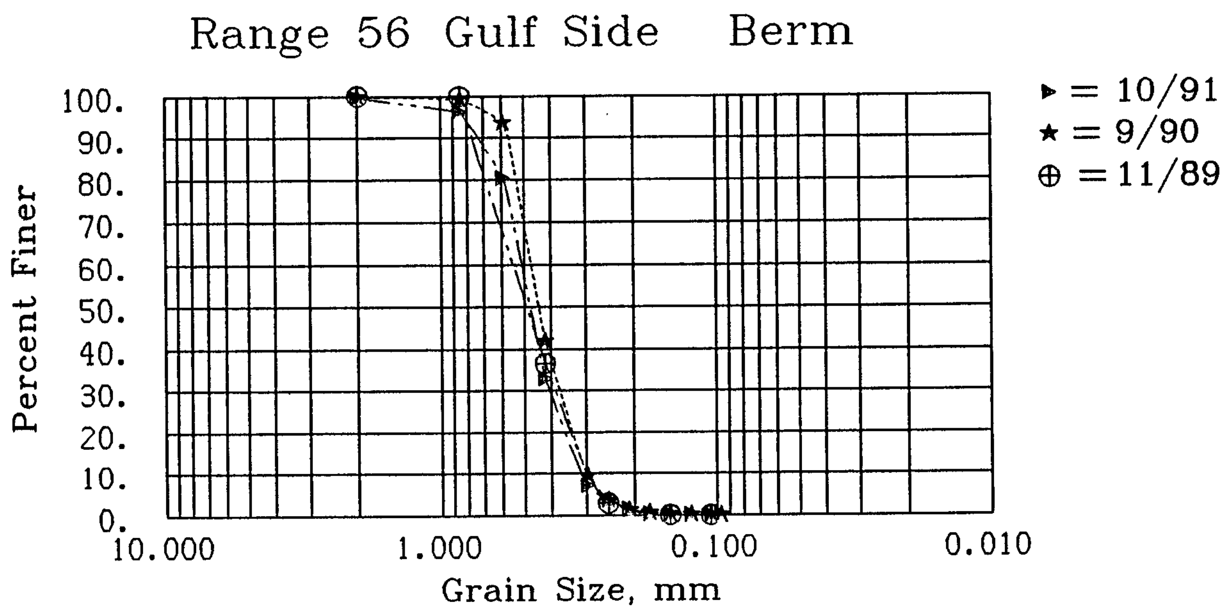


Figure V-85: Grain Size Distributions for Range 56, Dune and Mid-Beach Positions.



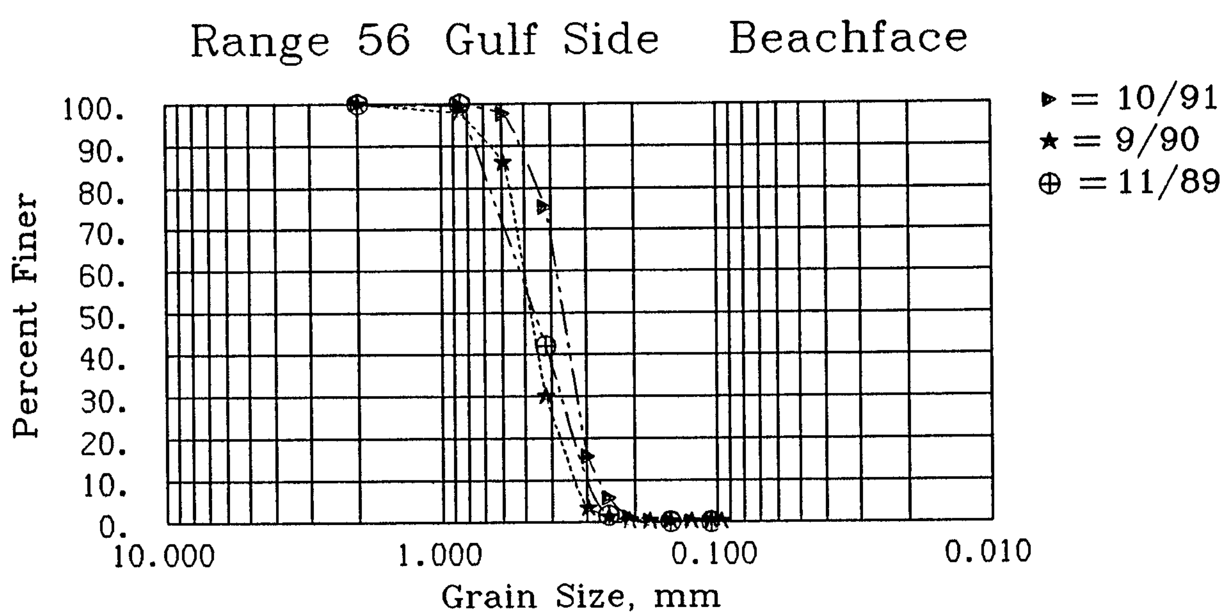
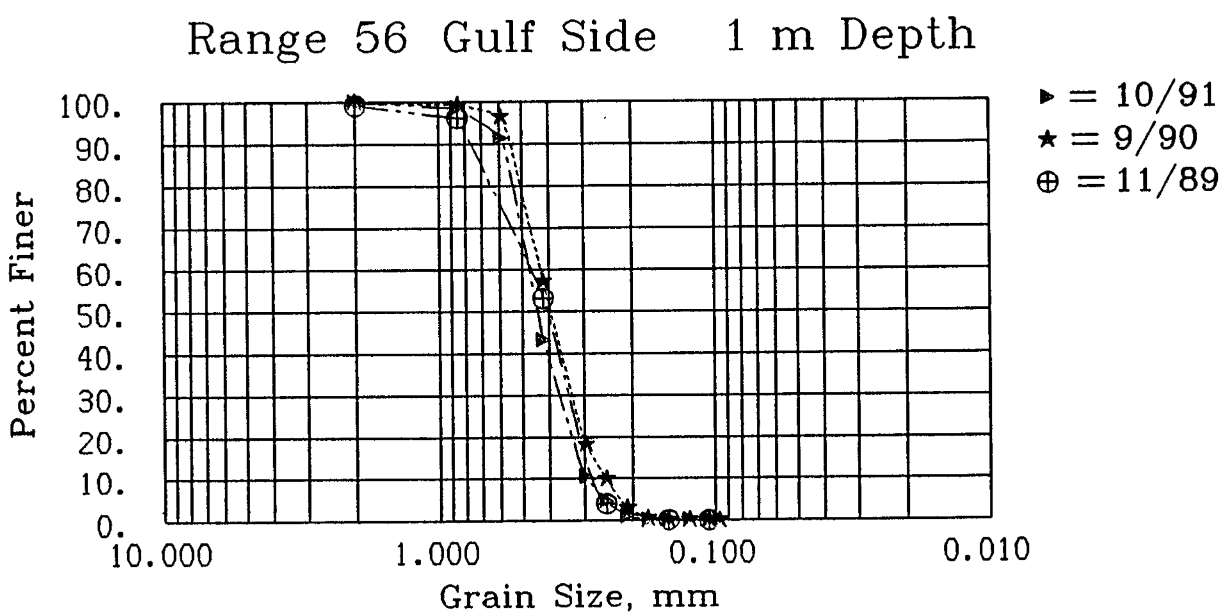


Figure V-86: Grain Size Distributions for Range 56, Berm and Beachface Positions.



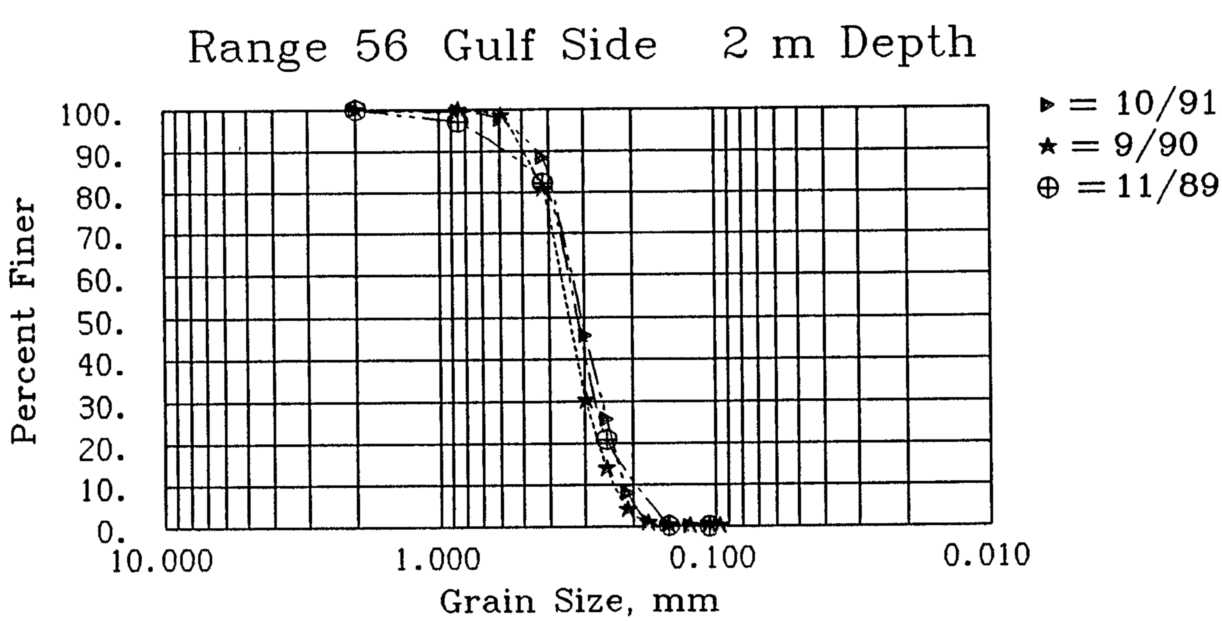
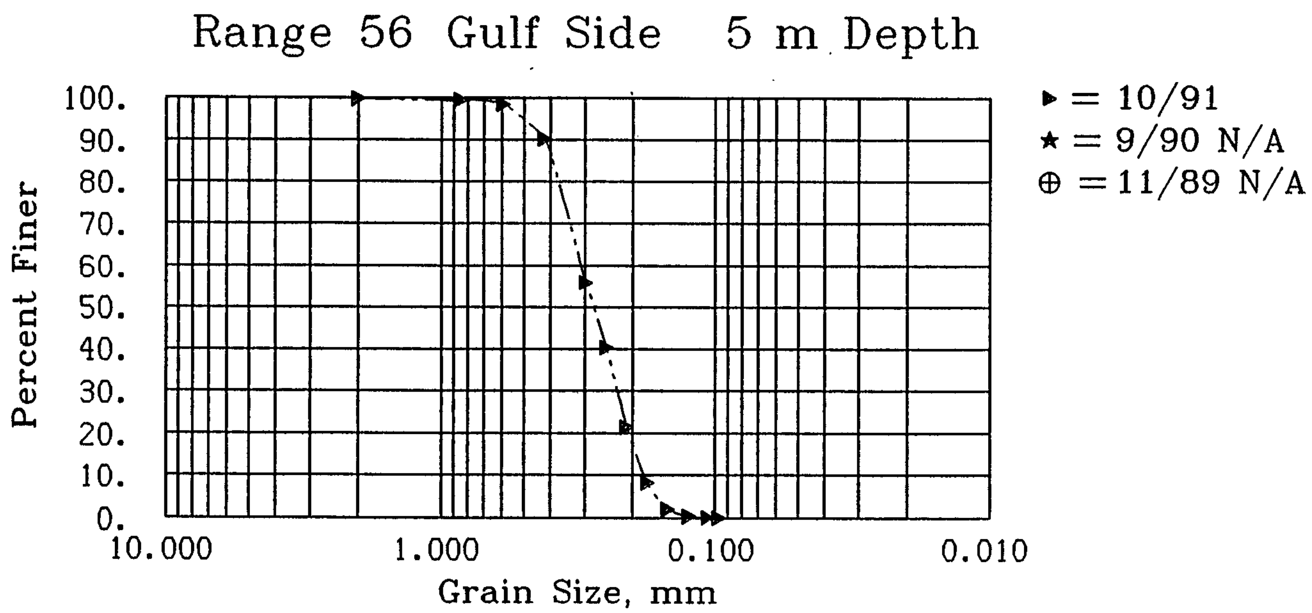


Figure V-87: Grain Size Distributions for Range 56, 1 m and 2 m Depth Positions.



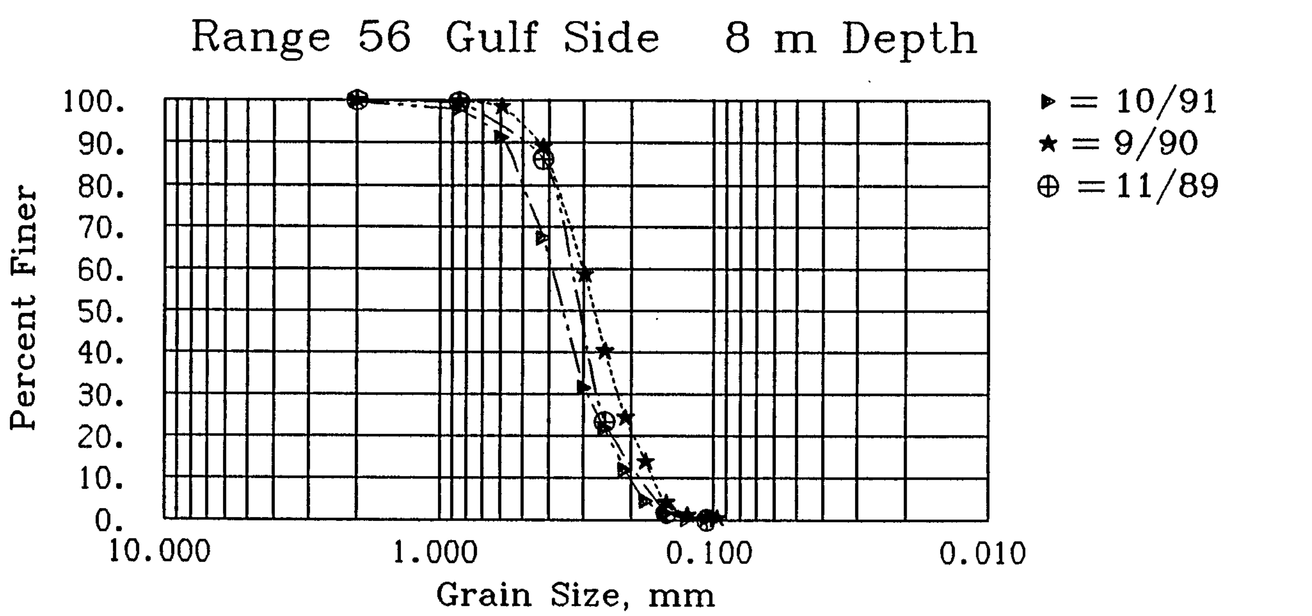
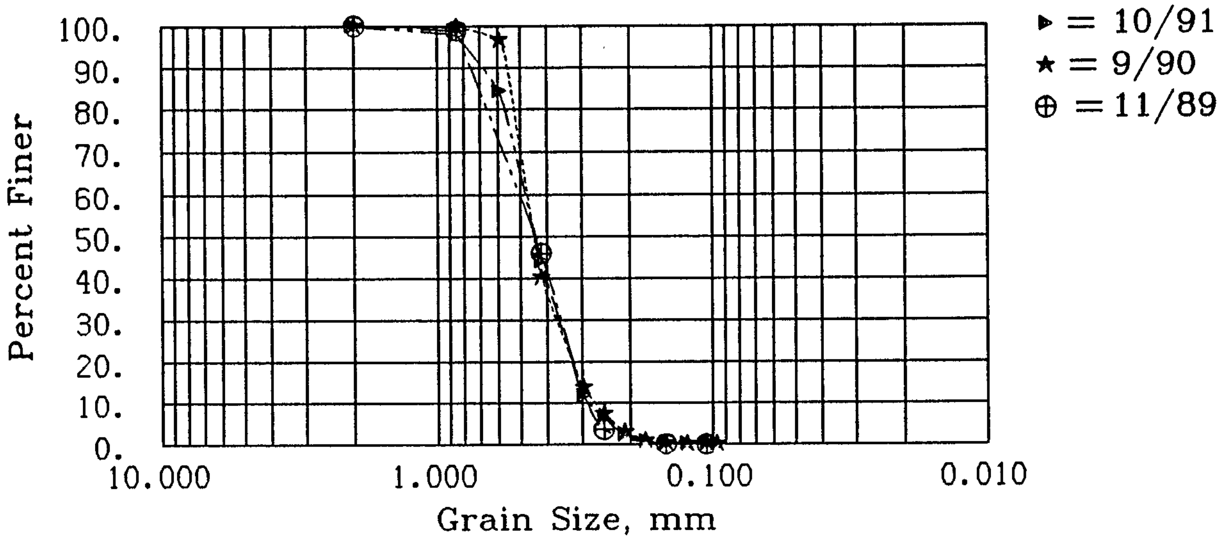


Figure V-88: Grain Size Distributions for Range 56, 5 m Depth and 8 m Depth Positions.

Range 58 Gulf Side Dune



Range 58 Gulf Side Mid–beach

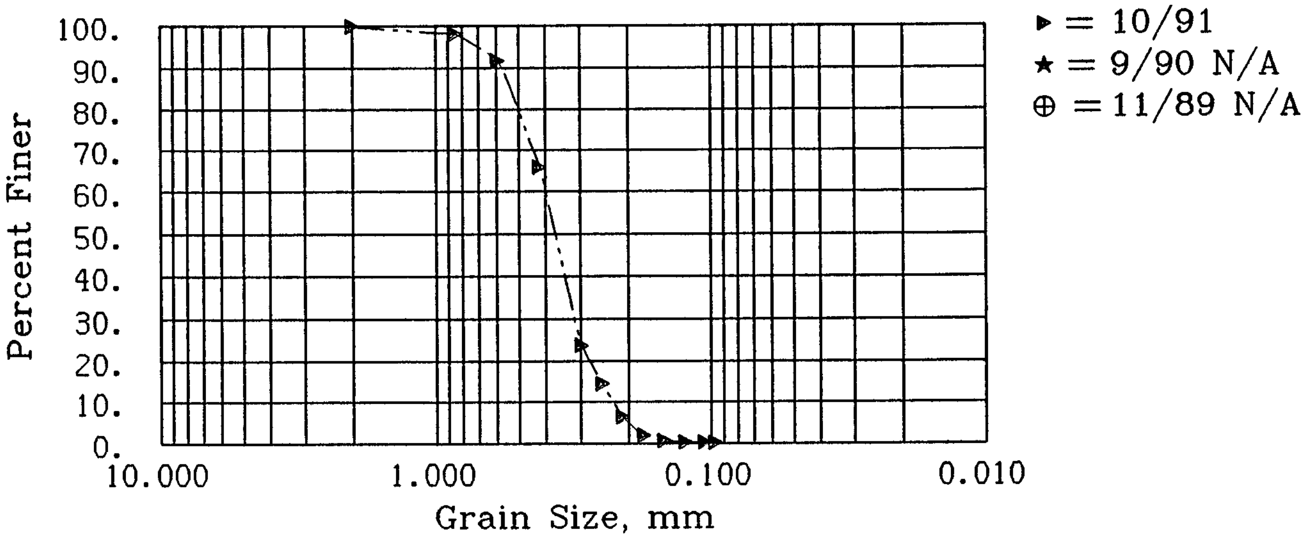
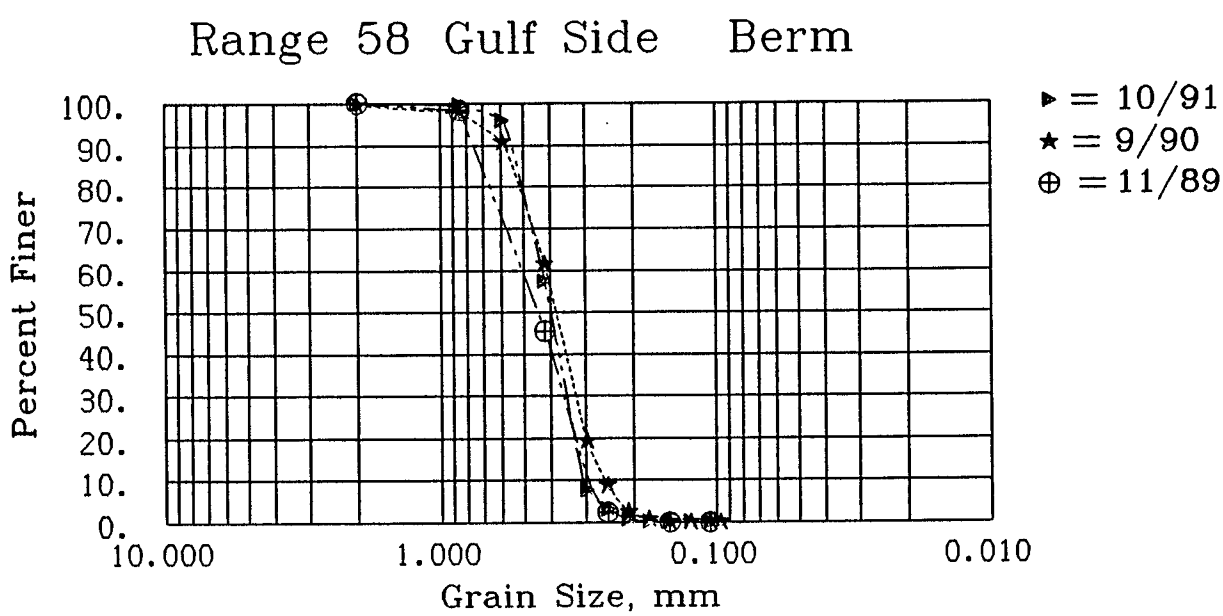


Figure V-89: Grain Size Distributions for Range 58, Dune and Mid–Beach Positions.



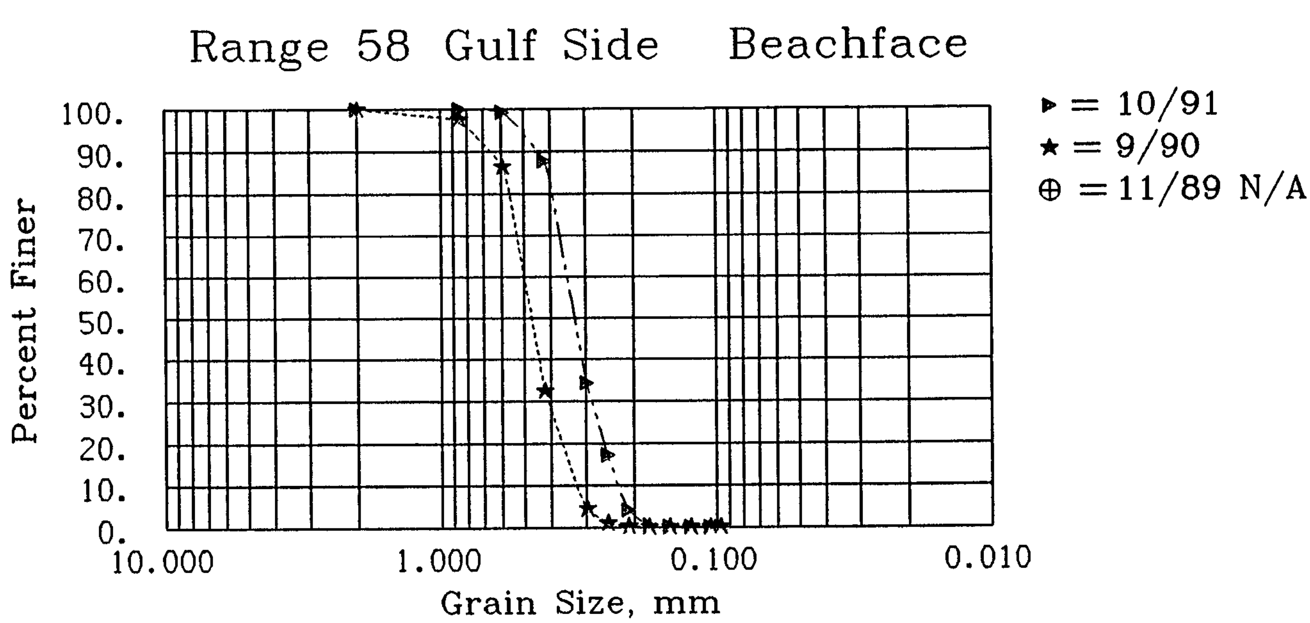
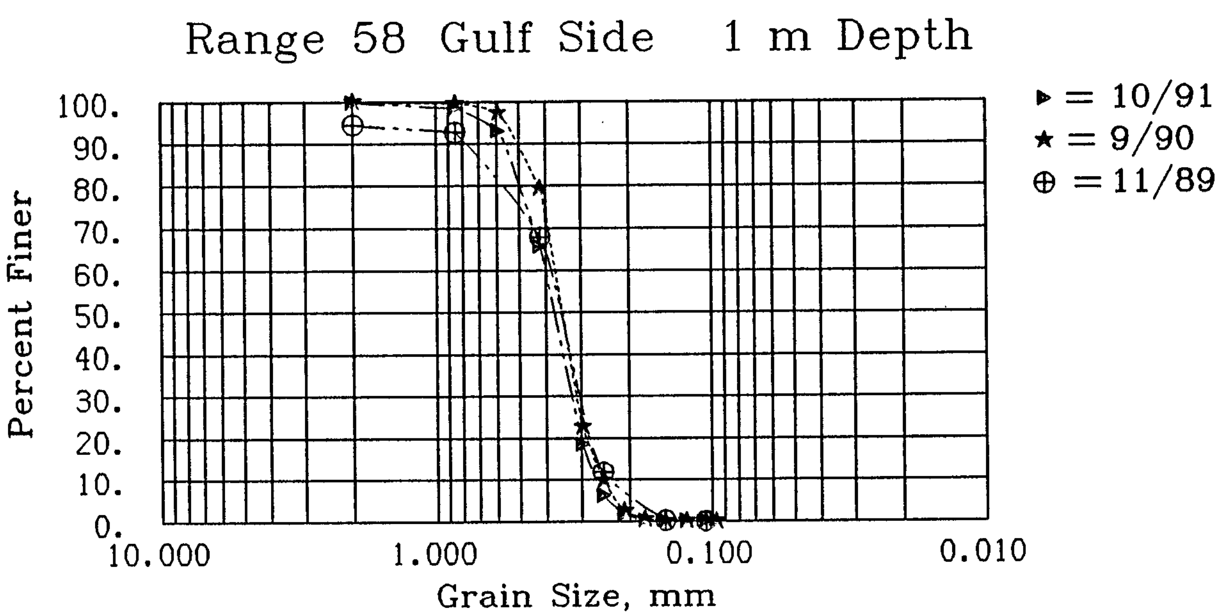


Figure V-90: Grain Size Distributions for Range 58, Berm and Beachface Positions.



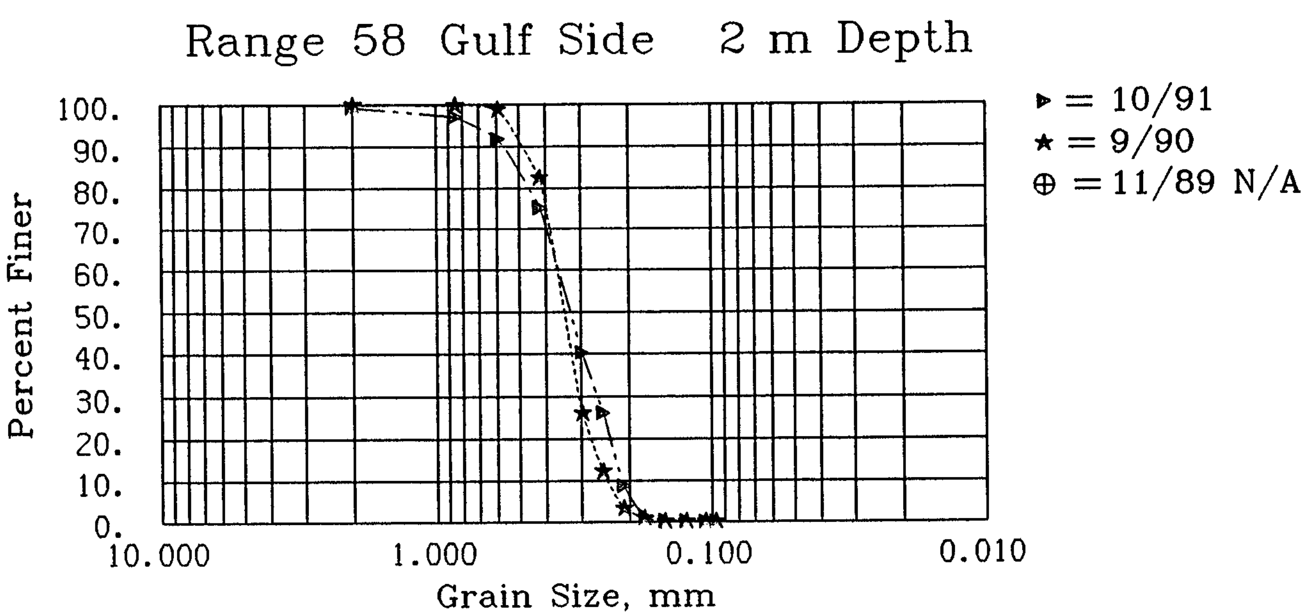
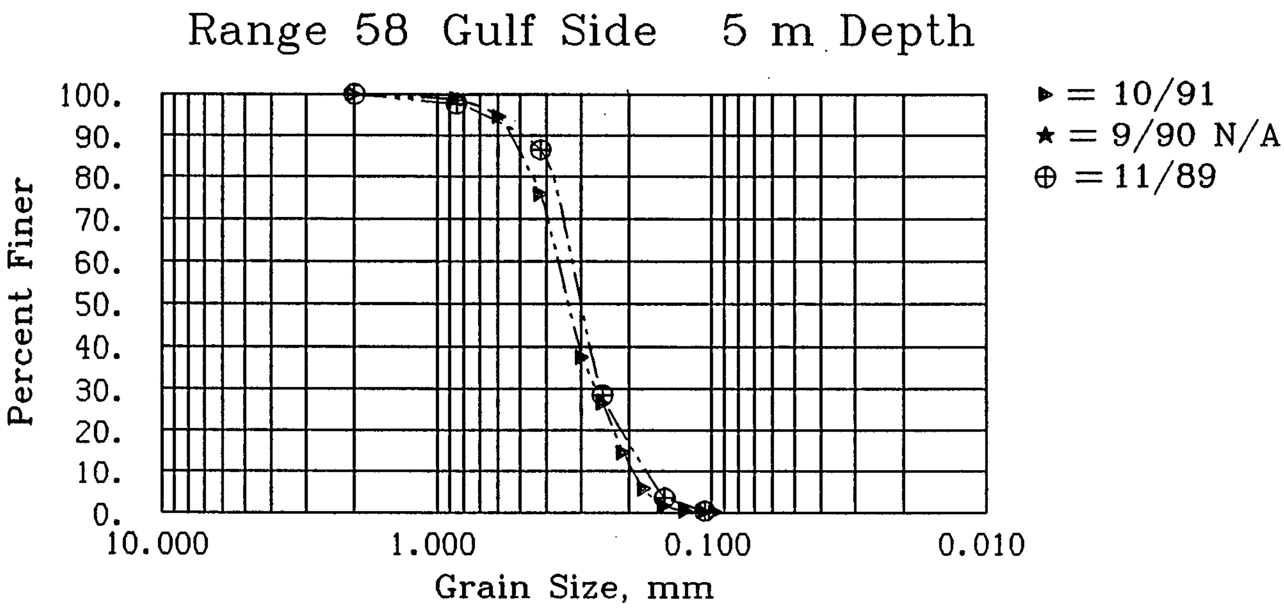


Figure V-91: Grain Size Distributions for Range 58, 1 m and 2 m Depth Positions.



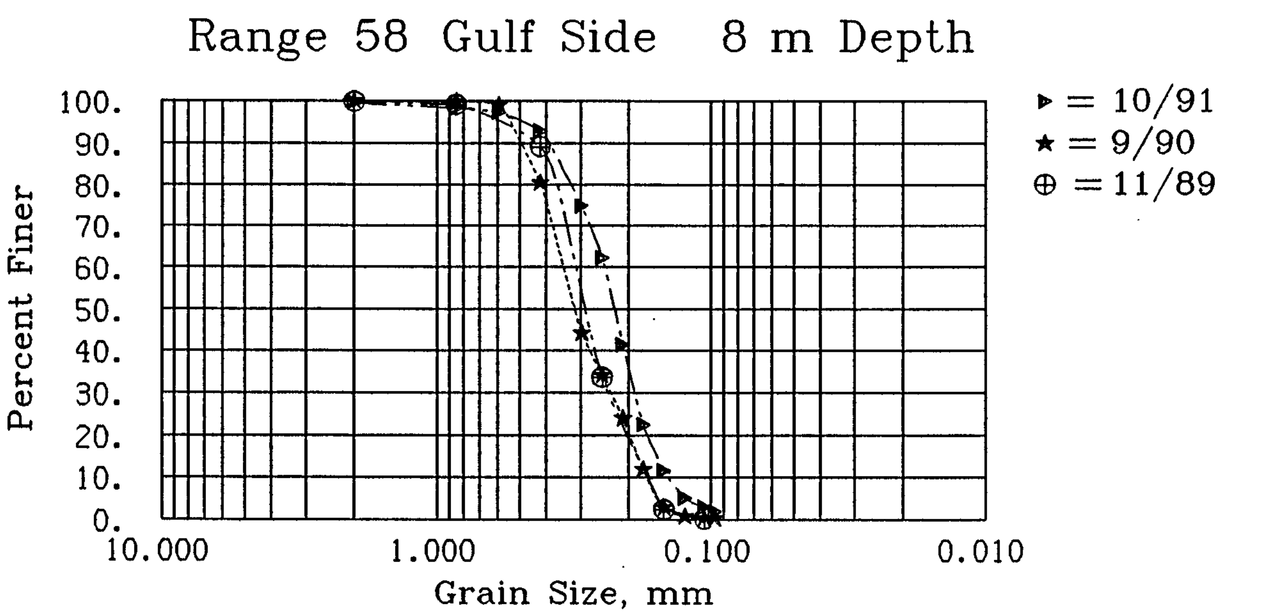
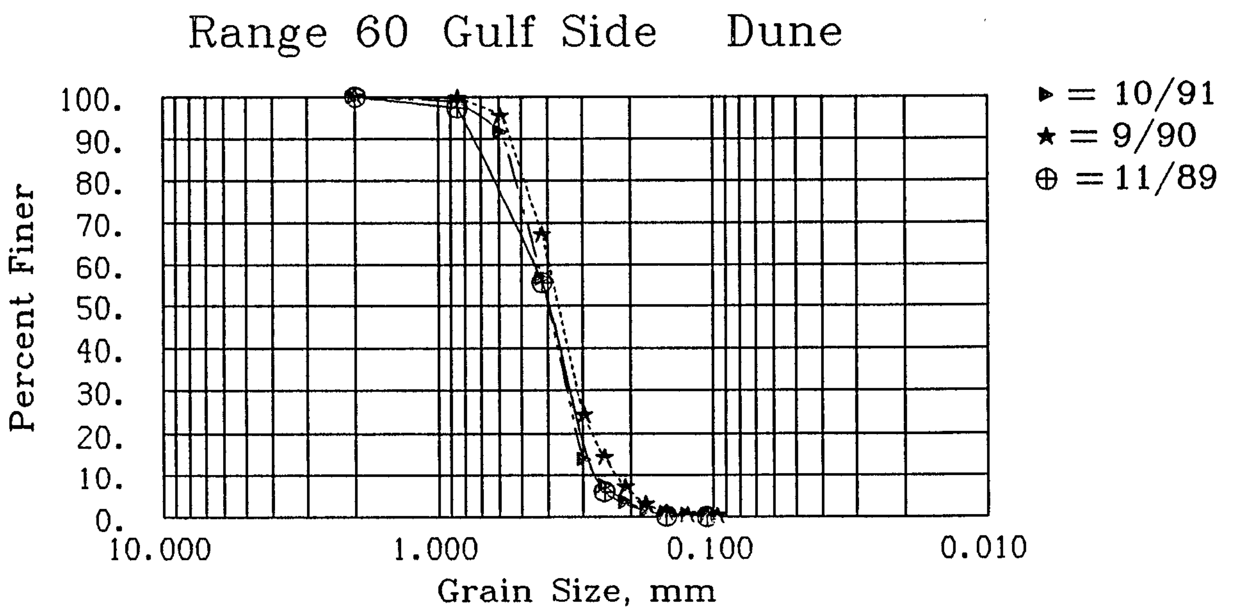


Figure V-92: Grain Size Distributions for Range 58, 5 m Depth and 8 m Depth Positions.



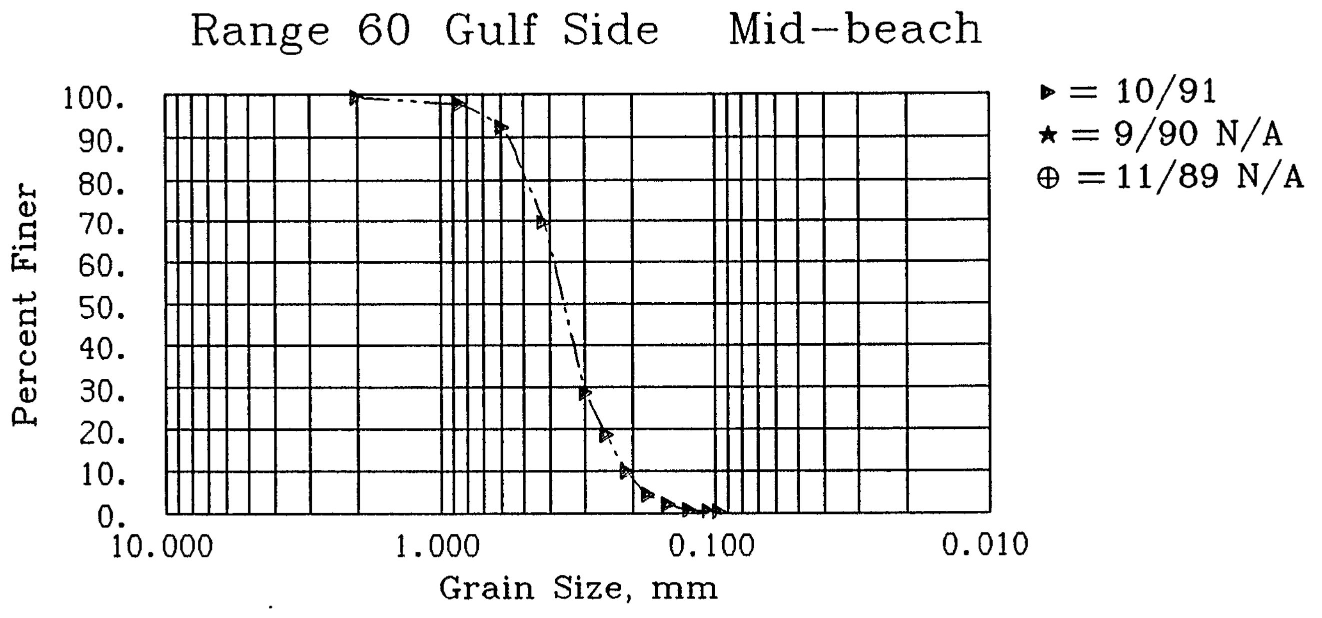
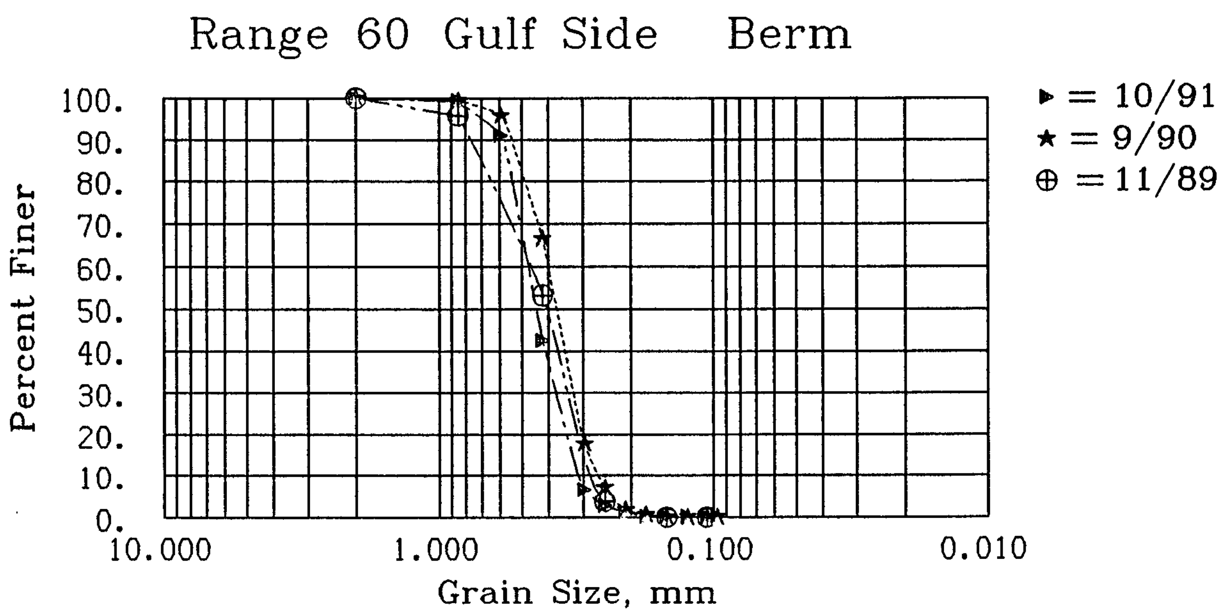


Figure V-93: Grain Size Distributions for Range 60, Dune and Mid–Beach Positions.



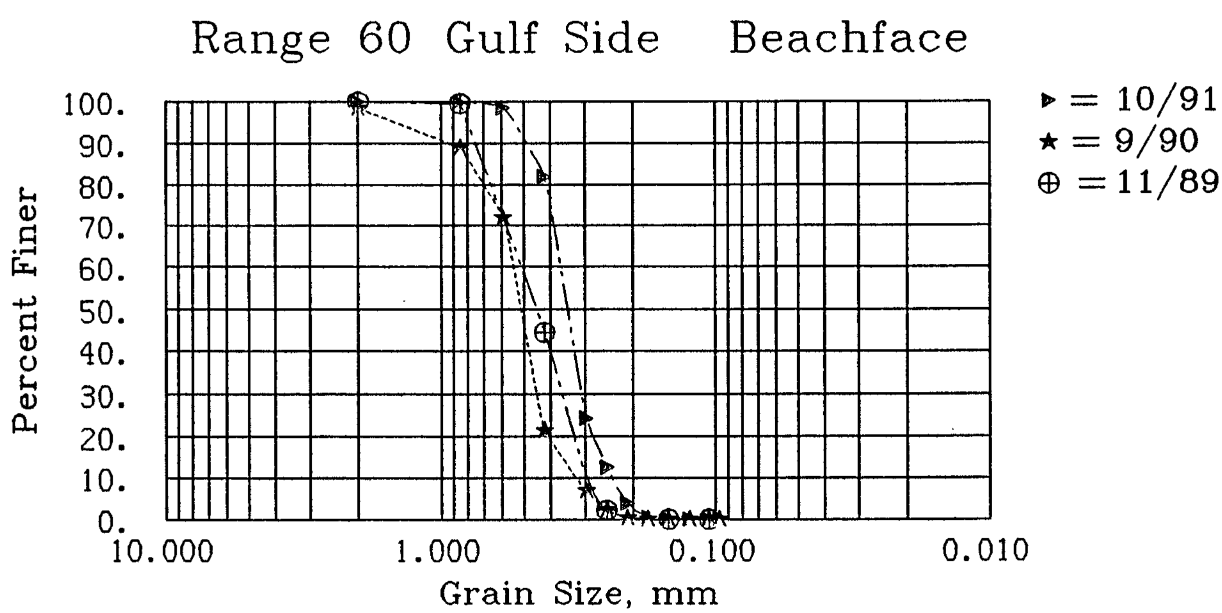
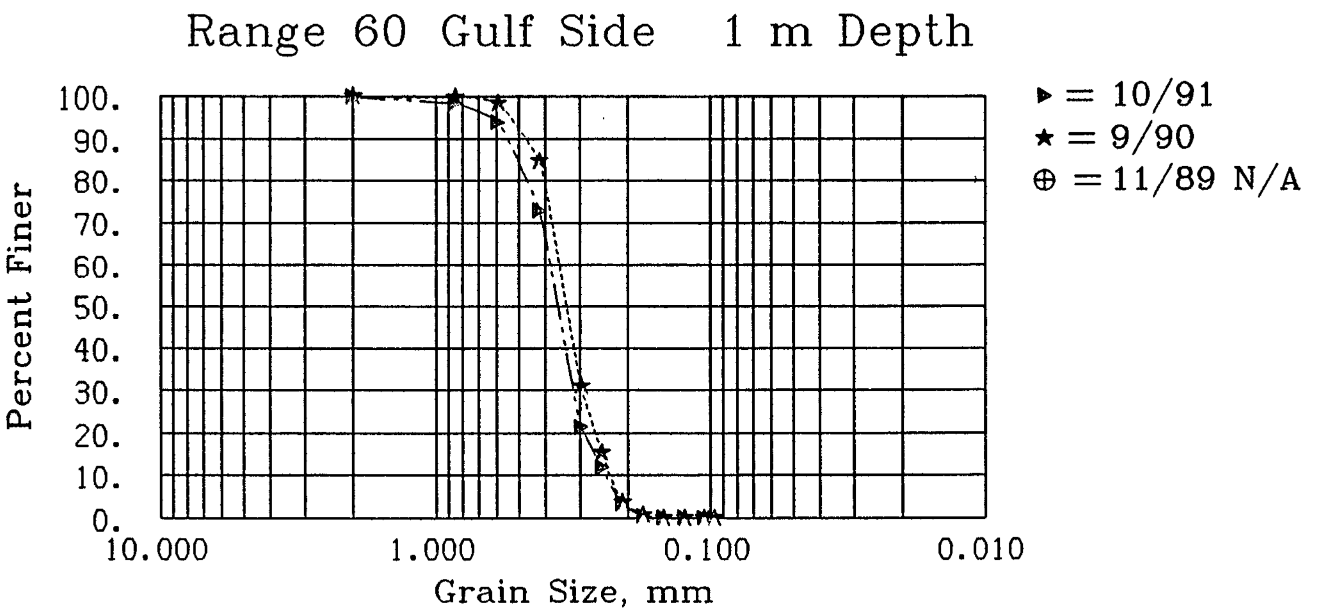


Figure V-94: Grain Size Distributions for Range 60, Berm and Beachface Positions.



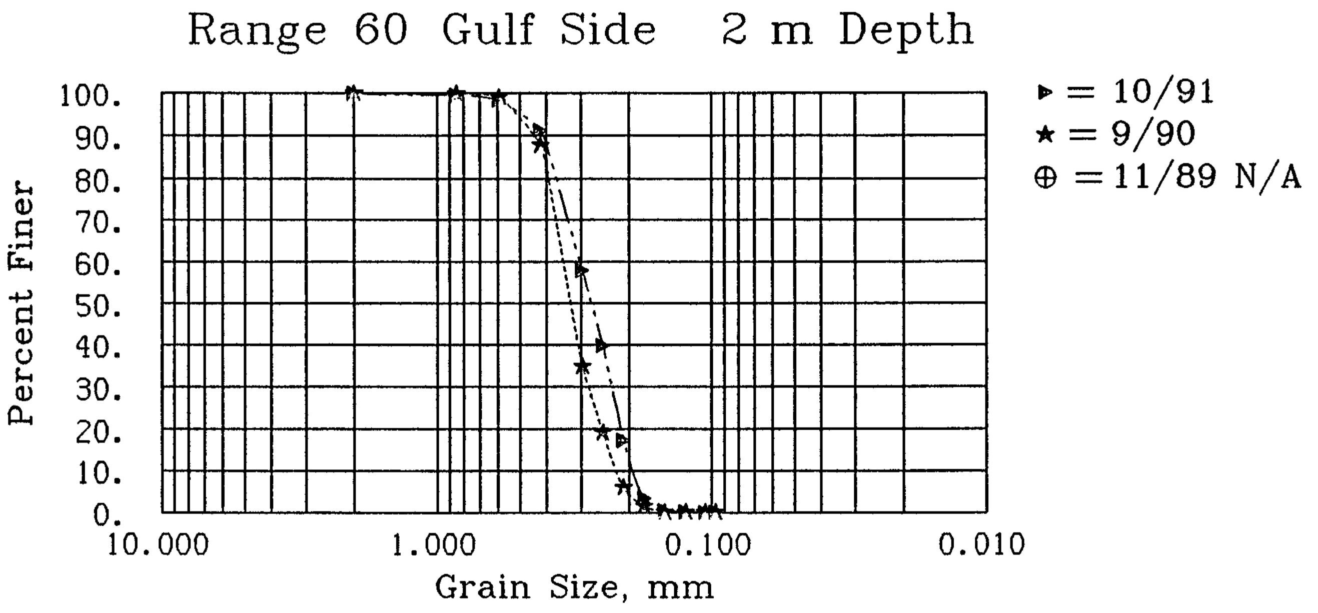


Figure V-95: Grain Size Distributions for Range 60, 1 m and 2 m Depth Positions.

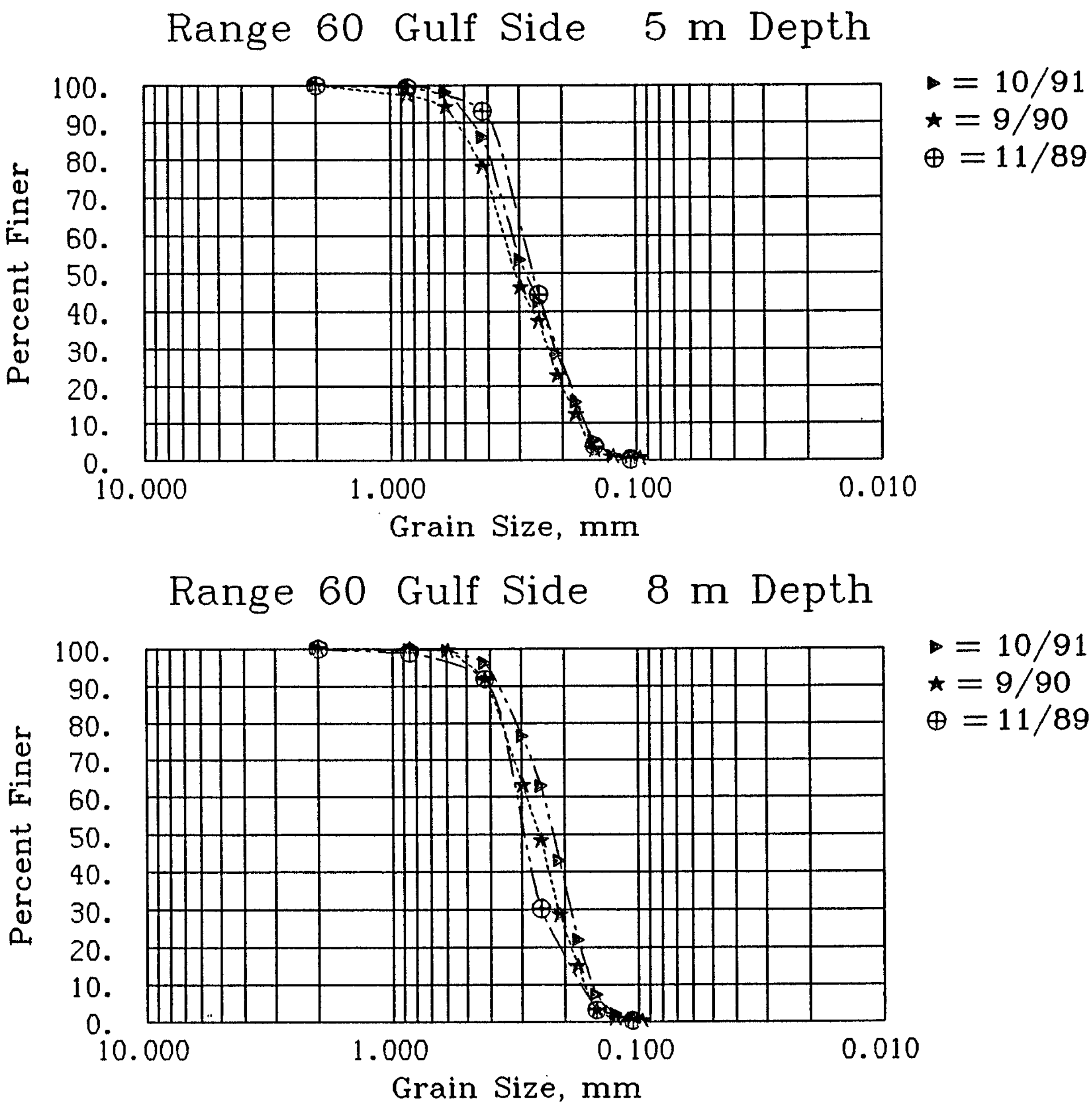
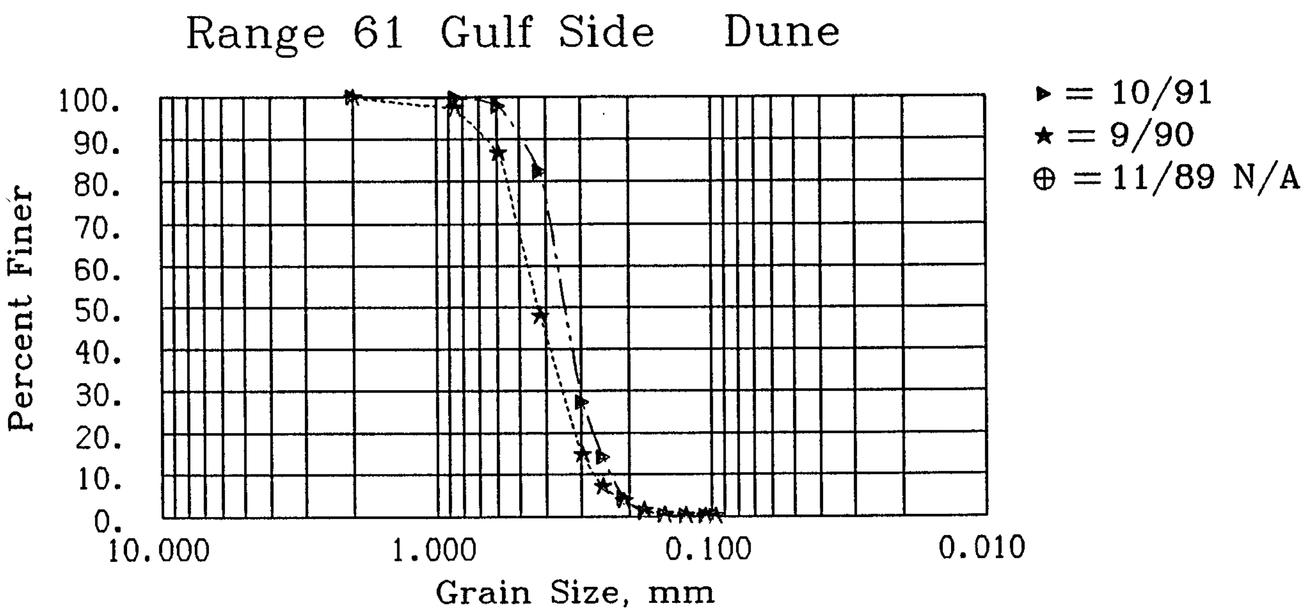


Figure V-96: Grain Size Distributions for Range 60, 5 m Depth and 8 m Depth Positions.



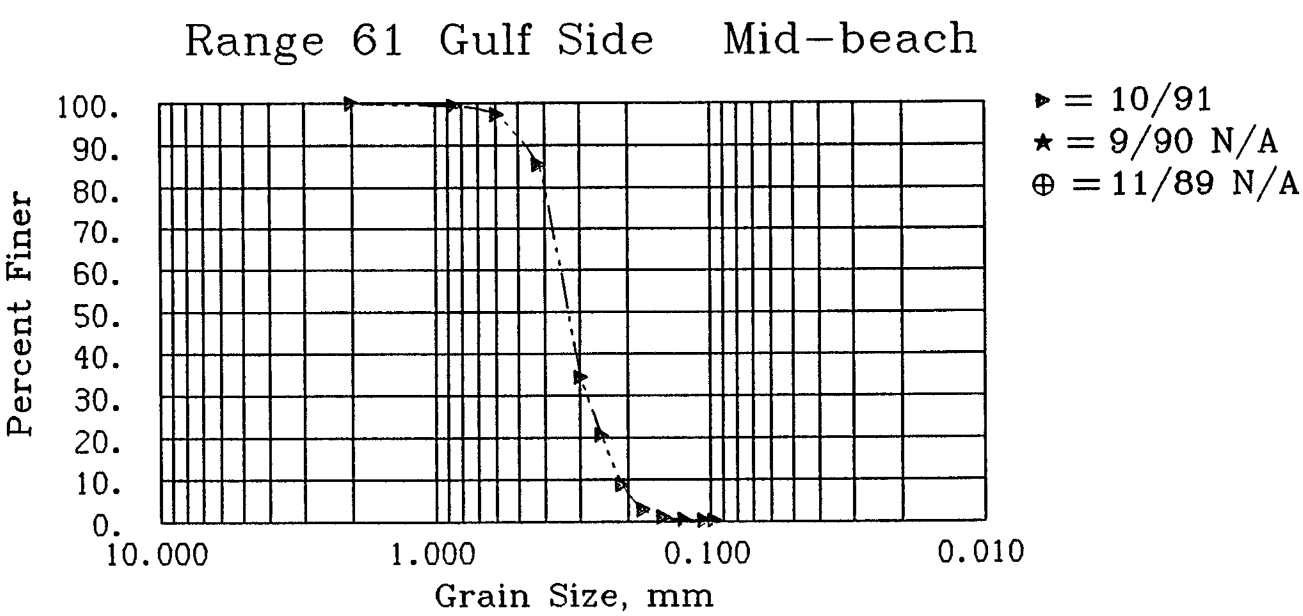
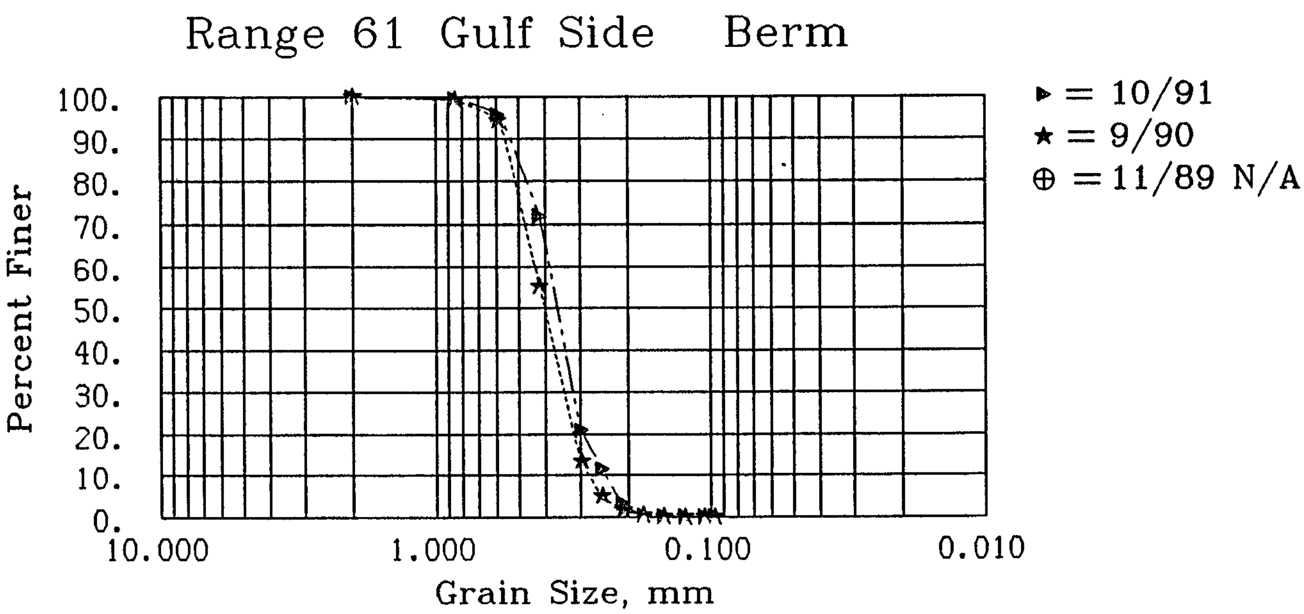


Figure V-97: Grain Size Distributions for Range 61, Dune and Mid–Beach Positions.



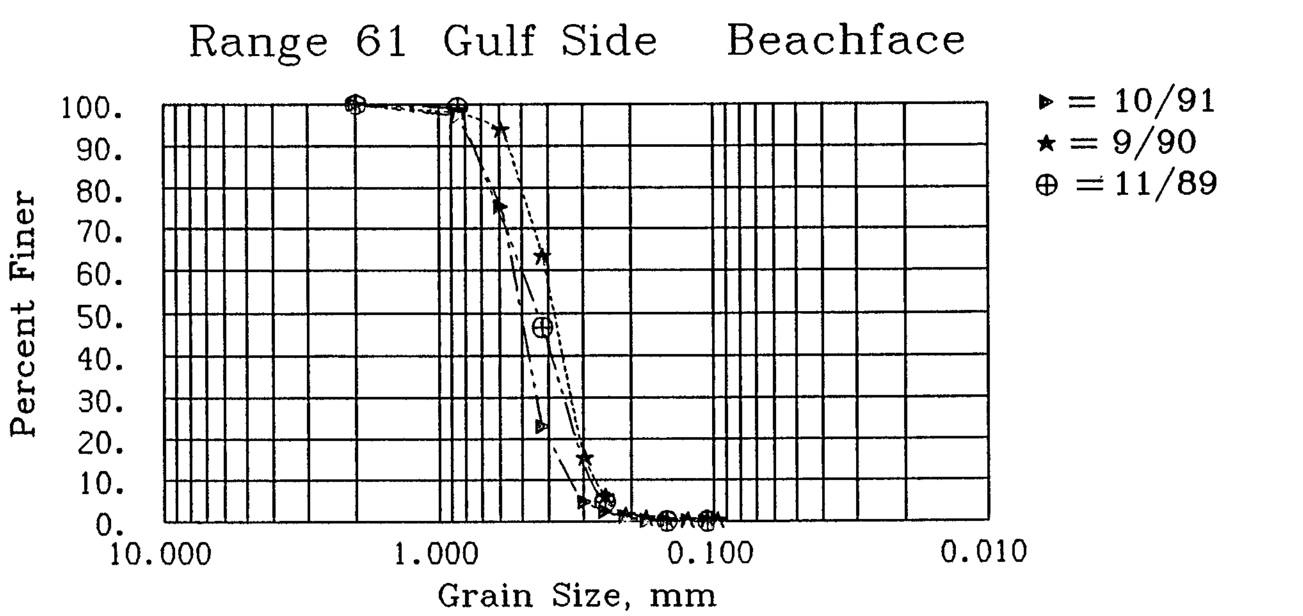
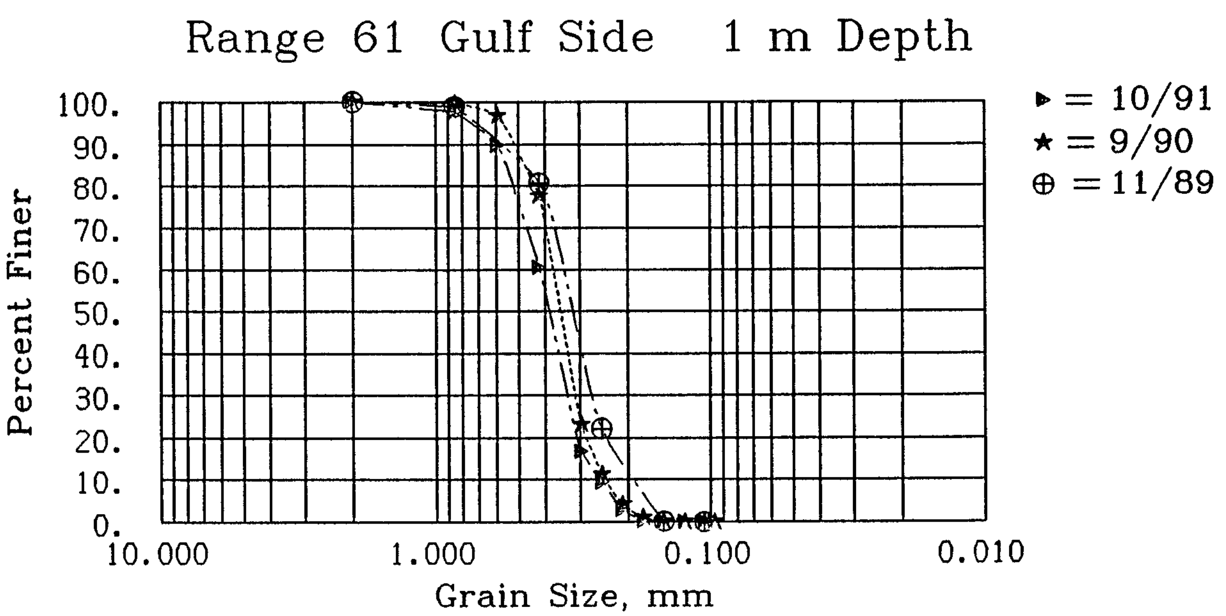


Figure V-98: Grain Size Distributions for Range 61, Berm and Beachface Positions.



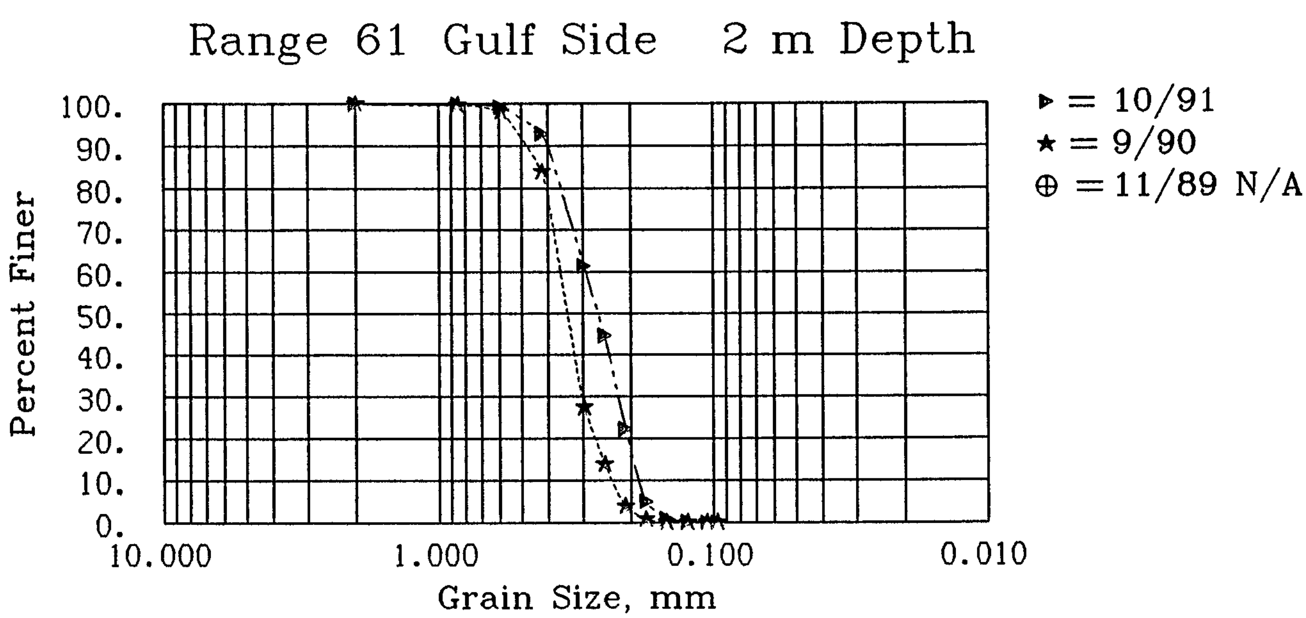
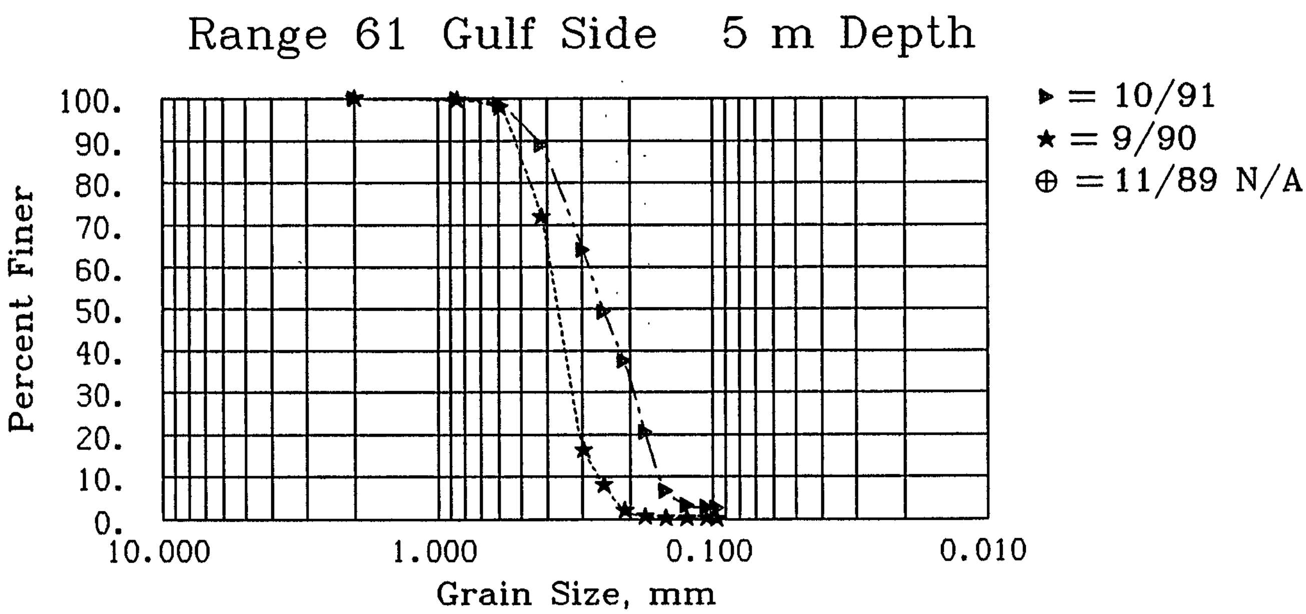


Figure V-99: Grain Size Distributions for Range 61, 1 m and 2 m Depth Positions.



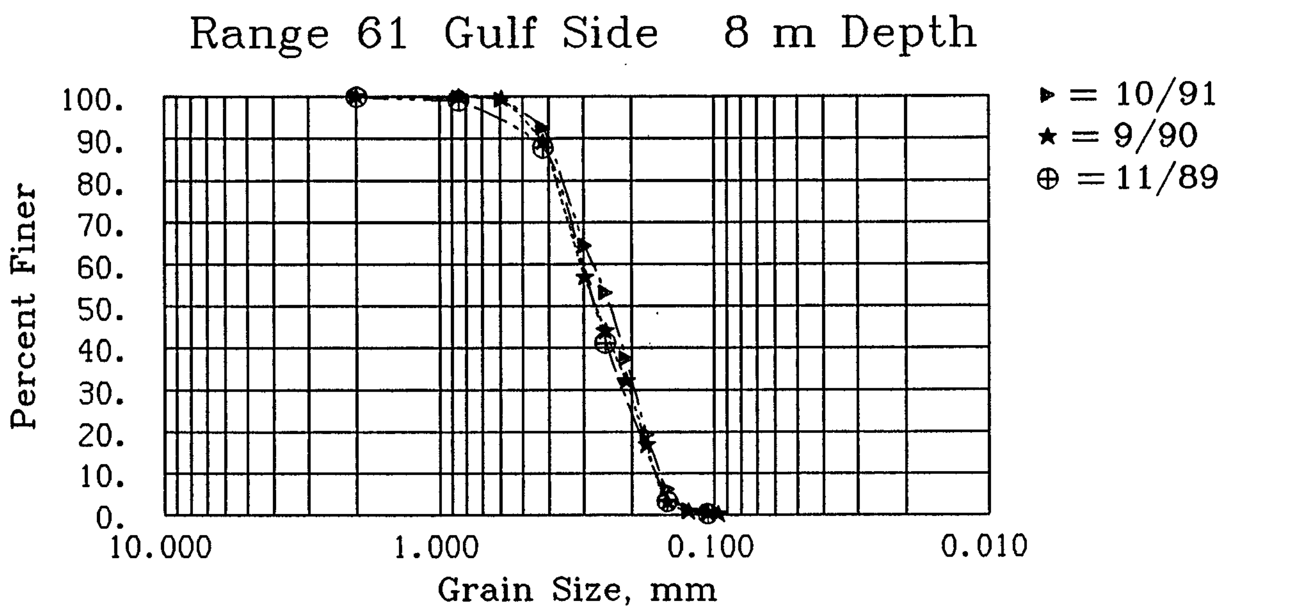
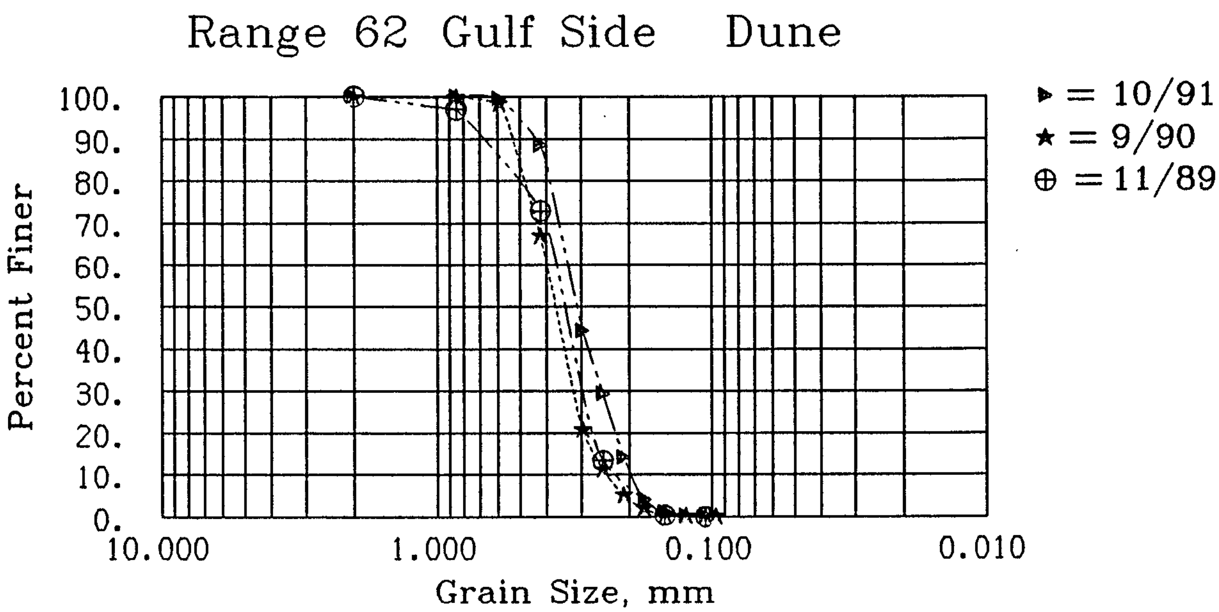


Figure V-100: Grain Size Distributions for Range 61, 5 m Depth and 8 m Depth Positions.



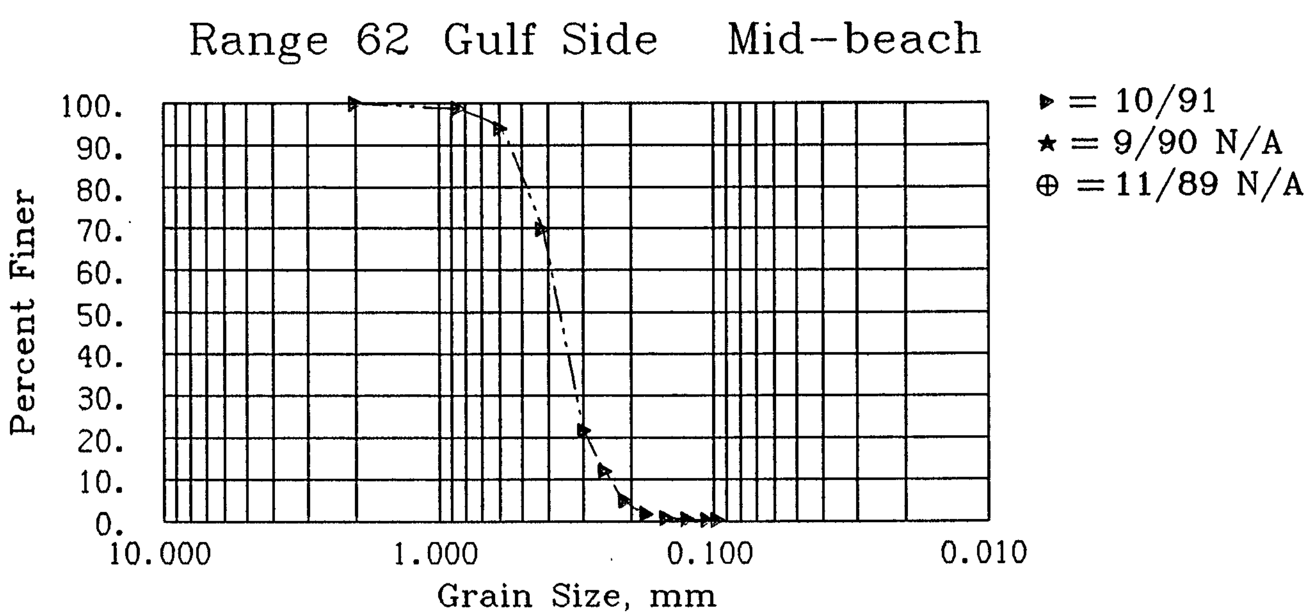
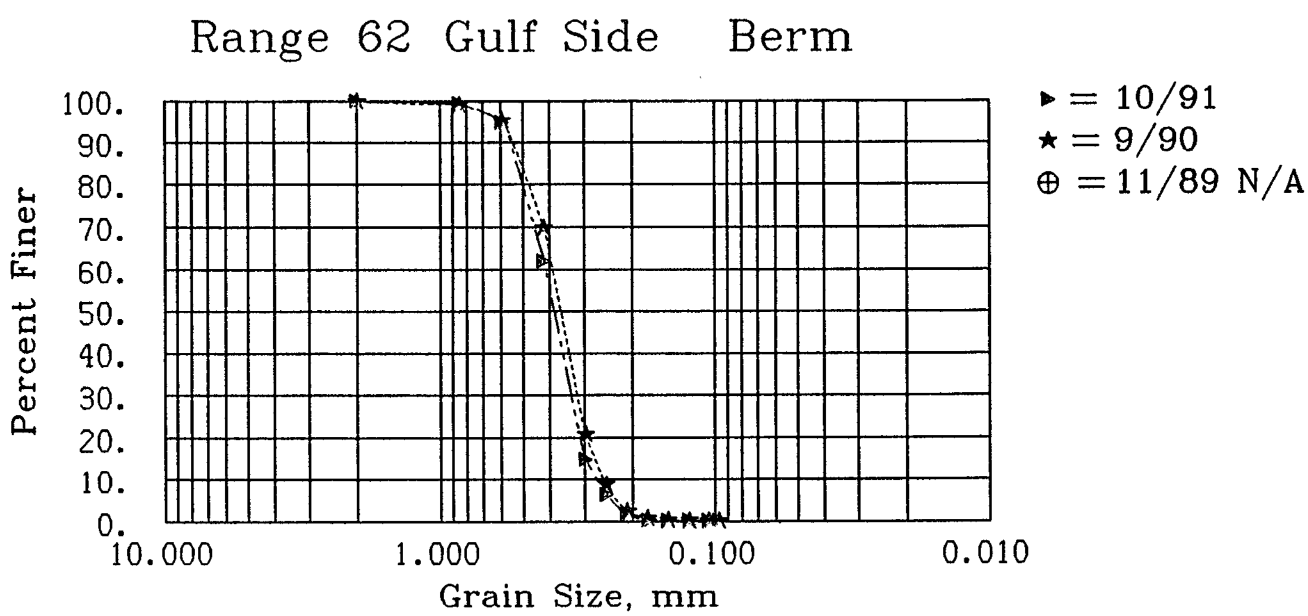


Figure V-101: Grain Size Distributions for Range 62, Dune and Mid–Beach Positions.



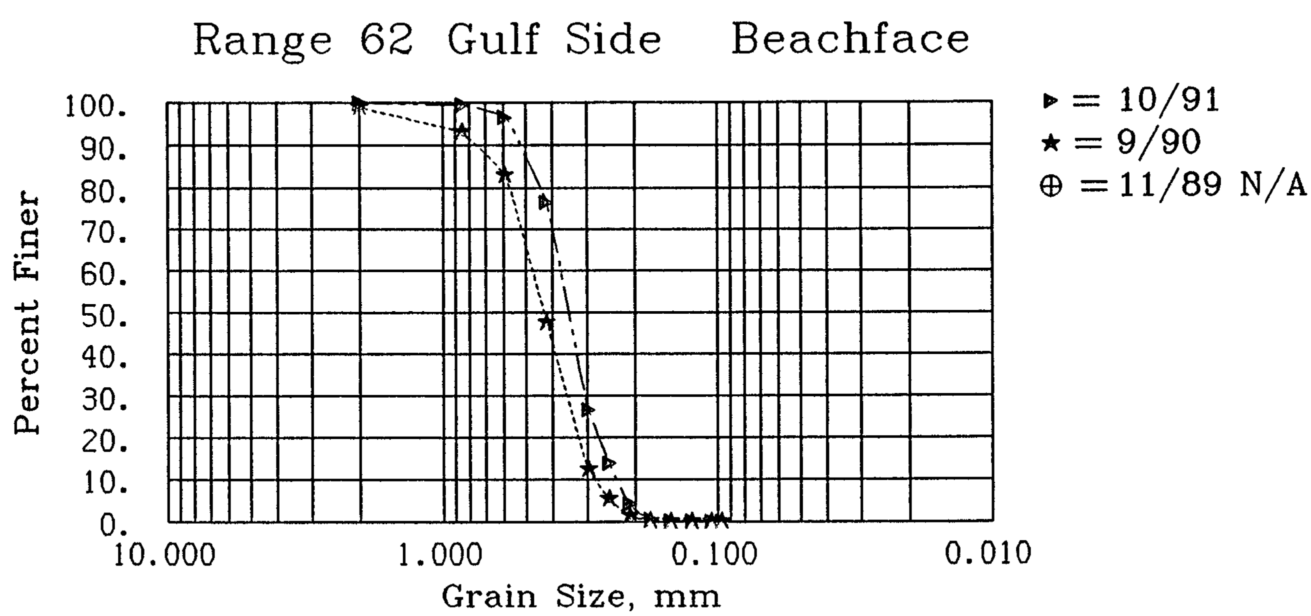
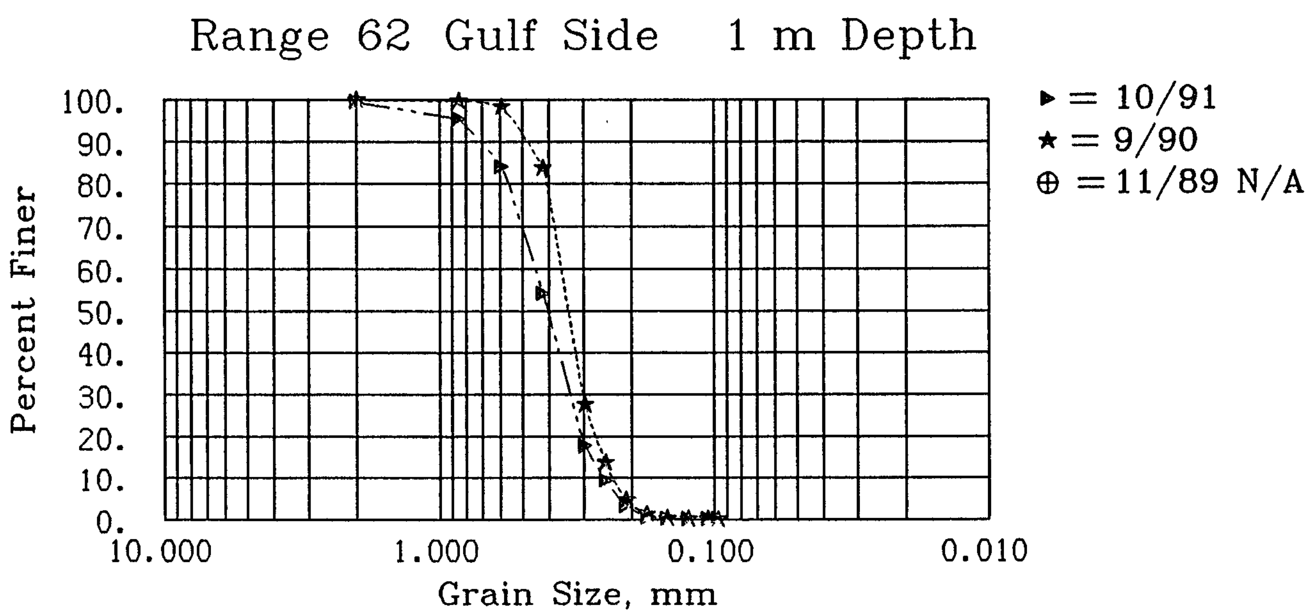


Figure V-102: Grain Size Distributions for Range 62, Berm and Beachface Positions.



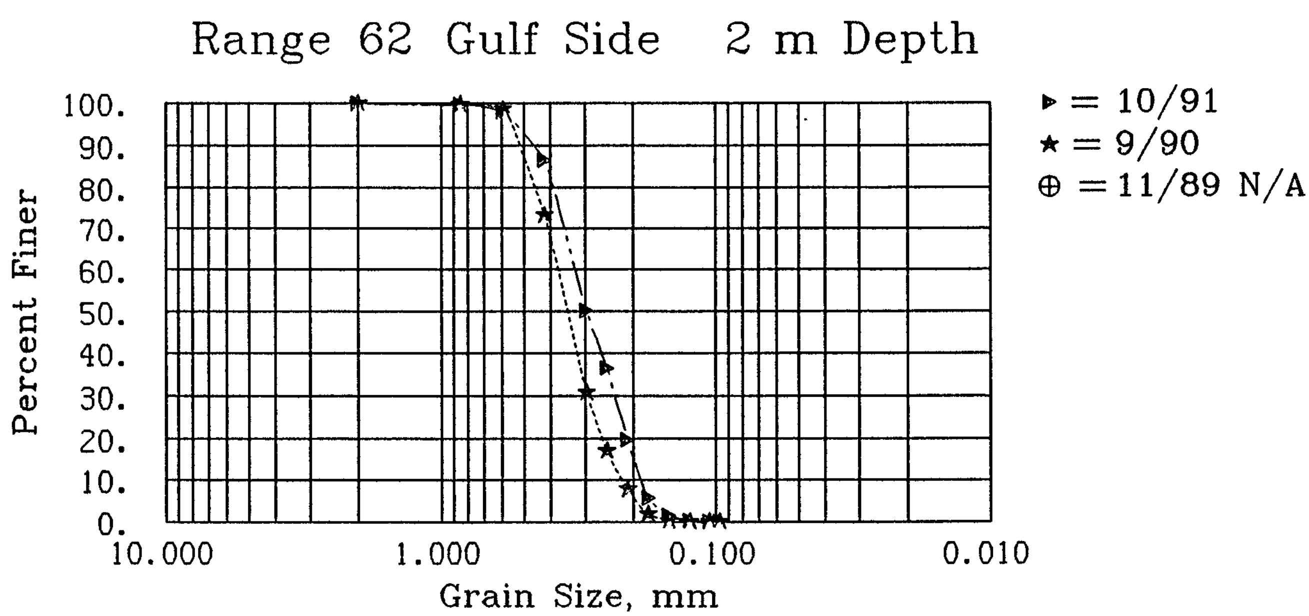
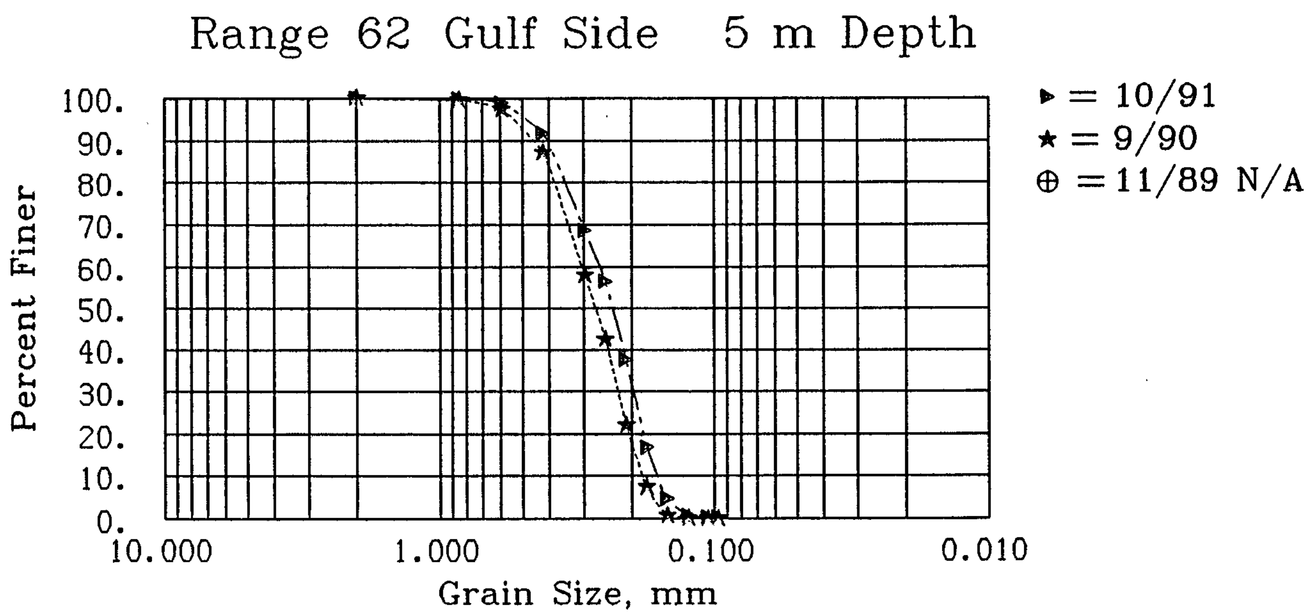


Figure V-103: Grain Size Distributions for Range 62, 1 m and 2 m Depth Positions.



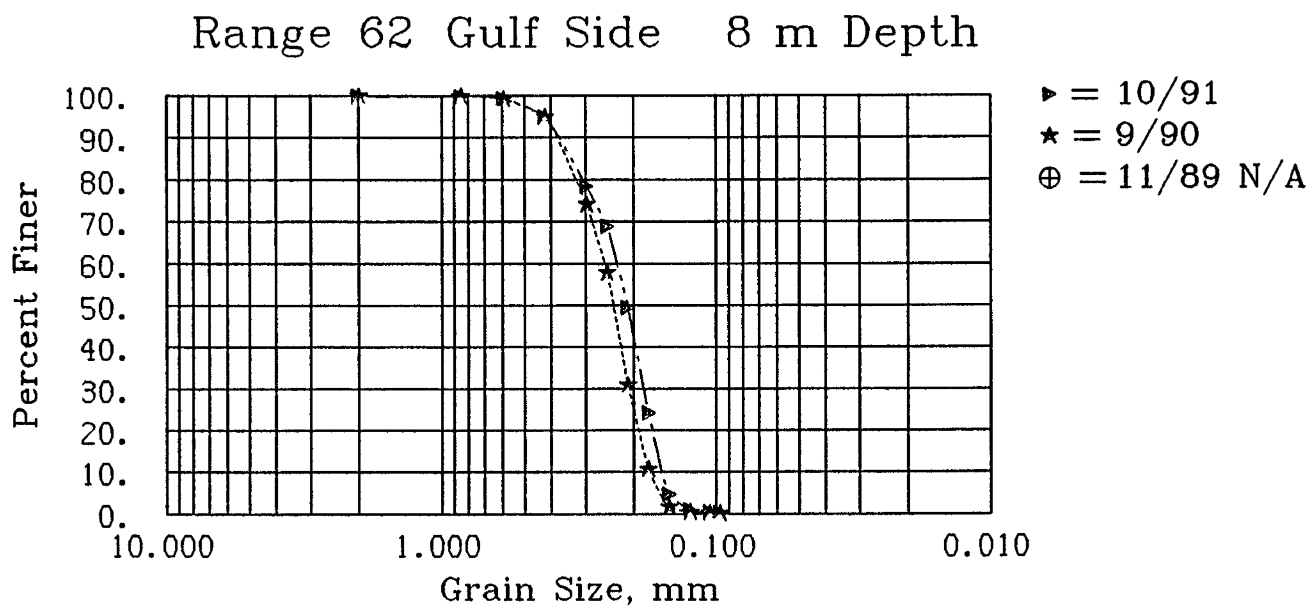
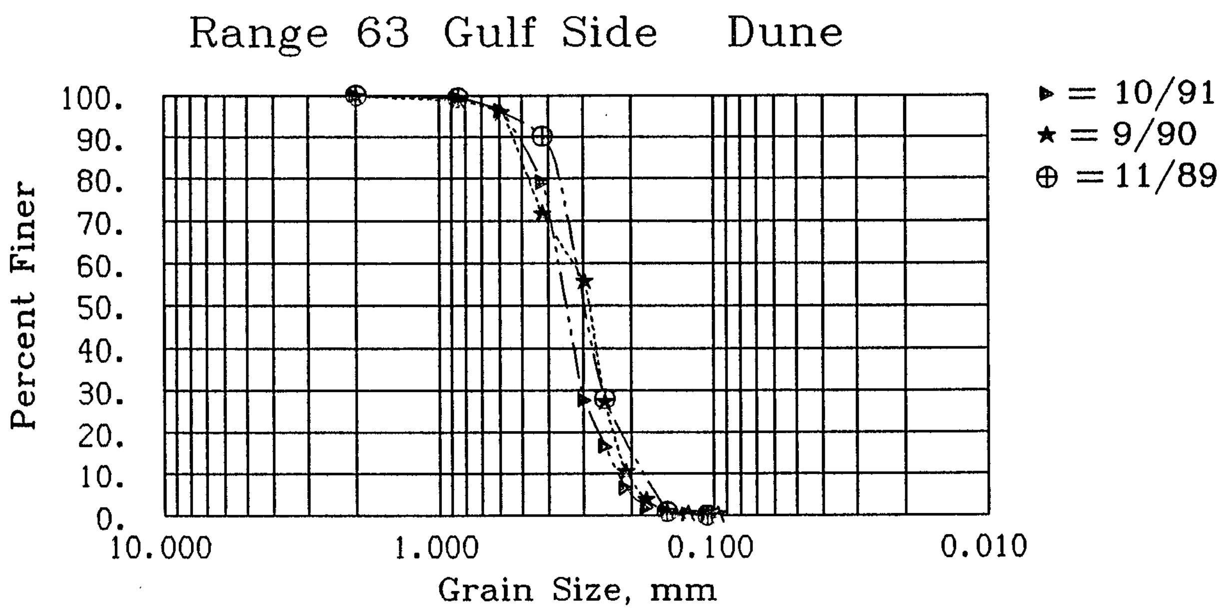


Figure V-104: Grain Size Distributions for Range 62, 5 m Depth and 8 m Depth Positions.



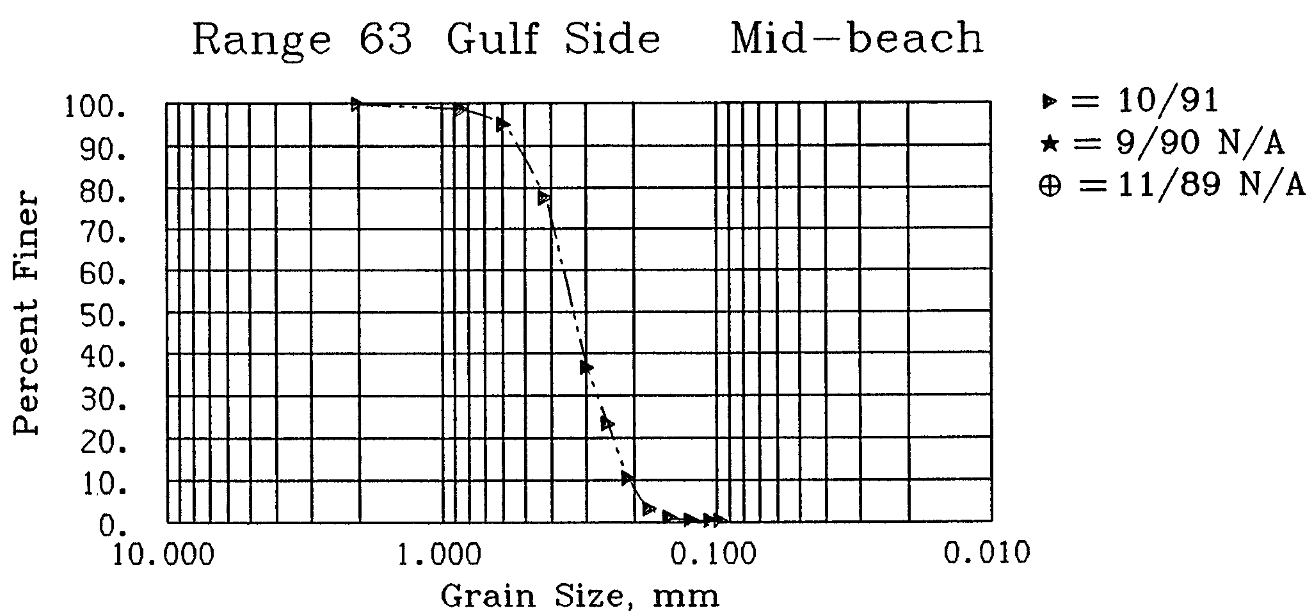
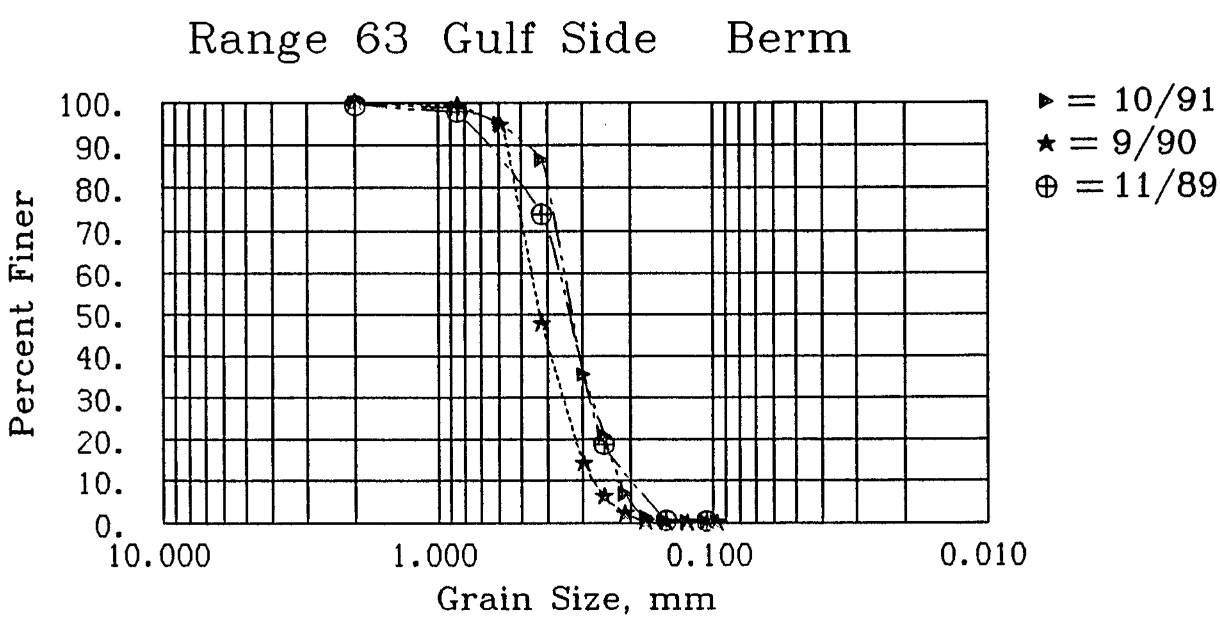


Figure V-105: Grain Size Distributions for Range 63, Dune and Mid–Beach Positions.



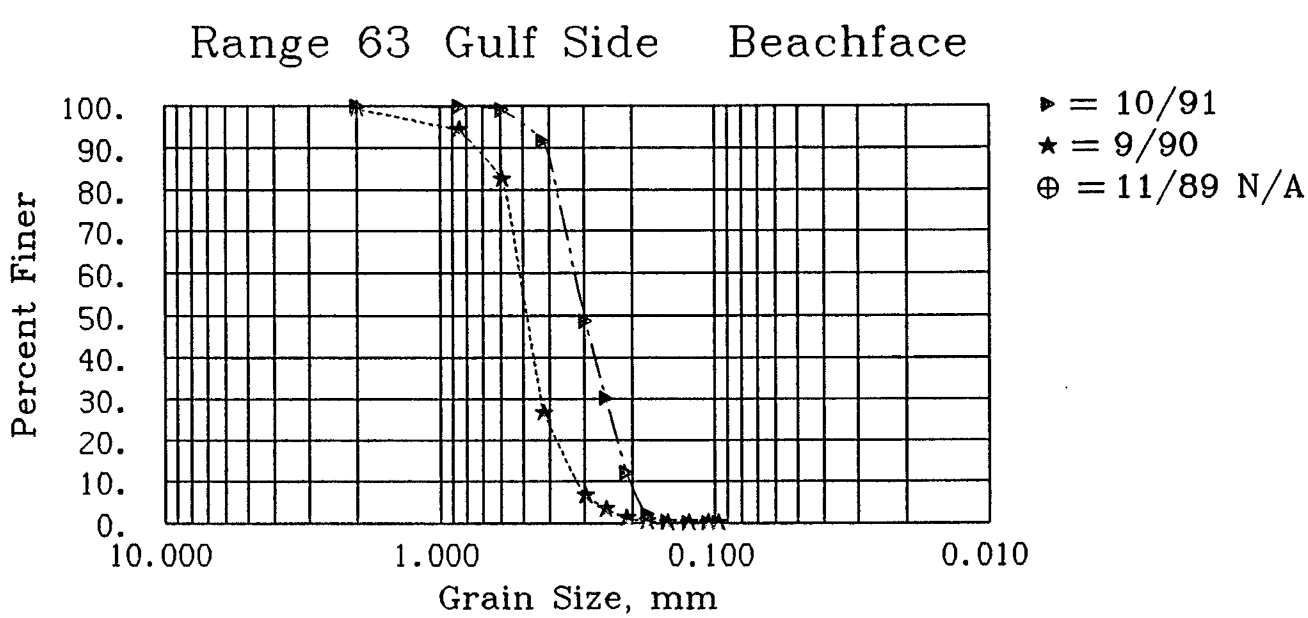
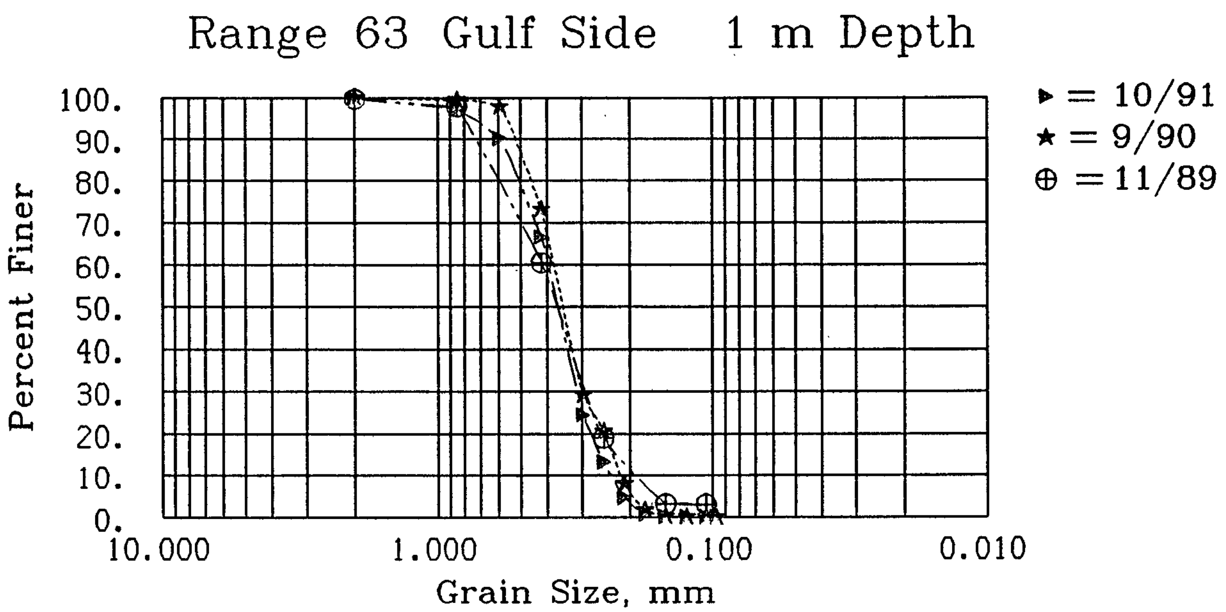


Figure V-106: Grain Size Distributions for Range 63, Berm and Beachface Positions.



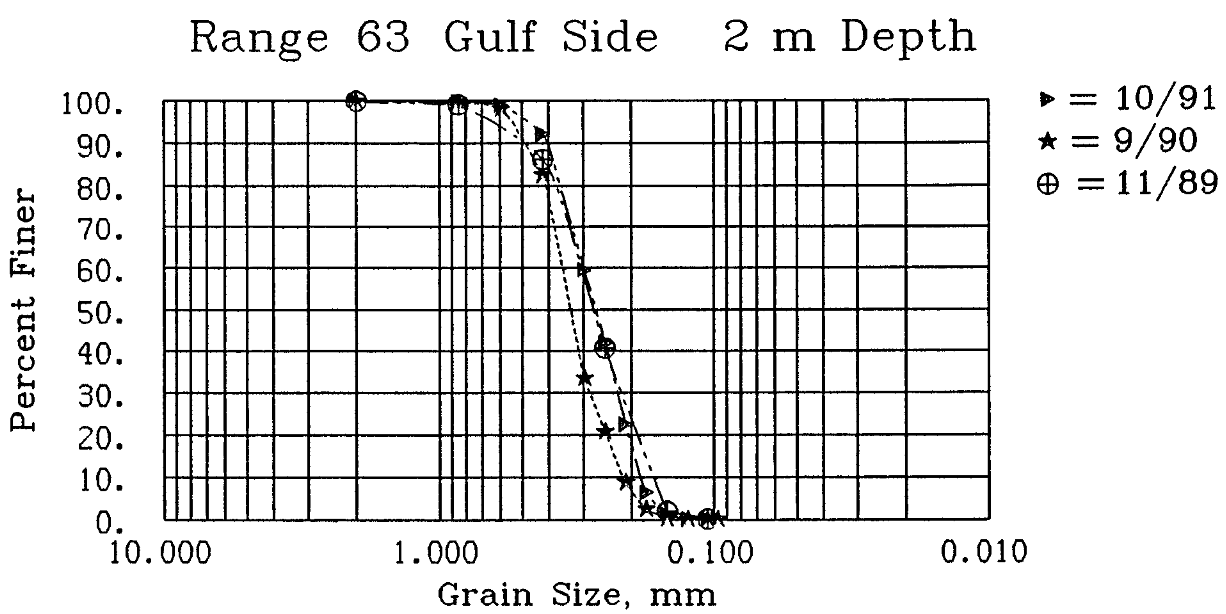
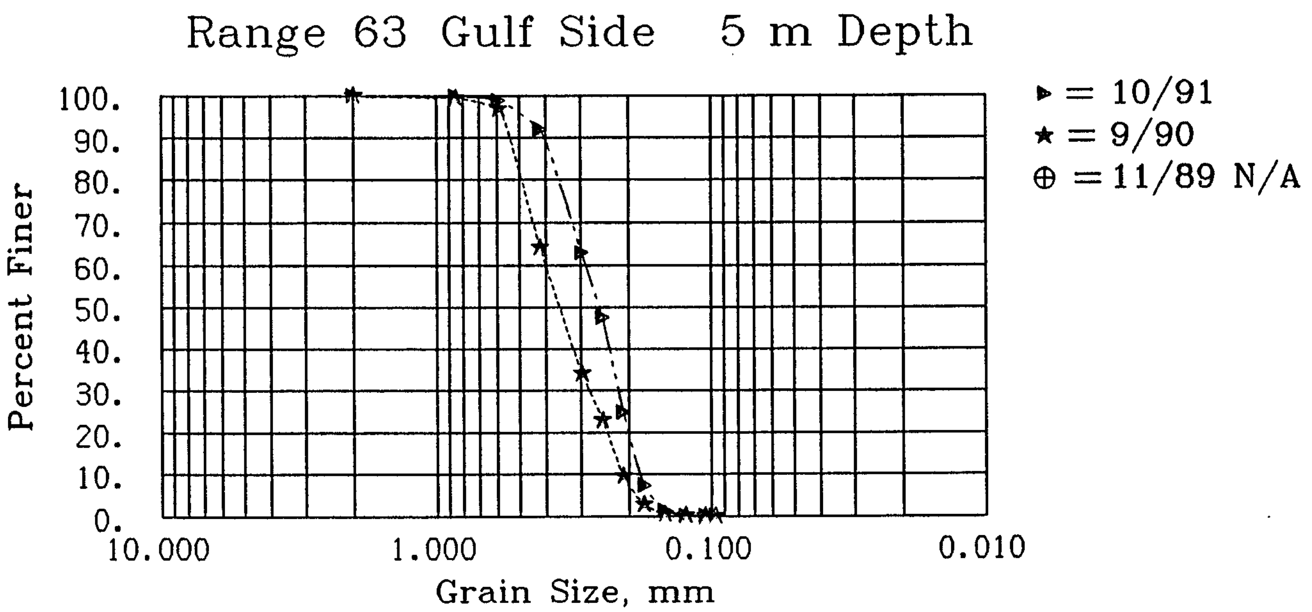


Figure V-107: Grain Size Distributions for Range 63, 1 m and 2 m Depth Positions.



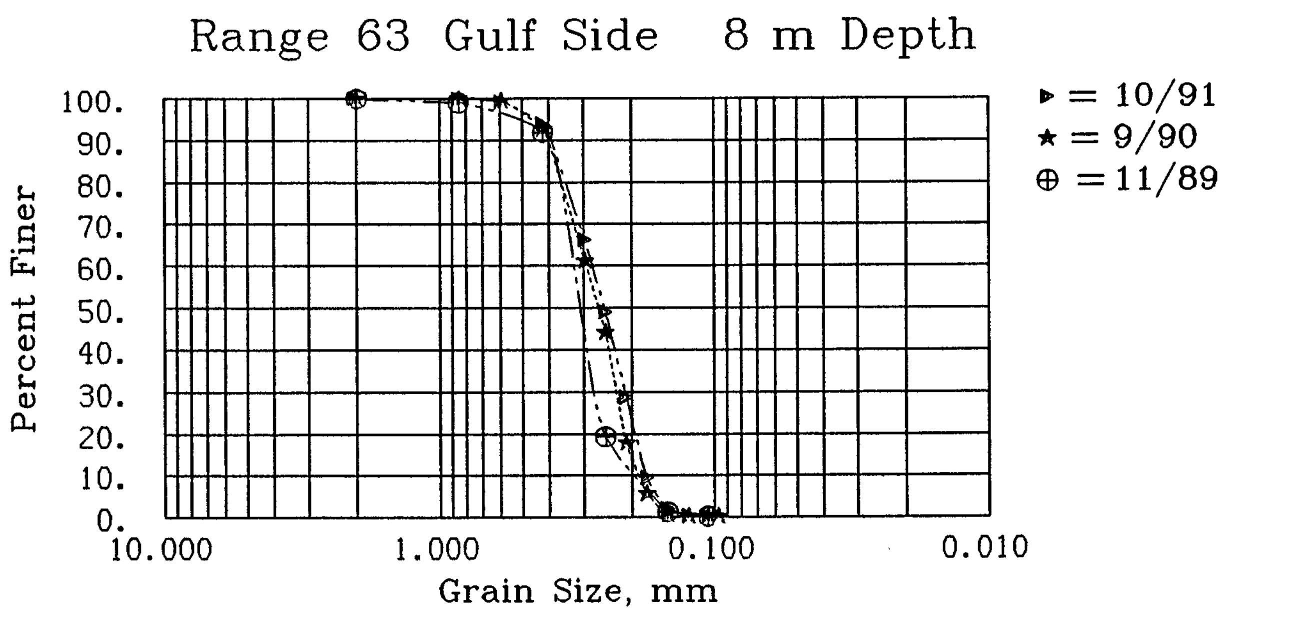
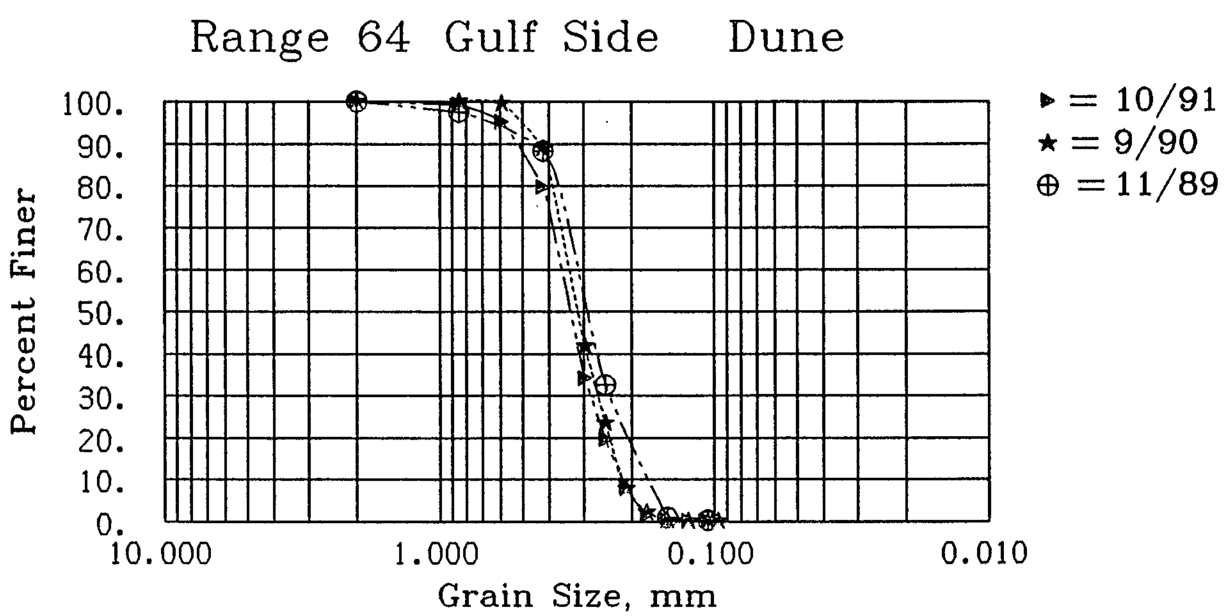


Figure V-108: Grain Size Distributions for Range 63, 5 m Depth and 8 m Depth Positions.



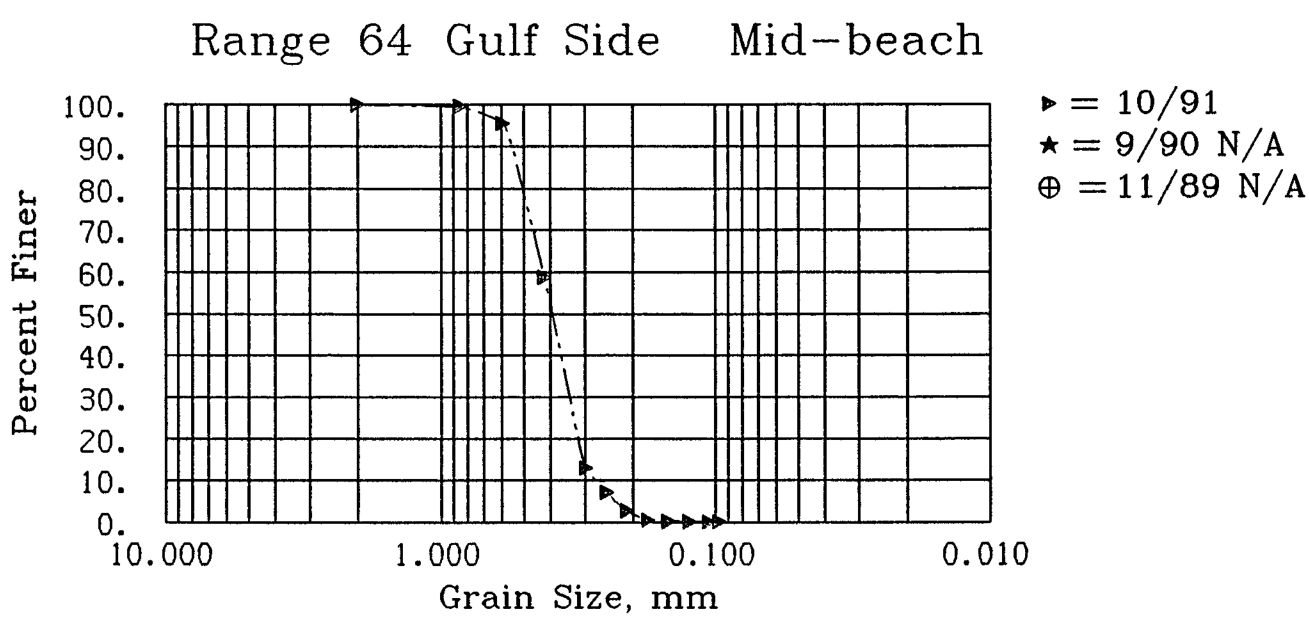
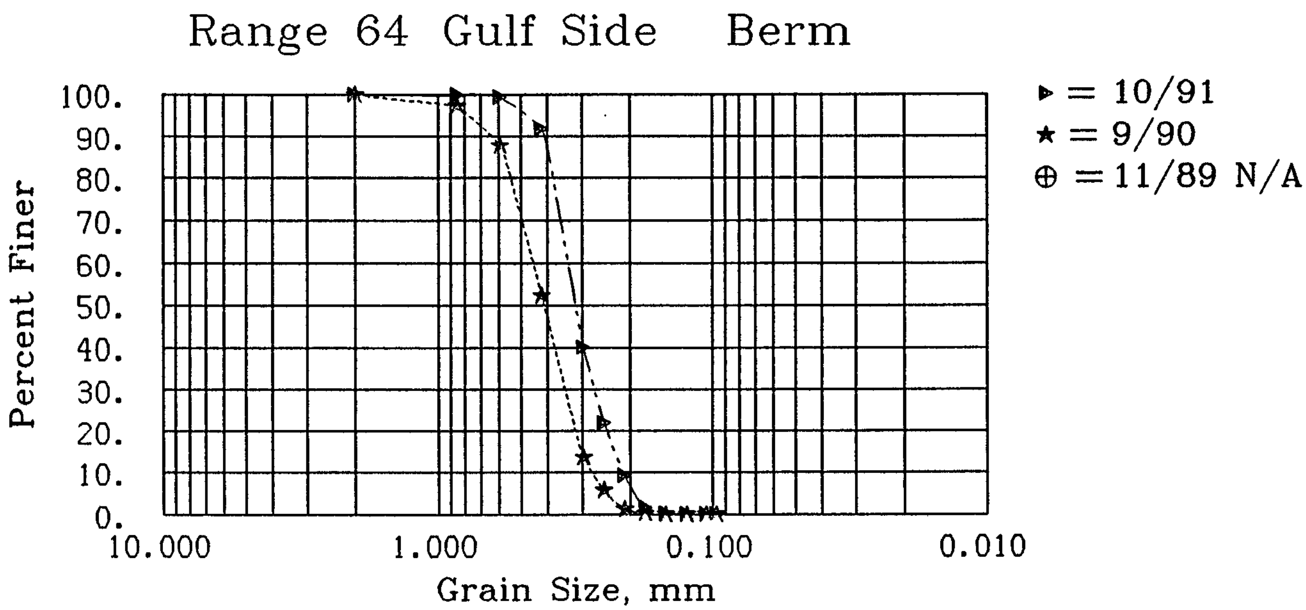


Figure V-109: Grain Size Distributions for Range 64, Dune and Mid–Beach Positions.



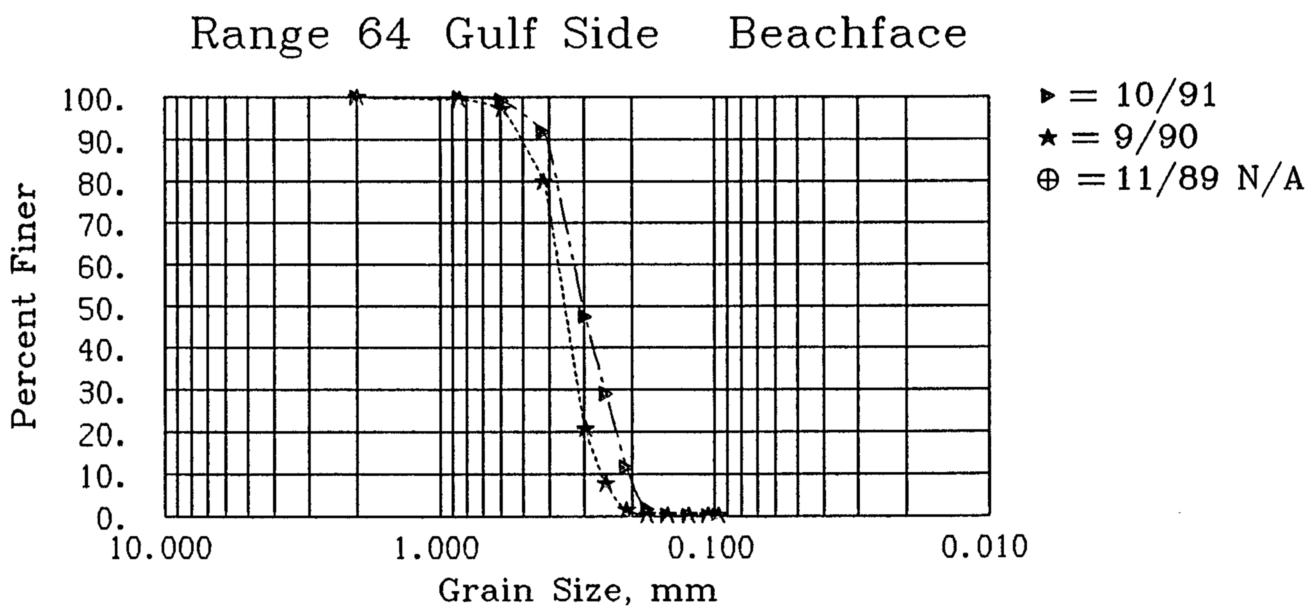
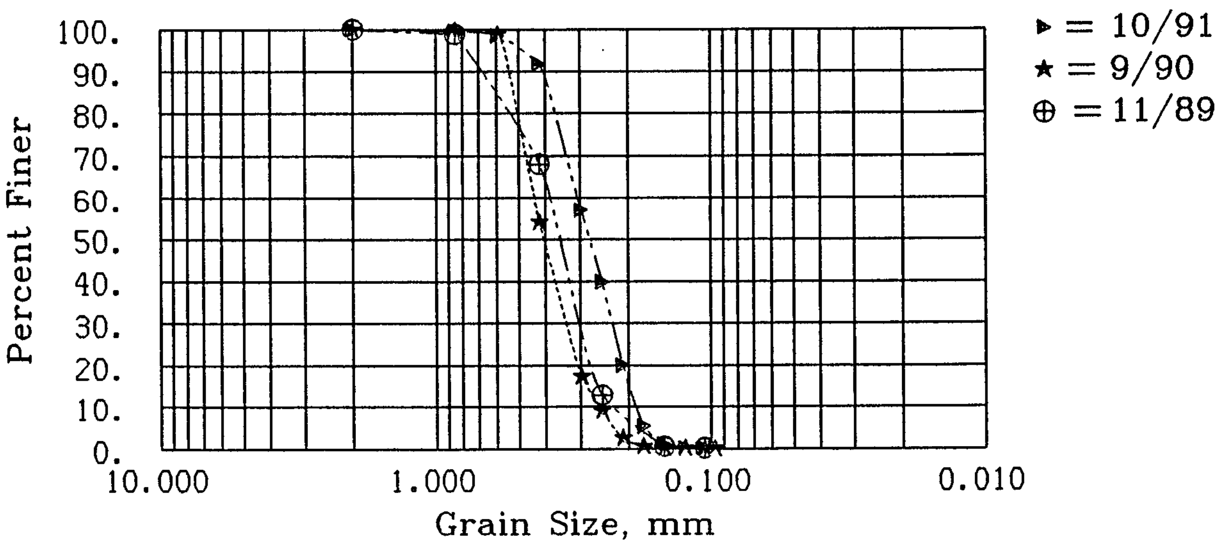


Figure V-110: Grain Size Distributions for Range 64, Berm and Beachface Positions.

Range 64 Gulf Side 1 m Depth



Range 64 Gulf Side 2 m Depth

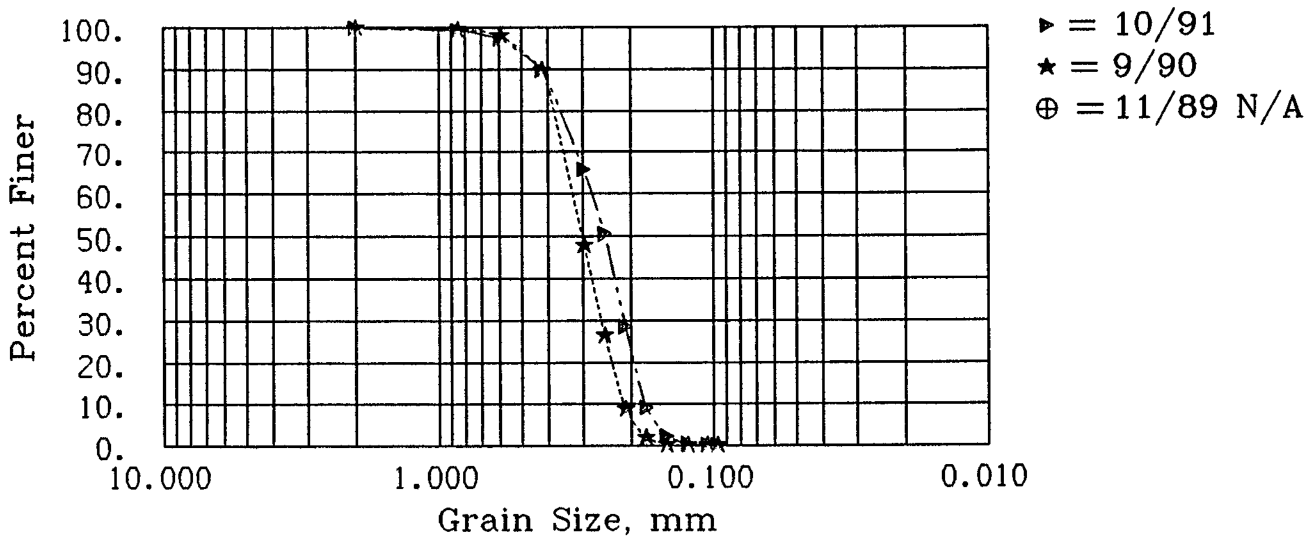
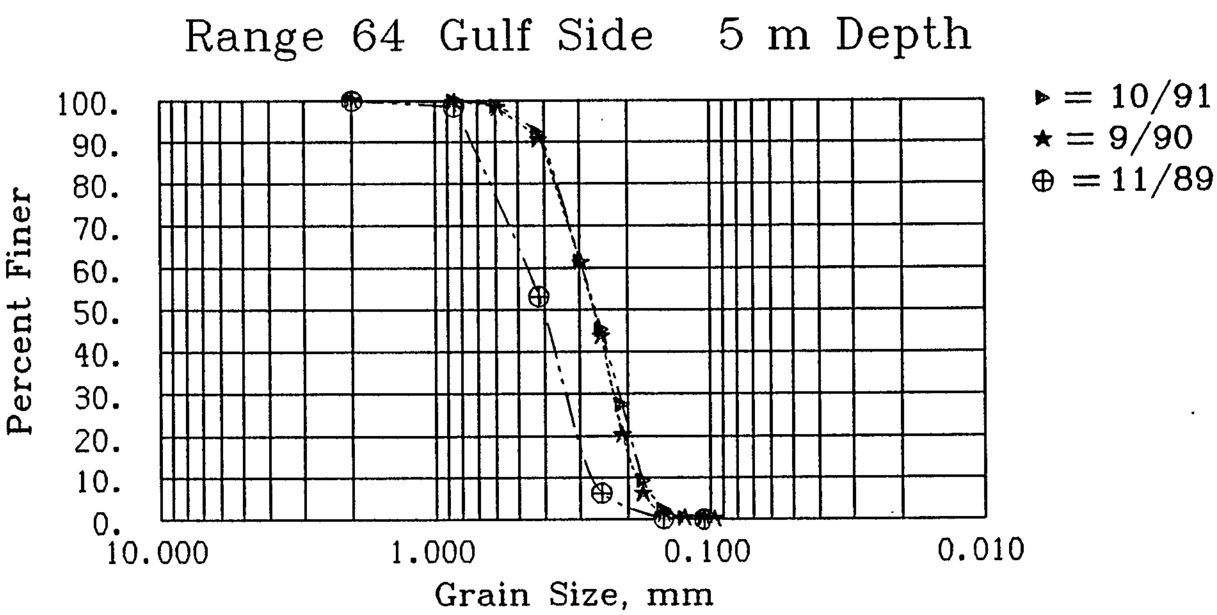


Figure V-111: Grain Size Distributions for Range 64, 1 m and 2 m Depth Positions.



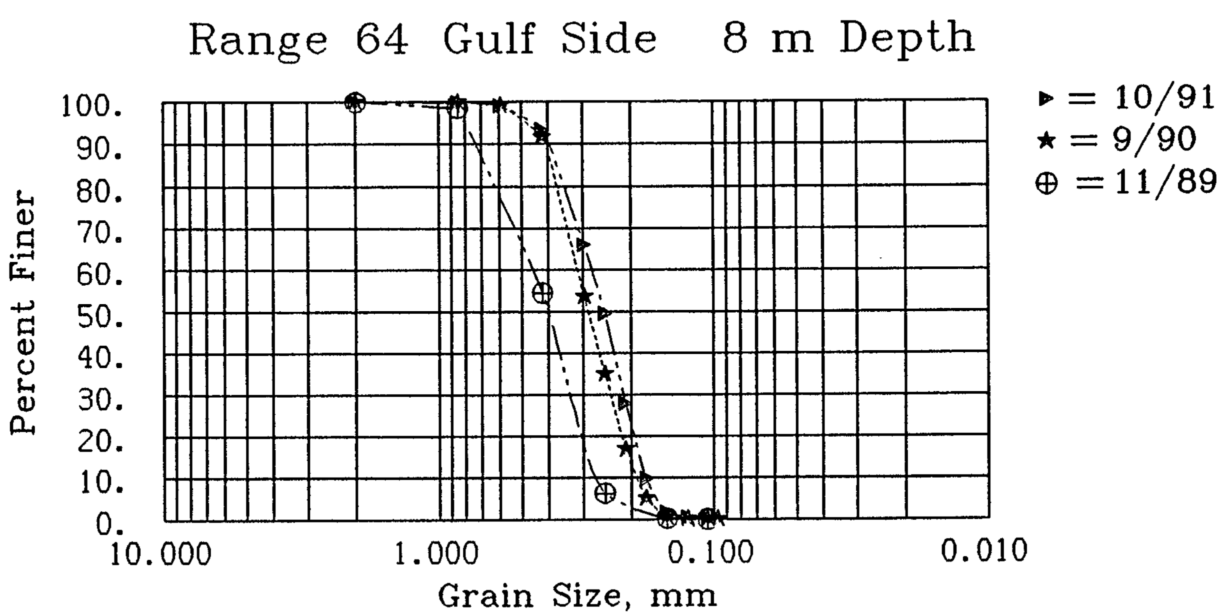
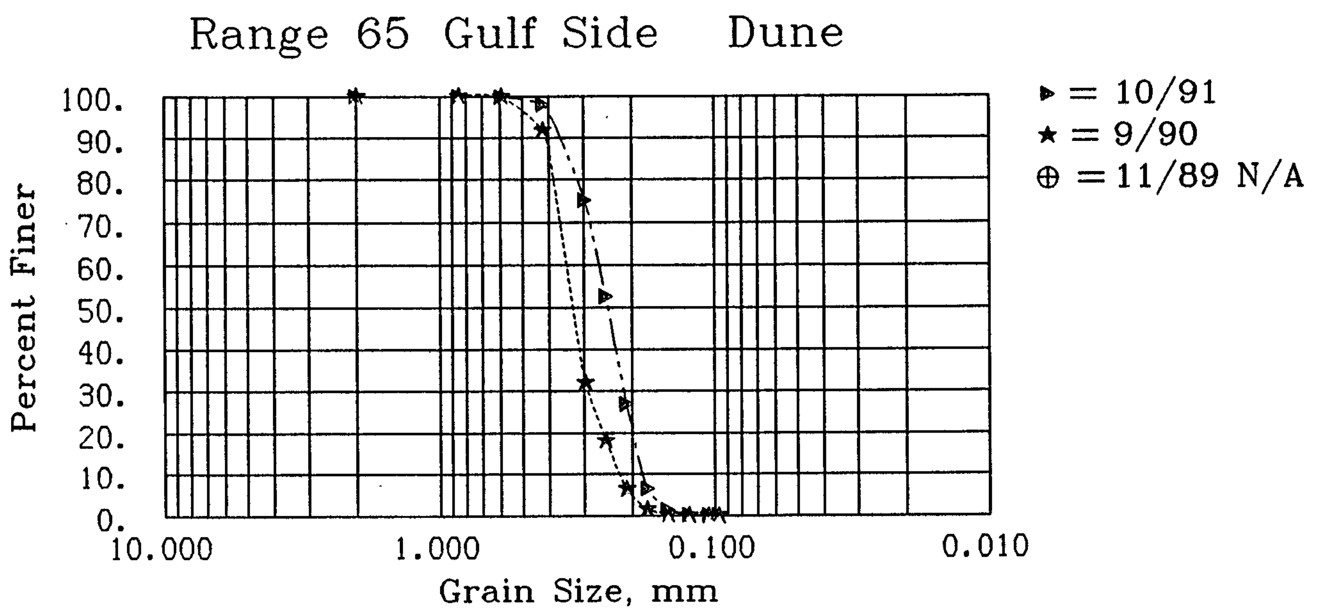


Figure V-112: Grain Size Distributions for Range 64, 5 m Depth and 8 m Depth Positions.



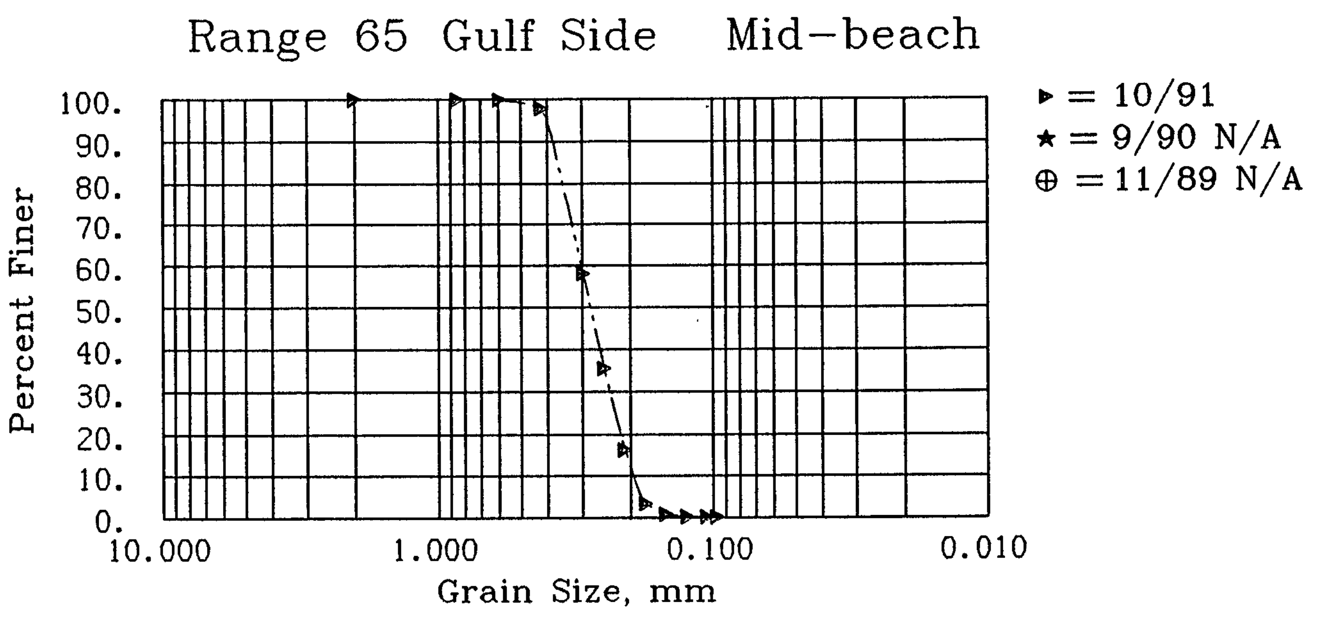
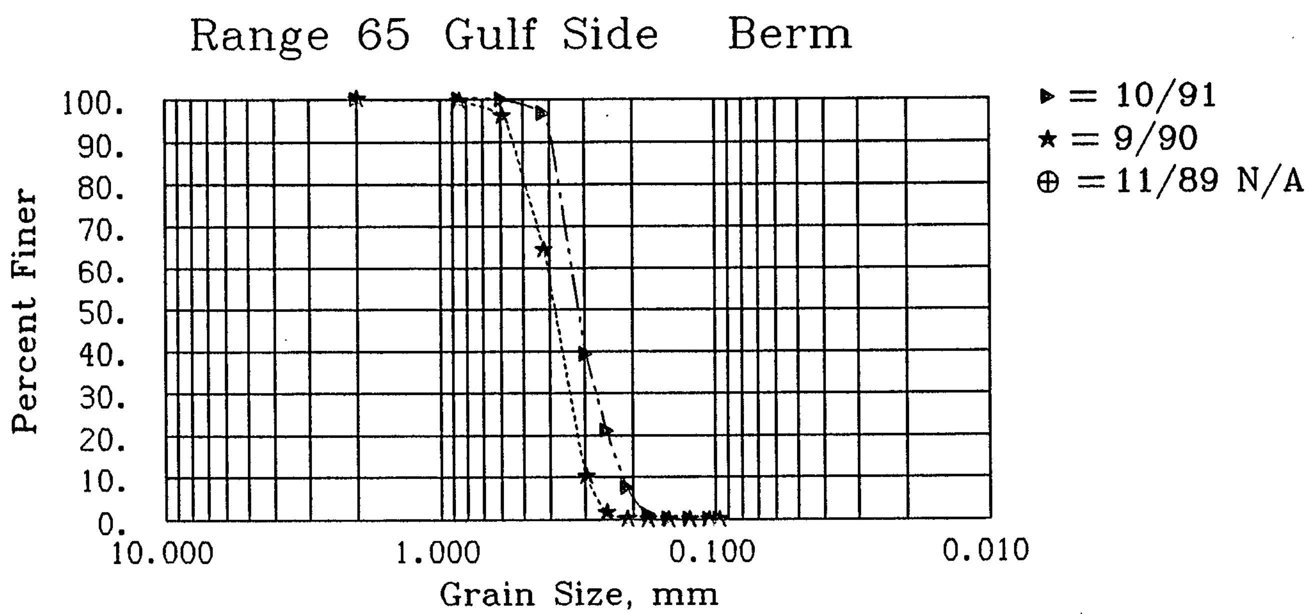


Figure V-113: Grain Size Distributions for Range 65, Dune and Mid–Beach Positions.



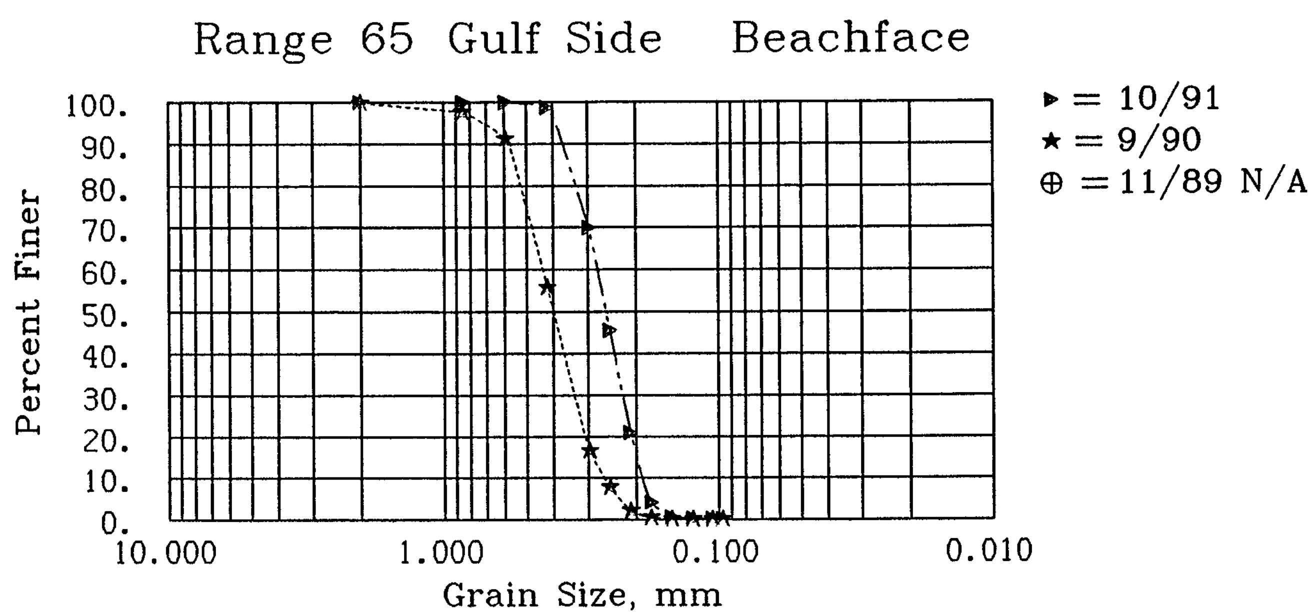
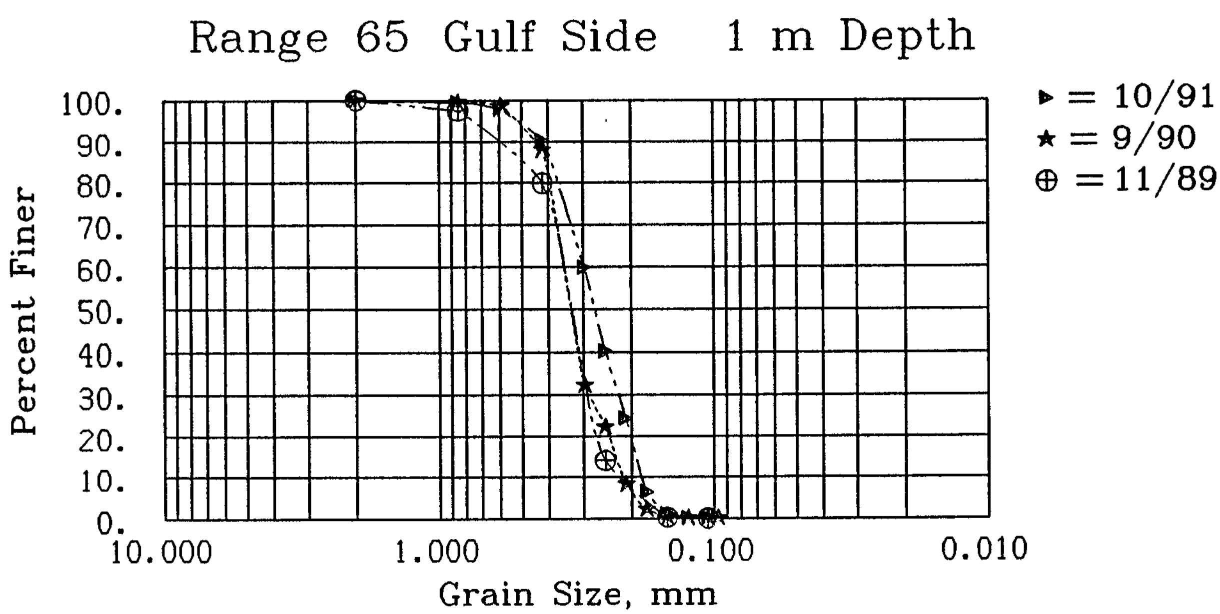


Figure V-114: Grain Size Distributions for Range 65, Berm and Beachface Positions.



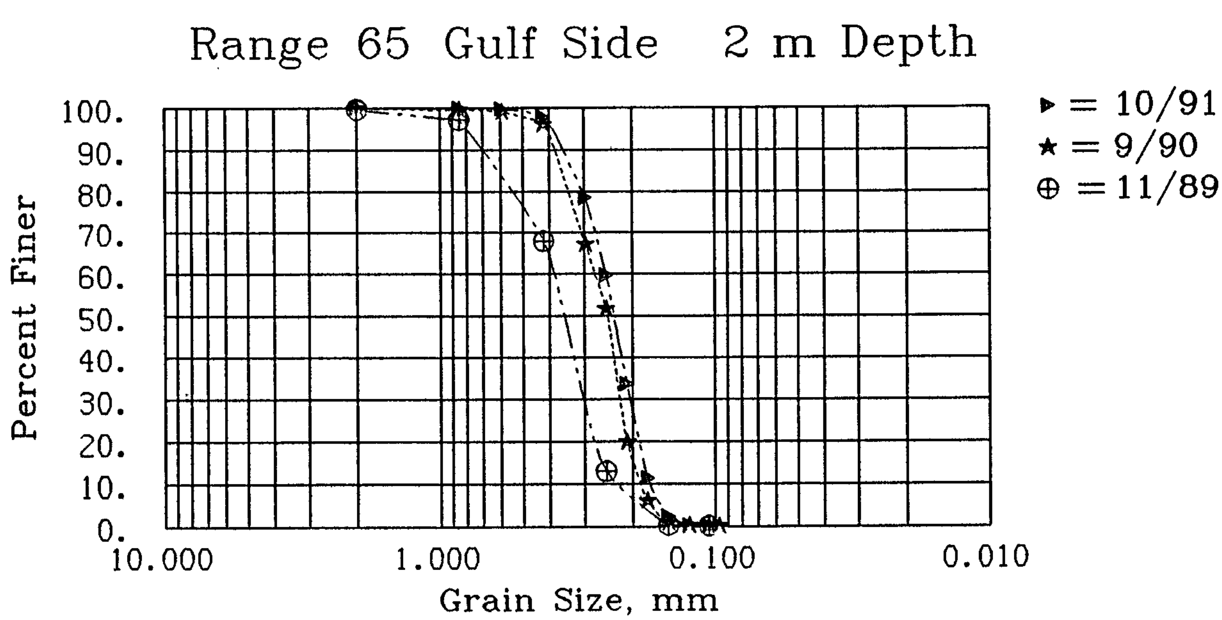
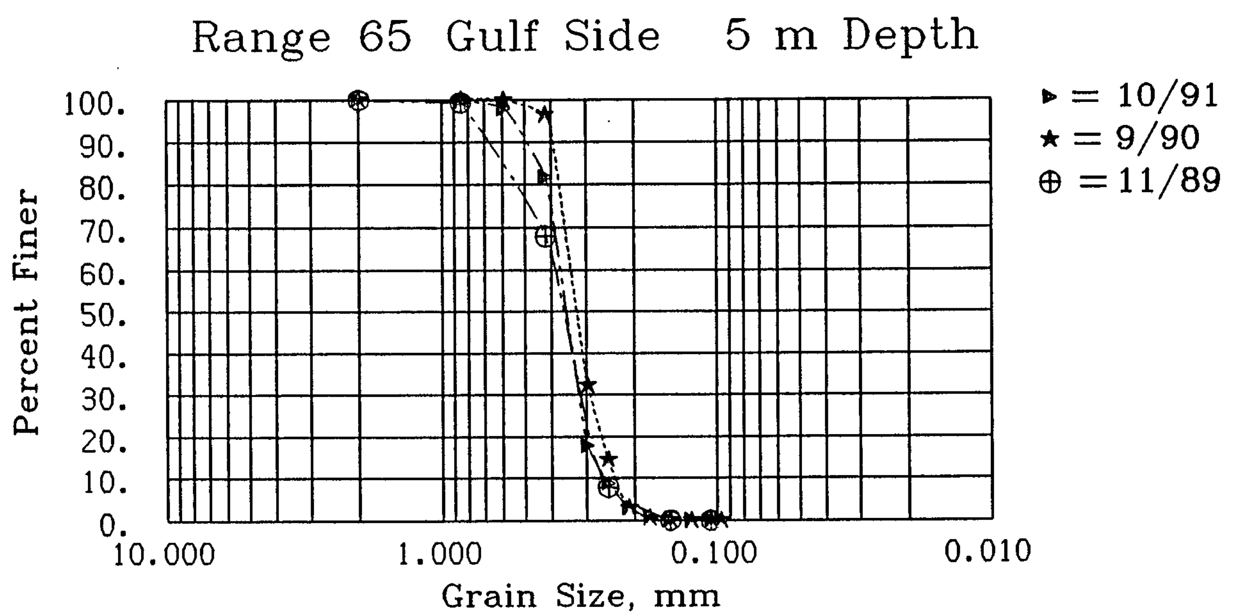


Figure V-115: Grain Size Distributions for Range 65, 1 m and 2 m Depth Positions.



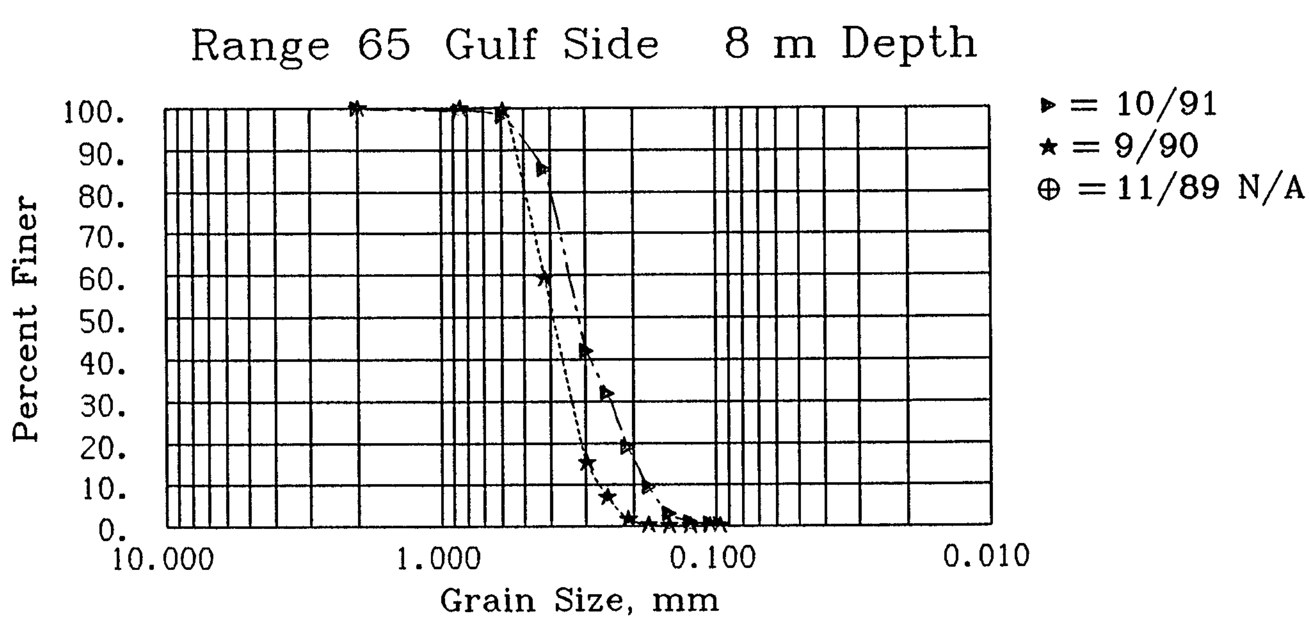
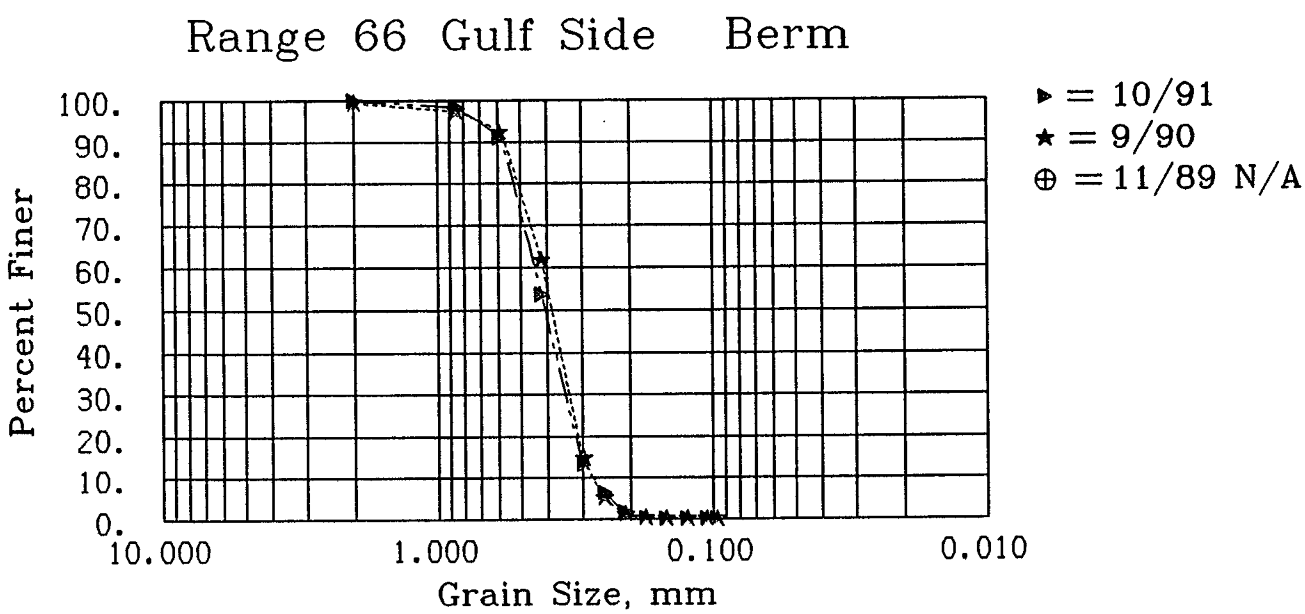


Figure V-116: Grain Size Distributions for Range 65, 5 m Depth and 8 m Depth Positions.



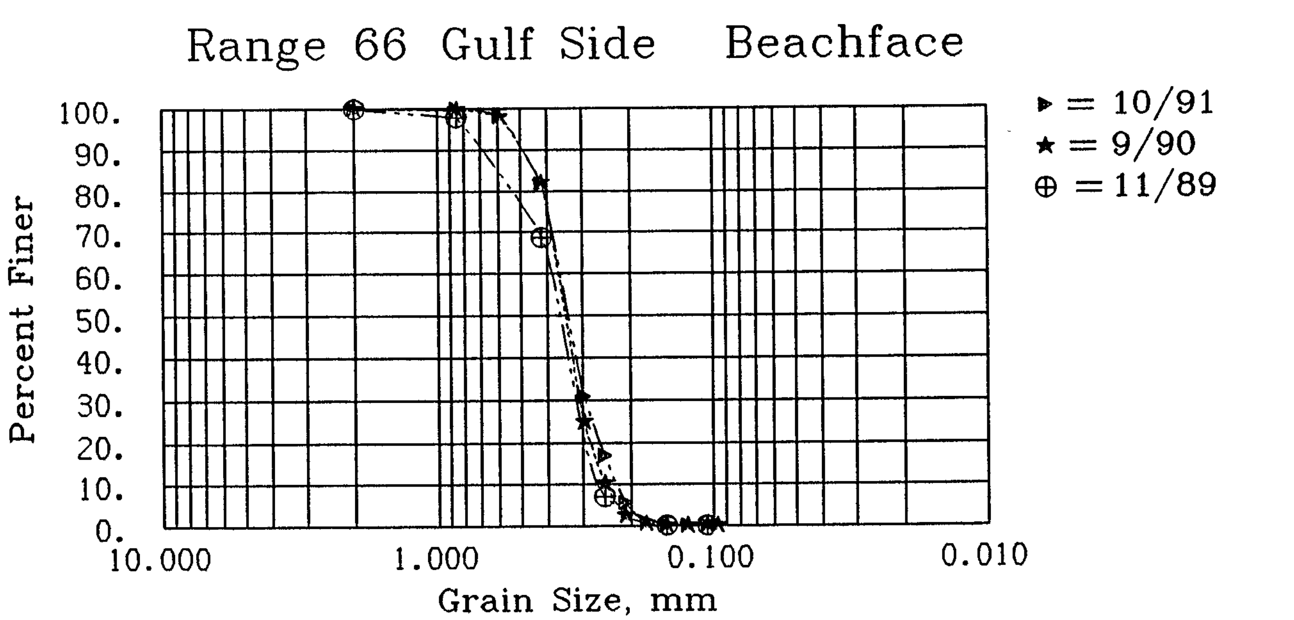
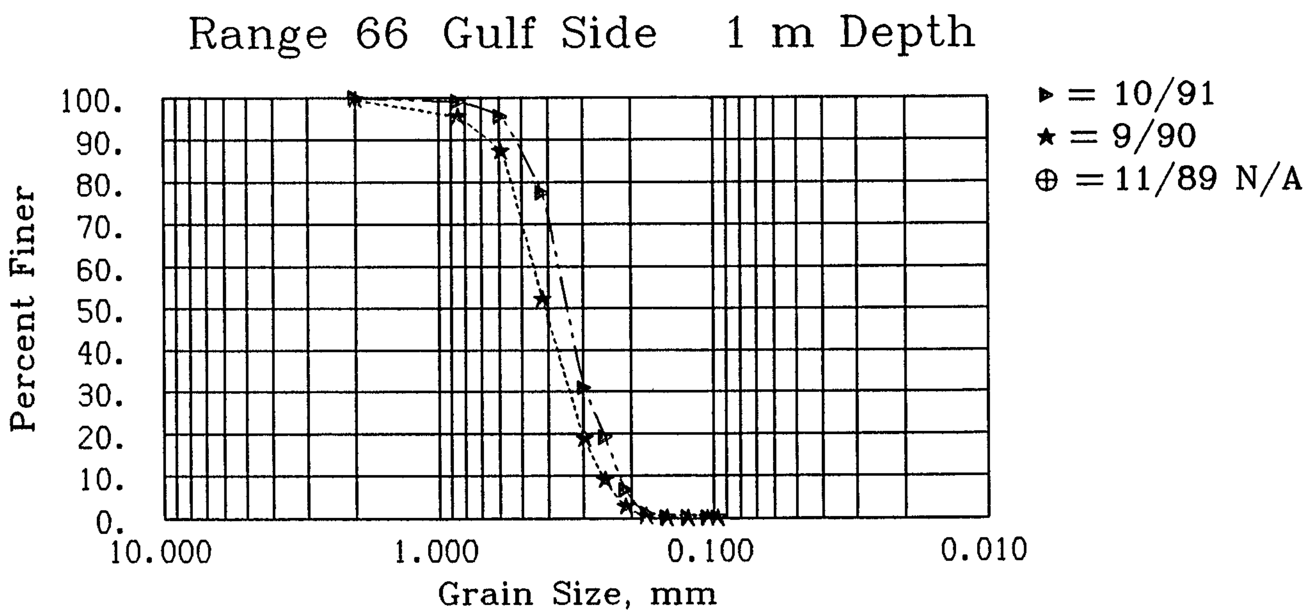


Figure V-118: Grain Size Distributions for Range 66, Berm and Beachface Positions.



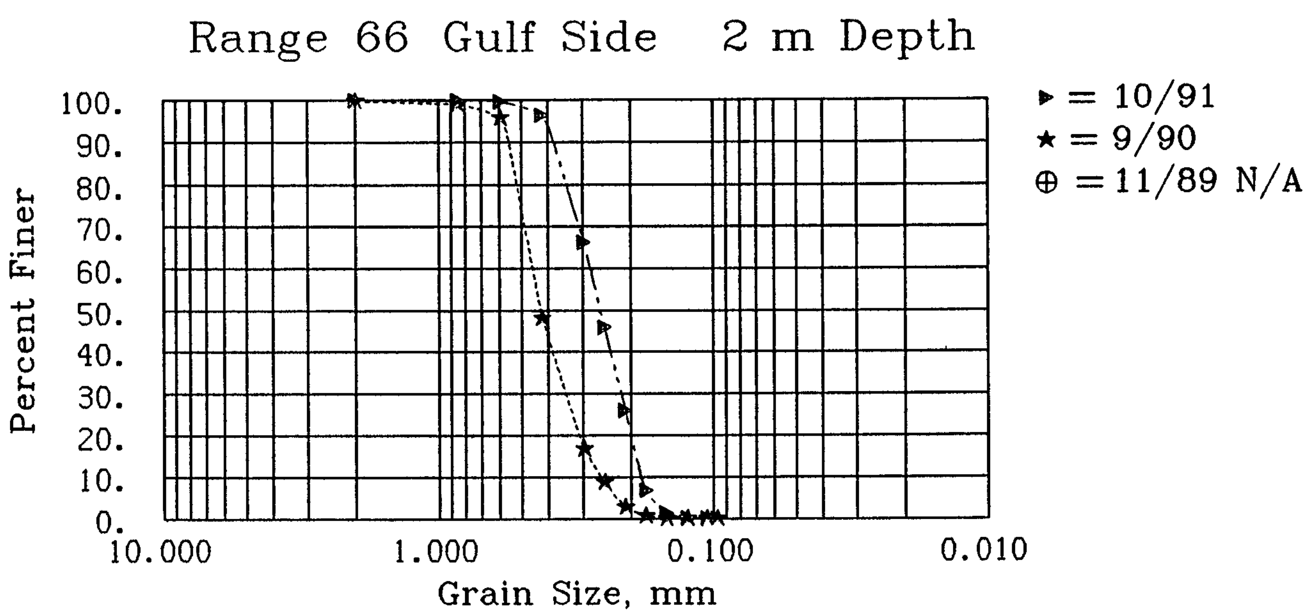
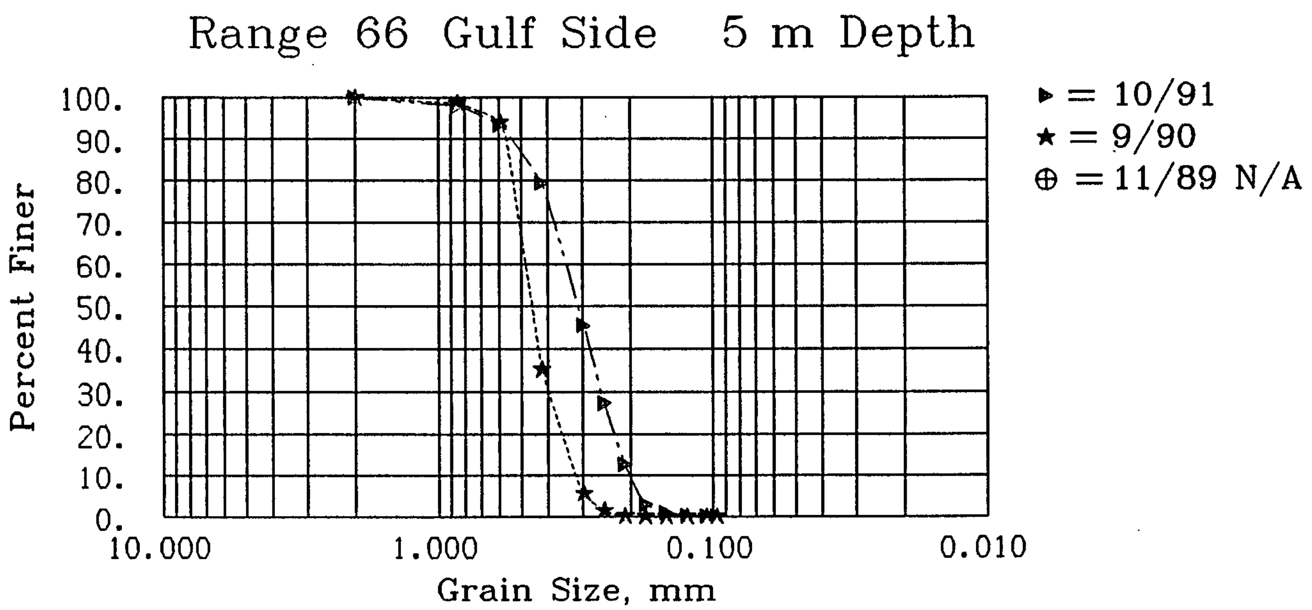


Figure V-119: Grain Size Distributions for Range 66, 1 m and 2 m Depth Positions.



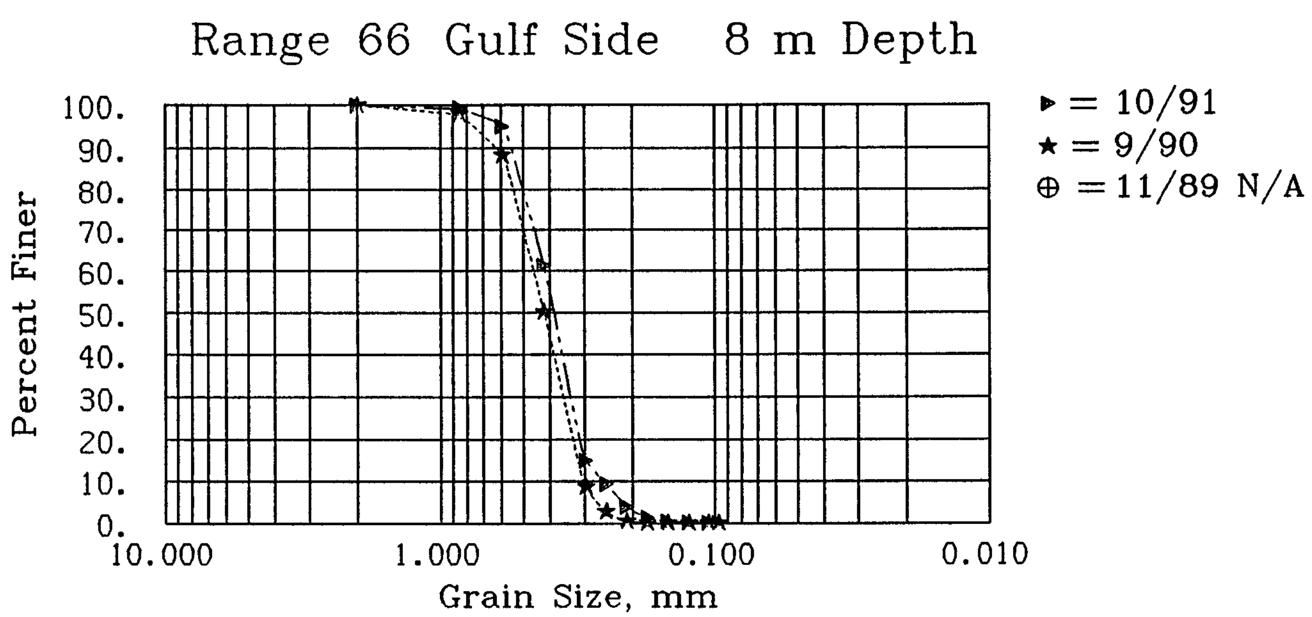


Figure V-120: Grain Size Distributions for Range 66, 5 m Depth and 8 m Depth Positions.

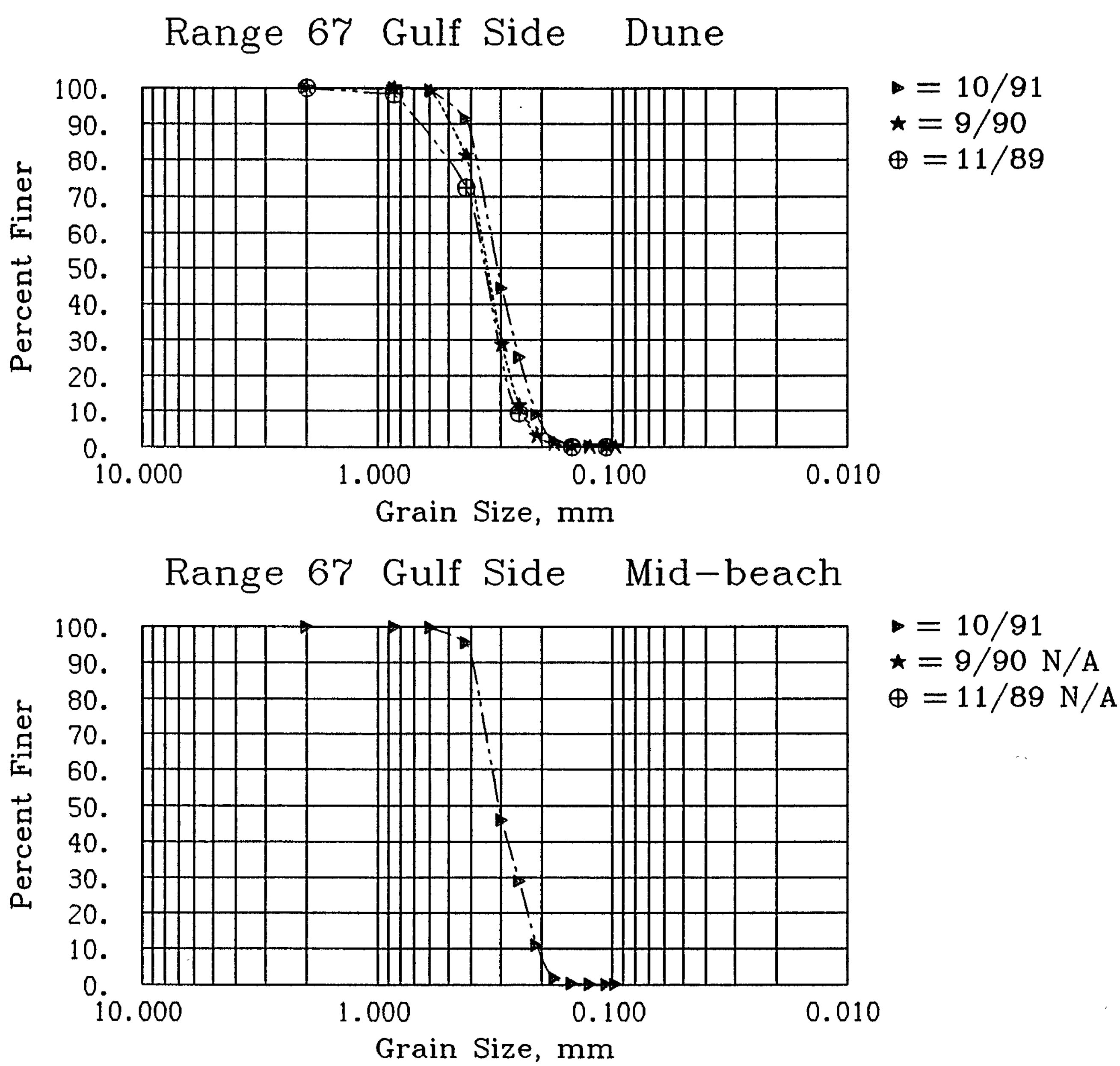
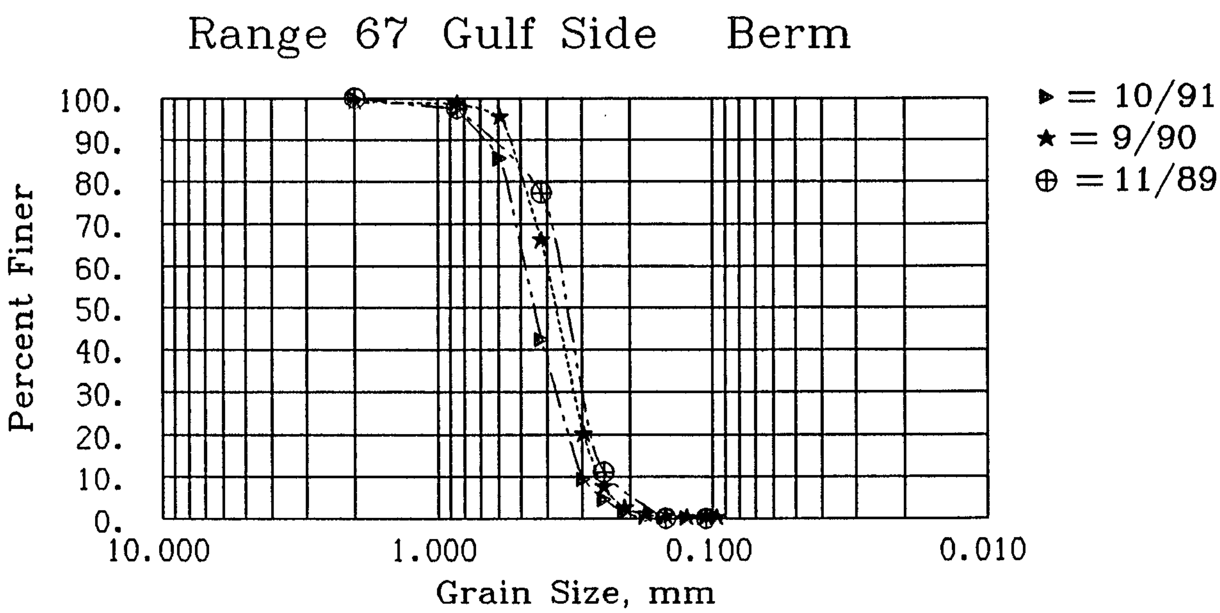


Figure V-121: Grain Size Distributions for Range 67, Dune and Mid–Beach Positions.



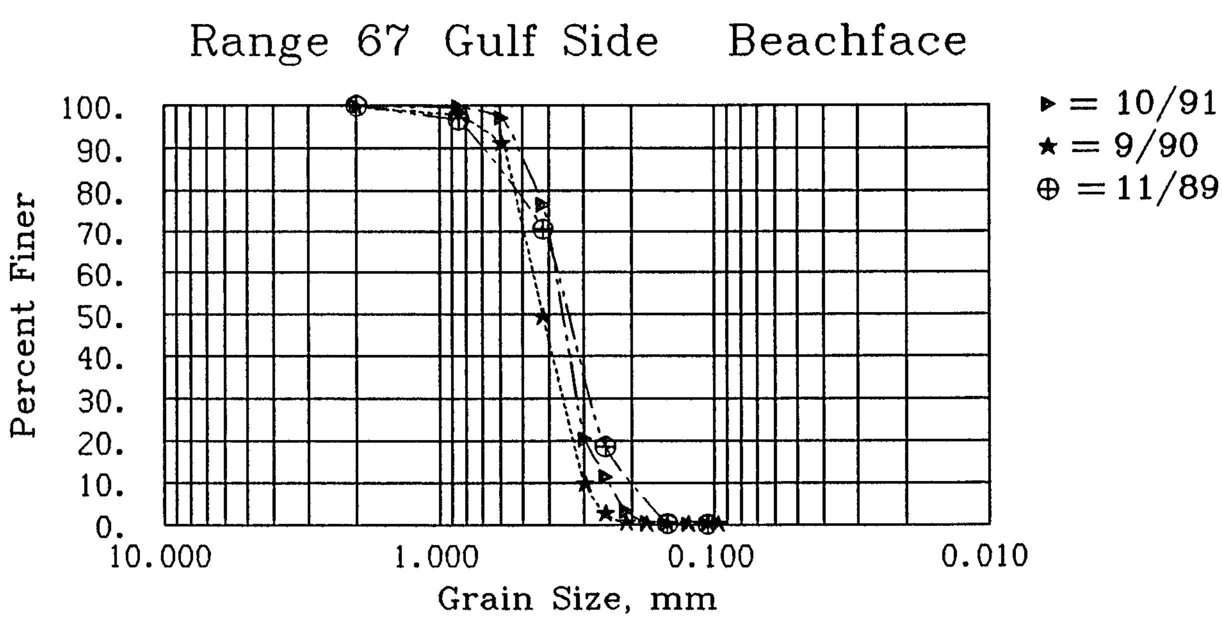
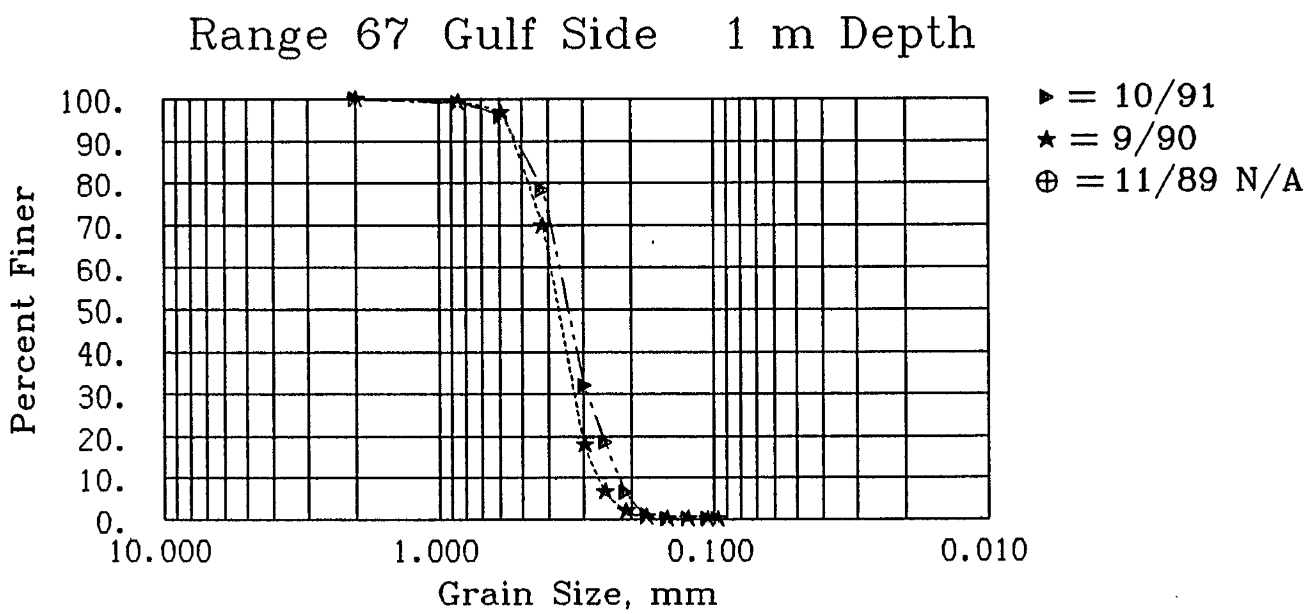


Figure V-122: Grain Size Distributions for Range 67, Berm and Beachface Positions.



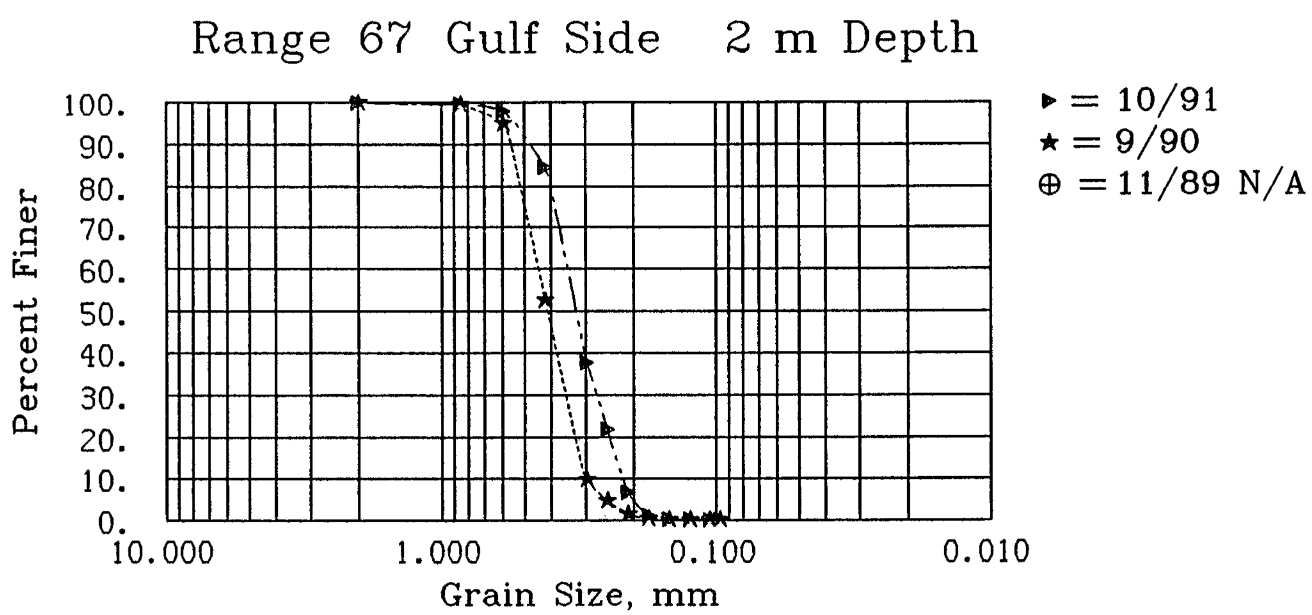
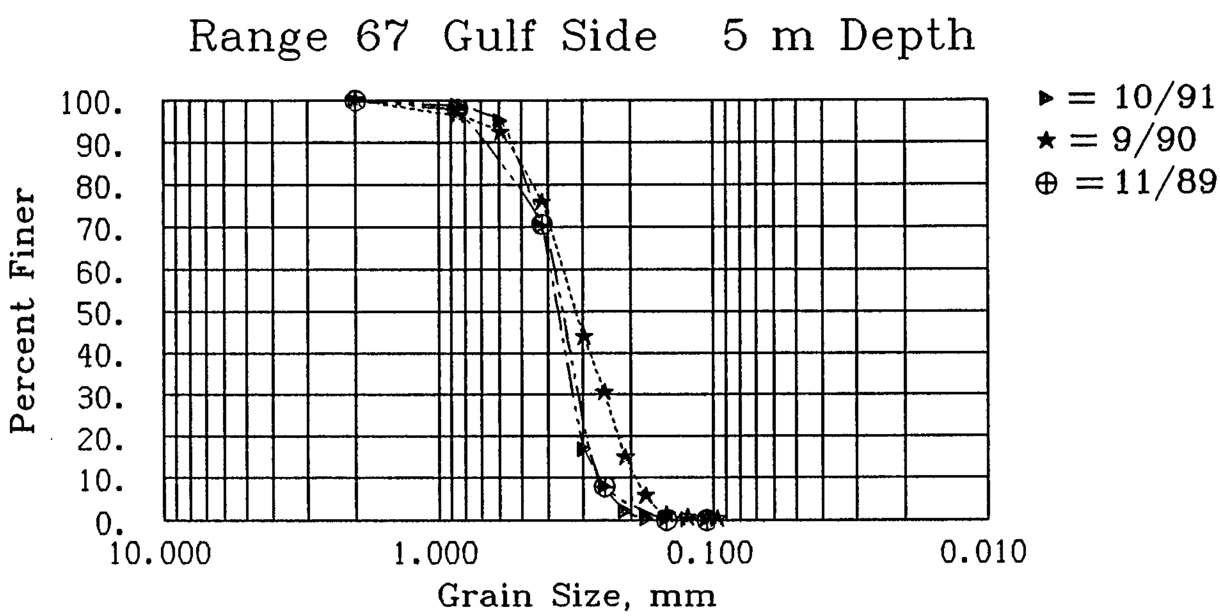


Figure V-123: Grain Size Distributions for Range 67, 1 m and 2 m Depth Positions.



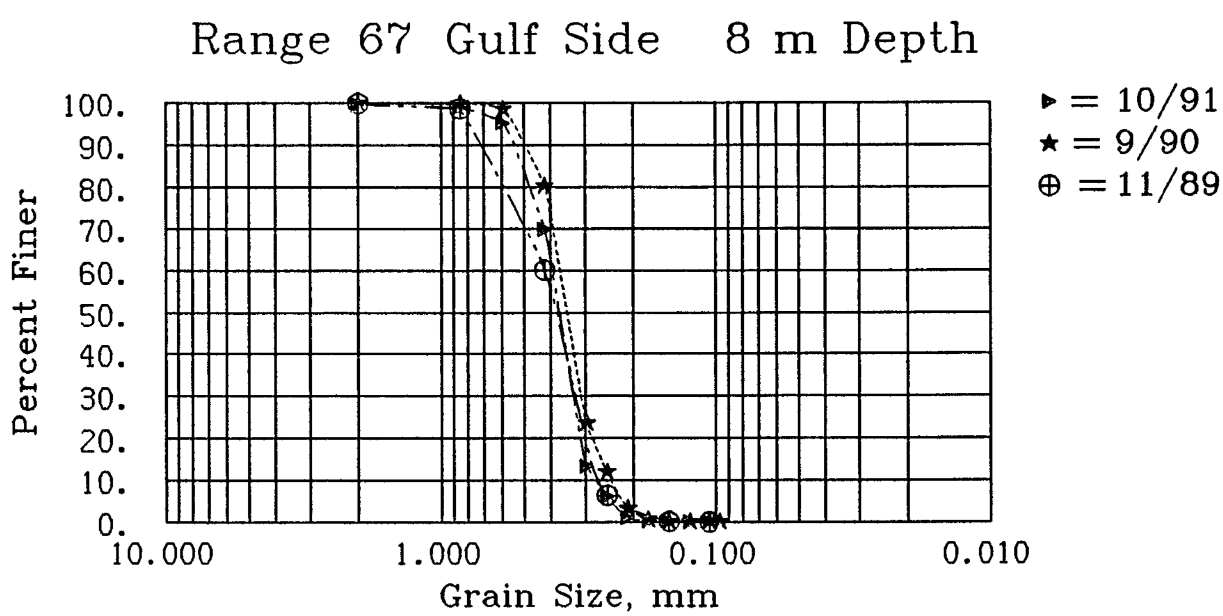


Figure V-124: Grain Size Distributions for Range 67, 5 m Depth and 8 m Depth Positions.

APPENDIX VI

SEDIMENT GRAIN SIZE STATISTICS FOR 9/90

Perdido Key: September, 1990 sand samples

Notes: 1) The following samples had too large a fine fraction to analyze by sieving: R425M.GLF, R468M.GLF, R505M.GLF, R565M.GLF, R585M.GLF

2) The following samples were re-analyzed after wet sieving to remove the fine fraction: R435M.GLF, R445M.GLF, R455M.GLF, R458M.GLF, R465M.GLF

File	Total	D50	Dmean	S.I.	Skew	Kurtosis
R25DUNE.GLF	238.800	0.340	0.332	0.330	0.106	0.971
R25BERM.GLF	251.300	0.374	0.378	0.429	-0.039	0.601
R251M.GLF	223.100	0.228	0.249	0.503	-0.260	0.400
R252M.GLF	251.400	0.333	0.295	0.804	0.219	0.262
R30DUNE.GLF	129.300	0.324	0.322	0.361	0.027	0.821
R30BERM.GLF	204.900	0.359	0.368	0.398	-0.084	0.693
R30BCH.GLF	211.900	0.347	0.346	0.429	0.003	0.682
R301M.GLF	329.700	0.247	0.287	0.688	-0.313	0.349
R302M.GLF	299.200	0.249	0.256	0.553	-0.074	0.521
R305M.GLF	249.100	0.311	0.302	0.477	0.095	0.873
R308M.GLF	265.100	0.421	0.399	0.627	0.126	0.836
R32DUNE.GLF	196.300	0.364	0.368	0.452	-0.030	0.585
R32BERM.GLF	215.100	0.442	0.389	0.496	0.372	0.491
R32BCH.GLF	239.400	0.464	0.441	0.386	0.188	0.741
R321M.GLF	291.600	0.349	0.316	0.662	0.214	0.372
R322M.GLF	315.800	0.237	0.254	0.582	-0.169	0.475
R325M.GLF	225.600	0.360	0.361	0.540	-0.007	0.713
R328M.GLF	201.400	0.332	0.328	0.573	0.029	0.604
R34DUNE.GLF	211.500	0.285	0.292	0.395	-0.090	0.601
R34BERM.GLF	70.300	0.365	0.381	0.355	-0.176	0.725
R34BCH.GLF	198.000	0.384	0.399	0.363	-0.153	0.504
R341M.GLF	258.100	0.297	0.265	0.539	0.299	0.323
R342M.GLF	314.400	0.297	0.284	0.567	0.112	0.618
R345M.GLF	217.500	0.304	0.291	0.525	0.128	0.768
R348M.GLF	212.400	0.297	0.300	0.421	-0.033	0.844
R36BERM.GLF	307.800	0.372	0.389	0.312	-0.212	0.536
R36BCH.GLF	107.300	0.450	0.425	0.461	0.176	0.803
R361M.GLF	224.100	0.444	0.339	0.678	0.571	0.322
R362M.GLF	320.200	0.270	0.275	0.555	-0.049	0.569
R365M.GLF	274.700	0.326	0.306	0.656	0.141	0.505
R368M.GLF	227.700	0.357	0.360	0.394	-0.034	0.838
R38DUNE.GLF	215.600	0.380	0.392	0.377	-0.122	0.611
R38BERM.GLF	199.700	0.355	0.360	0.291	-0.075	1.007
R38BCH.GLF	220.200	0.486	0.471	0.280	0.152	1.101
R381M.GLF	249.200	0.416	0.336	0.666	0.465	0.382
R382M.GLF	322.700	0.439	0.335	0.696	0.559	0.356
R385M.GLF	216.200	0.351	0.345	0.570	0.046	0.462
R388M.GLF	354.500	0.282	0.278	0.783	0.025	0.248
R40DUNE.GLF	189.500	0.346	0.338	0.371	0.092	0.805
R40BERM.GLF	281.400	0.350	0.350	0.465	0.004	0.640
R40BCH.GLF	152.300	0.327	0.317	0.346	0.122	0.827
R401M.GLF	247.500	0.333	0.306	0.461	0.263	0.730
R402M.GLF	219.500	0.441	0.364	0.573	0.480	0.444

File (9/90)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R405M.GLF	186.000	0.338	0.336	0.534	0.015	0.602
R408M.GLF	231.300	0.307	0.291	0.489	0.163	0.728
R421M.GLF	299.400	0.334	0.324	0.602	0.073	0.441
R422M.GLF	297.200	0.319	0.302	0.475	0.169	0.804
R428M.GLF	230.500	0.364	0.374	0.623	-0.063	1.118
R43DUNE.GLF	152.800	0.285	0.291	0.389	-0.084	0.462
R43BERM.GLF	203.300	0.389	0.402	0.386	-0.120	0.547
R43BCH.GLF	169.300	0.344	0.342	0.389	0.024	0.729
R431M.GLF	291.600	0.470	0.414	0.422	0.433	0.746
R432M.GLF	262.300	0.465	0.408	0.439	0.428	0.635
R435M.GLF	49.560	0.199	0.189	0.922	0.082	-0.340
R438M.GLF	260.800	0.358	0.371	0.496	-0.103	1.520
R44DUNE.GLF	299.900	0.313	0.307	0.425	0.070	0.749
R44BERM.GLF	250.000	0.363	0.362	0.480	0.011	0.575
R44BCH.GLF	264.800	0.349	0.340	0.334	0.119	1.001
R441M.GLF	268.100	0.362	0.356	0.529	0.042	0.513
R442M.GLF	239.500	0.298	0.292	0.457	0.066	0.719
R445M.GLF	48.330	0.203	0.289	0.441	-1.160	0.864
R448M.GLF	227.600	0.384	0.403	0.484	-0.145	1.408
R45DUNE.GLF	234.800	0.374	0.381	0.429	-0.061	0.598
R45BERM.GLF	239.900	0.364	0.370	0.401	-0.058	0.704
R45BCH.GLF	207.600	0.347	0.337	0.300	0.136	1.117
R451M.GLF	291.500	0.337	0.328	0.530	0.075	0.622
R452M.GLF	287.100	0.475	0.403	0.465	0.505	0.589
R455M.GLF	53.800	0.224	0.232	0.782	-0.068	-0.106
R458M.GLF	54.440	0.168	0.177	0.574	-0.123	-0.237
R46DUNE.GLF	291.500	0.358	0.364	0.381	-0.062	0.711
R46BERM.GLF	252.400	0.341	0.330	0.374	0.129	0.824
R46BCH.GLF	310.300	0.436	0.411	0.440	0.195	0.777
R461M.GLF	259.300	0.355	0.358	0.508	-0.022	0.610
R462M.GLF	253.400	0.308	0.297	0.433	0.120	0.681
R465M.GLF	56.200	0.099	0.212	-0.055	19.802	-9.788
R48DUNE.GLF	193.900	0.349	0.346	0.533	0.021	0.503
R48BERM.GLF	249.400	0.364	0.371	0.527	-0.052	0.664
R48BCH.GLF	143.500	0.327	0.313	0.363	0.176	0.703
R481M.GLF	294.600	0.364	0.362	0.499	0.016	0.500
R485M.GLF	252.200	0.316	0.294	0.662	0.154	0.471
R488M.GLF	243.400	0.275	0.269	0.580	0.049	0.576
R50DUNE.GLF	243.400	0.411	0.400	0.409	0.098	0.689
R50BERM.GLF	291.200	0.310	0.304	0.415	0.065	0.713
R50BCH.GLF	240.500	0.342	0.337	0.419	0.054	0.639
R501M.GLF	255.200	0.406	0.376	0.523	0.214	0.423
R502M.GLF	61.700	0.313	0.312	0.444	0.017	0.709
R508M.GLF	207.100	0.317	0.312	0.562	0.043	0.598
R52DUNE.GLF	31.900	0.398	0.391	0.458	0.053	0.570
R52BERM.GLF	112.700	0.375	0.380	0.458	-0.044	0.547
R52BCH.GLF	201.100	0.368	0.378	0.452	-0.087	0.511
R521M.GLF	292.400	0.414	0.364	0.575	0.323	0.367
R522M.GLF	254.700	0.470	0.394	0.496	0.515	0.463
R525M.GLF	276.400	0.432	0.397	0.532	0.227	0.995
R528M.GLF	256.800	0.295	0.287	0.521	0.083	0.728
R54DUNE.GLF	247.000	0.392	0.402	0.401	-0.091	0.668

File (9/90)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R54BERM.GLF	274.100	0.411	0.407	0.426	0.031	0.611
R54BCH.GLF	218.700	0.423	0.420	0.440	0.024	0.778
R541M.GLF	244.400	0.358	0.364	0.540	-0.041	0.600
R542M.GLF	309.900	0.374	0.369	0.478	0.040	0.541
R545M.GLF	287.900	0.330	0.308	0.619	0.163	0.554
R548M.GLF	238.600	0.304	0.285	0.548	0.174	0.637
R56DUNE.GLF	238.900	0.403	0.402	0.429	0.014	0.600
R56BERM.GLF	274.900	0.444	0.422	0.404	0.182	0.630
R56BCH.GLF	209.500	0.476	0.454	0.372	0.181	0.817
R561M.GLF	303.600	0.394	0.389	0.456	0.042	0.548
R562M.GLF	134.600	0.340	0.339	0.406	0.017	0.700
R568M.GLF	222.800	0.274	0.270	0.557	0.037	0.610
R58DUNE.GLF	292.400	0.446	0.410	0.424	0.286	0.621
R58BERM.GLF	235.600	0.382	0.393	0.481	-0.087	0.777
R58BCH.GLF	201.700	0.471	0.448	0.387	0.181	0.790
R581M.GLF	236.300	0.351	0.353	0.380	-0.022	0.785
R582M.GLF	113.900	0.345	0.339	0.364	0.071	0.831
R588M.GLF	249.000	0.314	0.291	0.630	0.178	0.451
R60DUNE.GLF	269.200	0.366	0.365	0.503	0.004	0.616
R60BERM.GLF	249.700	0.374	0.387	0.419	-0.120	0.591
R60BCH.GLF	250.600	0.512	0.533	0.524	-0.111	1.278
R601M.GLF	182.000	0.336	0.325	0.364	0.136	0.845
R602M.GLF	249.100	0.328	0.314	0.385	0.167	0.779
R605M.GLF	262.900	0.309	0.300	0.673	0.068	0.549
R608M.GLF	270.000	0.255	0.262	0.545	-0.071	0.520
R61DUNE.GLF	325.400	0.428	0.418	0.475	0.071	0.910
R61BERM.GLF	269.600	0.402	0.406	0.419	-0.033	0.579
R61BCH.GLF	208.500	0.382	0.399	0.417	-0.149	0.727
R611M.GLF	243.800	0.352	0.355	0.407	-0.029	0.749
R612M.GLF	249.500	0.342	0.330	0.358	0.143	0.907
R615M.GLF	191.200	0.366	0.382	0.372	-0.161	0.780
R618M.GLF	275.200	0.271	0.264	0.590	0.065	0.477
R62DUNE.GLF	239.200	0.370	0.373	0.448	-0.021	0.626
R62BERM.GLF	250.800	0.365	0.376	0.438	-0.099	0.590
R62BCH.GLF	297.900	0.430	0.436	0.503	-0.041	1.170
R621M.GLF	290.100	0.341	0.330	0.358	0.137	0.928
R622M.GLF	308.100	0.347	0.346	0.494	0.013	0.566
R625M.GLF	273.000	0.272	0.281	0.523	-0.094	0.642
R628M.GLF	276.000	0.238	0.255	0.460	-0.221	0.541
R63DUNE.GLF	158.400	0.287	0.334	0.587	-0.374	0.435
R63BERM.GLF	220.400	0.427	0.408	0.430	0.154	0.594
R63BCH.GLF	268.600	0.486	0.467	0.418	0.135	1.157
R631M.GLF	233.700	0.350	0.339	0.530	0.087	0.475
R632M.GLF	266.800	0.334	0.319	0.449	0.146	0.729
R635M.GLF	254.400	0.357	0.344	0.592	0.088	0.386
R638M.GLF	247.500	0.265	0.280	0.449	-0.172	0.613
R64DUNE.GLF	282.700	0.315	0.305	0.408	0.116	0.731
R64BERM.GLF	308.900	0.412	0.417	0.459	-0.044	0.830
R64BCH.GLF	168.400	0.353	0.358	0.353	-0.056	0.821
R641M.GLF	255.800	0.404	0.392	0.438	0.104	0.556
R642M.GLF	193.000	0.303	0.301	0.413	0.020	0.751
R645M.GLF	284.100	0.266	0.279	0.482	-0.135	0.657

File (9/90)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R648M.GLF	264.200	0.287	0.285	0.458	0.023	0.610
R65DUNE.GLF	284.300	0.330	0.312	0.364	0.219	0.744
R65BERM.GLF	177.300	0.383	0.401	0.379	-0.171	0.499
R65BCH.GLF	257.400	0.399	0.404	0.459	-0.034	0.824
R651M.GLF	281.500	0.332	0.308	0.413	0.260	0.778
R652M.GLF	243.400	0.248	0.270	0.430	-0.289	0.485
R655M.GLF	243.900	0.327	0.316	0.314	0.159	0.502
R658M.GLF	256.800	0.391	0.394	0.401	-0.031	0.603
R66DUNE.GLF	239.900	0.335	0.320	0.368	0.173	0.832
R66BERM.GLF	194.500	0.386	0.403	0.427	-0.150	0.794
R66BCH.GLF	243.500	0.346	0.343	0.358	0.034	0.856
R661M.GLF	318.300	0.411	0.404	0.512	0.046	0.849
R662M.GLF	252.900	0.426	0.400	0.450	0.200	0.557
R665M.GLF	293.400	0.459	0.434	0.370	0.215	0.552
R668M.GLF	177.500	0.420	0.426	0.428	-0.046	0.764
R67DUNE.GLF	166.200	0.342	0.341	0.380	0.016	0.744
R67BERM.GLF	212.400	0.372	0.382	0.443	-0.084	0.542
R67BCH.GLF	193.000	0.423	0.420	0.418	0.024	0.750
R671M.GLF	220.100	0.368	0.382	0.403	-0.130	0.619
R672M.GLF	218.100	0.412	0.413	0.399	-0.007	0.546
R675M.GLF	222.800	0.317	0.326	0.613	-0.061	0.734
R678M.GLF	190.900	0.350	0.347	0.379	0.028	0.776

APPENDIX VII

SEDIMENT GRAIN SIZE STATISTICS FOR 11/89

Perdido Key: October/November, 1989, sand samples
Note: The following samples were re-analyzed after wet sieving to remove the fine fraction:
R361M.BAY, R441M.BAY, R565M.GLF (R565M.GLF>60% fines)

File	Total	D50	Dmean	S.I.	Skew	Kurtosis
R301M.GLF	321.500	0.343	0.374	0.507	-0.250	0.915
R302M.GLF	226.100	0.318	0.309	0.420	0.101	1.422
R305M.GLF	316.900	0.339	0.367	0.497	-0.230	0.997
R308M.GLF	319.200	0.381	0.419	0.713	-0.195	0.600
R30BCH.GLF	244.700	0.334	0.358	0.495	-0.202	1.054
R30BERM.GLF	321.600	0.314	0.313	0.340	0.018	1.433
R30DUNE.GLF	321.300	0.328	0.328	0.344	0.000	1.725
R321M.GLF	337.700	0.481	0.465	0.622	0.078	0.336
R322M.GLF	102.200	0.233	0.247	0.590	-0.138	0.707
R325M.GLF	295.200	0.341	0.378	0.595	-0.249	0.835
R328M.GLF	272.800	0.362	0.410	0.678	-0.261	0.664
R32BCH.GLF	315.200	0.353	0.393	0.558	-0.273	0.694
R32BERM.GLF	367.500	0.400	0.430	0.629	-0.166	0.426
R32DUNE.GLF	374.200	0.360	0.402	0.564	-0.281	0.531
R341M.GLF	335.600	0.388	0.425	0.633	-0.203	0.507
R342M.GLF	255.200	0.259	0.224	0.764	0.273	0.451
R345M.GLF	326.400	0.303	0.282	0.561	0.190	0.936
R348M.GLF	270.100	0.324	0.324	0.344	0.000	1.782
R34BCH.GLF	323.800	0.334	0.343	0.388	-0.105	1.401
R34BERM.GLF	348.300	0.334	0.346	0.405	-0.125	1.314
R34DUNE.GLF	316.100	0.376	0.417	0.602	-0.244	0.452
R361M.GLF	303.000	0.308	0.290	0.495	0.176	1.050
R362M.GLF	160.700	0.335	0.366	0.545	-0.238	0.983
R365M.GLF	290.900	0.304	0.293	0.644	0.087	0.760
R368M.GLF	302.800	0.356	0.397	0.588	-0.267	0.713
R36BCH.GLF	212.500	0.362	0.403	0.620	-0.250	0.659
R36BERM.GLF	338.600	0.487	0.473	0.637	0.066	0.335
R36DUNE.GLF	230.100	0.427	0.445	0.622	-0.096	0.322
R381M.GLF	339.300	0.333	0.358	0.563	-0.188	0.911
R382M.GLF	260.100	0.310	0.297	0.406	0.143	1.028
R385M.GLF	293.100	0.314	0.316	0.696	-0.014	0.625
R388M.GLF	307.000	0.346	0.386	0.594	-0.263	0.799
R38BCH.GLF	340.100	0.356	0.397	0.592	-0.263	0.696
R38BERM.GLF	362.300	0.458	0.455	0.631	0.015	0.325
R38DUNE.GLF	355.100	0.363	0.405	0.568	-0.281	0.456
R401M.GLF	326.900	0.346	0.389	0.617	-0.270	0.777
R402M.GLF	90.200	0.250	0.258	0.595	-0.072	0.705
R405M.GLF	283.100	0.305	0.291	0.656	0.105	0.840
R408M.GLF	296.700	0.327	0.342	0.632	-0.098	0.741
R40BCH.GLF	313.500	0.377	0.418	0.598	-0.254	0.368
R40BERM.GLF	337.500	0.335	0.351	0.430	-0.160	1.200
R40DUNE.GLF	348.200	0.349	0.385	0.514	-0.272	0.675
R421M.GLF	339.500	0.324	0.334	0.611	-0.068	0.807
R422M.GLF	202.100	0.289	0.269	0.496	0.209	0.400
R425M.GLF	290.000	0.323	0.329	0.621	-0.040	0.803
R428M.GLF	241.100	0.238	0.250	0.574	-0.124	0.575
R42BCH.GLF	287.400	0.439	0.447	0.622	-0.042	0.322
R42BERM.GLF	348.500	0.343	0.375	0.523	-0.247	0.883

File (11/89)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R42DUNE.GLF	284.500	0.368	0.408	0.608	-0.243	0.616
R431M.GLF	349.600	0.327	0.327	0.360	0.000	1.755
R432M.GLF	312.900	0.300	0.281	0.491	0.199	0.822
R438M.GLF	229.800	0.337	0.378	0.576	-0.283	0.970
R43BCH.GLF	287.800	0.338	0.369	0.577	-0.224	0.835
R43BERM.GLF	383.300	0.373	0.414	0.603	-0.252	0.500
R43DUNE.GLF	297.500	0.365	0.407	0.581	-0.272	0.505
R441M.GLF	312.500	0.425	0.441	0.649	-0.082	0.433
R442M.GLF	209.400	0.295	0.274	0.548	0.199	0.879
R445M.GLF	259.200	0.335	0.349	0.769	-0.075	0.523
R448M.GLF	279.200	0.388	0.440	0.684	-0.266	0.778
R44BCH.GLF	263.100	0.368	0.408	0.607	-0.249	0.599
R44BERM.GLF	311.600	0.363	0.404	0.601	-0.257	0.638
R44DUNE.GLF	314.600	0.383	0.420	0.614	-0.221	0.471
R451M.GLF	248.100	0.425	0.438	0.651	-0.064	0.474
R452M.GLF	217.400	0.299	0.279	0.509	0.195	0.837
R455M.GLF	199.400	0.317	0.327	0.808	-0.057	0.463
R458M.GLF	286.900	0.224	0.235	0.707	-0.102	0.928
R45BCH.GLF	181.800	0.336	0.347	0.391	-0.122	1.250
R45BERM.GLF	289.000	0.386	0.416	0.647	-0.169	0.579
R45DUNE.GLF	238.100	0.406	0.434	0.623	-0.157	0.329
R461M.GLF	251.600	0.404	0.422	0.683	-0.091	0.557
R462M.GLF	257.000	0.297	0.273	0.525	0.229	0.855
R465M.GLF	237.200	0.308	0.312	0.821	-0.020	0.552
R468M.GLF	236.200	0.241	0.240	0.607	0.009	0.502
R46BAR.GLF	217.500	0.348	0.387	0.544	-0.280	0.786
R46BCH.GLF	295.800	0.352	0.388	0.509	-0.281	0.536
R46BERM.GLF	252.000	0.369	0.411	0.593	-0.263	0.512
R46DUNE.GLF	214.200	0.394	0.432	0.608	-0.217	0.340
R481M.GLF	216.100	0.385	0.430	0.680	-0.235	0.572
R482M.GLF	209.700	0.305	0.286	0.472	0.194	0.921
R485M.GLF	214.500	0.330	0.345	0.640	-0.099	0.718
R488M.GLF	190.000	0.310	0.304	0.650	0.041	0.721
R48BCH.GLF	256.100	0.405	0.432	0.637	-0.144	0.451
R48BERM.GLF	222.200	0.413	0.434	0.641	-0.113	0.451
R48DUNE.GLF	215.700	0.345	0.377	0.510	-0.256	0.842
R501M.GLF	210.300	0.494	0.468	0.645	0.124	0.402
R502M.GLF	179.300	0.273	0.264	0.606	0.086	0.822
R505M.GLF	277.500	0.310	0.305	0.677	0.034	0.672
R508M.GLF	279.500	0.357	0.394	0.640	-0.225	0.691
R50BCH.GLF	271.900	0.526	0.495	0.577	0.153	0.422
R50BERM.GLF	17.000	0.391	0.428	0.620	-0.207	0.371
R50DUNE.GLF	246.100	0.369	0.413	0.572	-0.285	0.402
R521M.GLF	276.200	0.385	0.422	0.626	-0.208	0.511
R522M.GLF	215.400	0.276	0.263	0.564	0.124	0.780
R525M.GLF	250.600	0.283	0.268	0.622	0.131	0.903
R528M.GLF	221.300	0.339	0.371	0.541	-0.242	0.954
R52BAR.GLF	235.800	0.343	0.381	0.566	-0.266	0.849
R52BCH.GLF	230.400	0.372	0.414	0.606	-0.250	0.539
R52BERM.GLF	299.100	0.426	0.443	0.619	-0.096	0.323
R52DUNE.GLF	183.300	0.343	0.369	0.463	-0.230	0.863
R541M.GLF	245.600	0.375	0.420	0.603	-0.267	0.374

File (11/89)	Total	D50	Dmean	S.I.	Skew	Kurtosis
R542M.GLF	235.600	0.331	0.349	0.461	-0.167	1.190
R545M.GLF	254.500	0.323	0.336	0.768	-0.073	0.525
R548M.GLF	288.400	0.323	0.323	0.510	-0.004	1.064
R54BCH.GLF	343.600	0.438	0.451	0.622	-0.066	0.321
R54BERM.GLF	253.600	0.336	0.356	0.444	-0.186	1.164
R54DUNE.GLF	243.700	0.358	0.400	0.560	-0.286	0.559
R561M.GLF	224.000	0.406	0.445	0.648	-0.201	0.330
R562M.GLF	166.200	0.320	0.318	0.523	0.014	1.094
R568M.GLF	236.000	0.312	0.294	0.488	0.169	1.101
R56BAR.GLF	166.200	0.320	0.318	0.523	0.014	1.094
R56BCH.GLF	262.600	0.463	0.459	0.609	0.019	0.325
R56BERM.GLF	280.000	0.487	0.467	0.609	0.104	0.345
R56DUNE.GLF	254.900	0.411	0.440	0.614	-0.158	0.327
R581M.GLF	189.400	0.356	0.415	0.676	-0.329	0.553
R585M.GLF	326.200	0.303	0.281	0.545	0.195	1.037
R588M.GLF	332.800	0.291	0.273	0.550	0.167	0.837
R58BERM.GLF	279.200	0.446	0.454	0.626	-0.044	0.321
R58DUNE.GLF	291.600	0.443	0.451	0.630	-0.038	0.322
R605M.GLF	329.000	0.265	0.258	0.565	0.075	0.577
R608M.GLF	307.200	0.295	0.274	0.522	0.210	0.802
R60BCH.GLF	210.900	0.451	0.454	0.617	-0.017	0.322
R60BERM.GLF	154.500	0.406	0.446	0.648	-0.208	0.331
R60DUNE.GLF	243.600	0.396	0.434	0.645	-0.204	0.423
R611M.GLF	155.600	0.320	0.321	0.569	-0.008	0.870
R618M.GLF	250.400	0.276	0.267	0.591	0.077	0.787
R61BCH.GLF	160.500	0.439	0.446	0.634	-0.037	0.322
R62DUNE.GLF	226.300	0.344	0.385	0.591	-0.278	0.829
R631M.GLF	260.400	0.368	0.385	0.765	-0.084	0.535
R632M.GLF	129.400	0.278	0.271	0.594	0.058	0.790
R638M.GLF	336.500	0.311	0.301	0.401	0.127	1.218
R63BERM.GLF	348.800	0.335	0.361	0.645	-0.166	0.714
R63DUNE.GLF	294.600	0.300	0.282	0.502	0.185	0.899
R641M.GLF	289.600	0.354	0.395	0.616	-0.252	0.717
R645M.GLF	369.800	0.405	0.434	0.642	-0.155	0.433
R648M.GLF	368.000	0.400	0.432	0.640	-0.175	0.439
R64DUNE.GLF	204.000	0.294	0.277	0.541	0.157	0.969
R651M.GLF	216.100	0.332	0.354	0.480	-0.195	1.197
R652M.GLF	204.200	0.355	0.399	0.633	-0.268	0.705
R655M.GLF	277.600	0.360	0.402	0.583	-0.275	0.622
R66BCH.GLF	160.400	0.359	0.405	0.587	-0.296	0.602
R675M.GLF	285.900	0.354	0.399	0.576	-0.296	0.678
R678M.GLF	301.100	0.381	0.422	0.622	-0.239	0.475
R67BCH.GLF	177.800	0.342	0.375	0.686	-0.191	0.641
R67BERM.GLF	239.000	0.339	0.370	0.512	-0.251	1.000
R67DUNE.GLF	271.300	0.349	0.390	0.561	-0.282	0.763