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Grain Size and Sorting in Modern Beach Sands

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ABSTRACT

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Grain size and sorting studies are of great importance in order to texturally characterize the sedimentary environments. These parameters are useful in order to characterize the dynamic beach environment, which is of potential interest for research on natural resources and to interpret analogous ancient sedimentary environments. The main scope of this work deals with the interactions, between grain size and sorting of beach sands and their possible relationship with the coastal plain width. More than 10 000 km of sandy littoral were covered through 274 beach locations: five regions in the Pacific and Gulf of California and four regions from the Caribbean and Gulf of Mexico. The samples were sieved and the grain size and sorting were obtained. The sands were mostly well sorted to moderately sorted and the more abundant classes were medium to fine sands. The average grain size decreases from inshore towards backshore; foreshore and backshore sands are better sorted than the inshore sands, the latter are probably greatly influenced by mixtures and variations in processes related to waves and currents. The sands of terrigenous beaches exhibit finer grain sizes than those from beaches of carbonated provinces. A relationship between the coastal plain width and the average grain size and sorting was found: better sorted and finer sands are associated with wider coastal plains. A statistical correlation between grain size and sorting is observed ($r^2 = 0.7957$) when their average values are plotted according to major physiographic coastal plain regions.

ADDITIONAL INDEX WORDS: *Terrigenous beaches, carbonated beach sands, Mexico, hybrid sands.*

INTRODUCTION

The grain size and sorting are textural parameters of modern sediments and constitute an important aid to infer analogous ancient sedimentary environments (FRIEDMAN, 1961; ANDREWS and VAN DER LINGEN, 1968; DAVID, 1970; DICKINSON, 1974; INGERSOLL, 1990). The beach is a very dynamic environment that is usually affected by longshore currents, waves, fluvial inputs, offshore currents, winds, *etc.* (KOMAR, 1976). The textural character of beach sands is sometimes associated with sea turtle pits and nesting (MORTIMER, 1990).

The study of modern beach sands is very useful for provenance studies on the coastal environment as well as to establish concentrations of minerals of economic interest (MERO, 1965; KUNZENDORF, 1986), because they are natural enrichments mostly associated with fine and very fine sands of high density.

How much is the relief related with the grain size of the beach sands? Is a wide coastal plain more related to fine beach sands than a narrower coastal plain? Do terrigenous beach sands have the same textural behavior as carbonated beach sands?

This paper deals with these questions and its main purpose is to search for a possible relationship between grain size and sorting in sands from the beach environment, and how the coastal plain may, or may not, be associated with preferential grain size and sorting parameters.

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STUDY AREA

The study area covers more than 10 000 km of the Mexican littoral (Figure 1), which is comprised between 15° and 32° north latitude and between 87° and 117° west longitude. Nine coastal plain regions are considered. They are physiografic regions adapted and modified from TAMAYO (1990) by CARRANZA-EDWARDS *et al.* (1996). These regions and some major geographical aspects are shown in Table 1. For detailed geological units see ORTEGA-GUTIERREZ *et al.* (1992). The narower coastal plains correspond to regions 6, 8 and 5, and the wider coastal plains are represented by regions 4, 3 and 1 (Table 1).

According to TAMAYO (1990), the climate ranges from arid to sub-humid (Table 1); with regions 5 and 6 as the driest and regions 2, 8, and 9 with sub-humid climate. Tectonic activity is higher in the western littoral and more stable in the Gulf of Mexico and Caribbean. The coastal plain region 4 has the lowest relief and corresponds to the carbonated Yucatan Platform. It should be mentioned that although region 3 is located in a passive margin, the main source of sediments is controlled by the Sierra Madre de Chiapas that was been uplifted after the subduction of Cocos Plate, which is responsible for the tectonic activity in regions 8 and 9. Dominant waves and currents are listed in Table 1. The coastline as-

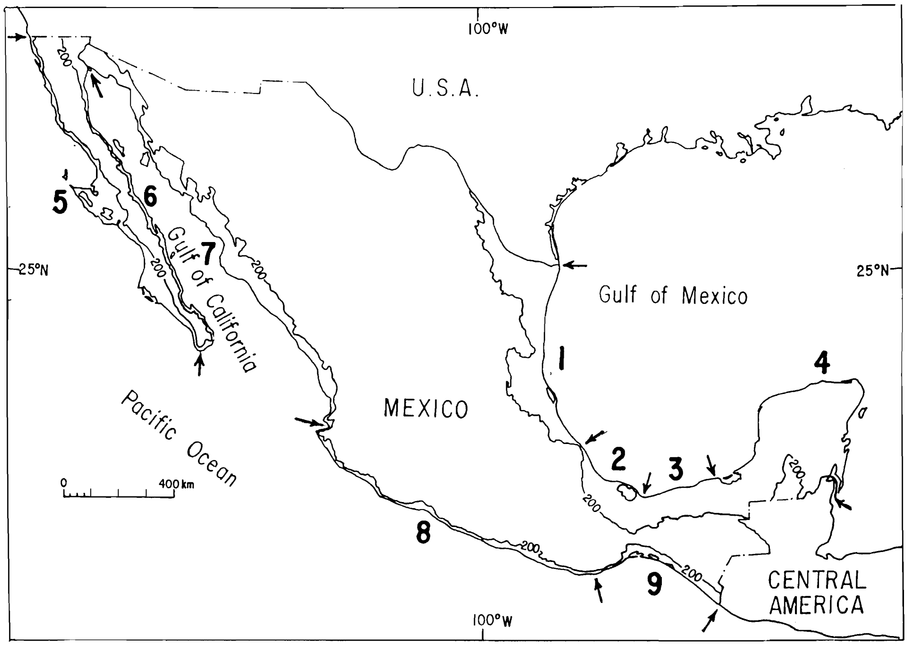

Fig. 1. Studied littoral. The selected regions are numbered from one to nine. Their names, width, number of beaches and number of samples are listed in table 1. The 200 m contour line delimits the coastal plain width.

sociated with regions 4 and 5 is affected by the stronger currents, namely the Yucatan Current and the California Current, respectively. Stronger waves are mostly related with regions 5, 8 and 9, which are controlled by open sea waves with big fetches (DAVIES, 1978).

METHODS

Eleven hundred beach sand samples were collected as part of the project "Sedimentology of Mexican Beaches" being carried out at the Insitute of Marine and Limnological Sciences (Instituto de Ciencias del Mar y Limnología). The numbers of considered regions, beach locations, and sand samples are depicted in Table 1. To eliminate the stratification effect, which will causes a natural increase in sorting values (PETTIJOHN *et al.*, 1972), only surficial sands were considered. For the distribution of sampled beaches see CARRANZA-EDWARDS *et al.* (1996). Gravel and silt samples were not considered. According to their beach position, samples were subdivided in inshore, foreshore and backshore beach subzones (KOMAR, 1976). According to their carbonate content, the limits were set at less than 15% of carbonates for terrigenous beaches and more than 85% for carbonated beaches.

The sand samples (terrigenous, carbonated or their combinations) were sieved following the techniques of FOLK (1974), the formulas and limits for grain size (Mz) and sorting (sigmma) were also from FOLK (1974).

Although there is a great complexity of the grain size distibution on the beaches because their geographic location depended on terrain accessibility, the general rule was to collect, when possible, more samples in the more extended beaches. That explains why the number of sand samples per beach varies from 5.36 for region 1 (northeast Gulf of Mexico) to 3.17 for region 9 (Gulf of Tehuantepec. It is suggested to consult the depositary table for more details on grain size

Table 1. *General characteristics of the studied regions.*

Region	Coastal plain (width in km)	Sampled Beaches	No. of Samples	Dominant Climate (1)	Waves Influence	Currents (2) Influence	Associated Relief
1	Northeast (103)	25	134	Sa to Sh	moderate	moderate	low
2	Lee (35)	11	45	Sub-humid	moderate	moderate	low
3	Southeast (115)	17	95	Sub-arid	moderate	moderate	low
4	Yucatan Platform (210)	25	102	Sa to Sh	low	high	low
5	West Californian slope (24)	25	108	dry	strong	high	moderate
6	East Californian slope (10)	25	97	dry	low	low to high	high
7	Northwest (45)	29	121	dry	moderate	low to high	moderate
8	Southwest (14)	100	344	Sub-humid	strong	low to mo	high
9	Gulf of Tehuantepec (27)	17	54	Sub-humid	strong	mo to high	mo to low

Sa = sub-arid, Sh = sub-humid, mo = moderate, (1) Tamayo, 1991; (2) Fernandez-Eguiarte et al., 1992a, 1992b.

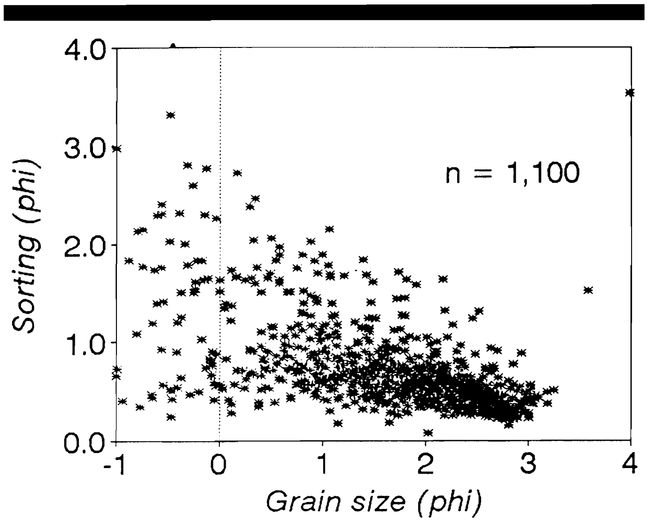

Fig. 2. Grain size and sorting for the total population of beach sand samples.

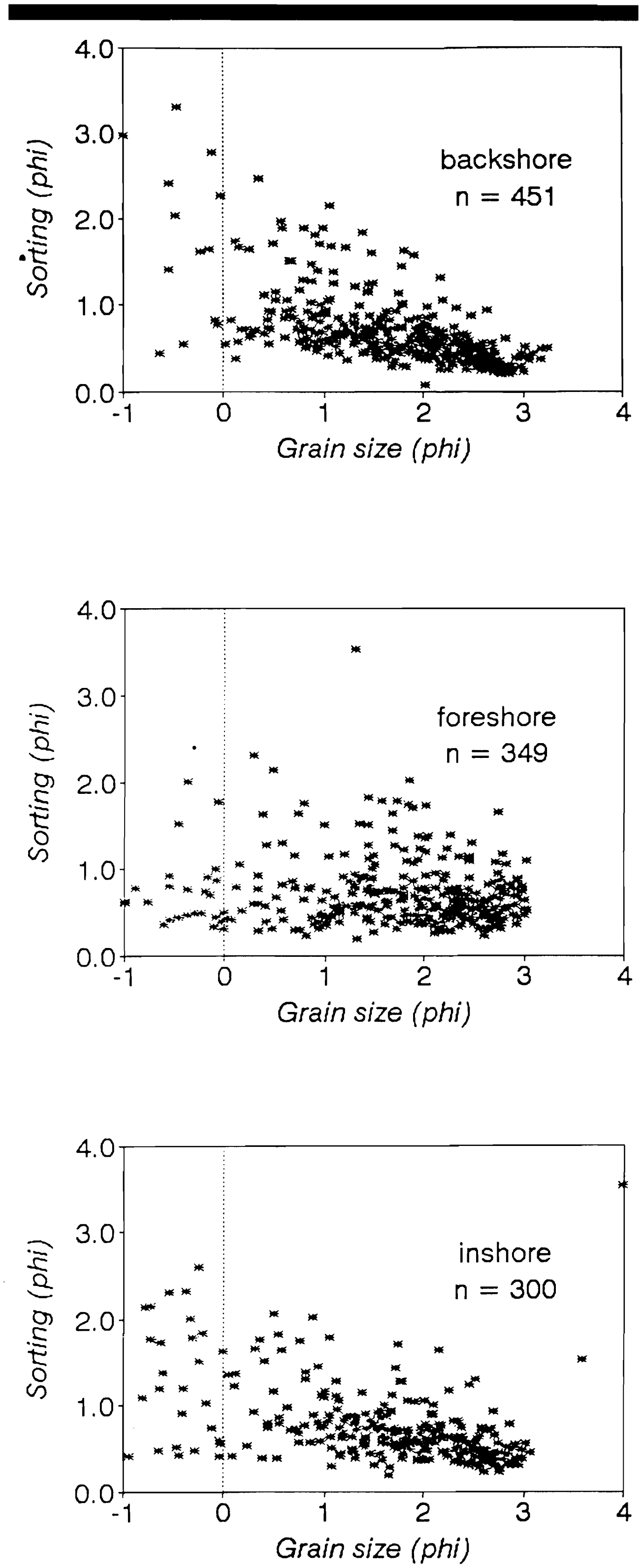

Fig. 3. Grain size and sorting for inshore, foreshore and backshore sand samples.

(mm) and σ ϕ for different values for backshore, foreshore and inshore of the nine geographic regions. The compositional character of the different beaches has been determined using as a reference the carbonate analysis on samples from the beach face slope for each beach locality.

RESULTS AND DISCUSSION

The total population of samples was plotted in an X-Y diagram (Figure 2). The mean graphic size (Mzϕ) was plotted on the X-axis and sorting (or standard graphic inclusive deviation) on Y-axis. Both calculated with formulas defined by FOLK (1974). Figure 2 presents a general picture of the dispersion data corresponding to the eleven hundred beach sand samples.

A higher abundance of data for the medium and fine sand classes (from 1 to 3 phi) can be observed. There is a greater range in the sorting variable for the very coarse and coarse sands, wheras the sorting values show less dispersion in medium and fine beach sands. Two exceptions are found on the right side of Figure 2, which belong to beach sands from region 4 (Figure 1), a carbonated province. These two samples correspond to very fine sands, with high carbonate content and show the heterogenous character of biogenous deposits (KENCH and MCLEAN, 1997).

According to the beach subzones (inshore, foreshore and backshore) the samples were grouped in Figure 3. A slight tendency is observed for inshore and backshore sands to have better sorting in the fine sizes than in coarse sands.

However, grain size (Mz ϕ) and sorting averages (Table 2) show that sorting is very similar for backshore and foreshore beach sands, which are better sorted than the beach sands from the inshore zone. This may be explained because, usually, there is more homogeneity in the proccesses that act on the foreshore (laminar wash and back-wash) and backshore (mostly soft wind action). In contrast, at the inshore subzone there is more turbulence generated by the breaking waves

Table 2. *Grain size and sorting (Subzones).*

	Mz ϕ		σϕ	
Subzones	Avg.	S.D.	Avg.	S.D.
Inshore	1.67	0.96	0.76	0.45
Foreshore	1.73	0.92	0.64	0.38
Backshore	1.81	0.83	0.66	0.43

and the longshore currents. Apparently there is a decrease in energy from sea to land; as implied by the average coarse grain sizes found for the inshore samples (Table 2), whereas finer average grain sizes were gradually found in sand populations from foreshore to backshore subzones. Figure 4 shows the general dominance expressed by the averages: inshore (n = 300 samples), foreshore (n = 349 samples) and backshore (n = 451 samples); these averages reflect that energy levels increase with increasing grain size. Apparently, increases in mixing processes induce an increase in sorting values, indicating bad sorting in the beach sands.

The average sorting value found for the analyzed inshore beach sands is higher (0.76 ϕ, with a standard deviation of 0.45ϕ) than the range (0.3 to 0.6 ϕ) suggested by FOLK and ROBLES (1964) for breaking waves zones.

To demonstrate differences in the grain size and sorting tendencies, according to terrigenous or carbonated beach sands, four diagrams (Figure 5) were constructed. Although the studied beaches have mostly a terrigenous character, these X-Y diagrams show that the beach sands have a general tendency for well sorted particles in fine sand ranges. As seen

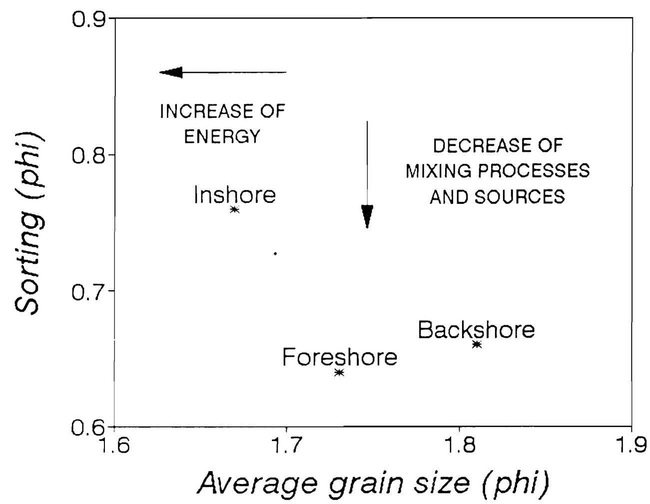

Fig. 4. Average values of grain size and sorting for beach subzones.

in Table 3, the sands with greater terrigenous components average finer sizes than the sands of carbonated beaches.

It is interesting to observe that the terrigenous beaches have sands with the lowest average in sorting values, corresponding consequently to better sorted sands, wheras hybrid sands (admixtures of terrigenous and carbonated beach sands) are influenced by biogenic processes. The hybrid sands are usually mixtures of biogenic particles of low density and coarse sizes, thus having an equivalent hydraulic diameter

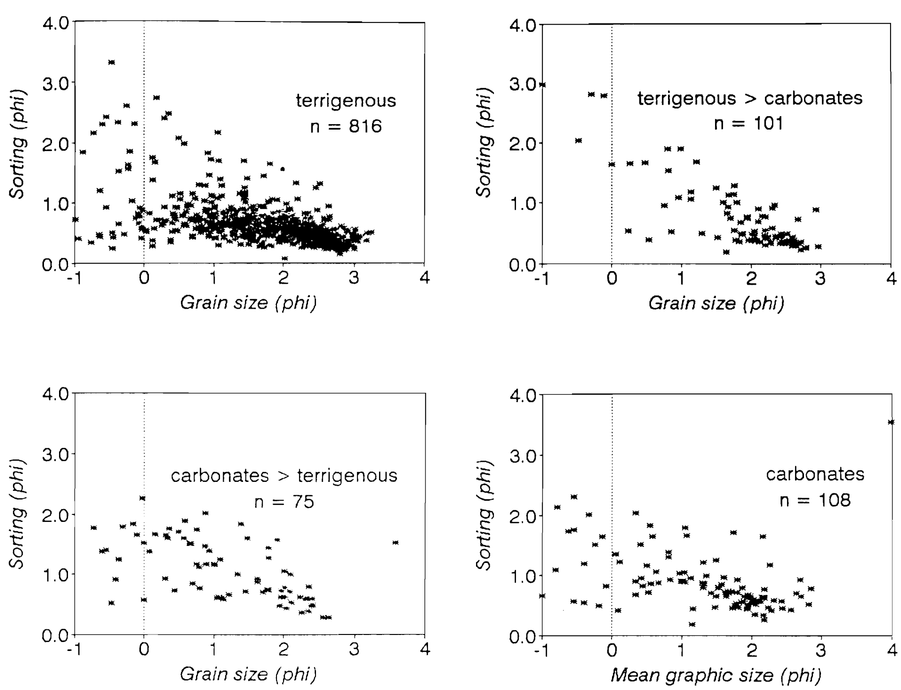

Fig. 5. Dispersion diagrams for terrigenous, carbonated, and mixtures of terrigenous and carbonated beach sands.

Table 3. *Grain size and sorting (Sub-types).*

	Mz ϕ		σϕ	
Types	Avg.	S.D.	Avg.	S.D.
Terrigenous	1.83	0.85	0.61	0.35
Terr. > Carb.	1.93	0.81	0.70	0.56
Carb. > Terr.	1.16	0.95	1.08	0.49
Carbonates	1.31	0.97	0.90	0.51

to that of the small terrigenous particles with higher densities (KOMAR, 1976).

Is there a relationship between the width of the coastal plain and the grain size of beach sands? On wide coastal plains an effective abrasion of the particles transported to the sea occurs, generating finer sediments in beach sands. As seen in Figure 6, fine size particles are associated with wider coastal plains in the nine selected regions (Figure 1, Table 1). If beach sands from the carbonated province (region 4) are ignored, this relationship is even better, producing an exponential tendency when the coastal plain width is plotted against mean graphic size (Mz ϕ).

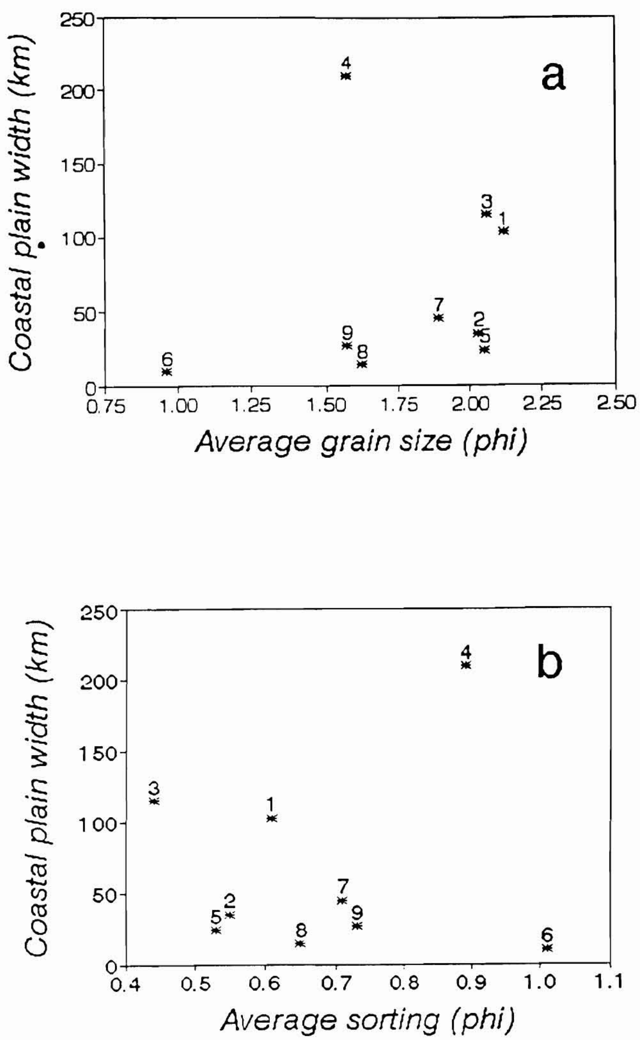

Fig. 6. The grain size (Mzϕ) and sorting (σϕ) variations according to the coastal plain width. Asterisks represent each one of the nine considered coastal regions (See Fig. 1).

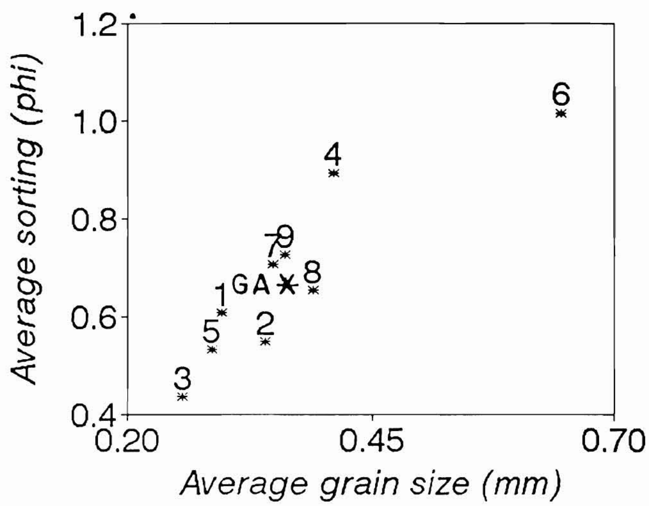

Fig. 7. Grain size (mm) and sorting (σϕ) averages (by regions). TA = total average (grain size = 0.3732 mm, sorting = 0.6761 σϕ).

An inverse image is observed (Figure 6) with the regional average sorting value, which exhibits a better sorting average for beach sands in the wider coastal plains. Wider coastal plains yield mostly fine size particles, which are associated with better sorted debris. This relationship between grain size and sorting is clearly shown in Figure 7. Here, the X-axis represents the average mean graphic size, but expressed in millimeters (Table 4). Under these conditions the exponential character from Figure 6, i.e., the graph in Figure 7, has a linear tendency; where the total average (TA) shows that regions one, two, three, and five are finer and better sorted (compared to its own population average) than the resting regions. Region three is the finest and better sorted. Why? This region is found in a passive margin, a sub-humid climate, associated to a wide coastal plain, which is the northern frontier of a high relief zone (the Sierra Madre de Chiapas Range) that is also the zone with the highest precipitation rates in Mexico. Under these conditions the terrestrial debris supplied to the sea in this region are subjected to agressive chemical weathering; according to NESBITT and

Table 4. *Average grain size and sorting.*

Region	Mz ϕ	Mz (mm)	σϕ
1	2.1176	0.2959	0.6070
2	2.0318	0.3413	0.5491
3	2.0617	0.2563	0.4359
4	1.5676	0.4100	0.8922
5	2.0506	0.2857	0.5327
6	0.9615	0.6460	1.0134
7	1.8888	0.3488	0.7065
8	1.6241	0.3899	0.6535
9	1.5712	0.3617	0.7256

YOUNG (1996), sand attrition is favored by chemical weathering. Region 3 is also affected by physical abrasion because the particles are subjected to a long transport on its wide coastal plain with moderate wave regime. In contrast, region six is the worst sorted and with coarser sizes. This region has the narrowest coastal plain associated with weak chemical (arid province) and physical (short transport debris from land to sea, and mostly weak waves in a protected gulf) action. The nine regions define a linear regression (Figure 7) with a significant r^2 (0.7957).

CONCLUSIONS

1) There is a preference, in the analyzed littoral, for medium and fine sands, with a higher dispersion of data for coarse and very coarse sand classes. Most sands are concentrated in the range of well sorted to moderately sorted. The total average value for the eleven hundred beach sands show a grain size of 0.3732 mm (1.7434 ϕ) and a sorting of 0.6761 ϕ.

2) The average grain size of the beach sands diminishes from sea to land: that is, in the inshore-foreshore-backshore subzones direction, suggesting that the energy in the beach environment decreases in the same direction. The inshore has sands that are less well sorted than those from the other subzones, probably because there is a great variability in waves and currents in the inshore subzone.

3) The average terrigenous and terrigenous>carbonate beach sands consist of finer grain sizes than carbonates>terrigenous and carbonate beach sands, because the former can reach the hydraulic equivalent diameter of finer sizes, that usually have higher densities than the latter.

4) In general, the sands from the wider coastal plains have, in average, finer grain sizes and are better sorted, because the detritus have longer periods of abrasion; wheras the narrower coastal plains have a tendency for coarser and worse sorted beach sands.

5) The nine selected regions show that their grain size and sorting averages have a good correlation value (r^2 = 0.7957). This evidences that there is a tendency for the fine grain beach sands to be better sorted.

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LITERATURE CITED

ANDREWS, P. B. and VAN DER LINGEN, G. J., 1968. Environmentally significant sedimentologic characteristics of beach sands. New Zealand. *Jour. Geol. and Geophys.,* 12, 119–137.

CARRANZA-EDWARDS, A.; ROSALES-HOZ, L., and SANTIAGO-PEREZ, S., 1996. A reconnaissance study of carbonates in Mexican beach sands. *Sediment. Geol.,* 101, 261–268.

CRONAN, D.S. (1980) *Underwater Minerals.* London: Academic, 362p.

DAVID, J. C., 1970. Information contained in sediment-size analysis. *Mathematical Geology,* 2(2), 105–112.

DAVIS, R. A. JR., 1978. *Coastal Sedimentary Environments.* New York: Springer-Verlag, 420p.

DICKINSON, WM. R., 1974. Plate Tectonics and Sedimentation. *In:* DICKINSON, W.R., (ed.), *Tectonics and Sedimentation,* Soc. Econ. Paleon. Mineral., Special Pub. (22), pp. 1–27.

EMERY K. O., 1978. Grain Size in Laminae of Beach Sand. *Journal Sedimentary Petrology,* 48 (4), 1203–1212.

FERNANDEZ-EGUIARTE, A.; GALLEGOS-GARCIA, A., and ZAVALA-HIDALGO, J., 1992a. Oceanografía Física 1 (Masas de agua y mareas de los mares mexicanos). *Atlas Nacional de México,* (Sheet IV.9.1., Summer). Inst. de Geografía, Univ. Nal. Autón. México.

FERNANDEZ-EGUIARTE, A.; GALLEGOS-GARCIA, A., and ZAVALA-HIDALGO, J., 1992b. Oceanografía Física 2 (Masas de agua y mareas de los mares mexicanos). *Atlas Nacional de México,* (Sheet IV.9.2., Winter). Inst. de Geografía, Univ. Nal. Autón. México.

FOLK, R.L. and ROBLES, R., 1964. Carbonate sands of Isla Perez, Alacran Reef complex, Yucatan. *Jour. Geology,* 72:255–292.

FOLK, R. L., 1974. *Petrology of Sedimentary Rocks.* Austin, Texas: Hemphill, Austin, Texas, 182p.

FRIEDMAN G. M., 1961. Distinction between dune, beach, and river sands from their textural characteristics. *Journal Sedim. Petrol.,* 31(4), 514–529.

INGERSOLL, R. V., 1990. Actualistic sandstone petrofacies: Discriminating modern and ancient source rocks. *Geology,* 18, 733–736.

JOPLING, A. V., 1964. Interpreting the concept of sedimentation unit. *Journal Sedim. Petrol.,* 34(1), 165–172.

KENCH, P. S. and MCLEAN, R. F., 1997. A comparison of settling and sieve techniques for the analysis of bioclastic sediments. *Sedimentary Geology,* 109, 111–119.

KOMAR, P.D., 1976. *Beach Processes and Sedimentation.* Englewood Cliffs, New Jersey: Prentice-Hall, 429p.

KUNZENDORF, H., 1986. *Marine Mineral Exploration.* New York: Elsevier, 300p.

MERO, J. L., 1965. *The Mineral Resources of the Sea.* New York: Elsevier, 312p.

MORTIMER, J., 1990. The influence of beach sand characteristics on the nesting behavior and clutch survival of green turtles (*Chelonia mydas*): *Copeia,* 3, 802–817.

NESBITT, H. W. and YOUNG G. M., 1996. Petrogenesis of sediments in the absence of chemical weathering: effects of abrasion and sorting on bulk composition and mineralogy. *Sedimentology*, 43, 341–358.

ORTEGA-GUTIERREZ, F.; MITRE-SALAZAR, L.M.; ROLDAN-QUINTANA, J.; ARANDA-GOMEZ, J., MORAN-ZENTENO, D., and NIETO-SAMANIEGO, A., 1992. *Carta Geológica de la República Mexicana.* Scale 1:2, 000,000. Inst. Geol., Univ. Nal. Autón. México.

PETTIJOHN, F. J.; POTTER, P. E., and SIEVER, R., 1972. *Sand and Sandstone.* New York: Springer-Verlag, 618p.

TAMAYO, J. L., 1970. *Geografía Moderna de México.* Editorial F. Trillas, S.A., México, 390p.

Depositary Table. *Grain size and sorting for beach zones and type of sediments.*

Region 1	Mz (mm)	σϕ	Zone	Type
253.1	0.28	0.68	a	tb
253.2	0.45	1.05	a	tb
253.3	0.24	0.38	a	tb
253.4	0.24	0.39	b	tb
253.5	0.28	0.36	b	tb
253.6	0.25	0.39	c	tb
253.7	0.24	0.40	c	tb
253.8	0.22	0.42	c	tb
254.1	0.24	0.47	a	tb
254.2	0.26	0.40	b	tb
254.3	0.19	0.46	c	tb
254.4	0.26	0.40	c	tb
255.1	0.24	0.54	a	tb
255.2	0.23	0.37	b	tb
255.3	0.16	0.30	c	tb
255.4	0.18	0.34	c	tb
256.1	0.29	0.39	a	tb
256.2	0.22	0.32	b	tb
256.3	0.18	0.37	c	tb
256.4	0.17	0.36	c	tb
257.1	0.28	0.50	a	tb
257.2	0.20	0.38	b	tb
257.3	0.16	0.33	c	tb
257.4	0.17	0.39	c	tb
257.5	0.16	0.44	c	tb
258.1	0.22	0.78	a	tb
258.2	0.23	0.69	a	tb
258.3	0.17	0.49	a	tb
258.4	0.31	0.93	a	tb
258.5	0.18	0.47	b	tb
258.6	0.17	0.37	c	tb
258.7	0.15	0.23	c	tb
259.1	0.17	0.38	a	tb
259.2	0.16	0.31	b	tb
259.3	0.14	0.26	c	tb
259.4	0.14	0.27	c	tb
260.1	0.16	0.45	a	tb
260.2	0.17	0.41	b	tb
260.3	0.13	0.28	c	tb
260.4	0.19	0.49	c	tb
261.1	0.15	0.27	a	t
261.2	0.15	0.26	b	t
261.3	0.14	0.23	c	t
261.4	0.13	0.24	c	t
261.5	0.14	0.21	c	t
262.1	0.16	0.47	a	t
262.2	0.13	0.23	b	t
262.3	0.14	0.25	c	t
263.1	0.14	0.34	a	t
263.2	0.14	0.34	b	t
263.3	0.14	0.24	c	t
263.4	0.14	0.23	c	t
264.1	0.16	0.38	a	t
264.2	0.16	0.45	b	t
264.3	0.16	0.35	c	t
264.4	0.15	0.23	c	t
264.5	0.53	1.82	c	t
265.1	1.74	1.09	a	b
265.2	1.14	0.50	b	b
265.3	0.65	1.06	c	b
265.4	1.32	0.55	c	b
265.5	0.74	0.83	c	b
266.1	0.16	0.36	a	tb
266.2	0.19	0.43	a	tb
266.3	0.35	1.24	b	tb
266.4	0.16	0.31	c	tb

Depositary Table. *Continued.*

Region 1	Mz (mm)	σϕ	Zone	Type
266.5	0.16	0.39	c	tb
267.1	0.16	0.73	a	tb
267.2	0.15	0.37	a	tb
267.3	0.72	1.65	b	tb
267.4	0.29	1.01	c	tb
268.1	0.16	0.71	a	t
268.2	0.90	1.66	b	t
268.3	0.19	0.33	c	t
268.4	0.47	1.39	c	t
268.5	0.18	0.50	c	t
268.6	0.18	0.52	c	t
269.1	1.06	0.83	b	b
269.2	0.34	0.85	c	b
269.3	0.56	0.93	c	b
269.4	0.40	0.79	c	b
270.1	0.20	0.91	b	tb
270.2	0.15	0.33	c	tb
270.3	1.09	2.77	c	tb
271.1	0.79	1.60	b	bt
271.2	1.45	1.41	c	bt
271.4	0.54	1.47	c	bt
271.5	0.90	1.67	c	bt
271.6	0.36	1.61	c	bt
272.1	0.45	1.18	b	tb
272.3	0.84	1.64	c	tb
273.1	0.16	0.76	b	t
273.2	0.18	0.88	c	t
273.3	0.16	0.94	c	t
273.4	0.22	1.32	c	t
273.5	0.15	0.25	c	t
274.1	1.12	1.84	b	bt
274.2	0.16	0.29	c	bt
274.3	0.38	1.84	c	bt
274.4	0.29	1.45	c	bt
274.5	0.64	1.51	c	bt
274.6	0.27	1.58	c	bt
274.7	0.17	0.28	c	bt
275.1	0.15	0.28	b	t
275.2	0.15	0.24	c	t
275.3	0.15	0.26	c	t
275.4	0.15	0.26	c	t
275.5	0.16	0.29	c	t
275.6	0.15	0.28	c	t
276.1	0.16	0.33	b	t
276.2	0.14	0.26	c	t
276.3	0.15	0.28	c	t
276.4	0.15	0.27	c	t
276.5	0.48	2.15	c	t
276.6	0.16	0.30	c	t
276.7	0.17	0.29	c	t
277.1	0.14	0.30	b	t
277.2	0.16	0.33	c	t
277.3	0.16	0.28	c	t
277.4	0.16	0.45	c	t
277.5	0.17	0.32	c	t
277.6	0.16	0.31	c	t
277.7	0.16	0.28	c	t
277.8	0.24	0.08	c	t
277.9	0.16	0.30	c	t
277.10	0.16	0.32	c	t
277.11	0.15	0.31	c	t
277.12	0.16	0.25	c	t
277.13	0.18	0.26	c	t
277.14	0.15	0.29	c	t
277.15	0.15	0.27	c	t
277.16	0.17	0.25	c	t
277.17	0.15	0.23	c	t
277.18	0.15	0.28	c	t

Depositary Table. *Continued.*

Region 2	Mz (mm)	σφ	Zone	Type
242.1	0.25	0.37	a	t
242.2	0.20	0.38	b	t
242.3	0.16	0.35	c	t
242.4	0.18	0.42	c	t
243.1	1.92	0.41	a	t
243.2	1.38	0.25	b	t
243.3	1.56	0.44	c	t
243.4	0.70	1.06	c	t
244.1	0.18	0.59	a	t
244.2	0.18	0.59	b	t
244.3	0.14	0.28	c	t
244.4	0.14	0.29	c	t
245.1	0.13	0.36	a	t
245.2	0.14	0.16	b	t
245.3	0.12	0.23	c	t
246.1	0.19	0.64	a	t
246.2	0.18	0.48	b	t
246.3	0.19	0.34	c	t
246.4	0.18	0.59	c	t
246.5	0.15	0.27	c	t
246.6	0.23	0.87	c	t
247.1	0.31	0.94	a	t
247.2	0.18	0.43	b	t
247.3	0.24	0.98	c	t
247.4	0.18	0.38	c	t
248.1	0.18	0.37	a	tb
248.2	0.16	0.31	b	tb
248.3	0.16	0.38	c	tb
249.1	0.85	0.54	a	tb
249.2	1.23	2.81	b	tb
249.3	0.43	1.67	c	tb
249.4	0.30	1.13	c	tb
250.1	0.17	0.29	a	t
250.2	0.16	0.30	b	t
250.3	0.25	0.66	c	t
250.4	0.19	0.34	c	t
251.1	0.22	0.47	a	tb
251.2	0.21	0.41	b	tb
251.3	0.17	0.33	c	tb
251.4	0.16	0.35	c	tb
252.1	0.29	0.55	a	tb
252.2	0.20	0.46	b	tb
252.3	0.21	0.34	c	tb
252.4	0.21	0.45	c	tb
252.5	0.19	0.45	c	tb
Region 3	**Mz (mm)**	**σφ**	**Zone**	**Type**
225.1	0.17	0.50	a	t
225.2	0.16	0.34	a	t
225.3	0.17	0.39	b	t
225.4	0.15	0.35	c	t
225.5	0.16	0.27	c	t
225.6	0.16	0.34	c	t
226.1	0.21	0.42	a	t
226.2	0.20	0.35	a	t
226.3	0.20	0.29	b	t
226.4	0.20	0.32	c	t
226.5	0.13	0.29	c	t
227.1	0.17	0.45	a	t
227.2	0.18	0.44	a	t
227.3	0.16	0.50	a	t
227.4	0.18	0.32	a	t
227.5	0.19	0.32	b	t
227.6	0.12	0.37	c	t
228.1	0.13	0.55	a	t
228.2	0.17	0.64	a	t
228.3	0.15	0.38	b	t

Depositary Table. *Continued.*

Region 3	Mz (mm)	σφ	Zone	Type
228.4	0.18	0.64	c	t
229.1	0.17	0.35	a	t
229.2	0.17	0.32	b	t
229.3	0.17	0.30	c	t
229.4	0.19	0.43	c	t
230.1	0.18	0.42	a	t
230.2	0.17	0.30	a	t
230.3	0.17	0.29	b	t
230.4	0.16	0.40	c	t
230.5	0.20	0.42	c	t
230.6	0.17	0.54	c	t
230.7	0.15	0.31	c	t
231.1	0.17	0.40	a	t
231.2	0.21	0.64	a	t
231.3	0.19	0.33	b	t
231.4	0.17	0.37	c	t
231.5	0.16	0.28	c	t
232.1	0.29	0.44	a	t
232.2	0.26	0.38	a	t
232.3	0.38	0.32	b	t
232.4	0.20	0.31	c	t
232.5	0.21	0.39	c	t
233.1	0.20	0.38	a	t
233.2	0.35	0.31	a	t
233.3	0.23	0.33	b	t
233.4	0.25	0.36	c	t
233.5	0.22	0.33	c	t
233.6	0.21	0.42	c	t
234.1	0.41	0.47	a	t
234.2	0.32	0.37	b	t
234.3	0.31	0.34	c	t
234.4	0.31	0.28	c	t
234.5	0.24	0.41	c	t
234.6	0.18	0.38	c	t
235.1	0.41	0.50	a	t
235.2	0.33	0.37	a	t
235.3	0.26	0.34	b	t
235.4	0.30	0.37	c	t
235.5	0.35	0.38	c	t
235.6	0.23	0.40	c	t
236.1	0.34	0.45	a	t
236.2	0.38	0.58	a	t
236.3	0.40	0.39	a	t
236.4	0.30	0.26	b	t
236.5	0.29	0.30	c	t
237.1	0.46	1.11	a	t
237.2	0.38	0.56	a	t
237.3	0.38	0.90	a	t
237.4	0.61	0.73	a	t
237.5	0.24	0.52	b	t
237.6	0.35	0.46	c	t
237.7	0.33	0.38	c	t
237.8	0.37	0.48	c	t
238.1	0.24	0.89	a	t
238.2	0.39	1.14	a	t
238.3	0.21	0.44	a	t
238.4	0.18	0.29	b	t
238.5	0.23	0.49	c	t
238.6	0.28	0.29	c	t
238.7	0.32	0.50	c	t
239.1	0.29	0.52	a	t
239.2	0.30	0.58	a	t
239.3	0.45	0.42	a	t
239.4	0.34	0.40	b	t
239.5	0.30	0.45	c	t
239.6	0.25	0.40	c	t
239.7	0.26	0.42	c	t
239.8	0.26	0.42	c	t

Depositary Table. *Continued.*

Region 3	Mz (mm)	σφ	Zone	Type
240.1	0.23	0.32	b	t
240.2	0.21	0.39	c	t
240.3	0.23	0.44	c	t
240.4	0.22	1.05	c	t
241.1	0.48	0.30	a	t
241.3	0.53	0.47	c	t
241.4	0.52	0.52	c	t
Region 4	Mz (mm)	σφ	Zone	Type
200.1	0.08	1.52	a	bt
200.5	0.62	0.84	c	bt
201.1	0.22	0.64	a	b
201.2	0.48	0.89	a	b
201.3	0.32	0.74	b	b
201.4	0.27	0.65	b	b
201.5	0.31	0.73	c	b
201.6	0.25	0.60	c	b
202.1	0.25	1.05	a	bt
202.2	0.25	0.78	a	bt
202.3	0.50	1.16	a	bt
202.4	0.81	0.92	a	bt
202.5	0.26	0.62	b	bt
202.6	0.46	0.61	c	bt
203.1	0.21	1.18	a	b
203.2	0.46	0.96	a	b
203.3	0.17	0.43	b	b
203.4	0.18	0.46	c	b
204.1	0.16	0.70	a	b
204.2	0.45	0.44	a	b
204.3	0.36	0.47	b	b
204.4	0.29	0.54	c	b
205.1	0.69	1.83	a	b
205.2	0.94	0.42	a	b
205.3	0.45	0.18	b	b
205.4	0.33	0.71	c	b
206.1	0.22	0.76	a	b
206.2	0.41	0.88	a	b
206.3	0.26	0.51	b	b
206.4	0.30	0.46	c	b
206.5	0.28	0.56	c	b
207.1	0.20	0.60	a	bt
207.2	0.31	0.70	a	bt
207.3	0.19	0.40	b	bt
207.4	0.21	0.37	c	bt
208.3	0.22	0.26	c	b
208.4	0.22	0.33	c	b
208.1	0.22	0.62	a	b
208.2	0.24	0.35	b	b
209.1	0.30	1.71	a	b
209.2	1.32	1.20	a	b
209.3	0.29	0.92	b	b
209.4	0.20	0.59	c	b
209.5	0.26	0.68	c	b
209.6	0.23	0.58	c	b
210.1	1.73	2.13	a	b
210.3	0.75	0.96	b	b
210.4	0.35	0.80	c	b
210.5	0.36	0.65	c	b
211.1	0.21	0.47	a	b
211.2	0.71	1.16	a	b
211.3	0.23	0.57	b	b
211.4	0.32	0.69	c	b
211.5	0.26	0.45	c	b
211.6	0.24	0.52	c	b
212.1	0.24	0.58	a	b
212.2	1.54	1.74	a	b
212.3	0.29	0.72	b	b

Depositary Table. *Continued.*

Region 4	Mz (mm)	σφ	Zone	Type
212.4	0.25	0.54	c	b
212.5	0.26	0.61	c	b
212.6	0.27	0.57	c	b
213.1	0.19	0.57	a	b
213.3	0.27	0.80	b	b
213.4	0.25	0.60	c	b
213.5	0.20	0.41	c	b
214.1	0.15	0.92	a	b
214.2	1.46	2.31	a	b
214.3	0.33	0.97	b	b
214.4	0.25	0.66	c	b
215.1	0.76	1.51	a	b
215.2	0.48	1.66	b	b
215.3	0.26	0.46	c	b
216.1	0.06	3.53	a	b
217.1	0.67	1.60	b	bt
217.2	0.62	1.51	c	bt
218.1	0.57	1.30	a	b
218.2	0.40	0.86	a	b
218.3	0.32	0.65	b	b
218.4	0.29	0.49	c	b
219.1	0.15	0.65	a	b
219.2	0.93	1.22	a	b
219.3	0.51	1.03	b	b
219.4	0.49	0.90	c	b
220.1	1.26	2.01	a	b
220.3	0.34	0.80	b	b
220.4	0.49	1.04	c	b
221.1	0.23	1.01	a	bt
221.2	1.24	1.79	a	bt
221.3	0.26	0.48	b	bt
221.4	0.52	1.40	c	bt
221.5	0.59	1.18	c	bt
222.1	0.14	0.53	a	b
222.3	0.37	0.70	b	b
222.4	0.23	0.64	c	b
222.5	0.36	1.25	c	b
223.1	0.22	1.64	a	b
223.2	0.57	1.39	a	b
223.3	0.25	0.57	b	b
223.4	0.31	0.70	b	b
223.5	0.39	0.99	c	b
224.1	0.54	2.02	a	bt
224.3	0.23	0.54	b	bt
Region 5	Mz (mm)	σφ	Zone	Type
1.1	0.24	0.49	a	t
1.2	0.25	0.47	b	t
1.3	0.24	0.43	b	t
1.4	0.32	0.50	c	t
2.1	0.19	0.40	a	t
2.2	0.21	0.37	b	t
2.3	0.20	0.43	b	t
2.4	0.24	0.37	c	t
2.5	0.20	0.39	c	t
3.1	0.19	0.33	a	t
3.2	0.19	0.30	b	t
3.3	0.19	0.31	b	t
3.4	0.18	0.39	b	t
3.5	0.18	0.37	c	t
4.1	0.19	0.33	a	t
4.2	0.19	0.28	b	t
4.3	0.20	0.28	b	t
4.4	0.21	0.33	b	t
4.5	0.20	0.42	c	t
4.6	0.20	0.41	c	t
5.1	0.17	0.34	a	t

Depositary Table. *Continued.*

Region 5	Mz (mm)	σϕ	Zone	Type
5.2	0.16	0.36	b	t
5.3	0.15	0.31	b	t
5.4	0.17	0.32	c	t
5.5	0.17	0.30	c	t
5.6	0.16	0.37	c	t
6.1	0.23	0.56	a	t
6.2	0.22	0.45	b	t
6.3	0.28	0.47	b	t
6.4	0.25	0.59	b	t
6.5	0.25	0.64	c	t
6.6	0.36	0.87	c	t
7.1	0.68	0.78	b	t
8.1	0.26	0.46	a	t
8.2	0.24	0.41	b	t
8.3	0.21	0.39	b	t
8.4	0.19	0.46	c	t
9.1	0.35	0.80	a	t
9.2	0.30	0.47	b	t
9.3	0.29	0.56	b	t
9.4	0.37	1.68	b	t
9.5	0.35	0.72	c	t
9.6	0.51	1.01	c	t
10.1	0.15	0.30	a	t
10.2	0.14	0.28	b	t
10.3	0.14	0.31	b	t
10.4	0.15	0.34	c	t
10.5	0.14	0.29	c	t
11.1	0.16	0.24	a	t
11.2	0.18	0.32	b	t
11.3	0.20	0.37	b	t
11.4	0.19	0.33	c	t
12.1	0.30	1.44	a	t
12.2	0.82	2.38	b	t
13.1	0.13	0.31	a	t
13.2	0.12	0.27	b	t
13.3	0.13	0.27	b	t
13.4	0.15	0.29	b	t
13.5	0.13	0.49	b	t
14.1	0.15	0.31	a	t
14.2	0.15	0.29	b	t
14.3	0.15	0.26	b	t
14.4	0.15	0.49	c	t
15.1	0.12	0.46	a	t
15.2	0.12	0.43	b	t
15.3	0.41	0.78	b	t
15.4	0.54	0.84	c	t
16.1	0.15	0.23	a	t
16.2	0.15	0.24	b	t
16.3	0.14	0.22	b	t
16.4	0.15	0.22	c	t
16.5	0.14	0.21	c	t
17.1	0.71	2.06	a	t
17.3	0.11	0.38	c	t
18.1	0.78	1.76	a	bt
18.2	0.40	1.01	b	bt
18.3	0.33	0.92	c	bt
19.1	0.14	0.44	a	t
19.2	0.13	0.32	b	t
19.3	0.13	0.36	b	t
19.4	0.14	0.31	c	t
20.1	0.19	0.75	a	t
20.2	0.15	0.41	b	t
20.3	0.17	0.34	b	t
20.4	0.18	0.40	c	t
21.1	0.21	0.64	a	t
21.2	0.22	0.70	a	t
21.3	0.22	0.71	b	t

Depositary Table. *Continued.*

Region 5	Mz (mm)	σϕ	Zone	Type
21.4	0.18	0.41	b	t
21.5	0.16	0.45	c	t
22.1	0.32	0.29	a	t
22.2	0.24	0.68	b	t
22.3	0.28	0.44	c	t
23.1	0.49	0.83	a	t
23.2	0.45	0.63	b	t
23.3	0.50	0.58	b	t
23.4	0.58	0.59	c	t
23.5	0.55	0.54	c	t
24.1	0.68	0.79	a	t
24.2	0.47	0.64	b	t
24.3	0.50	0.64	b	t
24.4	0.52	0.52	c	t
24.5	0.55	0.72	c	t
25.1	0.72	0.54	b	t
25.2	0.76	0.52	b	t
25.3	1.04	0.76	c	t
25.4	0.81	0.70	c	t
25.5	0.57	0.62	c	t
Region 6	**Mz (mm)**	**σϕ**	**Zone**	**Type**
26.2	1.69	0.35	b	t
72.1	1.01	0.56	a	t
27.2	1.05	0.67	b	t
27.3	1.06	0.82	c	t
27.4	0.76	1.11	c	t
28.2	1.06	0.80	b	t
28.3	0.62	0.43	b	t
28.4	0.73	0.55	c	t
28.5	0.86	0.72	c	t
29.1	0.97	1.35	a	b
29.2	0.67	1.64	a	b
29.3	1.46	1.76	b	b
29.4	0.29	0.47	b	b
29.5	0.40	1.21	c	b
30.1	0.29	1.27	a	bt
30.2	0.25	0.63	b	bt
30.3	0.24	0.44	c	bt
31.1	1.16	1.84	a	t
31.2	0.26	0.75	b	t
31.3	0.27	0.48	c	t
32.1	0.17	0.61	a	t
32.2	0.16	0.51	b	t
32.3	0.21	0.49	b	t
32.4	0.19	0.45	c	t
33.1	1.56	1.19	a	t
33.2	0.36	1.40	b	t
33.3	0.48	1.69	c	t
33.4	0.16	0.39	c	t
34.1	1.03	0.42	a	t
34.2	1.04	0.91	b	t
34.3	0.66	0.84	c	t
34.4	0.58	1.29	c	t
35.2	1.66	2.15	a	t
35.3	1.52	2.29	b	t
35.4	0.67	1.97	c	t
35.5	0.78	2.46	c	t
36.1	0.81	1.65	a	bt
36.2	0.95	1.39	b	bt
36.3	0.67	1.89	c	bt
36.4	1.02	2.27	c	bt
37.1	0.48	1.78	a	b
37.2	0.80	0.90	b	b
37.3	0.50	0.90	c	b
37.4	0.80	2.04	b	b
37.5	0.14	0.78	a	b

Depositary Table. *Continued.*

Region 6	Mz (mm)	σφ	Zone	Type
38.1	0.68	0.86	a	b
38.2	0.80	0.68	b	b
38.3	0.70	0.72	b	b
38.4	0.63	0.87	c	b
39.1	1.18	1.51	a	b
39.2	2.00	0.66	b	b
39.3	1.45	0.57	b	b
39.4	1.10	1.64	c	b
40.1	0.59	1.75	a	bt
40.2	0.58	1.12	b	bt
40.3	0.49	1.18	b	bt
40.4	0.47	1.26	c	bt
41.1	1.66	1.77	a	bt
41.2	1.07	1.65	b	bt
41.3	0.54	1.17	b	bt
41.4	0.71	1.70	c	bt
42.1	0.31	0.74	a	tb
42.2	0.25	0.48	b	tb
42.3	0.19	0.33	b	tb
43.1	0.23	0.90	a	tb
43.2	0.26	0.76	b	tb
43.3	0.26	0.74	b	tb
43.4	0.18	0.35	c	tb
44.1	0.17	1.31	a	t
44.2	0.22	0.63	b	t
44.3	0.31	0.92	b	t
44.4	0.31	0.94	b	t
44.5	0.37	1.24	c	t
45.1	1.46	0.93	b	t
45.2	0.75	0.83	b	t
45.3	0.76	0.66	c	t
46.1	0.22	0.76	b	tb
46.2	0.57	1.52	b	tb
46.3	0.57	1.89	c	tb
47.1	0.34	0.49	b	t
47.2	0.98	0.53	b	t
47.3	0.23	0.68	c	t
48.1	0.92	1.37	a	t
48.2	0.67	0.65	b	t
48.3	0.37	0.41	b	t
48.4	0.37	0.75	c	t
48.5	0.22	0.69	c	t
49.1	0.15	0.40	a	t
49.2	0.15	0.41	a	t
49.3	0.20	0.82	a	t
49.4	0.23	0.72	a	t
49.5	0.49	0.63	b	t
49.6	0.99	0.55	c	t
50.1	0.52	1.45	a	t
50.2	0.18	1.24	a	t
50.3	0.52	0.45	b	t
50.4	0.57	0.51	c	t
Region 7	**Mz (mm)**	**σφ**	**Zone**	**Type**
51.1	0.26	0.36	a	t
51.2	0.26	0.34	b	t
51.3	0.32	0.42	c	t
51.4	0.34	0.45	c	t
51.5	0.36	0.50	c	t
51.6	0.32	0.39	c	t
52.1	1.00	1.63	a	tb
52.2	0.51	1.08	b	tb
52.3	0.27	0.48	c	tb
53.1	0.32	0.19	a	tb
53.2	0.55	0.52	b	tb
53.3	1.40	2.03	c	tb

Depositary Table. *Continued.*

Region 7	Mz (mm)	σφ	Zone	Type
54.2	1.84	1.84	b	t
54.3	0.41	0.57	b	t
54.4	0.43	0.36	c	t
55.1	0.25	0.40	a	t
55.2	0.25	0.40	b	t
55.3	0.21	0.26	c	t
56.2	1.10	2.30	b	t
56.4	1.46	2.41	c	t
57.1	0.24	0.75	a	t
57.2	0.18	0.47	b	t
57.3	0.24	0.60	c	t
57.4	0.35	0.48	c	t
58.2	0.62	0.46	b	t
58.3	0.37	1.10	b	t
58.4	1.39	3.31	c	t
58.5	0.45	0.85	c	t
59.1	0.33	1.01	a	tb
59.2	0.16	0.40	b	tb
59.3	0.50	1.89	c	tb
59.4	2.00	2.98	c	tb
60.1	0.13	0.48	a	t
60.2	0.13	0.36	b	t
60.3	0.20	0.74	c	t
60.4	0.21	0.44	c	t
61.1	0.15	0.56	a	t
61.2	0.13	0.37	b	t
61.3	0.17	0.47	c	t
61.4	0.17	0.39	c	t
61.5	0.19	0.43	c	t
61.6	0.13	0.40	a	t
62.2	0.56	0.56	b	t
62.3	0.29	1.63	c	t
62.4	0.30	0.93	c	t
63.1	0.17	0.49	a	t
63.2	0.16	0.43	b	t
63.3	0.17	0.36	c	t
63.4	0.16	0.33	c	t
64.1	0.17	0.48	a	t
64.2	0.18	0.45	b	t
64.3	0.16	0.45	b	t
64.4	0.13	0.33	b	t
64.5	0.17	0.40	c	t
64.6	0.15	0.35	c	t
65.1	0.26	0.56	a	t
65.2	0.21	0.53	b	t
65.3	0.23	0.48	b	t
65.4	0.17	0.39	c	t
65.5	0.21	0.49	c	t
65.6	0.15	0.45	c	t
65.7	0.20	0.58	c	t
65.8	0.16	0.43	c	t
66.1	1.19	2.60	a	t
66.2	0.18	0.28	b	t
66.3	0.18	0.50	c	t
66.4	0.17	0.42	c	t
67.2	0.48	0.61	b	bt
67.3	0.48	0.63	c	bt
68.1	0.36	0.44	a	t
68.2	0.37	0.43	b	t
68.3	0.38	0.45	c	t
68.4	0.34	0.44	c	t
69.1	0.34	0.94	a	t
69.1	0.19	0.45	b	t
69.2	0.34	0.91	a	t
69.2	0.18	0.37	c	t
69.3	0.29	0.77	b	t
69.4	0.37	0.70	b	t
70.1	0.15	0.47	a	t

Depositary Table. *Continued.*

Region 1	Mz (mm)	σφ	Zone	Type
70.2	0.16	0.51	b	t
70.3	0.16	0.49	c	t
70.4	0.18	0.51	c	t
71.1	0.20	0.48	a	t
71.2	0.15	0.44	b	t
71.3	0.15	0.56	c	t
71.4	0.16	0.56	c	t
71.5	0.12	0.44	c	t
71.6	0.12	0.42	c	t
72.1	0.15	0.46	a	t
72.2	0.16	0.45	b	t
72.3	0.15	0.39	c	t
72.4	0.16	0.41	c	t
73.1	0.19	0.79	a	bt
73.2	0.20	0.60	b	bt
73.3	0.19	0.48	b	bt
73.4	0.29	0.75	c	bt
74.1	0.12	0.56	a	t
74.2	0.82	0.93	b	t
74.3	0.44	0.76	c	t
74.4	0.40	0.59	c	t
75.1	0.65	0.98	a	t
75.2	0.29	0.64	b	t
75.3	0.22	0.71	b	t
75.4	0.40	0.72	b	t
75.5	0.37	1.14	c	t
76.1	0.17	0.72	a	t
76.1	0.20	0.68	b	t
76.1	0.29	1.02	c	t
77.1	0.15	0.40	a	t
77.2	1.17	1.55	b	t
77.3	0.21	0.64	b	t
77.4	0.45	0.81	b	t
77.5	0.49	0.94	c	t
77.6	0.48	1.07	c	t
78.1	0.13	0.51	a	t
78.2	0.16	0.53	b	t
78.3	0.21	0.55	c	t
79.1	0.50	1.10	a	t
79.2	0.15	0.38	b	t
79.3	0.13	0.44	c	t
Region 8	**Mz (mm)**	**σφ**	**Zone**	**Type**
80.1	0.51	1.12	a	t
80.2	0.35	0.73	b	t
80.3	0.49	0.90	b	t
80.4	0.43	0.71	c	t
81.1	1.30	2.32	a	t
81.2	0.28	0.68	b	t
81.3	0.31	0.46	c	t
81.4	0.72	0.91	c	t
82.1	0.44	0.82	a	t
82.2	0.51	0.79	b	t
82.3	0.44	0.76	c	t
82.4	0.53	0.89	c	t
83.1	0.20	0.53	a	t
83.2	0.19	0.53	b	t
83.3	0.29	0.69	b	t
83.4	0.22	0.48	b	t
83.5	0.27	0.62	c	t
83.6	0.23	0.51	c	t
84.1	0.38	0.53	a	t
84.2	0.34	0.47	b	t
84.3	0.41	0.58	b	t
84.4	0.48	0.56	c	t
84.5	0.46	0.53	c	t
84.6	0.19	0.49	a	t
85.1	0.19	0.49	a	t

Depositary Table. *Continued.*

Region 8	Mz (mm)	σφ	Zone	Type
85.2	0.31	0.78	b	t
85.3	0.23	0.53	c	t
85.4	0.28	0.63	a	t
86.1	0.19	0.64	a	t
86.2	0.26	0.70	b	t
86.3	0.21	0.57	b	t
86.4	0.41	0.78	c	
87.1	0.22	0.72	a	t
87.2	0.18	0.54	b	t
87.3	0.21	0.55	b	t
87.4	0.44	0.68	c	t
88.1	0.17	0.46	a	t
88.2	0.15	0.36	b	t
88.3	0.59	0.57	c	t
89.2	0.44	0.67	b	t
89.3	0.49	0.75	c	t
91.1	0.38	1.15	a	t
91.2	0.55	0.72	b	t
91.3	0.37	1.13	b	t
91.5	0.49	0.91	c	t
90.1	0.29	0.70	a	t
90.2	0.58	0.75	b	t
90.3	0.95	0.83	c	t
90.4	0.24	0.84	c	t
92.1	0.18	0.55	a	t
92.2	0.18	0.58	b	t
92.3	0.22	0.66	c	t
92.4	0.32	0.65	c	t
93.1	0.14	0.32	a	t
93.2	0.15	0.31	b	t
93.3	0.16	0.42	c	t
94.1	0.63	0.71	a	t
94.2	0.51	0.60	b	t
94.3	0.60	0.71	c	t
95.1	0.54	0.89	a	t
95.2	0.63	0.74	b	t
95.3	0.59	0.79	c	t
96.1	0.27	0.58	a	t
96.1	0.27	0.56	b	t
96.1	0.73	0.92	c	t
97.1	0.27	0.61	a	t
97.1	0.20	0.53	b	t
97.1	0.50	0.60	c	t
98.1	0.60	0.68	a	t
98.1	0.52	0.64	b	t
98.1	0.82	0.67	c	t
98.1	0.53	0.68	c	t
99.1	0.35	0.76	a	t
99.1	0.33	0.52	b	t
99.1	0.26	0.45	c	t
100.1	0.41	0.47	a	t
100.1	0.41	0.48	b	t
100.1	0.37	0.57	c	t
101.1	0.32	0.56	a	t
101.1	0.44	0.63	b	t
101.1	0.38	0.46	c	t
102.1	0.22	0.47	a	t
102.1	0.20	0.43	b	t
102.1	0.33	0.77	c	t
103.1	0.31	0.52	a	t
103.1	0.24	0.54	b	t
103.1	0.47	0.68	c	t
104.1	0.30	0.49	a	t
104.1	0.36	0.45	b	t
104.1	0.35	0.58	c	t
105.1	0.27	0.60	a	t
105.1	0.21	0.54	b	t

Depositary Table. *Continued.*

Region 8	Mz (mm)	σφ	Zone	Type
105.1	0.32	0.56	c	t
106.1	0.28	0.56	a	t
106.1	0.32	0.65	b	t
106.1	0.22	0.59	c	t
107.1	0.26	0.59	a	t
107.1	0.29	0.59	b	t
107.1	0.56	0.60	c	t
111.0	0.37	0.82	a	t
111.1	0.37	1.05	b	t
111.2	0.23	0.57	c	t
111.3	0.31	0.60	c	t
112.1	0.16	0.44	a	t
112.2	0.14	0.41	b	t
112.3	0.13	0.43	b	t
112.4	0.11	0.51	c	t
113.1	0.29	0.58	a	t
113.2	0.22	0.60	b	t
113.3	0.42	0.93	b	t
113.4	0.36	0.69	c	t
114.1	0.46	1.28	a	t
114.2	0.24	0.62	b	t
114.3	0.24	0.57	c	t
114.4	0.22	0.60	c	t
115.1	0.13	0.39	a	t
115.2	0.12	0.42	b	t
115.3	0.19	0.66	c	t
115.4	0.13	0.39	c	t
116.1	0.23	0.57	a	t
116.2	0.19	0.52	b	t
116.3	0.18	0.54	b	t
116.4	0.26	0.73	c	t
116.5	0.17	0.49	c	t
117.1	0.77	0.39	a	t
117.2	1.02	0.88	b	t
117.3	0.84	0.63	c	t
118.1	0.48	0.51	a	t
118.2	0.47	0.54	b	t
118.3	0.67	0.62	b	t
118.4	0.58	0.60	c	t
119.1	0.25	0.74	a	t
119.2	0.21	0.59	b	t
119.3	0.26	0.85	c	t
120.1	0.51	0.75	a	t
120.2	0.60	1.07	b	t
121.1	0.26	0.68	a	t
121.2	0.20	0.57	b	t
121.3	0.55	1.03	c	t
121.4	0.24	0.75	c	t
122.1	0.27	0.57	a	t
122.2	0.19	0.54	b	t
122.3	0.19	0.53	c	t
122.4	0.22	0.67	c	t
123.1	0.14	0.38	a	t
123.2	0.14	0.31	b	t
123.3	0.15	0.33	c	t
124.2	0.59	0.95	b	tb
124.3	0.35	0.43	c	tb
125.1	0.13	0.31	a	t
125.2	0.12	0.39	b	t
125.3	0.13	0.34	b	t
125.4	0.13	0.40	c	t
126.1	0.20	0.51	a	t
126.2	0.15	0.48	b	t
126.3	0.19	0.57	c	t
126.4	0.29	1.01	c	t
127.1	0.29	0.72	a	t
127.2	0.23	0.58	b	t

Depositary Table. *Continued.*

Region 8	Mz (mm)	σφ	Zone	Type
127.3	0.65	0.92	c	t
127.4	0.37	1.16	c	t
128.3	0.89	2.73	b	t
128.4	0.18	0.56	b	t
128.5	0.23	0.71	c	t
128.6	0.35	0.78	c	t
129.1	0.17	0.55	a	t
129.2	0.14	0.57	b	t
129.3	0.23	0.50	c	t
129.4	0.17	0.53	c	t
130.1	0.28	1.06	a	t
130.2	0.19	0.50	b	t
130.3	0.22	0.56	c	t
130.4	0.33	0.83	c	t
130.5	0.92	1.73	c	t
131.1	0.18	0.50	a	t
131.2	0.15	0.41	b	t
131.3	0.11	0.49	c	t
132.1	0.18	0.53	a	t
132.2	0.12	0.37	b	t
132.3	0.14	0.61	c	t
133.1	0.17	0.59	a	t
133.2	0.16	0.55	b	t
133.3	0.18	0.55	c	t
133.4	0.22	0.70	c	t
134.1	0.31	1.12	a	tb
134.2	0.20	0.59	b	tb
134.3	0.32	0.82	c	tb
134.4	0.22	0.55	c	tb
135.1	0.29	1.28	a	tb
135.2	0.13	0.89	b	tb
135.3	0.20	0.97	c	tb
136.1	0.23	0.62	a	t
136.2	0.20	0.53	b	t
136.3	0.24	0.55	c	t
136.4	0.18	0.45	c	t
137.1	0.16	0.39	a	t
137.2	0.15	0.30	b	t
137.3	0.49	0.75	b	t
137.4	0.58	0.69	c	t
138.1	0.17	0.46	a	t
138.2	0.15	0.27	b	t
138.3	0.54	0.58	c	t
139.1	0.16	0.43	a	t
139.2	0.15	0.35	b	t
139.3	0.15	0.38	b	t
139.4	0.12	0.52	c	t
140.1	0.48	0.64	a	t
140.2	0.31	0.76	b	t
140.3	0.41	0.71	b	t
140.4	0.40	0.65	c	t
140.5	0.51	0.81	c	t
141.1	0.41	0.64	a	t
141.2	0.28	0.52	b	t
141.3	0.36	0.62	c	t
141.4	0.45	0.64	c	t
141.5	0.34	0.48	c	t
142.1	0.44	0.63	a	t
142.2	0.33	0.56	b	t
142.3	0.37	0.59	c	t
142.4	0.36	0.55	c	t
143.1	0.45	0.75	a	t
143.2	0.43	0.60	b	t
143.3	0.40	0.61	c	t
144.1	0.17	0.74	a	t
144.2	0.15	0.40	b	t
144.3	0.16	0.41	b	t

Depositary Table. *Continued.*

Region 8	Mz (mm)	σφ	Zone	Type
144.4	0.18	0.53	c	t
145.1	0.20	0.82	a	t
145.2	0.16	0.41	b	t
145.3	0.15	0.33	b	t
145.4	0.15	0.35	c	t
145.5	0.19	0.56	c	t
146	0.37	0.73	b	t
147	0.24	0.61	b	t
148	0.20	0.65	b	t
149.1	0.55	0.57	a	t
149.2	0.36	0.46	b	t
149.3	0.45	0.45	c	t
150.1	0.16	0.47	a	t
150.2	0.15	0.34	b	t
150.3	0.16	0.38	c	t
150.4	0.26	0.57	c	t
151.1	0.33	0.57	a	t
151.2	0.28	0.47	b	t
151.3	0.35	0.52	c	t
152.1	0.33	0.76	a	t
152.2	0.39	0.86	b	t
152.3	0.39	0.63	c	t
153.1	0.27	1.04	a	t
153.2	0.23	0.78	b	t
153.3	0.20	0.52	b	t
153.4	0.29	0.52	c	t
153.5	0.40	0.73	c	t
154.1	0.19	0.60	a	t
154.2	0.16	0.40	b	t
154.3	0.26	0.57	b	t
154.4	0.46	0.59	c	t
155.1	0.74	0.80	a	t
155.2	0.38	0.69	b	t
155.3	0.46	0.67	c	t
155.4	0.73	0.72	c	t
156.1	0.28	0.72	a	t
156.2	0.27	0.55	b	t
156.3	0.27	0.51	c	t
156.4	0.38	0.66	c	t
157.1	0.60	0.57	a	t
157.2	0.50	0.42	b	t
157.3	0.54	1.27	c	t
158.1	1.09	0.74	a	t
158.2	0.77	0.35	b	t
159.1	0.69	0.39	a	tb
159.2	0.41	0.50	b	tb
160.1	0.24	0.72	a	t
160.2	0.26	0.72	b	t
160.3	0.20	0.60	c	t
161.1	0.25	0.53	a	t
161.2	0.30	0.54	b	t
161.3	0.25	0.76	c	t
162.1	0.38	0.64	a	t
162.2	0.30	0.69	b	t
162.3	0.41	0.55	c	t
162.4	0.19	0.56	c	t
163.1	0.40	0.79	a	t
163.2	0.49	0.57	b	t
163.3	0.51	0.69	c	t
164.1	0.30	0.66	a	t
164.2	0.35	0.54	b	t
164.3	0.31	0.54	c	t
165.1	0.32	0.72	a	t
165.2	0.32	0.61	b	t
165.3	0.35	0.69	c	t
165.4	0.44	0.65	c	t
166.1	0.35	0.71	a	t

Depositary Table. *Continued.*

Region 8	Mz (mm)	σφ	Zone	Type
166.2	0.40	0.63	b	t
166.3	0.57	0.75	c	t
167.1	0.35	0.79	a	t
167.2	0.35	0.64	b	t
167.3	0.89	0.72	c	t
167.4	0.37	0.70	c	t
168.1	0.32	0.87	a	bt
168.2	0.37	0.72	b	bt
168.3	0.29	0.75	c	bt
168.4	0.21	0.62	c	bt
169.1	0.57	0.76	a	bt
169.2	0.45	0.59	b	bt
169.3	0.43	0.66	c	bt
170.1	0.20	0.64	a	t
170.2	0.27	0.58	b	t
170.3	0.33	0.88	c	t
171.1	0.34	0.86	a	t
171.2	0.24	0.64	b	t
171.3	0.37	0.72	c	t
172.1	1.03	0.60	a	t
172.2	0.52	0.87	b	t
172.3	0.70	1.15	c	t
173.1	0.19	0.60	a	bt
173.2	0.19	0.49	b	bt
174.1	1.52	1.39	a	bt
174.2	0.26	0.73	b	bt
175.1	1.13	1.03	a	t
175.2	1.99	0.73	b	t
175.3	1.28	1.51	b	t
175.4	0.59	0.70	c	t
176.1	1.21	0.48	a	t
176.2	1.38	0.51	b	t
176.3	0.91	0.57	c	t
177.1	1.33	0.91	a	bt
177.2	1.28	1.26	b	bt
177.3	1.00	1.52	b	bt
177.4	0.23	0.71	c	bt
178.1	0.42	0.87	a	t
178.2	0.23	0.61	b	t
178.3	0.41	0.87	c	t
179.1	1.57	0.48	a	t
179.2	1.28	0.65	b	t
180.1	0.74	0.74	a	t
180.2	0.62	1.14	b	t
180.3	0.49	0.41	c	t
181.1	1.37	0.43	a	t
181.2	0.92	0.29	b	t
181.3	0.92	0.38	c	t
182.1	1.39	0.53	a	bt
182.2	1.00	0.58	b	bt
182.3	0.74	0.73	c	bt

Region 9	Mz (mm)	σφ	Zone	Type
183.1	0.38	0.63	a	t
183.2	0.29	0.74	b	t
183.3	0.36	0.69	c	t
184.1	0.23	0.90	a	t
184.2	0.22	0.61	b	t
184.3	0.24	0.78	c	t
185.1	0.33	0.64	a	t
185.2	0.25	0.66	b	t
185.3	0.27	0.67	c	t
186.1	0.32	0.63	a	t
186.2	0.37	1.01	b	t
186.3	0.52	1.70	c	t
187.1	0.44	0.68	a	t
187.2	0.37	0.67	b	t

Depositary Table. *Continued.*

Region 9	Mz (mm)	σφ	Zone	Type
187.3	0.52	0.67	c	t
188.1	0.37	0.73	a	t
188.2	0.24	0.61	b	t
188.3	0.20	0.65	c	t
189.1	0.41	0.80	a	t
189.2	0.47	0.65	b	t
189.3	0.63	0.96	c	t
190.1	0.34	0.75	a	t
190.2	0.45	0.84	b	t
190.3	1.17	1.62	c	t
191.1	0.24	0.60	a	t
191.2	0.23	0.58	b	t
191.3	0.24	0.56	c	t
192.1	0.24	0.61	a	t
192.2	0.22	0.53	b	t
192.3	0.23	0.58	c	t
193.1	0.22	0.62	a	t
193.2	0.28	0.73	b	t
193.3	0.22	0.56	c	t
193.4	0.18	0.51	c	t
194.1	0.51	0.59	a	t

Depositary Table. *Continued.*

Region 9	Mz (mm)	σφ	Zone	Type
194.2	0.39	0.66	b	t
194.3	0.66	0.62	c	t
194.4	0.25	0.73	c	t
195.1	0.52	0.81	a	t
195.2	0.40	0.69	b	t
195.3	0.51	0.59	c	t
196.1	0.40	0.72	a	t
196.2	0.24	0.57	b	t
196.3	0.36	0.71	c	t
196.4	0.41	0.68	c	t
197.1	0.36	0.77	a	t
197.2	0.36	0.64	b	t
197.3	0.34	0.73	c	t
198.1	0.50	0.76	a	t
198.2	0.39	0.72	b	t
198.3	0.28	0.83	c	t
199.1	0.43	0.87	a	t
199.2	0.20	0.59	b	t
199.3	0.29	0.73	c	t

a = inshore, b = foreshore, c = backshore
t = terrigenous, b = biogenous.