

# LITTORAL ENVIRONMENT OBSERVATION DATA COLLECTION

## 1. WAVE PERIOD:

- a. Pick an arbitrary fixed point in the surf zone.
- b. Time 11 wave crests passing that point. Timing begins when the 1<sup>st</sup> crest passes and ends when the 11<sup>th</sup> crest passes the point. Record time.
- c. If there are no waves, record a "0" representing calm conditions

## 2. BREAKER HEIGHT:

- a. Visual estimate of the height of the breakers *farthest from shore* to the nearest tenth of a foot.
- b. If it's not possible to estimate breaker heights (they're too large/too far from shore), note this in the remarks section of the LEO form.

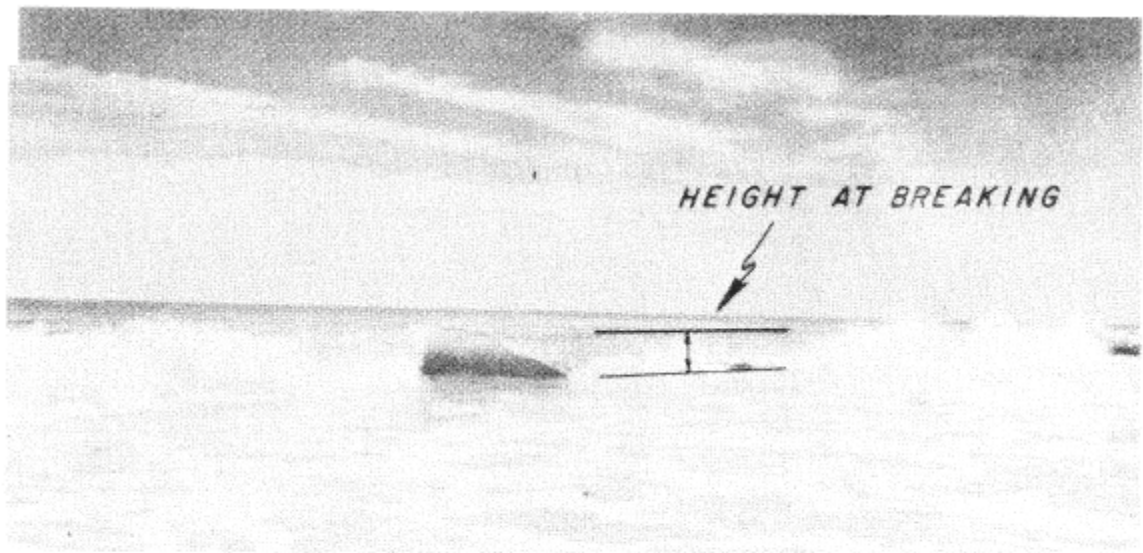


Figure 4. Visually observed estimate of breaker height.

## 3. WAVE ANGLE (see figures on next 2 pages):

- a. Being as close to the shoreline as practical, using the protractor on the LEO form, orient the 0-180 line parallel to the shoreline, and sight along the direction from which the breaking waves are approaching the shore and record angle.
- b. If on a pier or bluff perpendicular to the shoreline, orient the 0-180 line parallel to the pier, and sight along the direction from which the breaking waves are approaching the shore and record angle.

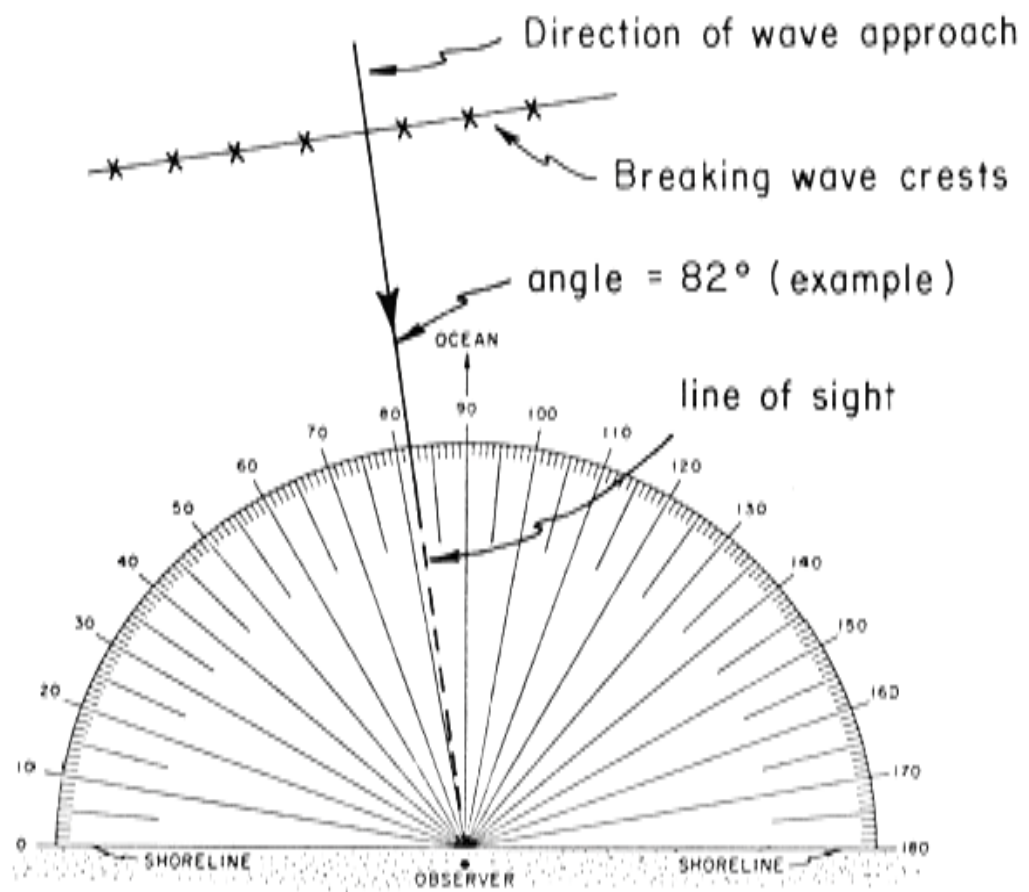


Figure 6. Measurement of wave angle from beach using protractor.

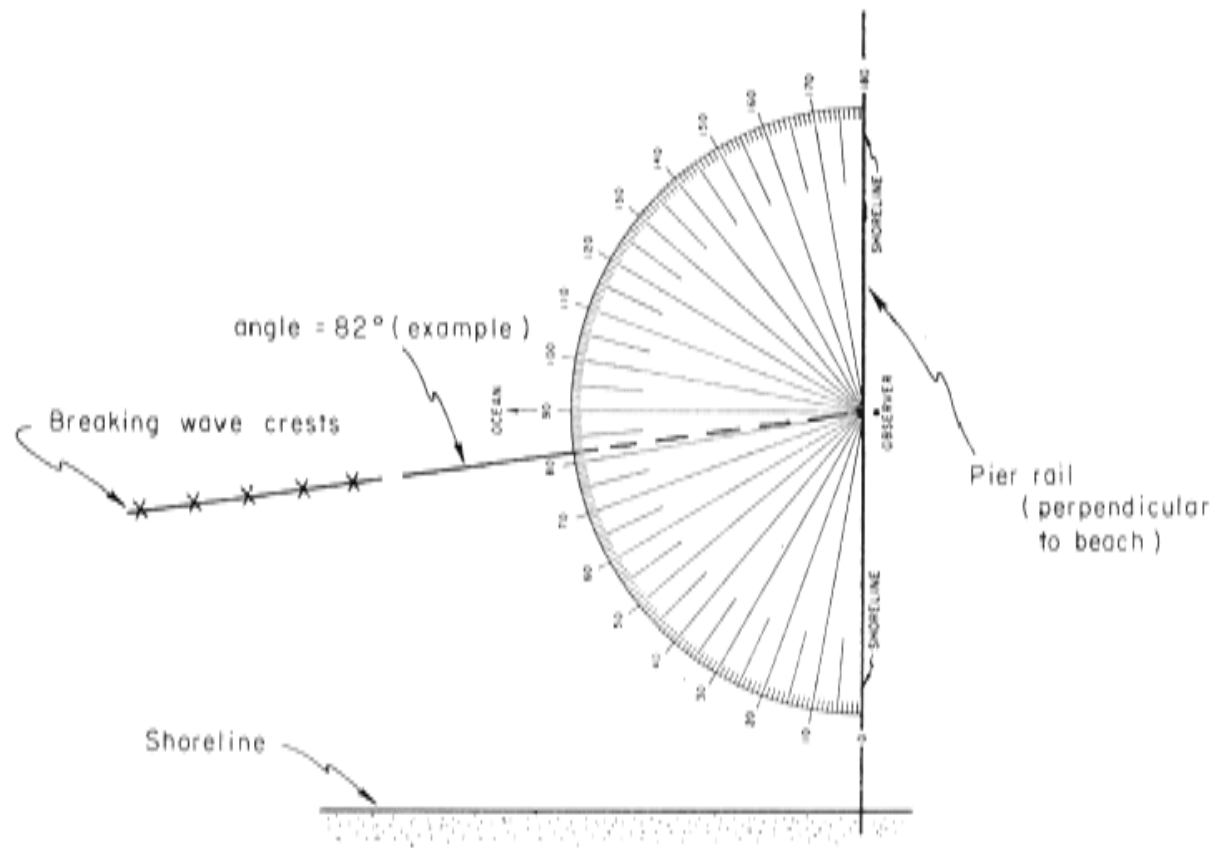


Figure 7. Measurement of wave angle from pier using protractor.

#### 4. WAVE TYPES:

(1) A *spilling breaker* occurs when the wave crest becomes unstable at the top and breaks to flow down the front face of the wave producing a foam surface (Fig. 8).

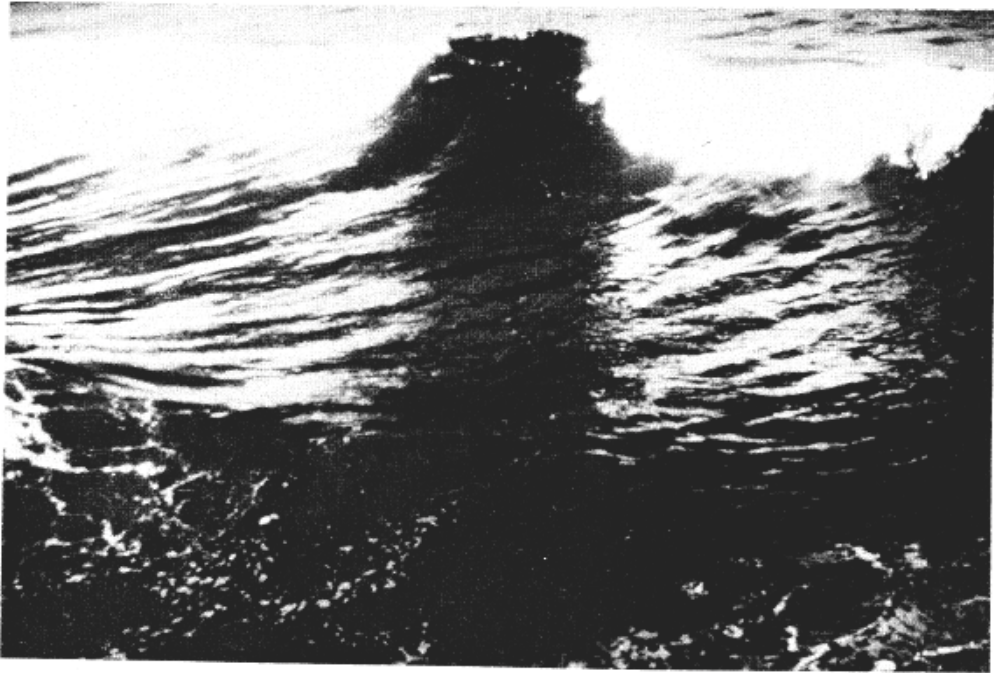


Figure 8. Spilling breaker.

(2) A *plunging breaker* occurs when the wave crest curls over the front face of the wave and falls onto the base to produce a high splash and much foam (Fig. 9). This hollow part under the curled-over crest is sometimes termed the "pipeline."

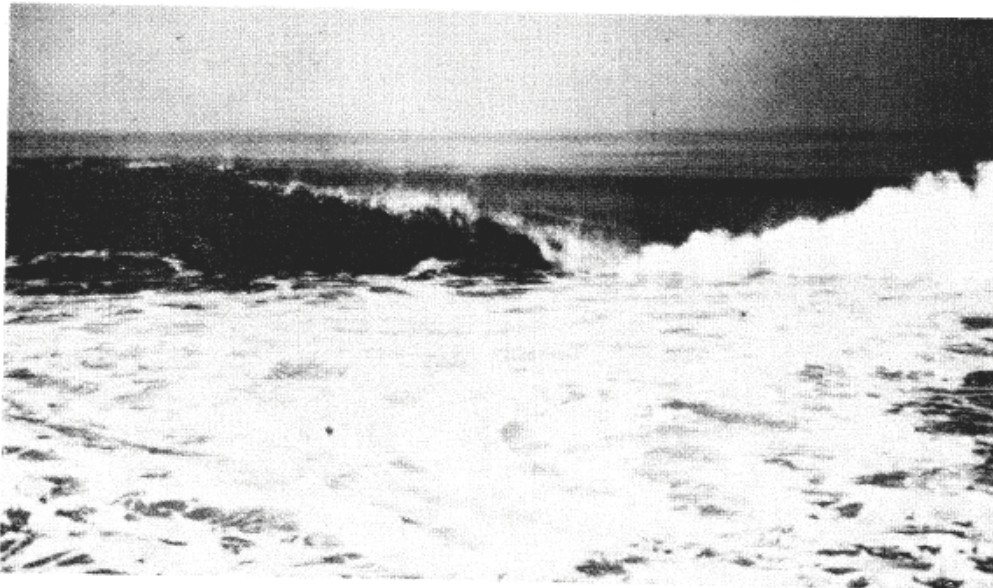


Figure 9. Plunging breaker.

(3) A *surging breaker* is characterized by a wave crest that remains unbroken while the base of the front face advances up the beach to break totally at the shoreline (Fig. 10).

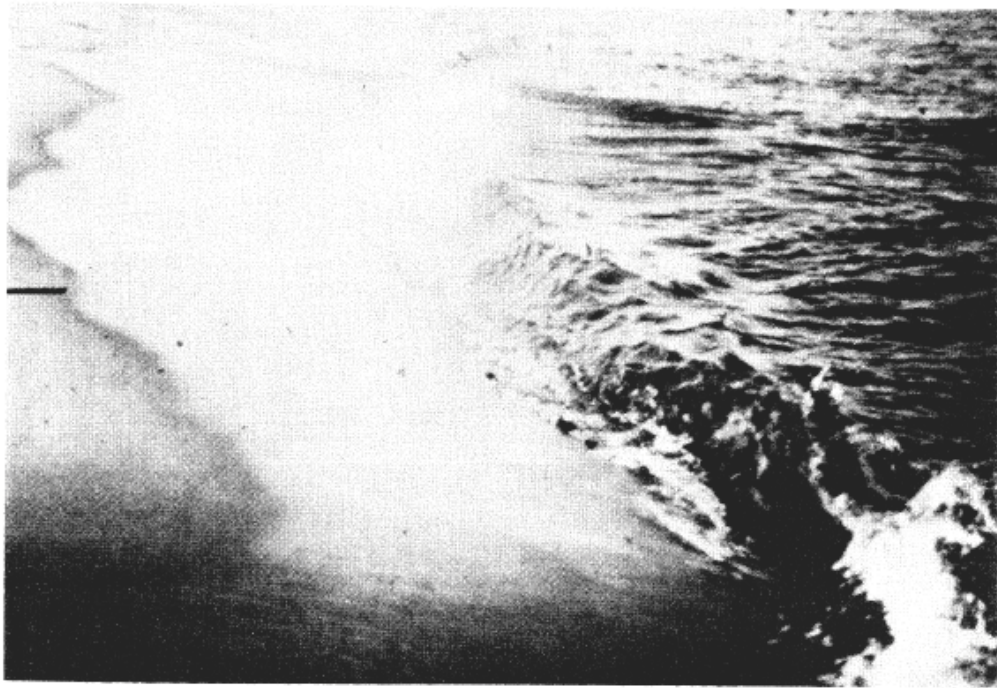


Figure 10. Surging breaker.

(4) Certain breaking waves may appear to have characteristics common to both spilling and plunging breakers. Such breakers are recorded as a *spill-plunge* type (Fig. 11).



Figure 11. Spill-plunge breaker.

**5. WIND SPEED:**

- a. Hold wind meter slightly above head level, and slowly rotate until maximum wind speed is found.

**6. WIND DIRECTION:**

- a. Using a compass, note which direction the maximum wind speed is blowing from.

**7. FORESHORE SLOPE:**

- a. On the part of the beach wetted by the wave uprush, lay flat surface (2X4 or similar) on the upper wetted part of the swash zone, pointed seaward. Place the level on the on the flat surface, and record the angle on LEO form.

**8. WIDTH OF SURF ZONE:**

- a. Visually estimate the distance from the shoreline (upper limit of the wetted part of the beach) to the seawardmost line of breakers. Record on form in feet.

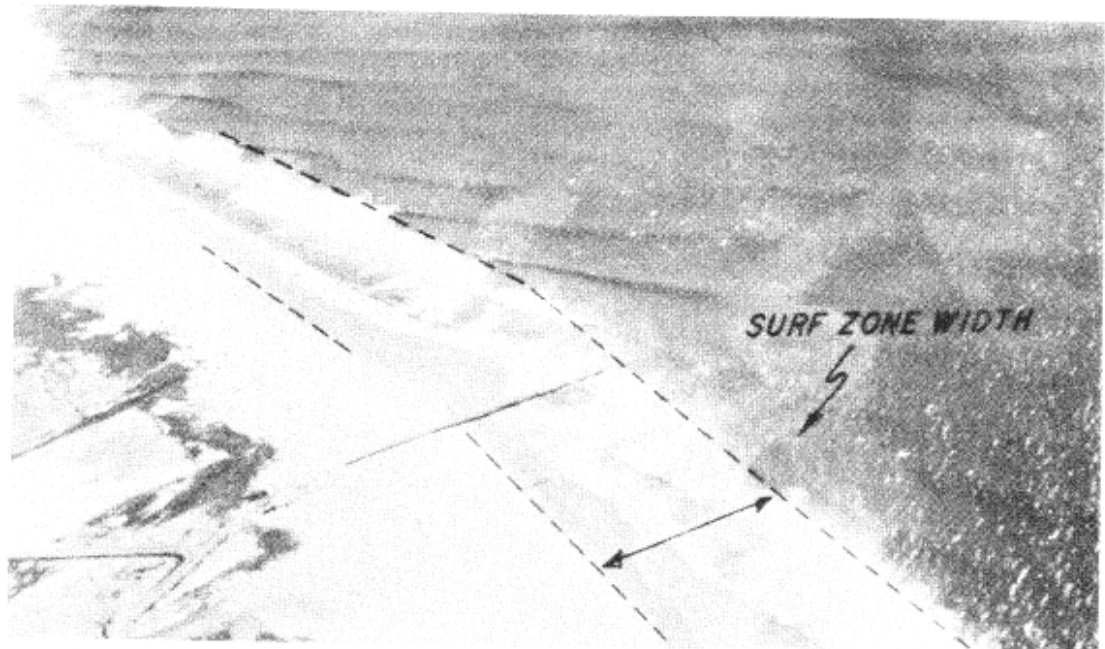


Figure 15. Surf zone width.

## 9. LONGSHORE CURRENT:



Figure 16. Observer marking point of dye injection on beach.



Figure 17. Observer pacing off distance traveled by dye patch in 1-minute period.

a. *Dye Distance*

- i. Throw dye packet into surf zone between the shoreline and the outermost line of breaking waves (surf zone proper). If possible, just landward of the breakers.
- ii. Estimate the distance from the shoreline to the point of dye injection. Record in feet.

b. *Current Speed*

- i. Mark a line with foot on the beach at the point of dye injection and begin timing the dye movement to determine current speed.
- ii. Follow the center of the dye patch for 1 minute.
- iii. Then, parallel to the shoreline, pace off the distance the dye traveled in 1 minute. Convert paces to feet, and record (you should know the length of your pace in feet first)

c. *Current Direction*

- i. Facing seaward, if the dye moves to the right, record a "+1", if the dye moves to the left, record a "-1".
- ii. If no movement occurs, or if the dye moves directly offshore, record a "0". If the dye moves seaward, note it in the remarks section.

## 10. RIP CURRENTS:

- a. If rip currents are observed, estimate the spacing between the currents by pacing along the beach with the distance recorded in feet on the form.

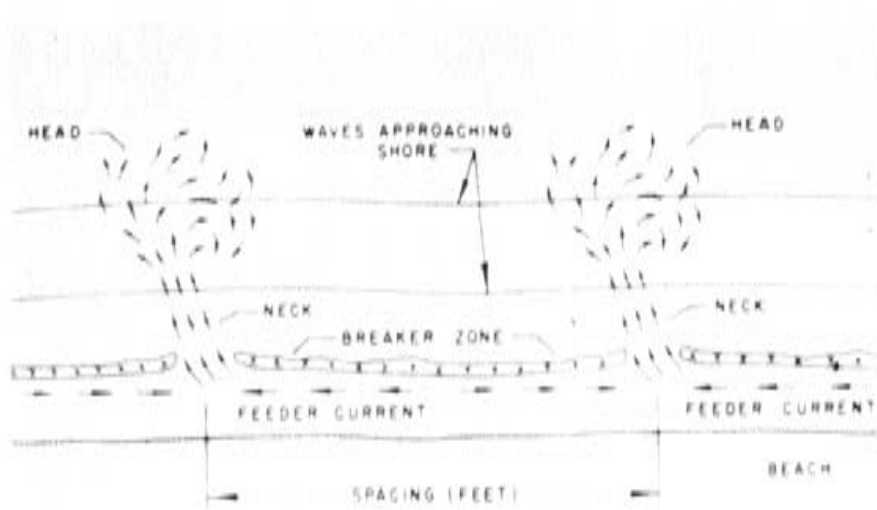


Figure 18. Rip currents.

## 11. BEACH CUSPS:

- a. If beach cusps are found, pace off the spacing between the mounds is and record the distance the form.

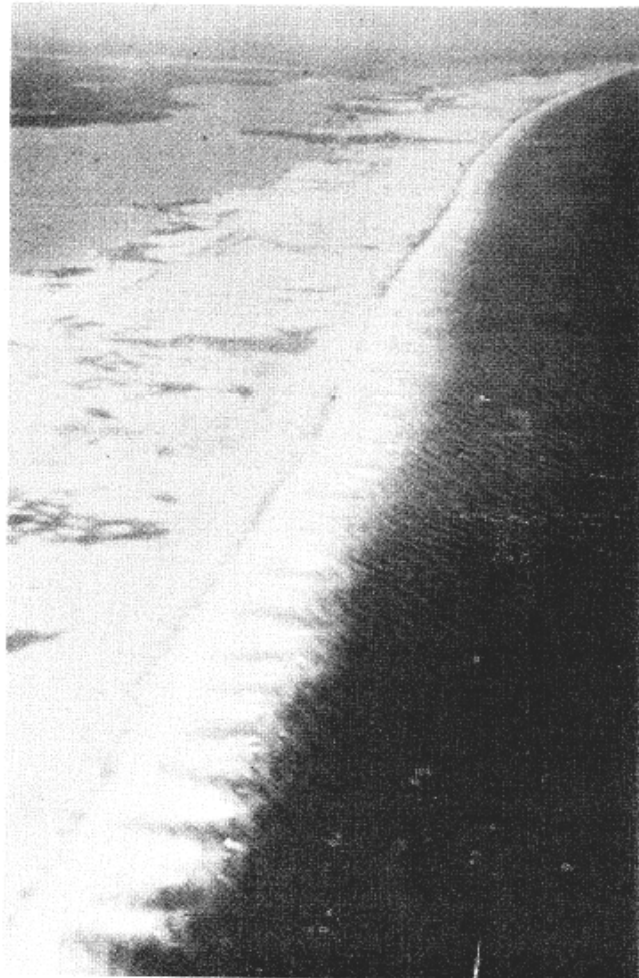
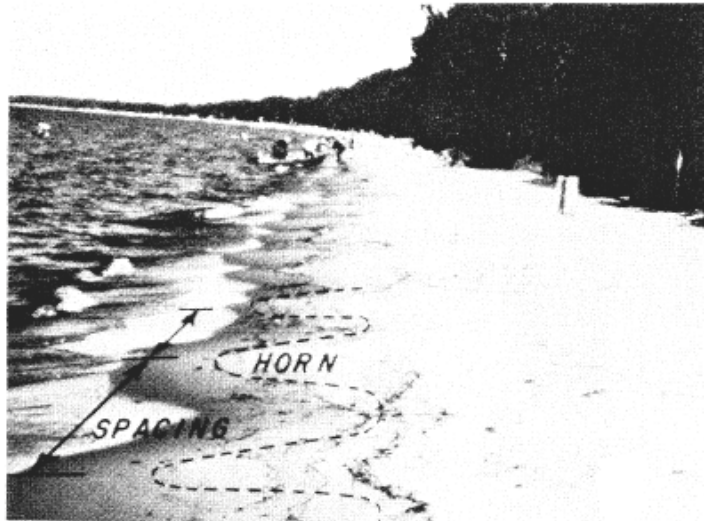


Figure 19. Beach cusps.