

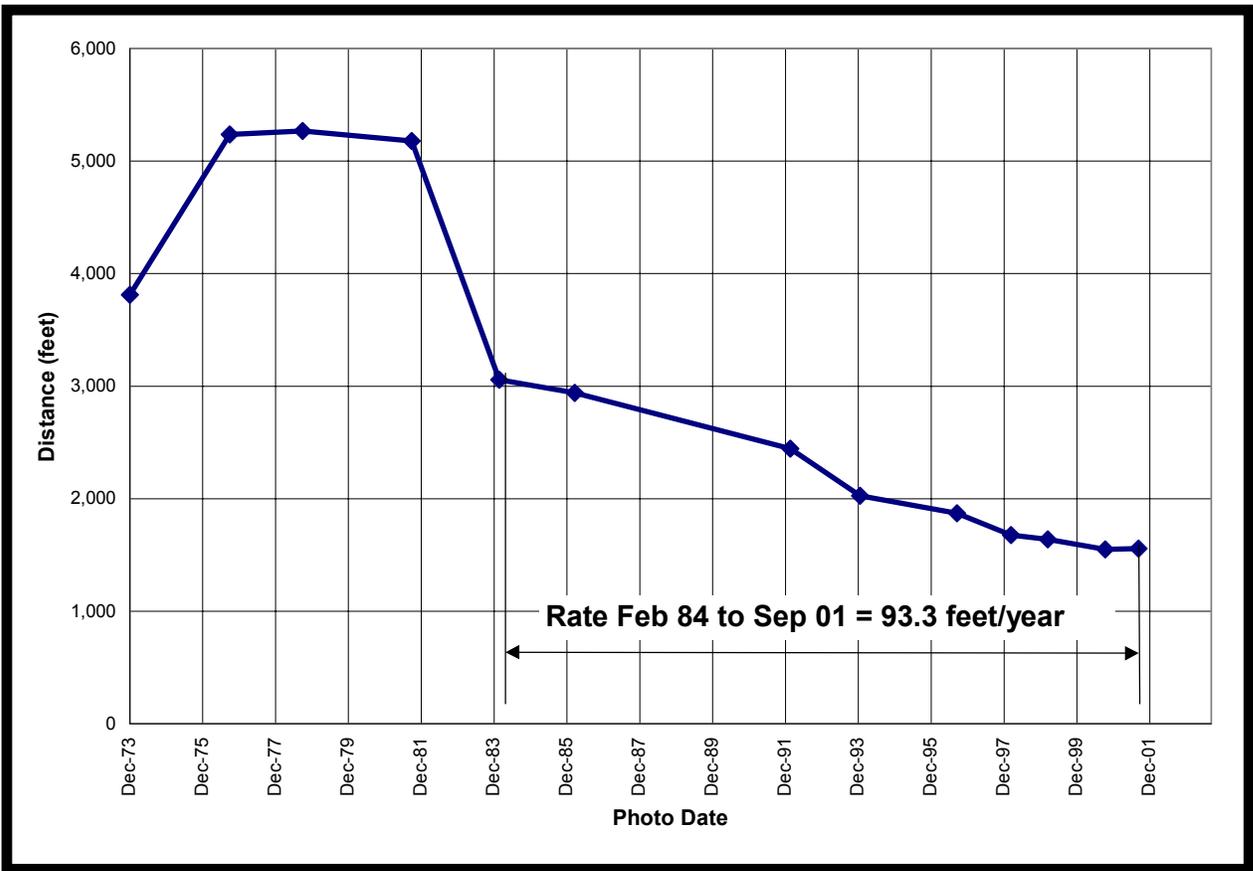
occurred in the morphology of the platform and mid inlet shoal during this interval with the exception of the emergence of ephemeral “islands” (Islands 1 and 2) that developed on the linear margin bars and in vicinity of the flood ramp (Figure 4.3). For the entire period of analysis (December 1973 to September 2001) the net movement of the ebb channel was 2,253 feet to the east at an average rate of 81.2 feet/year.

**4.3 Inlet Shoreline Changes.** The movement (erosion or accretion) of the east shoulder (Bogue Banks) and west shoulder (Bear Island) of the inlet generally follow a pattern of change related to the direction of movement of the channel within the inlet throat. The exception to this is a period in the mid to late 1970’s when the inlet morphology was changing rapidly and adjusting to the ebb channel reorientation/repositioning that occurred in 1975.

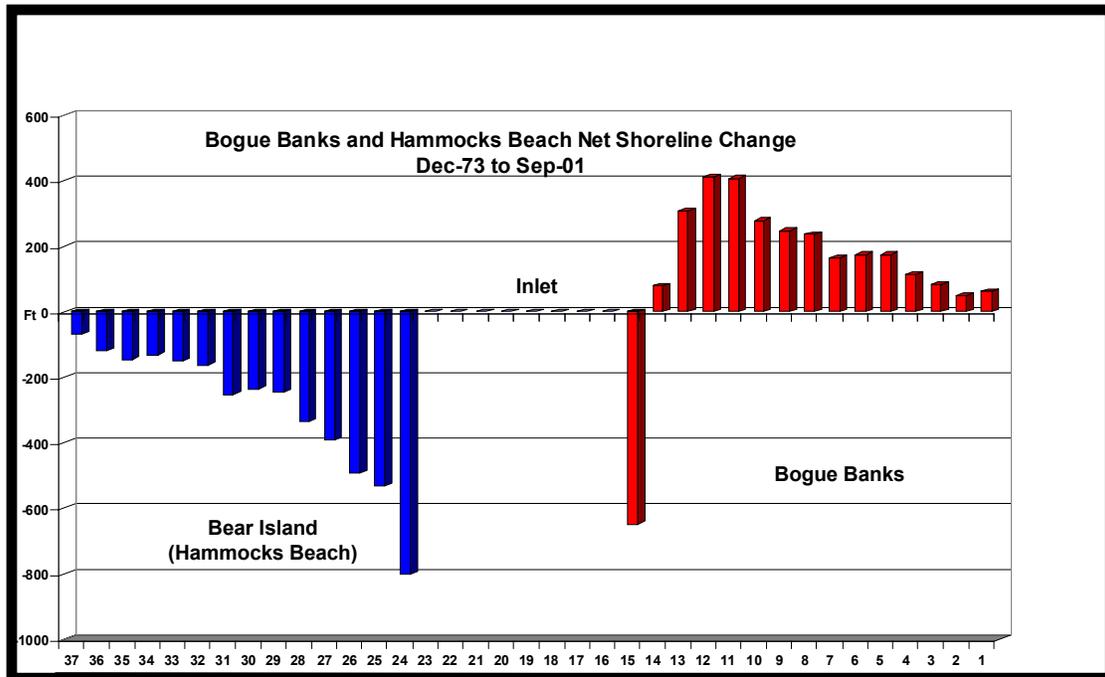
Evaluation of the data (Figure 4.4) shows that the ebb channel reversed its movement in 1981 and began its eastward migration. Between February 1984 and September 1996, the Bogue Banks shoulder eroded 912 feet. The majority of these losses occurred between January 1994 and September 1996, a period of time characterized by increased storm activity (Hurricanes Bertha and Fran). For the period from February 1984 to September 2001, the average rate of erosion of the Emerald Isle shoreline was 62.0 feet/year. The rate of shoreline erosion appeared to accelerate between February 1992 and September 2001 during which time the average rate was 87.6 feet/year. Again, the higher rate of erosion during this more recent period may have been the result of an increase in tropical storm activity.

The pattern for the inlet shoreline changes along the Bear Island shoulder is somewhat similar to that for the Bogue Banks. The Bear Island shoulder (spit growth) initially experienced a period of accretion when the ebb channel began its easterly migration in the early 1980s. Following a period of minor erosion (183 feet) between 1973 and 1976, the western margin of the inlet prograded 1,609 feet in an easterly direction between 1976 and 1984. The recession of the Bear Island shoulder coupled with erosion of the Bogue Banks shoulder has effectively led to a general widening of the inlet throat since 1984.

**4.4 Oceanfront Shoreline Change.** Oceanfront shoreline changes on Bogue Banks and Hammocks Beach State Park between 1973 and 2001 for the baseline transects are depicted in Figure 4.5. During this period, there were dramatic net differences in the shoreline change patterns along Bogue Banks and Bear Island oceanfront between 1973 and 2001. The average accretion along the Bogue Banks oceanfront shoreline segment (Transects 1-14) ranged from 56 to 410 feet. The greatest shoreline accretion occurred along the oceanfront near the inlet between Transects 10 and 13 and reached a maximum of 410 feet at Transect 12. For reference purposes, Transect 11 is located near the intersection of Coast Guard Drive and Inlet Drive. The net accretion of the entire Bogue Banks shoreline is directly attributable to the eastward movement of the ebb channel over the past several decades.



**Figure 4.4 Cumulative Movement of Channel Midpoint  
(Distances measured from Station 0+00 on Inlet Baseline)**



**Figure 4.5 Net Oceanfront Shoreline Change along Bogue Banks and Bear Island (Hammocks Beach State Park), 1973 to 2001.**