

## **ABSTRACT**

A major offset in the Virginia coastline exists between Assateague Island and Wachapreague Island. The offset produces the broad Chincoteague Bight anchored by the cape-like southern tip of Assateague Island and the northern tip of Parramore Island.

A combination of factors has influenced the development of this part of the Virginia coast. In particular, the hierarchy of watersheds in the area has had a strong influence on the formation of Chincoteague Bight. Large watersheds on the Atlantic coast have shore-normal orientations conducive to the formation of coastal compartments. Intermediated-sized watersheds with nearly shore-parallel orientations intersect the coastline at very low angles. Smaller, moderate-sized watersheds that have shore-normal orientations are conducive to the formation of tide-dominated barrier islands. Chincoteague Bight may be a result of the oblique intersection of the intermediated-sized Chincoteague paleovalley and the Atlantic coastline. Projecting the coastline across Chincoteague Bay produces a "stretched" valley-section that is about 4-5 times the width of a perpendicular section. Since the width of Chincoteague Bight is comparable to the width of the stretched valley section, we interpret the Bight formed in response to the low-angle intersection of the coastline and the paleovalley. Based on the characteristics of adjacent Coastal Plain watersheds, the present size of Chincoteague Bay may only represent a fraction of the entire Chincoteague watershed. Reconstruction of the entire system required hindcasting the coastline seaward during lower stands of sea level. By doing this, the entrance to the Chincoteague watershed was projected 90 km farther to the south. Transgression of the sea from this point allowed us to see the effects of watershed hierarchy on coastal configuration. Interfluves of different size and orientation were major factors influencing pathways of inlet and barrier island retreat. In the Delmarva area, wave-dominated landforms were initially the dominant elements of the Delmarva coastal compartment; with continued transgression the tide-dominated elements became increasingly more important. The reverse is likely to occur under different stages of transgression.