

Thus the total annual southerly and northerly transport components are 370,000 m³/yr and 170,000 m³/yr, respectively. The "net" and "gross" components are

$$\begin{aligned} Q_{\text{NET}} &= + 200,000 \text{ m}^3/\text{yr} \text{ (Southerly)} \\ Q_{\text{GROSS}} &= 370,000 + 170,000 = 540,000 \text{ m}^3/\text{yr} \end{aligned} \quad (2)$$

In general, the net longshore sediment transport is southward along the East coast portion of the Southeast Region. Fairly detailed estimates exist for the East coast of Florida as shown in Figure 7.

Cross-Shore Sediment Transport

It is well-known that beaches change seasonally and with differing wave conditions. Although beach profile changes can occur due to longshore sediment transport, the focus here will be limited to cross-shore sediment transport.

Winter waves are usually higher and generally have shorter periods than those occurring during the summer months. The resulting summer and winter beach profiles differ substantially as idealized in Figure 8. The summer profile tends to be steeper with a wider berm and the winter profile tends to be milder in slope and to have a narrower berm. Although the range in seasonal shoreline fluctuations is not known for many locations, it has been shown to be on the order of 30 m at Long Island, NY (Bokuniewicz et al., 1980), 80 m at Stinson Beach, CA (Johnson, 1971), and 10 m at Boca Raton, FL (Dewall and Richter, 1977). Additionally, in many locations, there is a bar present in the winter profile. At some locations, the bar is perennial.

The mechanics of cross-shore transport are not understood completely; however storm waves of greater heights and shorter periods cause offshore transport. Table 1 presents an example of shoreline changes that occurred in New Jersey due to a severe storm.

If the dunes are sufficiently high during a storm to prevent overtopping, transport may be limited to the offshore direction. However, if the storm tide level exceeds the dune elevation or if the dunes are breached, a process called "overwash" may occur. Overwash is the transport of water and sand over a normally subaerial feature usually due to storm-elevated water levels and increased wave heights. The sand deposit resulting from an overwash event is