

Figure 26 presents a "flow chart" describing the elements of the long-term simulation. In the Bay-Walton Counties area, hurricanes making landfall within \pm 150 n.mi. of these counties were considered requiring a total of 393 hurricanes to simulate a 500 year record. The return periods associated with various dune recessions as determined from the simulations are presented in Figure 27. As examples, the dune recessions for return periods of 10, 100 and 500 years are 4 m, 12 m and 18 m, respectively. Based on these results, Hurricane Eloise is judged to represent a 20 to 50 year erosional event; however based on results from a storm surge analysis, Hurricane Eloise was a 75 to 100 year coastal flooding event.

It is also possible to present the results of the erosion simulations in a manner that is of maximum relevance to individuals or agencies responsible for shoreline management. This type of presentation is demonstrated for the Bay-Walton County area in Figure 28. This plot includes the contributions from storms and sea level rise. As examples, without any erosion mitigation measures within the next 50 years, the erosion due to sea level rise (regarded as a certainty or probability of 100%) is expected to be approximately 15 ft. Within 50 years, the probability of erosion occurring to a distance of 40 ft is 85% and for distances of 60 and 80 ft, the corresponding probabilities are 32% and 9%, respectively. Through the use of figures such as these it would be possible to weigh the costs of certain erosion control measures against the potential of damage if those measures are not carried out.

These procedures provide, for the first time, a basis for conducting the necessary technical studies to implement the erosion component calculations of the Flood Insurance Act of 1973 which provides for the application of methodology to provide the basis for insurance rates for flooding and erosion coastal hazards. Although the flooding component of this act has been implemented, the erosion component has not.

It is noted that the State of Florida Division of Beaches and Shores of the Department of Natural Resources presently utilizes the erosion simulation model of Kriebel and simplifications thereof in the