The boundary conditions used were somewhat intuitive. At the shoreward end of the system, erosion proceeded with a specified slope above a particular depth, h_*. The depth, h_*, is the depth that the equilibrium slope and the slope corresponding to the beach face are the same. Thus a unit of recession of the uppermost active contour causes an erosion of the profile above the active contour that is "swept" by this specified slope. This material is then placed as a source into the uppermost active contour. The offshore boundary condition is that the active contours are those within which wave breaking occurs. If an active contour extends seaward, thereby encroaching over the contour below to an extent that the angle of repose is reached, the lower contour (and additional lower contours if necessary) are displaced seaward to limit the slope to that of the angle of repose.

Application of Method to Computation of Idealized Beach Response

Kriebel (1982) carried out computations for a number of idealized cases, some of which are reviewed below.

Response to Static Increased Water Level - Figure 20 presents the beach recession due to a static increase in water. The beach responds as expected. In the early response stages, the rate of adjustment is fairly rapid with the latter adjustments approaching the equilibrium recession in an asymptotic manner. Of special relevance is that the response time to equilibrium is long compared to the duration of most severe storm systems, such as hurricanes. The form of the response presented in Figure 20 is reminiscent of that for a first order process in which the time rate of change of beach recession, R, is represented as

$$\frac{dR}{dt} = -\alpha R \tag{19}$$

for which the solution is

$$\frac{R(t)}{R_\infty} = \left(1-e^{-\alpha t}\right) \tag{20}$$

Figure 21 presents a comparison of the response from the numerical model and Eq. (20). This similarity forms the basis for a very simple and approximate numerical model of beach and dune profile response. Such a model has been developed but will not be presented here.