

form similar to those developed in the laboratory or found in nature. One difficulty encountered was that with a pronounced bar present, the localized energy dissipation could be so severe as to cause instabilities. Moore applied a reasonable smoothing function to the energy dissipation and improved the stability of the computations. Figure 13 presents a comparison of a barred beach profile measured by Saville and that computed.

Moore also evaluated his model by comparison against measured profiles from the Nearshore Sediment Transport Study at Santa Barbara, California for the period January 21, 1980 to December 20, 1980. The initial and final prototype and predicted profiles are presented in Figure 14. The maximum and minimum (envelope) prototype and model profiles are presented in Figure 15. An empirical eigenfunction analysis was performed on the measured and predicted profiles. The first eigenfunction, the so-called "Mean Beach Function" is presented in Figure 16 where it is seen that reasonably good agreement occurs. The second or "Berm-Bar" eigenfunction is shown in Figure 17 where it is evident that the model results have the same general form, but are more irregular than the measured. The same general comments apply to the third eigenfunction, the "Terrace Function" presented in Figure 18.

## VII. PREDICTION OF BEACH AND DUNE EROSION DUE TO SEVERE STORMS

Mr. David Kriebel conducted the last component of work on the project to be reported here as a Master's thesis. Most of the previous work was incorporated and considerable original contributions were developed into a two-dimensional predictive model of beach and dune erosion for single storm events and for long-term scenarios in which many storms occur.

### Profile Schematization

The profile was schematized as a series of depth contours,  $h_n$ , the locations of which are specified by coordinates,  $x_n$ , measured from an arbitrary baseline, see Figure 19. The profile is thus inherently monotonic and at each time step, the  $x_n$  values of each of the active contours is updated.