



## Abstract View

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## Observations of Steady Longshore Currents in the Surf Zone

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### ABSTRACT

Steady surf-zone longshore currents and directional properties of the incident wave field were measured on a beach with nearly straight and parallel depth contours. Selected data were processed into 64 segments, each of 68.2 min. duration, irregularly spaced throughout an 18-day period. A wide variety of incident wave and longshore current conditions were observed. The radiation stress spectrum  $[S_{xy}(f)]$  was estimated from a slope array and two current meters located seaward of the surf zone. In many cases the total radiation stress  $[S_{xy}^T = \sum S_{xy}(f)\Delta f]$  contains important contributions from a wide range of frequencies. In a few instances, sea and swell approach the beach from different directions quadrants resulting in a new zero  $S_{xy}^T$ . The strong shears and direction reversals of the longshore current that could conceivably occur in this circumstance were not observed. An EOF decomposition of the mean longshore current pattern shows that most (<90%) of the current spatial variation in the 64 runs is contained in a classical parabolic shape. The temporal expansion coefficients of the first EOF are equally highly correlated with both  $S_{xy}^T$ , and a scale velocity suggested by radiation stress-based longshore current theories.

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