Date: **October 29th**

Time: **10:30 AM**

Location: **Olin 305**

Speaker: **Dr. Bob Guza**
Scripps Institution of Oceanography

Title: **"Field Observations of Alongshore Currents in the Surf Zone: A Review"**

Abstract

Obliquely incident sea and swell waves breaking on a beach drive an alongshore mean current V that can exceed 1m/sec. Predictions of V based on the one-dimensional (cross-shore variation only) and time-averaged alongshore momentum balance (between forcing, bottom stress, and lateral mixing) are compared with extensive field observations. The cross-shore structure of V usually was reproduced accurately (root-mean-square prediction errors about 0.2m/s). Although this simplified model has predictive skill, important physics are parameterized crudely. For example, V is highly sheared in the cross-shore direction, and is unstable. The growing instabilities, known as shear waves, are vorticity waves with periods of a few minutes and alongshore wavelengths of a few 100m. (The effect of shear waves is parameterized in the mean flow model with lateral eddy mixing.) Shear waves observed at five cross-shore locations within a few 100m of the shoreline agree at least qualitatively with numeric solutions of time-dependent, nonlinear shallow water equations.