Abstract View

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The Free Surface Turbulent Shear layer

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ABSTRACT

In applying the Wall layer analogy to a wind blown free surface it is necessary to decide in what coordinate system such an anology is realistic. A smoothed sea surface is taken to be that produced by the nearly irrotational components of the wave field, relegating irregular, dissipative wavelets to turbulence. It is then possible to regard wave motion and shear flow as independent, except for the vortex force effect of Stokes drift, discussed by Leibovich. An analysts or the available observations shows that the free surface shear layer has many of the characteristics of the wall layer. A major difference is a much larger roughness parameter, arising presumably from direct energy input to surface turbulence by the wind. Velocity gradients near the free surface are much smaller then over a solid wall under otherwise comparable conditions.