

Abstract Submitted  
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**Gravity Currents and Internal Solitary Waves Approaching Slopes** BRUCE SUTHERLAND, DELYLE POLET, University of Alberta, GREG IVEY, University of Western Australia — The theory for the speed of gravity currents and solitary waves usually assumes the depth of the ambient is constant. An adaptation of WKB theory predicts that gravity currents decelerate at a constant rate as they approach as uniform, though small slope. This is borne out in laboratory experiments of surface gravity currents propagating over a bottom slope even when the rise of the slope is comparable to the head height over its length. However, the deceleration is found to differ by an order of magnitude. The mathematics used to describe internal solitary waves is qualitatively different from that used to describe gravity currents. And yet their dynamics upon approaching a slope is similar. Of particular interest for the off-shore oil industry is where the separation point of the wave trough impacting upon the slope occurs. On the basis of experiments this is predicted as it depends upon the ambient fluid and slope.

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