



## **Subsurface Cores in Internal Solitary Waves**

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It has been known for some time that internal solitary waves may have trapped cores at the surface under conditions in which the stratification is strong at the surface of there is a background current with sufficiently large vorticity at the surface of the same sign as the wave induced vorticity (i.e. a surface current in the direction of propagation of waves of depression). Recent observations in the South China Sea have shown the existence of large internal solitary waves with subsurface trapped cores. These waves can exist under appropriate conditions if the background current has near surface vorticity of the opposite sign as that induced by the waves. In this talk we discuss the conditions under which such waves can exist using solutions of the DJL equation and fully nonlinear numerical solutions of the incompressible Euler equations.