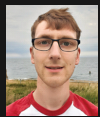


The Interaction of Internal Solitary Waves and Sea Ice in the Laboratory

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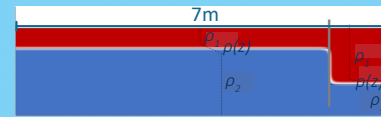


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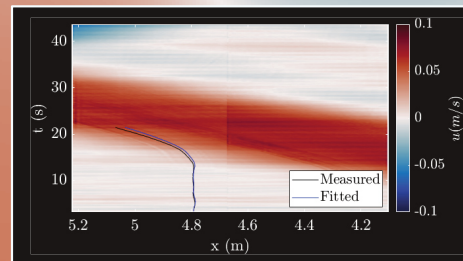
Natural
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How do we study Internal Waves?



Using a lock gate experimental setup (see image above) we study internal waves (waves that form underwater on the interface between more and less dense layers of seawater), and how they interact with model sea ice. A tank is set up with salty (dense) water at the bottom (blue) and fresher water (red) at the top, with extra fresher water behind a gate. When the gate is removed, an ISW propagates right to left.

How do ISWs affect Sea Ice?



Sea Ice is transported in the same direction as the wave as it passes, and then stops once the wave has passed. Fitting a simple drag model to measured flow velocities allows us to accurately predict the measured motion of our model ice particles (above).



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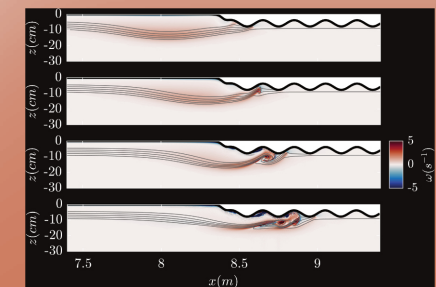


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How does Sea Ice affect ISWs?



We're also investigating how sea ice changes the wave-induced flow, both in numerical models (SPINS; Subich et al., 2013). Here we see vortices induced by under-ice roughness in the numerical model