

Abstract Submitted  
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**Gravity currents near the density maximum** DAVID LEPPINEN, University of Birmingham, ANTONY KAY, University of Loughborough — We describe lock-release experiments in which the receiving water is close to the freezing point, and is denser than the warm water in the lock. Experiments are performed with either a free surface or a rigid lid, the latter with a view to simulating warm water releases into ice-covered lakes. When the lock gate is removed, a gravity current of warm water flows out from the lock along the top of the receiving water. Mixing at the interface creates water that is denser than the ambient, which is detrained and sinks to the bed of the channel. Eventually, sufficient cold water is entrained into the gravity current for it to lose all of its buoyancy. At this stage, the gravity current is arrested, after which the only motion is vertical convection. The progress and eventual arrest of the current is described using a box model which incorporates a simple parameterisation of entrainment.

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