

Abstract Submitted  
for the DFD14 Meeting of  
The American Physical Society

**The convective dynamics of a suspension of ice crystals<sup>1</sup>** DAVID REES JONES, ANDREW WELLS, University of Oxford — The formation of solid crystals from a liquid cooled beneath its freezing temperature occurs in a wide range of environmental and industrial situations, such as in the formation of so-called “frazil ice” in rivers and the polar oceans. Eddies in the fluid flow act to keep the crystals suspended, while the relative buoyancy of the crystals causes them to rise, eventually sedimenting to form a layer of ice, called grease ice in the oceans. Here, we consider the interaction between the fluid dynamics of a suspension of crystals and the thermodynamics of phase change governing the growth and melting of the crystals. The crystals grow when the local temperature lies below the freezing temperature and melt when it lies above. We explore simplified scenarios that illustrate the important features of this multiphase flow and the effect of this “active suspension” on heat transfer.

<sup>1</sup>This research is funded by the John Fell Oxford University Press (OUP) Research Fund.

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Date submitted: 01 Aug 2014

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