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**Experimental Study of Roll-Hydrothermal Wave Coexistence in Convection Driven by Buoyancy and Thermocapillarity**[1] MICHAEL SCHATZ, BRETT TREGONING, Georgia Institute of Technology, JOSHUA BARNETT, Stanford University, MINAMI YODA, ROMAN GRIGORIEV, Georgia Institute of Technology — Buoyancy-thermocapillary convective flow in a volatile fluid with a free surface and a horizontal temperature gradient arises in a variety of situations. Previous work examining buoyancy-thermocapillary flow in a rectangular geometry showed that hydrothermal waves are usually found in the limit where the dynamic Bond number approaches zero while a stationary convection roll pattern is found in the limit where the dynamic Bond number is of order unity while the Marangoni number is held as a control parameter. Linear stability analysis predicts a dynamic Bond number regime in between these limits in which static convection rolls coexist in the domain with hydrothermal waves that propagate along the direction of the temperature gradient [Grigoriev and Qin, JFM 838, 248 (2018)]. By probing this regime over a range of dynamic Bond numbers, we examined these predicted dynamics using an experimental cell containing silicone oil imaged with a shadowgraph technique.

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