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Marangoni Convection and Deviations from Maxwell's Evaporation Model PHIL SEGRE, Physics. Dept., Emory Univ., Atlanta, Ga., EDDIE SNELL, NASA Marshall Space Flight Center, Huntsville, Al, DAN ADAMEK, NASA Marshall Space Flight Center, Huntsville, Al — We investigate evaporation and natural convection from thin pools of volatile liquids. We find that evaporation rates do not always follow the classical Maxwell evaporation model; deviations become larger with increasing liquid volatility. Thermal imaging shows that the liquids are not always stable to Marangoni convection; surface flows grow in strength with increasing volatility. A highly sensitive thermal imaging camera allows us to characterize the Marangoni patterns as a function of volatility, time, and liquid pool height. To help explain our results, we develop a heat balance model to connect the evaporation rates to the convective dynamics, and show that the convective flows are the source of the deviations from Maxwells' evaporation model.

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