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How do drops evaporate? NEBOJSA MURISIC, LOU KONDIC, New Jersey Institute of Technology — The problem of evaporating drops with non-pinned contact line, although seemingly trivial, so far lacks satisfactory theoretical description. In particular, there has been much discussion regarding appropriate evaporative mass flux model. We make an attempt to resolve this issue by comparing our experimental data with the results of several mathematical models for evaporating drops. After describing experimental procedure, we propose several models for mass flux and develop a governing equation for evolution of drop's thickness. Two-dimensional numerical results are then compared to the experimental results, and the most appropriate mass flux model is identified. Finally, we propose the governing equation for the full 3D system and present some new numerical results related to curious phenomena, where so-called "octopus-shaped" instabilities appear ahead of the contact line of volatile drops[1].

[1]Y. Gotkis, I. Ivanov, N. Murisic, L. Kondic, *Phys. Rev. Lett.* **97**, 186101 (2006).

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