

Thermophysical model of the production rate of C/1995 O1 (Hale-Bopp)

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A new approach to thermophysical modeling of comets is presented and applied to interpret the production rate measurements of water and CO of comet C/1995 O1 (Hale-Bopp). A long-term observation campaign of this exceptional comet showed that the production rate of a volatile species like CO is coupled to the solar irradiation of the surface [1]. This is only conceivable if CO is located close to the surface. By solving the Stefan problem of a multi-layered comet nucleus in a consistent way we obtain production rate curves for water and CO which we compare with measurements. Possible implications on the target comet of ESA's Rosetta mission 67P/Churyumov-Gerasimenko are discussed.

[1] Biver N. et al. (2002) *Earth Moon and Planets*, 90, 5-14