

# Accepted Manuscript

## Rarefied Gas Dynamic Simulation of Transfer and Escape in the Pluto-Charon System

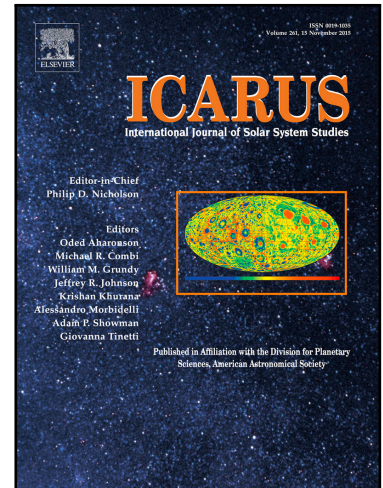
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**Highlights:**

- Pre- and post-encounter cases are simulated and well-resolved flowfields shown.
- Density fields exhibit a gas transfer structure arcing through L1 toward Charon's wake.
- A simulated escape rate of  $7 \times 10^{25} \text{ CH}_4 \text{ s}^{-1}$  for the NH encounter agrees with observation.
- Total flux to Charon is  $2 \times 10^{24} \text{ s}^{-1}$  at ~98 %  $\text{CH}_4$ , with peak values (~2x) on the upstream face.
- Charon gravitationally focuses incident flow into a wakeward high-density region.
- Charon may retain a thin atmosphere sourced from Pluto's escape, but below observable levels.

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