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The Shedding of Jupiters Red Flakes Does Not Mean It Is Dying PHILIP MARCUS, UC Berkeley, PEDRAM HASSANZAHDEH, Rice University, MICHAEL WONG, IMKE DE PATER, AIDI ZHANG, UC Berkeley, JOSEPH BARRANCO, UCSF, DAVID LEE, Rice University — During 2019 the Great Red Spot (GRS) of Jupiter repeatedly shed large  $(100,000 \text{ km}^2)$  chunks of itself as red flakes. Rather than the GRS "dying" as report in the popular press, we have a more benign hypothesis tested with 3D numerical simulations. There are 2 distinct boundaries of the GRS (n.b., neither of which is coincident with the boundary of its cloud cover): (1) the boundary of its potential vorticity (PV) anomaly, and (2) its last "closed streamline". An isolated vortex has nested closed streamlines, both interior to it and exterior it. The latter circumscribe the vortex. However, an anticyclone embedded in an anti-cyclonic zonal shear only has exterior closed streamlines near the PV boundary. Farther from its PV boundary, it has "open streamlines" that circumscribe the planet, not the vortex. The last close streamline contains at least one stagnation point. We show that when there is large area between the last closed streamline and the PV boundary, vortices "fed" to the GRS merge with it. However, when that area is small, vortices fed to the GRS will be expelled at or near a stagnation point. Thus, our explanation of the of recent Red Flakes is that area between the PV boundary of the GRS and its last closed streamline has shrunk.

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