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Hybrid Particle Code Simulations of Mars: The Role Ionospheric Escape in Explaining Water Loss from Mars STEPHEN BRECHT, Bay Area Research Corp., STEPHEN LEDVINA, Space Sciences Lab. Univ. of Ca. Berkeley — The results of our latest hybrid particle simulations using the HALFSHEL code are discussed. The presentation will address assorted processes that produce differing ion escape rates from Mars. The simulations investigate the role of the neutral atmosphere (Univ. of Michigan's MTGCM) in its dynamic form (neutral winds and co-rotation) in the calculation of the ionospheric loss from Mars. In addition, the effect of crustal magnetic field orientation in ion escape from Mars will be discussed. Further, the presentation addresses reasons for these differences and details of the interaction around the crustal magnetic fields. Finally, these results and others will be compared to fits to data. The estimated loss rates from a variety of missions and times were fit to the solar EUV flux. Our results will be compared to this fit.

Stephen Brecht
Bay Area Research Corp.

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