AQUAPLANETS ON ECCENTRIC ORBITS: ATMOSPHERIC RADIATIVE PROPERTIES AND OBSERVABILITY. A. D. Adams[1] and W. R. Boos[2], [1]Department of Astronomy, Yale University (e-mail: arthur.adams@yale.edu), [2]Department of Geology and Geophysics, Yale University.

Introduction: Fully 3D General Circulation Models have been extended from modeling Earth's atmosphere to a variety of exoplanetary scenarios. Planets on orbits of moderate to high eccentricity present a unique physical regime where atmospheric dynamics can potentially be dominated by an impulsive, yearly stellar radiative forcing. Additionally, highly eccentric planets have an increased geometric probability of transit compared with less eccentric planets of similar semi-major axis. Previous analyses of eccentric Earth-sized planets often consider ocean-dominated surfaces ("aquaplanets"), critiquing assumptions of using mean annual flux to assess habitability [1] and the effects of ice-albedo feedback as a function of host stellar spectral type [2]. Since no exoplanets are yet known to be ocean-dominated, such analyses are and continue to be theoretical. We explore the effects of changing large-scale radiative properties of the atmosphere of a hypothetical aquaplanet, examining the potential differences in the output spectrum and phase curves of such planets.

References:

[1] Bolmont E. et. al. (2016) *Astronomy & Astrophysics, 591,* A106. [2] Shields A. L. et al. (2013) *Astrobiology, 13,* 715-739.