1D2V Kinetic Simulations of Plasmas in the Scrape-Off Layer with Recycling\textsuperscript{1} E.L. SHI, Princeton University, T. STOLTZFUS-DUECK, A. HAKIM, G.W. HAMMETT, Princeton Plasma Physics Laboratory — The effects of neutral particle recycling into the scrape-off layer in a 1D geometry along the parallel direction are studied with gyrokinetic simulations. This is of interest as a step towards understanding how reduced recycling with lithium can improve confinement. Outflow from the core is represented as a steady source of plasma localized about the midplane, and the ionization of recycled neutrals is represented as a source of cold plasma at the divertor plate. We use the Gkeyll code to calculate the steady-state temperature and density profiles and find the parametric dependencies of upstream and target temperatures on the recycling coefficient. Comparisons are made with a fluid model to identify regimes where a fluid treatment is valid.

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