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Profile evolving tokamak plasma edge turbulence simulations[1] BO LI, Peking University, D.R. ERNST, MIT, C. SUN, A. ZHOU, H. ZHANG, Peking University — We have developed a new flux-driven 3D two-fluid code for the simulation of resistive ballooning modes in the tokamak edge and SOL. The plasma pressure and potential profiles are evolved self-consistently using the drift-reduced Braginskii equations. The simulation domain is radially global with both closed and open field line regions. We find that the plasma potential structures play an important role in the edge turbulence and transport. The simulations show that the nonlinear evolution of the curvature-driven mode produces the large-scale convective cells. These radially broad eddies result in the flattened pressure profiles in the turbulent, steady state.

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