



What is the effect of mantle-reconnection interaction?

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We employ a 2.5D PIC simulation to study a scenario where cold streaming mantle plasma gets captured by the reconnection process. As soon as the tailward streaming protons get involved, it contributes to the overall momentum balance, altering the initially symmetric outflow dynamics. Adding x-directed momentum to the reconnection process also results in the tailward propagation of the reconnection site. As the reconnection site propagates tailward, the inflow conditions will also change. We investigate how the reconnection process re-orient itself to the changing momentum conditions on the kinetic scale, and how the reconnection rate is affected, both on temporary and long (global) timescales. Adding tailward momentum and motion of the reconnection site should lead to a reduction of the overall reconnection rate. Our results are important for understanding the development and dynamics of magnetospheric substorms and storms.