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The statistical relationship between magnetosheath ion temperatures and magnetic field perturbations throughout the dayside magnetosheath.

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The magnetosheath layer functions as an interface between interplanetary and near Earth space. As a result, the magnetosheath plasma properties dictate the efficiency and occurrence of processes which regulate the energy and momentum transport to the inner magnetosphere. Two (and possibly correlated) magnetosheath plasma properties which may play a significant role are ion temperatures and magnetic field perturbations; both of which comfortably exceed their solar wind counterparts. It has been proposed that magnetic field fluctuations, particularly those close to ion gyro-scales, can heat ions. In some cases, especially close to the magnetopause, these may facilitate diffusive plasma transport via kinetic Alfvén waves. The results presented here describe a statistical study using THEMIS and OMNI data between 2008 through 2015 in which we study the statistical relationship between magnetosheath ion temperatures and magnetic field variations over Pc 1-5 scale lengths. We show that higher amplitude fluctuations behind the quasi-parallel shock can produce higher ion temperatures subsequently driving a dawn-dusk asymmetry. We will also determine which scale/s are more effective at driving higher temperatures. We ascertain whether this relationship varies with spatial location, and if there are any global implications.