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Foreshock compressive structures and their relations to jet-like events in the magnetosheath

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Plasma structures with enhanced density or dynamic pressure, also known as jets or plasmoids, are often observed in Earth's magnetosheath. Early studies of jets in the magnetosheath have indicated that the jet formation is closely related to processes in the foreshock region. Based on the magnetic field changes, Karlsson et al. (2015) divided the plasmoids into two distinct groups. They observed numbers of "diamagnetic" plasmoids in the foreshock region and suggested that Short Large Amplitude Magnetic Structures (SLAMS) could be a source of both plasmoid types in the magnetosheath. Using measurements by the Magnetospheric Multiscale (MMS) spacecraft we present a statistical analysis of foreshock compressive structures with significantly enhanced density and dynamic pressure. Based on our statistical analysis and previous studies, we discuss features of those structures, their properties, occurrence, evolution, and relation to the magnetosheath jets and plasmoids.