



Observations of transients released by helmet streamers

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The Heliospheric Imagers (HI) onboard the STEREO (Solar TERrestrial Relation Observatory) are used to study the out-flowing transients released by helmet streamers from the Sun to Earth-like distances. We present a systematic analysis of the in-situ observations associated with the passage of these transients near 1 AU and classify them according to their magnetic and plasma properties. We find that streamer blobs observed 'face-on' in coronagraph images emerge from the parts of streamers that extend greatly in latitude. These face-on blobs can be associated in-situ with small-scale magnetic flux ropes entrained by high speed streams. The passage of the STEREO and near-Earth spacecraft through long periods (several days) of very slow solar wind measured in-situ is associated with flat helmet streamers extending in longitude inside the ecliptic plane. We find that the intermittent mass flows released from these flat streamers are associated in-situ with solar wind structures where the plasma pressure dominates largely over the plasma pressure. We interpret these findings by considering simple physical processes that may occur inside the streamer belt.