Foreshock Transients and Their Geoeffects

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Foreshock transients are frequently observed upstream from the bow shock (such as Hot Flow Anomalies, foreshock cavities, and foreshock bubbles). They play a significant role in the mass, energy and momentum transport from the solar wind into the magnetosphere and impact the whole magnetosphere-ionosphere system. This presentation will discuss the great progress made recently toward answering some specific outstanding science questions. Some outstanding questions are listed below. What are the physical differences and relationships between different transient phenomena at the bow shock? What are the formation conditions for the transient phenomena at the bow shock? How do the magnetosphere and ionosphere respond to transient phenomena generated at bow shock? How do transient phenomena at the bow shock evolve with time?