Title: Hot Flow Anomalies & Foreshock Cavities − Are They the Same Thing?

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Abstract:

Both hot flow anomalies (HFAs) and foreshock cavities are events observed upstream from the bow shock. They have similarities and differences. Both HFAs and foreshock cavities are characterized by enhanced magnetic field strengths and densities bounding regions of depressed magnetic field strength and density. In addition, energy particles are often present in both types of events. Foreshock cavities are less prominent than the HFAs in the sense that the solar wind distributions within the cavities show little evidence of heating or significant flow deflection although a second, suprathermal population is present. In addition, unlike HFAs, foreshock cavities are not associated with interplanetary discontinuities separating regions with significantly different plasma parameters and field orientations, although they do possess some local internal structure. We present THEMIS observations of a structure that started as a foreshock cavity and finally evolved into an HFA which is characterized by significant flow deflection and dramatic plasma heating.