Frequency variability of standing Alfvén waves excited by fast mode resonances in the outer magnetosphere

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Introduction

This supporting information shows an example of a THEMIS magnetosphere crossing (on 31 Jul 2008 by THD), indicating how the data are selected and turned into the density profiles used in the study.
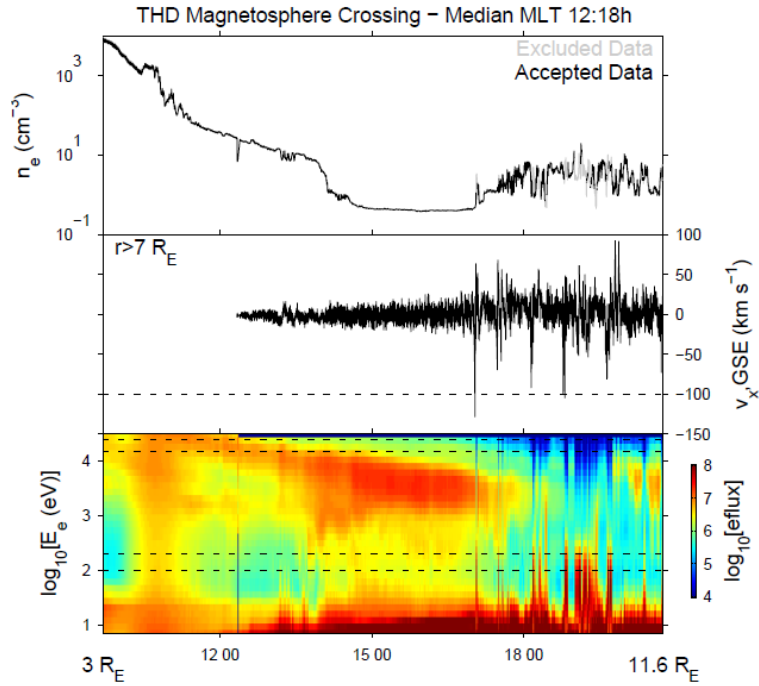
Figure S1. Outbound THD magnetosphere crossing. (top) Spacecraft potential inferred electron density. Data satisfying our selection criteria are shown in black whereas rejected data is in grey. (middle) Sunward component of the ion velocity shown for radial distances of $7\,R_E$ or greater. Times when the velocity was below the threshold value (dotted line) were excluded. (bottom) Electron energy spectrogram where the color indicates the differential energy flux. The high energy (typically magnetospheric) and low energy (typically magnetosheath) energy channels used are highlighted by the dotted lines. Data was rejected when the ratio of these was less than 0.01.
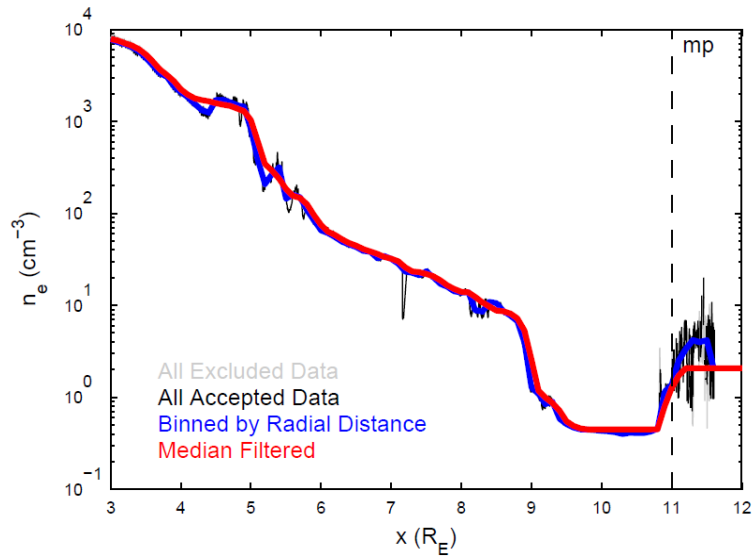
Figure S2. Electron density as a function of radial distance for the magnetosphere crossing shown in Figure S1. All accepted (black) and excluded (grey) data are shown. The blue line indicates the data binned by radial distance (0.1 R_E), which are subsequently median filtered resulting in the red line. The model magnetopause standoff distance is also displayed.