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Characteristics of the plasmaspheric hiss in the inner magnetosphere

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The plasmaspheric hiss is regularly observed in the plasmasphere and in the related high-density regions such as in the plumes. Even the phenomenon has been well known for long time, the generation mechanism of hiss remains still open. The hiss is important because it is believed to cause loss of energetic trapped particles. In this study we investigate in detail the characteristics of hiss and its occurrence using the four-point Cluster observations in order to distinguish temporal and spatial variations of hiss. Each orbit includes two crossings of the inner magnetosphere on two hemispheres and so one can follow variations of hiss during some 2-3 hours by four spacecraft every few days. The power of plasmaspheric hiss often appears to be highly correlated with the local plasma density particularly during quiet conditions. The hiss is found to be generated at the equatorial region particularly in the plumes. At lower L shells it tend to propagate towards the equator.