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Transport and dynamics in Saturn's magnetosphere

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From Voyager and more recent Cassini observations, it is clear that the dominant source of Saturn's magnetospheric plasma is the rings and icy satellites, well inside the magnetospheric boundary. Relevant evidence includes the plasma composition and the strong inward gradient in the density. There is also considerable evidence that this material is transported outward from the source region, at least in part through a very active process of flux-tube interchange. Ultimately, the plasma must be lost from the magnetosphere, through the magnetopause or down the tail as a planetary wind. We examine observations from the Cassini CAPS instrument during the first few orbits about Saturn for evidence indicative of the location and nature of this loss process. In particular, we explore the local time dependence of the plasma characteristics and injection signatures.