



Global statistical evidence for chorus as the embryonic source of plasmaspheric hiss

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The origin of plasmaspheric hiss, the electromagnetic emission responsible for the gap between the inner and outer radiation belts, has been debated for over four decades. Recently a new theory proposed that chorus, which is excited in the equatorial region outside the plasmopause, can propagate to low altitudes on the dayside and evolve into plasmaspheric hiss. Here we combine data from six satellites and show that chorus extends along the Earth's magnetic field to high latitudes in the pre-noon sector and, in the equatorial region, there is a clear gap of the order 1-2 Earth radii between plasmaspheric hiss at $L^* < 4$ and chorus further out, consistent with ray tracing modeling from a chorus source. Our observations confirm two of the key predictions of the new theory and provide the first statistical evidence for chorus as the embryonic source of plasmaspheric hiss.