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Lightning induced whistler waves as a cause of electron precipitation

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Lightning induced whistler waves are one of the primary causes of energetic electron loss from the Earth's radiation belts. This is mainly due to the pitch angle scattering of the particles by whistler mode waves, leading to precipitation. The detailed spatial and temporal influence of lightning on precipitation losses is, however, not well known. The World Wide Lightning Location Network (WWLLN) gives continuous global lightning coverage with good time resolution. Since the detection efficiency of WWLLN is relatively low, it was compared to LIS/OTD data. However, whereas WWLLN records strokes, LIS/OTD record flashes. Therefore the flash multiplicity has to be taken into account. By incorporating multiplicity and lightning stroke orientation to the WWLLN global lightning distribution and then transforming the resulting data to geomagnetic (MAG) coordinates, the average VLF power that is radiated into the ionosphere can be estimated. This can be used to determine the energy and the spectrum of the waves that go on to enter the magnetosphere. Hence the precipitation losses due to whistler mode waves can be studied.

Level (Hons, MSc, PhD, other)?

MSc

Consider for a student award (Yes / No)?

Yes

**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

No

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