Trimpi Events and Other Amplitude Perturbations Observed at Varanasi Using SoftPal Receiver

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The "trimpi events" [1] consists of a sudden change in phase and amplitude of the transmitter signal followed by a slow recovery to the initial levels as the ionization decays. We report here preliminary observations of phase and amplitude perturbations (trimpis) on VLF signals propagating in the Earth ionosphere wave-guide. Five VLF transmitter signals are monitored at our low latitude station Varanasi (L = 1.07) using SoftPAL Receivers. This paper deals with the current understanding of lightening discharge associated processes that leads to the changes in the characteristic of the waveguide and thus variation in the received amplitude and/or phase of the VLF transmission signals observed for the period August 25 2009 to December 25 2009. Occurrence of Trimpi events at low L-values can be interpreted as precipitation of very high energetic electrons which are capable of producing perturbations during daylight, or as evidence of the 'fast' Trimpi mechanism which can dominate at low L-value [2]. This wave induced particle precipitation is assumed to occur due to gyroresonance between whistler-mode waves and counter streaming electrons [3-4].

Keywords: Trimpis, Earth ionosphere waveguide, lightening, VLF waves.

References

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