

In this study, we present simultaneous observations of structured chorus waves being modulated by ULF waves generated as a result of a substorm injection. The in-situ wave data, measured by Van Allen Probes, were observed simultaneously with ground-based observations of pulsating aurora. Theory and observations have linked equatorial VLF waves with pulsating aurora for decades, invoking the process of pitch-angle scattering of 10's keV electrons in the equatorial magnetosphere. Recent satellite studies have strengthened this argument. In this case study, we propose the scenario being one of substorm-driven ULF pulsations modulating chorus waves, and thus providing the driver for pulsating particle precipitation into the Earth's atmosphere. To investigate the modulation of VLF waves further, we use the WHAMP plasma wave dispersion code to simulate this feature through ULF-modulated density variations. The emerging picture shows that ULF and VLF waves can be intimately related, which has implications for wave-particle interactions throughout the inner magnetosphere.