Ion injection triggered EMIC wave activity and its association with enhanced convection periods

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Electromagnetic ion cyclotron (EMIC) waves are found to be most prevalent during geomagnetic storms and solar wind pressure pulses which provide the necessary free energy for the wave growth. However, they have also been regularly observed in the absence of these two drivers. These non-storm time and non-pressure pulse EMIC events are very well associated with individual night side injections during substorms. However, not all substorm injections elicit wave activity. Our study aims to determine which substorm trigger wave activity. EMIC events excited during substorm injections are examined and various plasma parameters that are responsible for wave growth are studied. We find that injections that are associated with EMIC waves are also associated with enhanced high latitude ionospheric convection, which are manifestations of strong magnetospheric electric fields. The convective signatures occur at local times similar to those of the observed wave activity.