# Characteristics of Steady Magnetospheric Convection: A SuperDARN Perspective

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Intervals of Steady Magnetospheric Convection (SMC) are loosely defined as times when convection in the magnetosphere is enhanced and there are no substorm signatures. There have been several quantitative definitions developed to detect SMC events. None of these methods, however, are based on observations of convection. SuperDARN is a useful tool for studying SMC, because it gives a direct measurement of convection on a global scale.

Previous SMC selection methods make use of ground based magnetometer responses to auroral electrojet currents. Previous methods resulted in a strong seasonal dependence in SMC occurrence due to seasonal changes in ionospheric conductivity. A new SMC selection criterion was developed to improve upon the previous criterion for enhanced convection. SuperDARN was used to evaluate the old and new selection methods. According to SuperDARN convection observations the new SMC selection criterion largely eliminated conductivity effects.

Statistical studies reveal that the new SMC intervals have similar properties as events selected using traditional methods. Case studies confirmed the statistical results that SMCs selected by the new criterion have SMC properties. Both SMC events sets have a moderate solar wind driver, enhanced convection, and stable polar cap size. Statistical studies also show there was good SuperDARN data coverage during SMC, unlike other types of active magnetosphere phenomena. SuperDARN was therefore shown to be an excellent tool with which to study SMC.