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Near Real-Time Riometer Data Processing

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Riometers provide passive instrumentation for monitoring and analyzing changes to ionospheric absorption. The relative nature of riometer measurements, and their sensitivity to noise, pose challenges for their use in calculation of near real-time absorption. To this end, methods for automatically cleaning, filtering, and processing riometer data from the NRCan riometer network have been developed. These algorithms flag likely periods of absorption and radio noise, which enables the near real-time calculation of riometer quiet day curves and local ionospheric absorption. To demonstrate the method's ability to automatically calculate absorption, its performance is evaluated during absorption events, using data from the NRCan riometer network. Periods which were excluded from quiet day curve calculation due to heightened noise or suspected periods of absorption were found to have higher deviations and a poorer fit to calculated quiet day curve values than quiet time periods, indicating the algorithm is correctly identifying periods for exclusion from quiet-day curve calculation.

Keyword-1

Riometer

Keyword-2

Ionosphere

Keyword-3

Absorption

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