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Transforming the autocorrelation function of a time series to detect land cover change

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ABSTRACT

Regional monitoring of land cover conversion of natural vegetation to new informal human settlements is essential when investigating the migration of people to urbanized cities. Detecting these new settlements require reliable change detection methods. A robust change detection metric can be derived by analyzing the area under the autocorrelation function for a time series. The time dependence on the first and second moment causes a non-stationary event within the time series which results in non-symmetrical variations. In this work we explore the behavior of the autocorrelation function using new integration, differentiation and windowing approaches. Experiments were conducted in the Gauteng province of South Africa and we found a proper windowing function improved the overall detection accuracy.