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Improving features used for hyper-temporal land cover change detection by reducing the uncertainty in the feature extraction method

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ABSTRACT:

The well-being of the environment is one of the major factors that contributes to sustainability. Sustainable human settlements require local governance to plan, implement, develop, and manage human settlements expansions. This is important as the number anthropogenic activities is directly correlated to the increase in human population within a geographical region. Regional mapping of land cover conversion of natural vegetation to new human settlements is essential. In this paper we explore the effect which the length of a temporal sliding window has on the success of detecting land cover change. It is shown using a short Fourier transform as a feature extraction method provides meaningful robust input to a machine learning method. In theory, the performance is increased by improving the estimates on the features by increasing the length of the sliding window. Experiments were conducted in the Limpopo province of South Africa and were found that increasing the length of the sliding window beyond 12 months yield minor improves due to other seasonal and external factors.