Title
Modeling C-band radar observables over sugarbeet fields using machine learning

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Abstract

This thesis developed a forward model for Sentinel-1 C-band co-pol and cross-pol backscatter and coherence using crop biophysical variables including leaf area index, tops weight, surface soil moisture and root zone soil moisture as inputs for sugarbeet. These input variables are simulated using a crop model called Decision Support System for Agrotechnology Transfer (DSSAT). The prediction of SAR signals is conducted using random forest regression model across all the sugarbeet fields in Noord-Brabant, the Netherlands. The correlation between simulated variables and the C-band SAR observables is investigated, as well as an evaluation of the effect of different feature combinations.