**Title**

Vegetation monitoring in coastal areas using readily available Remote Sensing data

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**Abstract**

Monitoring of the status of vegetation is required for nature conservation. However, doing this for large areas is a time intensive task. Now the use of aerial data from airplanes has made this task easier. However this data source is dependent on the weather conditions and permission to fly in the busy airspace above the Netherlands. An alternative dataset can be found in the form of optical satellite data, which has become increasingly more suitable due to better spatial resolution and revisit times. For this study the optical satellite data from Superview is combined with the LiDAR elevation data set AHN on a 1-meter raster. With this data available, the goal is to classify vegetation into three different classes: sand, grass and trees. And do this for multiple epochs to analyze class transition patterns. Three classification methods were compared: nearest centroid, random forest and neural network. These methods were tested on 11 epochs on the Meijendel en Berkheide dunal area on the Dutch coast. Both neural network and random forest seemed in good agreement with the aerial imagery data set. Where neural network was faster to process, the random forest produced a more stable result. All the methods are also able to output probabilities, which are used to classify mixed class pixels. The location of these mixed class pixels agree with the transition process that are expected between the classes. This study show that it is possible to use a combination of satellite and LiDAR elevation data for vegetation assessment.