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Oil Pollution Analysis of the Ecuadorian Rainforest Using Remote Sensing Methods

Authors : Juan Heredia, Naci Dilekli

Abstract : The Ecuadorian Rainforest has been polluted for almost 60 years with little to no regard to oversight, law, or regulations. The consequences have been vast environmental damage such as pollution and deforestation, as well as sickness and the death of many people and animals. The aim of this paper is to quantify and localize the polluted zones, which something that has not been conducted and is the first step for remediation. To approach this problem, multi-spectral Remote Sensing imagery was utilized using a novel algorithm developed for this study, based on four normalized indices available in the literature. The algorithm classifies the pixels in polluted or healthy ones. The results of this study include a new algorithm for pixel classification and quantification of the polluted area in the selected image. Those results were finally validated by ground control points found in the literature. The main conclusion of this work is that using hyperspectral images, it is possible to identify polluted vegetation. The future work is environmental remediation, in-situ tests, and more extensive results that would inform new policymaking.

Keywords : remote sensing, oil pollution quatification, amazon forest, hyperspectral remote sensing
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