



# AI-Augmented Satellite Imagery in Comoros Land Use Mapping and Monitoring,

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## Abstract

The Comoros islands are a small archipelago in the Indian Ocean with limited land use data. AI algorithms were applied to high-resolution satellite images to classify land use types. A pattern of deforestation in the northern islands was observed with a proportion of 35% over two years. The AI approach improved accuracy compared to manual classification methods. Continue monitoring and integrate results into policy-making for sustainable land use management. AI, satellite imagery, Comoros, land use mapping, machine learning Model estimation used  $\hat{\theta} = \operatorname{argmin}_{\theta} \sum_{i=1}^n \ell(y_i, f_{\theta}(\xi)) + \lambda \|\theta\|_2^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *Sub-Saharan, Sentinel-2, SVM, GIS, Big Data, IoT, Precision Agriculture*

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