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## A New Approach to Change Detection in Multispectral Images by Means of ERGAS Index

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### Abstract:

In this letter, we propose a novel method for unsupervised change detection (CD) in multitemporal Erreur Relative Globale Adimensionnelle de Synthèse (ERGAS) satellite images by using the relative dimensionless global error in synthesis index locally. In order to obtain the change image, the index is calculated around a pixel neighborhood ( $3 \times 3$  window) processing simultaneously all the spectral bands available. With the objective of finding the binary change masks, six thresholding methods are selected. A comparison between the proposed method and the change vector analysis method is reported. The accuracy CD showed in the experimental results demonstrates the effectiveness of the proposed method.

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### I. Introduction

Remote sensing imagery is an excellent tool for rapid mapping applications. In this context, one of the main uses of remote sensing is the detection of natural or anthropic changes. Change detection (CD) is a technique used to determine the change between two or more time periods of a particular object of study. CD involves the use of multitemporal data sets to discriminate areas of land cover change between dates of imaging [1].

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