

EGGERSCHWILER, Myriam (2018) : Land grabbing assessment using satellite imagery, a case study In Romania

Abstract

Land grabbing is a worldwide issue that may lead to consequences like environmental damages, exploitation of workers or illegal transactions. Thus, a good understanding of this phenomenon and its actual state is a crucial challenge. We argue that land grabbing implies large-scale land deals and that the evolution of landscape structure and more especially the size of these landscape elements is related to land grabbing. In this Master thesis, land grabbing assessment in Romania, using satellite imagery and remote sensing methods is proposed.

In this work, the proposed methodology consists of four main stages: noise removal, image segmentation, morphological operation and size computation of patches considered as crops. The proposed algorithm is applied on Landsat satellite imagery of 2006 and 2016. The algorithm is implemented and the data acquired using Google Earth Engine, online platform launched in 2010 that provides algorithms and computation skills. Change detection between these years is then obtained and repeated for four different places throughout Romania.

This process reveals that the suggested workflow yield patches considered as crops very close to Landsat image and good results in assessing changes in spatial arrangements of these patches. It also clearly shows an evolution of the sizes of the patches considered as crops over the years with globally a decrease of small-scale patches and increase of large-scale patches. This evolution yield to new insight into land grabbing in Romania.

Patches statistics are finally compared with official Romanian statistics and this comparison reveals that the proposed methodology may lead to some imperfections mainly due the choice of the parameters of the algorithm based on best-fitting visual results. This suggests interesting perspectives for the future, especially thinking about parameters validation and automatic classification.