

Higher National School of Hydraulic

The Library

Digital Repository of ENSH



المدرسة الوطنية العليا للري

المكتبة

المستودع الرقمي للمدرسة العليا للري



The title (العنوان):

Assessment of Land Cover Changes in the Allala Watershed Based on Object Based Image Analysis Using Landsat and Sentinel-2 Images .

The paper document Shelf mark P22-1 (: paper version not available)

APA Citation (APA توثيق):

Zaabar Nariman, Niculescu Simona, Mihoubi Mustapha Kamel .(2022). *Assessment of Land Cover Changes in the Allala Watershed Based on Object Based Image Analysis Using Landsat and Sentinel-2 Images*. European Spatial Data for Coastal and Marine Remote Sensing, pp 81–96. DOI ou URL :

https://link.springer.com/chapter/10.1007/978-3-031-16213-8_5

The digital repository of the Higher National School for Hydraulics "Digital Repository of ENSH" is a platform for valuing the scientific production of the school's teachers and researchers.

Digital Repository of ENSH aims to limit scientific production, whether published or unpublished (theses, pedagogical publications, periodical articles, books...) and broadcasting it online.

Digital Repository of ENSH is built on the open DSpace software platform and is managed by the Library of the National Higher School for Hydraulics. <http://dspace.ensh.dz/jspui/>

المستودع الرقمي للمدرسة الوطنية العليا للري هو منصة خاصة بتقييم لإنتاج لأساتذة باحثي المدرسة.

يهدف المستودع الرقمي للمدرسة إلى حصر الإنتاج العلمي سواء كان منشورا أو غير منشور (طروحات، مطبوعات، مباحثات، مقالات الدوريات، كتب...) بثه على الخط.

المستودع الرقمي للمدرسة مبني على المنصة المفتوحة DSpace و يتم إدارته من طرف مديرية المكتبة للمدرسة العليا .

كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

Abstract : The coastal city of Ténès, located in northwestern Algeria, is exposed to several natural hazards, such as floods, earthquakes, landslides, and forest fires. Due to human activities, socio-economic constructions, agricultural activities, and the resulting population acceleration, land cover and land use (LULC) dynamics in the city are changing over time. Hence, the understanding of LULC changes and its interactions with human activities and natural hazards is essential for appropriate land management and decision-making. In this study, we investigate LULC changes in the Allala watershed, including the city of Ténès, using remote sensing methods and Geographic Information System (GIS) tools. Object-based image analysis (OBIA) based on random forest (RF) and support vector machine (SVM) machine learning algorithms was performed to provide LULC classification maps, and then, LULC changes were assessed using GIS. In order to assess LULC changes, we used three images acquired using remote sensing, corresponding to 3 years; 1999, 2009, and 2020. A Sentinel-2 image and two Landsat images were used as input data in our methodology. Our LULC classification results showed that RF outperformed SVM on the three input data periods, with an overall accuracy of 95.6% obtained with the Sentinel-2 image. Given the changes over time, it is clear that the Allala watershed has undergone significant changes over the years, particularly an increase in building infrastructure and agricultural land due to population and urbanization growth. Analyzing and mapping the trends of LULC changes in the study area provide a basis for strategic planning and managing, and results of LULC changes can be used as a decision support tool and provide further help in regional and national land management.

KEYWORDS : LULC changes ; Allala watershed ; Landsat images ; Sentinel-2 ; Object-based image analysis (OBIA) RF ; SVM

Available from : https://link.springer.com/chapter/10.1007/978-3-031-16213-8_5