

Detection of change in land surface properties in using space-born-images

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ABSTRACT

In the area around Rabat in Morocco, land degradation and desertification are increasing problems for both environment and local communities. This study is part of the DESIRE project that aims to fill a lack of insight on these problems and to address these with policy makers to counter degradation and desertification. DESIRE selected the Sehoule plateau as research area, which is where this study was conducted.

In this research, the aim was to provide an overview of changes in land surface properties in the Sehoule using Landsat TM images. Selected hotspots of changes were analysed with field data in order to get insight in the links between these changes and socio-economic and/or natural phenomena. Additionally, this analysis was upscaled for temporal trends, to detect underlying causes for a short term (with MODIS data) and a long term (precipitation data) period.

Also, the classification method used by DESIRE was validated to get insight in the possibilities of land cover classes for all DESIRE study sites. A reclassification was made in order to show which classes are interesting to add to enlarge the analytical value for the Sehoule site specifically.

The results indicated that three phenomena were predominant causes for change in Sehoule. First of all, a shift from traditional to modernized agriculture, resulting in compaction and thus increasing land degradation; secondly, demographic changes, increasing the pressure in and on Sehoule, resulting in for example overgrazing and decreasing forest condition; and thirdly, the seasonal variability of precipitation, which, in combination with current cultivation seasons, results in high erosion risks.

It was recommended that policy makers and researchers focus especially on the third issue, in follow-up studies and policies, adjusted to the changes that are ongoing in Sehoule.

Keywords: Remote Sensing; Land Use; Change Detection; Vegetation; Land cover classification