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VEGETATION INDICES AND SURFACE TEMPERATURE FOR REMOTE SENSING IN A BRAZILIAN SEMIARID WATERSHED

V. H. R. Coelho [a, *], B. B. Silva [b], S. M. G. L. Montenegro [c], C. N. Almeida [d], L. M. M. Oliveira [e], A. C. V. L. Gusmão [f]

[a] Federal University of Pernambuco (UFPE), Technology and Geosciences Center (CTG), Water Resources Group, Recife, Brazil – victor-coelho@hotmail.com
[b] Federal University of Pernambuco (UFPE), Technology and Geosciences Center (CTG), Water Resources Group, Recife, Brazil – bbdasilva.ufpe@gmail.com
[c] Federal University of Pernambuco (UFPE), Technology and Geosciences Center (CTG), Water Resources Group, Recife, Brazil – suzanam.ufpe@gmail.com
[d] Federal University of Paraíba (UFPB), Technology Center (CT), Water Resources and Environmental Engineering Laboratory (LARHENA), João Pessoa, Brazil – almeida74br@yahoo.com.br
[e] Federal University of Pernambuco (UFPE), Technology and Geosciences Center (CTG), Water Resources Group, Recife, Brazil – leidjaneoliveira@hotmail.com
[f] Federal University of Pernambuco (UFPE), Technology and Geosciences Center (CTG), Water Resources Group, Recife, Brazil – villareluna@yahoo.com.br

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ABSTRACT:

Many algorithms have been developed to identify changes in vegetation properties through combinations of spectral bands of satellite images. Thus, it is possible to identify land use changes, especially in watersheds. The objective of this study was to evaluate the changes in vegetation cover of a watershed located in Northeastern Brazil, through the EVI, NDVI, and Tsup. The study was conducted based on the MOD09A1 and MOD11A2 products extracted from MODIS – Terra satellite, with which reflectance and land surface temperature data were used in order to calculate the EVI, NDVI and Tsup in different days of 2011 and 2012. The results obtained show that the EVI and NDVI presented similar patterns in 2011 and 2012. However, both indices showed a significant decrease between 2011 and 2012. The NDVI showed average values in 2011 and 2012 respectively equal to 0.567 and 0.397, while the average values of the EVI in 2011 and 2012 were respectively equal to 0.337 and 0.230. Due to the reduction of vegetation indices in 2012, there was an increase of 3.58ºC in land surface temperature as reflection of the decrease in rainfall recorded in 2012. According to the Student t test there was no significant difference between the mean values of NDVI , EVI and Tsup between 2011 and 2012.

* Corresponding author.