

Interactive comment on “Heuristic Approach to Multidimensional Temporal Assignment of Spatial Grid Points for Effective Vegetation Monitoring and Land Use in East Africa” by Virginia M. Miori et al.

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Received and published: 12 September 2018

These comments verbatim from a second reviewer:

"The paper entitled "Heuristic Approach to multidimensional temporal assignment of spatial grid point for effective vegetation monitoring and land use in East Africa" by V.M. Miori et al seeks to develop and test a methodology to describe trends of vegetation changes in East Africa based on NDVI data. The work is presented as an improvement over similar techniques in that it reduces false identifications of changes and at the

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same time takes into account spatial information from the NDVI data.

The paper is well written, despite some obvious typos, and the methodology is clearly described. The overall motivation for a better approach in developing a successful detection mechanism for vegetation changes is well grounded. The paper layout is reasonable, although the Literature Review section (Section 2) is not clear. I am personally not familiar with multiple testing techniques, and the description in Section 2 is problematic as it does not explain how the previous techniques were used with geophysical data. It would be probably beneficial for the paper if the authors invited the collaboration of experts in agricultural, terrestrial biology, land and land use change science, in order to better address the physical understanding of the statistical methods employed.

Furthermore, it is unclear how, from a well established trend of past changes in vegetation, one can predict changes in the future, purely based on one index (NDVI). Trends in vegetation are a result of climate change, but also natural variability, local weather and microclimate, as well as anthropogenic intervention on the local level. There are vegetation changes associated with humidity, water supply, draughts, floods, precipitation, soil destruction, ground erosion, wildfires, winds, solar radiation availability, cloudiness, atmospheric pollution etc which in addition to land use change and agriculture may impact the vegetation changes. None of these factors is taken into account, nor is there a qualification how these factors are represented in the approach described here.

Lastly, I feel unequipped to judge the merit of the statistical technique proposed here, as it would have been better evaluated by a more specialized peer group in a similarly specialized journal. Co-author Clements has collaborated on a similar paper in the International Journal of Remote Sensing published in 2013. That journal would have been more relevant for this article perhaps. It is however an important point the authors must reconcile whether they decide to publish this paper elsewhere: how can trend detection that is based on past state of the system and which does not take into account climate change and extreme events or any other meteorological, climatic, bio-

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geochemical factor that influences the local ecological balances, can provide reliable predictions of future trends?

I recommend that this paper is not published in ESSD at this stage unless both my major criticisms are addressed. "

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2018-18>, 2018.