

Interactive comment on “Spatial indicators for desertification in south-east Vietnam” by Le Thi Thu Hien et al.

Anonymous Referee #3

Received and published: 30 July 2019

The manuscript presents a desertification risk indicator based on a simple scheme applied to a coastal region in the Vietnamese southeast. The results of the scheme are very similar to those of the World vulnerability map of desertification, page 10, lines 10-13, what question the interest of the manuscript.

The defined quality indicators are difficult to understand: 1. The climate quality indicator (CQI) is based on the average annual precipitation and reference aridity index and its temporal rate of change, neglecting the influence of other meteorological factors such as the wind, (the occurrence of strong land winds is mentioned in page 3, line 15), and the relative humidity. Why do not integrate these effects in a water balance in the air above the ground? Is there any rationale behind the selected threshold values used for the scores of the precipitation and aridity?

C1

Incidentally, the scores for the different magnitudes should have been better indicated in a table.

2.-The soil quality indicator (SQI) includes the slope which is not properly an edaphic attribute. The texture scores should be based on the textural components, not on the units of a soil classification system what implies the contribution of other edaphic factors like rock presence, salinity, or depth, considered in other parts of the SQI. As in the previous indicator, the authors should have justified the limits between different categories. Why the presence of rocks and salinity are not better delimited?

3.-The vegetation quality indicator (VQI) is loosely defined. Is the vegetation of the study region so homogeneous that does not require any specification of trees, shrubs, or herbaceous plants? Is it necessary to include both the NDVI and its time rate of change at the same level in the VQI?

4.-The water management quality indicator (WMQI) is a mixture of very heterogeneous factors with the same level of influence. The water balance is not the volume of water used for irrigation. This volume should be expressed as volume per unit area to extend its potential use out of the study area. The groundwater capacity refers more precisely to a volume than to a discharge rate. The irrigation factors type and capacity are not similar as they appear in the WMQI equation. What relevance the canal density in the indicator? The existence of canals do not necessarily imply that they are in use.

The risk indicator demands a sound justification.

There are some formal aspects in addition to the convenience of tables to show the different scores for indicators and their factors:

1.-Is there a necessity to reinforce some of the statements with a host of references? The abundance of multiple references might be more an obstacle than a help for the reader.

2.-Some sentences are rather obvious (e.g. page 2 lines 25-26; page 3 lines 24-25;

C2

page 3 lines 31-32, page 4 lines 1-3; page 11 lines 14-15).

3.-Some references are missing in the final list as the FAO-UNESCO of page 5 line 6-

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-146>, 2019.