

SOIL Discuss., community comment CC1  
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## **Comment on soil-2021-55**

Fuat Kaya

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Community comment on "Potential and limits of vegetation indices compared to evaporite mineral indices for soil salinity discrimination and mapping " by Abderrazak Bannari and Abdelgader Abuelgasim, SOIL Discuss.,  
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The manuscript, first of all, parameters related to salinity in soil samples in Kuwait and their relationships with ground-based hyperspectral data are examined. However, hyperspectral data obtained in Kuwait is "resampled" to Landsat 8 OLI bands. Information from here is used to predict soil salinity at Omangwa salt-pan in Namibia.

The study differentiates itself by presenting an approach towards the applicability of the modeling information obtained in similar areas.

### **General comment**

Assertively, modeling approaches from vegetation indexes are reported to have failed at Omongwa salt pan. This is an expected result. In addition, not only landsat, but any satellite image that is currently accessible for free and paid cannot detect a salt crystal due to spatial resolution.

We can create the polynomial model in Microsoft excel. When applying this model spatially in a raster environment with commercial software such as PCI, it becomes difficult to understand in text. At least I struggled.

### **Specific comments and technical corrections**

A detailed literature review on the subject of the study, in which the literature is abundant, is given.

Section 2.3, L283-285

I calculated this part myself.

$$r = h * \tan\left(\frac{\alpha}{2}\right) * \frac{\Pi}{180}$$

$$A = \Pi * r^2$$

$\alpha$ , the measuring viewing angle

A, Field of view

r, Field of view radius

According to your data, when I calculate it, I get 554.99 cm<sup>2</sup>. Saying about 700 would lose precision.

You made the resampling function in Section 2.5., L326 using "CAM5S radiative transfer code (RTC)". Was this process performed in an open source software or with a commercial software? Readers may want to know about it. There is one that I know of. The "hsdar" package can do these things in R. **hsdar**: Manage, Analyze and Simulate Hyperspectral Data. <https://cran.r-project.org/web/packages/hsdar/index.html>

L1301, Figure 1, It's really hard to follow the arrows in the flowchart.

L1420, Table 1 and Table 2, Wouldn't it be more appropriate to give descriptive statistics in general terms? For example, it may be important to know the salt content of the soils taken from the A, B, C, D, E and F regions in Table 1 Kuwait.

Please also note the supplement to this comment:

<https://soil.copernicus.org/preprints/soil-2021-55/soil-2021-55-CC1-supplement.pdf>