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Discussions

Interactive comment on "An attempt to monitor seasonal dynamics of soil salinization in the Yellow River Delta region of China using Landsat data" *by* Hongyan Chen et al.

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Thank you for your comments concerning our manuscript which were posted on the NHESS Discussion page on January 31, 2019. Those comments are helpful and constructive for improving our manuscript and future research. The comments and our responses are presented below.

1. The authors aimed to develop models to predict soil salinity over different seasons using an improved vegetation index. However, I found that the drawbacks of the earlier indices were not explained in the Introduction of the revised manuscript.

Response: We will add some description about the drawbacks of the earlier indices in the Introduction of the revised manuscript.

2. The Discussion also needs to be improved, particularly the third paragraph since it only repeats the Results.

Response: We agree with the comment, the discussion will be revised carefully. The third paragraph mainly discussed the results and disadvantages based on the data of time point. We will delete the repeat description of results in the revised manuscript.

3. How did the authors ensure the accuracy of their select months compared to the other months?

Response: Only based on the data of time point in one season, it is really difficult to ensure the accuracy of the selected time point compared to the other months, so, in order to respond more accurately to the dynamic changes of soil salt, a period of SSC should be selected as the seasonal salt data, which will be the future research. We will add related discussion in the revised manuscript.

4. It is also unclear why the samples collected in spring and autumn were used to develop the inversion models while the samples of winter and summer were used to validate the models.

Response: Firstly, in the YRD regions with distinct seasons, soil salinity between seasons varies usually greatly, it is not appropriate applying the same model to four seasons. Secondly, from the descriptive statistics of the soil samples SSC (Table 2), the SSC in spring is close to winter meanwhile the SSC in summer is close to autumn, so it is feasible to adopt the same model in spring and winter, meanwhile it is feasible to adopt the same model in autumn and summer. Thirdly, in the YRD regions soil salts aggregate to the soil surface in spring, spring is often chosen to study soil salinity inversion (Weng et al., 2010), and because the summer vegetation is too luxuriant, the autumn is more suitable for the study season than summer (Dehni & Lounis, 2012;

Yang et al., 2015), so the samples collected in spring and autumn were used to develop the inversion models while the samples of winter and summer were used to validate the models.

5. P11L2 What is the relationship between 5 grades of soil salinization and figure 5?

Response: 5 grades of soil salinization are non-saline soil, mild saline soil, moderate saline soil, severe saline soil, and solonchak, the degree of soil salinization gradually increased. We will add some description about the relationship between 5 grades of soil salinization in section 3.4.1 of the revised manuscript.

6. There are numerous convoluted sentences that can be simply re-written.

Response: We accept the comment, some of the most striking examples will be revises one by one and some sentences will be re-written, we will revise the whole manuscript carefully.

7. I strongly suggest the authors to seek professional English proof-reader to help with the overall language presentation of the manuscript since there are also numerous grammatical errors.

Response: We accept the comment, we will revise the grammatical errors listed one by one and will seek professional English proof-reader to help.

8. What are the obvious geographical advantages?

Response: The obvious geographical advantages mainly refers to that the Yellow River Delta is located in the junction part of the Beijing-Tianjin-Hebei metropolitan and Shandong Peninsula, and there is a national-level high-efficiency ecological economic region in China. In order to clarify clearly the information, we will modify some description in the revised manuscript.