Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2019-194-RC2, 2019

Biogeosciences Discussions
Open Access
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Interactive comment on "Comparing Stability in Random Forest Models to Map Northern Great Plains Plant Communities Using 2015 and 2016 Pleiades Imagery" *by* Jameson Brennan et al.

Anonymous Referee #2

Received and published: 17 September 2019

The authors use the unique plant community signature of Prairie Dog colonies to challenge RF methods, but the novelty of this approach is never articulated. Explain early on, with references, why temporal and spatial characteristics of prairie dog influence on vegetation makes it an interesting challenge for remote sensing and the combined ecological/rangeland management/remote sensing triumvirate of the manuscript will be clearer to the reader. The Introduction needs to be restructured and I recommend the Results and Discussion be entirely re-written, it was extremely difficult to follow and all of the cool aspects of this interesting study were either buried or not mentioned at all. After rather major revisions I can see how this paper could be acceptable for publication. It is technically sound for the most part but needs major changes.

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Minor comments: The ecological justification for investigating Prairie Dog towns was somewhat lacking in the abstract. Is this study fundamentally about identifying colonies from remote platforms or using prairie dog colonies as an interesting opportunity to advance statistical techniques in remote sensing?

The statement on line 43 is somewhat fuzzy. The cautious note at the end of the abstract is forthcoming.

The transition from line 65 to 66 is a bit harsh. The narrative 'funnels' from remote sensing in general to prairie dog colonies in particular far too rapidly. As a consequence, the reader is left wondering if the central theme is prairie dog colony identification or remote sensing techniques or rangeland and cattle management (or all of the above, and if so how do they fit together).

The paragraph beginning line 79 is 'listy' and reads like a few random manuscripts that the authors read. How do these fit together to advance the overall objective of the study? I recommend restructuring the Introduction. 'Writing Science' by Schimel is a good text for describing logical flow in scientific manuscripts.

From the paragraph on line 101 it appears that the objective isn't to compare RF against different techniques, which is fine. But the opportunity to use the subtle (or not so subtle) vegetation changes induced by prairie dog colonies to challenge RF methods isn't brought to the forefront. This is a missed opportunity in my opinion. Note also in line 146 that a goal could also be to investigate prairie dog and plant ecology: you don't always have to bring it back to cattle foraging. The Utah and Mexican Prairie Dogs are endangered after all.

156: The Ecological Sites notion was new to me and the descriptions sound like soil types. Are these a USDA thing?

162: I'm confused, I always thought that Kentucky bluegrass was Poa pratensis.

173: the temperature and precip measurements are great but please specify the

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mesonet used (South Dakota).

174: using common abbreviations like ‘pdf’ or common words like ‘snow’, ‘cool’, and ‘warm’ will lead to confusion. Sites are either on towns or off, so using PD with subscript f or g, then O (or similar, even ‘NPD’ as used on line 201 without previous description) with subscripted snowberry, c3, and c4 would help me at least. There is a lot to digest here and making things easier for the reader can go a long way.

I’m not entirely sure why an ordination, MRPP, NMS, Bray-Curtis, etc. was used for pre-defined vegetation types. Weren’t they already selected to be different from each other? Is the point of this analysis to guarantee that the five vegetation types are in fact different from each other (e.g. line 256)? In this case of course it’s fine to do so.

NDVI probably doesn’t need to be defined on 231 although a note about any differences in the spectral resolution of the red and NIR among Pleiades and other common satellites may be interesting for the Discussion.

276 is probably a methods point and 278 may even be an Introduction point. Literature as a whole needs to be woven into the narrative. In general, any time a sentence starts with the author of a paper, the sentence needs to be changed. Doing this makes the author(s) the subject(s) of the sentence. The topic at hand should be the topic of the sentence. Please start a sentence with authors only when those authors are the subject of the sentence, which can happen.

The paragraph beginning 265 could benefit from a few more quantitative values rather than qualitative ones like ‘high degree’ and ‘lower’.

296: I disagree somewhat. Different species will be more prominent during different times of the year (e.g. cool vs warm season grasses).

The manuscript would probably benefit from separating the results and discussion to show first what happened then explain it. The discussion never comes back to prairie dogs.

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Please make font sizes larger in the figures. They are often hard to read.

From Fig. 5 and 6 it appears that prairie dog colonies, at least in this area of SD, can be identified with a relatively large degree of accuracy. This needs to be made more prominent in the discussion.

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