Reviewer 2:

Overall this is a good paper with some really interesting results. With some additional improvements to the figures/analysis it could be excellent and make an excellent contribution.

Thanks for the positive comments and the suggestions.

I am mostly viewing this as a scholar who uses land use projections, and the discussion of the different approaches and how they differ is really important. I like the introduction in general but a bit more detail would be appreciated.

We will add more detail, in common with the responses to R1.

I would also like the authors to discuss how observational data is incorperated into this models, or not. The usual standard for earth system science, is a lot of comparison to observations, so please explain how each of these paradigms try to make sure they actually compare well to observations, especially of historical land use change trajectories, or if they do not do such comparisons. If currently there is no comparison, this could be a way to differentiate these different approaches to see which is more accurate.

Thanks, an important point. We will detail specific and general use of observational data in the revision, particularly in the model description/comparison table referred to in responses to Reviewer 1. In general, optimising models have indeed been more often compared against data but we will provide specific details for these models.

I also think a bit more analysis could be helpful in the figures to synthesize a bit more. Details below.
Figure 2a: the dark (IAP) vs. lighter (CRAFTY) symbol isn't clear enough here: I recommend you make more of a matrix with left being light colors and right being dark colors and showing then that the right ones are IAP and left ones are CRAFTY. I stared at the plot for awhile before I understood what the dark grey and light grey was in the figure.

Figure 2b: the colors aren't really different enough here, and the same issue with the dark vs. light colors.
Figure 2 in general: Would a difference plot work better for this? Or a % difference? There are so many similar bar graphs?
Figure 3: white means two things here: not included, and not land? Please try use grey for one of those so this is clearer. Maybe you want difference plots here instead of these contrasting, but similar plots? Are there patterns of where in particular the differences are important that you can find and call out?
Figure 4: this graph is not self standing enough: describe what is on the left versus the right, why the arrow goes in the opposite direction on the bottom, everything needs to be explained. Describe the alternative parameterizations briefly here in the figure caption.

We will make all of these changes as suggested.