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Geoscientific Model Development Discussions
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GMDD
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Interactive Comment

Interactive comment on "Grassland production under global change scenarios for New Zealand pastoral agriculture" *by* E. D. Keller et al.

Anonymous Referee #1

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General comments

This ms presents model results on how climate change and other factors will affect New Zealand pastoral agriculture over the 21st century, combining downscaled GCM data, land use projections, and the ecophysiological model Biome-BGC. While not groundbreaking in terms of novelty, this is solid, interesting, and high necessary work. The ms is generally well written and clear throughout, with appropriate references and prior work cited. The methods are generally well documented, with a few exceptions (see below). The authors do a nice job of describing all their steps, including model calibra-

tion and validation, dataset choices, and processing of final results.

Specific comments

I do have a few significant concerns. First, the authors need to specify the software version used and source for Biome-BGC and, as applicable, all other models/data used. Second, no error estimates are presented with any of the results, which is surprising. I understand that the emphasis is on differences between model runs, and not absolute results, but both do appear and it would be very useful to (e.g.) at least calculate differences across the driving GCMs.

Technical corrections

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1. Page 3308, line 2: don't use define LURNZ (and DLUCS below) if not used again in abstract

2. 3308, 3: perhaps define "intensification"

3. 3309, 10: NZD I assume? Clarify

4. 3311, 3-26: not sure this is all necessary

5. 3314: interesting!

6. 3318, 8-9: how? Biome-BGC doesn't include irrigation explicitly

7. 3321, 25: reference should be to Table 2?

8. 3326, 14: might discuss briefly how consistent the White et al. results are with yours here

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9. Table 3: define ME, and generally improve caption to provide more info

10. Figures 3 and 4: ideally, statistically test measure:model regression line slope for intercept=0 and slope=1

Interactive comment on Geosci. Model Dev. Discuss., 7, 3307, 2014.

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Discussion Paper