

Editor's comments:

I also recommend streamlining the presentation of the study and providing more detail. E.g., the introduction of the Methods section lists 5 bullet points while the study is in fact more comprehensive. You may consider providing a study design schematic that covers all these aspects and renders them better traceable throughout the manuscript. Also missing in this list and subsequent descriptions is how the expectation types relate to the parameter perturbations. Are they part of the LHC sampling or is each of the 10000 parameter sets run for each expectation type?

Another point of confusion may be the calibration of a gcamlnd parameter for one year and the subsequent sensitivity analysis/calibration using further parameter perturbations. The manuscript may profit here from clear descriptions of the whole study process as pointed out above.

As pointed out by the reviewer, more detail and clarity on further steps or options for validating such a selection of a "numerically optimal parameter set" that serves "to guide the selection of parameters for an economic model", i.e. a calibration, would be important, including the state-of-the-art in the field (e.g. relating to the Introduction) in case an actual out-of-bag validation is hampered by data availability or other limitations. This is touched upon in parts of the Discussion but should deserve more elaboration.

Finally, I also agree that the abstract should provide more technical information to better target the readership of GMD. E.g., it would be helpful to mention the expectation types tested, the perturbed parameter types, etc. L6-9 in turn are not necessarily relevant for a technical paper.

Specific comments:

- L122: GGE needs to be spelled out
- L136: planted to harvested area ratio provides the ratio of crop failures or non-harvested crops. Do you mean physical cropland to harvested area, which determines multi-cropping, or actual crop failure ratios?
- Footnotes 4/8: Provide citations for R packages
- Table 2: "Logit exponent (p) ..." should be included in column two for consistency
- L184: What are the implications of the acceptable NRMSE for the study results?
- L259: European Space Agency
- L386/L431/L503: reconsider use of "you/we"