

Review: Ocean-atmosphere interactions modulate irrigation's climate impacts

1 General

In general, I think the authors did a very good job at integrating most of the reviewers' suggestions, strongly increasing the manuscript's quality. However, in my opinion there still exists a major issue with the conclusions the authors draw from their results.

In the last part of their discussion section (p. 8 l. 30 ff) the authors claim that simulations with fixed SSTs or regional models may miss some important effects related to irrigation. The way the section reads, this can very easily be understood as meaning that the respective simulations (fixed SSTs or regional models) also do a worse job at representing real world irrigation impacts. This the authors have not shown in their study, e.g. there is no comparison to observations and there is also no comparison to any results from regional simulations. Here, it is equally plausible that the ocean model introduces some erroneous effects that lead to an amplification of the irrigation impacts that in reality does not exist. Thus, I think this statement should be revised carefully. It should very clearly be acknowledged that (in the present study) there is no evidence that the amplifying effects of the ocean model actually result in a better representation of irrigation effects with respect to reality.

As I have stated before I see a danger that this notion establishes grounds on which results of future modelling studies can easily be rejected merely because the model did not include an interactive ocean component. Because this is an important issue, the authors should either ensure that the respective passage can not be misunderstood or provide evidence for an actual improvement as a result of having an ocean model.

As a minor issue, it would be very nice to have the numbers for the fraction of the surface being significantly affected by irrigation (p. 6 l. 50 ff) also for the land surface only.