

Title: The G4Foam Experiment: Global Climate Impacts of Regional Ocean Albedo Modification

General comments

The paper deals with the G4Foam experiment, a unique testbed experiment for the GeoMIP simulations. G4Foam aims to increase the albedo of certain ocean regions. This method of climate engineering aims to reduce the global warming without reducing the monsoon rainfall. The study address the effect of G4Foam experiment on annual mean and JJA rainfall especially over land regions.

This paper addresses an interesting and socially relevant aspect of G4Foam experiment. Decrease in monsoon precipitation has always been a topic of discussion in climate engineering especially for G4SSA experiment. From the current study it is shown that the G4Foam experiment increases the precipitation over most of the land regions especially for JJA season with some adverse impacts elsewhere.

I recommend to accept the paper with the modifications/corrections suggested below.

Specific comments

- 1) In the case of termination of G4Foam, why not study a gradual termination instead of an abrupt termination? It would be interesting to see the recovering phase of G4Foam in a gradual termination process.
- 2) Paper claims the G4Foam experiment would cool the NH tropics and hence reduce the heat related mortality (Line no : 127, 377). However, heat related mortality is caused by extreme temperatures not the mean values, please justify.
- 3) Line no 382-386 : Please provide the values in comparison with RCP6.0?
- 4) From Table1 (also from Figure6) it is clear that the G4Foam experiment increases the tropical land precipitation by 1.4% annually and 2.02% during JJA relative to RCP6.0. How does this affect the extreme precipitation and frequent flooding events occurring in tropical land regions during monsoon time? Similar to reduction in precipitation, excess precipitation also affects the society right? So does this cause more adverse affects than benefits?
- 5) Line no : 461-463, (Similar to the above point) How can it be an important benefit without analysing the effects of increased precipitation especially during monsoon season. Extreme precipitation may lead to more floods adversely affecting the societies. Could you please justify this point with further analysis.
- 6) Line no : 472-474 Could you please give more explanation to the hypothesis.
- 7) Discussion part seems to be extremely positive about the precipitation response of G4Foam. Increase in precipitation does not always mean without negative impacts. Please rephrase the discussion with inclusion of the negative impacts of excess water supply and precipitation.

Technical corrections

Line no : 91 Please provide expansion of SSI.

Line no : 188 Could you please rephrase the sentence for better understanding.

Line no : 335 This is for JJA season right? please specify it.

Line no : 343 Is it G4Foam or G4SSA?

Line no : 396 Please check the value with the one given in Table1.

Line no : 398 Shouldn't it be RCP6.0 instead of G4SSA?

Line no : 406 Please check the values with Table1, values seems to be interchanged.

Line no : 856 Typo in Figure caption.