Ocean Sci. Discuss., 6, C766–C767, 2009
www.ocean-sci-discuss.net/6/C766/2009/

Ocean Science
Discussions

Interactive comment on "The role of atmosphere and ocean physical processes in ENSO" *by* S. Y. Philip et al.

Anonymous Referee #1

Received and published: 11 November 2009

Review of "The role of atmosphere and ocean physical processes in ENSO" by SY Philip, M Collins, GJ van Oldenburgh, and BJJM van den Hurk, submitted to Ocean Science Discussions.

This paper presents a very comprehensive analysis of ensembles of perturbed-physics coupled GCM integrations and and a simpler intermediate GCM, to determine the relative importance of feedback processes behind the model ENSO. It concludes that the response of the SST to the local winds and damping, and the response of the SST to thermocline depth changes are the most important feedbacks. The work is of a high quality and presented and presented in a very comprehensive manner.

Major comments.

1. The paper seemed unnecessarily and detrimentally over long. Especially in the second half, there was an inordinate amount of detail on individual ensemble members, which rather obscured the main messages. In my opinion, the paper would benefit from shortening.

2. How are the process equations (e.g., equation 1) "fitted" (page 2045, line 24) to the GCM?

Minor comments.

1. What exactly is the delta lag in the thermocline term in equation 1?

Interactive comment on Ocean Sci. Discuss., 6, 2037, 2009.