Earth Syst. Dynam. Discuss., 3, C114–C115, 2012
www.earth-syst-dynam-discuss.net/3/C114/2012/

Earth System
Dynamics
Discussions

Interactive comment on "On the determination of the global cloud feedback from satellite measurements" *by* T. Masters

A. Dessler (Referee)

adessler@tamu.edu

Received and published: 30 March 2012

After reading this review, I felt that a few clarifications were necessary.

Quote: In the present case where one is examining feedbacks due to clouds, one must ask whether it is appropriate to use analyzed data where model physics is known to deal poorly with clouds, and where this may bias results toward model results for feedbacks. In data sparse regions, analyzed "data" is primarily model output, and it is commonly at considerable variance with the actual data. Masters is certainly correct in asking whether the choice of analyzed or raw data makes a difference. If it does, then it may be reasonable to suppose that the use of raw data is less biased.

Response: I think this comment misrepresents several aspects of the situation. First,

Dessler 2010 only used the reanalysis clear-sky fluxes — so any problems with the reanalysis clouds would not impact the analysis. Second, there is an implication here that the measurements should be considered by default to be better than the reanalysis. It is important to remember, however, that the CERES clear-sky fluxes are derived products and not direct measurements. Thus, I do not think it is reasonable that the "raw data" is less biased than the reanalysis in this case. And, as I pointed out in a previous comment, there are strong reasons to view the CERES clear-sky data as suspect.

Quote: I think that Masters' response to Dessler on "robustness" is adequate. It should be obvious that results with very low r2 should not be considered robust by any criterion. Masters makes this clear. The point that the separation of cloudy and clear sky using satellite data leads to an apparent negative feedback is adequately qualified by the demonstration of lack of robustness.

Response: I am somewhat surprised that this argument keeps coming up. The cloud feedback is the slope of the relationship between dRcloud and surface temperature. The r^2 statistic is NOT an estimate of the uncertainty of the slope — therefore, it should be obvious that that statistic tells you nothing about the uncertainty — and a low r^2 should not be taken as indicating an unreliable result. Dessler 2010 provided error bars that appropriately express the uncertainty in the cloud feedback.

Interactive comment on Earth Syst. Dynam. Discuss., 3, 73, 2012.