Interactive comment on "Intercomparison of temperature trends in IPCC CMIP5 simulations with observations, reanalyses and CMIP3 models" *by* J. Xu and A. M. Powell Jr.

Anonymous Referee #1

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The authors analyze zonal mean global temperature trends in the radiosonde data, reanalysis datasets, CMIP3 and CMIP5 model output. This is a manuscript with just one idea or question- what is the temperature trend between 1979 and 2005? Clearly based on this manuscript and other recent manuscripts the authors know how to compute a trend. Technically I didn't find any flaws. The answer to the question what is the trend is, it depends. It depends on whether you are analyzing the troposphere or the stratosphere, the radiosonde or reanalysis data, CMIP3 or CMIP5 model output. But in the most general terms the troposphere is warming and the stratosphere is cooling. The authors lay out the data for the reader and don't stray from the most direct interpretation of the data. For example I was left wondering, given that the simulated

tropospheric temperature trend in the CMIP5 models is more than double the temperature trend observed in the radiosonde data, does this mean that the climate sensitivity of the models is too high? This might have important implications for temperature projections based on the CMIP5 models in doubling CO2 scenarios. But the authors do not explore possible implications of their results, which both limit the amount of criticism for the analysis (they certainly cannot be criticized for drawing conclusions not supported by the data or the analysis) but makes for a less interesting article to read. Still I found the article useful and it is important to understand how the temperature trend varies among the different datasets analyzed. Here are some minor comments:

1. The statistical significant trends are delineated by a 2.5 contour. I am not sure where this value came from. 2. On page 3268 the sentence on line 6 is awkward and hard to understand. 3. Figures 6 but especially 1 are busy and hard to see without greatly magnifying the plot. Maybe Figure 1 can be broken into two figures but it just may be an unavoidable downside for ease of comparison.

Interactive comment on Geosci. Model Dev. Discuss., 5, 3621, 2012.