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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Global temperature response to the major volcanic eruptions in multiple reanalysis datasets" *by* M. Fujiwara et al.

Anonymous Referee #2

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The paper focuses on the important scientific problem of quantification of climatic responses to volcanic eruptions in the second half of the 20th century using nine available reanalysis data sets. The authors study zonal mean latitude-altitude pattern of temperature response. The text is quite condensed and in parts could be more explanative. Despite an interesting work was done, the major objectives are not clearly formulated. They are not collected in one place but scattered throughout the paper. The conclusions are weak and not really informative. Please see the specific comments below.

Abstract: Please outline what is the major purpose of the study.

P 13318, L 17-20: Did you make any conclusions regarding data quality and reanalysis improvements?

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P 13318, L 27-29: I disagree, there multiple examples of using reanalysis for comparison with model simulations.

P 13320, L 1-5: Please discuss your corresponding findings in the conclusion section.

P 13321, L 1-21: There are number of other indexes, e.g., NAO, Indian Monsoon, why they are not included? Could you comment on this?

P 13322, L 9: It is really not clear and has to be explained.

P 13323, L 15: In linear approximation, bias should not affect a response to external forcing.

P 13324, L 18-19: Repetition

P 13326, L 15-25: It is most important that the Agung period is not covered by satellite observations. Could you please comment on this?

P 13326, L 27-28: Why the surface temperature response is good then?

P 13327, L 9-10: Disagree, the El Chichon plume was mostly in the northern hemisphere.

P 13328, L 15: Could you compare the optical depth of small eruptions with one of mt. Pinatubo.

P 13328, L 28: There are no physical reasons for small eruptions to produce qualitatively different response. It is probably an artifact of your signal-extracting procedure.

P 13330, L 12-14: Same as the previous comment.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 13315, 2015.