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Interactive comment on "Uncertainties in cloud phase and optical thickness retrievals from the Earth Polychromatic Imaging Camera (EPIC)" *by* Kerry Meyer et al.

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Does the paper address relevant scientific questions within the scope of AMT? Yes Does the paper present novel concepts, ideas, tools, or data? Yes Are substantial conclusions reached? Yes Are the scientific methods and assumptions valid and clearly outlined? Yes Are the results sufficient to support the interpretations and conclusions? On the whole Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Yes Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes Does the title clearly reflect the contents of the paper? Yes Does the abstract provide a concise and complete summary? Yes Is the over-

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Discussion paper

all presentation well structured and clear? On the whole Is the language fluent and precise? Yes Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? On the whole Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? Some - see below Are the number and quality of references appropriate? Yes

This paper deals with the expected uncertainties in retrieving cloud optical thickness and temperature from the Earth Polychromatic Imaging Camera (EPIC) in support of the Deep Space Climate Observatory mission. The camera has limitations which may affect those uncertainties and these are tested using MODIS data which allows a comparison between MODIS analyses and results which would have been obtained with the more limited EPIC data.

This paper is generally excellent in satisfying its apparent aims.

The data are analysed comprehensively and convincingly with limitations and degraded uncertainties broadly as one might expect. The arguments are clear and detailed and the presentation, though dense, is appropriate. The limitations of EPIC mean that some cloud parameters have to be assumed and the results of these assumptions are discussed in sufficient detail.

We are not told to what extent the uncertainties satisfy any predetermined design criteria but this paper will clearly be useful as a baseline document for later users of EPIC data.

I was perplexed to discover that (page 7 line 5) "An increase in the number of undetermined phase pixels is not necessarily detrimental.....". The following explanation may be correct but the sentiment could be better expressed.

Units are generally clear and consistent except in line 13 of page 11 we see degrees (presumably Celsius) replacing"K" as the temperature unit.

Acronyms are generally referenced and explained when introduced. DISORT, page 8,

seems to be an exception. It is fundamental, but the cloud optical thickness product (COT) must be at a particular wavelength. We should be clearly told what that is early on.

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