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Atmospheric Measurement Techniques Discussions

Interactive comment on "Using Two-Stream Theory to Capture Fluctuations of Satellite-Perceived TOA SW Radiances Reflected from Clouds over Ocean" *by* Florian Tornow et al.

Anonymous Referee #1

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The manuscript of Tornow et al. considers the statistical model which relates the SW radiances and cloud parameters. The paper is suitable for publication in ATM. In principle, it can be published as it is now.

However I suggest some points which can be addressed by authors:

Abstract, line 4: 'Like previous approaches' - sounds confusing was trained -> was statistically trained

Define 'cloud phase' line 78

More general remarks: authors consider very simple radiative transfer models (two-

stream, Eddington etc). Why not to use more accurate models, e.g. MOMO developed by the co-authors?

Several cloud types are considered in the paper. Different cloud types have different expansion coefficients of the phase function. The differences are significant for high order expansion terms. Simplistic radiative transfer models hardly can capture them. I doubt that just asymmetry parameter is sufficient to describe different types of cloud models. In this regard, the choice of the two-stream model needs to be justified. Perhaps, authors could elaborate.

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