

Interactive comment on “Effects of long-range aerosol transport on the microphysical properties of low-level liquid clouds in the Arctic” by Q. Coopman et al.

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The authors thank the reviewers for their interest in the article and their comments. We have considered each comment and have made the following adjustments to the manuscript.

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1 Answer to an editorial comment.

"I notice that you use the terminology IE to define microphysical responses. I take full responsibility for coining this acronym, but as was pointed out to me soon after that publication, the indirect effect is about radiative responses, not microphysical responses. I therefore suggest that you consider changing your terminology."

Many articles currently use the terminology ACI standing for aerosol-cloud interactions to calculate the same parameter. Here we use CO rather than aerosols to represent a pollution plume. The question is how pollution plumes affect cloud properties, allowing for the possibility that pollution aerosols may have been scavenged en route to the Arctic. Thus, we propose to replace the term IE with PCI standing for pollution-cloud interactions.

We have added a sentence on page (33-12) in Section 3.2 *The indirect effect parameter*: "We do not directly consider the effect of CCN or aerosols on clouds but rather the extent to which a pollution plume interacts with cloud microphysical properties. Often what is evaluated is aerosol-cloud interactions (or ACI). However, if aerosols have been scavenged en route to the Arctic then pollution may be present but its impact on cloud properties weak. Thus, we employ the term PCI instead standing for pollution-cloud interactions." Accordingly, we have replaced in the figures and text the term IE with PCI.

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