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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Impact of Saharan dust on North Atlantic marine stratocumulus clouds: Importance of the semi-direct effect" *by* Anahita Amiri-Farahani et al.

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Thanks for this useful comment.

This part is added to the result section: The aerosol-cloud radiative effect is weakly positive during boreal winter. The presence of non-dusty aerosols could also be a reason of the large uncertainty. Kishcha et al., (2015) show that, in winter, Saharan dust is not the predominant aerosol species over our study area. In winter non-dusty aerosols, such as carbonates (organic and black carbon), sea salt and sulfates also significantly contribute to the total AOD over the tropical North Atlantic. Absorbing aerosols, such as organic and black carbon, produce mainly a positive semi-direct radiative effect, similar to the dust effect. Sulfates and sea salt, non-absorbing aerosols,

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produce a negative indirect radiative effect, acting as effective CCN. Thus, non-dusty aerosols, producing either positive or negative radiative effects, significantly contribute to the large uncertainty of the aerosol-cloud radiative effect in winter.

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