

Interactive
Comment

Interactive comment on “Impacts of aerosol particles on the microphysical and radiative properties of stratocumulus clouds over the Southeast Pacific ocean” by C. H. Twohy et al.

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Response to Reviewer 1

Thank you for your favorable comments. We appreciate it and your thoughts on improving the paper.

Summary: The following sentence has been added to the Abstract: Thus, larger scale forcings that impact cloud macrophysical properties, as well as enhanced aerosol particles, are important in determining cloud droplet size and cloud albedo.

General: 1) Good point. Rather than clutter up the plots, we've added information on

measurement standard deviation along the tracks and uncertainty in the measurement technique themselves (to the best of our knowledge) to the figure captions.

2) While rumors of Ilo smelter emissions stopping due to a labor strike abounded during VOCALS, according to our co-authors who work directly on emissions inventories, there was no conclusive evidence that Ilo emissions were significantly reduced during the VOCALS period. Southern Copper production records all say high production occurred there in the 4th quarter of 2008. Records of the local labor dispute at Ilo include only the strike in June/July, with no shutdown in sympathy with the broader regional protests during the VOCALS intensive operating period. From OMI satellite SO₂ retrievals, it appears that La Oroya and Ilo were both operating during the experiment. Ilo might have stopped briefly in October, but the inventory's Ilo emissions rate is ~ 0.51 KT/day, right at OMI's estimate. Thus, even if there was a brief interruption, it appears not to have had a significant effect on net emissions, or on our results.

3) The WRF-Chem used in our study was run with chemical boundary conditions coming from the MOZART global model, so long-range sources were included in the analysis. We have added this point to the paper. (However, as shown by Allen et al 2011, plumes originating in Australia and advecting eastward primarily impact the free troposphere, and should not affect our overall results.)

Minor: Comma replaced with "and" in Abstract.

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