

Interactive comment on “Source attribution of climatically important aerosol properties measured at Paposo (Chile) during VOCALS” by D. Chand et al.

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I think this is a useful paper. It identifies contributions of various aerosol sources to coastal SE Pacific aerosol populations and shows where the particles may have come from.

Specific comments:

p 17857, line 4: They clearly note that these observations were on the coast and are one end of a gradient that extends out to unpolluted regions of the SEP. One of the particularly attractive features of the VOCALS Rex region is the gradients offshore, which can be used for teasing apart anthropogenic and marine sources.

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p 17861, line 11: Although I probably sometimes do it myself, I hate to see, “are comparable with” in scientific papers. It’s so vague that it tells you nothing quantitative. The only thing it conveys is, “we found nothing new.”

P 17862, line 4: I like Fig 5. It is a clear demonstration of how the various source types come and go over time.

P 17862, line 27: grasses also contain a fair amount of Si. These little shards of glass are part of the reason most animals can’t digest them.

P 7864, line 19: Come on, now. Does anyone think that a critical diameter can be known to 0.5 nm? Even the 69 is too many significant figures. We should avoid implying that we know any measured or computed value to 1 part in 138, unless it’s a very precisely measured quantity like CO₂.

P 17864, line 22: The authors should clarify, though, that CCN above 300 nm can be very important for many cloud processes, such as drizzle formation.

P 17866, lines 1&2: Isn’t this circular? Reproducing the observations with a function tuned to those observations isn’t a very noteworthy proof of the validity of the function.

P 17869, lines 21-27: They should also add to this summary what I think may be the most important observation of this section: the balance between dilution by entrainment and enhancement by sources is one of the most critical factors controlling concentrations. We often forget how large a role dynamics and vertical fluxes play.

I’m happy to recommend publication with the relatively-minor changes I’ve suggested above. It’s a good paper.

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