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Comment

# ***Interactive comment on “Annual cycle of Antarctic baseline aerosol: controlled by photooxidation-limited aerosol formation” by M. Fiebig et al.***

**M. Fiebig et al.**

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Dear Anne,

thanks for your interest in the article and your helpful comments!

It turns out that you are addressing an issue that has been raised by one of the other reviewers as well. In the ACPD version of the article, it is claimed that the annual cycle of ozone in Antarctica is due to ozone destruction induced by  $\text{NO}_x$  which is photochemically released from the snowpack. It turns out that this notion is wrong. Like in other (mostly) low- $\text{NO}_x$  environments, the annual cycle of ozone is created by photochem-

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ically produced hydrogen peroxide, inducing ozone destruction that is proportional to insolation (Ayers et al., 1992). However, local exceptions exist in Antarctica, where ozone is *produced* from  $\text{NO}_x$  emitted from the snowpack, which e.g. the study you are quoting shows.

However, going into this level of detail in the present article would shift the article focus too much away from the actual subject, the photochemical production of particle volume in Antarctic baseline air. Here, ozone comes in as a side aspect to support the notion that Antarctic baseline air descends from aloft. We therefore decided to correct the article, but not to extend the discussion of ozone further.

## References

Ayers, G. P., Penkett, S. A., Gillett, R. W., Bandy, B., Galbally, I. E., Meyer, C. P., Elsworth, C. M., Bentley, S. T., Forgan, B. W., 1992. Evidence for photochemical control of ozone concentrations in unpolluted marine air. *nature* 360, 446 – 449.  
<http://www.nature.com/nature/journal/v360/n6403/abs/360446a0.html>

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 23057, 2013.

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