

***Interactive comment on “Continental Scale
Antarctic deposition of sulphur and black carbon
from anthropogenic and volcanic sources” by
H.-F. Graf et al.***

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General Comments This is an interesting follow up to the Shirsat paper in early 2009 and it is good to see that the model has been expanded to cover more of the continent than previously. As stated in the paper, this is one of the first attempts to model the impacts of the pollutants emitted near to the continent and can help us to understand the impacts of human activity on the continent. One would have to read the Shirsat paper to find out more about how the aircraft, shipping and base fuel usage was collated and it is a shame to say that some of the values come from “rather crude information from. . .”. Maybe you could add some more of how this information was gathered so

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it could be a more stand-alone source of information? However, with the information that was available, this is a very interesting way of estimating the effects of pollution on Antarctica

Specific comments You mentioned the Explorer cruise vessel sinking, maybe you should mention the Bahia Paraiso in 1989 where 600,000 litres were spilled This would explain this review better: (for a comprehensive review on the effects of human presence in Antarctica see Tin et al., (2009) p. 26580 line 10, Station activity including ground transport contributes 158Mg of SO₂ for April 2004 to March 2005, very close to an earlier estimate (Boutron and Wolff, 1989) by 18 Mg.. (less or more?)

p. 26581 line 10 Could you find some Erebus volcano references p. 26583 line 17. You quote some SO₂ concentrations at McMurdo, There is a paper that shows SO₂ measurements at south Pole of about 10 pptv by Eisele 2008(Antarctic Tropospheric Chemistry Investigation (ANTCI) 2003 overview, Atmospheric Environment 42 (2008) 2749–2761). Would that be useful to quote?

Spelling/ typos

p. 26579 line 5 It was suggested that the annual cycle of BC was indicative of control by the timing of biomass burning in the tropics, strongly modulated by the efficiency of transport to Antarctica (change to from its timing, appears to be controlled)

p. 26579 line 9 Bargagli p. 26580 line 25 (Boutron and Wolff, 1989)! 26581 line 23 Estimated from crude info.. (in what format? Ship miles, gallons?, etc..?)

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 26577, 2009.

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