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Atmos. Chem. Phys., 4, 1849-1856, 2004
www.atmos-chem-phys.net/4/1849/2004/

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Extrapolating future Arctic ozone losses

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Abstract. Future increases in the concentration of greenhouse gases and water vapour may cool the stratosphere further and increase the amount of polar stratospheric clouds (PSCs). Future Arctic PSC areas have been extrapolated from the highly significant trends 1958-2001. Using a tight correlation between PSC area and the total vortex ozone depletion and taking the decreasing amounts of ozone depleting substances into account we make empirical estimates of future ozone. The result is that Arctic ozone losses increase until 2010-2015 and decrease only slightly afterwards. However, for such a long extrapolation into the future caution is necessary. Tentatively taking the modelled decrease in the ozone trend in the future into account results in almost constant ozone depletions until 2020 and slight decreases afterwards. This approach is a complementary method of prediction to that based on the complex coupled chemistry-climate models (CCMs).

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Citation: Knudsen, B. M., Harris, N. R. P., Andersen, S. B., Christiansen, B., Larsen, N., Rex, M., and Naujokat, B.: Extrapolating future Arctic ozone losses, Atmos. Chem. Phys., 4, 1849-1856, 2004. [Bibtex](#) [EndNote](#) [Reference Manager](#)

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