

Interactive comment on “Interaction of chemical and transport processes during the formation of the Arctic stratospheric polar vortex” by D. Blessmann et al.

Anonymous Referee #1

Received and published: 30 January 2012

Review of "Interaction of chemical and transport processes during the formation of the Arctic stratospheric polar vortex" by Blessman et al.

GENERAL COMMENTS

This is a simple and straightforward paper that is relatively well written. It explores a single aspect of the Arctic polar vortex i.e. the lifetime of an artificially induced ozone anomaly as a function of altitude and time. The methods used to do this are sound and the conclusions of the paper are well supported by the analysis. I recommend the paper for publication in ACP after the minor corrections below have been addressed.

SPECIFIC COMMENTS

C14849

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Page 32284, lines 5-6: The phrase 'how relevant variable dynamical processes during vortex formation' is so contorted that I couldn't quite figure out what this sentence was trying to say. Can you please rewrite this more clearly.

Page 32284, line 12: Do you mean 'persistence of the induced ozone anomaly' here?

I think that the abstract would benefit from another sentence or two describing why this matters at all i.e. what was the justification or rationale for this study?

Page 32287, line 10: When you say 'formed according to Carslaw et al. (1995)' do you mean using parameterizations described in Carslaw et al. (1995)? If so, perhaps you should say so.

Page 32287, line 19: Was there any specific reason why this year was chosen?

Somewhere in the paper, preferably towards the beginning, you need to include a couple of sentences, and a citation (I would suggest Butchart, N. and Remsberg, E.E., The area of the stratospheric polar vortex as a diagnostic for tracer transport on an isentropic surface, J. Atmos. Sci., 43, 1319-1339, 1986), that describes what equivalent latitude is.

Page 32290, lines 5-8: I find this sentence confusing. My confusion arises, in part, from the phrase 'the timescale of the decrease of equilibrium is shorter'. Can you please try to phrase this sentence in a more transparent way.

GRAMMAR AND TYPOGRAPHICAL ERRORS

Page 32284, line 17: Replace 'can not' with 'cannot'.

Page 32285, line 20: It might be clearer if you replaced 'The following variability' with 'The later variability'.

Page 32286, line 2: An 'effect' can't transport anything so I would suggest replacing 'The degree to which this effect transports' with 'The degree to which these waves transport'.

Page 32286, line 3: Replace 'ozone mixing ratios into the Arctic' with 'ozone into the Arctic'.

Page 32288, line 3: Replace 'hydrochloride acid' with 'hydrochloric acid'.

Page 32288, line 4: Replace 'of the' with 'by the'.

Page 32288, line 19: Replace 'Forecast' with 'Forecasts'.

Page 32288, line 26: Replace 'in good' with 'to a good'.

Page 32289, line 9: 'mixing ratios' can't subside so I would write this as 'ozone isopleths subside'.

Page 32289, line 15: Replace 'level' with 'levels'.

Page 32290, line 5: It might be clearer to say 'faster than ozone loss'.

Page 32290, line 25: Replace 'are still present' with 'is still present'.

Page 32291, line 15: Replace 'latitudes' with 'equivalent latitudes'.

Page 32292, line 4: Replace 'reproduces' with 'simulates'.

Page 32292, line 8: Delete 'mixing ratios'.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 32283, 2011.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)