

Third review of “Comparison of Inorganic Chlorine in the Antarctic and Arctic lowermost stratosphere by separate Late Winter aircraft measurements” by Jesswein et al.

The manuscript has again been revised and substantially improved. Only a few minor wording issues, either overlooked by the authors in their latest revision or introduced in the newly added text, remain to be addressed. After that the paper is ready for publication.

Respectfully,
Michelle Santee

- L186: the descending generally stops --> descent generally stops
- L196: unique --> uniquely
- L254: where no measurements of all major chlorine containing substances are available --> where measurements of all major chlorine-containing substances are not available
- L273: indirectly determine --> indirectly determined
- L355: difference between Cl_{total} from controlled substances during PGS and SouthTRAC --> difference between Cl_{total} from controlled substances during PGS and that during SouthTRAC
- L383: SouhTRAC --> SouthTRAC
- L384-386: This wording is confusing. I think this would be clearer: “Taking into account the difference in Cl_{total} between the two campaigns would reduce the observed differences in the mid-latitudes, where mixing ratios of Cl_y were higher during PGS, but would increase the differences in the high latitudes, where higher Cl_y was derived for SouthTRAC.”
- L387: than they can --> than can; difference of Cl_{total} --> difference in Cl_{total}
- L390: “transported” is not the right word; “converted” or “transformed” would be better
- L391-392: It would be more appropriate to state that the results of this work are consistent with those of Konopka et al. (2015), since that study came first: “Therefore, the observed differences in Cl_y , with higher Cl_y values in the southern high latitudes than in the northern high latitudes (see Fig. 9 and 10), are consistent with the differences in the age of air found by Konopka et al. (2015).”
- L393-394: showed an updated report to the long-term total column data for HCl and ClONO_2 (representing Cl_y) by Mahieu et al. (2014) --> updated the long-term total column HCl and ClONO_2 (representing Cl_y) record reported by Mahieu et al. (2014); also: though --> through
- L396: add a comma after “stations”
- L401: I do not understand what is meant by “the trends given are indicative of the interhemispheric differences in Cl_y ”. Why would the rates of change in Cl_y necessarily reflect its absolute abundances in the two hemispheres?
- L402: of about 200 ppt and above --> of 200 ppt or more; also, why is the word “explicitly” used here? It does not seem appropriate and probably should be deleted.
- L442: was found --> were found (in two places)
- L444-445: reanalyses data --> reanalysis data