

The article lists some interesting findings regarding the state of the atmosphere during low ozone events at south Brazil, caused by transfer of O₃-poor air from the Antarctica. The scientific results presented in the manuscript certainly deserve publication. However, the manuscript has to be improved significantly prior to its publication.

The “Secondary Effect of the Antarctic Ozone hole” refers to low ozone events over mid- and low-latitudes of the southern hemisphere due to the flow of ozone-poor air masses from Antarctica to the mid-latitudes. The authors identify and discuss these events, and then describe the changes in atmospheric dynamics throughout their evolution. Finally they show that during these events very strong winds flow at higher (polar jet stream) and lower (sub-tropical jet stream) levels of the atmosphere, which probably explaining the transport of O₃-poor air masses from polar regions to mid-latitudes.

The main problem of the manuscript is the language. In several points it was very difficult for me to understand what the authors mean. The authors must try hard to improve the language of the manuscript. Some possible corrections are listed below. Though, more work is necessary. Furthermore, there are several points where the citations either are missing or are not appropriate.

Analytical comments are provided below:

Title: The title is unclear and confusing and has to change. An alternative title could be “Investigation of the Secondary effect of the ozone hole at Southern Brazil” or something similar.

P1, 117: “Antarctica” instead of “Antarctic”

P1, 122: “besides ... observations.” This phrase is very unclear. I recommend re-writing it.

P1, 123: define AOH at line 20 before using it here – or use the full phrase.

P1, 126: “ECMWF reanalysis products” instead of “ECMWF reanalysis”

P1, 129: “analysis” instead of “analyzes”. Please correct this error throughout the manuscript.

P1, 130: “region of study” instead of “study region”

P2, 135: I suppose that the authors mean here, that UV is more harmful than visible radiation. However this information is inaccurate. The biological significance of UV radiation is of course very high, but UV is both beneficial and harmful. Furthermore, the cited literature here does not discuss the biological effects of UV radiation (it is probably at a wrong place?). Since a huge amount of bibliography is available describing the biological effects of UV, I recommend that the authors should search more carefully and add some appropriate references.

P2, 139: What is the “southern transport”? Do the authors mean “meridian transport”?

P2, 151: “discussing” instead of “with respect to this”

P2, 152: Delete “in this period”

P3, 177-78: “This ... mm/year” Is this information necessary or useful for the study? If no, I suggest removing this sentence.

P3, 180: Lines 81 – 87 are written very badly. I suggest trying to re-write more carefully and in a clearer way, and add the appropriate references. For example, I suggest replacing “The ... #167” with: “Ground based measurements of the total ozone were performed using the Brewer (type MKIII) with serial 167, now on referred as MKIII #167” or something similar. Furthermore, either discuss the reliability and uncertainties in the total ozone measurements from Brewer and OMI, or at least provide the appropriate references.

P3, 185-87: Brewer has two operational modes. It can either measure – nearly simultaneously – the irradiance at the referred wavelengths (306.3, ..., 320.1 nm) or scan the solar spectrum with a step of 0.5 nm in a particular wavelength range (for MKIII Brewers it is usually 290 – 363 nm). I am also pretty sure that NO₂ cannot be retrieved from spectral measurements in the UV-B region as authors state (although the MKIII type Brewers such as the one used here also provide measurements in the UV-A region where it is possible to retrieve NO₂). Please investigate the relative bibliography and add more accurate information, as well as the appropriate references.

P3, 189: OMI is not a satellite. It is an instrument on board on Aura satellite. TOMS (total ozone monitoring instrument) is also not a satellite, but a satellite instrument. Please be more careful and add the appropriate references.

P3, 189-95: Although authors discuss the retrieval of many different products from OMI (without however citing the appropriate literature), they do not provide any information or reference about the retrieval of total ozone. Since there are many studies regarding the validation of the OMI total ozone product, I also suggest adding some relative discussion in order to highlight the reliability of the total ozone measured by OMI. In all cases, please add the appropriate references. Finally, please specify if TOC is the total ozone column.

P4, 1103: Please add “were used” after “sea level”.

P4, 1114: Please add “were used” after “velocity model

P4, 1124: “ σ is”

P4, 1128-129: “After ... made”. This sentence is unclear. Please re-write it.

P6, 1171: geopotential height?

P6, 1186: “subtracted” instead of “decreased”?

P6, 1192: Again, OMI is not a satellite

P6, 1199-200: I do not agree that a strong correlation is enough in order to allow merging the ground-based and satellite datasets. The authors should also discuss the average, as well as the maximum differences between the two datasets. If for example there is –even a small - offset this would directly introduce a bias in the results of the analysis. Furthermore, if there are differences of 5-10 DU between the satellite and ground-based measurements (even for a very limited number of days), then how the authors know that they are not affecting the results? I suggest discussing the above issues here in order to prove that the merging does not affect importantly the results of the present study.

P7, 1229: Delete “(absolute PV)”

P8, 1246: Delete “for the analysis of tropospheric dynamics”

P8, 1252: Replace “who” with “which”

Figure 4: The PV, and not the absolute PV is resented in the figure. Please correct the caption.

Figure 5: Define on the figure caption that the anomalies of the PV are presented here.

P9, 1300: What is the meaning of “photovoltaic” here? Is it a typo?