

Interactive comment on “Three-year observations of halocarbons at the Nepal Climate Observatory at Pyramid (NCO-P, 5079 m a.s.l.) on the Himalayan range” by M. Maione et al.

Anonymous Referee #2

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General comments:

The manuscript by Maione M. et al. (Title: Three-year observations of halocarbons at the Nepal Climate Observatory at Pyramid (NCO-P, 5079 ma.s.l.) on the Himalayan range) analyses for the first time halocarbons (HCs) time series recorded at the Himalayan Nepal Climate Observatory, during the period 2006-2008. Data analysis has been focused on the determination of HC trends and the identification of anthropogenic and biogenic source regions. The first part of the paper concerns the determination of background levels and polluting events. An iterative linear regression procedure has been properly used for this purpose. Background time series at NCO-P have

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been compared with other global stations. The comparison is very interesting and confirms a latitudinal gradient consistent with higher emissions in the Northern Hemisphere. The second part of the manuscript deals with the study of the influence of long and short range transport on the atmospheric HCs content and with the evaluation of anthropogenic and biogenic emission regions. Meteorological parameters, back-trajectories analysis and ancillary measurements (i.e. ozone) have been used for transport and source identification analysis. Back-trajectory results show that relevant anthropic emissions originate from the Northern part of the Indian sub-continent. The paper also highlights the local impact of forest fires. Data are original and analysis of results in the manuscript is sufficient and interesting for paper readers. In general the quality of the paper is good but some sections are obscure (i.e. description of methods and sampling site) and data interpretation is not always adequately supported by observations and data analysis (i.e. influence of fires). I recommend this paper for publication after the following revisions.

Specific comments:

Abstract The abstract is overall a summary of the conclusions but doesn't give information about specific results (i.e. trends, mean concentration values etc.) Quantitative results should be highlighted in this part of the paper.

2.1. Analytical methodology

A detailed description of the sampling site is referred to Bonasoni et al. 2010 but in my opinion a sampling site overview should be included in this work. In particular details on the geographical position of the Observatory, possible polluting sources location, and the meteorological conditions of the site should be better specified.

p.22343-line 8 "...over a period of about 10 min..." The sentence doesn't give information about the amount of air collected. What is the volume of the flasks? What is the pressure reached inside the flasks? Please specify.

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p.22343-line18 “. . .improved accuracy. . .” What is the accuracy reached with the new detector? How much the accuracy has been improved compared with the old one?

3.1.1 Atmospheric baselines p.22347, line 3- There are no comments on fig.4. Please comment this figure.

3.1.3. Atmospheric trends p.22348, lines 9-10 “the four-month data sub-set are denoted by an asterisk in Table 3.” The asterisks and sub-sets are absent.

p.22348, lines 11-12 “Compounds for which the confidence interval is well below the trend itself can be considered significant and are indicated in bold in the table, while italics denote. . .” Italics and bold characters are absent.

3.2 Methyl halides p.22350, line 7 “. . .time series reported in Fig. 7a and b” CH₃Cl data series is reported twice (in Figure 7b and in Fig.8). I suggest to delete Fig.7b and to report in Fig. 7a the CH₃Br time series recorded at NCO-P compared with baseline data measured at other global station (as done for CH₃Cl in Fig.8).

4. Conclusions p. 22351, lines 12-14 “...relevant appears the contribution of tropical vegetation and biomass burning” p.22351, lines 14-17 “...In fact, biomass burning...along the Khumbu valley” These conclusions are not well supported by data analysis and observations. I suggest to combine observations of some halocompounds (i.e. CH₃Cl deviations from the baseline) with back-trajectory analysis and meteorological parameters (i.e. wind direction) in order to evaluate if the air masses corresponding to high HCs values originate from biomass burning or tropical vegetation regions.

Figures Figure 6: the figure is unclear. Please use a better graphics.

Figures 7 a-b : see comments above

Technical comments:

3. Results and discussion 3.1 Anthropogenic species

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p.22345-line 21 "...which characterise..." change to: "...which characterises..."

3.1.1 Atmospheric baselines

p.22346, lines 5-6: "...Due to due to..." There is a repetition. Delete one "due to" sentence.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 22339, 2010.

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