

Interactive comment on “Organic carbon at a remote site of the western Mediterranean Basin: composition, sources and chemistry during the ChArMEx SOP2 field experiment” by Vincent Michoud et al.

Anonymous Referee #1

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The manuscript deals with measurements of various different VOCs together with inorganic gases and aerosols on Corsica. The measurement period is fairly short, three weeks. This data is used for PMF modelling in order to detect source areas and atmospheric chemistry of the compounds. The manuscript is well written, but the measurements are not adequately described and the input data is not presented at all. The manuscript is suitable for publication in ACP after minor corrections and additions.

1. Online analysis using Perkin-Elmer instrument. The calibration gas contains also monoterpenes. Were they also analyzed although Nafion dryers are known to isomer-

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ize monoterpenes?

2. Online analysis with Markes air server. BVOCs and OVOCs were analyzed using Markes air server unit and KI ozone scrubber was used. What is meant by BVOCs here? Monoterpenes or isoprene are not included in the standard. Were they analyzed? It would be very interesting to see the comparison with monoterpenes analyzed with the off line technique.

KI scrubber is generally used when analyzing aldehydes and ketones. Have they been tested for BVOCs? I would be interested to see recoveries of monoterpenes. Diluting the sample probably increases blank value quite a lot. Was this taken into account when subtracting blank values? How much diluting increased the blanks?

3. Collection into adsorbent tubes. I think a short description of the analysis should be given here too. For the collection of 35 compounds (C5-C16) on the adsorbent tubes, air was passed through MnO₂ ozone scrubber. How many MnO₂ coated nets were used? What was the sampling efficiency? According to Calogirou et al (1999) some oxygen containing compounds (for example linalool) are lost in these scrubbers and Pollmann et al (2005) found sesquiterpenes total loss in MnO₂ scrubbers.

Results and discussion

No measurement data is shown in the manuscript. Some statistics of the model input data should be given (mean, standard deviation). For many of the compounds at least two overlapping methods were used and they were also compared although the data is not shown. However, this comparison would be very useful for others conducting similar analysis at least if severe flaws are observed. Where all the data used for PMF modelling? When studying photochemical ages of air masses the authors observe much lower slope than theoretical (Fig.3) and they attribute this to mixing between air parcels of different histories and origins. There is probably quite heavy marine traffic around Corsica that can affect also VOC ratios. Would it be possible to remove ship emissions from marine sector according to high NO_x or SO₂ concentrations for

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example? For PMF modelling inorganic gases were not used, neither inorganic ions, although they could have been analyzed with PILS. These analysis would have provided important addition to the PMF modelling. NO_x would have given information of traffic and combustion, SO₂ from ship emissions and for example K-ions of wood burning. Why did you leave inorganic compounds outside modelling? Did you try PMF modelling with inorganic compounds? Figure 8 in supplementary material is nice. I think it could be included in the manuscript. The diurnal cycles of biogenic factors with maxima during day indicate light dependent emissions. Also different diurnal cycles have been observed with higher concentrations at night due to efficient mixing and sink reactions during daytime. (Harrison et al., 2001; Hakola et al., 2012)

References: Calogirou A, 1996. Decomposition of terpenes by ozone during sampling on Tenax. *Analytical Chemistry* 68, 1499-1506. Hakola et al., 2012. In situ measurements of volatile organic compounds in a boreal forest. *Atmos. Chem. Phys.*, 12, 11665-11678. Harrison et al., 2001. Ambient isoprene and monoterpene concentrations in a Greek fir (*Abies Borisii-regis*) forest. Reconciliation with emissions measurements and effects on measured OH concentrations. *Atmospheric Environment*, 4699-4711. Pollmann et al., 2005. Analysis of atmospheric sesquiterpenes: Sampling losses and mitigation of ozone interferences, *Environmental Science & Technology*, 9620-9629, DOI: 10.1021/es050440w

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