

## ***Interactive comment on “One year monitoring of volatile organic compounds (VOCs) from an oil-gas station in northwest China” by Huang Zheng et al.***

### **Anonymous Referee #2**

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This paper reported one year VOC measurements in high frequency at oil-gas station area in China. High frequency VOC data enable to show diurnal variations of VOCs in the sampling site and strong influence of meteorological condition for VOC concentrations was elucidated. Using PMF analysis, VOC emission was successfully categorized into five sources. Further, CPF analysis gave more information about the direction of the VOC emission sources. Also backward trajectory based analysis (PSCF, CWT) were applied.

[ General comments ] Similar VOCs measurement and analysis were already demonstrated in urban area, but the detailed VOC observation at oil-gas station area will be

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important in view point of source area information. Because strong VOC emission sources are close to the measurement site, the analyzed results would be simpler and seems to be reasonable. But I am not sure about the validity of PSCF and CWT analysis in this measurements. When there is a strong source very close to the measurement site (like 2 km from Oil refinery and 6km from Oil-gas field in Fig 1c), the backward trajectories passed the near emission source will be counted as high concentration over its whole trajectory rout. Therefore, the raster analysis (distinguish local and regional area) would be reasonable trial. (But I am afraid that the influence of very close emission sources can not be excluded, because that 12h radius will be still long and concentration of each grid was estimated from CWT.)

[ Detailed comments ] Fig1 : What is 2 type green area in Fig 1(a)? What is blue area in Fig1(b) ? Exact location of the sampling site is difficult to see in Fig1 (b) (because of blue color). Is the sampling site located in Region 1? What is the rose figure in Fig1c ? Wind speed or VOC concentration from each direction? If this rose figure shows wind direction, figure caption will be incorrect (“Northwesterly and northeasterly wind prevailed”).

Page4 L3 : PLOT column will be used for C2-C4 separation in GC. For C2-C4 trap, some absorbent (tenax etc) would be used. Please check the explanation about VOC measurement system.

Table 1 : Please explain “MDL” (method detection limit). “KOH” will be better to write in small characters.

Fig3 : Is the colors in Fig3(e) same as Fig3(a)-(d)? (In Fig3(e), blue (acetylene?) seems larger contribution. )

Fig6 and text: Are O3, BLH etc 24hour average or only daytime average? There are strong diurnal variations in BLH, O3 and VOCs, so these plot would be different when you use whole day or only daytime data.

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Fig12 (d) : Is it correct “F1-F4” ? (Is it “CO-F4” ?)

Fig13 : Please explain MCH and MCP. In the right axis of (a),(b),(e), "/" will be better to show as ",". They are not ratio, but just concentration. “Cyclohexane” etc would be better to show as dot and line.

P12 L24-2: Diurnal pattern of acetylene seems to be different. (Acetylene did not decrease during daytime.)

P15 L20-22 : "Northeast to Southwest" Is this “Southeast to Southwest”?

P15 L23-24 : Fig.14(b), highest peak is in east direction.

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