EMEP/CCC-Report 6/2011

**EMEP** Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe

# VOC measurements 2009

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# Contents

# Summary

This report presents measurements of VOC carried out during 2009 at EMEP monitoring sites. VOC measurements are reported for a total of 12 sites, and 3 of these with carbonyls. Except for two sites with continuous monitoring of hydrocarbons (Rigi and Hohenpeissenberg) all the VOC measurements are made by grab samples of light hydrocarbons in canisters and by 8-hours samples of carbonyls by DNPH adsorption tubes.

The monitoring network was reduced by two stations in 2009. The monitoring of light hydrocarbons at Utö (FI09) in Finland was ended and no data were reported from Starina (SK06) in Slovakia. Data from a new VOC site, Kollumerward (NL09) in the Netherlands, were received but are not reported here due to limited data coverage in 2009.

The winter median concentration levels were highest at three sites in Northern Germany; Zingst, Waldhof and Neuglobsow for many of the hydrocarbons. In general, however, fairly uniform mean concentration levels of alkanes were seen, indicating that these compounds become well mixed in the dark season without effective chemical loss mechanisms.

Some compounds, like benzene and toluene, show a long-term development indicating a general reduction in the concentration level, whereas for other compounds there are too large year-to-year variations to see clear trends. The data from the three-year period 2007-2009 indicate increased winter concentrations of ethane and butane at several sites. Robust trend calculations of the VOCs are difficult due to the poor sampling frequency (normally 2 samples per week) and the strong influence of meteorology. Modelling studies are needed to separate the effect of changes in emissions from those of changing meteorology from year to year.

# VOC measurements 2009

## 1. Introduction

The Geneva Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes was adopted in November 1991. It entered into force on 29 September 1997. Three options for emission reduction targets are specified by the Protocol:

(i) 30% reduction in emissions of VOC by 1999 using a year between 1984 and 1990 as a basis;
(ii) The same reduction as for (i) within a Tropospheric Ozone Management Area (TOMA) and ensuring that by 1999 total national emissions do not exceed 1988 levels;
(iii) Finally, where emissions in 1988 did not exceed certain specified levels, Parties may opt for a stabilization at that level of emission by 1999.

In 1999 the Gothenburg protocol to Abate Acidification, Eutrophication and Ground-level Ozone was adopted by the Executive Body of UN-ECE, and on the 17th May 2005 the Protocol entered into force. The Protocol sets emission ceilings for 2010 for four pollutants: sulphur, $NO_x$, VOCs and ammonia. These ceilings were negotiated on the basis of scientific assessments of pollution effects and abatement options. Parties whose emissions have a more severe environmental or health impact and whose emissions are relatively cheap to reduce will have to make the biggest cuts. According to the Protocol, Europe’s sulphur emissions should be cut by at least 63%, its $NO_x$ emissions by 41%, its VOC emissions by 40% and its ammonia emissions by 17% compared to 1990. The Protocol also sets tight limit values for specific emission sources (e.g. combustion plant, electricity production, dry cleaning, cars and lorries) and requires best available techniques to be used to keep emissions down. VOC emissions from such products as paints or aerosols will also have to be cut.

The EMEP VOC monitoring programme was initiated at the EMEP Workshop on Measurements of Hydrocarbons/VOC in Lindau, 1989 (EMEP/CCC, 1990). A three-fold objective of the measurement programme was defined at the workshop:

- Establishing the current ambient concentrations
- Compliance monitoring (“Do the emission control programme lead to a reduction of atmospheric concentrations?”)
- Support to the transboundary oxidant modelling (prognostic and diagnostic)

The Workshop recommended that as a first step it would be sufficient with VOC monitoring at 10-15 rural sampling sites and taking two samples per week at each station centred at 12 noon GMT. Collection in stainless steel canisters and analyses by high resolution gas chromatography was recommended for the detection of light hydrocarbons, whereas impregnated adsorbent tubes sampling combined with high performance liquid chromatography (HPLC) was recommended for the detection of carbonyls. A list of required and desirable compounds was defined and is shown in Table 1.

Certain additional remarks at the Workshop were underlined in the proceedings report (EMEP/CCC, 1990). The need for more information on VOC concentrations close to the emission sources for modelling purposes was raised. Harmonisation with national urban measurement programmes was recommended as well as the assembling of VOC emission inventories. Furthermore, the importance of concurrent measurements of oxides of nitrogen was strongly emphasised.

At the Lindau Workshop it was also recommended that during the starting period the analyses of the VOC samples should be made by the CCC and that other laboratories should be included later on.

*Table 1: List of volatile organic compounds that are "required" or "desirable" to measure within the EMEP programme as defined at the EMEP Workshop in Lindau, 1989 (EMEP/CCC, 1990).*

| | **Required** | **desirable** |
|---|---|---|
| **Alkanes** | Ethane | hexane |
| | Propane | branched hexanes |
| | i-butane | heptane |
| | n-butane | branched heptanes |
| | i-pentane | octane |
| | n-pentane | |
| **Alkenes** | Ethene | butenes |
| | Propene | pentenes |
| | Isoprene | |
| **Alkynes** | Acetylene | |
| **Aromatics** | Benzene | styrene |
| | Toluene | propylbenzenes |
| | o-xylene | ethyltoluenes |
| | m,p-xylene | |
| | Ethylbenzene | |
| | Trimethylbenzenes | |
| **Aldehydes** | Formaldehyde | propionaldehyde |
| | Acetaldehyde | |
| **Ketones** | Acetone | methylethylketone |
| | | methylvinylketone |

The measurements of VOC within EMEP started with the collection of grab samples of light hydrocarbons in the middle of 1992, whereas measurements of carbonyls started in 1993. In the beginning five stations were included in the monitoring programme, Rucava (LV10), Košetice (CZ03), Waldhof (DE02), Tänikon (CH32) and Donon (FR08). Since then the number and selection of VOC measurement sites have changed several times.

The first laboratory intercomparison of light hydrocarbons in EMEP was organised already in 1993 (Romero, 1995). The variation or relative deviation among the laboratories was in a range ±25% from the median. The exercise showed that the majority of the participating laboratories had the required analytical technique to correctly analyse a wide range of NMHC within an accuracy of ±10–15%. Furthermore, the results showed no substantial differences whether the air samples were analysed immediately after collection or after a period up to 2 months (for $C_2$–$C_5$ hydrocarbons).

In the EU FP5 project AMOHA (Accurate Measurements of Hydrocarbons in the Atmosphere) a large number of laboratories in Europe participated in parallel sampling and analyses of hydrocarbons in ambient air (Slemr et al., 2002). A major part of the project was to organize four annual intercomparisons starting in 1997 and ending in 2000. The results showed that except for a few laboratories the agreement was within ±25% of the median for the lighter alkanes. For some aromats and unsaturated hydrocarbons as well as the $C_6$-$C_7$ alkanes a large spread in the values were seen, indicating measurement difficulties with these compounds. The spread in the results were, however, much less for laboratories using a NPL standard for calibration (Aas et al., 2001). Thus, it may be concluded that a large part of the differences seen among the laboratories reflected the use of different calibration gases. When using the same NPL standard the results from this intercomparison were very satisfactory.

The EMEP VOC measurements are reported annually, and officially made public by the Steering Body of EMEP. Previous results from the EMEP VOC programme have been presented in annual reports (e.g. Solberg, 2007). An EMEP expert meeting on VOC measurements was organised in Berlin, 1994 (EMEP/CCC, 1995a), and an evaluation of the measurement programme was made in 1995 (Solberg et al., 1995). Highlights and findings from the EMEP VOC programme have also been presented in a number of scientific papers (Lindskog et al., 1995; Solberg et al., 1996; Hov et al., 1997; Solberg et al., 2001; Borbon et al., 2004; Hakola et al., 2006).

An initiative has been taken to increase the cooperation and exchange of VOC data between GAW (Global Atmospheric Watch) and EMEP. At the EMEP TFMM workshop in Oslo in November 2004, on the implementation of the EMEP monitoring strategy, a closer harmonisation between the VOC monitoring in EMEP and GAW was discussed. Minutes and conclusions from the workshop is given elsewhere (EMEP/CCC, 2005). Harmonisation of data quality objectives (DQOs) and using a common audit questionnaire was recommended, and it is also a wish to arrange common GAW/EMEP training course and to further increase the exchange of VOC monitoring data between EMEP, GAW and WDCGG (World Data Centre of Greenhouse Gases).

In 2006 a WMO/GAW workshop on global measurements of VOCs (WMO, 2007) proposed a list of species to be measured based on current and future possibilities and needs of GAW. The proposed species are: Ethane, propane, acetylene, isoprene, formaldehyde, terpenes, acetonitrile, methanol, ethanol, acetone, DMS, benzene, toluene, iso- and n-butane, iso- and n-pentane. Most of these compounds are already part of the EMEP VOC programme with some exceptions. The alcohols (methanol and ethanol) are likely to become more important in the future due to increased use of biofuels in vehicles. Furthermore, terpenes are important as precursors for secondary organic aerosols. These compounds would be of interest to include in the EMEP monitoring as well, but require other sampling methods and instrumentations than presently used for the hydrocarbons and carbonyls.

In the new EMEP Monitoring Strategy for 2010-2019 (ECE/EB.AIR/GE.1/ 2009/15), which hydrocarbons and carbonyls to measure have not been specified, but it is clearly stated that it is necessary to harmonise with the WMO GAW programme.

In April 2011 the project ACTRIS (Aerosols, Clouds, and Trace gases Research InfraStructure Network) was initiated. This is a European Project (EC 7$^{th}$ Framework Programme) aiming at integrating European ground-based stations equipped with advanced atmospheric probing instrumentation for aerosols, clouds, and short-lived gas-phase species. ACTRIS will have the essential role to support building of new knowledge as well as policy issues on climate change, air quality, and long-range transport of pollutants. WP4 in ACTRIS is dedicated to the measurements of VOCs and nitrogen oxides. The aim is to integrate and harmonise such trace gas measurements in Europe. The development of standardised measurement protocols (SOPs) and common European calibration scales for VOCs is a central issue. Furthermore, ACTRIS will foster the dissemination of the methods and quality assured data to scientific groups related to the analysis and modelling of air pollutants in Europe and to support EC directives relevant for air pollution and the CLRTAP abatement strategies.

# 2. Status of the measurement programme in 2009

## 2.1 The station network

The location of the monitoring sites for VOC presented in this report is shown in Figure 1 and an overview of the measurement programme and the responsible laboratories in 2009 is given in Table 2. Totally 12 measurement sites reported VOC data to CCC in 2009. Carbonyls were only sampled at 3 sites and only in France and Spain. Previously the lab at NILU/EMEP-CCC analysed carbonyls sampled at Utö in Finland and Košetice in Czech Republic. Hydrocarbons were reported from the site Campisábalos (ES09) but the data indicated technical or analytical problems and had to be discarded. Furthermore, hydrocarbon data for a period of the year were reported from the site Kollumerward (NL09) for the first time. With a more complete data capture in the coming years, the data will be included in the data report.

Table 3 gives the number of valid (daily) samples of hydrocarbons and carbonyls (after inspection and removal of outliers). According to EMEP's recommendations, the samples should be taken at least twice a week, implying that 104 samples per year correspond to 100% data cover.

A 90% data completeness, i.e. 94 samples pr year, of daily values is given as data quality objective according to the EMEP manual (EMEP/CCC, 1995b). The data capture for hydrocarbons was lower than this for some sites in 2009 and lowest at La Tardière. Hohenpeissenberg and Rigi have continuous sampling and thus a much higher data capture than the other sites. Carbonyls are only measured once per week in France giving a data capture of the order of 50%. Only Campisábalos in Spain had a data completeness fulfilling the criteria of 90% for carbonyls.

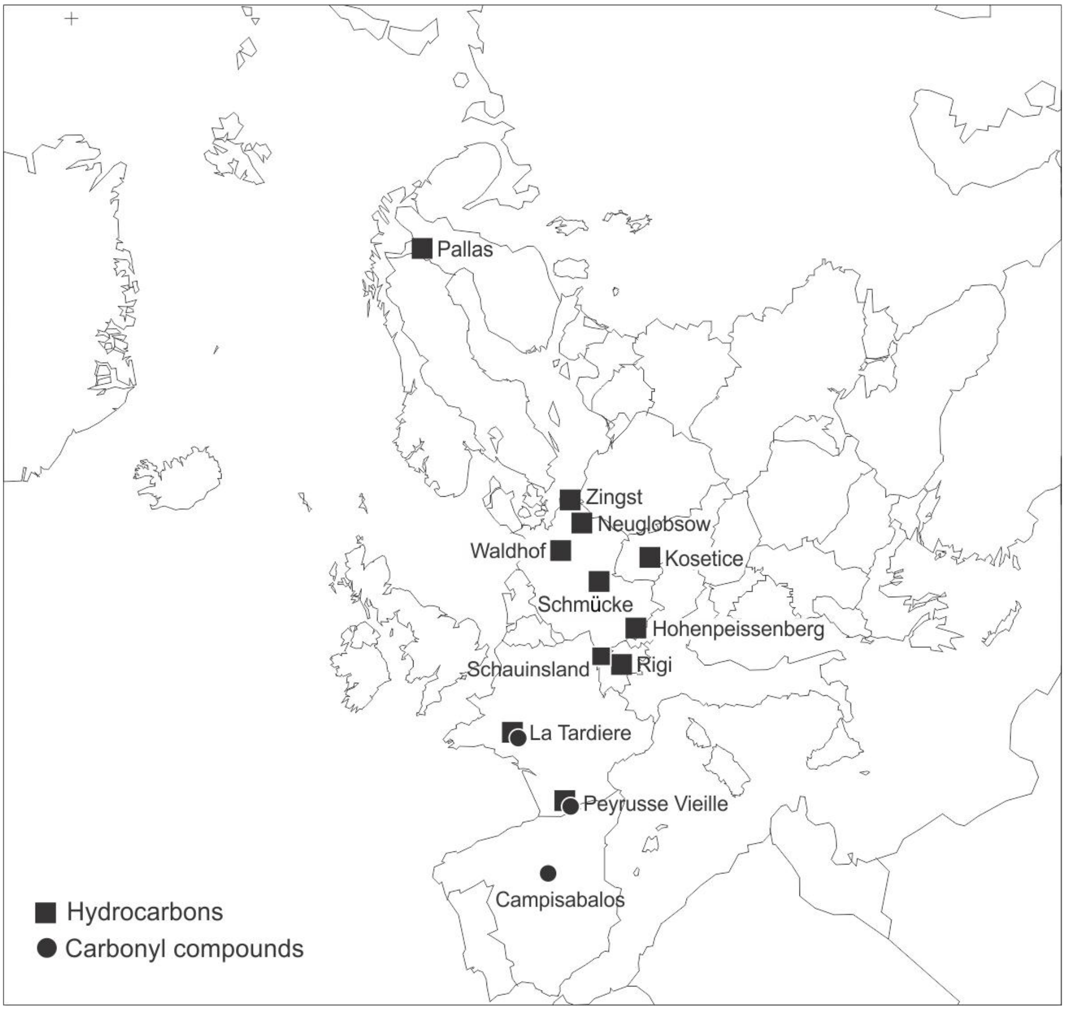


*Figure 1: Monitoring sites for VOC in 2009.*

*Table 2: Status of the VOC monitoring programme in 2009. The columns give the station names, site code, and the sampling frequencies for hydrocarbons (HC) and carbonyl compounds (Carb). The laboratory responsible for the chemical analyses is also given.*

| Station | Code | HC[1)] | Lab.[2)] | Carb[1)] | Lab.[2)] |
|---|---|---|---|---|---|
| Pallas | FI96 | Reg. | FMI | n.m. | - |
| Waldhof | DE02 | Reg. | UBA | n.m. | - |
| Schauinsland | DE03 | Reg. | UBA | n.m. | - |
| Neuglobsow | DE07 | Reg. | UBA | n.m. | - |
| Schmücke | DE08 | Reg. | UBA | n.m. | - |
| Zingst | DE09 | Reg. | UBA | n.m. | - |
| Hohenpeissenberg | DE43 | Daily | DWD | n.m. | - |
| Košetice | CZ03 | Reg. | CHMI | n.m. | - |
| Rigi | CH05 | Cont. | EMPA | n.m. | - |
| Peyrusse Vieille | FR13 | Reg. | EMD | Reg. | EMD |
| La Tardière | FR15 | Reg. | EMD | Reg. | EMD |
| Campisábalos | ES09 | (Reg.)[3)] | MMA | Reg. | MMA |

1) Reg. = regularly, Scat. = scattered, n.m. = not measured., n.a. = not yet analysed, cont. = Continuous
2) CHMI = Czech Hydrometeorological Institute
DWD = Deutscher Wetterdienst
EMD = Ecole des Mines de Douai (France)
EMPA = Swiss Federal Lab. for Materials Testing and Research
FMI = Finnish Meteorological Institute
MMA = Ministerio de Medio Ambiente (Spain)
UBA = Umweltbundesamt (Germany)
3) Hydrocarbons reported but discarded due to technical or analytical problems

*Table 3: The number of valid samples of hydrocarbons (HC) and carbonyls (Carb) in 2009.*

| Station | Number of samples HC[2)] | Carb[3)] |
|---|---|---|
| Pallas | 86 | - |
| Waldhof | 97 | - |
| Schauinsland | 80 | - |
| Neuglobsow | 94 | - |
| Schmücke | 100 | - |
| Zingst | 92 | - |
| Hohenpeissenberg[1)] | 355 | - |
| Košetice | 98 | - |
| Rigi[1)] | 264 | - |
| Peyrusse Vieille | 97 | 47 |
| La Tardière | 79 | 50 |
| Campisábalos | 0 | 100 |

[1)] Refers to days with monitoring data
[2)] Refers to ethane (may differ for other HCs)
[3)] Refers to formaldehyde (may differ for other carbonyls)

## 2.2 Analytical procedures and quality control

The procedures for sampling and chemical analyses were similar in 2009 as in previous years, and are not discussed in this report. The technical procedures for the sampling and analysis of hydrocarbons by FMI at the Finnish station, as well as a site description and data interpretation, are given by Laurila and Hakola (1996). A presentation of the sampling and analyses performed by the laboratories at EMD (France), EMPA (Switzerland), CHMI (Czech Republic), MMA (Spain) and UBA (Germany) has been given in previous annual reports and by Solberg et al. (1996) and is not repeated here. A new GC and new analytical methods were introduced by UBA for the German sites in 2006 leading to certain systematic changes. In general, the new method was more sensitive to $C_7$ and higher VOCs. The instrumentation and methods applied by DWD at Hohenpeissenberg have been successfully tested in two international intercomparison experiments (NOMHICE, AMOHA) and have been documented by Plass-Dülmer et al. (2002).

For the EMEP VOC measurements in general, the quality control of the VOC measurements includes QA procedures at all stages from sampling to chemical analyses and integration. The QA procedures are described in the EMEP manual (EMEP/CCC, 1995b) and are the laboratories' responsibility to follow up. In addition, data received from the individual laboratories are inspected before classified as valid or invalid by the EMEP/CCC.

The concentrations of 3-buten-2-one, 2-methylpropenal, 2-butanone and butanal have for many years been difficult to interpret. No systematic and explainable pattern has been found and inter-laboratory comparisons between EMD, UBA and NILU have indicated analytical problems. Laboratory studies at CCC indicate that unsaturated carbonyl compounds are not chemical stable in the prepared sample solution. Furthermore, LC/MS studies indicate possibilities of chromatographic interference in the $C_4$ carbonyl compound range. Thus, a revision of the monitoring procedures for these carbonyls is needed.

# 3. VOC concentrations in 2009

## 3.1 General

Monthly mean and median concentrations of the individual hydrocarbons and carbonyls for 2009 are tabulated in Appendix A. The monthly statistics were not calculated for sample numbers less than four. Time series of all compounds during 2009 are given in Appendix B. For the continuous monitor data from CH05 Rigi the average of two 2-hourly values around noon were used in the calculations whilst the sample taken around noon at Hohenpeissenberg were used (samples from noon and midnight were reported). Based on previous experience there is not much difference in the anthropogenic HC concentrations at noon and at midnight at Hohenpeissenberg (pers. comm., Christian Plass-Dülmer). For isoprene the difference is substantial as this is a reactive biogenic compound, emitted during daytime, with low concentrations during night.

A comparison of the seasonal mean and percentile concentrations of hydrocarbons in winter (Jan., Feb., Nov., Dec.) and carbonyls in summer (May, Jun., Jul., Aug.) measured at the different stations is given in Figure 2 and Figure 3. The stations are arranged from north to south. Considering that the sites span a wide area from Southern Europe to the most northern part of the continent, the hydrocarbon winter mean levels are fairly uniform for the alkanes but some systematic differences are seen. High peak concentrations of isobutane and pentane are seen at Peyrusse Vieille and Le Tardière, respectively. Furthermore, larger geo-graphical differences are generally seen for the alkenes (ethane and propene) compared to the alkanes. This is as expected and reflects the shorter lifetime of the alkenes in winter due to the oxidation with $O_3$ which is effective also during winter.

The carbonyl monitoring has been substantially reduced the latest years and was carried out only at three sites in France/Spain in 2009. Furthermore, at the French sites the sampling frequency is once per week, making the seasonal statistics more uncertain. We note that formaldehyde levels were significantly lower at Campisábalos than at the other two sites and vice versa for acetaldehyde.

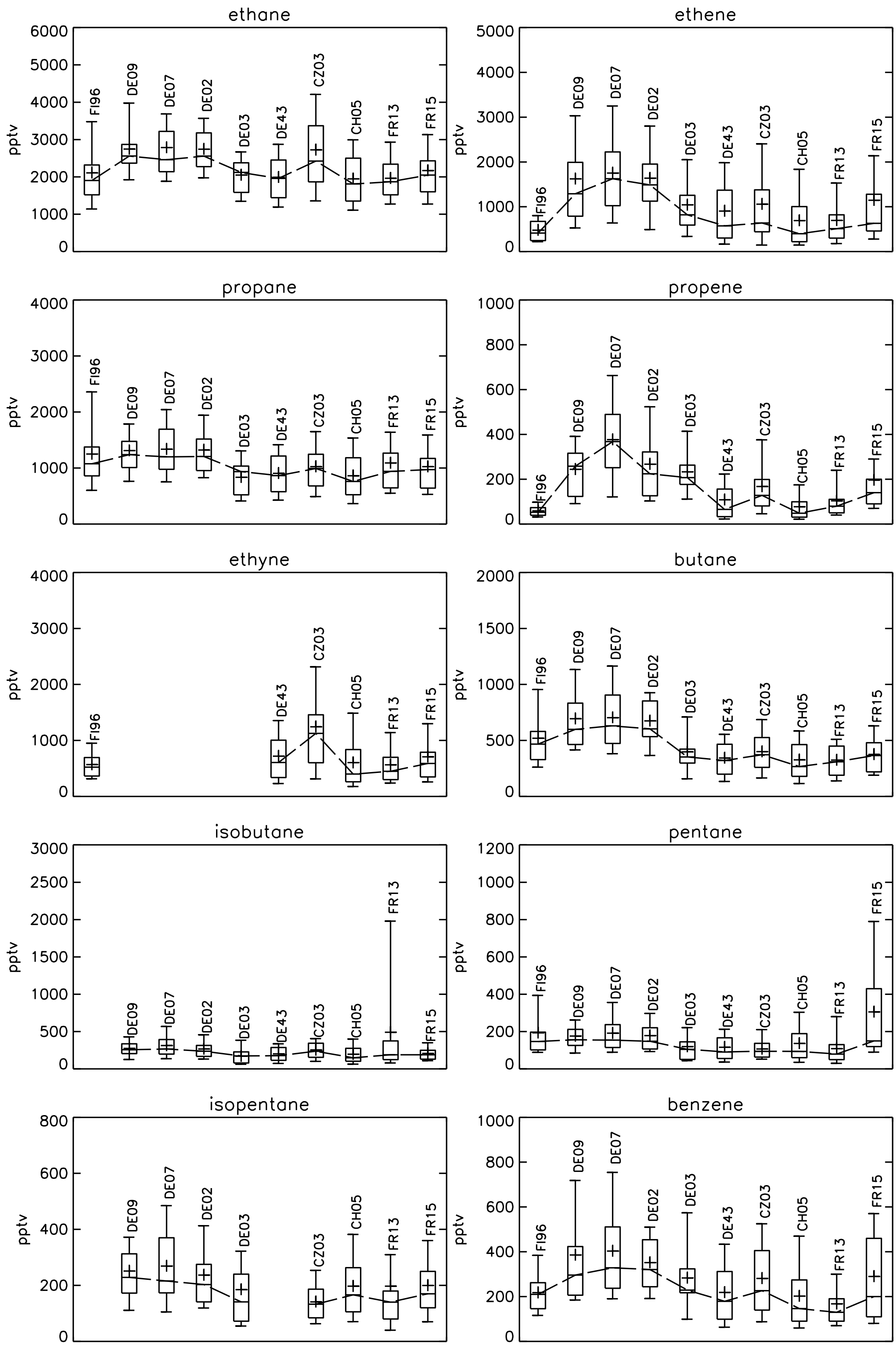


*Figure 2: Box- and whisker-diagrams for hydrocarbons during winter 2009 (Jan., Feb., Nov., Dec.). The markers indicate the 10-, 25-, 50-, 75- and 90-percentiles. Mean values are indicated by a cross. The dashed line connects the median values for clarity.*

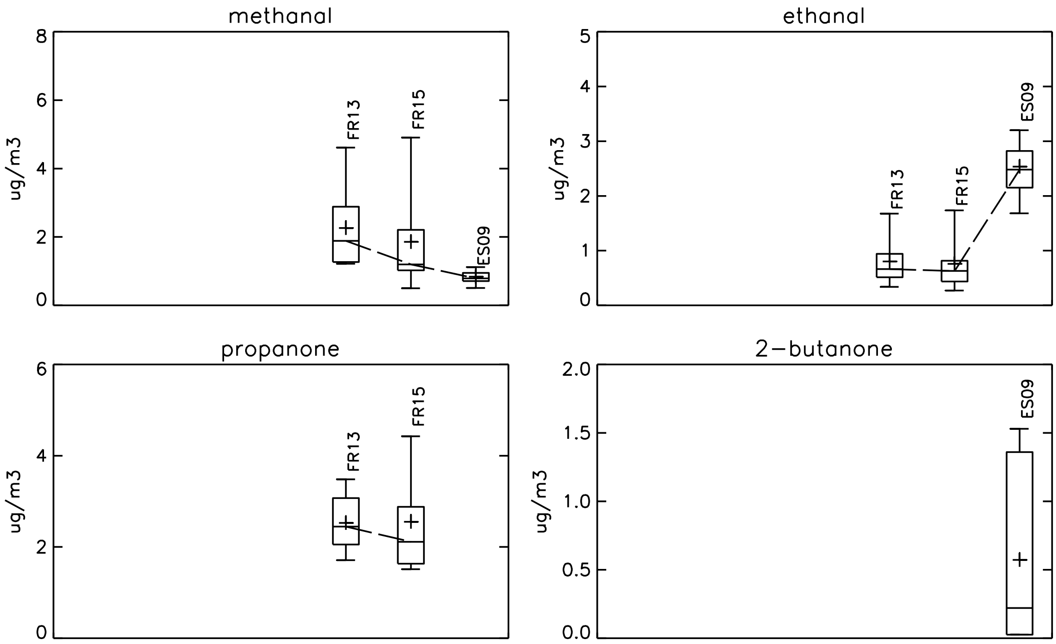


*Figure 3: Box- and whisker-diagrams for carbonyls during summer 2009 (May, June, July, August). The markers indicate the 10-, 25-, 50-, 75- and 90-percentiles. Mean values are indicated by a cross.*

## 3.2 Regional distribution of VOC

Figure 4–Figure 13 show maps with the stations' median concentrations of 10 light hydrocarbons for the winter months January, February, November and December in 2009 taken together. These medians are based on the average of the two 2-hourly values around noon at Rigi and on the day-time values at Hohenpeissenberg.

Although the number of sites obviously is too low to give a picture of the regional background distribution of hydrocarbons in Europe, some characteristics are indicated by these results. Similar figures for three carbonyls for the summer months May-August 2009 are given in Figure 14–Figure 16.

As noted in previous reports, the measurements indicate that hydrocarbons become fairly well mixed in Europe in winter. Components with a long chemical lifetime in winter, such as ethane and propane, show less geographical variations.

Many of the compounds showed highest seasonal mean concentrations at the three sites in Northern Germany (Zingst, Waldhof and Neuglobsow) in 2009.

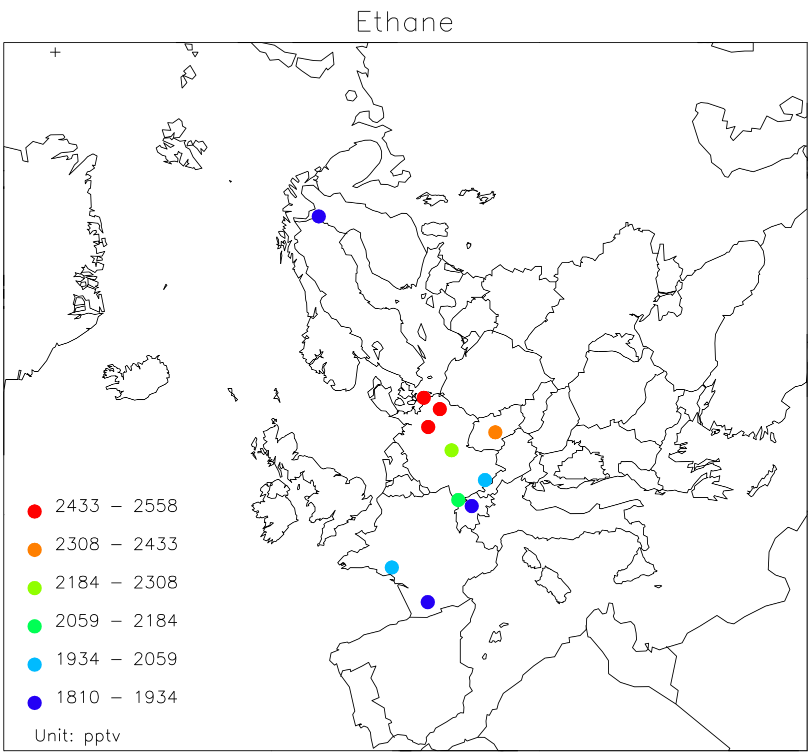


*Figure 4: Median concentration of ethane at EMEP sites in the winter months November, December, January and February 2009 taken together.*

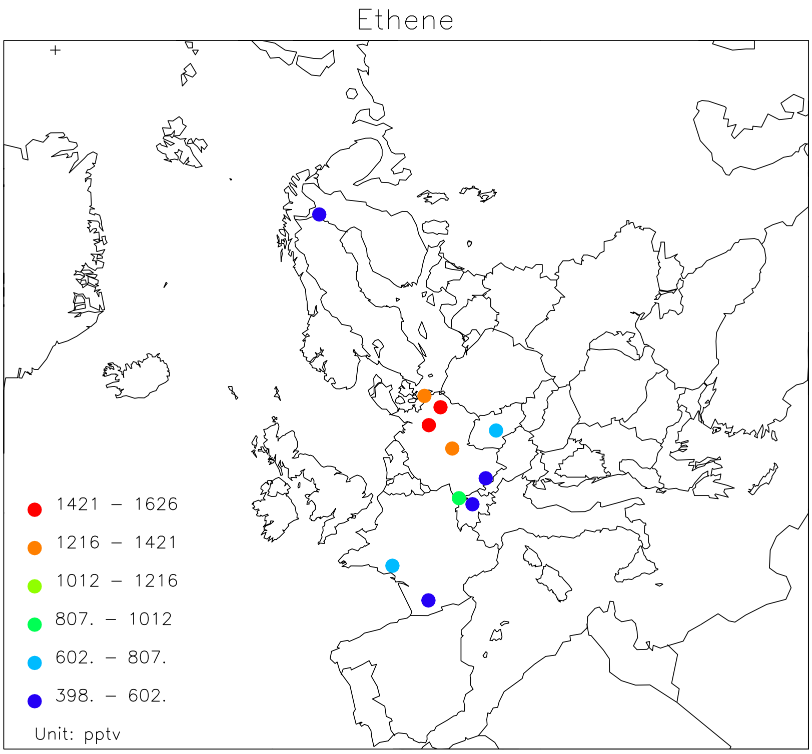


*Figure 5: Median concentration of ethene at EMEP sites in the winter months November, December, January and February 2009 taken together.*

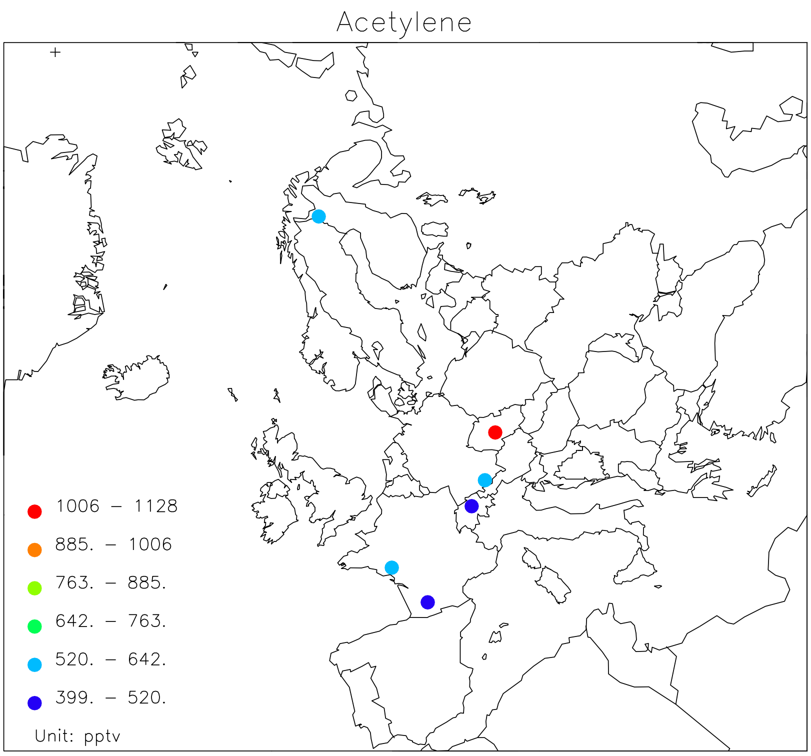


*Figure 6:* *Median concentration of acetylene at EMEP sites in the winter months November, December, January and February 2009 taken together.*

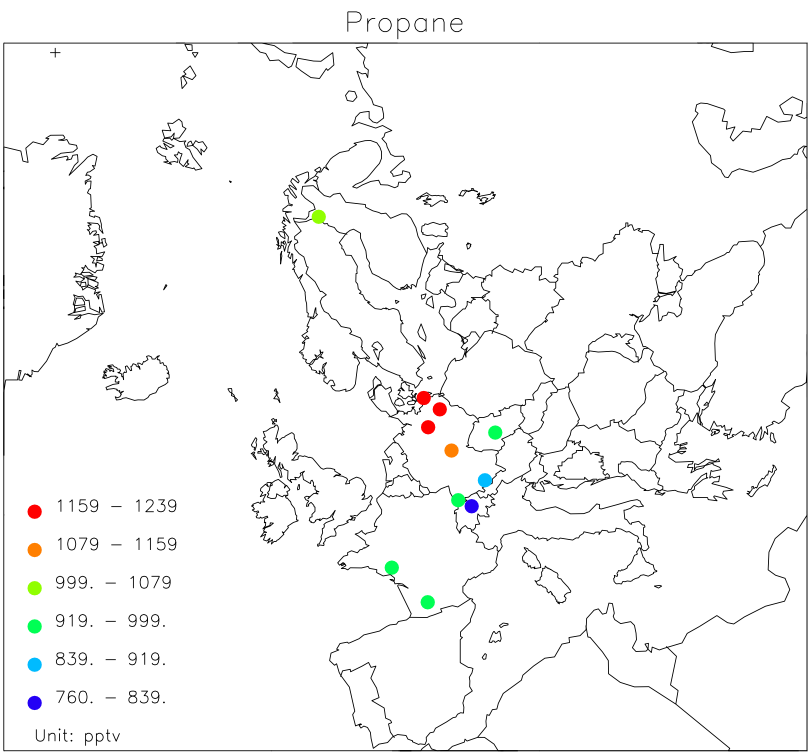


*Figure 7:* *Median concentration of propane at EMEP sites in the winter months November, December, January and February 2009 taken together.*

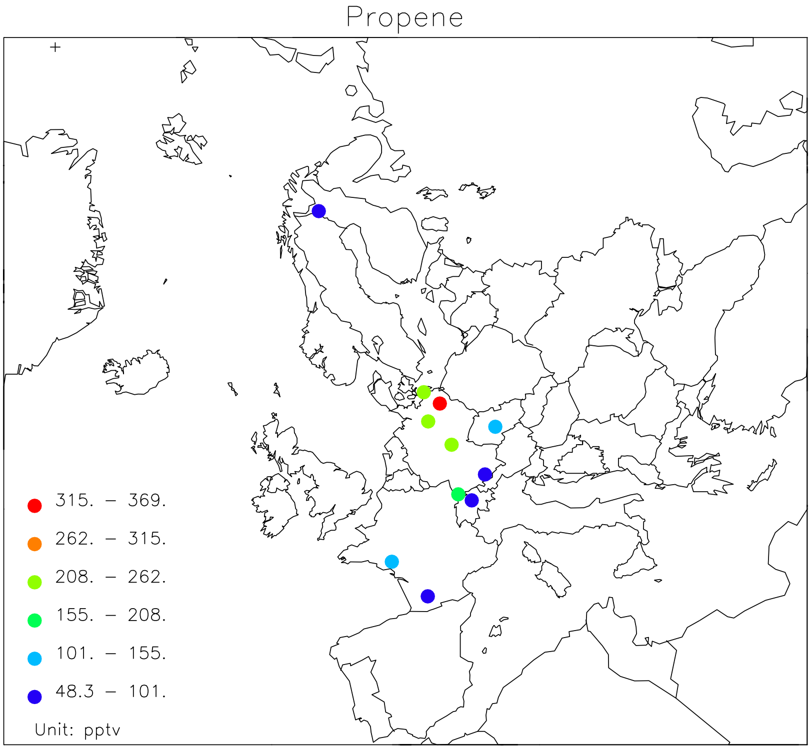


*Figure 8: Median concentration of propene at EMEP sites in the winter months November, December, January and February 2009 taken together.*

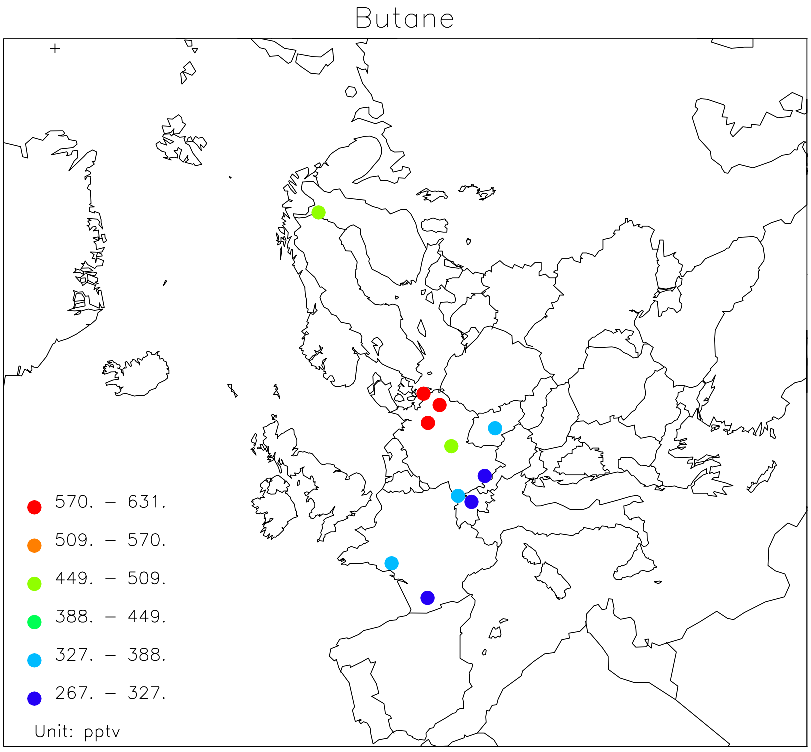


*Figure 9: Median concentration of n-butane at EMEP sites in the winter months November, December, January and February 2009 taken together.*

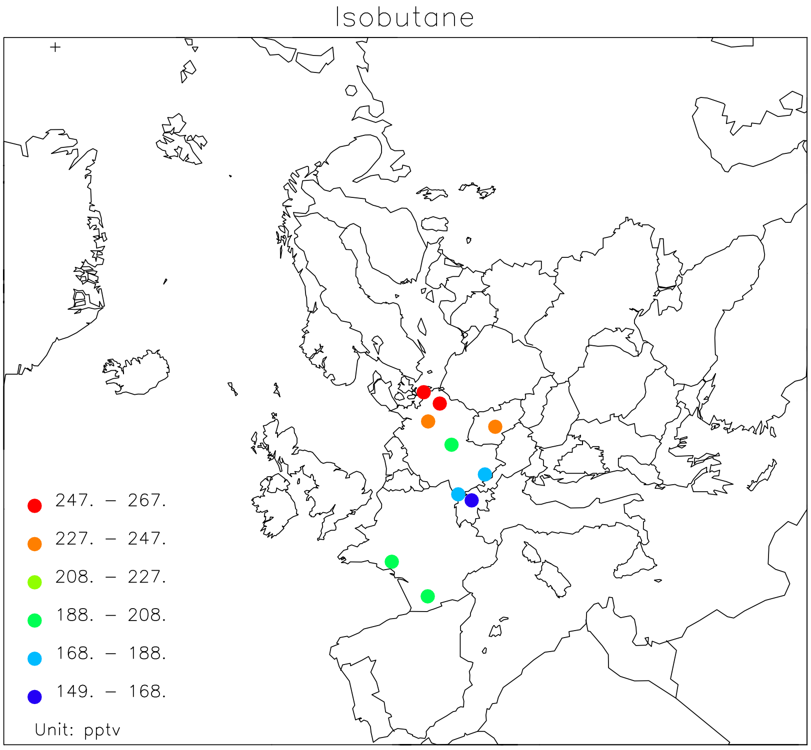


*Figure 10: Median concentration of i-butane at EMEP sites in the winter months November, December, January and February 2009 taken together.*

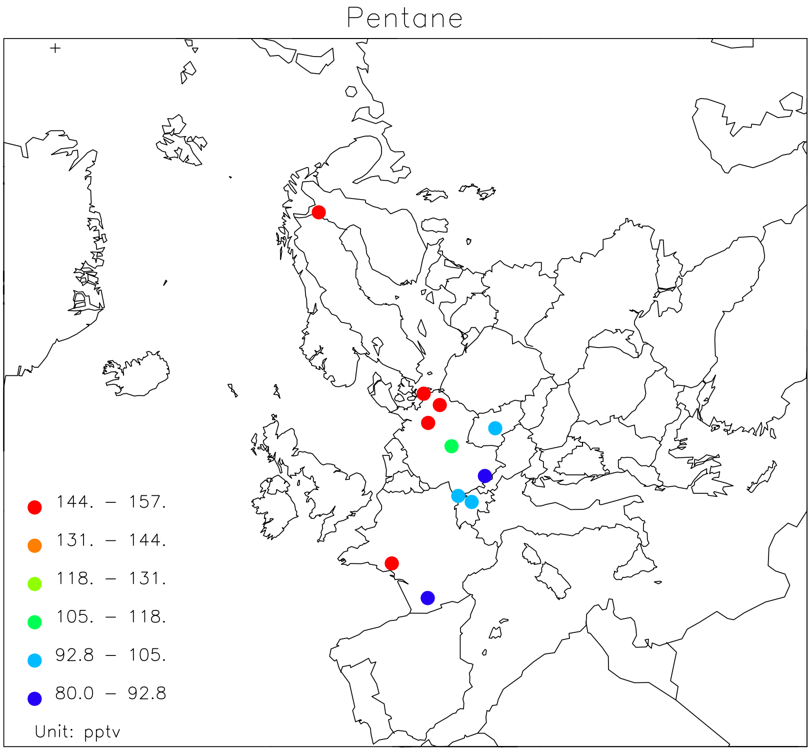


*Figure 11: Median concentration of n-pentane at EMEP sites in the winter months November, December, January and February 2009 taken together.*

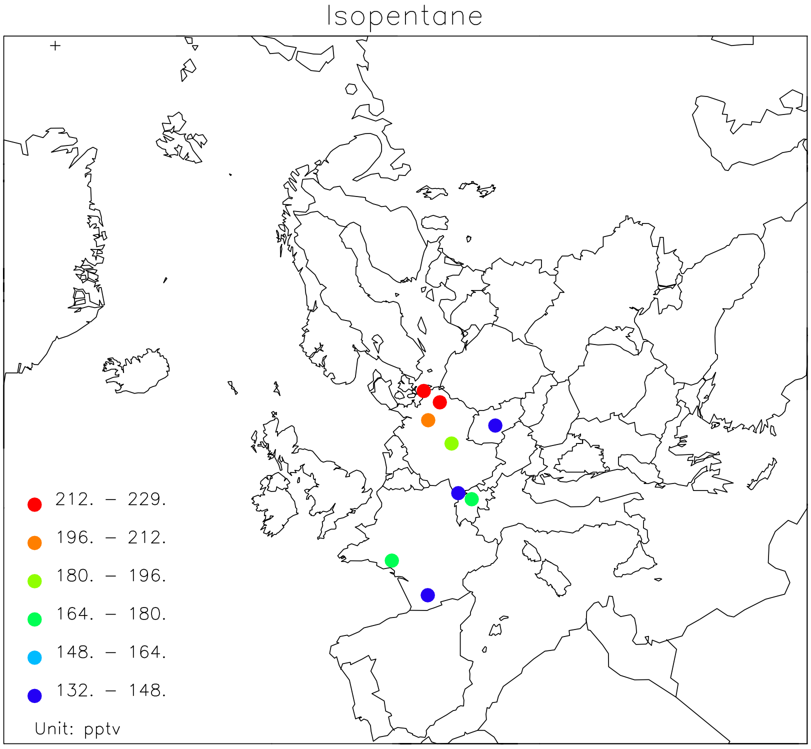


*Figure 12: Median concentration of i-pentane at EMEP sites in the winter months November, December, January and February 2009 taken together.*

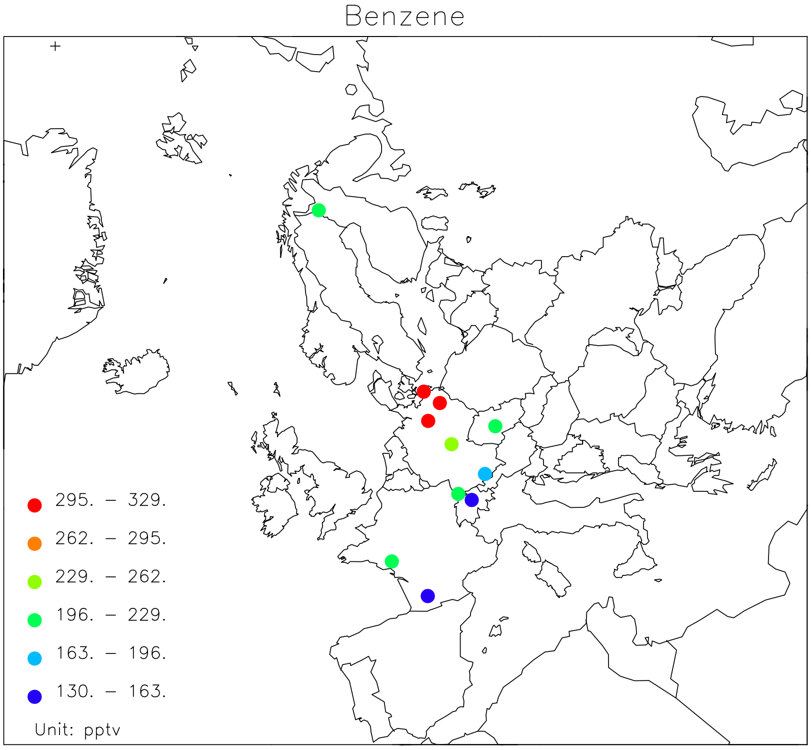


*Figure 13: Median concentration of benzene at EMEP sites in the winter months November, December, January and February 2009 taken together.*

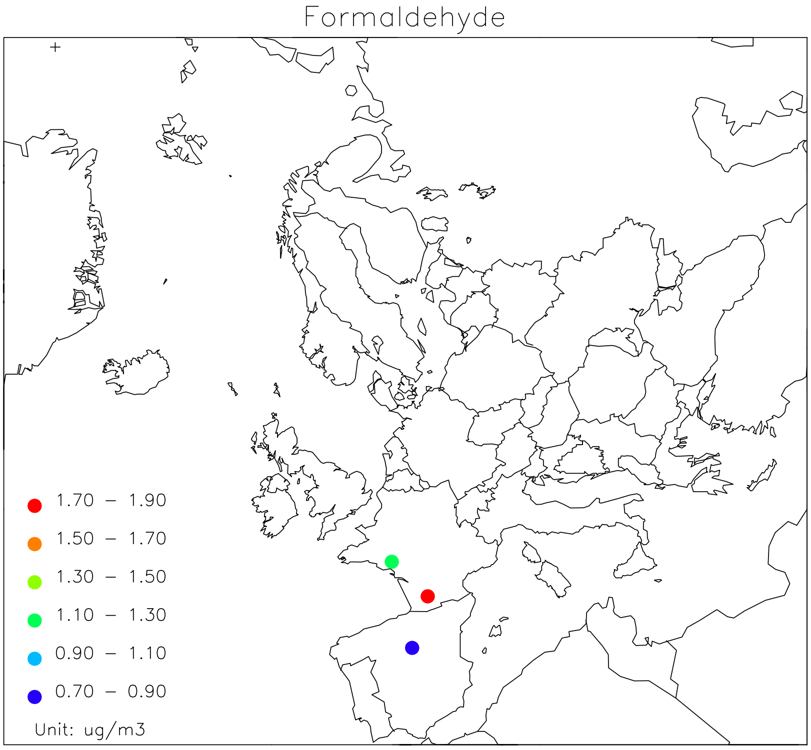


*Figure 14: Median concentration of formaldehyde at EMEP sites in the summer months May, June, July and August 2009 taken together.*

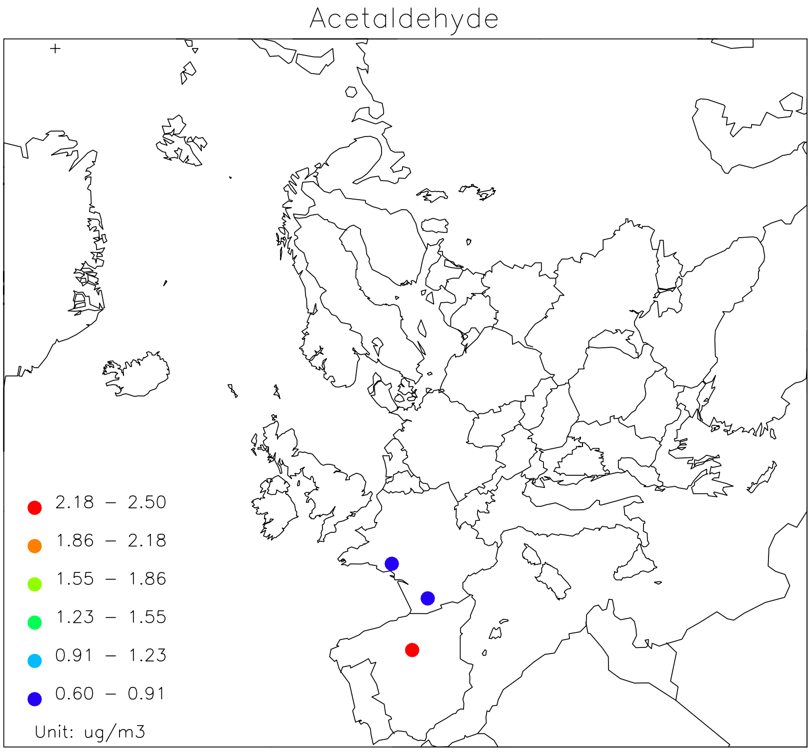


*Figure 15: Median concentration of acetaldehyde at EMEP sites in the summer months May, June, July and August 2009 taken together. Note that the values for ES09 are based on data for August only.*

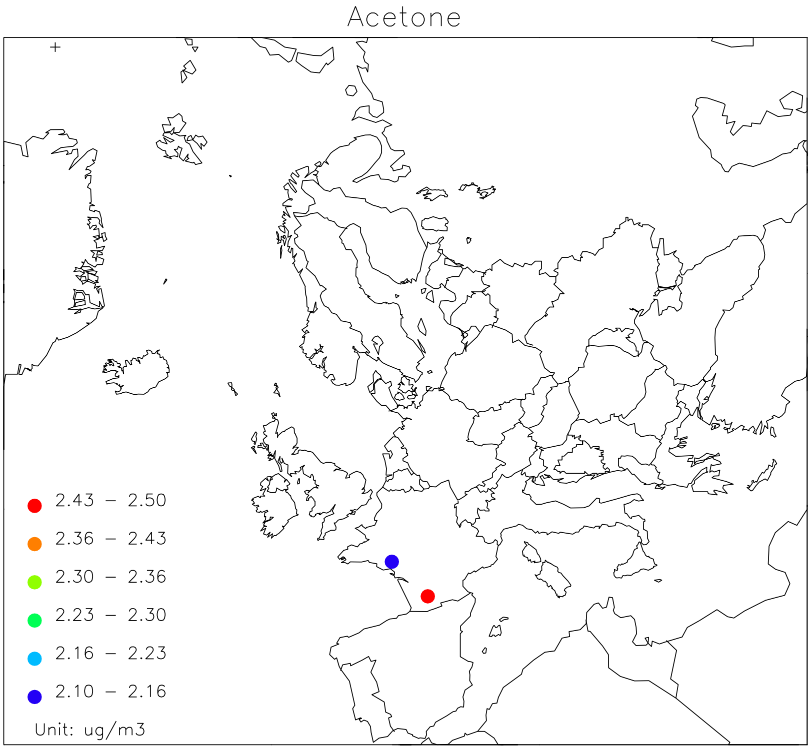


*Figure 16: Median concentration of acetone at EMEP sites in the summer months May, June, July and August 2009 taken together.*

# 4. Long-term trends in VOC

The 15 year's trend in the measured VOC from 1995 is indicated in Figure 17 showing the winter medians at Pallas (FI96), Waldhof (DE02), Schmücke (DE08), Košetice (CZ03) and Peyrusse Vieille (FR13) of selected hydrocarbons.

In addition to the emission source strength, these long-term trends or variations will be largely controlled by inter-annual changes in weather conditions and atmospheric stability.

The 15 year's trend, or variations, in the winter medians varies for the different hydrocarbons as indicated by Figure 17 and no overall picture is seen. For some compounds at some sites the results do indicate a long-term reduction in the winter median concentration level, whereas for other compounds, the year-to-year variations are too large to draw any further conclusions. The levels of benzene and toluene are apparently going down at many of the sites during this period, but there are several data gaps, making that an uncertain finding. The results indicate an increase in the winter median concentrations for ethane and butane for the three-years period 2007-2009.

To separate the sole effect of changes in European VOC emissions on the observed concentrations trends in Figure 17 requires a number of detailed model calculations. Furthermore, due to the large scatter in data values from year to year, a linear trend is of little value to assign.

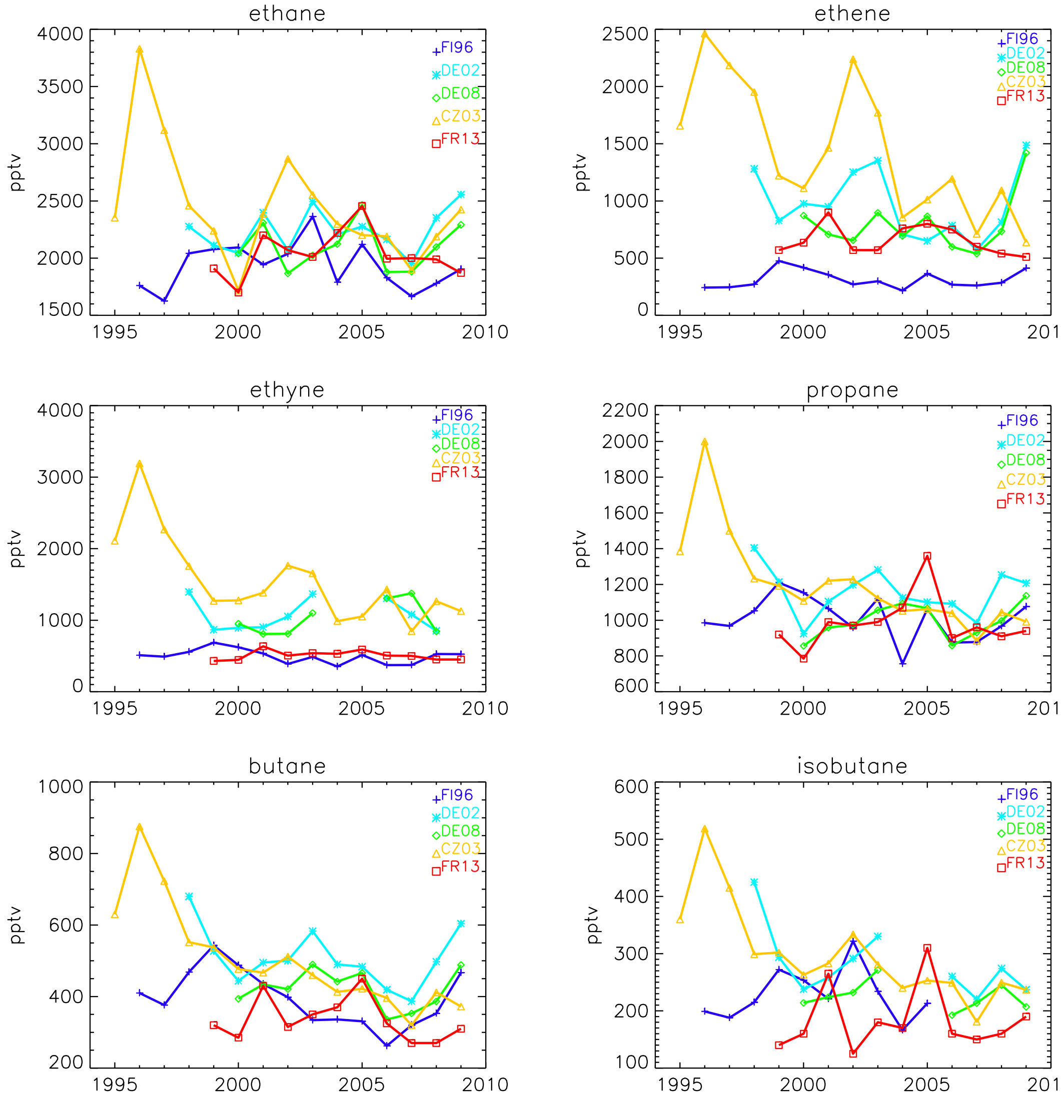


*Figure 17: Annual winter (Jan., Feb., Nov., Dec.) median concentrations of hydrocarbons at Pallas (FI96), Waldhof (DE02), Schmücke (DE08), Košetice (CZ03) and Peyrusse Vieille (FR13) during the period 1995-2009.*

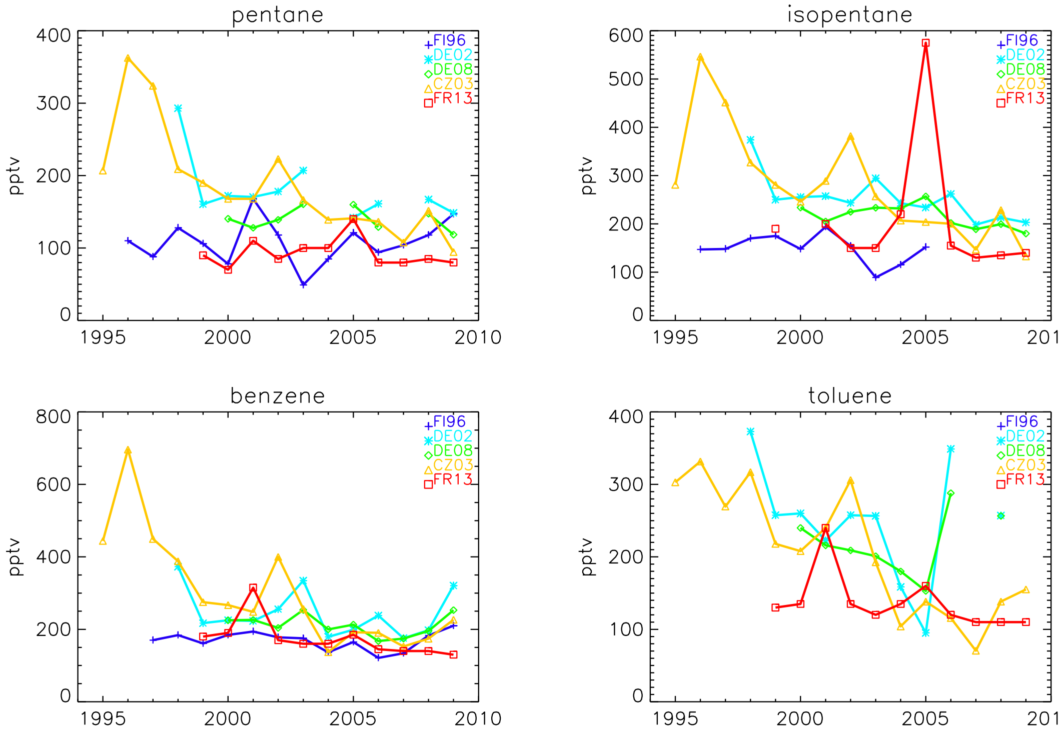


*Figure 17, cont.*

## 5. Acknowledgement

We would like to thank all people involved in the sampling and handling of hydrocarbon canisters and DNPH tubes. We are very grateful for the VOC measurement data provided by Patrice Coddeville (EMD), Hannele Hakola (FMI), Radek Pokorny (CHMI), Alberto Gonzalez Ortiz (MMA), Karin Uhse (UBA), Christian Plass-Dülmer (DWD), Stefan Reimann (EMPA) and Hans Berkhout (RIVM).

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# Appendix A

# Monthly mean and median concentrations of hydrocarbons and carbonyls in 2009

# Monthly mean and median concentrations
# (first and second line, respectively)
# of hydrocarbons (pptv)

**ETHANE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 2331 | 2564 | 2125 | 1719 | 1230 | 862 | 642 | 558 | 554 | 945 | 1478 | 1967 |
| | 1992 | 2273 | 1969 | 1700 | 1221 | 858 | 595 | 551 | 552 | 807 | 1263 | 1879 |
| Zingst | 2546 | 3158 | 2498 | 2530 | 1741 | 1251 | 917 | 1082 | 891 | 1320 | 2433 | 2843 |
| | 2499 | 2710 | 2379 | 2451 | 1765 | 1135 | 893 | 1042 | 868 | 1281 | 2237 | 2674 |
| Neuglobsow | 2742 | 3362 | 2487 | 2343 | 1620 | 1266 | 880 | 1106 | 949 | 1281 | 2437 | 2474 |
| | 2933 | 3054 | 2275 | 2342 | 1571 | 1257 | 834 | 1086 | 982 | 1169 | 1958 | 2406 |
| Waldhof | 2786 | 3423 | 2789 | 2438 | 1701 | 1385 | 858 | 898 | 984 | 1358 | 2049 | 2714 |
| | 2765 | 3219 | 2303 | 2335 | 1672 | 1431 | 825 | 880 | 885 | 1089 | 2049 | 2530 |
| Schmücke | 2512 | 2916 | 2401 | 2342 | 1545 | 1373 | 851 | 1045 | 995 | 1422 | 1789 | 2282 |
| | 2325 | 2851 | 2316 | 2385 | 1433 | 1286 | 837 | 971 | 917 | 1299 | 1760 | 2240 |
| Schauinsland | 2159 | 2637 | 2198 | 2365 | 1467 | 1148 | 803 | 883 | 1284 | 1037 | 1573 | 1884 |
| | 2170 | 2478 | 2190 | 2293 | 1497 | 1298 | 724 | 936 | 1357 | 911 | 1552 | 1608 |
| Hohenpeissenberg | 2244 | 2473 | 2126 | 1847 | 1376 | 1037 | 668 | 689 | 925 | 1075 | 1309 | 1968 |
| | 2191 | 2423 | 2135 | 1766 | 1330 | 1008 | 631 | 686 | 934 | 1065 | 1242 | 1945 |
| Košetice | 3459 | 3682 | 2961 | 2440 | 1473 | 1086 | 862 | 913 | 1117 | 1366 | 1917 | 2453 |
| | 3603 | 3517 | 2541 | 2150 | 1277 | 1116 | 830 | 831 | 1049 | 1356 | 1639 | 2239 |
| Rigi | 2664 | 2659 | 2281 | 1764 | 1178 | 951 | 814 | - | 1093 | 1092 | 1290 | 1870 |
| | 2660 | 2641 | 2293 | 1681 | 1142 | 957 | 759 | - | 1084 | 1095 | 1210 | 1706 |
| La Tardière | 2756 | 2293 | 2230 | 1899 | 1320 | 938 | 538 | 585 | - | 1159 | 1433 | 2131 |
| | 2390 | 2335 | 2220 | 1810 | 1240 | 970 | 550 | 630 | - | 1205 | 1385 | 1990 |
| Peyrusse Vieille | 2354 | 2153 | 1902 | 1678 | 1208 | 849 | 573 | 579 | 887 | 1049 | 1360 | 1917 |
| | 2000 | 2130 | 1850 | 1600 | 1220 | 870 | 560 | 520 | 780 | 1055 | 1300 | 1800 |

**ETHENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 491 | 414 | 209 | 54 | 66 | 54 | 81 | 104 | 64 | 206 | 459 | 559 |
| | 455 | 277 | 236 | 57 | 67 | 47 | 68 | 106 | 64 | 103 | 475 | 519 |
| Zingst | 903 | 1029 | 857 | 499 | 276 | 323 | 280 | 340 | 240 | 398 | 1994 | 2567 |
| | 815 | 755 | 442 | 459 | 286 | 281 | 227 | 203 | 230 | 247 | 1651 | 2361 |
| Neuglobsow | 1528 | 1353 | 748 | 380 | 268 | 400 | 244 | 260 | 237 | 473 | 2040 | 2177 |
| | 1464 | 1051 | 359 | 383 | 248 | 329 | 251 | 244 | 186 | 341 | 1694 | 2223 |
| Waldhof | 1285 | 1325 | 959 | 414 | 274 | 320 | 259 | 213 | 216 | 703 | 1549 | 2393 |
| | 1338 | 889 | 490 | 348 | 251 | 307 | 280 | 187 | 209 | 456 | 1554 | 2514 |
| Schmücke | 1114 | 873 | 703 | 567 | 289 | 295 | 251 | 188 | 341 | 766 | 1732 | 2095 |
| | 800 | 687 | 457 | 531 | 246 | 279 | 180 | 170 | 310 | 598 | 1699 | 2144 |
| Schauinsland | 652 | 720 | 489 | 502 | 330 | 340 | 236 | 228 | 332 | 252 | 1223 | 1617 |
| | 674 | 729 | 422 | 516 | 282 | 355 | 220 | 216 | 363 | 219 | 1195 | 1527 |
| Hohenpeissenberg | 1337 | 773 | 448 | 401 | 167 | 144 | 103 | 145 | 306 | 419 | 528 | 941 |
| | 1295 | 665 | 335 | 231 | 141 | 123 | 91 | 121 | 276 | 312 | 293 | 894 |
| Košetice | 1871 | 1035 | 581 | 622 | 287 | 164 | 169 | 151 | 270 | 695 | 1000 | 769 |
| | 1248 | 793 | 405 | 334 | 220 | 155 | 171 | 129 | 187 | 366 | 509 | 629 |
| Rigi | 1406 | 863 | 457 | 314 | 170 | 164 | 152 | - | 365 | 357 | 376 | 679 |
| | 1462 | 680 | 396 | 234 | 154 | 153 | 126 | - | 319 | 262 | 267 | 362 |
| La Tardière | 2012 | 933 | 514 | 540 | 350 | 200 | 175 | 133 | - | 470 | 430 | 1087 |
| | 1280 | 600 | 440 | 485 | 310 | 210 | 170 | 135 | - | 485 | 380 | 1030 |
| Peyrusse Vieille | 1026 | 713 | 298 | 278 | 208 | 234 | 216 | 174 | 196 | 225 | 235 | 733 |
| | 580 | 540 | 260 | 270 | 220 | 220 | 200 | 190 | 190 | 210 | 240 | 510 |

**PROPANE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 1322 | 1513 | 1047 | 494 | 328 | 119 | 108 | 121 | 132 | 447 | 826 | 1288 |
| | 1097 | 1291 | 880 | 473 | 305 | 97 | 98 | 121 | 131 | 362 | 772 | 932 |
| Zingst | 1365 | 1600 | 1128 | 800 | 403 | 259 | 364 | 397 | 261 | 549 | 1005 | 1272 |
| | 1298 | 1390 | 1012 | 756 | 467 | 219 | 281 | 315 | 245 | 495 | 903 | 1203 |
| Neuglobsow | 1515 | 1736 | 995 | 700 | 389 | 307 | 264 | 403 | 305 | 507 | 874 | 1136 |
| | 1618 | 1554 | 854 | 724 | 359 | 282 | 255 | 348 | 297 | 486 | 790 | 993 |
| Waldhof | 1495 | 1762 | 1199 | 739 | 433 | 328 | 295 | 266 | 307 | 662 | 911 | 1112 |
| | 1454 | 1684 | 1010 | 709 | 382 | 306 | 220 | 254 | 266 | 417 | 936 | 1015 |
| Schmücke | 1352 | 1390 | 957 | 778 | 492 | 383 | 420 | 561 | 524 | 772 | 790 | 1029 |
| | 1228 | 1363 | 954 | 845 | 428 | 365 | 391 | 518 | 502 | 601 | 737 | 1043 |
| Schauinsland | 988 | 1198 | 929 | 764 | 260 | 413 | 185 | 257 | 416 | 392 | 477 | 745 |
| | 1006 | 1019 | 857 | 790 | 260 | 422 | 140 | 268 | 378 | 303 | 454 | 675 |
| Hohenpeissenberg | 1039 | 1158 | 791 | 527 | 303 | 240 | 153 | 232 | 384 | 442 | 530 | 913 |
| | 1040 | 1137 | 812 | 464 | 289 | 233 | 145 | 225 | 403 | 413 | 477 | 907 |
| Košetice | 1074 | 1350 | 1021 | 704 | 315 | 256 | 178 | 241 | 559 | 483 | 676 | 1102 |
| | 1090 | 1462 | 887 | 644 | 322 | 166 | 181 | 185 | 379 | 499 | 572 | 1011 |
| Rigi | 1241 | 1207 | 756 | 435 | 222 | 288 | 149 | 190 | 403 | 402 | 493 | 860 |
| | 1373 | 1179 | 758 | 374 | 205 | 266 | 127 | 177 | 408 | 369 | 434 | 765 |
| La Tardière | 1303 | 1074 | 904 | 603 | 382 | 242 | 148 | 168 | - | 484 | 656 | 1032 |
| | 1170 | 1095 | 900 | 540 | 390 | 240 | 115 | 145 | - | 460 | 600 | 970 |
| Peyrusse Vieille | 1157 | 957 | 688 | 486 | 251 | 212 | 194 | 213 | 381 | 439 | 608 | 1409 |
| | 990 | 950 | 670 | 460 | 270 | 190 | 200 | 210 | 320 | 450 | 560 | 1200 |

**PROPENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 72 | 43 | 41 | 25 | 32 | 21 | 25 | 36 | 26 | 40 | 57 | 63 |
| | 60 | 36 | 43 | 26 | 26 | 20 | 23 | 35 | 25 | 31 | 53 | 51 |
| Zingst | 287 | 201 | 150 | 127 | 62 | 69 | 64 | 63 | 54 | 78 | - | - |
| | 278 | 123 | 121 | 104 | 60 | 64 | 51 | 57 | 56 | 56 | - | - |
| Neuglobsow | 433 | 321 | 145 | 67 | 93 | 118 | 63 | 75 | 58 | 113 | - | - |
| | 425 | 354 | 79 | 65 | 82 | 105 | 66 | 75 | 43 | 89 | - | - |
| Waldhof | 317 | 217 | 174 | 65 | 54 | 84 | 59 | 55 | 45 | 172 | - | - |
| | 306 | 127 | 124 | 60 | 53 | 74 | 60 | 50 | 45 | 196 | - | - |
| Schmücke | 353 | 188 | 128 | 95 | 58 | 74 | 46 | 68 | 68 | 156 | - | - |
| | 331 | 155 | 131 | 92 | 55 | 71 | 46 | 61 | 60 | 128 | - | - |
| Schauinsland | 288 | 146 | 120 | 116 | 104 | 89 | 52 | 64 | 75 | 75 | - | - |
| | 247 | 128 | 96 | 116 | 62 | 85 | 50 | 58 | 64 | 72 | - | - |
| Hohenpeissenberg | 157 | 84 | 53 | 50 | 19 | 19 | 16 | 18 | 32 | 56 | 72 | 105 |
| | 139 | 77 | 43 | 20 | 15 | 16 | 14 | 15 | 20 | 39 | 35 | 81 |
| Košetice | 287 | 142 | 86 | 171 | 46 | 36 | 42 | 42 | 63 | 96 | 127 | 174 |
| | 160 | 135 | 77 | 44 | 40 | 31 | 38 | 42 | 57 | 59 | 59 | 127 |
| Rigi | 131 | 79 | 55 | 40 | 31 | 55 | 27 | 24 | 53 | 61 | 56 | 87 |
| | 116 | 64 | 47 | 31 | 29 | 52 | 18 | 18 | 46 | 48 | 40 | 48 |
| La Tardière | 308 | 143 | 103 | 128 | 102 | 54 | 45 | 30 | - | 108 | 101 | 217 |
| | 190 | 125 | 100 | 130 | 110 | 40 | 45 | 30 | - | 115 | 90 | 180 |
| Peyrusse Vieille | 123 | 94 | 39 | 48 | 36 | 46 | 73 | 59 | 39 | 65 | 58 | 126 |
| | 90 | 70 | 30 | 40 | 35 | 40 | 90 | 50 | 40 | 60 | 55 | 110 |

**ETHYNE (ACETYLENE)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 591 | 652 | 515 | 270 | 130 | 64 | 52 | 83 | 84 | 235 | 468 | 551 |
| | 531 | 569 | 457 | 265 | 148 | 65 | 55 | 88 | 85 | 160 | 455 | 522 |
| Zingst | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Neuglobsow | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Waldhof | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schmücke | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schauinsland | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Hohenpeissenberg | 1002 | 793 | 528 | 475 | 213 | 163 | 108 | 150 | 264 | 308 | 398 | 720 |
| | 953 | 725 | 467 | 379 | 188 | 162 | 101 | 144 | 293 | 256 | 291 | 696 |
| Košetice | 1308 | 1111 | 825 | 586 | 239 | 178 | 110 | 118 | 220 | 375 | 686 | 1879 |
| | 1202 | 1014 | 642 | 513 | 206 | 156 | 88 | 116 | 226 | 319 | 346 | 1343 |
| Rigi | 1145 | 865 | 604 | 477 | 220 | 190 | 145 | 158 | 293 | 267 | 299 | 560 |
| | 1145 | 741 | 570 | 384 | 201 | 173 | 125 | 150 | 301 | 207 | 236 | 366 |
| La Tardière | 1084 | 679 | 501 | 449 | 242 | 110 | - | 78 | - | 255 | 306 | 714 |
| | 810 | 640 | 495 | 410 | 270 | 110 | - | 75 | - | 240 | 260 | 650 |
| Peyrusse Vieille | 756 | 671 | 403 | 329 | 185 | 153 | 124 | 56 | 125 | 218 | 257 | 546 |
| | 480 | 580 | 400 | 280 | 170 | 120 | 120 | 50 | 115 | 175 | 260 | 420 |

**BUTANE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 512 | 608 | 336 | 103 | 397 | 32 | 54 | 146 | 37 | 278 | 399 | 551 |
| | 452 | 486 | 282 | 100 | 137 | 28 | 33 | 40 | 39 | 183 | 431 | 377 |
| Zingst | 517 | 620 | 386 | 245 | 115 | 92 | 143 | 187 | 100 | 187 | 698 | 942 |
| | 469 | 520 | 359 | 193 | 113 | 53 | 140 | 121 | 98 | 167 | 657 | 836 |
| Neuglobsow | 571 | 731 | 321 | 195 | 105 | 141 | 83 | 161 | 112 | 178 | 676 | 854 |
| | 535 | 655 | 264 | 201 | 107 | 122 | 75 | 113 | 100 | 169 | 512 | 791 |
| Waldhof | 578 | 711 | 435 | 223 | 133 | 160 | 120 | 103 | 121 | 258 | 677 | 733 |
| | 562 | 655 | 342 | 230 | 119 | 106 | 86 | 99 | 88 | 156 | 667 | 671 |
| Schmücke | 468 | 527 | 341 | 244 | 168 | 160 | 111 | 131 | 186 | 287 | 511 | 645 |
| | 445 | 527 | 336 | 266 | 148 | 161 | 118 | 122 | 141 | 222 | 441 | 627 |
| Schauinsland | 362 | 452 | 290 | 302 | 113 | 147 | 88 | 136 | 199 | 177 | 348 | 473 |
| | 364 | 364 | 254 | 277 | 76 | 140 | 60 | 113 | 198 | 109 | 298 | 411 |
| Hohenpeissenberg | 411 | 427 | 253 | 158 | 104 | 90 | 64 | 93 | 161 | 181 | 200 | 343 |
| | 402 | 418 | 240 | 128 | 99 | 88 | 65 | 87 | 156 | 167 | 159 | 333 |
| Košetice | 469 | 546 | 454 | 211 | 131 | 71 | 76 | 96 | 162 | 158 | 234 | 423 |
| | 483 | 517 | 253 | 205 | 140 | 46 | 75 | 76 | 139 | 149 | 189 | 365 |
| Rigi | 486 | 467 | 299 | 194 | 108 | 100 | 93 | 123 | 215 | 183 | 190 | 322 |
| | 515 | 436 | 300 | 175 | 97 | 92 | 80 | 109 | 205 | 158 | 160 | 270 |
| La Tardière | 462 | 408 | 286 | 254 | 204 | 82 | - | 93 | - | 171 | 244 | 376 |
| | 390 | 395 | 290 | 240 | 190 | 70 | - | 85 | - | 165 | 210 | 350 |
| Peyrusse Vieille | 369 | 300 | 219 | 118 | 67 | 60 | 100 | 103 | 195 | 124 | 178 | 391 |
| | 280 | 320 | 200 | 100 | 75 | 40 | 95 | 80 | 180 | 125 | 150 | 340 |

**ISOBUTANE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Zingst | 283 | 364 | 226 | 140 | 63 | 71 | 83 | 96 | 62 | 112 | 187 | 264 |
| | 260 | 291 | 206 | 119 | 63 | 51 | 79 | 72 | 63 | 96 | 171 | 234 |
| Neuglobsow | 369 | 445 | 221 | 112 | 79 | 76 | 174 | 89 | 67 | 105 | 189 | 225 |
| | 362 | 392 | 170 | 114 | 74 | 62 | 81 | 73 | 68 | 108 | 144 | 206 |
| Waldhof | 317 | 395 | 270 | 131 | 84 | 63 | 74 | 59 | 70 | 148 | 173 | 187 |
| | 310 | 372 | 210 | 137 | 61 | 58 | 56 | 54 | 50 | 80 | 152 | 173 |
| Schmücke | 344 | 332 | 211 | 139 | 125 | 85 | 72 | 75 | 105 | 206 | 136 | 161 |
| | 250 | 336 | 208 | 147 | 99 | 70 | 58 | 74 | 77 | 124 | 106 | 157 |
| Schauinsland | 224 | 264 | 162 | 154 | 62 | 86 | 42 | 64 | 101 | 86 | 92 | 115 |
| | 203 | 203 | 155 | 146 | 38 | 84 | 27 | 55 | 98 | 62 | 74 | 101 |
| Hohenpeissenberg | 248 | 250 | 154 | 105 | 64 | 57 | 43 | 60 | 110 | 110 | 118 | 200 |
| | 240 | 248 | 143 | 85 | 60 | 58 | 41 | 58 | 102 | 95 | 96 | 198 |
| Košetice | 294 | 339 | 261 | 154 | 87 | 51 | 54 | 60 | 122 | 107 | 152 | 271 |
| | 308 | 338 | 153 | 151 | 87 | 33 | 46 | 53 | 96 | 103 | 119 | 237 |
| Rigi | 307 | 291 | 173 | 117 | 64 | 66 | 56 | 68 | 120 | 106 | 111 | 188 |
| | 303 | 254 | 163 | 102 | 60 | 62 | 47 | 60 | 118 | 90 | 89 | 151 |
| La Tardière | 253 | 204 | 218 | 111 | 776 | 54 | 48 | 35 | - | 81 | 138 | 233 |
| | 240 | 190 | 160 | 90 | 80 | 60 | 45 | 35 | - | 75 | 125 | 225 |
| Peyrusse Vieille | 1031 | 424 | 125 | 77 | 43 | 51 | 46 | 64 | 81 | 174 | 120 | 328 |
| | 430 | 180 | 110 | 60 | 35 | 30 | 40 | 30 | 80 | 90 | 90 | 260 |

**BUTENES**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Zingst | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Neuglobsow | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Waldhof | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schmücke | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schauinsland | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Hohenpeissenberg | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Košetice | 119 | 75 | 67 | 169 | 200 | 133 | 138 | 134 | 148 | 136 | 136 | 188 |
| | 83 | 83 | 61 | 134 | 206 | 125 | 116 | 126 | 136 | 122 | 124 | 170 |
| Rigi | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| La Tardière | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Peyrusse Vieille | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**BUT_1_ENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 51 | 14 | 13 | 9 | 16 | 5 | 7 | 11 | 9 | 17 | 15 | 17 |
| | 21 | 13 | 12 | 8 | 7 | 3 | 7 | 11 | 9 | 11 | 15 | 16 |
| Zingst | 29 | 31 | 27 | 32 | 15 | 24 | 16 | 27 | 14 | 16 | 57 | 56 |
| | 27 | 23 | 21 | 24 | 13 | 15 | 13 | 19 | 15 | 13 | 49 | 53 |
| Neuglobsow | 45 | 135 | 28 | 16 | 22 | 28 | 16 | 21 | 15 | 24 | 53 | 71 |
| | 46 | 127 | 17 | 16 | 20 | 22 | 16 | 20 | 14 | 22 | 58 | 70 |
| Waldhof | 39 | 34 | 31 | 15 | 15 | 20 | 14 | 16 | 12 | 27 | 43 | 57 |
| | 34 | 22 | 21 | 15 | 15 | 18 | 14 | 16 | 13 | 28 | 45 | 57 |
| Schmücke | 32 | 28 | 20 | 20 | 18 | 15 | 15 | 17 | 17 | 31 | 80 | 57 |
| | 32 | 23 | 17 | 19 | 14 | 13 | 13 | 16 | 16 | 25 | 56 | 58 |
| Schauinsland | 30 | 24 | 24 | 26 | 16 | 19 | 15 | 16 | 17 | 18 | 36 | 43 |
| | 28 | 21 | 23 | 24 | 16 | 16 | 13 | 16 | 17 | 19 | 36 | 39 |
| Hohenpeissenberg | 27 | 15 | 11 | 11 | 6 | 5 | 5 | 6 | 8 | 11 | 14 | 20 |
| | 24 | 13 | 8 | 5 | 6 | 5 | 5 | 5 | 7 | 9 | 9 | 15 |
| Košetice | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Rigi | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| La Tardière | 52 | 38 | 31 | 41 | 32 | 20 | 10 | 6 | - | 31 | 28 | 44 |
| | 30 | 40 | 30 | 40 | 30 | 20 | 8 | 5 | - | 35 | 30 | 40 |
| Peyrusse Vieille | 24 | 21 | 13 | 14 | 13 | 12 | 22 | 14 | 9 | 13 | 16 | 23 |
| | 20 | 20 | 10 | 10 | 10 | 10 | 20 | 10 | 10 | 10 | 20 | 20 |

**TRANS_2_BUTENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 3 | 3 | 3 | 3 | 16 | 3 | 4 | 4 | 3 | 9 | 4 | 3 |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 |
| Zingst | - | - | 27 | 23 | 17 | 23 | 12 | 22 | 16 | 17 | 26 | 27 |
| | - | - | 27 | 23 | 17 | 16 | 13 | 18 | 16 | 18 | 25 | 26 |
| Neuglobsow | - | - | 25 | 20 | 22 | 18 | 14 | 21 | 16 | 22 | 26 | 35 |
| | - | - | 28 | 19 | 20 | 17 | 15 | 20 | 16 | 22 | 27 | 31 |
| Waldhof | - | - | 24 | 22 | 18 | 16 | 14 | 15 | 14 | 20 | 24 | 24 |
| | - | - | 25 | 22 | 18 | 16 | 13 | 15 | 14 | 20 | 23 | 25 |
| Schmücke | - | - | 25 | 22 | 23 | 17 | 15 | 17 | 16 | 20 | 23 | 27 |
| | - | - | 25 | 23 | 17 | 17 | 15 | 19 | 16 | 19 | 24 | 27 |
| Schauinsland | - | - | - | 25 | 15 | 15 | 13 | 18 | 15 | 15 | 21 | 22 |
| | - | - | - | 26 | 15 | 14 | 13 | 18 | 16 | 16 | 20 | 23 |
| Hohenpeissenberg | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Košetice | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Rigi | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| La Tardière | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Peyrusse Vieille | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**CIS_2_BUTENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 3 | 3 | 3 | 3 | 13 | 3 | 4 | 8 | 3 | 8 | 4 | 4 |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Zingst | - | - | 16 | 18 | 10 | 17 | 6 | 12 | 8 | 8 | 16 | 17 |
| | - | - | 16 | 18 | 9 | 11 | 6 | 9 | 7 | 7 | 16 | 16 |
| Neuglobsow | - | - | 17 | 12 | 16 | 12 | 8 | 10 | 8 | 13 | 16 | 24 |
| | - | - | 17 | 13 | 15 | 11 | 8 | 11 | 7 | 12 | 16 | 20 |
| Waldhof | - | - | 11 | 14 | 12 | 13 | 7 | 9 | 7 | 12 | 14 | 17 |
| | - | - | 11 | 13 | 10 | 11 | 6 | 9 | 6 | 11 | 14 | 17 |
| Schmücke | - | - | 10 | 14 | 15 | 11 | 7 | 10 | 9 | 10 | 15 | 18 |
| | - | - | 10 | 14 | 10 | 11 | 6 | 10 | 10 | 9 | 17 | 18 |
| Schauinsland | - | - | - | 18 | 11 | 11 | 8 | 12 | 9 | 11 | 12 | 11 |
| | - | - | - | 17 | 11 | 11 | 8 | 11 | 9 | 11 | 11 | 12 |
| Hohenpeissenberg | 8 | 8 | 6 | 5 | 4 | 3 | 3 | 3 | 4 | 5 | 5 | 6 |
| | 8 | 8 | 6 | 4 | 3 | 3 | 2 | 3 | 4 | 4 | 4 | 6 |
| Košetice | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Rigi | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| La Tardière | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Peyrusse Vieille | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**PENTANE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 205 | 244 | 98 | 24 | 44 | 10 | 22 | 45 | 14 | 97 | 136 | 180 |
| | 160 | 147 | 88 | 23 | 17 | 9 | 16 | 18 | 13 | 66 | 150 | 121 |
| Zingst | 174 | 211 | 128 | 75 | 46 | 134 | 79 | 70 | 50 | 81 | 135 | 184 |
| | 155 | 157 | 107 | 79 | 34 | 142 | 75 | 45 | 40 | 76 | 125 | 178 |
| Neuglobsow | 201 | 232 | 115 | 75 | 64 | - | 54 | 71 | 60 | 84 | 127 | 199 |
| | 165 | 201 | 81 | 82 | 54 | - | 49 | 57 | 51 | 78 | 96 | 150 |
| Waldhof | 199 | 240 | 150 | 78 | 74 | 132 | 90 | 58 | 51 | 121 | 137 | 138 |
| | 192 | 211 | 118 | 76 | 51 | 138 | 56 | 48 | 42 | 74 | 116 | 121 |
| Schmücke | 185 | 173 | 106 | 107 | 85 | 315 | 67 | 74 | 99 | 141 | 83 | 117 |
| | 159 | 173 | 99 | 106 | 82 | 217 | 61 | 67 | 82 | 99 | 61 | 96 |
| Schauinsland | 160 | 142 | 91 | 109 | 54 | - | 57 | 78 | 105 | 101 | 97 | 71 |
| | 121 | 107 | 70 | 111 | 48 | - | 43 | 52 | 107 | 55 | 51 | 63 |
| Hohenpeissenberg | 134 | 145 | 81 | 77 | 61 | 79 | 38 | 72 | 98 | 94 | 79 | 116 |
| | 120 | 135 | 66 | 54 | 50 | 58 | 35 | 51 | 89 | 75 | 55 | 109 |
| Košetice | 98 | 77 | 101 | 91 | 59 | 36 | 46 | 46 | 75 | 93 | 90 | 151 |
| | 98 | 68 | 75 | 89 | 54 | 24 | 36 | 46 | 55 | 73 | 67 | 123 |
| Rigi | 253 | 199 | 135 | 144 | 101 | 114 | 82 | 88 | 182 | 114 | 77 | 114 |
| | 271 | 165 | 130 | 126 | 88 | 93 | 54 | 72 | 161 | 76 | 58 | 79 |
| La Tardière | 582 | - | - | - | - | 256 | 120 | 205 | - | 165 | 153 | 147 |
| | 520 | - | - | - | - | 90 | 120 | 200 | - | 145 | 125 | 130 |
| Peyrusse Vieille | 157 | 97 | 53 | 39 | 49 | 28 | 38 | 16 | 24 | 59 | 57 | 116 |
| | 80 | 90 | 50 | 30 | 30 | 20 | 30 | 20 | 20 | 40 | 40 | 90 |

**ISOPENTANE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Zingst | 265 | 329 | 200 | 116 | 81 | 113 | 147 | 146 | 103 | 122 | 169 | 242 |
| | 252 | 251 | 176 | 130 | 63 | 78 | 133 | 115 | 104 | 112 | 158 | 239 |
| Neuglobsow | 305 | 342 | 189 | 111 | 118 | 161 | 106 | 140 | 139 | 117 | 165 | 249 |
| | 249 | 291 | 137 | 110 | 85 | 118 | 105 | 134 | 103 | 111 | 115 | 200 |
| Waldhof | 283 | 348 | 225 | 123 | 121 | 141 | 133 | 117 | 94 | 175 | 163 | 155 |
| | 267 | 314 | 175 | 121 | 94 | 114 | 111 | 101 | 90 | 161 | 130 | 154 |
| Schmücke | 295 | 272 | 179 | 162 | 189 | 148 | 126 | 141 | 169 | 201 | 130 | 146 |
| | 235 | 276 | 163 | 148 | 120 | 134 | 114 | 142 | 148 | 145 | 83 | 149 |
| Schauinsland | 263 | 230 | 158 | 170 | 109 | 167 | 125 | 182 | 203 | 131 | 135 | 93 |
| | 221 | 197 | 123 | 177 | 112 | 155 | 102 | 142 | 198 | 85 | 66 | 89 |
| Hohenpeissenberg | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Košetice | 145 | 95 | 128 | 123 | 83 | 48 | 73 | 80 | 117 | 103 | 117 | 200 |
| | 151 | 79 | 99 | 109 | 73 | 42 | 57 | 70 | 83 | 85 | 88 | 186 |
| Rigi | 319 | 270 | 172 | 173 | 146 | 193 | 165 | 211 | 285 | 184 | 135 | 180 |
| | 350 | 227 | 163 | 163 | 129 | 175 | 134 | 187 | 271 | 141 | 114 | 139 |
| La Tardière | 258 | - | - | - | - | 92 | - | 113 | - | 101 | 150 | 174 |
| | 200 | - | - | - | - | 90 | - | 95 | - | 100 | 120 | 170 |
| Peyrusse Vieille | 404 | 153 | 127 | 76 | 61 | 76 | 81 | 49 | 122 | 90 | 77 | 151 |
| | 160 | 150 | 100 | 60 | 55 | 60 | 70 | 50 | 100 | 65 | 80 | 150 |

**HEXANE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 54 | 60 | 31 | 8 | 9 | 3 | 5 | 8 | 3 | 34 | 41 | 57 |
| | 43 | 42 | 30 | 8 | 3 | 3 | 3 | 5 | 3 | 18 | 46 | 36 |
| Zingst | 90 | 178 | 65 | 57 | 43 | 70 | 59 | 66 | 39 | 42 | 58 | 81 |
| | 84 | 71 | 59 | 48 | 40 | 49 | 47 | 40 | 37 | 44 | 54 | 75 |
| Neuglobsow | 98 | 97 | 72 | 108 | 62 | 67 | 63 | 69 | 43 | 46 | 64 | 86 |
| | 94 | 89 | 44 | 103 | 49 | 68 | 47 | 65 | 38 | 39 | 47 | 62 |
| Waldhof | 72 | 101 | 69 | 69 | 79 | 57 | 48 | 39 | 42 | 83 | 67 | 47 |
| | 60 | 90 | 52 | 63 | 69 | 50 | 45 | 40 | 42 | 59 | 54 | 50 |
| Schmücke | 108 | 107 | 65 | 79 | 57 | 76 | 87 | 73 | 65 | 101 | 40 | 53 |
| | 77 | 77 | 55 | 74 | 52 | 58 | 58 | 43 | 56 | 71 | 27 | 46 |
| Schauinsland | 92 | 60 | 47 | - | 37 | 53 | 42 | 57 | 71 | 59 | 54 | 45 |
| | 61 | 51 | 41 | - | 37 | 57 | 46 | 45 | 65 | 63 | 25 | 48 |
| Hohenpeissenberg | 39 | 36 | 19 | 13 | 10 | 10 | 8 | 11 | 19 | 19 | 18 | 31 |
| | 36 | 35 | 16 | 11 | 10 | 9 | 7 | 10 | 16 | 16 | 13 | 26 |
| Košetice | 59 | 51 | 50 | 23 | 15 | 11 | 12 | 15 | 22 | 21 | 27 | 48 |
| | 59 | 47 | 23 | 21 | 15 | 11 | 14 | 13 | 16 | 17 | 23 | 35 |
| Rigi | 52 | 46 | 27 | 20 | 14 | 10 | 15 | 13 | 21 | 15 | 14 | 27 |
| | 51 | 43 | 25 | 18 | 13 | 9 | 14 | 12 | 18 | 13 | 10 | 21 |
| La Tardière | 54 | 74 | 78 | 76 | 63 | 26 | 53 | 21 | - | 31 | 41 | 44 |
| | 40 | 75 | 70 | 80 | 53 | 30 | 50 | 20 | - | 30 | 40 | 30 |
| Peyrusse Vieille | 69 | 44 | 27 | 14 | 25 | 33 | 23 | 21 | 16 | 92 | 21 | 37 |
| | 60 | 30 | 20 | 10 | 5 | 20 | 20 | 10 | 10 | 20 | 20 | 30 |

**ISOPRENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 4 | 7 | 6 | 5 | 30 | 21 | 34 | 24 | 4 | 11 | 4 | 4 |
| | 4 | 4 | 4 | 4 | 4 | 20 | 35 | 4 | 4 | 4 | 4 | 4 |
| Zingst | 5 | 9 | 8 | 25 | 23 | 98 | 680 | 604 | 195 | 19 | 15 | 16 |
| | 5 | 5 | 6 | 10 | 17 | 103 | 748 | 510 | 133 | 14 | 11 | 15 |
| Neuglobsow | 19 | 12 | 16 | 47 | 57 | 96 | 327 | 521 | 109 | 26 | 18 | 20 |
| | 16 | 10 | 10 | 34 | 51 | 89 | 180 | 409 | 77 | 25 | 18 | 22 |
| Waldhof | 8 | 8 | 8 | 16 | 26 | 60 | 128 | 148 | 48 | 24 | 16 | 15 |
| | 7 | 7 | 7 | 18 | 24 | 51 | 102 | 146 | 51 | 25 | 15 | 16 |
| Schmücke | 13 | 7 | 6 | 33 | 51 | 42 | 54 | 83 | 27 | 19 | 11 | 14 |
| | 6 | 6 | 5 | 32 | 49 | 37 | 53 | 77 | 27 | 17 | 11 | 14 |
| Schauinsland | 18 | 9 | 8 | 33 | 77 | 92 | 151 | 318 | 132 | 26 | 17 | 14 |
| | 6 | 6 | 8 | 29 | 49 | 57 | 81 | 183 | 79 | 22 | 10 | 13 |
| Hohenpeissenberg | 9 | 4 | 3 | 25 | 42 | 30 | 51 | 69 | 38 | 10 | 7 | 5 |
| | 6 | 3 | 2 | 9 | 14 | 17 | 24 | 30 | 19 | 7 | 5 | 4 |
| Košetice | 65 | 9 | 33 | 70 | 38 | 75 | 271 | 221 | 64 | 13 | 11 | 12 |
| | 12 | 9 | 16 | 63 | 32 | 34 | 219 | 171 | 46 | 10 | 4 | 11 |
| Rigi | 9 | 9 | 8 | 16 | 64 | 133 | 106 | 124 | 44 | 20 | 12 | 9 |
| | 8 | 8 | 6 | 11 | 27 | 101 | 52 | 64 | 29 | 11 | 9 | 7 |
| La Tardière | 9 | 8 | 6 | 14 | 112 | 380 | 188 | 238 | - | 59 | 12 | 9 |
| | 5 | 5 | 5 | 10 | 130 | 100 | 190 | 250 | - | 50 | 5 | 5 |
| Peyrusse Vieille | 5 | 6 | 32 | 54 | 225 | 1193 | 1029 | 900 | 451 | 234 | 12 | 6 |
| | 5 | 5 | 20 | 20 | 205 | 1030 | 470 | 1000 | 320 | 200 | 5 | 5 |

**BENZENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | 210 | 253 | 217 | 113 | 60 | 25 | 27 | 49 | 33 | 110 | 180 | 224 |
| | 184 | 214 | 221 | 107 | 65 | 22 | 20 | 40 | 33 | 65 | 181 | 208 |
| Zingst | 262 | 337 | 282 | 265 | 143 | 191 | 121 | 155 | 113 | 154 | 425 | 518 |
| | 234 | 229 | 200 | 300 | 138 | 207 | 116 | 132 | 115 | 132 | 275 | 421 |
| Neuglobsow | 384 | 393 | 261 | 205 | 147 | 257 | 121 | 158 | 123 | 186 | 407 | 433 |
| | 340 | 294 | 174 | 194 | 154 | 254 | 122 | 140 | 112 | 184 | 332 | 392 |
| Waldhof | 299 | 400 | 301 | 220 | 153 | 195 | 107 | 118 | 125 | 247 | 312 | 396 |
| | 289 | 324 | 183 | 188 | 151 | 208 | 107 | 122 | 105 | 232 | 301 | 412 |
| Schmücke | 323 | 316 | 231 | 243 | 134 | 251 | 119 | 148 | 143 | 190 | 317 | 319 |
| | 244 | 288 | 198 | 232 | 126 | 234 | 127 | 122 | 144 | 148 | 223 | 323 |
| Schauinsland | 239 | 286 | 212 | 243 | 108 | - | 107 | 131 | 159 | 120 | 263 | 364 |
| | 228 | 269 | 194 | 217 | 110 | - | 105 | 111 | 128 | 111 | 217 | 308 |
| Hohenpeissenberg | 307 | 242 | 155 | 128 | 57 | 49 | 30 | 46 | 79 | 92 | 117 | 221 |
| | 301 | 217 | 141 | 98 | 51 | 47 | 30 | 43 | 79 | 79 | 85 | 213 |
| Košetice | 453 | 370 | 266 | 242 | 93 | 56 | 48 | 66 | 99 | 112 | 184 | 233 |
| | 422 | 335 | 178 | 188 | 90 | 47 | 38 | 60 | 73 | 105 | 102 | 189 |
| Rigi | 371 | 285 | 189 | 138 | 67 | 73 | 60 | 53 | 74 | 77 | 96 | 195 |
| | 368 | 249 | 181 | 113 | 61 | 70 | 58 | 52 | 74 | 61 | 75 | 131 |
| La Tardière | 336 | 531 | 685 | 918 | 518 | 46 | 30 | 40 | - | 94 | 96 | 202 |
| | 230 | 530 | 675 | 900 | 80 | 50 | 25 | 40 | - | 85 | 80 | 190 |
| Peyrusse Vieille | 233 | 186 | 121 | 88 | 48 | 42 | 40 | 33 | 61 | 64 | 75 | 164 |
| | 140 | 170 | 120 | 70 | 50 | 30 | 40 | 40 | 50 | 60 | 75 | 130 |

**TOLUENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Zingst | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Neuglobsow | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Waldhof | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schmücke | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schauinsland | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Hohenpeissenberg | 185 | 157 | 97 | 82 | 62 | 56 | 53 | 65 | 102 | 114 | 114 | 142 |
| | 195 | 137 | 83 | 64 | 52 | 53 | 46 | 55 | 83 | 86 | 81 | 147 |
| Košetice | 288 | 203 | 121 | 105 | 70 | 40 | 47 | 46 | 84 | 80 | 94 | 172 |
| | 300 | 172 | 92 | 72 | 46 | 43 | 41 | 46 | 58 | 59 | 69 | 155 |
| Rigi | 341 | 242 | 137 | 137 | 106 | 140 | 133 | 102 | 136 | 124 | 94 | 140 |
| | 340 | 177 | 110 | 106 | 79 | 116 | 108 | 92 | 117 | 84 | 72 | 85 |
| La Tardière | 267 | 610 | 668 | 859 | 604 | 124 | 188 | 155 | - | 146 | 214 | 210 |
| | 190 | 610 | 650 | 820 | 560 | 70 | 160 | 130 | - | 130 | 85 | 160 |
| Peyrusse Vieille | 163 | 131 | 92 | 89 | 70 | 78 | 87 | 86 | 116 | 100 | 62 | 114 |
| | 110 | 140 | 60 | 70 | 60 | 50 | 50 | 60 | 60 | 80 | 65 | 120 |

**ETHYLBENZENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Zingst | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Neuglobsow | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Waldhof | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schmücke | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Schauinsland | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Hohenpeissenberg | 31 | 26 | 16 | 14 | 11 | 11 | 10 | 11 | 18 | 21 | 19 | 25 |
| | 31 | 24 | 13 | 11 | 10 | 10 | 9 | 11 | 15 | 16 | 13 | 24 |
| Košetice | 35 | 38 | 26 | 18 | 9 | 4 | 7 | 7 | 19 | 21 | 18 | 24 |
| | 35 | 41 | 24 | 16 | 6 | 6 | 8 | 7 | 17 | 21 | 19 | 12 |
| Rigi | 63 | 33 | 18 | 21 | 15 | 24 | 20 | 15 | 20 | 20 | 19 | 24 |
| | 59 | 22 | 14 | 17 | 13 | 22 | 19 | 15 | 18 | 16 | 16 | 17 |
| La Tardière | 53 | - | - | - | - | 24 | 26 | 31 | - | 33 | 41 | 39 |
| | 50 | - | - | - | - | 20 | 25 | 30 | - | 30 | 25 | 30 |
| Peyrusse Vieille | 25 | 19 | 13 | 13 | 13 | 11 | 24 | 10 | 15 | 13 | 8 | 16 |
| | 20 | 20 | 10 | 10 | 10 | 10 | 20 | 10 | 10 | 10 | 8 | 20 |

**m+p-XYLENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Zingst | 123 | 123 | 59 | 41 | 22 | 90 | 30 | 31 | 32 | 34 | 82 | 92 |
| | 90 | 126 | 63 | 31 | 20 | 37 | 26 | 27 | 29 | 35 | 85 | 94 |
| Neuglobsow | 118 | 99 | 51 | 50 | 31 | 59 | 35 | 66 | 29 | 50 | 75 | 116 |
| | 109 | 93 | 44 | 47 | 26 | 55 | 28 | 83 | 26 | 45 | 59 | 112 |
| Waldhof | 87 | 125 | 61 | 33 | 34 | 32 | 31 | 26 | 30 | 60 | 72 | 70 |
| | 77 | 96 | 47 | 31 | 33 | 28 | 30 | 26 | 33 | 61 | 65 | 65 |
| Schmücke | 96 | 91 | 58 | 62 | 40 | 41 | 38 | 43 | 56 | 74 | 59 | 72 |
| | 98 | 92 | 48 | 52 | 46 | 37 | 35 | 29 | 49 | 56 | 47 | 57 |
| Schauinsland | 98 | 62 | 52 | 56 | 28 | 44 | 36 | 42 | 61 | 38 | 70 | 70 |
| | 82 | 60 | 37 | 55 | 26 | 37 | 33 | 35 | 51 | 23 | 58 | 65 |
| Hohenpeissenberg | 79 | 58 | 39 | 28 | 23 | 21 | 20 | 21 | 38 | 50 | 49 | 62 |
| | 70 | 49 | 29 | 19 | 17 | 18 | 16 | 15 | 28 | 35 | 30 | 58 |
| Košetice | 67 | 72 | 47 | 27 | 14 | 9 | 10 | 7 | 34 | 41 | 36 | 66 |
| | 69 | 76 | 40 | 24 | 13 | 10 | 11 | 7 | 33 | 44 | 33 | 42 |
| Rigi | 174 | 78 | 39 | 44 | 35 | 67 | 49 | 34 | 42 | 45 | 41 | 62 |
| | 150 | 45 | 27 | 32 | 29 | 61 | 43 | 31 | 36 | 33 | 32 | 41 |
| La Tardière | 127 | - | - | - | - | 46 | 68 | 78 | - | 99 | 141 | 111 |
| | 100 | - | - | - | - | 20 | 70 | 55 | - | 90 | 70 | 70 |
| Peyrusse Vieille | 43 | 33 | 20 | 17 | 28 | 30 | 39 | 20 | 27 | 31 | 17 | 32 |
| | 30 | 30 | 20 | 20 | 25 | 20 | 40 | 20 | 20 | 20 | 20 | 40 |

**o-XYLENE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pallas | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Zingst | 45 | 41 | 18 | 16 | 9 | 40 | 27 | 41 | 20 | 12 | 27 | 33 |
| | 39 | 32 | 14 | 15 | 8 | 10 | 24 | 19 | 19 | 13 | 26 | 37 |
| Neuglobsow | 59 | 41 | 17 | 16 | 17 | 51 | 35 | 53 | 24 | 16 | 31 | 37 |
| | 62 | 35 | 12 | 18 | 17 | 45 | 26 | 56 | 25 | 13 | 22 | 35 |
| Waldhof | 49 | 38 | 24 | 15 | 12 | 31 | 35 | 46 | 29 | 20 | 22 | 25 |
| | 48 | 30 | 18 | 16 | 13 | 34 | 29 | 44 | 29 | 18 | 19 | 25 |
| Schmücke | 41 | 29 | 21 | 27 | 22 | 26 | 31 | 52 | 40 | 27 | 19 | 23 |
| | 40 | 32 | 17 | 26 | 22 | 28 | 29 | 46 | 37 | 21 | 13 | 20 |
| Schauinsland | 53 | 49 | 17 | 13 | 16 | 25 | 26 | 30 | 42 | 20 | 23 | 27 |
| | 48 | 34 | 13 | 12 | 16 | 17 | 25 | 34 | 46 | 21 | 17 | 19 |
| Hohenpeissenberg | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Košetice | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Rigi | 76 | 35 | 18 | 20 | 14 | 30 | 20 | 17 | 20 | 20 | 20 | 26 |
| | 63 | 24 | 14 | 15 | 12 | 27 | 18 | 17 | 19 | 17 | 19 | 21 |
| La Tardière | 40 | - | - | - | - | 13 | 31 | 33 | - | 24 | 33 | 32 |
| | 30 | - | - | - | - | 10 | 35 | 30 | - | 20 | 20 | 20 |
| Peyrusse Vieille | 16 | 11 | 8 | 7 | 9 | 12 | 14 | 14 | 14 | 9 | 7 | 13 |
| | 10 | 10 | 5 | 5 | 8 | 10 | 20 | 10 | 10 | 5 | 5 | 10 |

# Monthly mean and median concentrations (first and second line, respectively) of carbonyls (μg $m^{-3}$)

**METHANAL (FORMALDEHYDE)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 1.158 | 1.198 | 1.100 | 1.118 | 1.140 | 2.235 | 1.844 | 2.207 | 2.521 | 1.976 | 0.866 | 0.857 |
| | 1.069 | 0.935 | 1.185 | 1.123 | 1.061 | 1.555 | 1.355 | 1.830 | 3.219 | 1.630 | 0.807 | 0.863 |
| Peyrusse Vieille | 0.763 | - | 1.176 | 0.764 | 1.191 | 2.270 | - | 2.561 | 2.130 | - | 0.752 | 0.887 |
| | 0.729 | - | 1.145 | 0.656 | 1.265 | 1.839 | - | 2.581 | 2.012 | - | 0.679 | 0.903 |
| Campisábalos | 0.536 | 0.557 | 0.521 | 0.437 | 0.600 | 0.806 | 0.986 | 0.922 | 0.815 | 0.471 | 0.690 | 0.321 |
| | 0.550 | 0.540 | 0.520 | 0.450 | 0.565 | 0.790 | 0.870 | 0.840 | 0.800 | 0.490 | 0.550 | 0.315 |

**ETHANAL (ACETALDEHYDE)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 1.049 | 0.889 | 0.735 | 0.656 | 0.592 | 1.033 | 0.558 | 0.853 | 1.324 | 1.350 | 0.442 | 0.770 |
| | 0.979 | 0.732 | 0.749 | 0.644 | 0.629 | 0.732 | 0.435 | 0.680 | 1.441 | 1.146 | 0.429 | 0.773 |
| Peyrusse Vieille | 0.734 | - | 0.799 | 0.530 | 0.735 | 0.783 | - | 0.915 | 0.993 | - | 0.436 | 0.616 |
| | 0.713 | - | 0.788 | 0.504 | 0.631 | 0.559 | - | 0.759 | 0.967 | - | 0.383 | 0.593 |
| Campisábalos | 1.377 | 1.643 | 1.845 | 2.038 | 2.613 | 2.578 | 2.941 | 2.012 | 1.380 | 1.096 | 1.331 | 0.990 |
| | 1.400 | 1.590 | 1.935 | 2.150 | 2.570 | 2.410 | 2.820 | 1.900 | 1.390 | 1.170 | 1.250 | 0.950 |

**PROPANONE (ACETONE)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 1.603 | 1.308 | 1.407 | 2.198 | 2.236 | 3.043 | 2.038 | 2.888 | 4.099 | 2.551 | 1.226 | 1.252 |
| | 1.493 | 1.143 | 1.316 | 1.816 | 2.113 | 2.297 | 1.550 | 2.726 | 5.219 | 2.542 | 1.170 | 1.315 |
| Peyrusse Vieille | 1.253 | - | 2.062 | 2.215 | 2.636 | 2.532 | - | 2.650 | - | - | 1.245 | 1.099 |
| | 1.156 | - | 1.708 | 2.306 | 2.559 | 2.374 | - | 2.827 | - | - | 1.190 | 1.077 |
| Campisábalos | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**PROPANAL**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 0.150 | 0.141 | 0.095 | 0.069 | 0.084 | 0.123 | 0.047 | 0.084 | 0.144 | 0.122 | 0.036 | 0.077 |
| | 0.146 | 0.125 | 0.090 | 0.069 | 0.083 | 0.086 | 0.039 | 0.064 | 0.150 | 0.129 | 0.035 | 0.069 |
| Peyrusse Vieille | 0.092 | - | 0.112 | 0.041 | 0.089 | 0.072 | - | 0.094 | 0.101 | - | 0.028 | 0.111 |
| | 0.087 | - | 0.111 | 0.043 | 0.078 | 0.064 | - | 0.046 | 0.091 | - | 0.015 | 0.097 |
| Campisábalos | 0.098 | 0.061 | 0.054 | 0.025 | 0.025 | 0.025 | 0.025 | 0.041 | 0.025 | 0.025 | 0.025 | 0.025 |
| | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |

**2-PROPENAL (ACROLEIN)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 0.015 | 0.015 | 0.014 | 0.015 | 0.016 | 0.028 | 0.015 | 0.015 | 0.020 | 0.014 | 0.015 | 0.015 |
| | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.017 | 0.015 | 0.015 | 0.015 | 0.014 | 0.015 | 0.016 |
| Peyrusse Vieille | 0.015 | - | 0.015 | 0.014 | 0.015 | 0.015 | 0.019 | 0.015 | 0.026 | 0.015 | 0.015 | 0.015 |
| | 0.015 | - | 0.015 | 0.014 | 0.015 | 0.016 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| Campisábalos | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**2-BUTANONE (METHYLETHYLKETONE)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Peyrusse Vieille | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Campisábalos | 0.912 | 1.138 | 1.276 | 1.523 | 0.145 | 0.050 | 0.518 | 1.527 | 0.888 | 1.277 | 1.106 | 1.341 |
| | 0.810 | 1.205 | 1.225 | 1.600 | 0.122 | 0.025 | 0.025 | 1.470 | 1.010 | 1.130 | 1.090 | 1.335 |

**3-BUTEN-2-ONE (METHYLVINYLKETONE)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Peyrusse Vieille | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Campisábalos | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**2-METHYLPROPENAL (METHACROLEIN)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 0.018 | 0.014 | 0.010 | 0.011 | 0.034 | 0.084 | 0.135 | 0.131 | 0.115 | 0.099 | - | 0.027 |
| | 0.011 | 0.011 | 0.011 | 0.011 | 0.013 | 0.051 | 0.074 | 0.087 | 0.079 | 0.110 | - | 0.019 |
| Peyrusse Vieille | 0.011 | - | 0.011 | 0.023 | 0.141 | 0.357 | - | 0.403 | 0.260 | - | - | 0.011 |
| | 0.011 | - | 0.011 | 0.011 | 0.136 | 0.169 | - | 0.411 | 0.130 | - | - | 0.011 |
| Campisábalos | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**BENZENECARBALDEHYDE**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 0.055 | 0.068 | 0.045 | 0.053 | 0.071 | 0.068 | 0.049 | 0.064 | 0.167 | 0.101 | 0.038 | 0.055 |
| | 0.057 | 0.062 | 0.042 | 0.039 | 0.071 | 0.042 | 0.044 | 0.072 | 0.100 | 0.104 | 0.022 | 0.063 |
| Peyrusse Vieille | 0.027 | - | 0.043 | 0.034 | 0.056 | 0.051 | - | 0.056 | 0.043 | - | 0.026 | 0.041 |
| | 0.024 | - | 0.041 | 0.038 | 0.043 | 0.045 | - | 0.049 | 0.042 | - | 0.025 | 0.037 |
| Campisábalos | 0.587 | 0.930 | 0.621 | 0.752 | 0.072 | 0.031 | 0.665 | 0.828 | 0.522 | 0.636 | 0.357 | 0.388 |
| | 0.630 | 1.010 | 0.515 | 0.610 | 0.085 | 0.025 | 0.830 | 0.810 | 0.530 | 0.540 | 0.350 | 0.385 |

**PENTANAL**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Peyrusse Vieille | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |
| Campisábalos | 0.181 | 0.325 | 0.168 | 0.231 | 0.132 | 0.081 | 0.201 | 0.117 | 0.144 | 0.204 | 0.346 | 0.143 |
| | 0.190 | 0.305 | 0.165 | 0.220 | 0.130 | 0.090 | 0.160 | 0.120 | 0.130 | 0.190 | 0.220 | 0.140 |

**ETHANEDIAL (GLYOXAL)**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 0.011 | 0.011 | 0.015 | 0.011 | 0.024 | 0.116 | 0.019 | 0.031 | 0.074 | - | 0.025 | 0.024 |
| | 0.011 | 0.011 | 0.011 | 0.011 | 0.013 | 0.036 | 0.018 | 0.027 | 0.049 | - | 0.021 | 0.018 |
| Peyrusse Vieille | 0.011 | - | 0.017 | 0.010 | 0.035 | 0.052 | - | 0.136 | - | - | 0.017 | 0.018 |
| | 0.011 | - | 0.011 | 0.011 | 0.039 | 0.033 | - | 0.033 | - | - | 0.011 | 0.012 |
| Campisábalos | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

**HEXANAL**

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 0.032 | 0.030 | 0.035 | 0.052 | 0.069 | 0.113 | 0.051 | 0.065 | 0.067 | 0.048 | - | 0.064 |
| | 0.030 | 0.032 | 0.038 | 0.052 | 0.055 | 0.081 | 0.045 | 0.060 | 0.077 | 0.040 | - | 0.048 |
| Peyrusse Vieille | 0.031 | - | 0.042 | 0.067 | 0.212 | 0.122 | - | 0.096 | 0.126 | - | - | 0.025 |
| | 0.029 | - | 0.041 | 0.073 | 0.203 | 0.116 | - | 0.082 | 0.091 | - | - | 0.015 |
| Campisábalos | 0.196 | 0.267 | 0.171 | 0.210 | 0.315 | 0.248 | 0.237 | 0.205 | 0.222 | 0.201 | 0.161 | 0.155 |
| | 0.200 | 0.260 | 0.160 | 0.200 | 0.290 | 0.250 | 0.220 | 0.210 | 0.230 | 0.200 | 0.140 | 0.185 |

**2-OXOPROPANAL (METHYLGLYOXAL)**

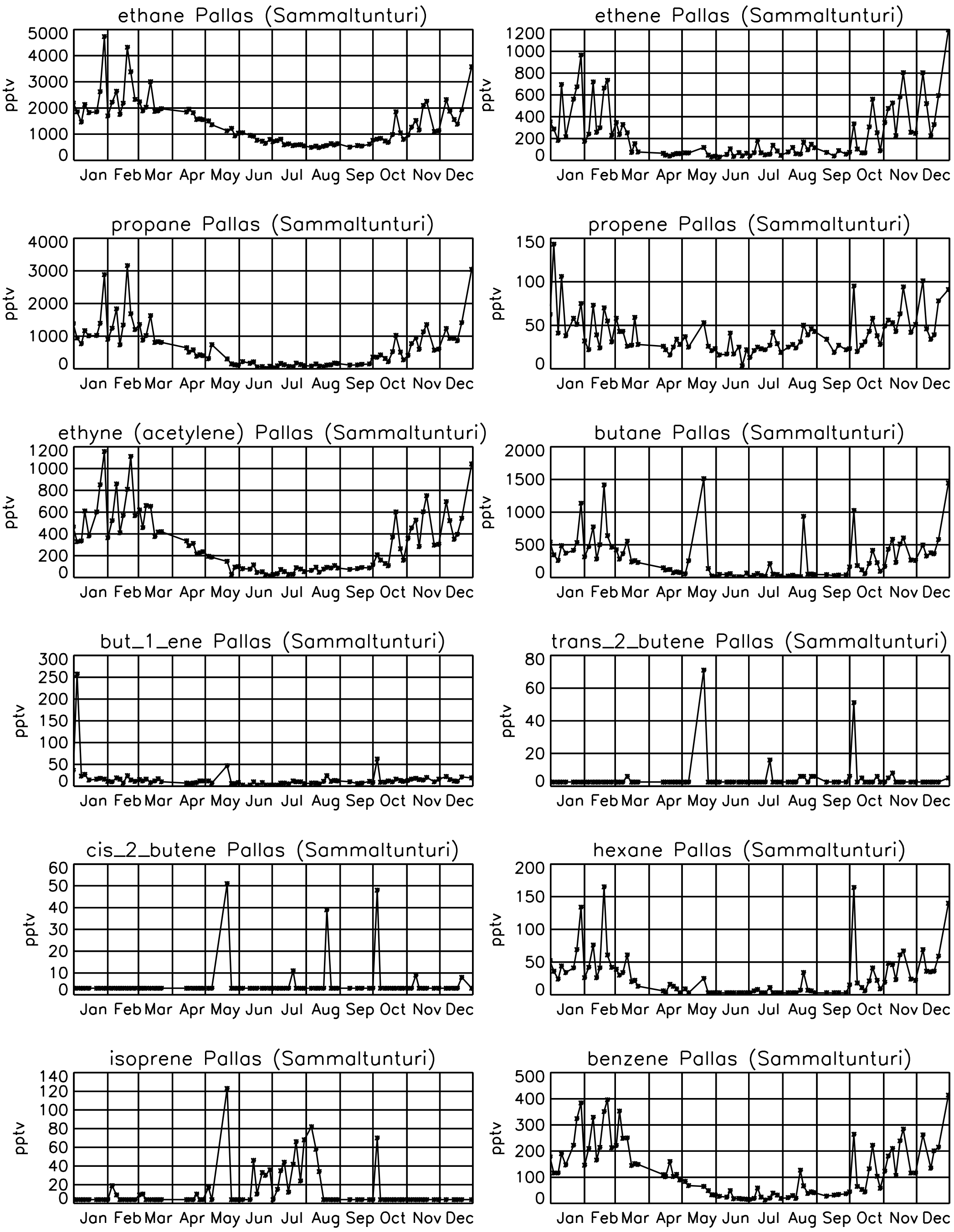
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| La Tardière | 0.025 | 0.026 | 0.036 | 0.047 | 0.026 | 0.266 | 0.033 | 0.065 | 0.108 | 0.161 | 0.023 | 0.057 |
| | 0.015 | 0.023 | 0.015 | 0.047 | 0.017 | 0.111 | 0.024 | 0.061 | 0.049 | 0.177 | 0.023 | 0.044 |
| Peyrusse Vieille | 0.015 | - | 0.015 | 0.035 | 0.056 | 0.133 | 0.187 | 0.347 | 0.125 | - | - | 0.019 |
| | 0.015 | - | 0.015 | 0.015 | 0.059 | 0.104 | 0.141 | 0.320 | 0.079 | - | - | 0.015 |
| Campisábalos | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - |

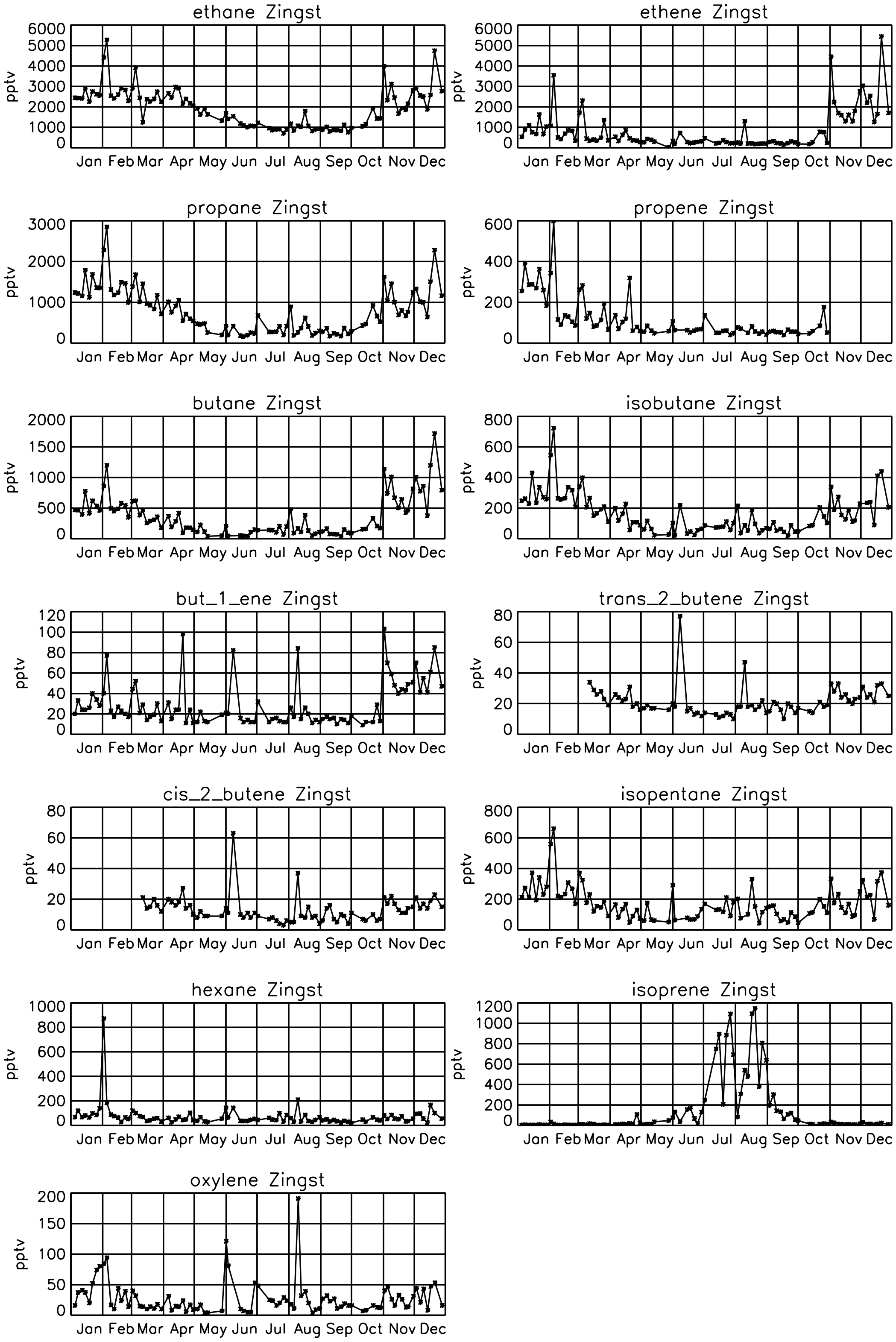
# Appendix B

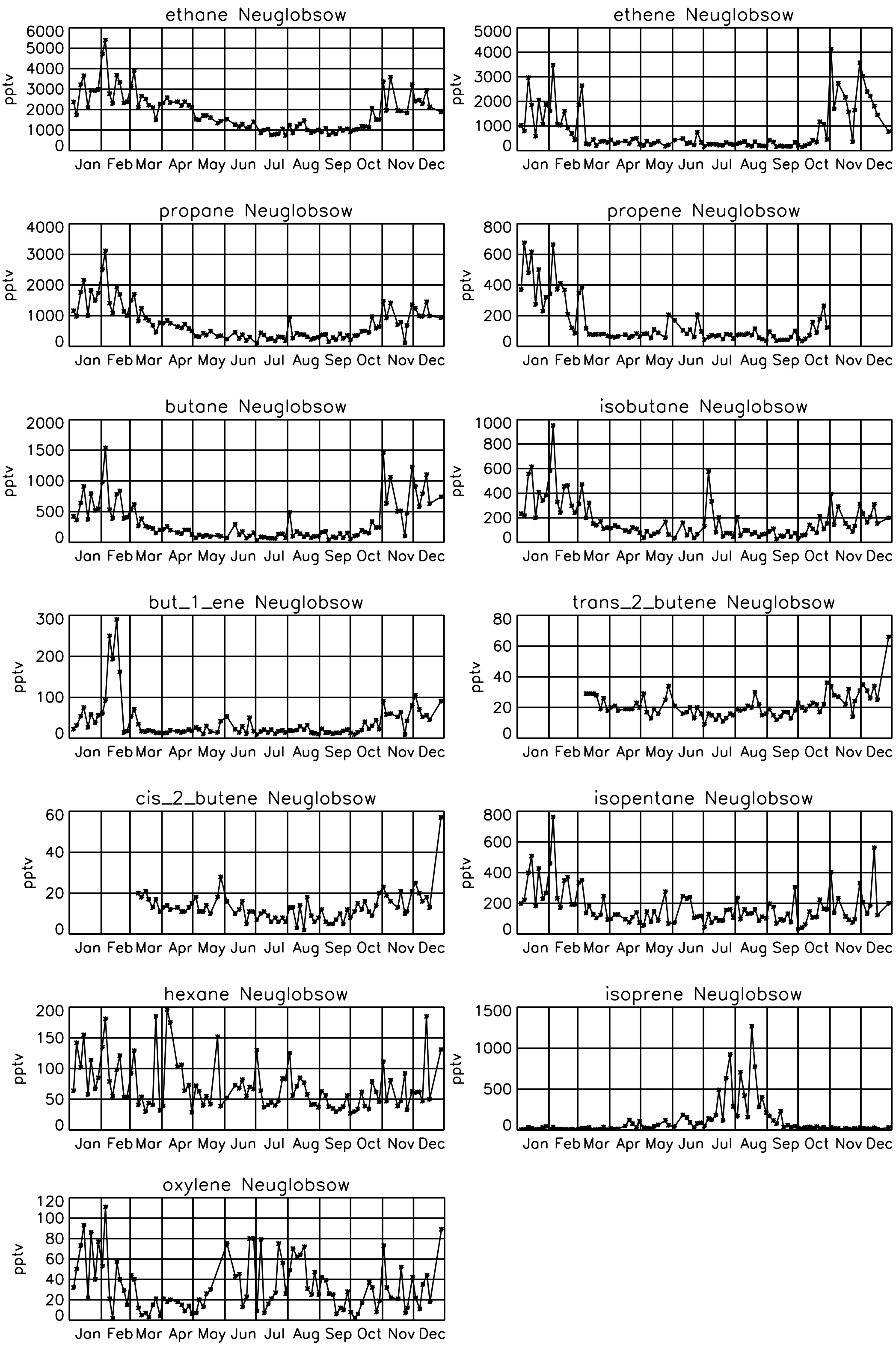
# Time series of VOC measured in 2009

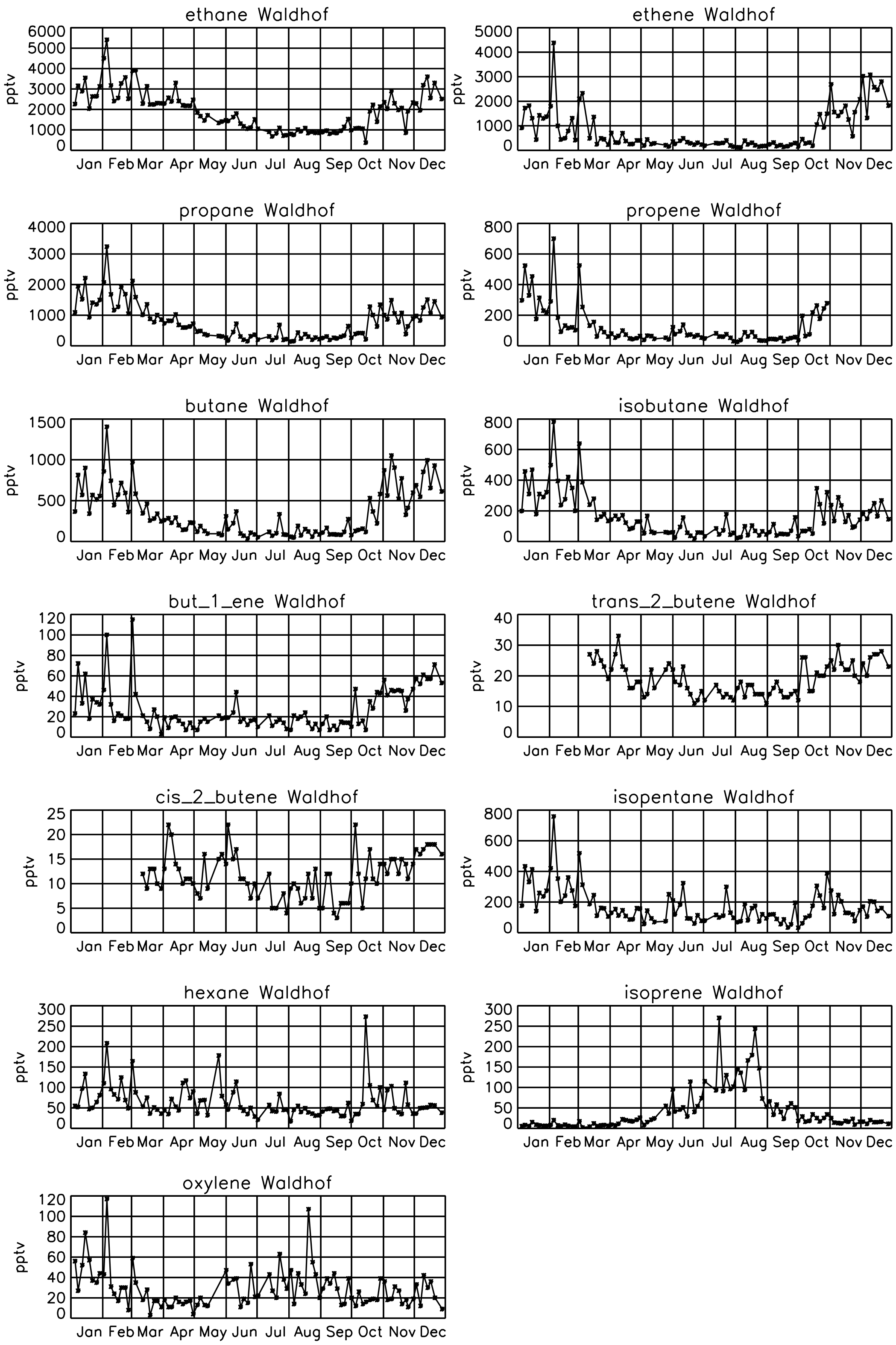
## Explanations and synonyms to component names

| | |
|---|---|
| ethyne: | acetylene |
| butane: | n-butane |
| isobutane: | i-butane |
| pentane: | n-pentane |
| isopentane: | i-pentane |
| hexane: | n-hexane |
| methanal: | formaldehyde |
| ethanal: | acetaldehyde |
| propanone: | acetone |
| N2propenal: | 2-propenal (acrolein) |
| N2butanone: | 2-butanone (methyl ethyl ketone) |
| N3buten2one: | 3-buten-2-one (methyl vinyl ketone) |
| N2methylpropenal: | 2-methyl propenal (methacrolein) |
| benzenecarbaldehyde: | benzaldehyde |
| ethanedial: | glyoxal |
| N2oxoproanal: | 2-oxopropanal (methyl glyoxal) |


ethane Pallas (Sammaltunturi)
ethene Pallas (Sammaltunturi)
propane Pallas (Sammaltunturi)
propene Pallas (Sammaltunturi)
ethyne (acetylene) Pallas (Sammaltunturi)
butane Pallas (Sammaltunturi)
but_1_ene Pallas (Sammaltunturi)
trans_2_butene Pallas (Sammaltunturi)
cis_2_butene Pallas (Sammaltunturi)
hexane Pallas (Sammaltunturi)
isoprene Pallas (Sammaltunturi)
benzene Pallas (Sammaltunturi)
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


ethane Zingst
ethene Zingst
propane Zingst
propene Zingst
butane Zingst
isobutane Zingst
but_1_ene Zingst
trans_2_butene Zingst
cis_2_butene Zingst
isopentane Zingst
hexane Zingst
isoprene Zingst
oxylene Zingst
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


ethane Neuglobsow
ethene Neuglobsow
propane Neuglobsow
propene Neuglobsow
butane Neuglobsow
isobutane Neuglobsow
but_1_ene Neuglobsow
trans_2_butene Neuglobsow
cis_2_butene Neuglobsow
isopentane Neuglobsow
hexane Neuglobsow
isoprene Neuglobsow
oxylene Neuglobsow
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


ethane Waldhof
ethene Waldhof
propane Waldhof
propene Waldhof
butane Waldhof
isobutane Waldhof
but_1_ene Waldhof
trans_2_butene Waldhof
cis_2_butene Waldhof
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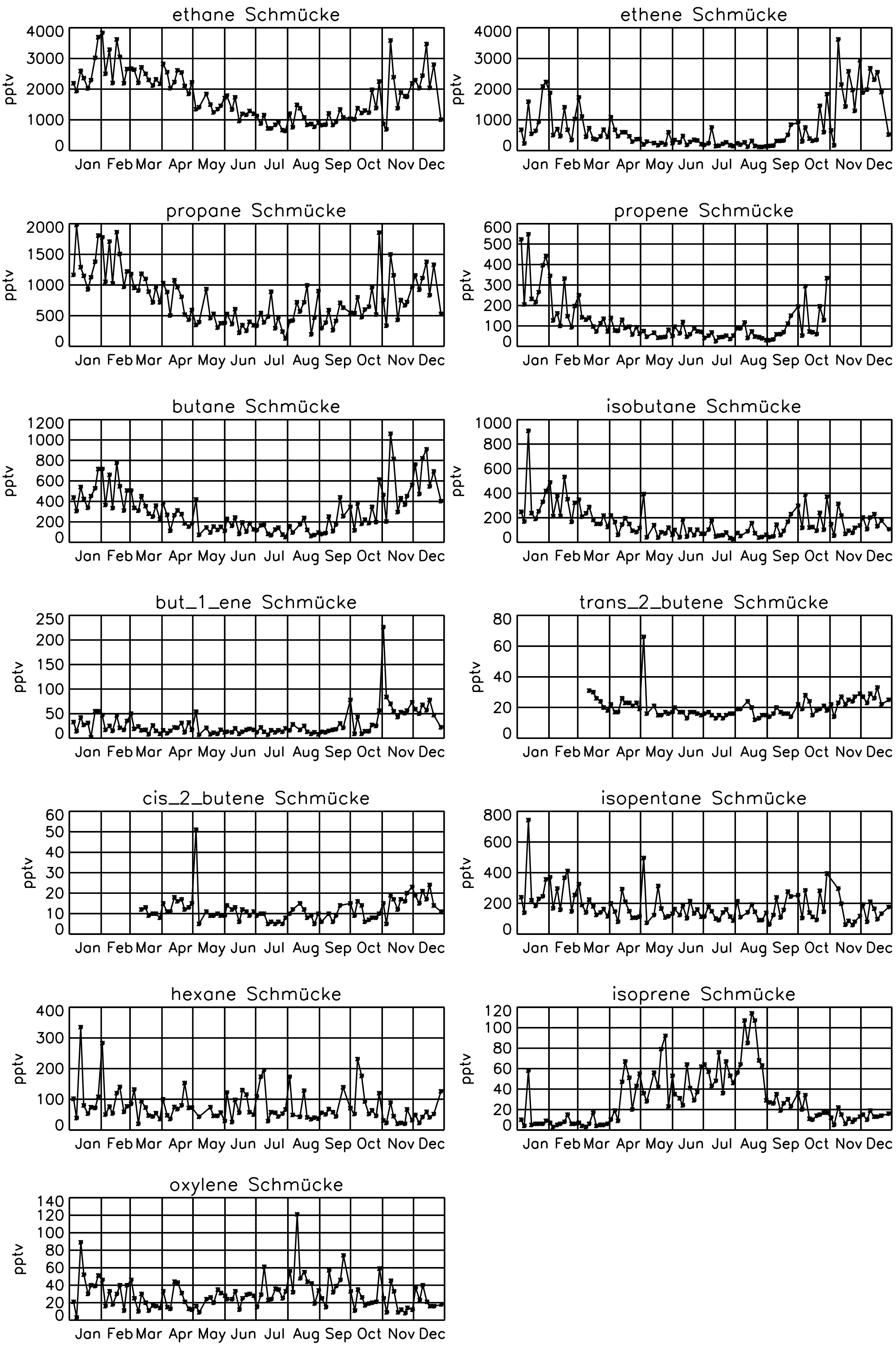
hexane Waldhof
isoprene Waldhof
oxylene Waldhof
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec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2000
1000
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
ethene Schmücke
4000
3000
2000
1000
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
propane Schmücke
2000
1500
1000
500
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
propene Schmücke
600
500
400
300
200
100
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
butane Schmücke
1200
1000
800
600
400
200
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
isobutane Schmücke
1000
800
600
400
200
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
but_1_ene Schmücke
250
200
150
100
50
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
trans_2_butene Schmücke
80
60
40
20
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
cis_2_butene Schmücke
60
50
40
30
20
10
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
isopentane Schmücke
800
600
400
200
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
hexane Schmücke
400
300
200
100
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
isoprene Schmücke
120
100
80
60
40
20
0
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
oxylene Schmücke
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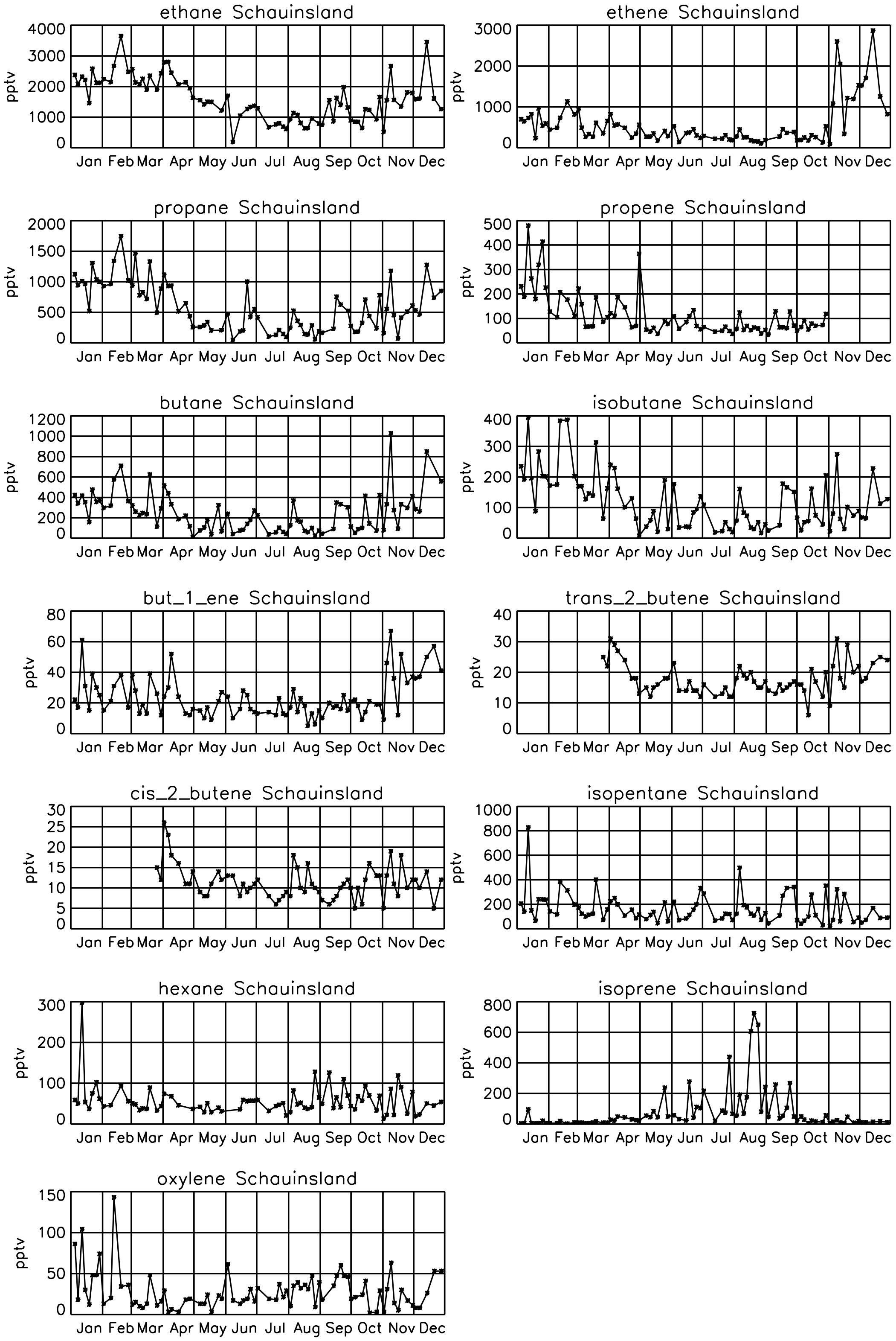
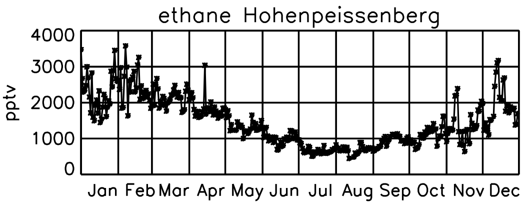

ethane Schauinsland
ethene Schauinsland
propane Schauinsland
propene Schauinsland
butane Schauinsland
isobutane Schauinsland
but_1_ene Schauinsland
trans_2_butene Schauinsland
cis_2_butene Schauinsland
isopentane Schauinsland
hexane Schauinsland
isoprene Schauinsland
oxylene Schauinsland
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec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2000
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0
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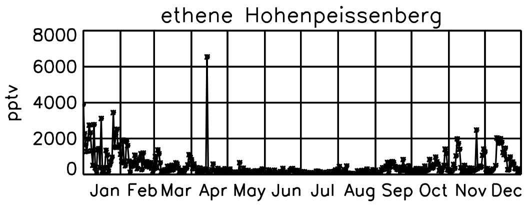
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pptv
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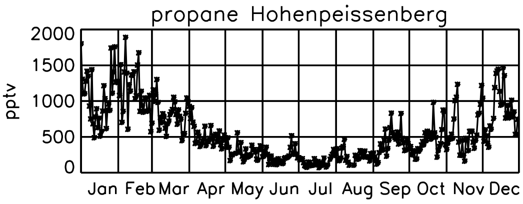
6000
4000
2000
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec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500
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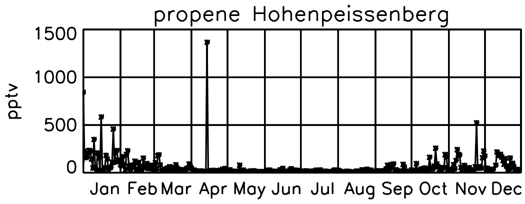
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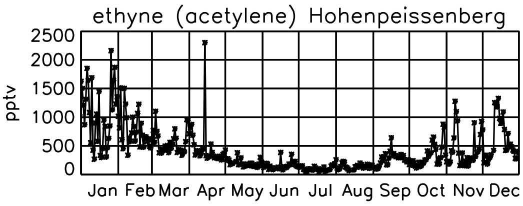
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1000
500
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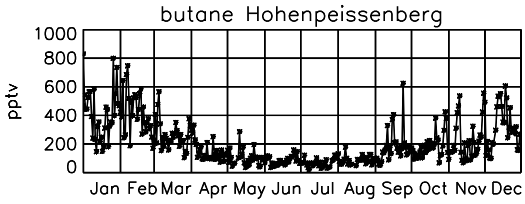
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200
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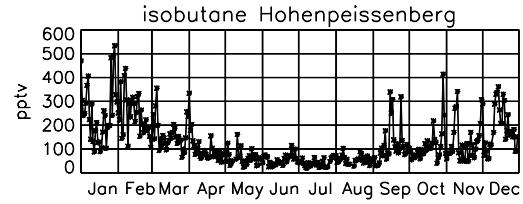
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec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100
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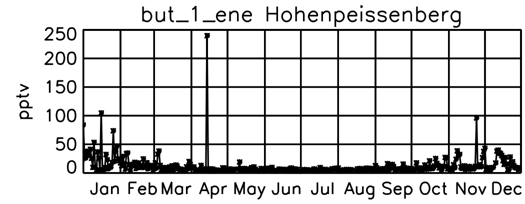
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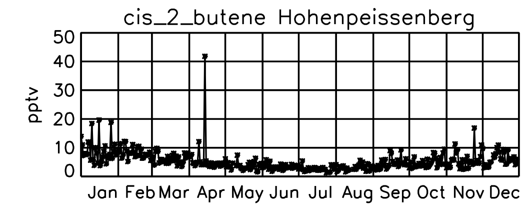
50
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec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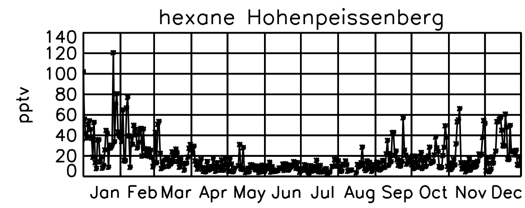
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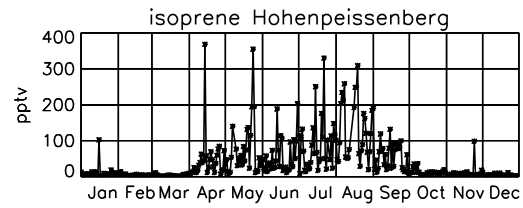
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100
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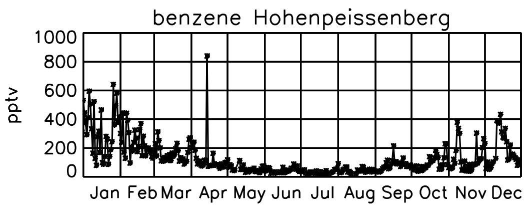
benzene Hohenpeissenberg
pptv
1000
800
600
400
200
0
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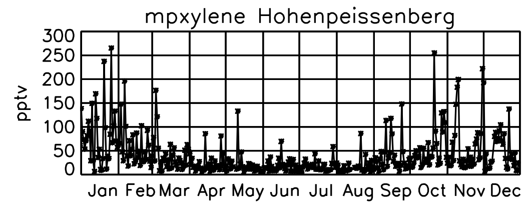
mpxylene Hohenpeissenberg
pptv
300
250
200
150
100
50
0
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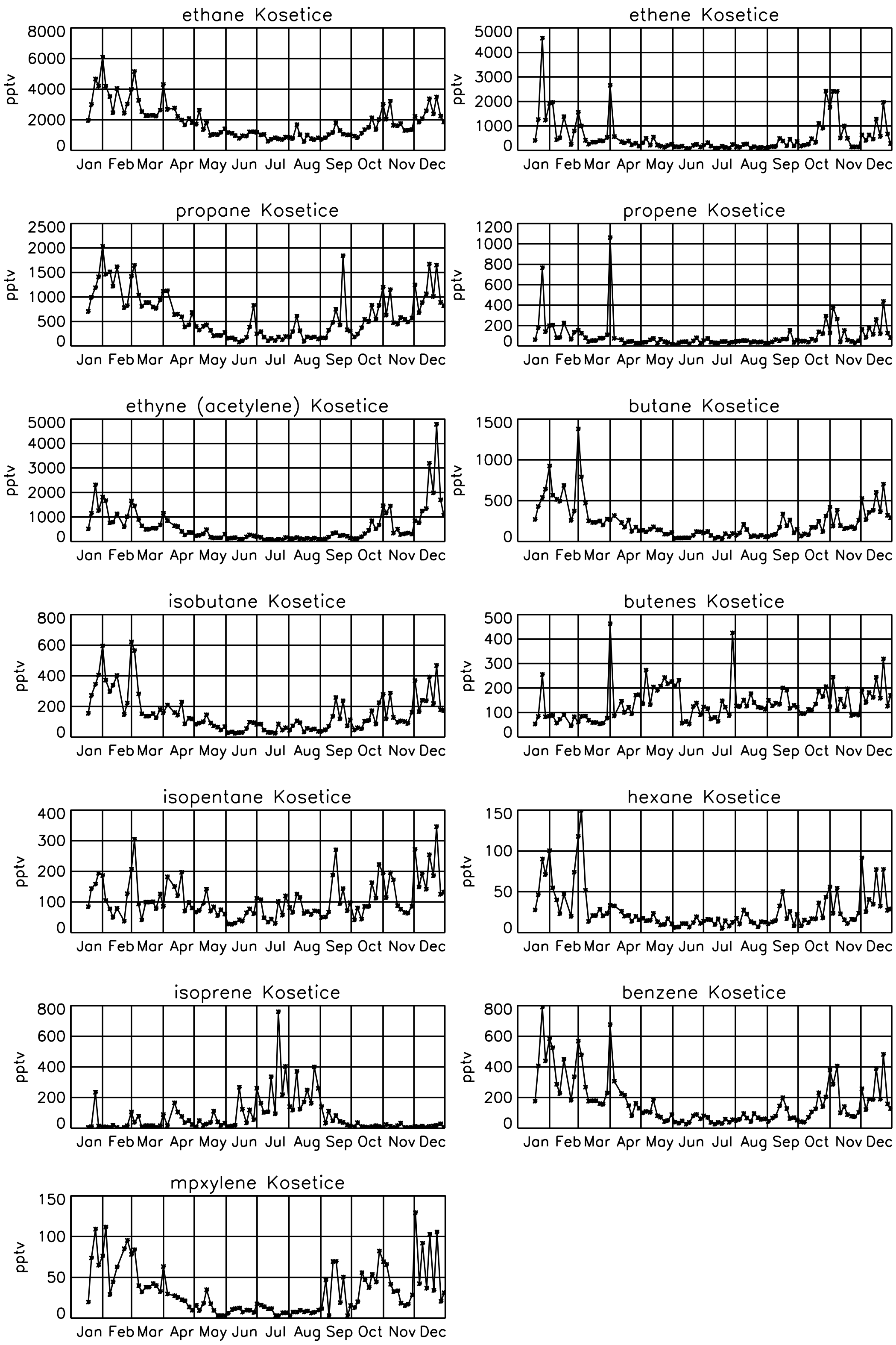
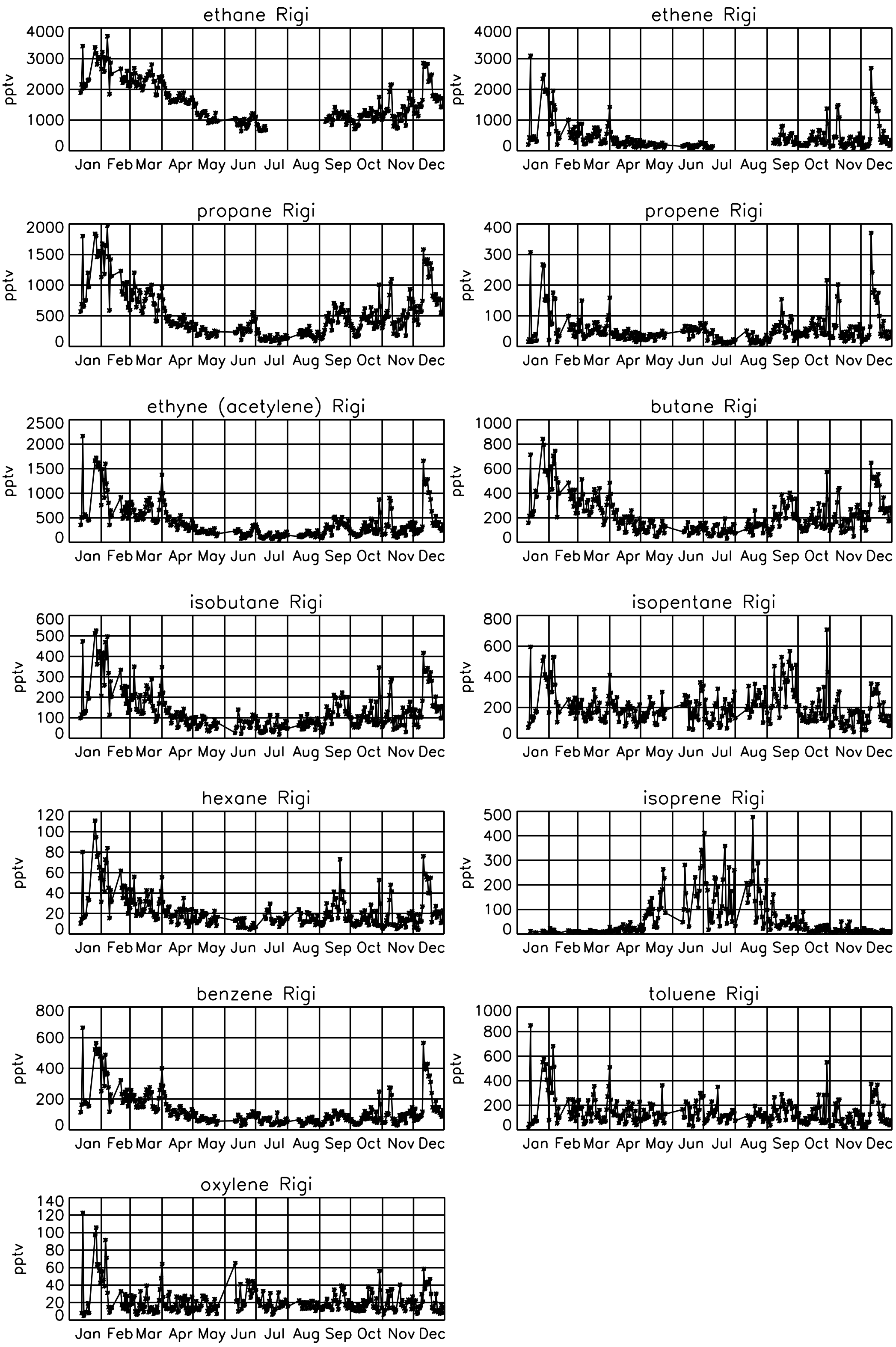
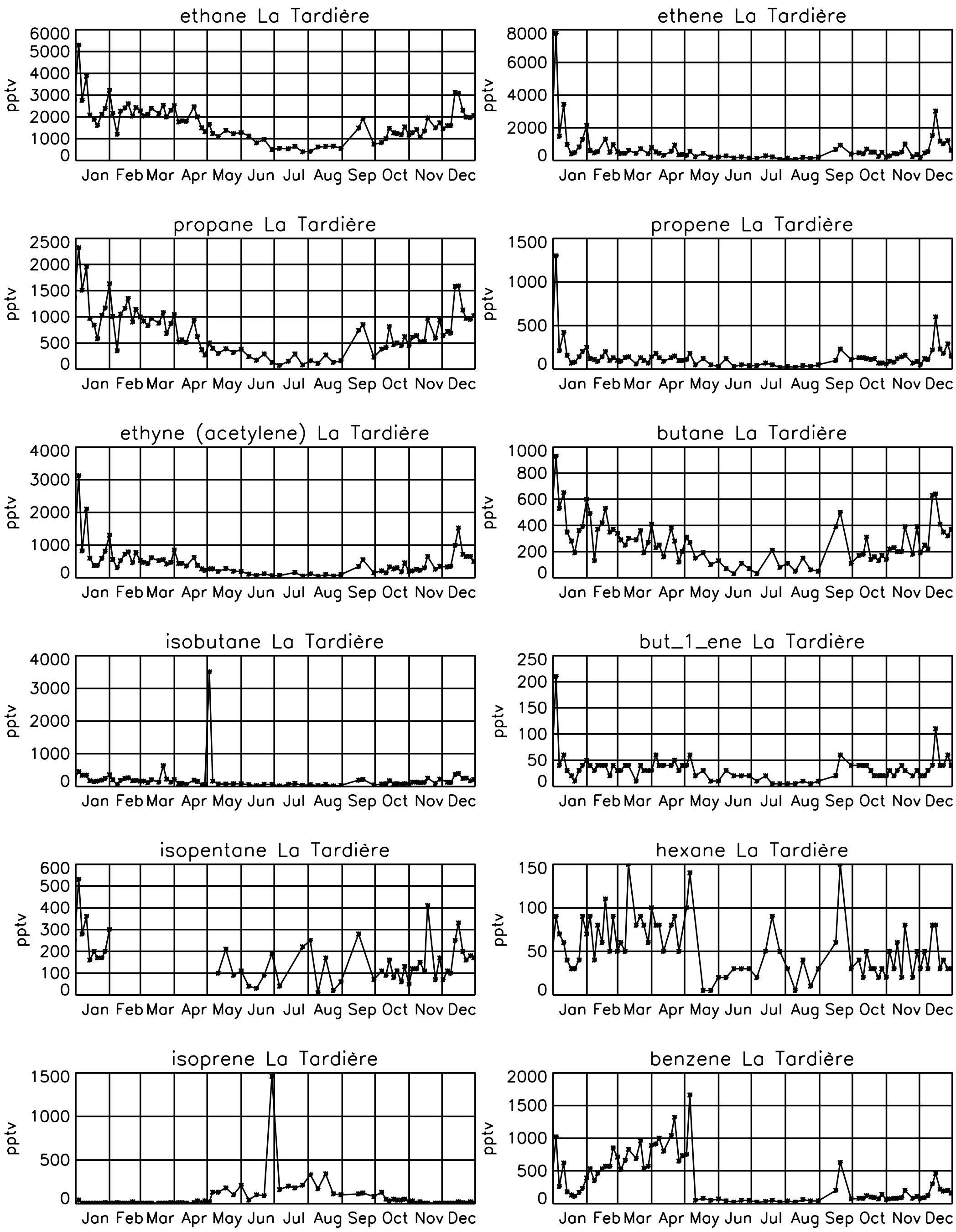
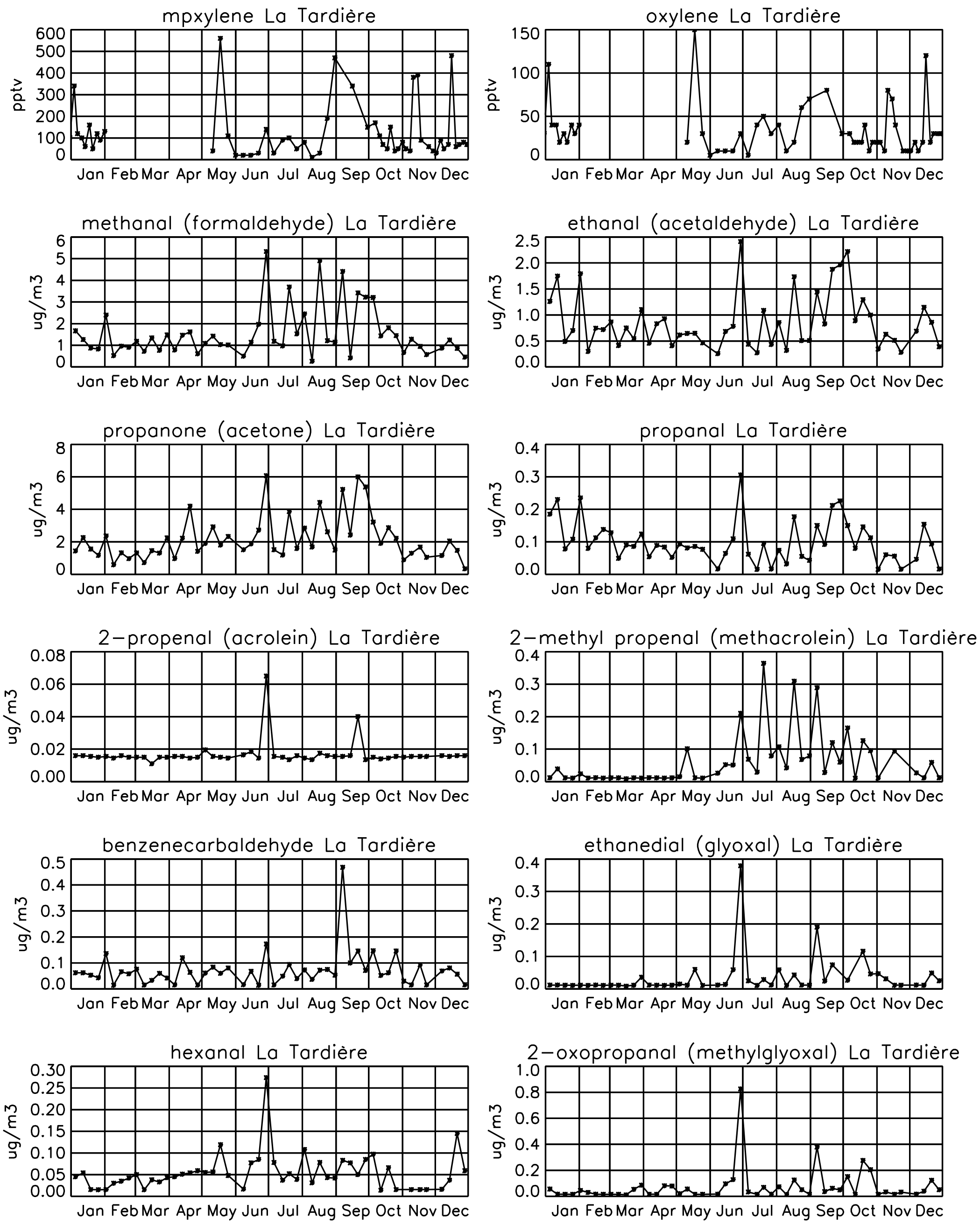
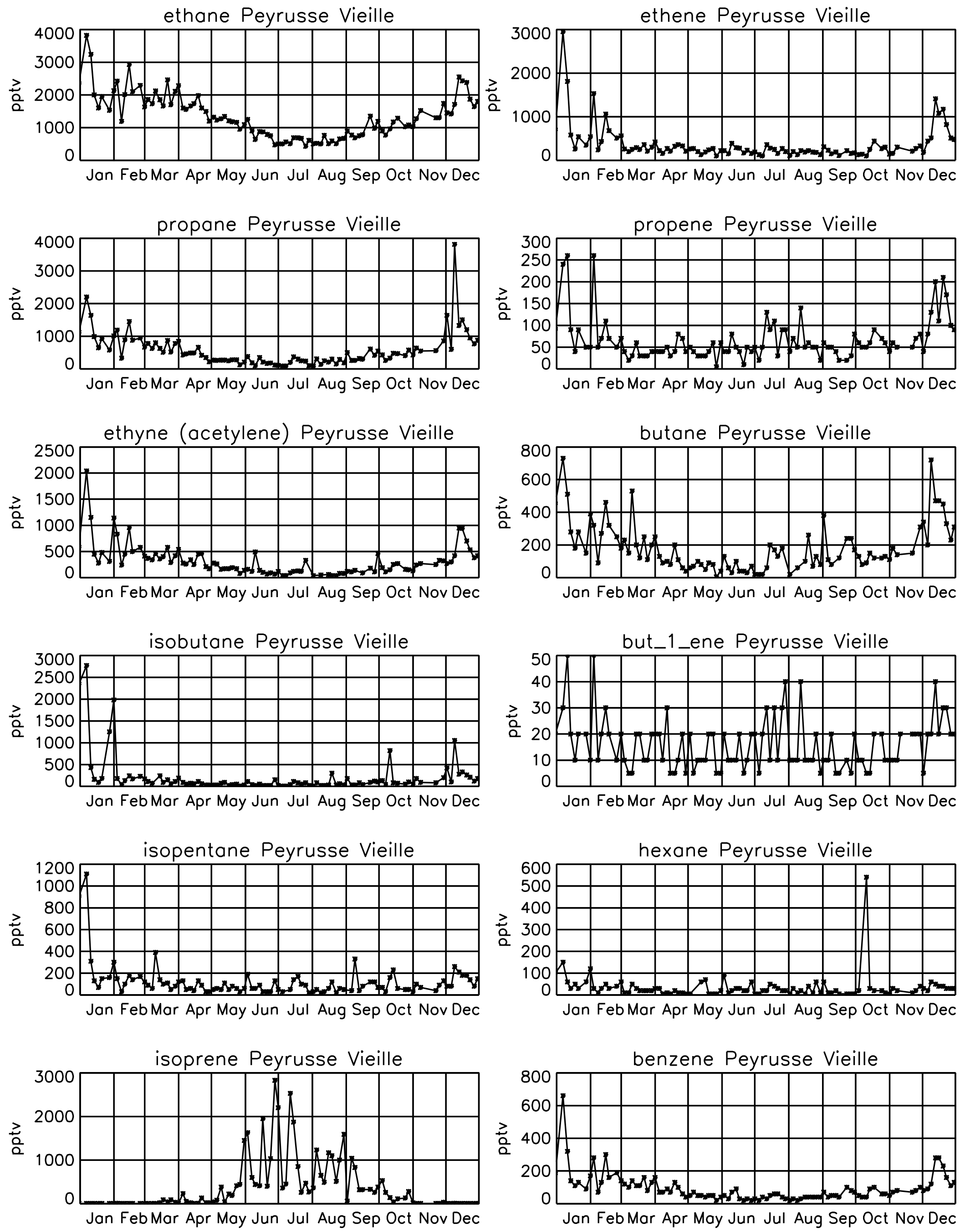
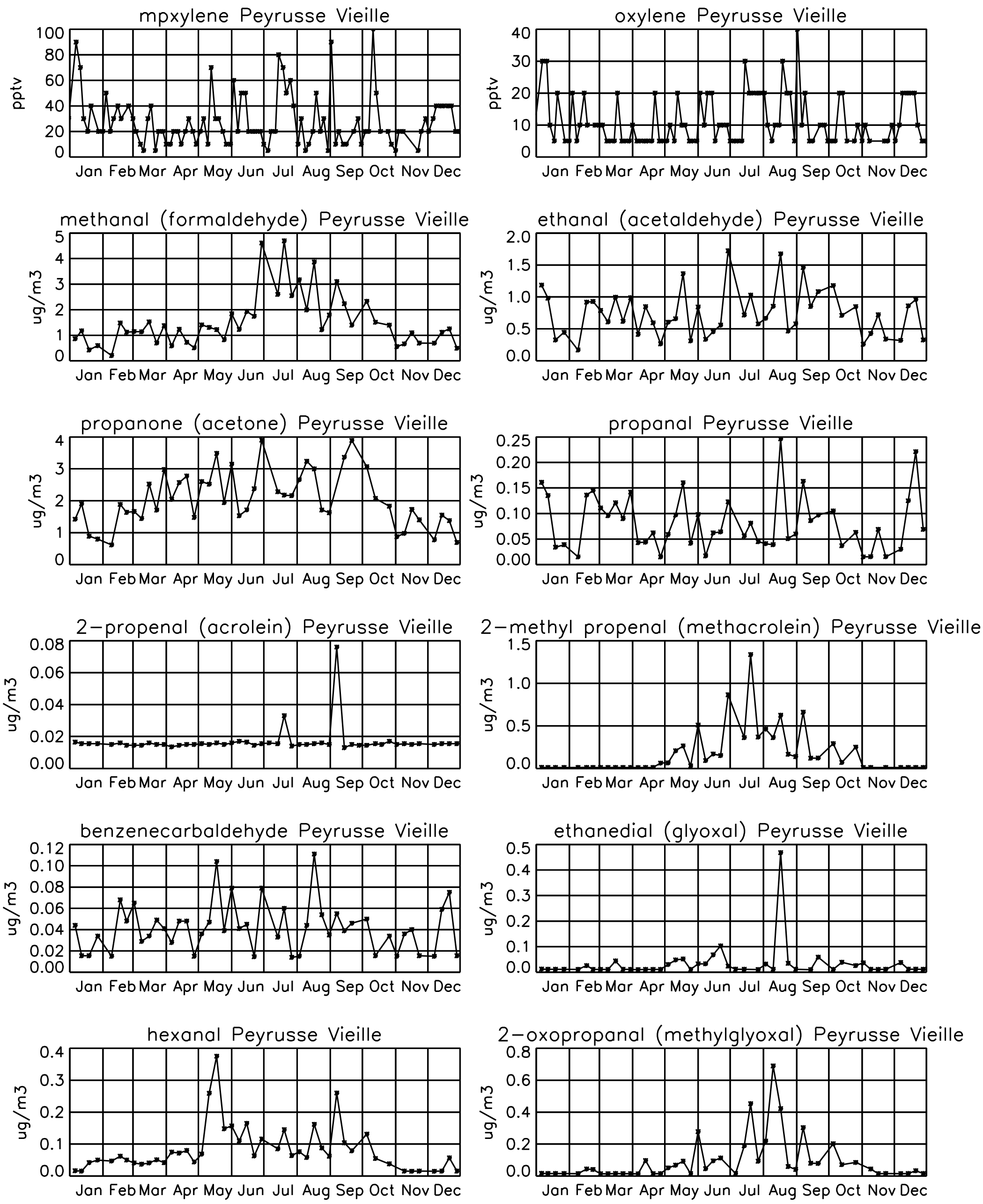

ethane Kosetice
ethene Kosetice
propane Kosetice
propene Kosetice
ethyne (acetylene) Kosetice
butane Kosetice
isobutane Kosetice
butenes Kosetice
isopentane Kosetice
hexane Kosetice
isoprene Kosetice
benzene Kosetice
mpxylene Kosetice
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

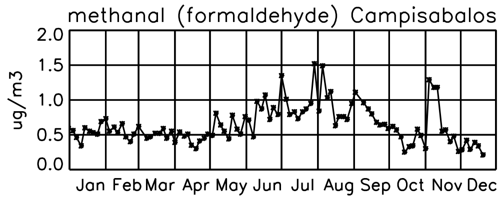

ethane Rigi
ethene Rigi
propane Rigi
propene Rigi
ethyne (acetylene) Rigi
butane Rigi
isobutane Rigi
isopentane Rigi
hexane Rigi
isoprene Rigi
benzene Rigi
toluene Rigi
oxylene Rigi
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

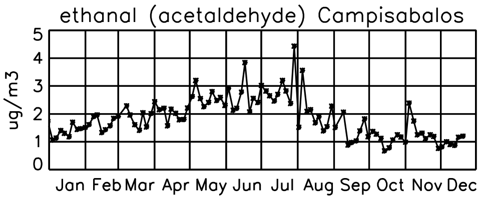

ethane La Tardière
ethene La Tardière
propane La Tardière
propene La Tardière
ethyne (acetylene) La Tardière
butane La Tardière
isobutane La Tardière
but_1_ene La Tardière
isopentane La Tardière
hexane La Tardière
isoprene La Tardière
benzene La Tardière
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

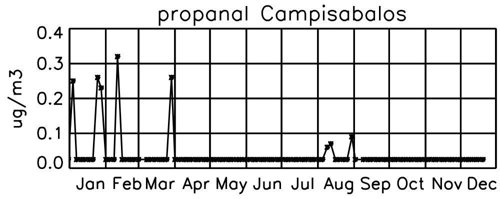

mpxylene La Tardière
pptv
oxylene La Tardière
pptv
methanal (formaldehyde) La Tardière
ug/m3
ethanal (acetaldehyde) La Tardière
ug/m3
propanone (acetone) La Tardière
ug/m3
propanal La Tardière
ug/m3
2−propenal (acrolein) La Tardière
ug/m3
2−methyl propenal (methacrolein) La Tardière
ug/m3
benzenecarbaldehyde La Tardière
ug/m3
ethanedial (glyoxal) La Tardière
ug/m3
hexanal La Tardière
ug/m3
2−oxopropanal (methylglyoxal) La Tardière
ug/m3
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

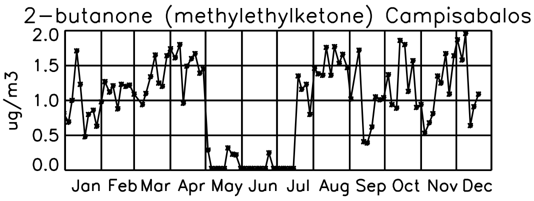

ethane Peyrusse Vieille
ethene Peyrusse Vieille
propane Peyrusse Vieille
propene Peyrusse Vieille
ethyne (acetylene) Peyrusse Vieille
butane Peyrusse Vieille
isobutane Peyrusse Vieille
but_1_ene Peyrusse Vieille
isopentane Peyrusse Vieille
hexane Peyrusse Vieille
isoprene Peyrusse Vieille
benzene Peyrusse Vieille
pptv
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

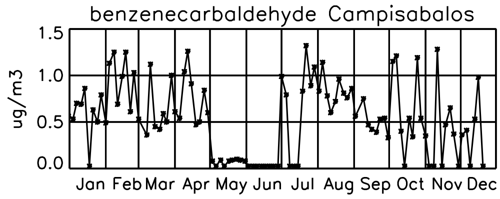

mpxylene Peyrusse Vieille
pptv
oxylene Peyrusse Vieille
pptv
methanal (formaldehyde) Peyrusse Vieille
ug/m3
ethanal (acetaldehyde) Peyrusse Vieille
ug/m3
propanone (acetone) Peyrusse Vieille
ug/m3
propanal Peyrusse Vieille
ug/m3
2−propenal (acrolein) Peyrusse Vieille
ug/m3
2−methyl propenal (methacrolein) Peyrusse Vieille
ug/m3
benzenecarbaldehyde Peyrusse Vieille
ug/m3
ethanedial (glyoxal) Peyrusse Vieille
ug/m3
hexanal Peyrusse Vieille
ug/m3
2−oxopropanal (methylglyoxal) Peyrusse Vieille
ug/m3
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

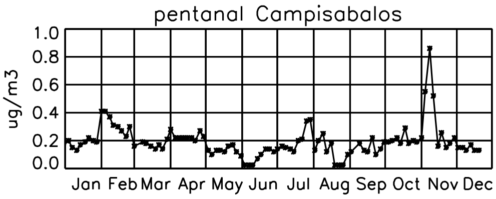

methanal (formaldehyde) Campisabalos
ug/m3
2.0
1.5
1.0
0.5
0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

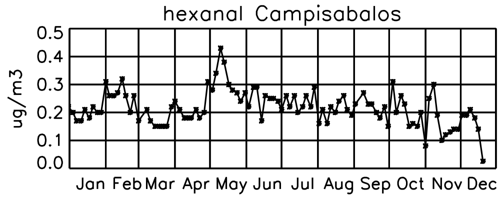

ethanal (acetaldehyde) Campisabalos
ug/m3
5
4
3
2
1
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


propanal Campisabalos
ug/m3
0.4
0.3
0.2
0.1
0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


2−butanone (methylethylketone) Campisabalos
ug/m3
2.0
1.5
1.0
0.5
0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


benzenecarbaldehyde Campisabalos
ug/m3
1.5
1.0
0.5
0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


pentanal Campisabalos
ug/m3
1.0
0.8
0.6
0.4
0.2
0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


hexanal Campisabalos
ug/m3
0.5
0.4
0.3
0.2
0.1
0.0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec