

## Data dictionary

### 1. 2013.A6.012.13A\_Empirical Data\_Dr Guo\_MCM

1.1. 2005-2014 MCM input.csv

1.2. Figures.docx

Name	Description	Data type	Unit
Date	Date of the sample	numeric	--
LTEMP	Temperature	numeric	K
LH2O	Humidity (number of H2O molecules)	numeric	molecules
LO3	Mixing ratio of O3	numeric	ppbv
LCO	Mixing ratio of CO	numeric	ppbv
LNO	Mixing ratio of NO	numeric	ppbv
LNO2	Mixing ratio of NO2	numeric	ppbv
LSO2	Mixing ratio of SO2	numeric	ppbv
LC2H6	Mixing ratio of C2H6	numeric	pptv
LC2H4	Mixing ratio of C2H4	numeric	pptv
LC2H2	Mixing ratio of C2H2	numeric	pptv
LC3H8	Mixing ratio of C3H8	numeric	pptv
LC3H6	Mixing ratio of C3H6	numeric	pptv
LIC4H10	Mixing ratio of IC4H10	numeric	pptv
LNC4H10	Mixing ratio of NC4H10	numeric	pptv
LBUT1ENE	Mixing ratio of 1-BUTENE	numeric	pptv
LTBUT2ENE	Mixing ratio of TRANS-2-BUTENE	numeric	pptv
LCBUT2ENE	Mixing ratio of CIS-2-BUTENE	numeric	pptv
LIC5H12	Mixing ratio of IC5H12	numeric	pptv
LNC5H12	Mixing ratio of NC5H12	numeric	pptv
LC4H6	Mixing ratio of C4H6	numeric	pptv
LPENT1ENE	Mixing ratio of 1-PENTENE	numeric	pptv
LC5H8	Mixing ratio of C5H8	numeric	pptv
LM2PE	Mixing ratio of 2-METHYLPENTAN	numeric	pptv
LNC6H14	Mixing ratio of NC6H14	numeric	pptv
LNC7H16	Mixing ratio of NC7H16	numeric	pptv
LNC8H18	Mixing ratio of NC8H18	numeric	pptv
LBENZENE	Mixing ratio of BENZENE	numeric	pptv
LTOLUENE	Mixing ratio of TOLUENE	numeric	pptv
LEBENZ	Mixing ratio of ETHYLBENZENE	numeric	pptv
LMXYL	Mixing ratio of M-/P-XYLENES	numeric	pptv
LOXYL	Mixing ratio of O-XYLENE	numeric	pptv
LTM135B	Mixing ratio of 1,3,5-TRIMETHYLBENZENE	numeric	pptv

<b>LTM124B</b>	Mixing ratio of 1,2,4-TRIMETHYLBENZENE	numeric	pptv
<b>LTM123B</b>	Mixing ratio of 1,2,3-TRIMETHYLBENZENE	numeric	pptv

## 2. 2013.A6.012.13A\_Empirical Data\_Dr Guo\_OBM

### 2.1. OBM\_input\_ppr.csv

<b>Name</b>	<b>Description</b>	<b>Data type</b>	<b>Unit</b>
<b>Date</b>	Date of the sample	numeric	--
<b>LTEMP</b>	Temperature	numeric	K
<b>LH2O</b>	Humidity (number of H2O molecules)	numeric	molecules
<b>LO3</b>	Mixing ratio of O3	numeric	ppbv
<b>LCO</b>	Mixing ratio of CO	numeric	ppbv
<b>LNO</b>	Mixing ratio of NO	numeric	ppbv
<b>LNO2</b>	Mixing ratio of NO2	numeric	ppbv
<b>LSO2</b>	Mixing ratio of SO2	numeric	ppbv
<b>LC2H6</b>	Mixing ratio of C2H6	numeric	pptv
<b>LC2H4</b>	Mixing ratio of C2H4	numeric	pptv
<b>LC2H2</b>	Mixing ratio of C2H2	numeric	pptv
<b>LC3H8</b>	Mixing ratio of C3H8	numeric	pptv
<b>LC3H6</b>	Mixing ratio of C3H6	numeric	pptv
<b>LIC4H10</b>	Mixing ratio of IC4H10	numeric	pptv
<b>LNC4H10</b>	Mixing ratio of NC4H10	numeric	pptv
<b>LBUT1ENE</b>	Mixing ratio of 1-BUTENE	numeric	pptv
<b>LTBUT2ENE</b>	Mixing ratio of TRANS-2-BUTENE	numeric	pptv
<b>LCBUT2ENE</b>	Mixing ratio of CIS-2-BUTENE	numeric	pptv
<b>LIC5H12</b>	Mixing ratio of IC5H12	numeric	pptv
<b>LNC5H12</b>	Mixing ratio of NC5H12	numeric	pptv
<b>LC4H6</b>	Mixing ratio of C4H6	numeric	pptv
<b>LPENT1ENE</b>	Mixing ratio of 1-PENTENE	numeric	pptv
<b>LC5H8</b>	Mixing ratio of C5H8	numeric	pptv
<b>LM2PE</b>	Mixing ratio of 2-METHYLPENTAN	numeric	pptv
<b>LNC6H14</b>	Mixing ratio of NC6H14	numeric	pptv
<b>LNC7H16</b>	Mixing ratio of NC7H16	numeric	pptv
<b>LNC8H18</b>	Mixing ratio of NC8H18	numeric	pptv
<b>LBENZENE</b>	Mixing ratio of BENZENE	numeric	pptv
<b>LTOLUENE</b>	Mixing ratio of TOLUENE	numeric	pptv
<b>LEBENZ</b>	Mixing ratio of ETHYLBENZENE	numeric	pptv
<b>LMXYL</b>	Mixing ratio of M-/P-XYLENES	numeric	pptv
<b>LOXYL</b>	Mixing ratio of O-XYLENE	numeric	pptv

<b>LTM135B</b>	Mixing ratio of 1,3,5-TRIMETHYLBENZENE	numeric	pptv
<b>LTM124B</b>	Mixing ratio of 1,2,4-TRIMETHYLBENZENE	numeric	pptv
<b>LTM123B</b>	Mixing ratio of 1,2,3-TRIMETHYLBENZENE	numeric	pptv

2.2 Figures.docx

### 3. 2013.A6.012.13A\_Empirical Data\_Dr Guo\_Source apportionment

3.1. regional 2014.csv

<b>Name</b>	<b>Description</b>	<b>Data type</b>	<b>Unit</b>
<b>LCO</b>	Mixing ratio of CO	numeric	ppbv
<b>LC3H8</b>	Mixing ratio of C3H8	numeric	pptv
<b>LIC4H10</b>	Mixing ratio of IC4H10	numeric	pptv
<b>LNC4H10</b>	Mixing ratio of NC4H10	numeric	pptv
<b>LIC5H12</b>	Mixing ratio of IC5H12	numeric	pptv
<b>LNC5H12</b>	Mixing ratio of NC5H12	numeric	pptv
<b>LC3H6</b>	Mixing ratio of C3H6	numeric	pptv
<b>LC5H8</b>	Mixing ratio of C5H8	numeric	pptv
<b>LNC6H14</b>	Mixing ratio of NC6H14	numeric	pptv
<b>LBENZENE</b>	Mixing ratio of BENZENE	numeric	pptv
<b>LTOLUENE</b>	Mixing ratio of TOLUENE	numeric	pptv
<b>LEBENZ</b>	Mixing ratio of ETHYLBENZENE	numeric	pptv
<b>LMXYL</b>	Mixing ratio of M-/P-XYLENES	numeric	pptv
<b>LOXYL</b>	Mixing ratio of O-XYLENE	numeric	pptv

3.2. LOCAL.csv

<b>Name</b>	<b>Description</b>	<b>Data type</b>	<b>Unit</b>
CO (ppm)	Mixing ratio of CO	numeric	ppm
propane (ppb)	Mixing ratio of propane	numeric	ppb
i-butane (ppb)	Mixing ratio of i-butane	numeric	ppb
n-butane (ppb)	Mixing ratio of n-butane	numeric	ppb
i-pentane (ppb)	Mixing ratio of i-pentane	numeric	ppb
n-pentane (ppb)	Mixing ratio of n-pentane	numeric	ppb
propene (ppb)	Mixing ratio of propene	numeric	ppb

isoprene (ppb)	Mixing ratio of isoprene	numeric	ppb
hexane (ppb)	Mixing ratio of hexane	numeric	ppb
heptane (ppb)	Mixing ratio of heptane	numeric	ppb
benzene (ppb)	Mixing ratio of benzene	numeric	ppb
toluene (ppb)	Mixing ratio of toluene	numeric	ppb
ethyl benzene (ppb)	Mixing ratio of ethyl benzene	numeric	ppb
m&p-xylene (ppb)	Mixing ratio of m&p-xylene	numeric	ppb
o-xylene (ppb)	Mixing ratio of o-xylene	numeric	ppb

#### 4. 2013.A6.012.13A\_Empirical Data\_Dr Guo\_Others

##### 4.1. Concentrations of C3-C5, C6-C7 and aromatics.csv

Name	Description	Data type	Unit
<b>C3-C5 hydrocarbon (ppb)</b>	Mixing ratio of C3-C5 hydrocarbon	numeric	ppbv
<b>C6-C7 hydrocarbon (ppb)</b>	Mixing ratio of C6-C7 hydrocarbon	numeric	ppbv
<b>aromatics (ppb)</b>	Mixing ratio of aromatics	numeric	ppbv

##### 4.2. Linear regression parameters of long-term trends of C3-C5 hydrocarbon

Name	Description	Data type
Multiple R	$R = \text{square root of } R^2$	numeric
R Square	$R^2 = \text{coefficient of determination}$	numeric
Adjusted R Square	Adjusted $R^2$ used if more than one x variable	numeric
Standard deviation	This is the sample estimate of the standard deviation of the error u	numeric
Observation value	Number of observations used in the regression (n)	numeric
df of regression	Degree of freedom of regression	numeric
df of residual	Degree of freedom	numeric
df of total	Total degree of freedom	numeric

SS of regression	Sum of squares of deviation from mean of regression	numeric
SS of residual	Sum of squares of deviation from mean of residual	numeric
SS of total	Total sum of squares of deviation from mean	numeric
MS of regression	Mean square of regression	numeric
MS of residual	Mean square of residual	numeric
F of regression	F-statistics of regression	numeric
Significant F of regression	Significance of F-statics of regression	numeric
Coefficients of intercept	N/A	numeric
Standard deviation of intercept	N/A	numeric
t Stat of intercept	N/A	numeric
P-value of intercept	N/A	numeric
Lower 95% of intercept	Upper 95% confidence interval of intercept	numeric
Upper 95% of intercept	lower 95% confidence interval of intercept	numeric
Coefficients of X Variable	N/A	numeric
Standard deviation of X Variable	N/A	numeric
t Stat of X Variable	N/A	numeric
P-value of X Variable	N/A	numeric
Lower 95% of X Variable	Upper 95% confidence interval of X variable	numeric
Upper 95% of X Variable	lower 95% confidence interval of X variable	numeric

#### 4.3. Linear regression parameters of long-term trends of C6-C7 hydrocarbon

Name	Description	Data type
Multiple R	R = square root of R <sup>2</sup>	numeric
R Square	R <sup>2</sup> = coefficient of determination	numeric
Adjusted R Square	Adjusted R <sup>2</sup> used if more than one x variable	numeric
Standard deviation	This is the sample estimate of the standard deviation of the error u	numeric
Observation value	Number of observations used in the regression (n)	numeric

df of regression	Degree of freedom of regression	numeric
df of residual	Degree of freedom	numeric
df of total	Total degree of freedom	numeric
SS of regression	Sum of squares of deviation from mean of regression	numeric
SS of residual	Sum of squares of deviation from mean of residual	numeric
SS of total	Total sum of squares of deviation from mean	numeric
MS of regression	Mean square of regression	numeric
MS of residual	Mean square of residual	numeric
F of regression	F-statistics of regression	numeric
Significant F of regression	Significance of F-statics of regression	numeric
Coefficients of intercept	N/A	numeric
Standard deviation of intercept	N/A	numeric
t Stat of intercept	N/A	numeric
P-value of intercept	N/A	numeric
Lower 95% of intercept	Upper 95% confidence interval of intercept	numeric
Upper 95% of intercept	lower 95% confidence interval of intercept	numeric
Coefficients of X Variable	N/A	numeric
Standard deviation of X Variable	N/A	numeric
t Stat of X Variable	N/A	numeric
P-value of X Variable	N/A	numeric
Lower 95% of X Variable	Upper 95% confidence interval of X variable	numeric
Upper 95% of X Variable	lower 95% confidence interval of X variable	numeric

#### 4.4. Linear regression parameters of long-term trends of aromatics

Name	Description	Data type
Multiple R	$R = \text{square root of } R^2$	numeric
R Square	$R^2 = \text{coefficient of determination}$	numeric
Adjusted R Square	Adjusted $R^2$ used if more than one x variable	numeric
Standard deviation	This is the sample estimate of the standard deviation of the error u	numeric

Observation value	Number of observations used in the regression (n)	numeric
df of regression	Degree of freedom of regression	numeric
df of residual	Degree of freedom	numeric
df of total	Total degree of freedom	numeric
SS of regression	Sum of squares of deviation from mean of regression	numeric
SS of residual	Sum of squares of deviation from mean of residual	numeric
SS of total	Total sum of squares of deviation from mean	numeric
MS of regression	Mean square of regression	numeric
MS of residual	Mean square of residual	numeric
F of regression	F-statistics of regression	numeric
Significant F of regression	Significance of F-statics of regression	numeric
Coefficients of intercept	N/A	numeric
Standard deviation of intercept	N/A	numeric
t Stat of intercept	N/A	numeric
P-value of intercept	N/A	numeric
Lower 95% of intercept	Upper 95% confidence interval of intercept	numeric
Upper 95% of intercept	lower 95% confidence interval of intercept	numeric
Coefficients of X Variable	N/A	numeric
Standard deviation of X Variable	N/A	numeric
t Stat of X Variable	N/A	numeric
P-value of X Variable	N/A	numeric
Lower 95% of X Variable	Upper 95% confidence interval of X variable	numeric
Upper 95% of X Variable	lower 95% confidence interval of X variable	numeric