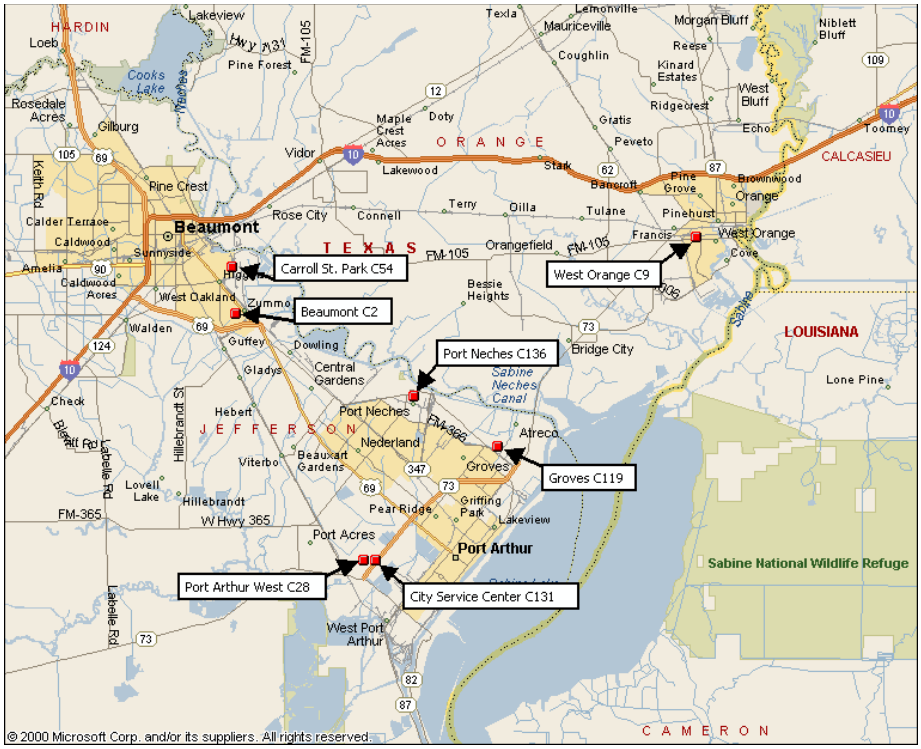
Appendix CC

Figures from:

Analysis of Canister Data for the Houston-Galveston and Beaumont-Port Arthur Areas


Carroll St. Park C54
Beaumont C2
West Orange C9
Port Neches C136
Groves C119
Port Arthur West C28
City Service Center C131
Beaumont
Port Arthur
TEXAS
ORANGE
JEFFERSON
HARDIN
CALCASIEU
LOUISIANA
CAMERON
Sabine National Wildlife Refuge
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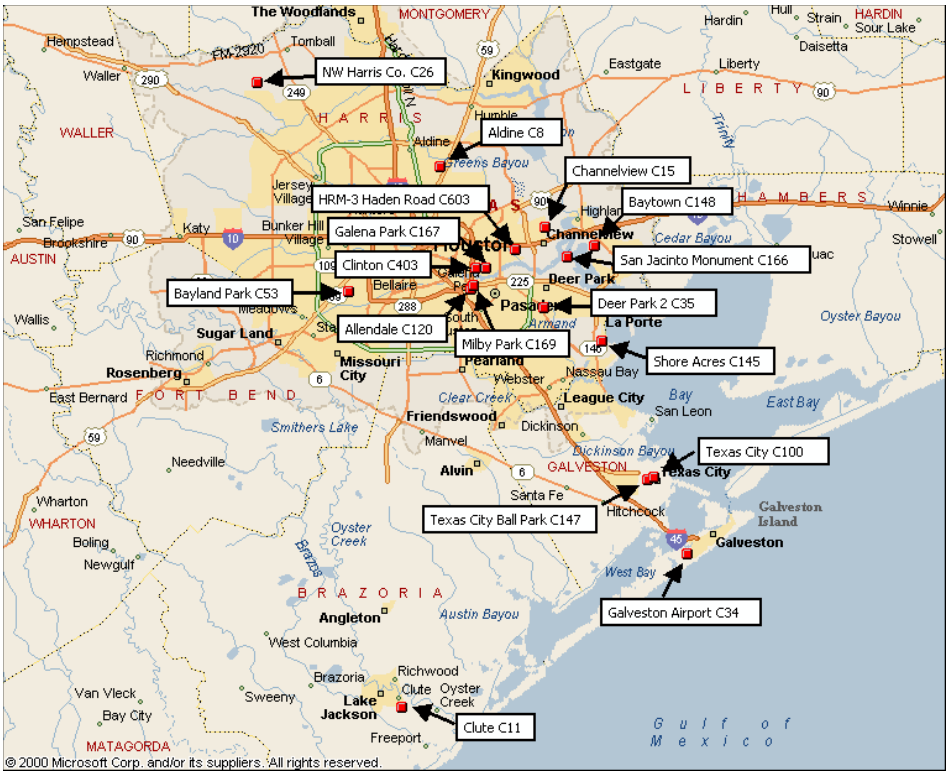
NW Harris Co. C26
Aldine C8
Channelview C15
HRM-3 Haden Road C603
Baytown C148
Galena Park C167
San Jacinto Monument C166
Clinton C403
Bayland Park C53
Deer Park 2 C35
Allendale C120
Milby Park C169
Shore Acres C145
Texas City C100
Texas City Ball Park C147
Galveston Airport C34
Clute C11
Houston
Channelview
Deer Park
Pasadena
La Porte
Kingwood
Sugar Land
Missouri City
Pearland
Friendswood
Alvin
Texas City
Galveston
Angleton
Lake Jackson
HARRIS
LIBERTY
CHAMBERS
FORT BEND
GALVESTON
BRAZORIA
WALLER
WHARTON
MATAGORDA
MONTGOMERY
AUSTIN
Gulf of Mexico
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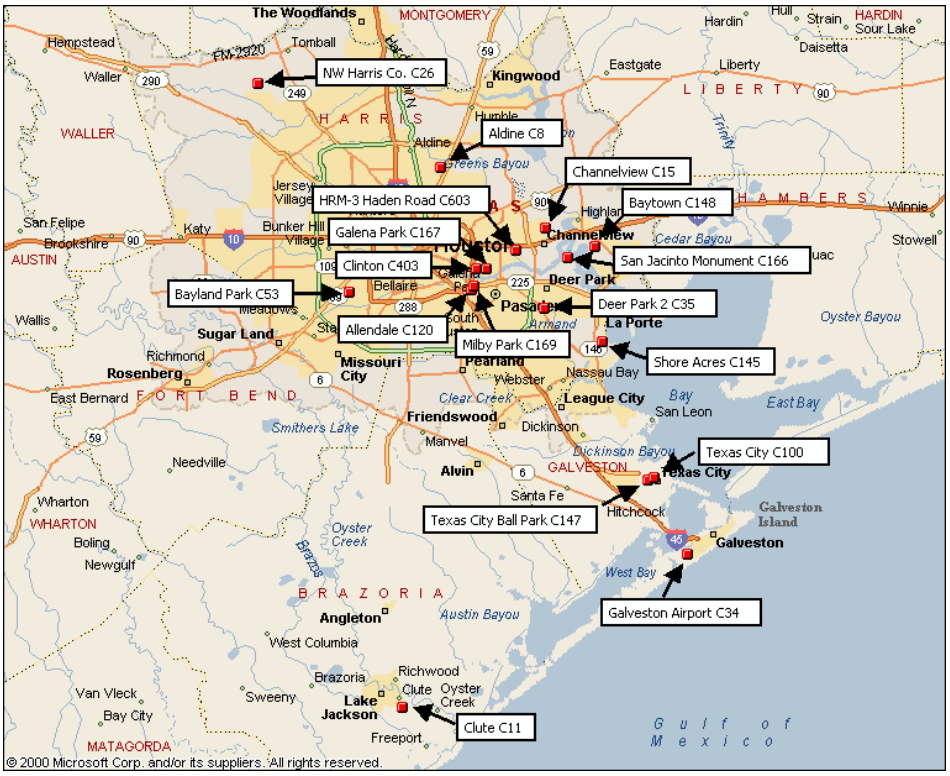
NW Harris Co. C26
Aldine C8
Channelview C15
HRM-3 Haden Road C603
Baytown C148
Galena Park C167
San Jacinto Monument C166
Clinton C403
Bayland Park C53
Deer Park 2 C35
Allendale C120
Milby Park C169
Shore Acres C145
Texas City C100
Texas City Ball Park C147
Galveston Airport C34
Clute C11
The Woodlands
MONTGOMERY
Hempstead
Tomball
Waller
Kingwood
Eastgate
Liberty
LIBERTY
HARDIN
Sour Lake
Daisetta
Hardin
Strain
WALLER
HARRIS
Aldine
Greens Bayou
Jersey Village
Bunker Hill Village
Katy
San Felipe
Brookshire
AUSTIN
Highlands
Channelview
Cedar Bayou
HAMBERS
Winnie
Stowell
Deer Park
Bellaire
Pasadena
La Porte
Wallis
Sugar Land
Richmond
Rosenberg
Missouri City
Pearland
Webster
Nassau Bay
Oyster Bayou
East Bernard
FORT BEND
Clear Creek
League City
Bay
San Leon
East Bay
Friendswood
Smithers Lake
Dickinson
Manvel
Needville
Dickinson Bayou
GALVESTON
Alvin
Texas City
Santa Fe
Wharton
WHARTON
Hitchcock
Galveston Island
Boling
Oyster Creek
Brazos
Galveston
Newgulf
West Bay
BRAZORIA
Angleton
Austin Bayou
West Columbia
Brazoria
Richwood
Clute
Oyster Creek
Van Vleck
Sweeny
Lake Jackson
Bay City
Freeport
MATAGORDA
Gulf of Mexico
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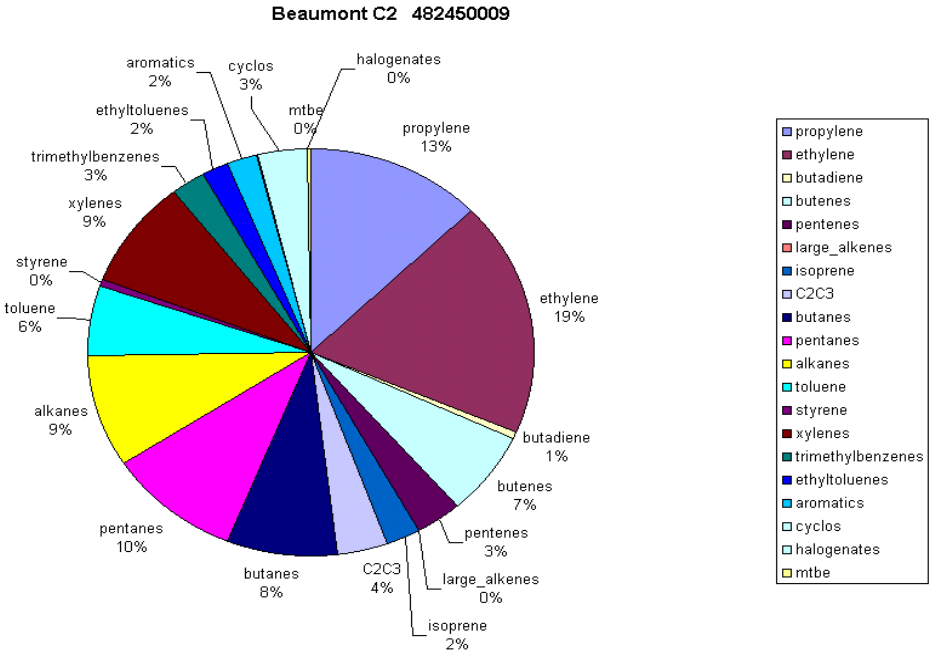
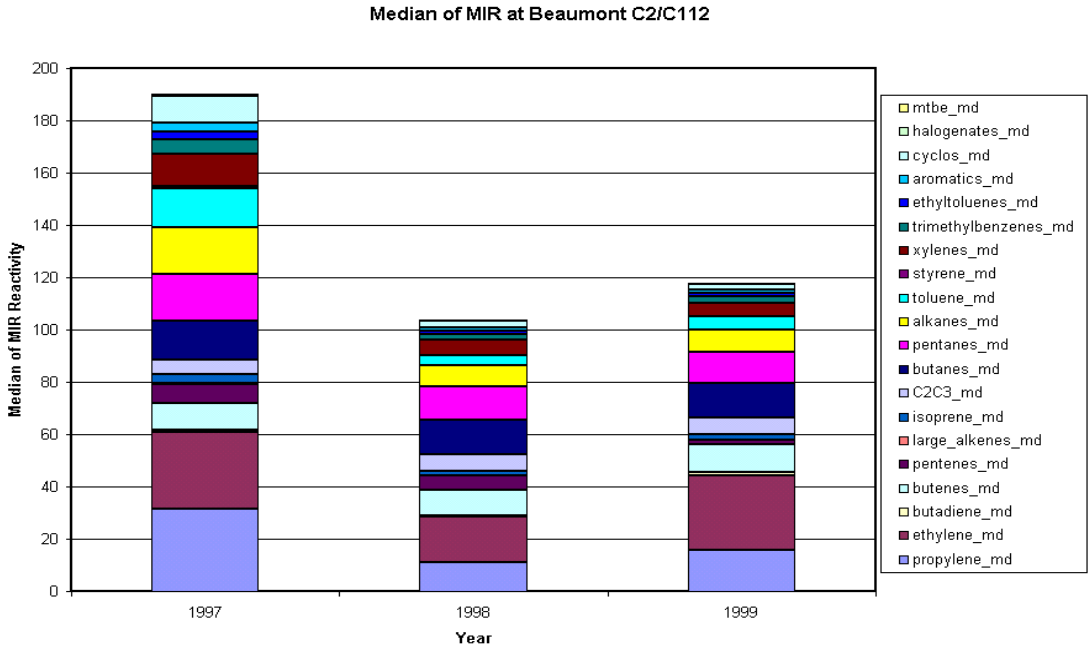
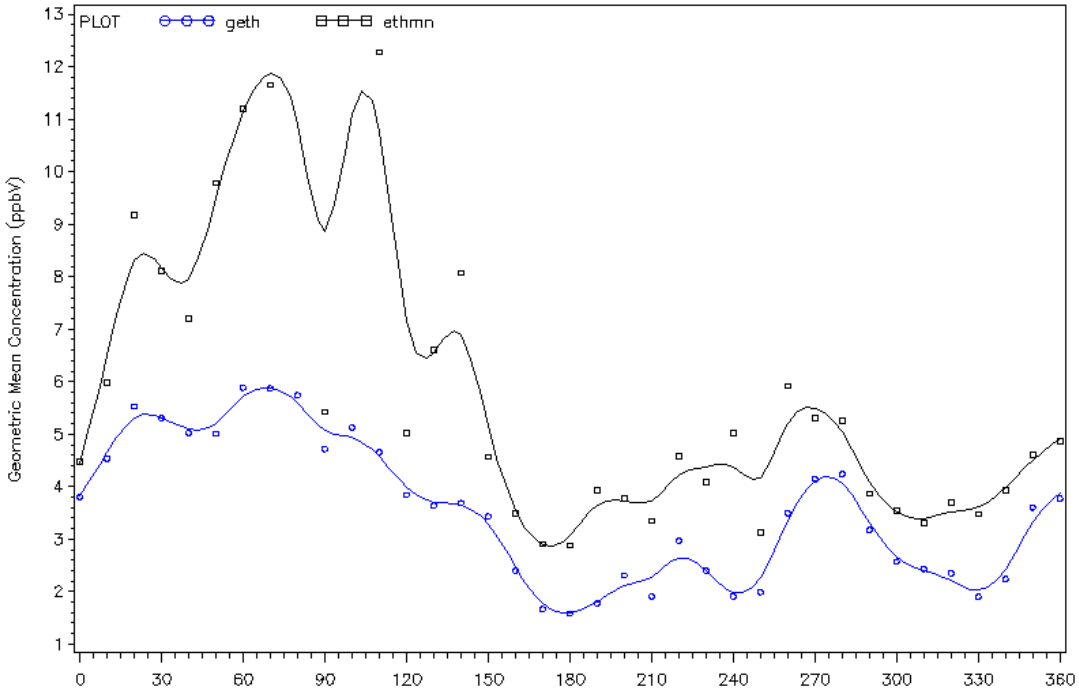
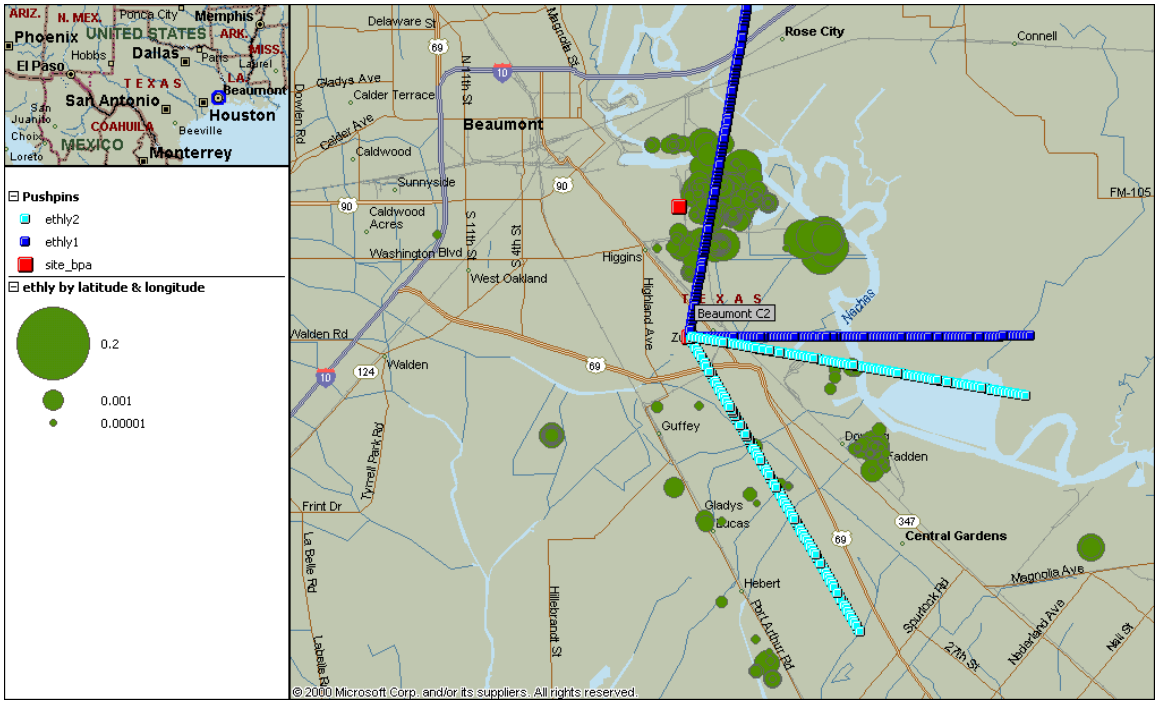

Beaumont C2 482450009
aromatics 2%
cyclos 3%
halogenates 0%
ethyltoluenes 2%
mtbe 0%
propylene 13%
trimethylbenzenes 3%
xylenes 9%
styrene 0%
toluene 6%
ethylene 19%
alkanes 9%
butadiene 1%
butenes 7%
pentenes 3%
pentanes 10%
butanes 8%
C2C3 4%
large_alkenes 0%
isoprene 2%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
mtbe


Median of MIR at Beaumont C2/C112
Median of MIR Reactivity
0
20
40
60
80
100
120
140
160
180
200
1997
1998
1999
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


PLOT
geth
ethmn
Geometric Mean Concentration (ppbV)
13
12
11
10
9
8
7
6
5
4
3
2
1
0
30
60
90
120
150
180
210
240
270
300
330
360



ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
Hobbs
Dallas
Paris
MISS.
El Paso
Laurel
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Chobo
MEXICO
Loreto
Monterrey
Pushpins
ethly2
ethly1
site_bpa
ethly by latitude & longitude
0.2
0.001
0.00001
Delaware St
Magnolia St
Rose City
Connell
Gladys Ave
Calder Terrace
N 11th St
Dowlen Rd
Calder Ave
Beaumont
Caldwood
Sunnyside
FM-105
Caldwood Acres
S 11th St
S 4th St
Washington Blvd
Higgins
West Oakland
Highland Ave
TEXAS
Beaumont C2
Nachas
Walden Rd
Walden
Guffey
Tyrrell Park Rd
Frint Dr
Gladys
Lucas
Central Gardens
La Belle Rd
Hebert
Hillebrandt St
Port Arthur Rd
Spurlock Rd
Magnolia Ave
27th St
Nederland Ave
Nail St
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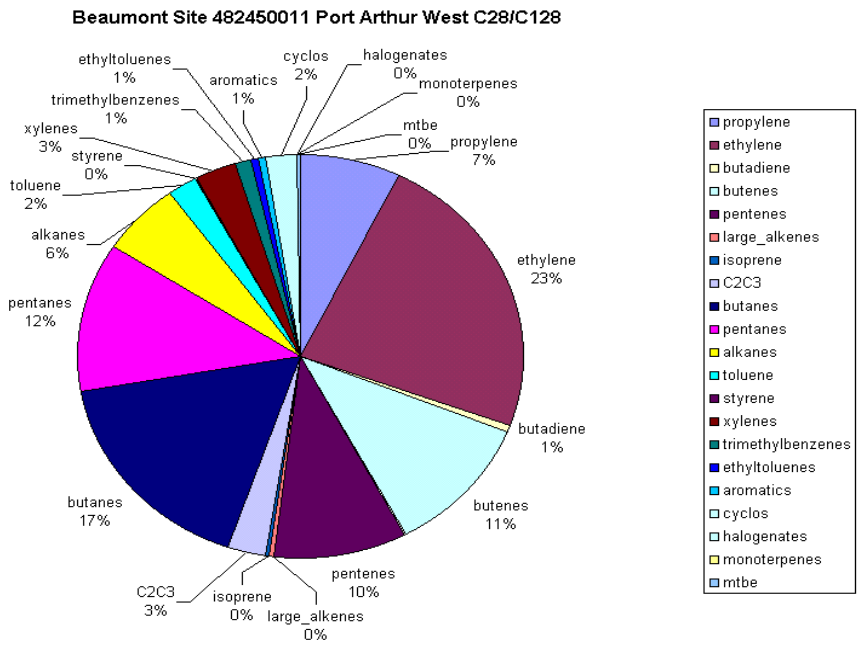
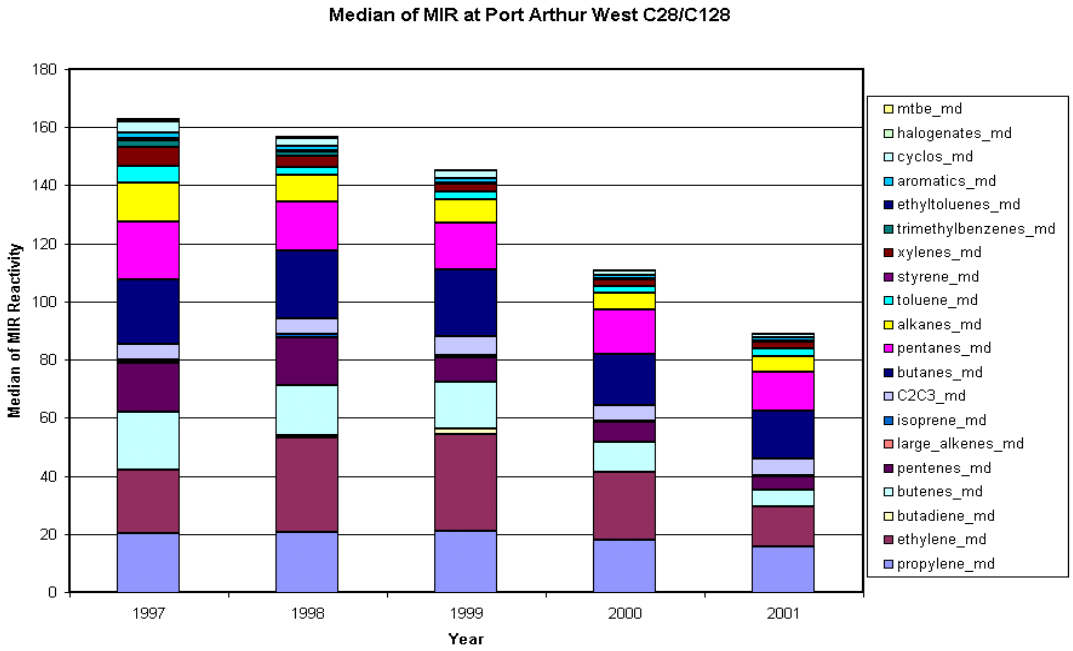
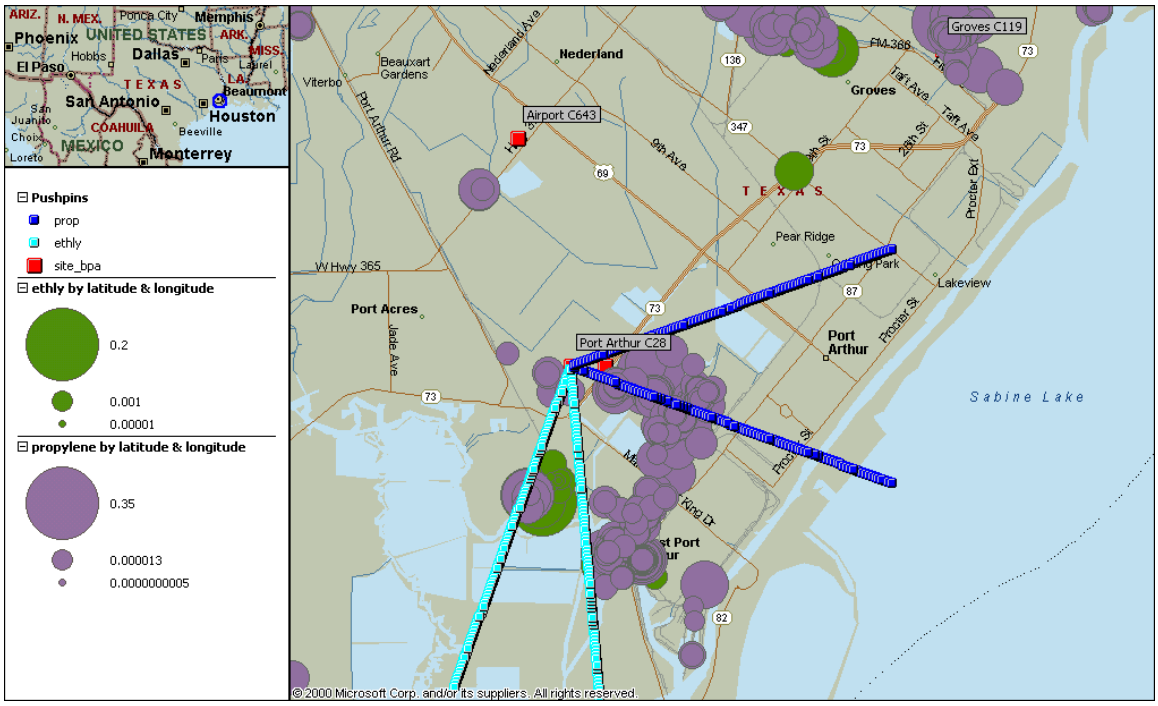

Beaumont Site 482450011 Port Arthur West C28/C128
ethyltoluenes 1%
cyclos 2%
halogenates 0%
aromatics 1%
monoterpenes 0%
trimethylbenzenes 1%
mtbe 0%
xylenes 3%
propylene 7%
styrene 0%
toluene 2%
alkanes 6%
ethylene 23%
pentanes 12%
butadiene 1%
butenes 11%
butanes 17%
pentenes 10%
C2C3 3%
isoprene 0%
large_alkenes 0%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Port Arthur West C28/C128
Median of MIR Reactivity
0
20
40
60
80
100
120
140
160
180
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md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Dallas
MISS.
El Paso
Hobbs
Paris
Laurel
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
Choix
COAHUILA
Beeville
MEXICO
Monterrey
Loreto
Pushpins
prop
ethly
site_bpa
ethly by latitude & longitude
0.2
0.001
0.00001
propylene by latitude & longitude
0.35
0.000013
0.0000000005
Groves C119
Airport C643
Port Arthur C28
Nederland
Beauxart Gardens
Viterbo
Port Arthur Rd
Nederland Ave
9th Ave
Groves
FM 366
Taft Ave
24th St
28th St
Procter Ext
Pear Ridge
Lakeview
Port Acres
Jade Ave
Port Arthur
Procter St
Sabine Lake
King Dr
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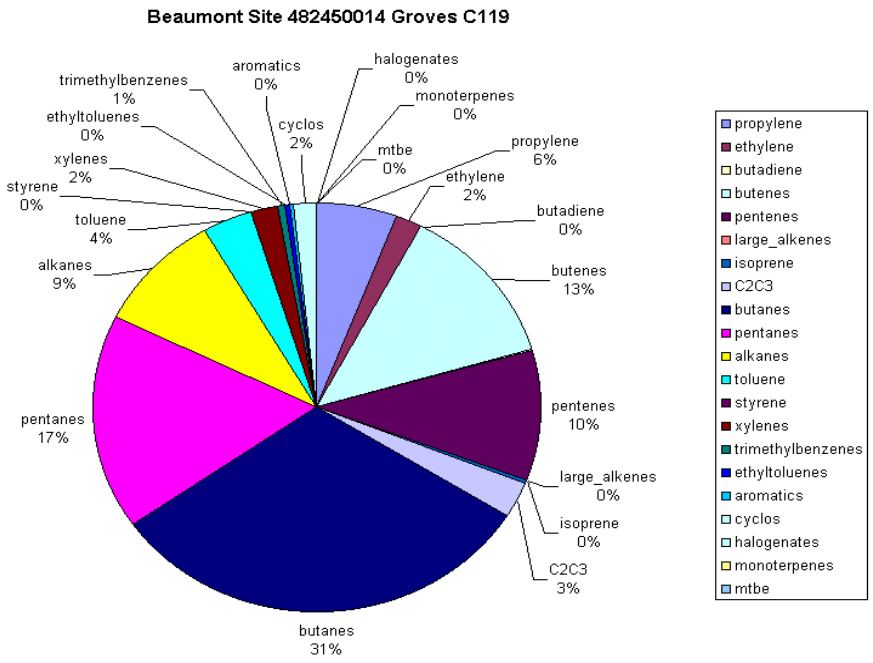
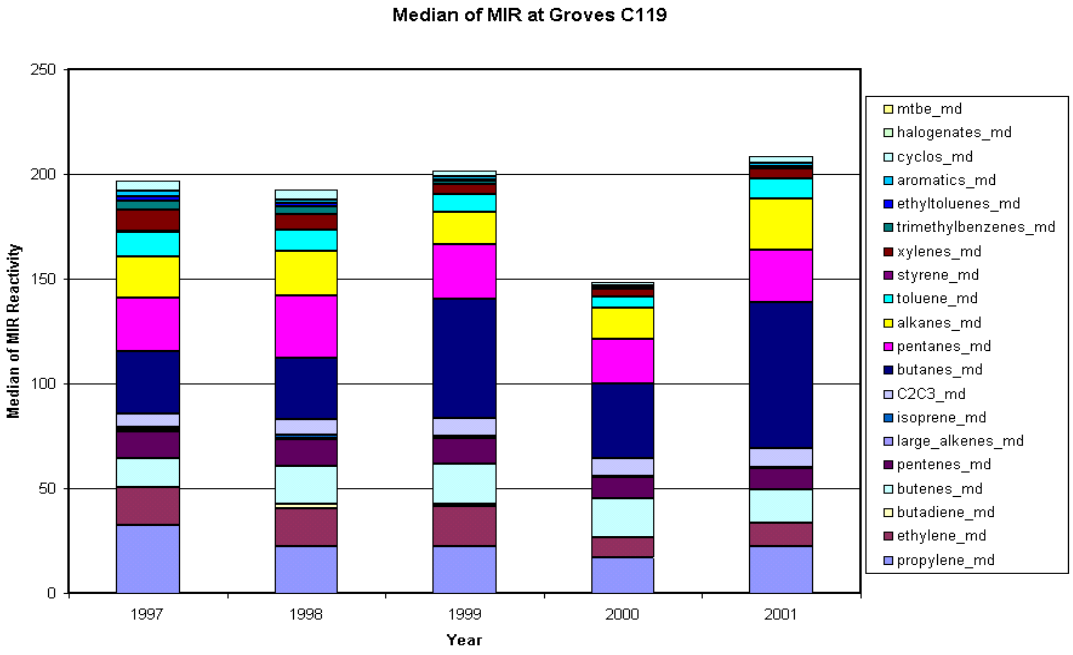
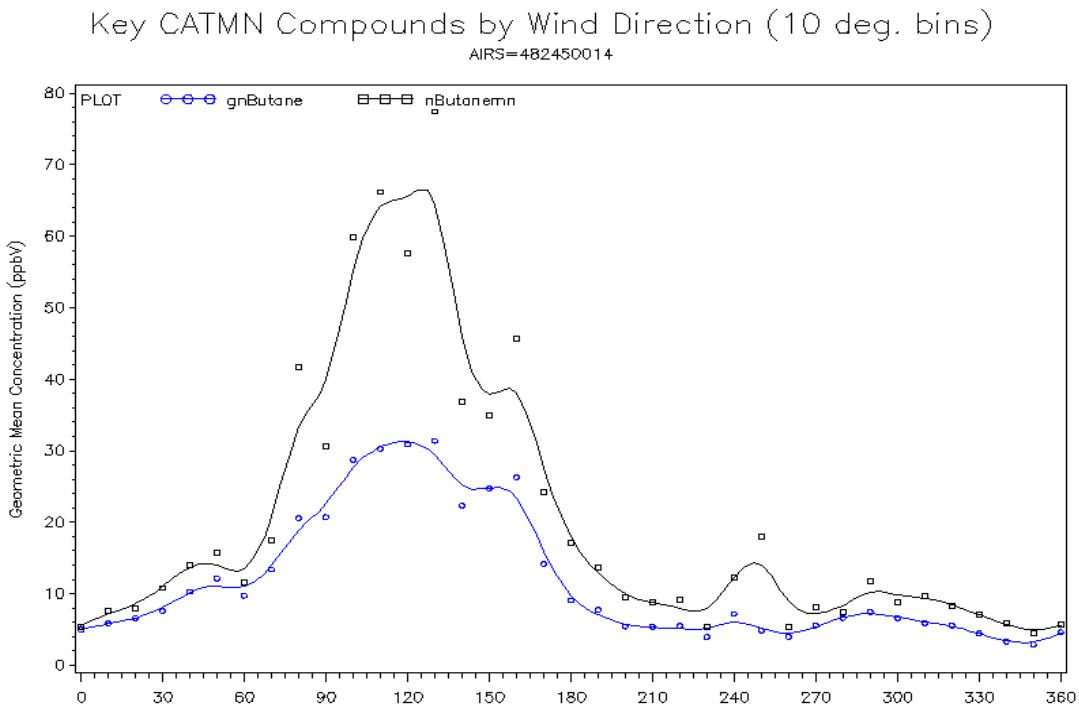
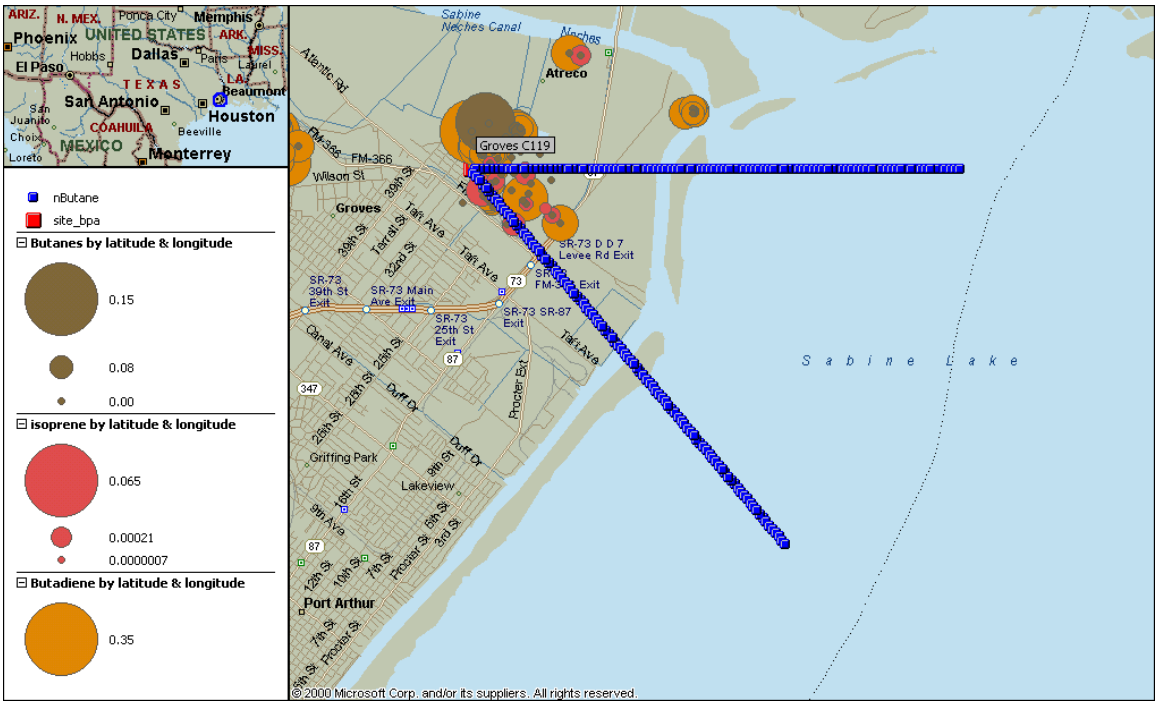

Beaumont Site 482450014 Groves C119
halogenates 0%
monoterpenes 0%
propylene 6%
ethylene 2%
butadiene 0%
butenes 13%
pentenes 10%
large_alkenes 0%
isoprene 0%
C2C3 3%
butanes 31%
pentanes 17%
alkanes 9%
toluene 4%
styrene 0%
xylenes 2%
ethyltoluenes 0%
trimethylbenzenes 1%
aromatics 0%
cyclos 2%
mtbe 0%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Groves C119
Median of MIR Reactivity
250
200
150
100
50
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482450014
PLOT
gnButane
nButanemn
Geometric Mean Concentration (ppbV)
0
10
20
30
40
50
60
70
80
0
30
60
90
120
150
180
210
240
270
300
330
360


ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
Hobbs
Dallas
MISS.
El Paso
Paris
Laurel
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Monterrey
Loreto
nButane
site_bpa
Butanes by latitude & longitude
0.15
0.08
0.00
isoprene by latitude & longitude
0.065
0.00021
0.0000007
Butadiene by latitude & longitude
0.35
Sabine Neches Canal
Neches
Atreco
Atlantic Rd
Groves C119
FM-366
Wilson St
Groves
Tarr Ave
SR-73 D D 7 Levee Rd Exit
SR-73 39th St Exit
SR-73 Main Ave Exit
SR-73 25th St Exit
SR-73 SR-87 Exit
Canal Ave
Duff Dr
Procter Ext
Griffing Park
Lakeview
Port Arthur
Sabine Lake
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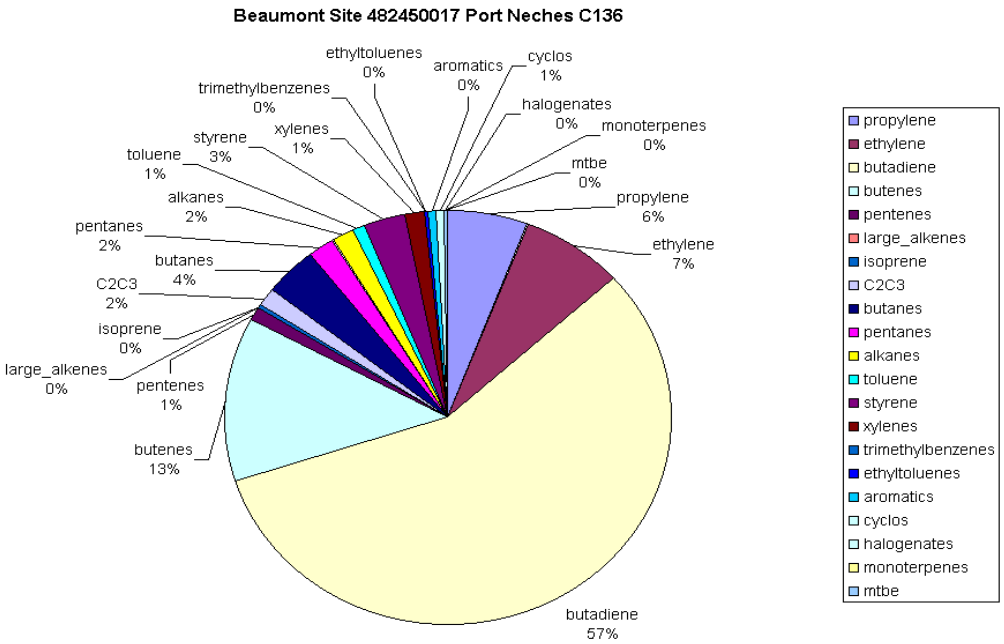
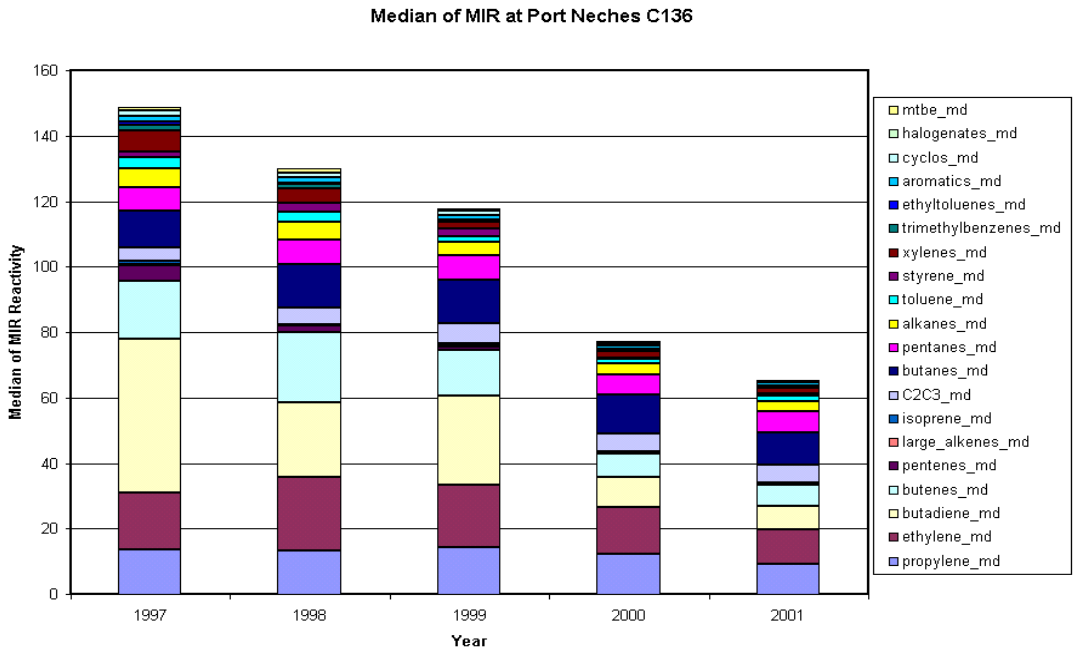
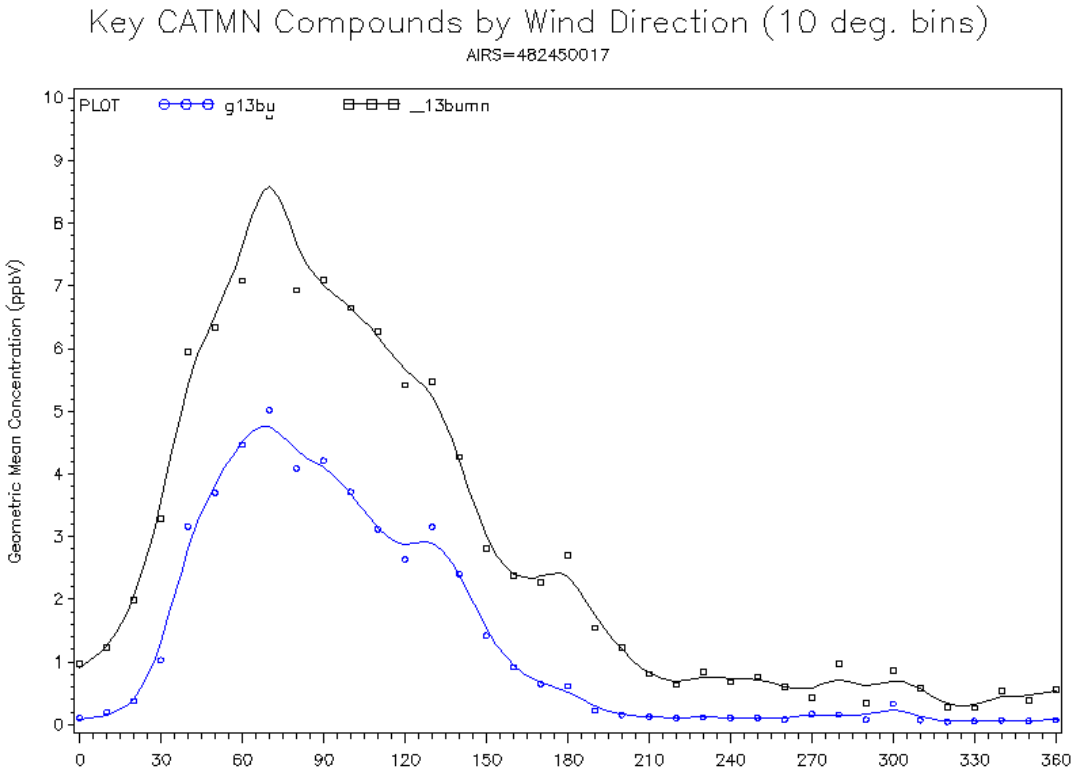
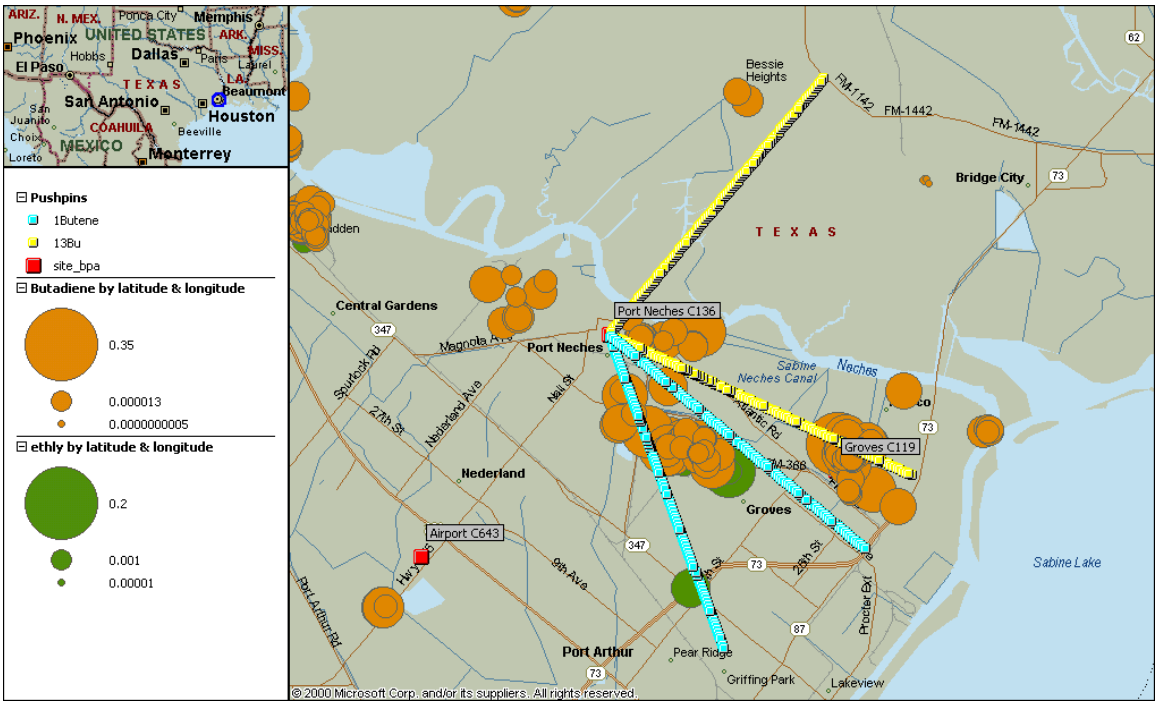

Beaumont Site 482450017 Port Neches C136
ethyltoluenes 0%
aromatics 0%
cyclos 1%
trimethylbenzenes 0%
halogenates 0%
monoterpenes 0%
styrene 3%
xylenes 1%
toluene 1%
mtbe 0%
alkanes 2%
propylene 6%
pentanes 2%
ethylene 7%
butanes 4%
C2C3 2%
isoprene 0%
large_alkenes 0%
pentenes 1%
butenes 13%
butadiene 57%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Port Neches C136
Median of MIR Reactivity
160
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482450017
PLOT
g13bu
_13bumn
Geometric Mean Concentration (ppbV)
0
1
2
3
4
5
6
7
8
9
10
0
30
60
90
120
150
180
210
240
270
300
330
360


Pushpins
1Butene
13Bu
site_bpa
Butadiene by latitude & longitude
0.35
0.000013
0.0000000005
ethly by latitude & longitude
0.2
0.001
0.00001
Port Neches C136
Groves C119
Airport C643
Port Neches
Groves
Nederland
Port Arthur
Bridge City
Central Gardens
Bessie Heights
Pear Ridge
Griffing Park
Lakeview
Sabine Lake
Sabine Neches Canal
TEXAS
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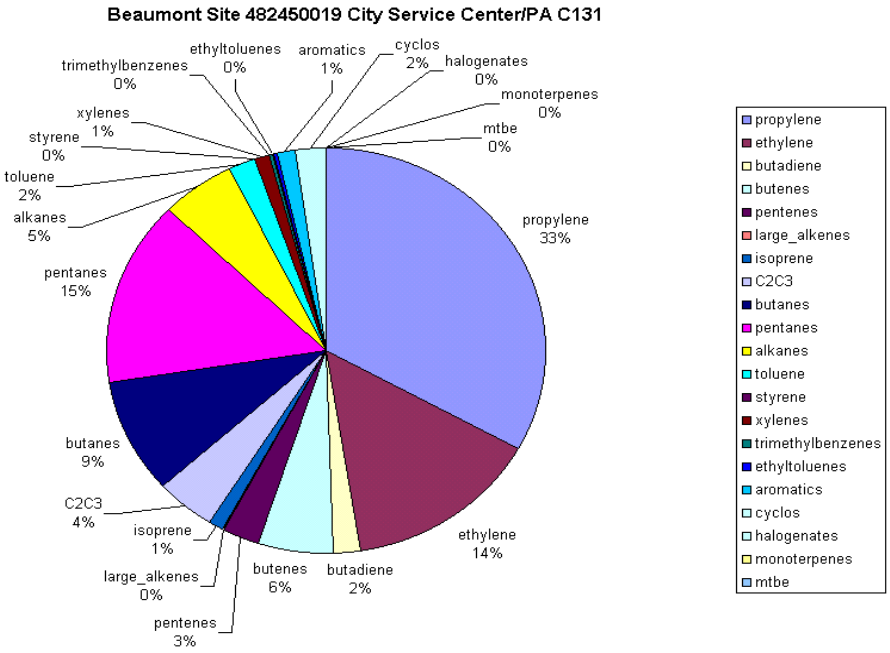
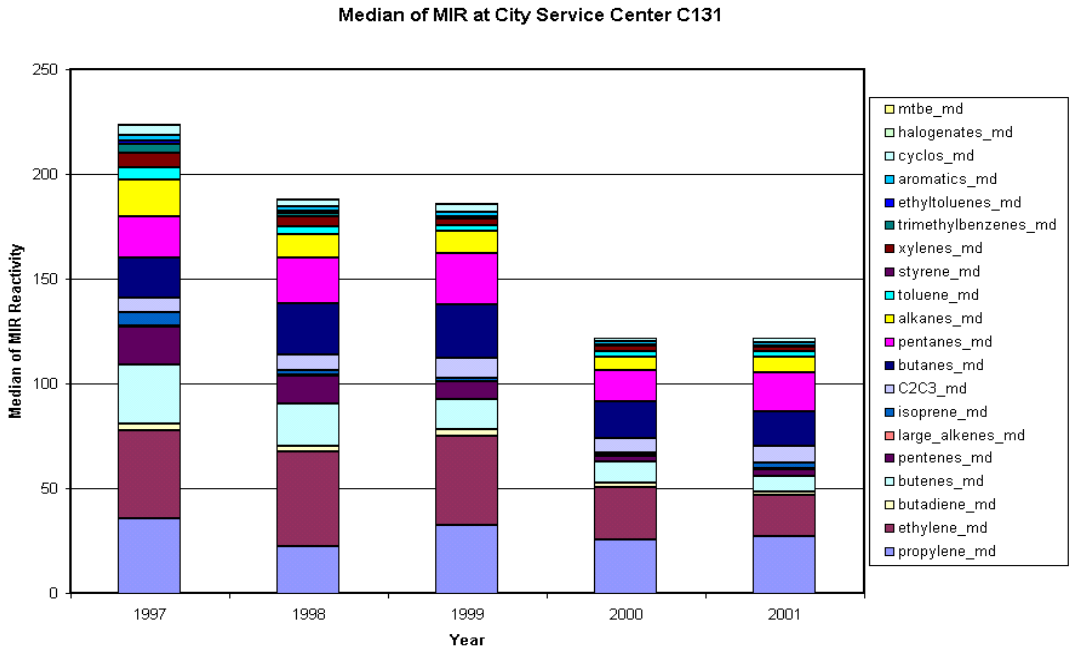
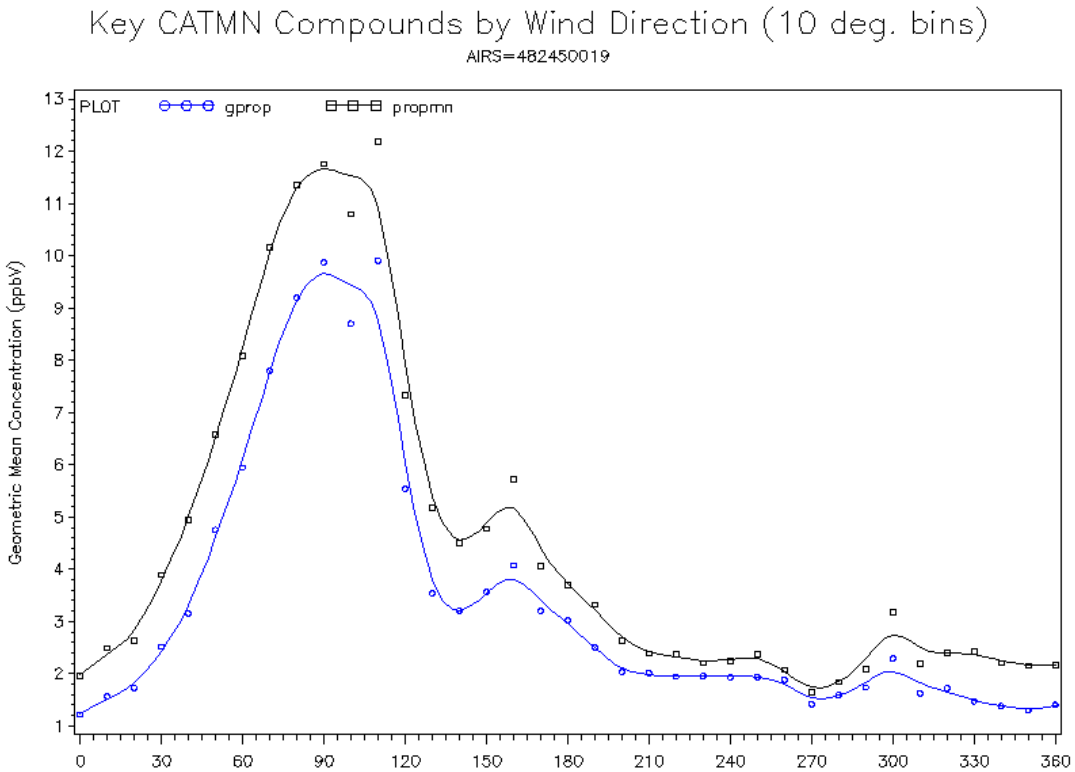
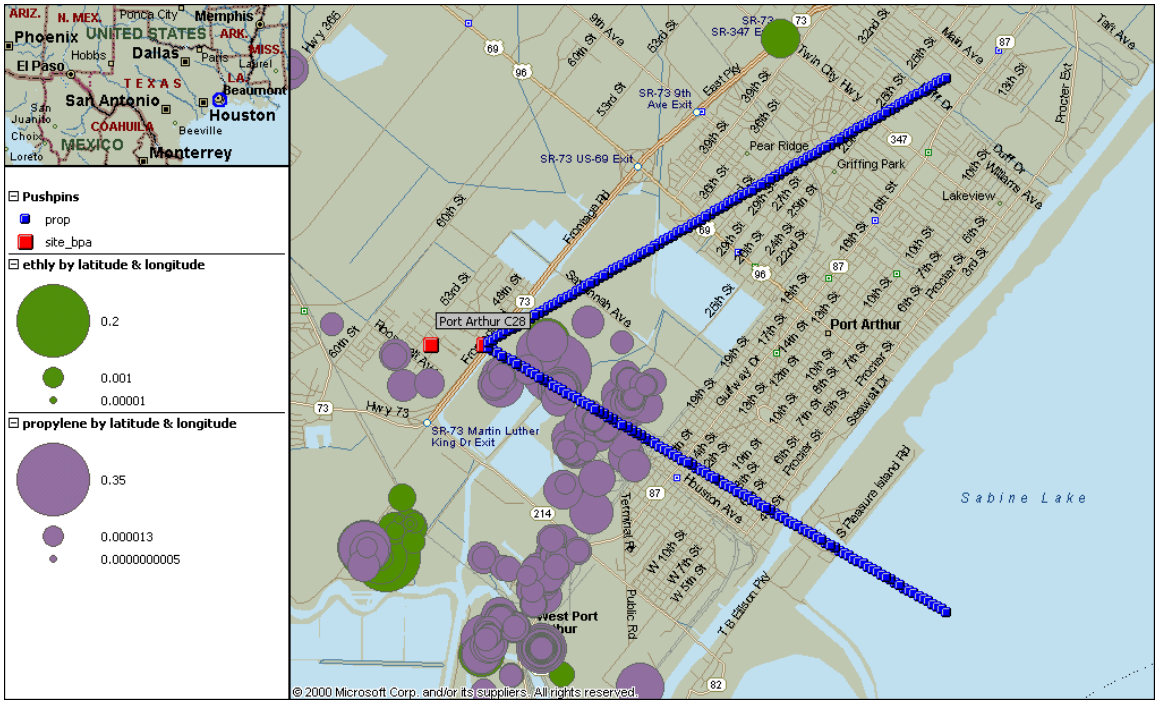

Beaumont Site 482450019 City Service Center/PA C131
propylene 33%
ethylene 14%
butadiene 2%
butenes 6%
pentenes 3%
large_alkenes 0%
isoprene 1%
C2C3 4%
butanes 9%
pentanes 15%
alkanes 5%
toluene 2%
styrene 0%
xylenes 1%
trimethylbenzenes 0%
ethyltoluenes 0%
aromatics 1%
cyclos 2%
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at City Service Center C131
Median of MIR Reactivity
250
200
150
100
50
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482450019
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
0
30
60
90
120
150
180
210
240
270
300
330
360


Pushpins
prop
site_bpa
ethly by latitude & longitude
0.2
0.001
0.00001
propylene by latitude & longitude
0.35
0.000013
0.0000000005
Port Arthur C28
Port Arthur
Sabine Lake
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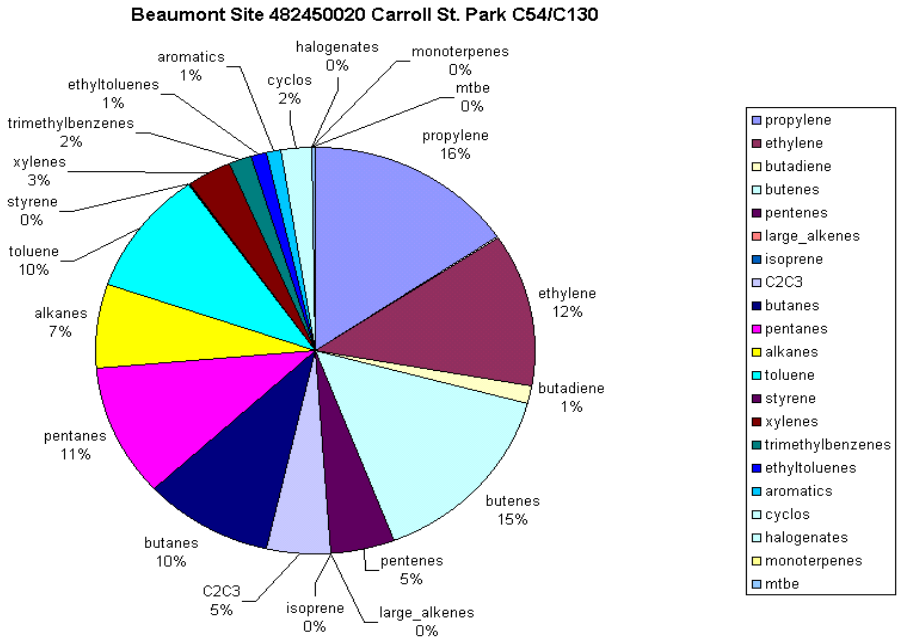
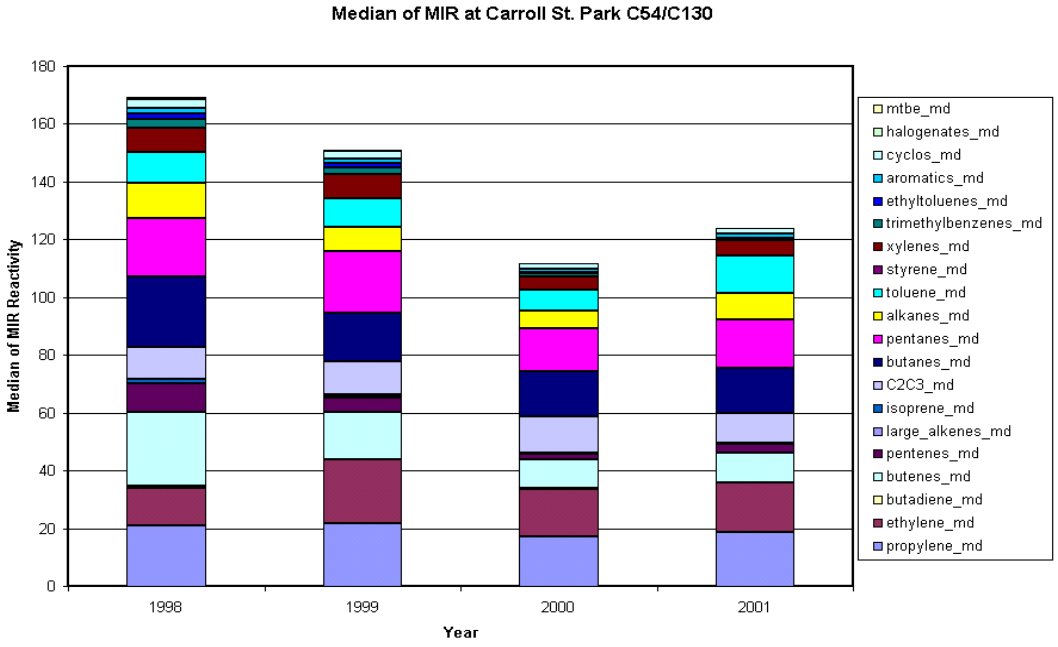
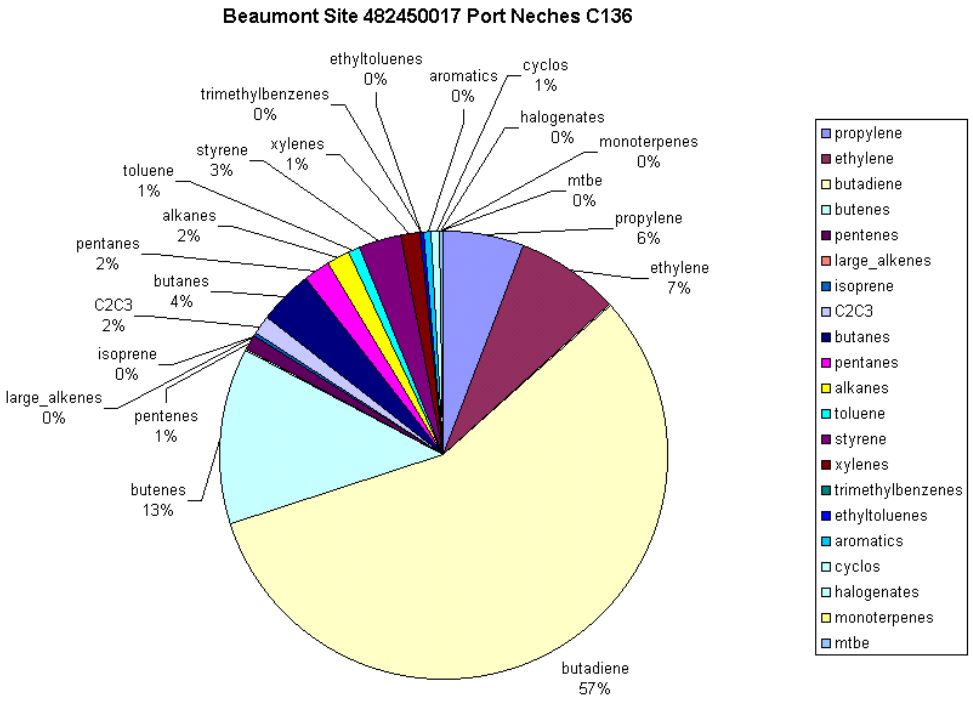
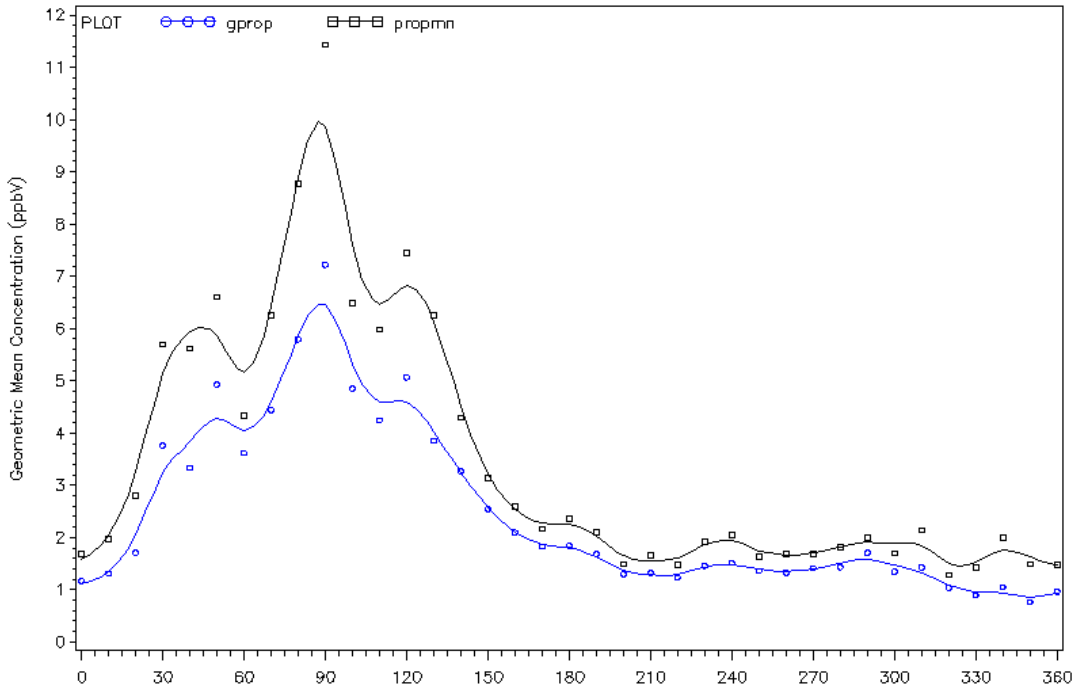

Beaumont Site 482450020 Carroll St. Park C54/C130
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene 16%
ethylene 12%
butadiene 1%
butenes 15%
pentenes 5%
large_alkenes 0%
isoprene 0%
C2C3 5%
butanes 10%
pentanes 11%
alkanes 7%
toluene 10%
styrene 0%
xylenes 3%
trimethylbenzenes 2%
ethyltoluenes 1%
aromatics 1%
cyclos 2%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe

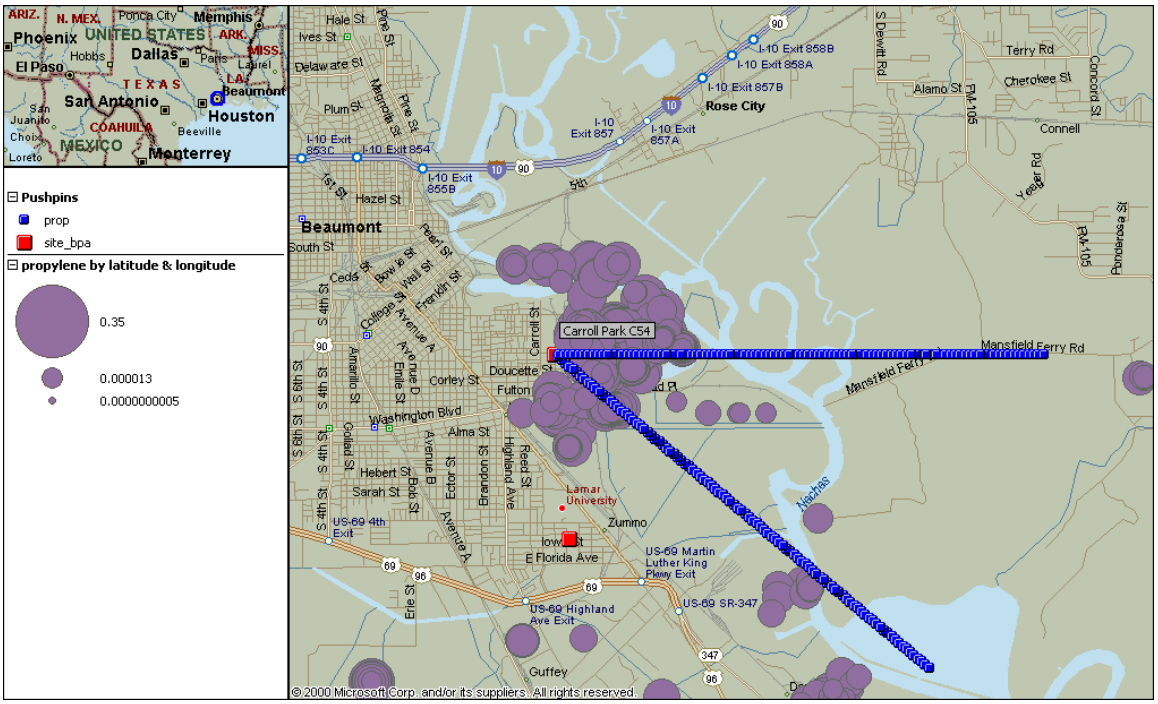

Median of MIR at Carroll St. Park C54/C130
Median of MIR Reactivity
0
20
40
60
80
100
120
140
160
180
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

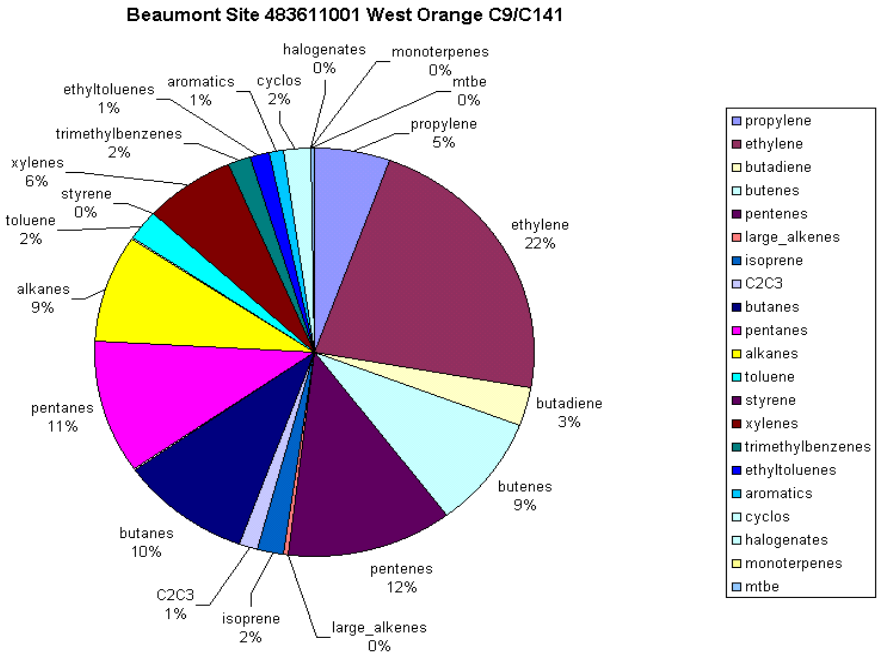

Beaumont Site 482450017 Port Neches C136
ethyltoluenes 0%
aromatics 0%
cyclos 1%
trimethylbenzenes 0%
halogenates 0%
monoterpenes 0%
styrene 3%
xylenes 1%
toluene 1%
mtbe 0%
alkanes 2%
propylene 6%
pentanes 2%
ethylene 7%
butanes 4%
C2C3 2%
isoprene 0%
large_alkenes 0%
pentenes 1%
butenes 13%
butadiene 57%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe

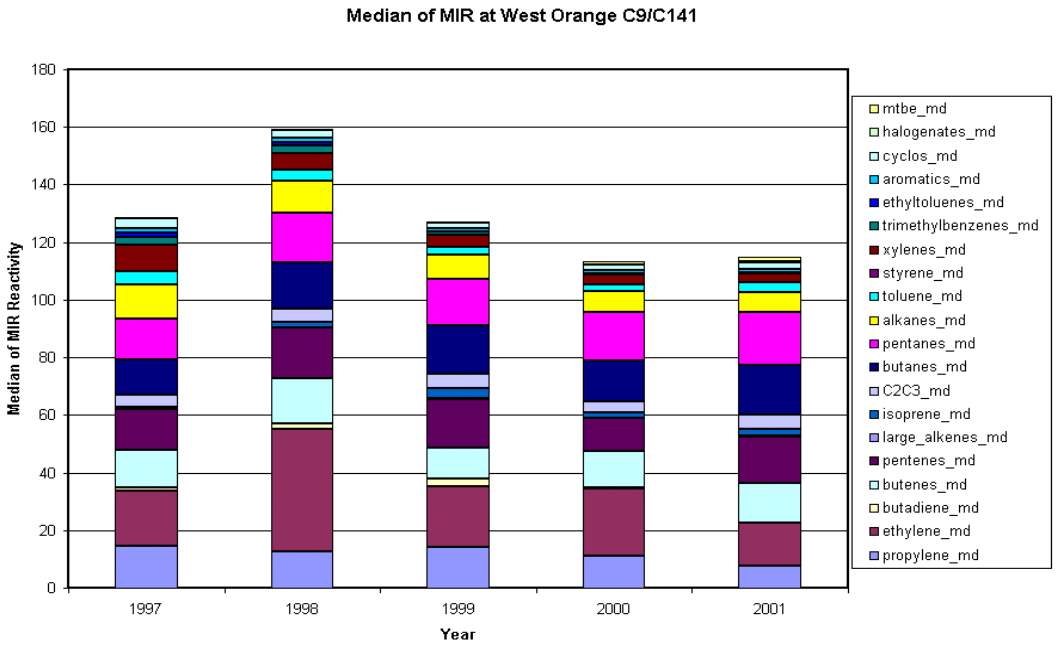
Key CATMN Compounds by Wind Direction (10 deg. bins)

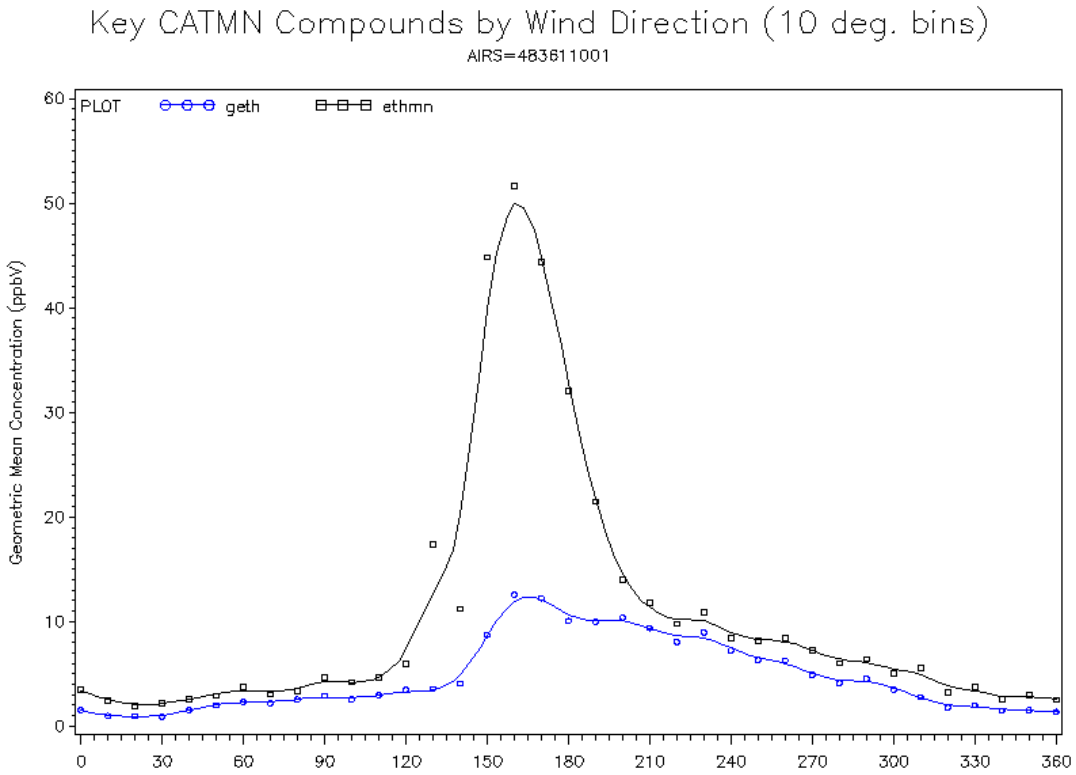
AIRS=482450020

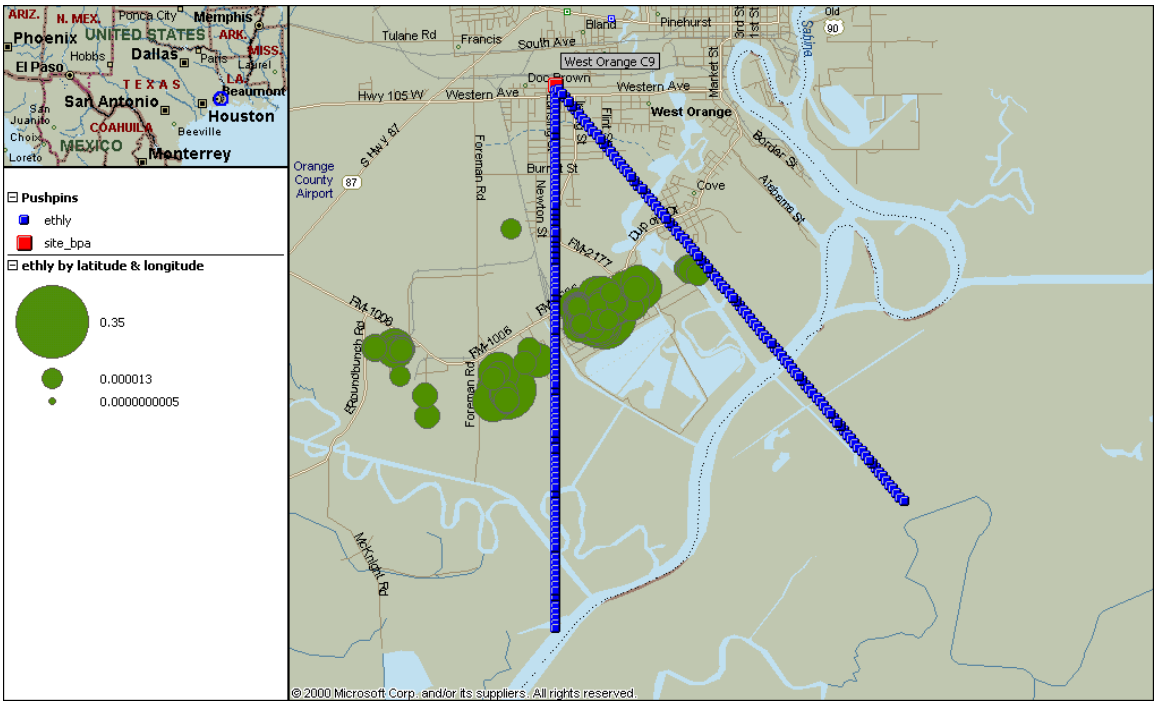





Beaumont Site 483611001 West Orange C9/C141
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene 5%
ethylene 22%
butadiene 3%
butenes 9%
pentenes 12%
large_alkenes 0%
isoprene 2%
C2C3 1%
butanes 10%
pentanes 11%
alkanes 9%
toluene 2%
styrene 0%
xylenes 6%
trimethylbenzenes 2%
ethyltoluenes 1%
aromatics 1%
cyclos 2%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at West Orange C9/C141
Median of MIR Reactivity
180
160
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=483611001
PLOT
geth
ethmn
Geometric Mean Concentration (ppbV)
0
10
20
30
40
50
60
0
30
60
90
120
150
180
210
240
270
300
330
360



ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
MISS.
Hobbs
Dallas
Paris
Laurel
El Paso
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Loreto
Monterrey
Pushpins
ethly
site_bpa
ethly by latitude & longitude
0.35
0.000013
0.0000000005
Tulane Rd
Francis
South Ave
Bland
Pinehurst
3rd St
1st St
Old
90
Sabine
West Orange C9
Doc Brown
Hwy 105 W
Western Ave
Western Ave
Market St
West Orange
S Hwy 87
Foreman Rd
Orange County Airport
87
Burnet St
Newton St
Cove
Border St
Alabama St
FM-2177
FM-1008
FM-1006
Roundbunch Rd
Foreman Rd
McKnight Rd
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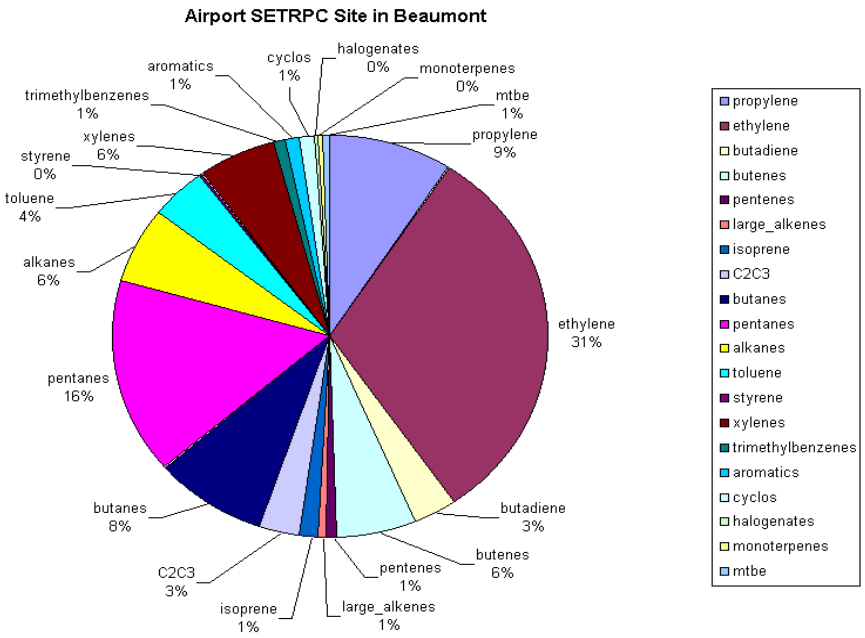
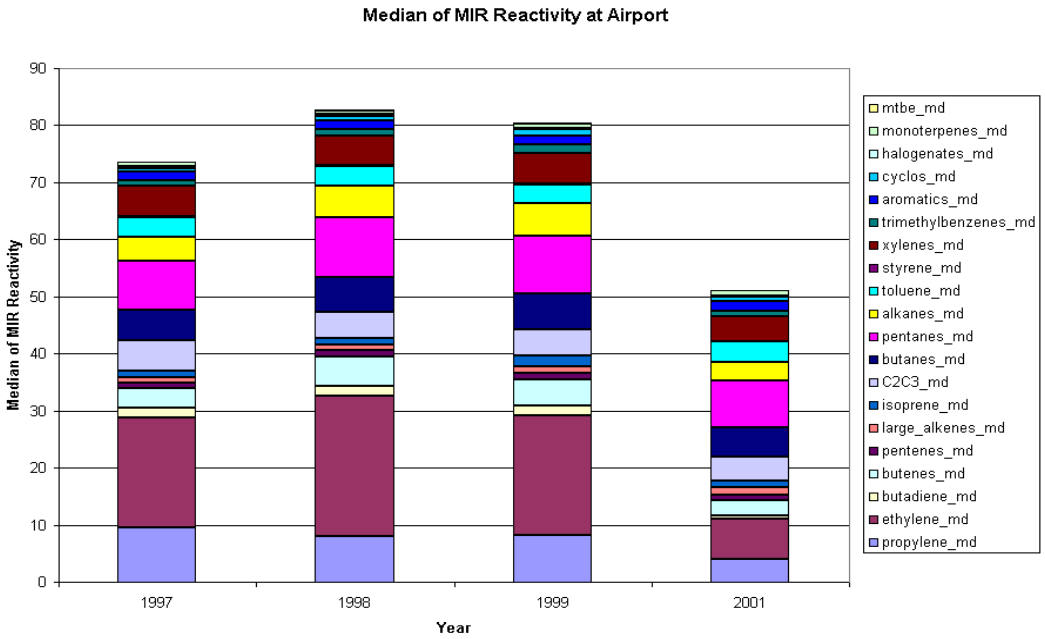
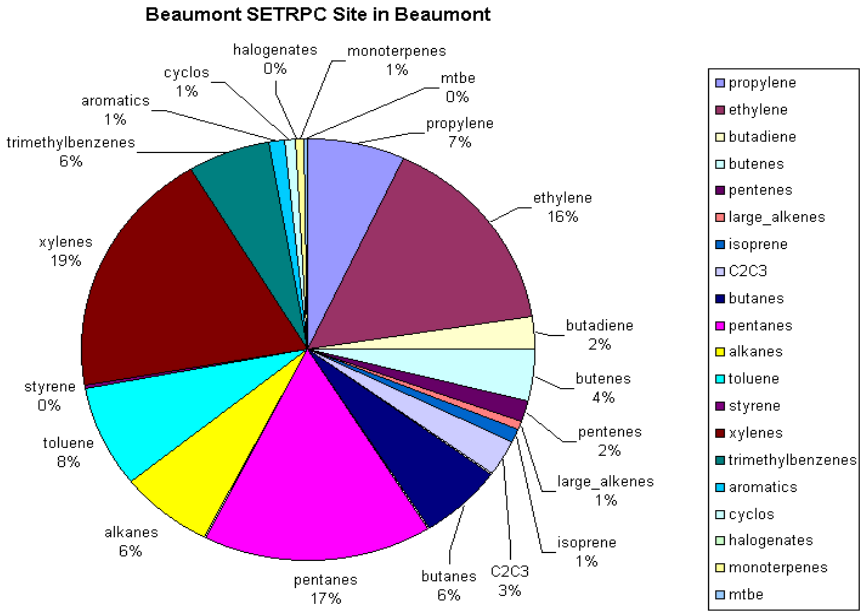
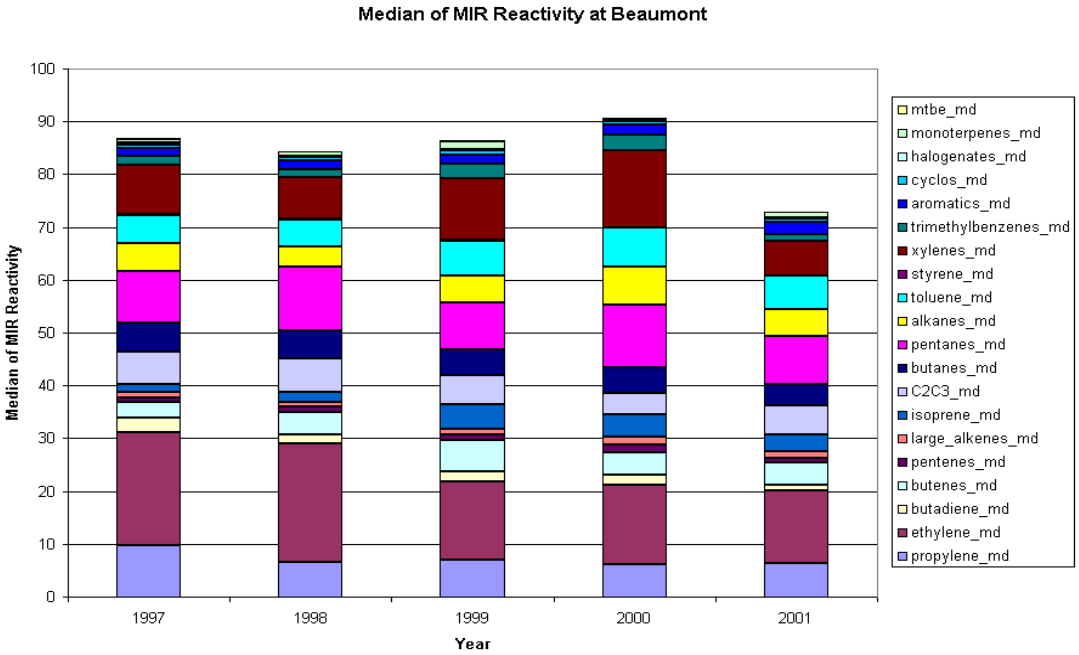
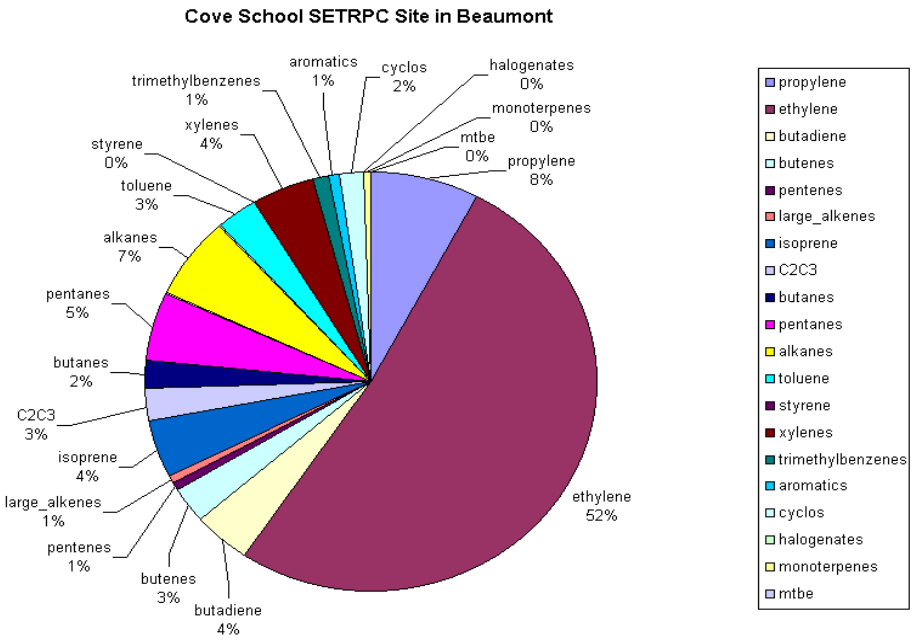
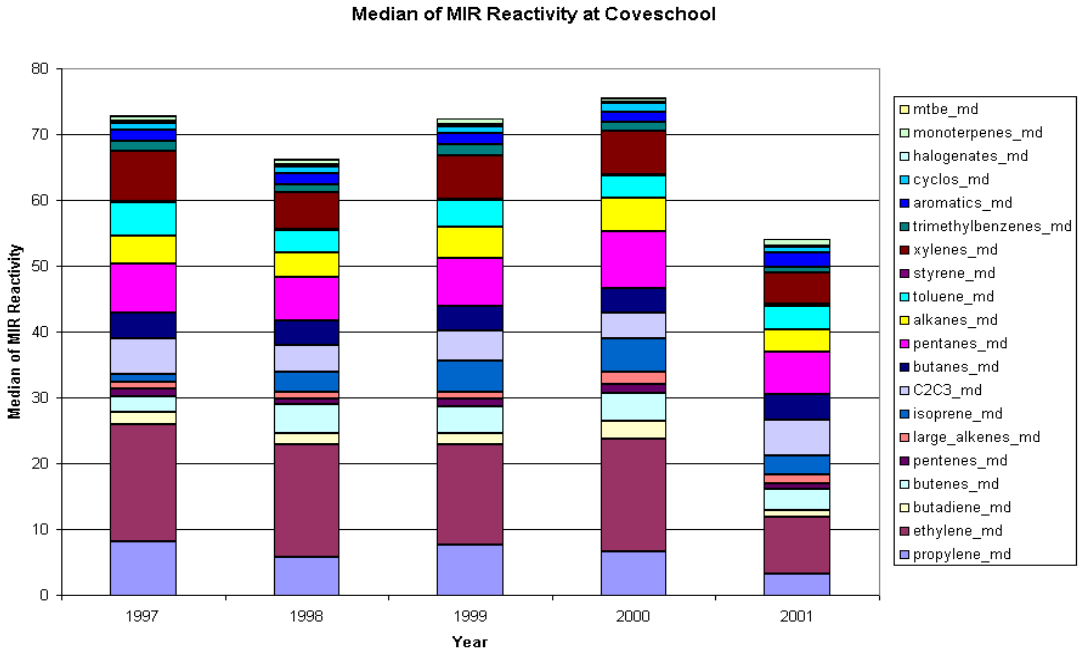

Airport SETRPC Site in Beaumont
halogenates 0%
monoterpenes 0%
mtbe 1%
propylene 9%
ethylene 31%
butadiene 3%
butenes 6%
pentenes 1%
large_alkenes 1%
isoprene 1%
C2C3 3%
butanes 8%
pentanes 16%
alkanes 6%
toluene 4%
styrene 0%
xylenes 6%
trimethylbenzenes 1%
aromatics 1%
cyclos 1%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
aromatics
cyclos
halogenates
monoterpenes
mtbe

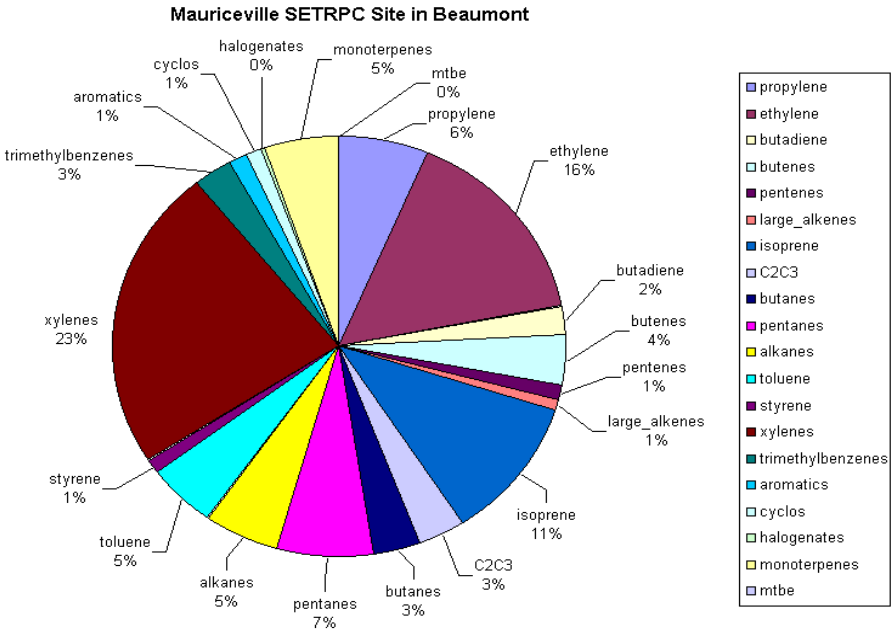

Median of MIR Reactivity at Airport
Median of MIR Reactivity
0
10
20
30
40
50
60
70
80
90
1997
1998
1999
2001
Year
mtbe_md
monoterpenes_md
halogenates_md
cyclos_md
aromatics_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

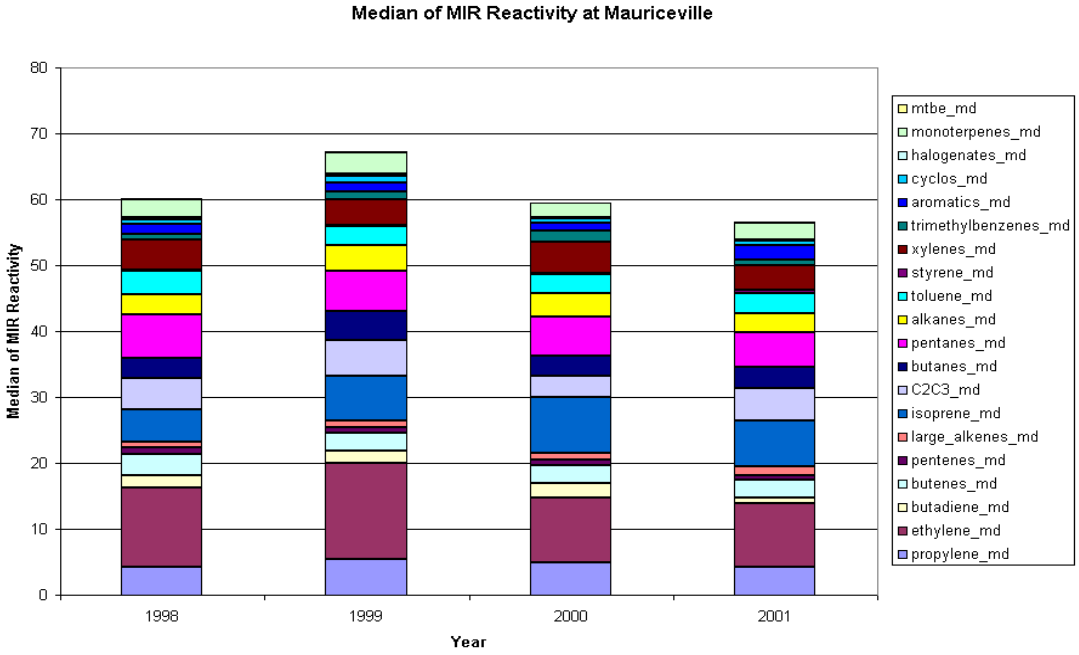

Beaumont SETRPC Site in Beaumont
halogenates 0%
monoterpenes 1%
cyclos 1%
mtbe 0%
aromatics 1%
propylene 7%
trimethylbenzenes 6%
ethylene 16%
xylenes 19%
butadiene 2%
butenes 4%
styrene 0%
pentenes 2%
toluene 8%
large_alkenes 1%
alkanes 6%
isoprene 1%
pentanes 17%
butanes 6%
C2C3 3%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
aromatics
cyclos
halogenates
monoterpenes
mtbe

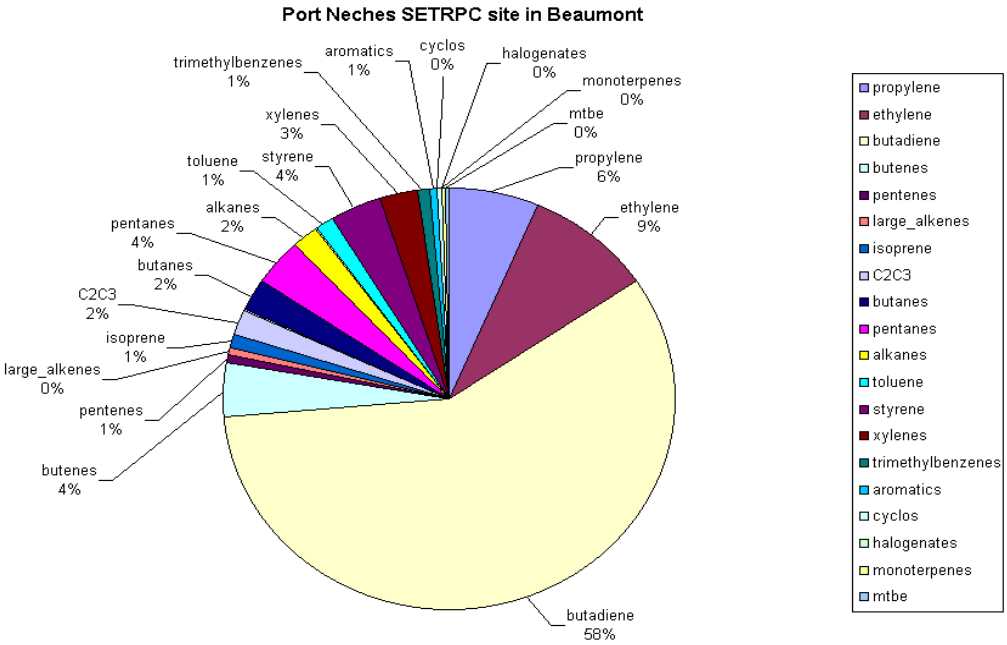

Median of MIR Reactivity at Beaumont
Median of MIR Reactivity
100
90
80
70
60
50
40
30
20
10
0
1997
1998
1999
2000
2001
Year
mtbe_md
monoterpenes_md
halogenates_md
cyclos_md
aromatics_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

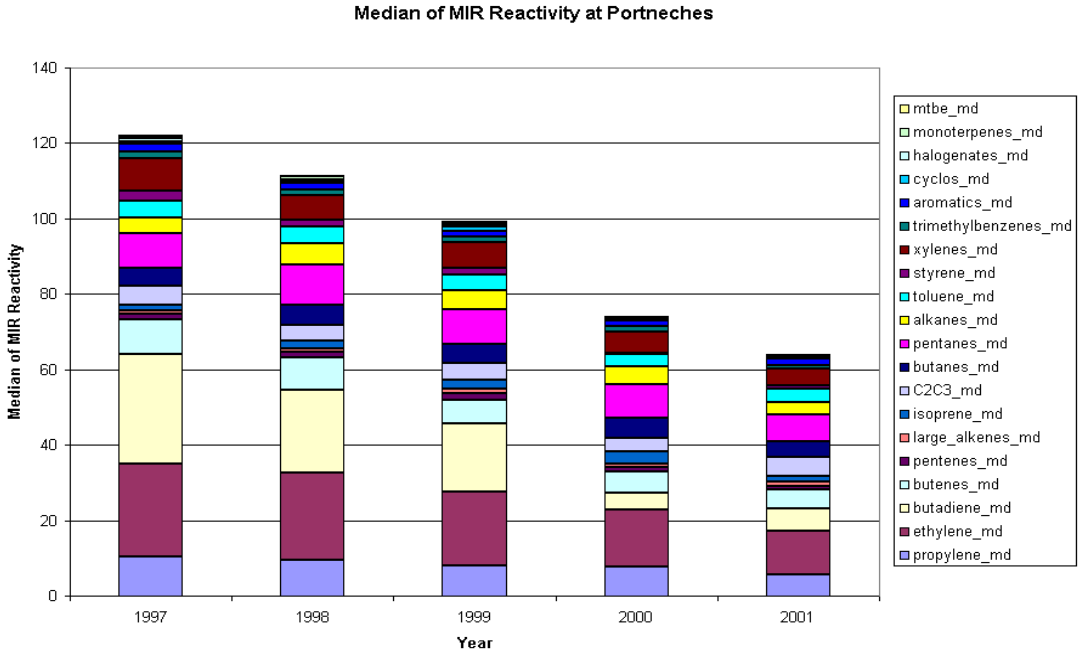

Cove School SETRPC Site in Beaumont
aromatics 1%
cyclos 2%
halogenates 0%
trimethylbenzenes 1%
monoterpenes 0%
xylenes 4%
mtbe 0%
styrene 0%
propylene 8%
toluene 3%
alkanes 7%
pentanes 5%
butanes 2%
C2C3 3%
isoprene 4%
large_alkenes 1%
ethylene 52%
pentenes 1%
butenes 3%
butadiene 4%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
aromatics
cyclos
halogenates
monoterpenes
mtbe

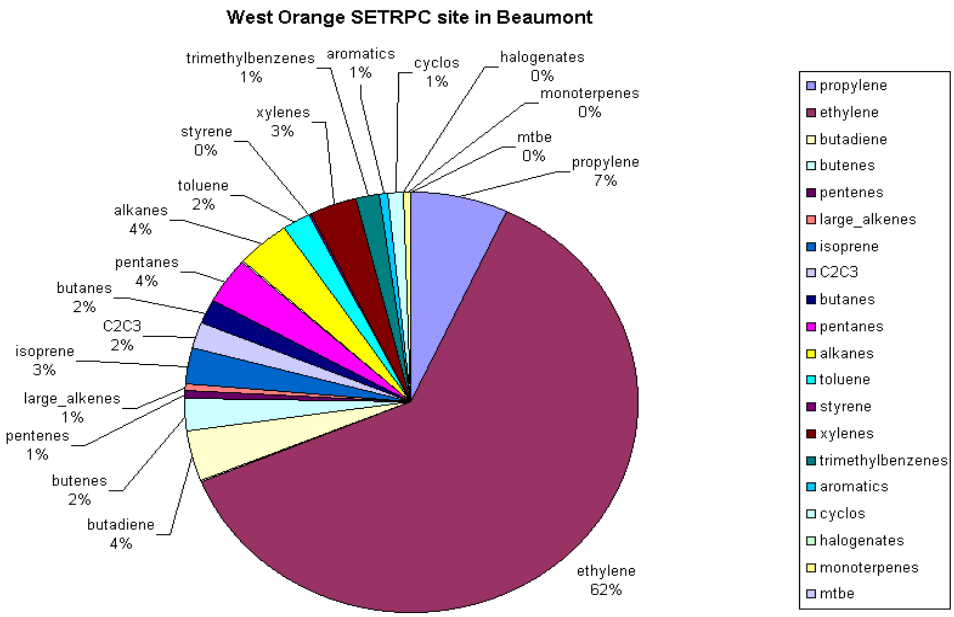

Median of MIR Reactivity at Coveschool
Median of MIR Reactivity
0
10
20
30
40
50
60
70
80
1997
1998
1999
2000
2001
Year
mtbe_md
monoterpenes_md
halogenates_md
cyclos_md
aromatics_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

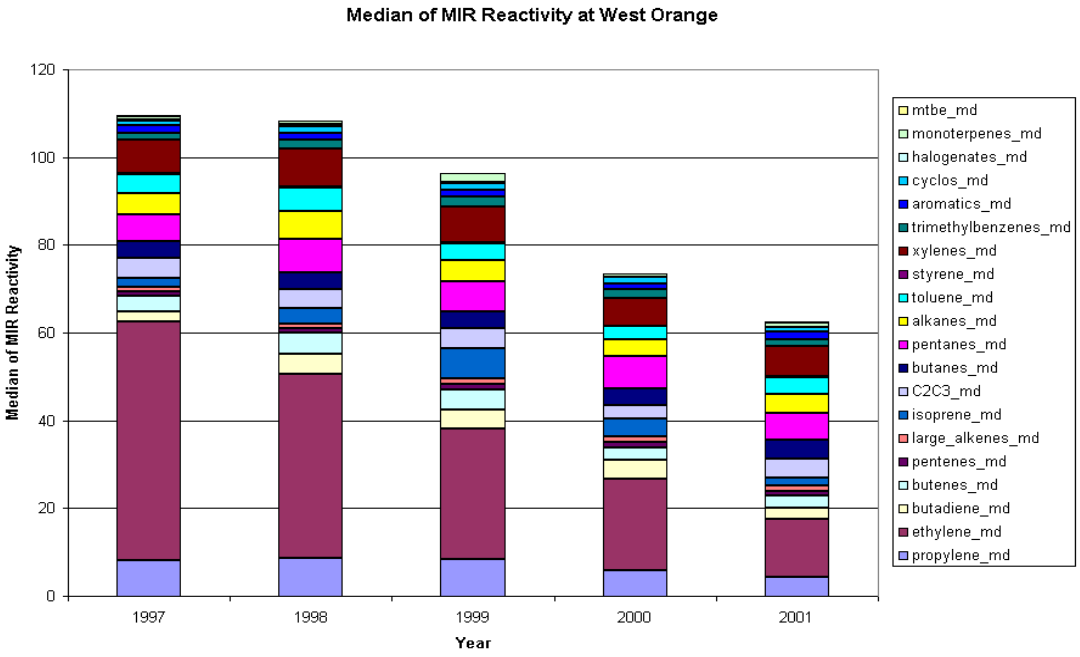

Mauriceville SETRPC Site in Beaumont
halogenates 0%
monoterpenes 5%
cyclos 1%
mtbe 0%
aromatics 1%
propylene 6%
trimethylbenzenes 3%
ethylene 16%
butadiene 2%
xylenes 23%
butenes 4%
pentenes 1%
large_alkenes 1%
styrene 1%
isoprene 11%
toluene 5%
C2C3 3%
alkanes 5%
butanes 3%
pentanes 7%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
aromatics
cyclos
halogenates
monoterpenes
mtbe

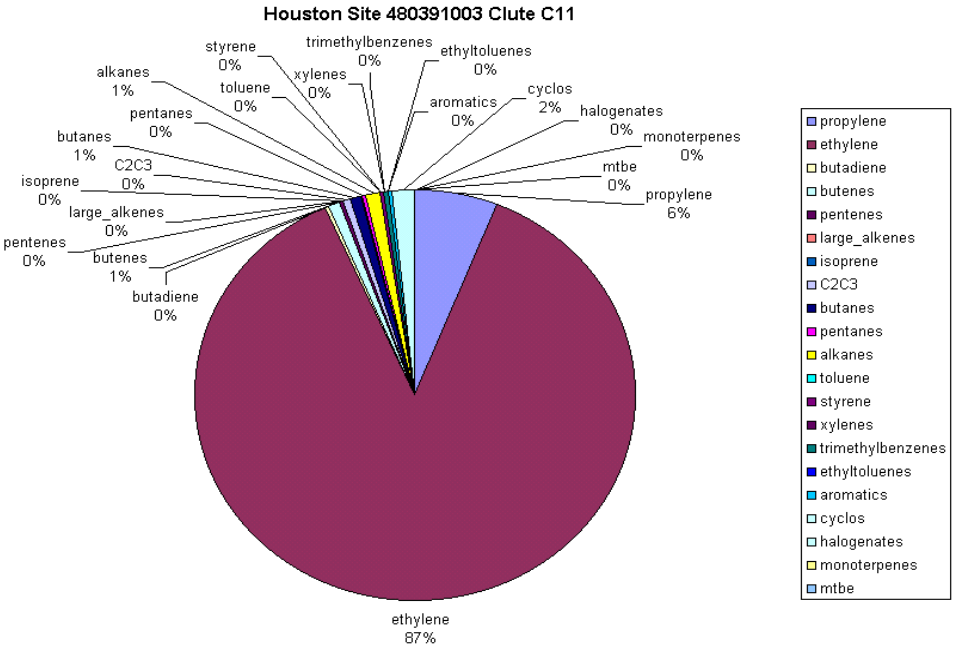

Median of MIR Reactivity at Mauriceville
Median of MIR Reactivity
0
10
20
30
40
50
60
70
80
1998
1999
2000
2001
Year
mtbe_md
monoterpenes_md
halogenates_md
cyclos_md
aromatics_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

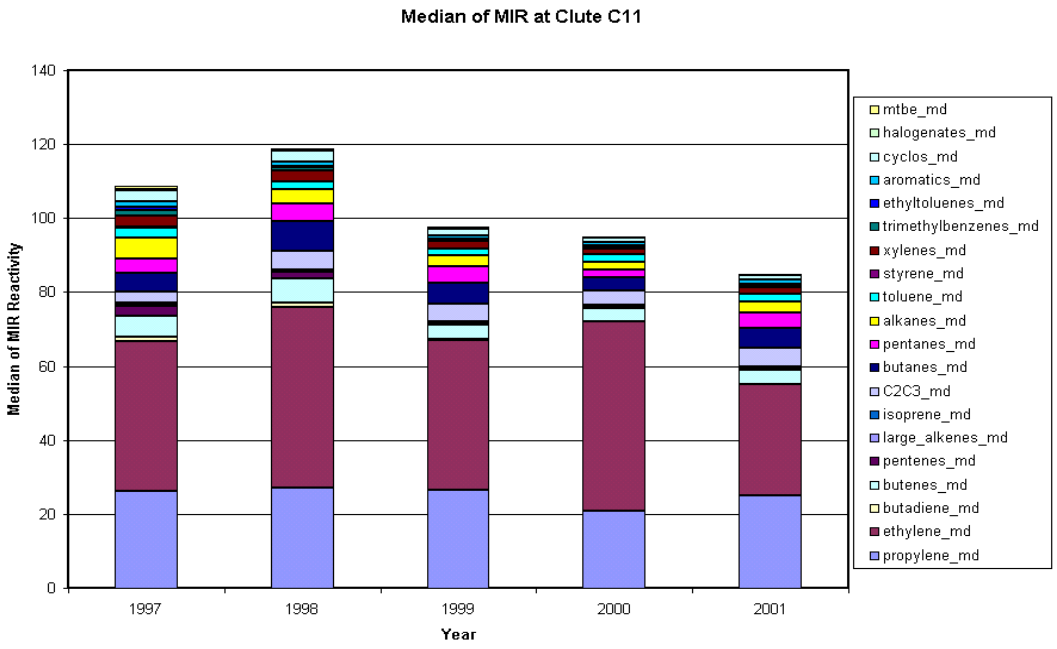

Port Neches SETRPC site in Beaumont
trimethylbenzenes 1%
aromatics 1%
cyclos 0%
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene 6%
ethylene 9%
xylenes 3%
styrene 4%
toluene 1%
alkanes 2%
pentanes 4%
butanes 2%
C2C3 2%
isoprene 1%
large_alkenes 0%
pentenes 1%
butenes 4%
butadiene 58%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
aromatics
cyclos
halogenates
monoterpenes
mtbe

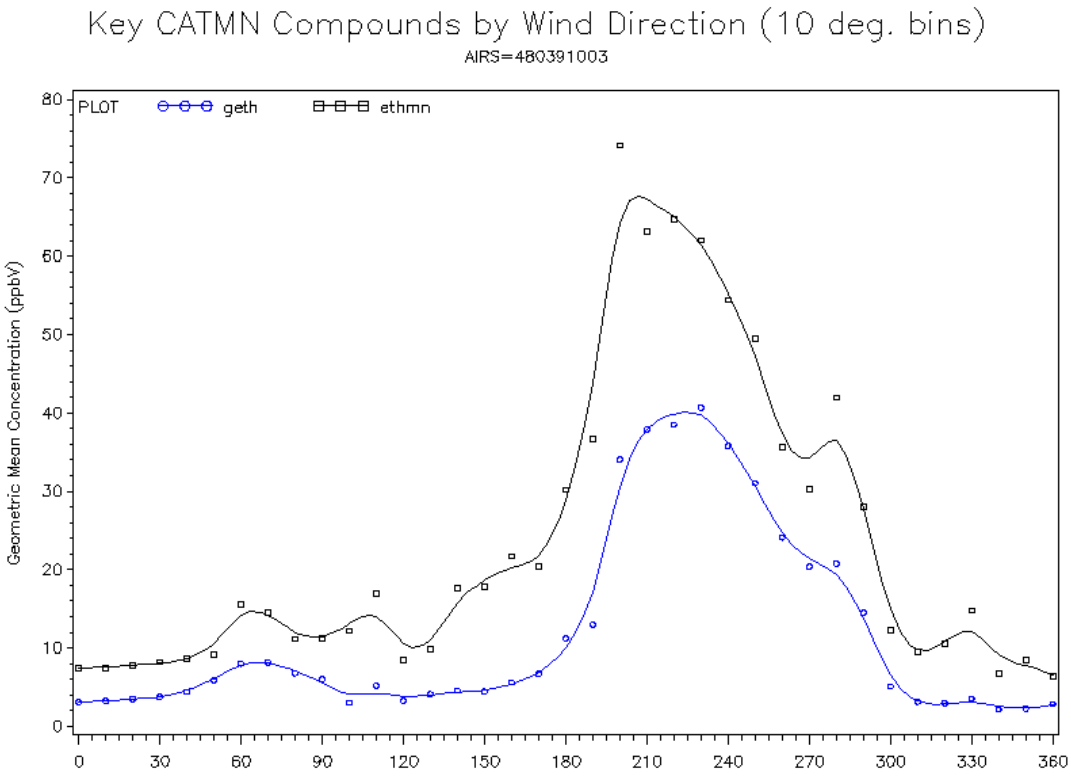

Median of MIR Reactivity at Portneches
Median of MIR Reactivity
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
Year
mtbe_md
monoterpenes_md
halogenates_md
cyclos_md
aromatics_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

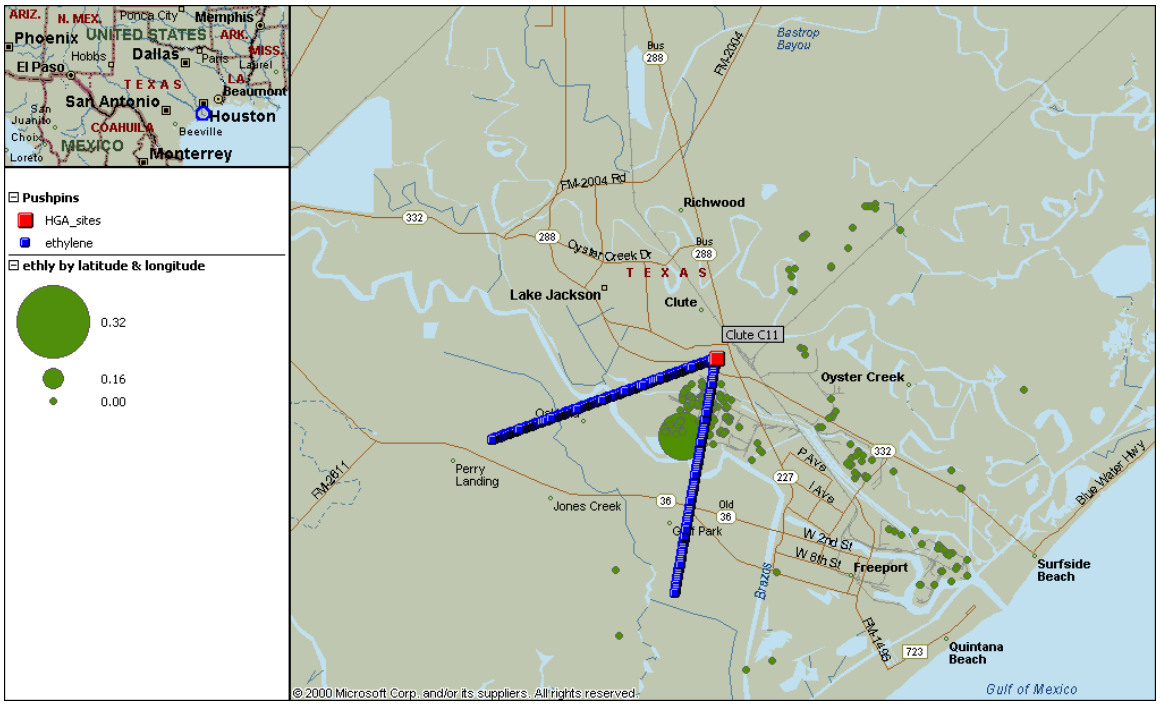

West Orange SETRPC site in Beaumont
trimethylbenzenes 1%
aromatics 1%
cyclos 1%
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene 7%
xylenes 3%
styrene 0%
toluene 2%
alkanes 4%
pentanes 4%
butanes 2%
C2C3 2%
isoprene 3%
large_alkenes 1%
pentenes 1%
butenes 2%
butadiene 4%
ethylene 62%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR Reactivity at West Orange
Median of MIR Reactivity
0
20
40
60
80
100
120
1997
1998
1999
2000
2001
Year
mtbe_md
monoterpenes_md
halogenates_md
cyclos_md
aromatics_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Houston Site 480391003 Clute C11
styrene 0%
trimethylbenzenes 0%
ethyltoluenes 0%
alkanes 1%
xylenes 0%
toluene 0%
cyclos 2%
aromatics 0%
halogenates 0%
pentanes 0%
monoterpenes 0%
butanes 1%
C2C3 0%
mtbe 0%
isoprene 0%
propylene 6%
large_alkenes 0%
pentenes 0%
butenes 1%
butadiene 0%
ethylene 87%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Clute C11
Median of MIR Reactivity
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=480391003
PLOT
geth
ethmn
Geometric Mean Concentration (ppbV)
0
10
20
30
40
50
60
70
80
0
30
60
90
120
150
180
210
240
270
300
330
360



ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
MISS.
Hobbs
Dallas
Paris
Laurel
El Paso
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Monterrey
Loreto
Pushpins
HGA_sites
ethylene
ethly by latitude & longitude
0.32
0.16
0.00
Bastrop Bayou
Bus 288
FM-2004
FM-2004 Rd
Richwood
332
288
Oyster Creek Dr
Bus 288
TEXAS
Lake Jackson
Clute
Clute C11
Oyster Creek
Perry Landing
FM-2611
Jones Creek
36
Old 36
Golf Park
227
P Ave
I Ave
W 2nd St
W 8th St
Freeport
Brazos
Blue Water Hwy
Surfside Beach
FM-1495
723
Quintana Beach
Gulf of Mexico
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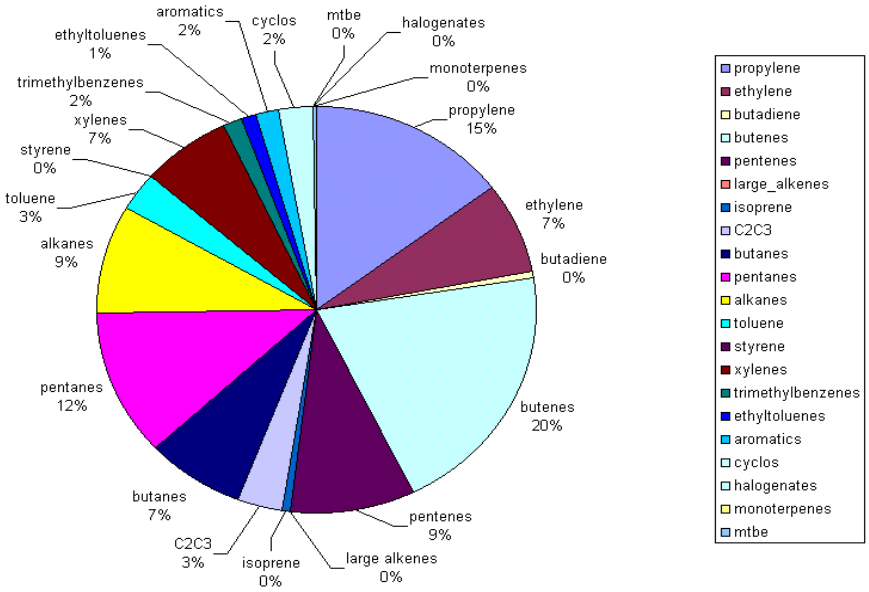
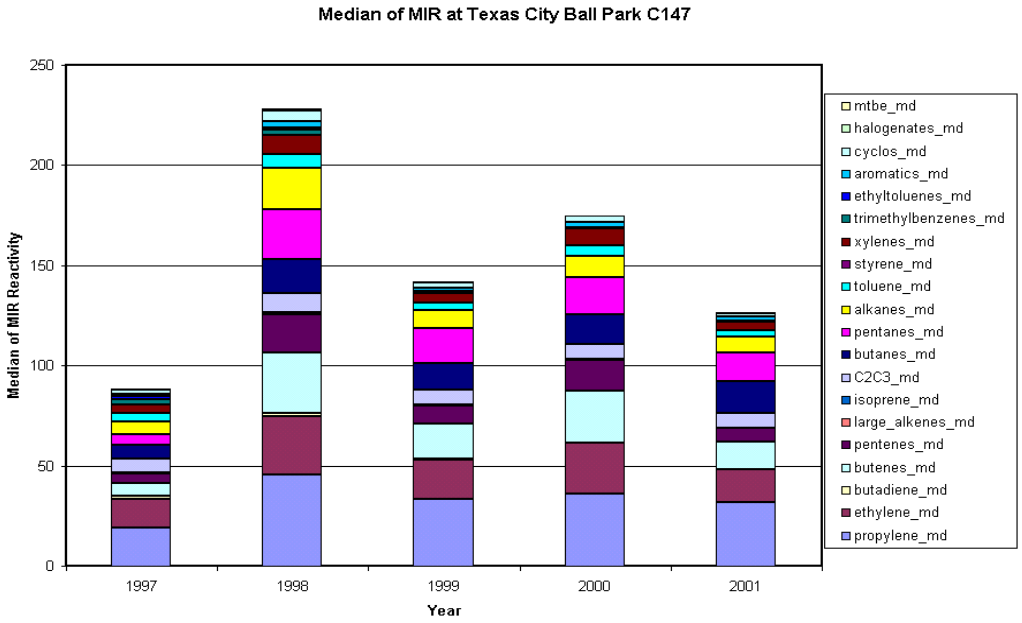
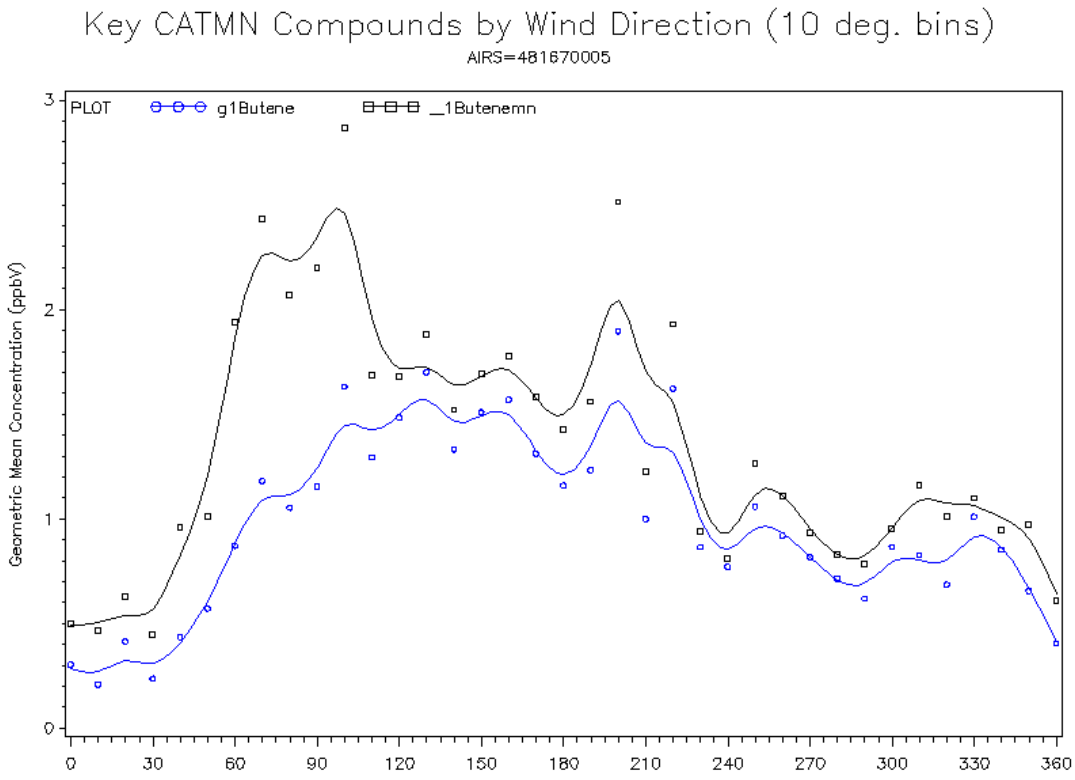
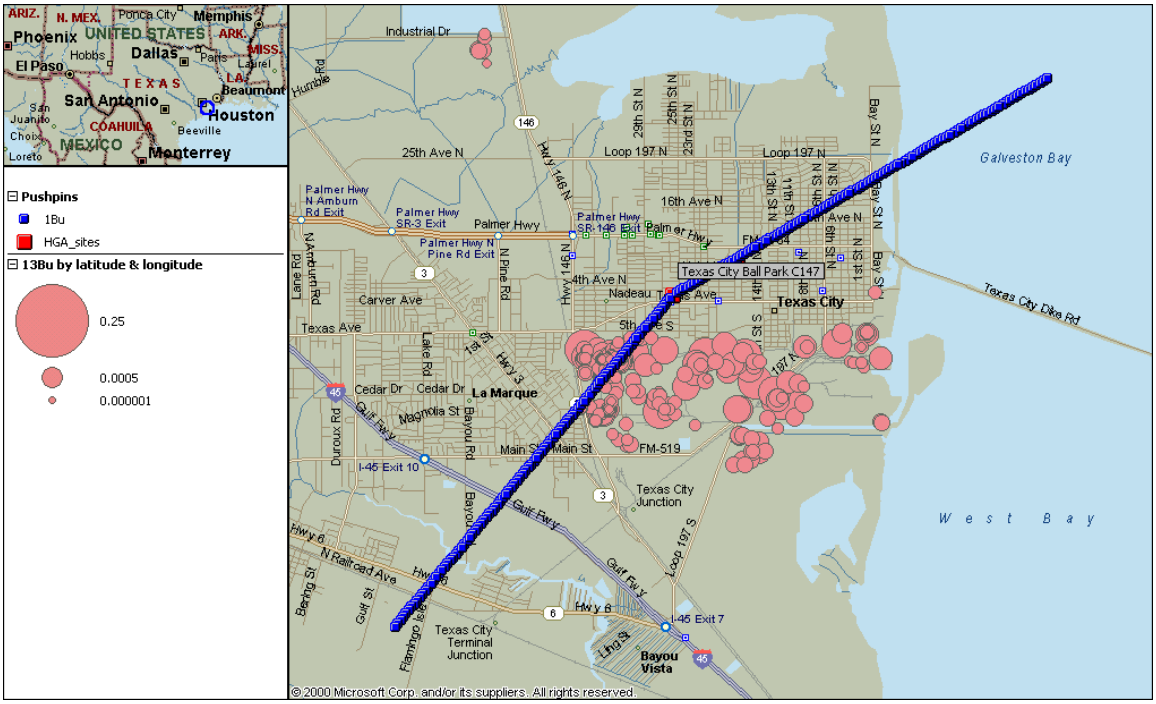
Houston Site 481670005 Texas City Ball Park C147




Median of MIR at Texas City Ball Park C147
Median of MIR Reactivity
250
200
150
100
50
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=481670005
PLOT
g1Butene
_1Butenemn
Geometric Mean Concentration (ppbV)
0
1
2
3
0
30
60
90
120
150
180
210
240
270
300
330
360


ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
MISS.
Hobbs
Dallas
El Paso
Paris
Laurel
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Loreto
Monterrey
Pushpins
1Bu
HGA_sites
13Bu by latitude & longitude
0.25
0.0005
0.000001
Industrial Dr
Humble Rd
25th Ave N
Loop 197 N
Hwy 146 N
29th St N
25th St N
23rd St N
Bay St N
Galveston Bay
Palmer Hwy N Amburn Rd Exit
Palmer Hwy SR-3 Exit
Palmer Hwy
Palmer Hwy SR-146 Exit
Palmer Hwy N Pine Rd Exit
16th Ave N
N Amburn Rd
N Pine Rd
Hwy 146 N
4th Ave N
Texas City Ball Park C147
Nadeau Texas Ave
Texas City
Texas City Dike Rd
Carver Ave
Texas Ave
5th Ave S
Lake Rd
Hwy 3
Cedar Dr
La Marque
Magnolia St
Bayou Rd
Duroux Rd
Gulf Fwy
Main St
FM-519
I-45 Exit 10
Texas City Junction
West Bay
Hwy 6
N Railroad Ave
Bering St
Gulf St
Flamingo Isle
Texas City Terminal Junction
Loop 197 S
I-45 Exit 7
Bayou Vista
Ling St
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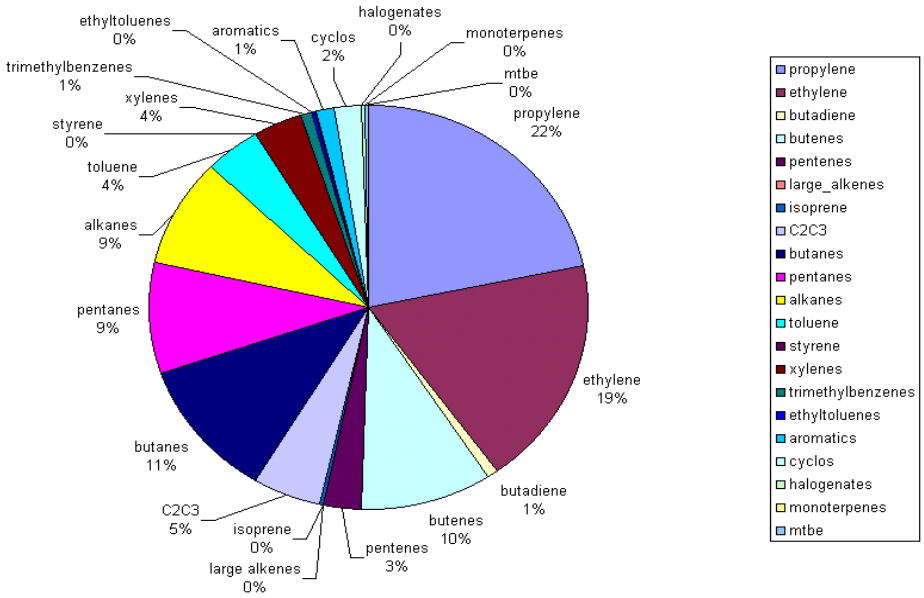
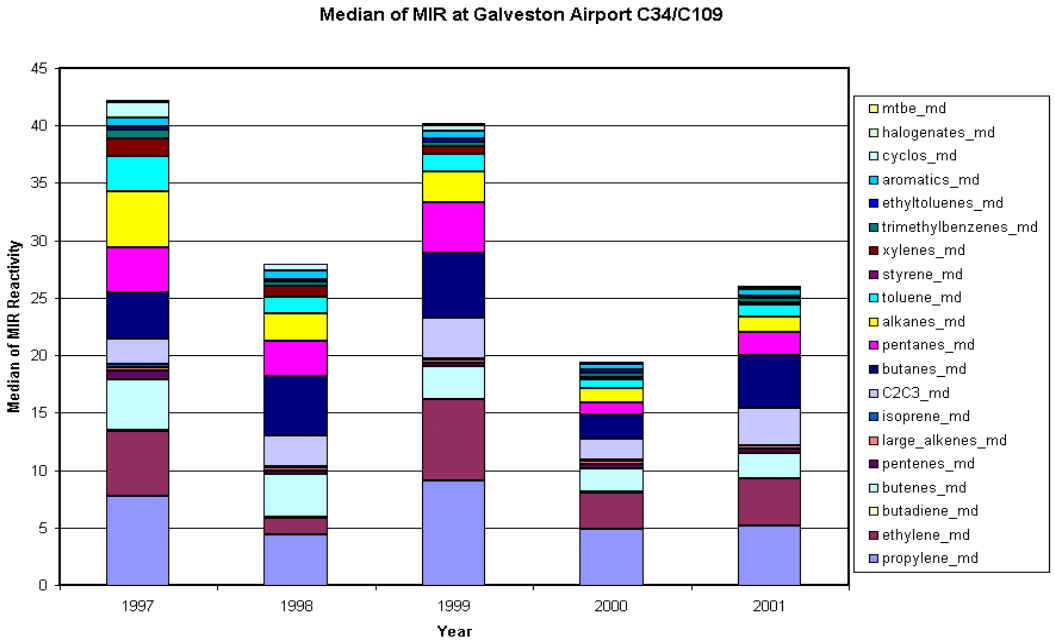
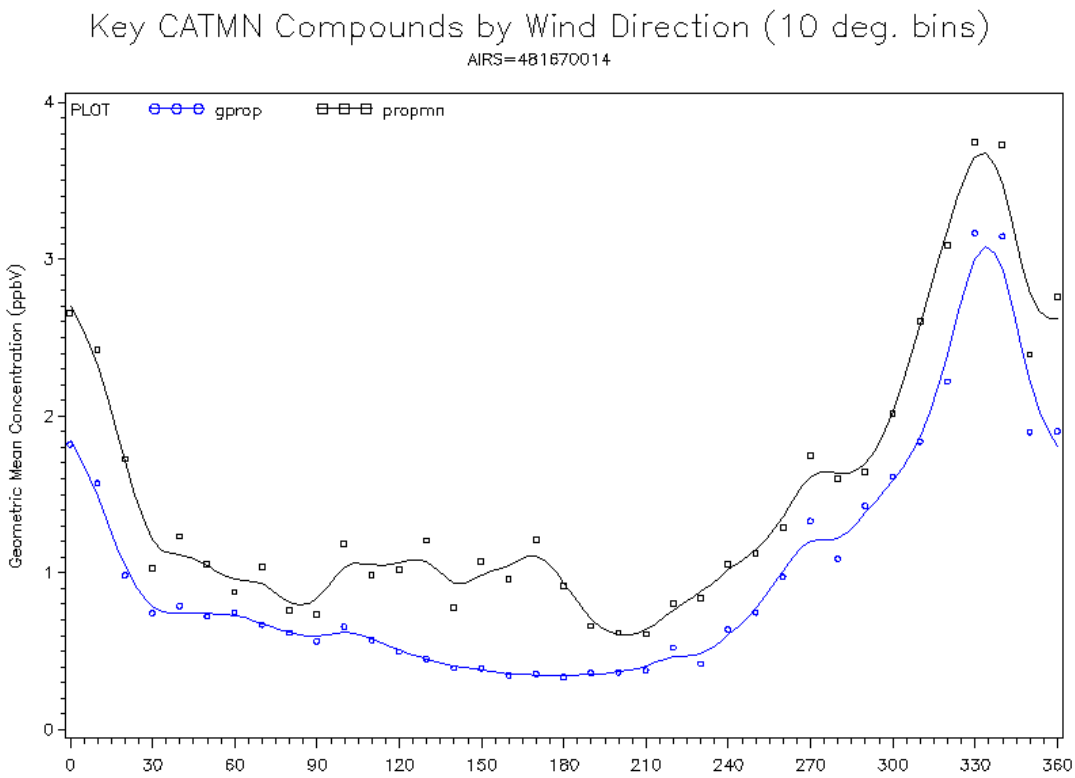
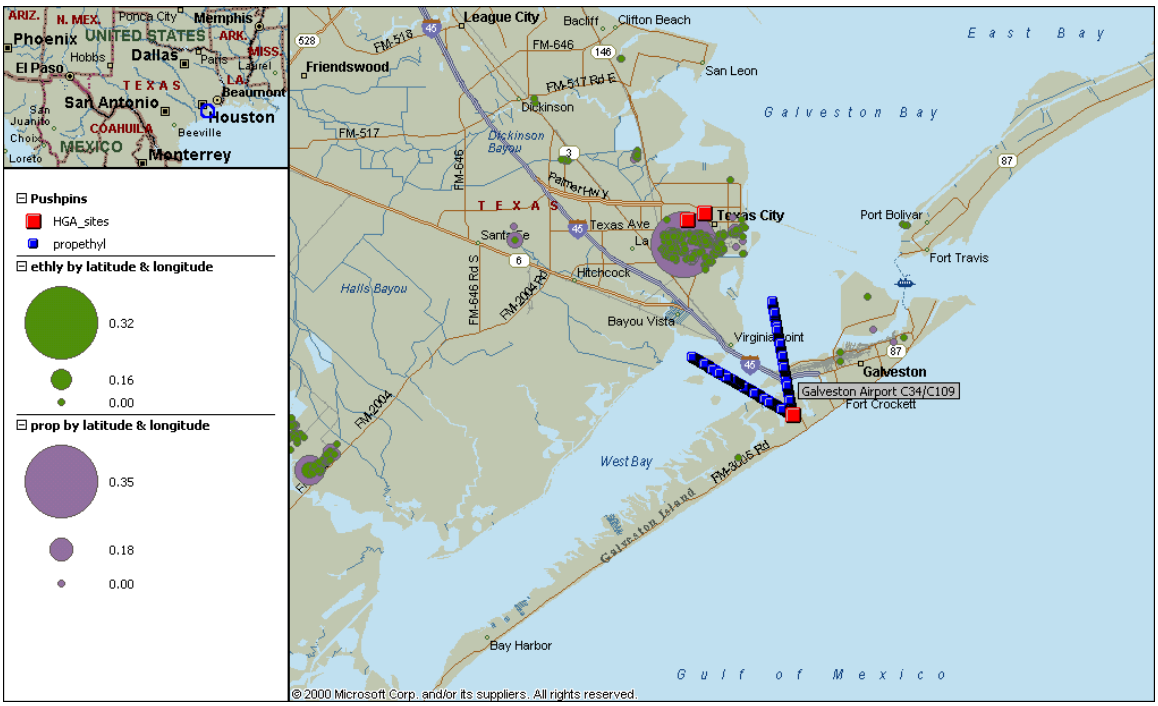
Houston Site 481670014 Galveston Airport C34/C109




Median of MIR at Galveston Airport C34/C109
Median of MIR Reactivity
Year
0
5
10
15
20
25
30
35
40
45
1997
1998
1999
2000
2001
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=481670014
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
0
1
2
3
4
0
30
60
90
120
150
180
210
240
270
300
330
360


Pushpins
HGA_sites
propethyl
ethly by latitude & longitude
0.32
0.16
0.00
prop by latitude & longitude
0.35
0.18
0.00
Phoenix
El Paso
Dallas
San Antonio
Houston
Memphis
Monterrey
MEXICO
UNITED STATES
TEXAS
League City
Friendswood
Dickinson
San Leon
Texas City
Port Bolivar
Fort Travis
Galveston
Galveston Airport C34/C109
Fort Crockett
Virginia Point
Bayou Vista
Hitchcock
Halls Bayou
West Bay
Galveston Island
Bay Harbor
East Bay
Galveston Bay
Gulf of Mexico
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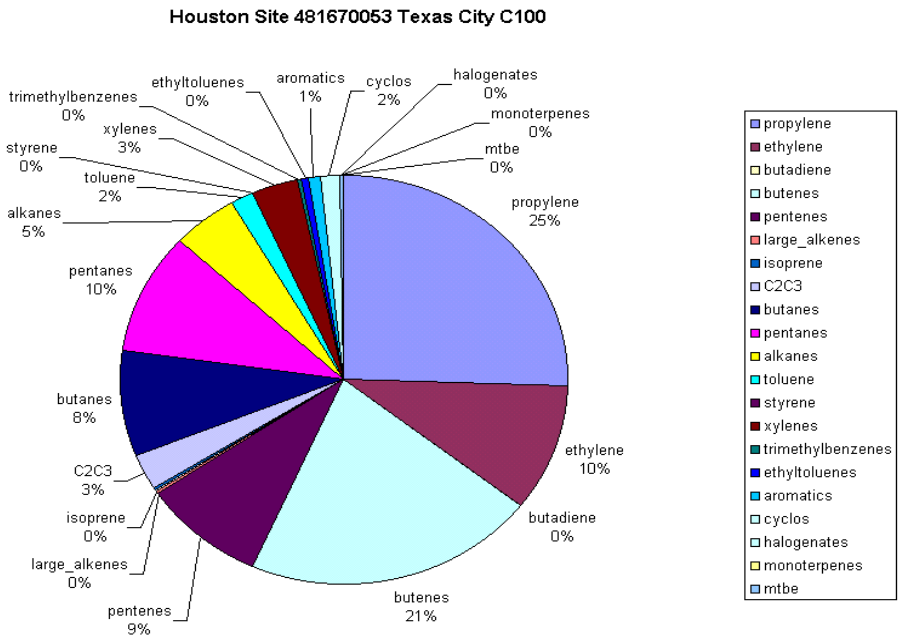
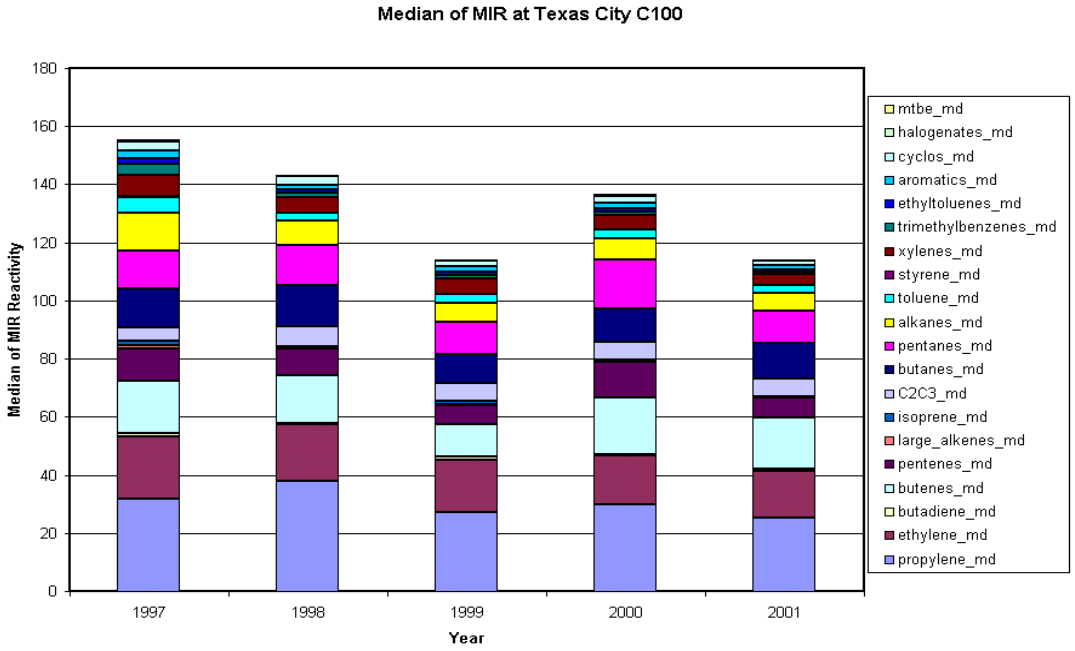
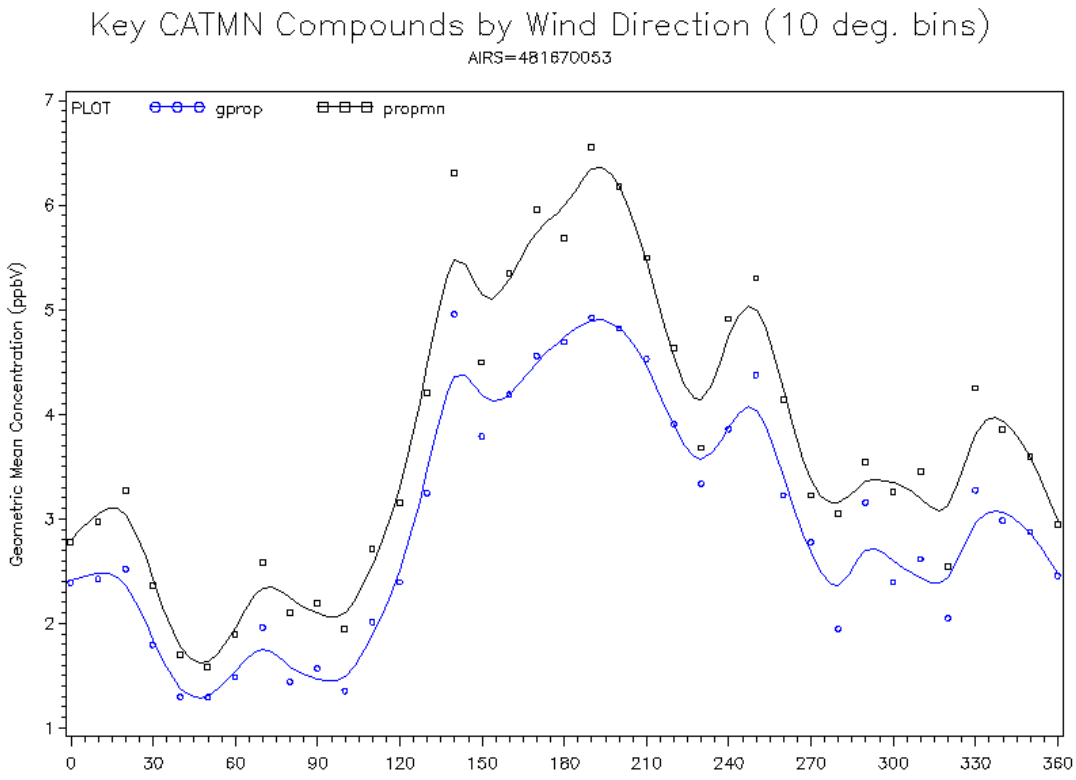
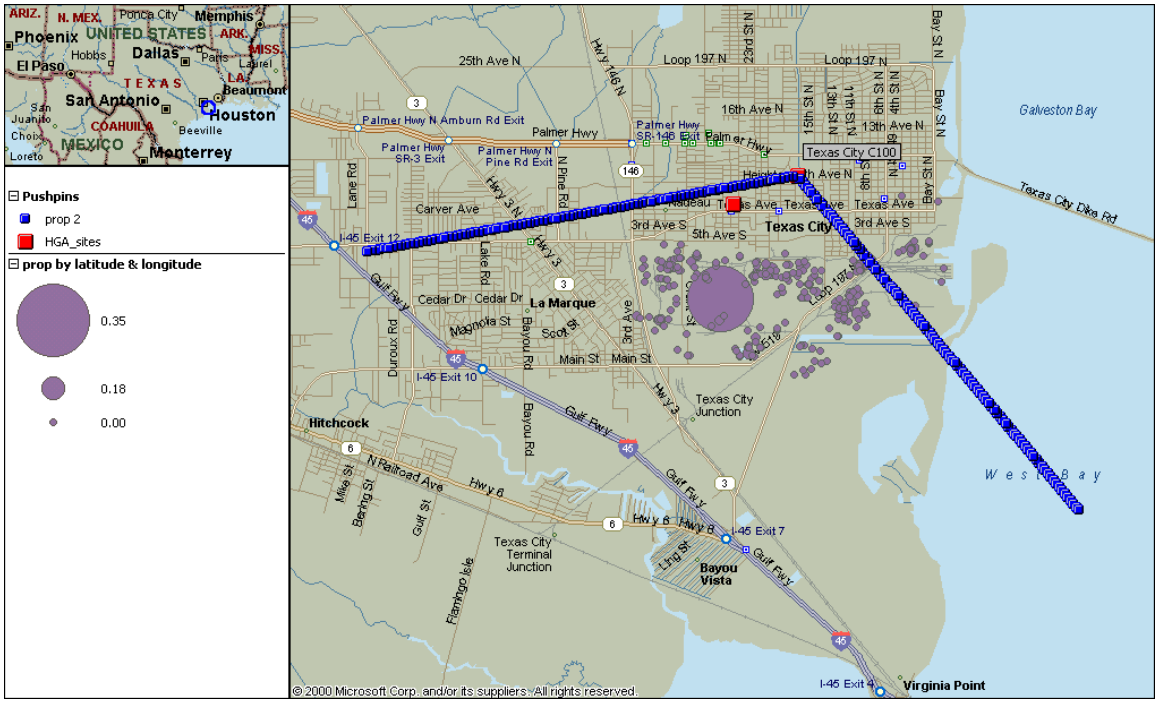

Houston Site 481670053 Texas City C100
propylene 25%
ethylene 10%
butadiene 0%
butenes 21%
pentenes 9%
large_alkenes 0%
isoprene 0%
C2C3 3%
butanes 8%
pentanes 10%
alkanes 5%
toluene 2%
styrene 0%
xylenes 3%
trimethylbenzenes 0%
ethyltoluenes 0%
aromatics 1%
cyclos 2%
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Texas City C100
Median of MIR Reactivity
180
160
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=481670053
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
1
2
3
4
5
6
7
0
30
60
90
120
150
180
210
240
270
300
330
360



ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
MISS.
Hobbs
Dallas
Paris
Laurel
El Paso
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Monterrey
Loreto
Pushpins
prop 2
HGA_sites
prop by latitude & longitude
0.35
0.18
0.00
25th Ave N
Loop 197 N
23rd St N
Bay St N
Galveston Bay
Palmer Hwy N Amburn Rd Exit
Palmer Hwy
Palmer Hwy SR-146 Exit
16th Ave N
15th St N
13th St N
11th St N
6th St N
4th St N
Texas City C100
Palmer Hwy SR-3 Exit
Palmer Hwy N Pine Rd Exit
N Pine Rd
Lane Rd
Carver Ave
Hwy 3 N
Texas Ave
3rd Ave S
5th Ave S
Texas City
Texas City Dike Rd
I-45 Exit 12
Lake Rd
Gulf Fwy
Cedar Dr
La Marque
Magnolia St
Scott St
3rd Ave
Main St
Duroux Rd
I-45 Exit 10
Bayou Rd
Hwy 3
Texas City Junction
Hitchcock
N Railroad Ave
Hwy 6
Mike St
Bering St
Gulf St
Texas City Terminal Junction
Flamingo Isle
I-45 Exit 7
Bayou Vista
Ling St
West Bay
I-45 Exit 4
Virginia Point
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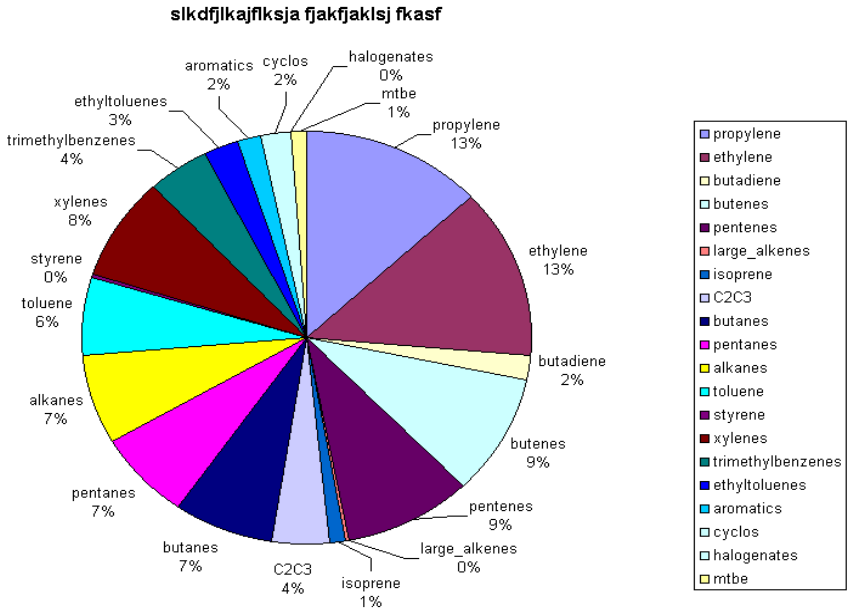
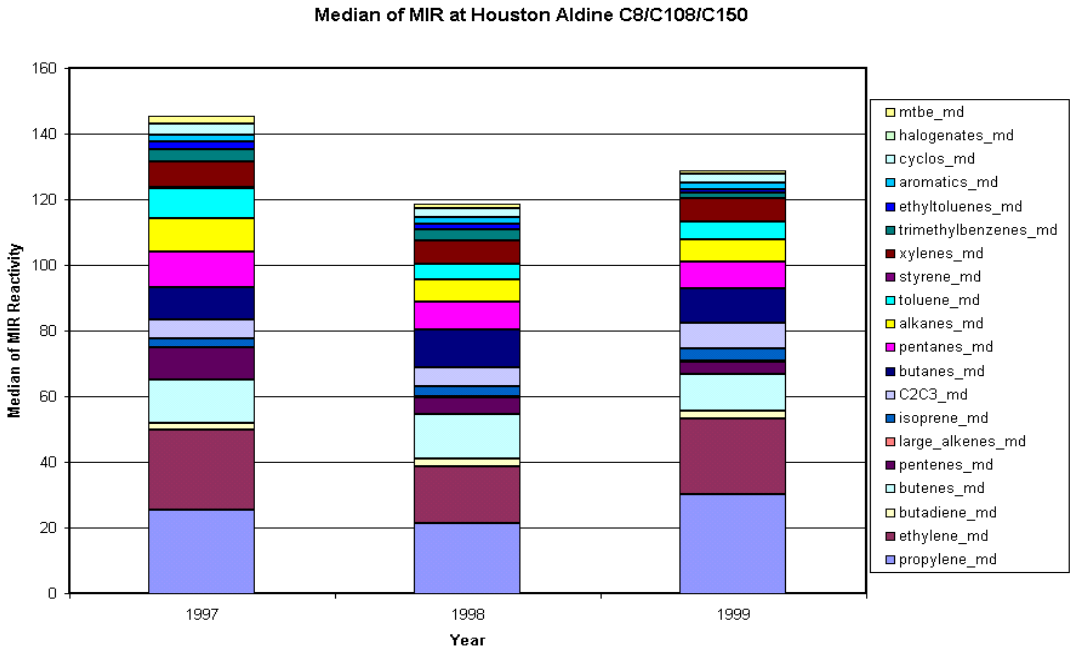
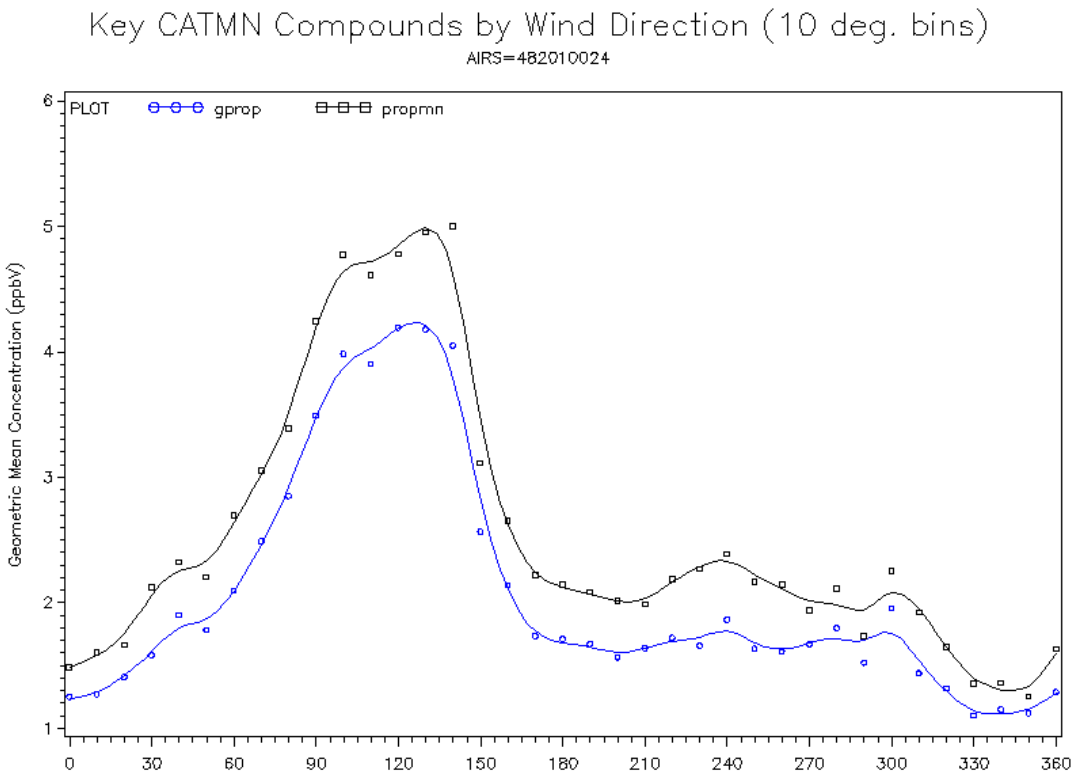
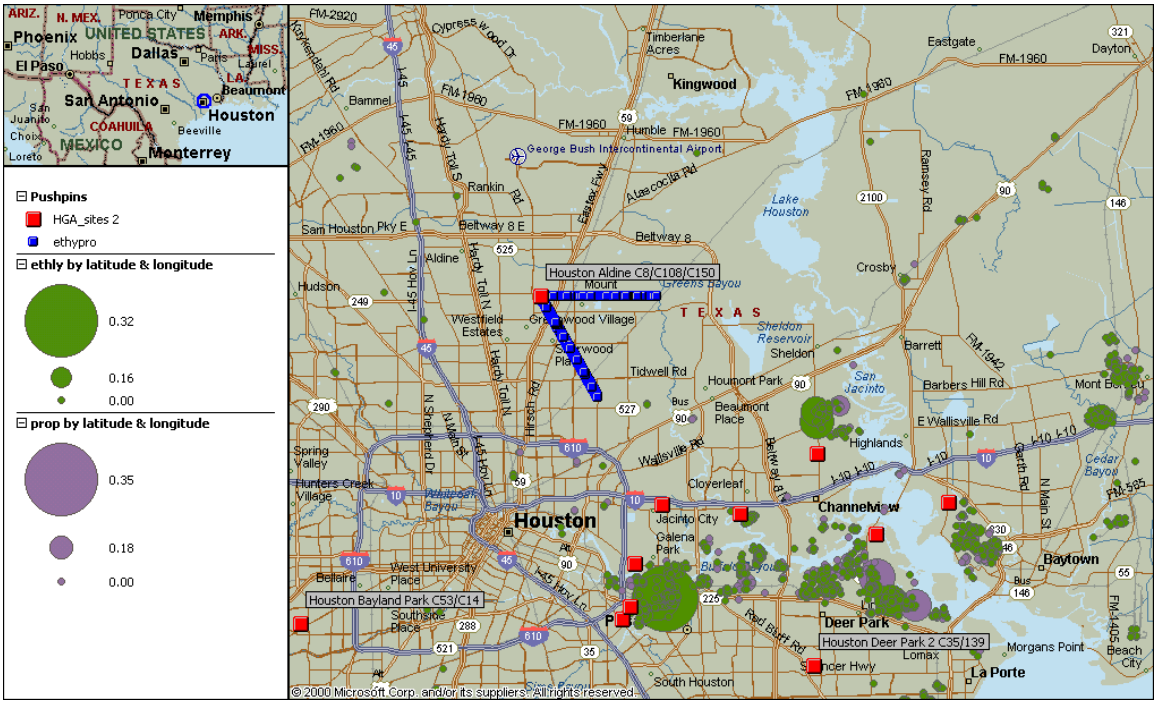

slkdfjlkajflksja fjakfjaklsj fkasf
propylene 13%
ethylene 13%
butadiene 2%
butenes 9%
pentenes 9%
large_alkenes 0%
isoprene 1%
C2C3 4%
butanes 7%
pentanes 7%
alkanes 7%
toluene 6%
styrene 0%
xylenes 8%
trimethylbenzenes 4%
ethyltoluenes 3%
aromatics 2%
cyclos 2%
halogenates 0%
mtbe 1%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
mtbe


Median of MIR at Houston Aldine C8/C108/C150
Median of MIR Reactivity
160
140
120
100
80
60
40
20
0
1997
1998
1999
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010024
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
1
2
3
4
5
6
0
30
60
90
120
150
180
210
240
270
300
330
360



Pushpins
HGA_sites 2
ethypro
ethly by latitude & longitude
0.32
0.16
0.00
prop by latitude & longitude
0.35
0.18
0.00
Houston Aldine C8/C108/C150
Houston Bayland Park C53/C14
Houston Deer Park 2 C35/139
Houston
Kingwood
Channelview
Deer Park
Baytown
La Porte
Lake Houston
Sheldon Reservoir
San Jacinto
Cedar Bayou
Whiteoak Bayou
Greens Bayou
George Bush Intercontinental Airport
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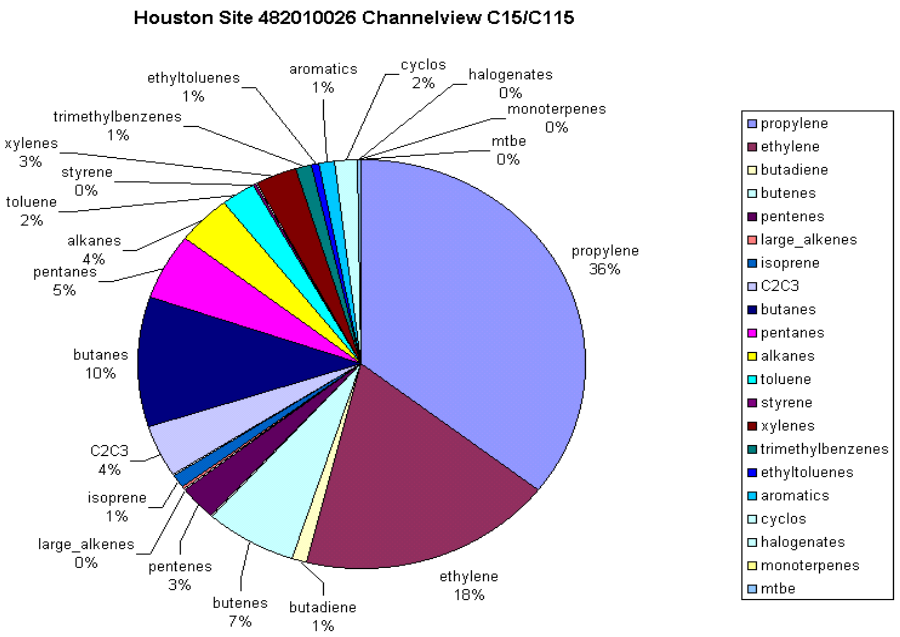
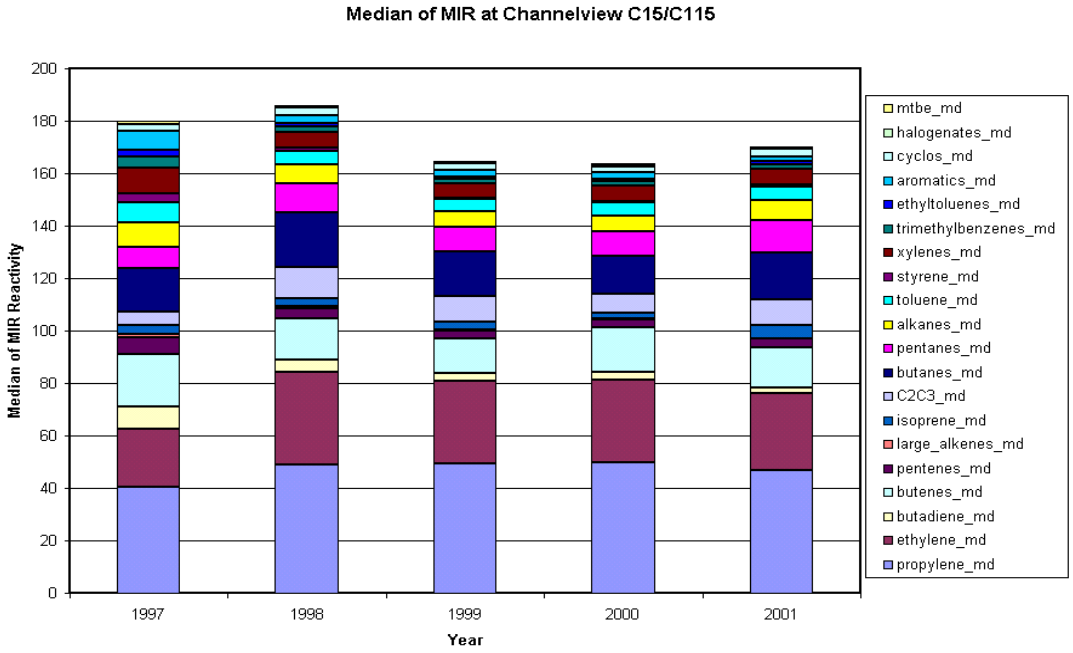
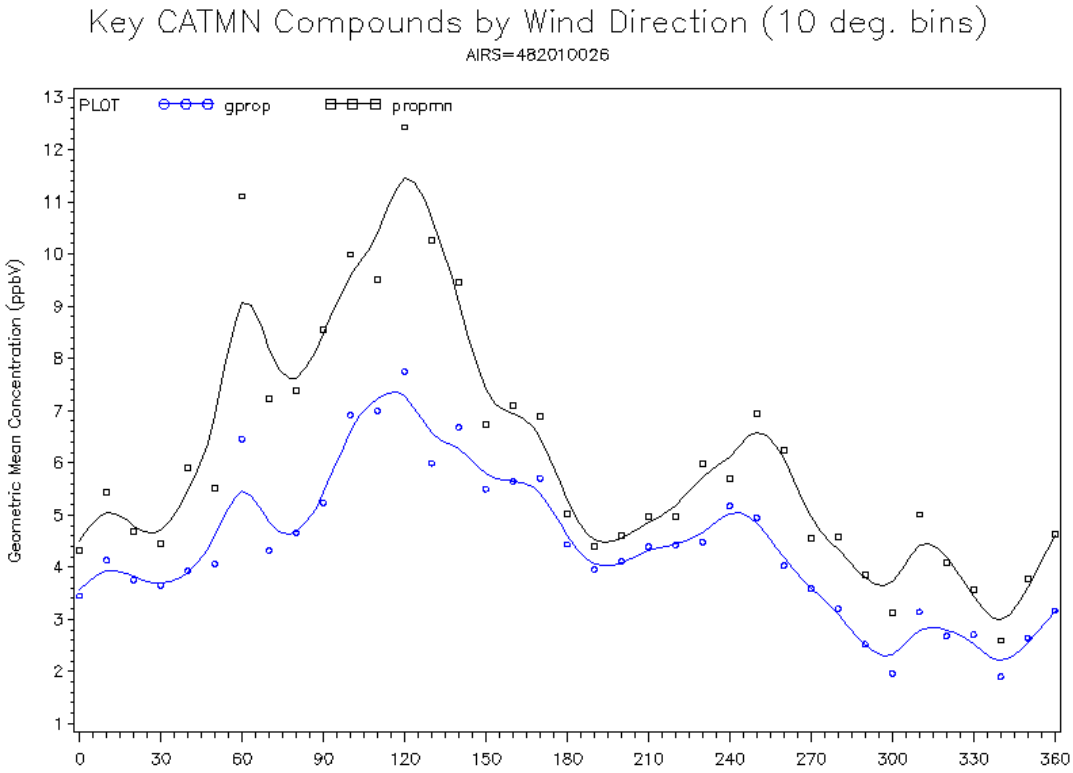
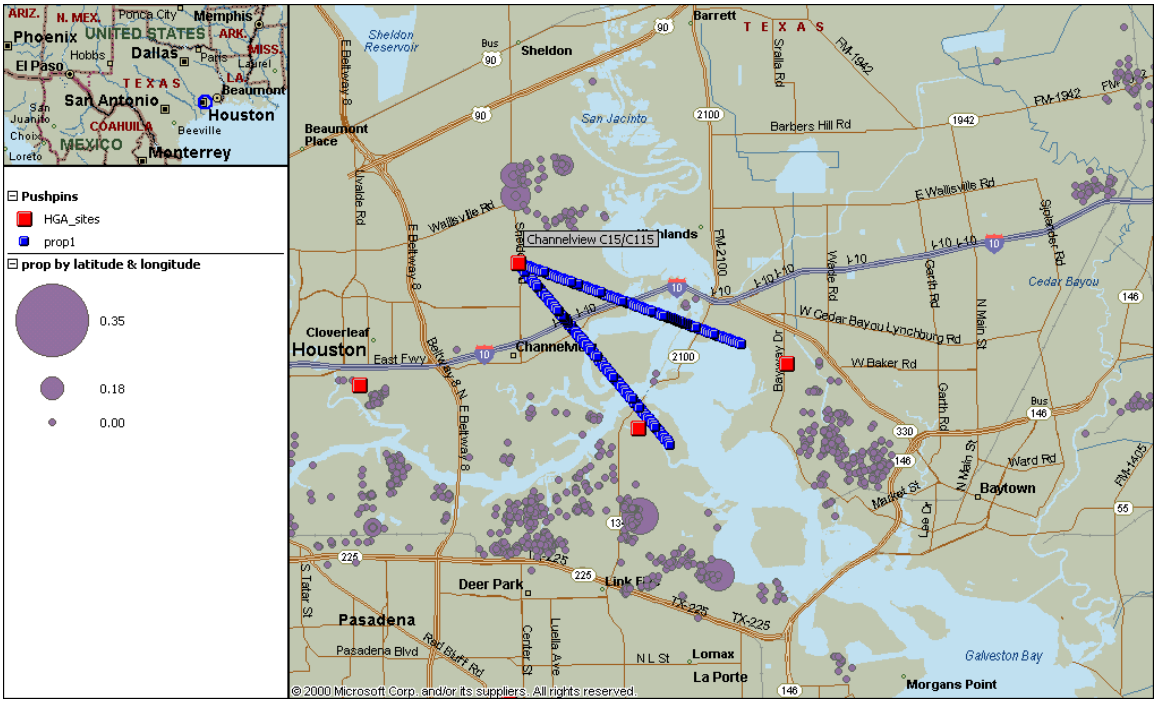

Houston Site 482010026 Channelview C15/C115
propylene 36%
ethylene 18%
butadiene 1%
butenes 7%
pentenes 3%
large_alkenes 0%
isoprene 1%
C2C3 4%
butanes 10%
pentanes 5%
alkanes 4%
toluene 2%
styrene 0%
xylenes 3%
trimethylbenzenes 1%
ethyltoluenes 1%
aromatics 1%
cyclos 2%
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Channelview C15/C115
Median of MIR Reactivity
200
180
160
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010026
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
1
2
3
4
5
6
7
8
9
10
11
12
13
0
30
60
90
120
150
180
210
240
270
300
330
360



Pushpins
HGA_sites
prop1
prop by latitude & longitude
0.35
0.18
0.00
Channelview C15/C115
Sheldon
Barrett
Beaumont Place
Cloverleaf
Houston
Channelview
Deer Park
Pasadena
Lomax
La Porte
Baytown
Morgans Point
Galveston Bay
Cedar Bayou
San Jacinto
Sheldon Reservoir
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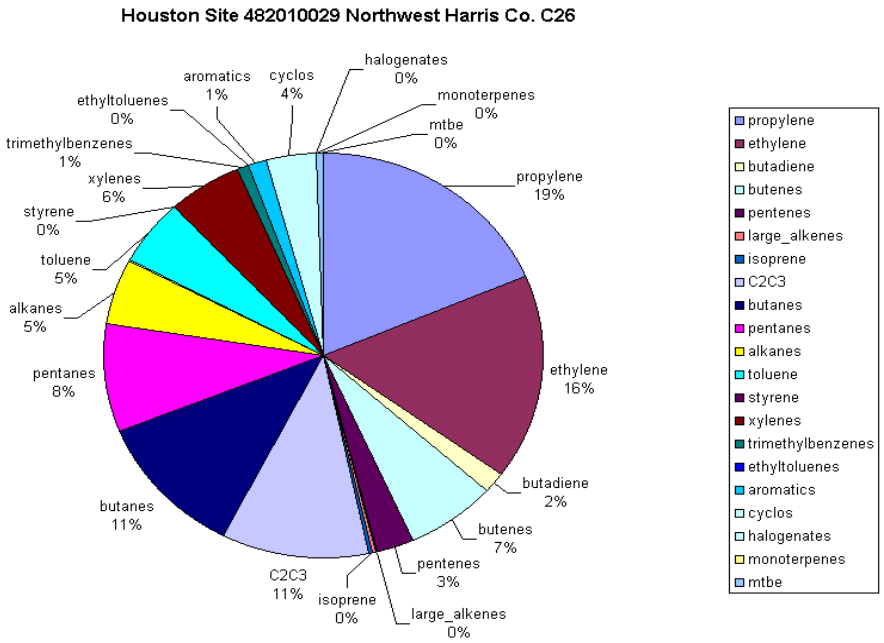
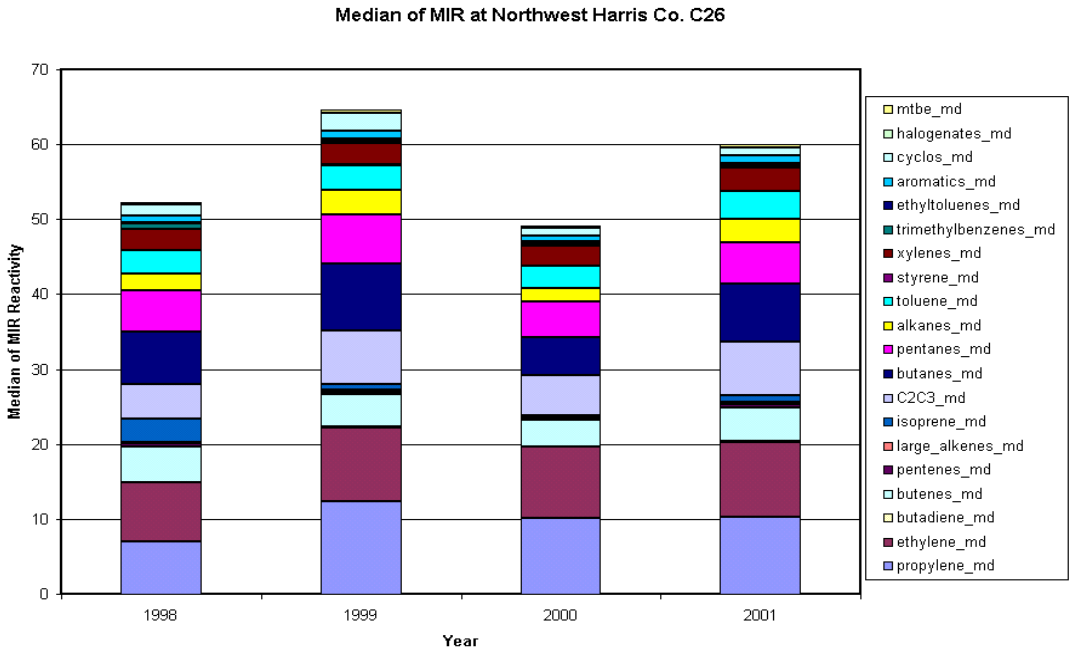
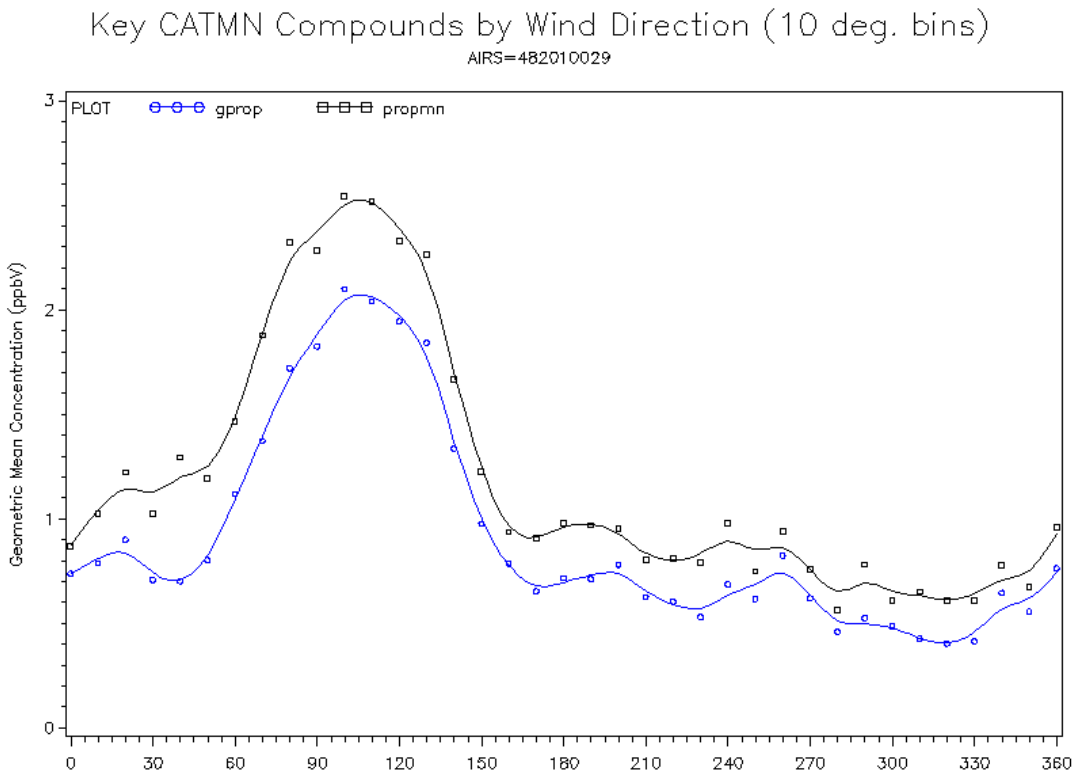
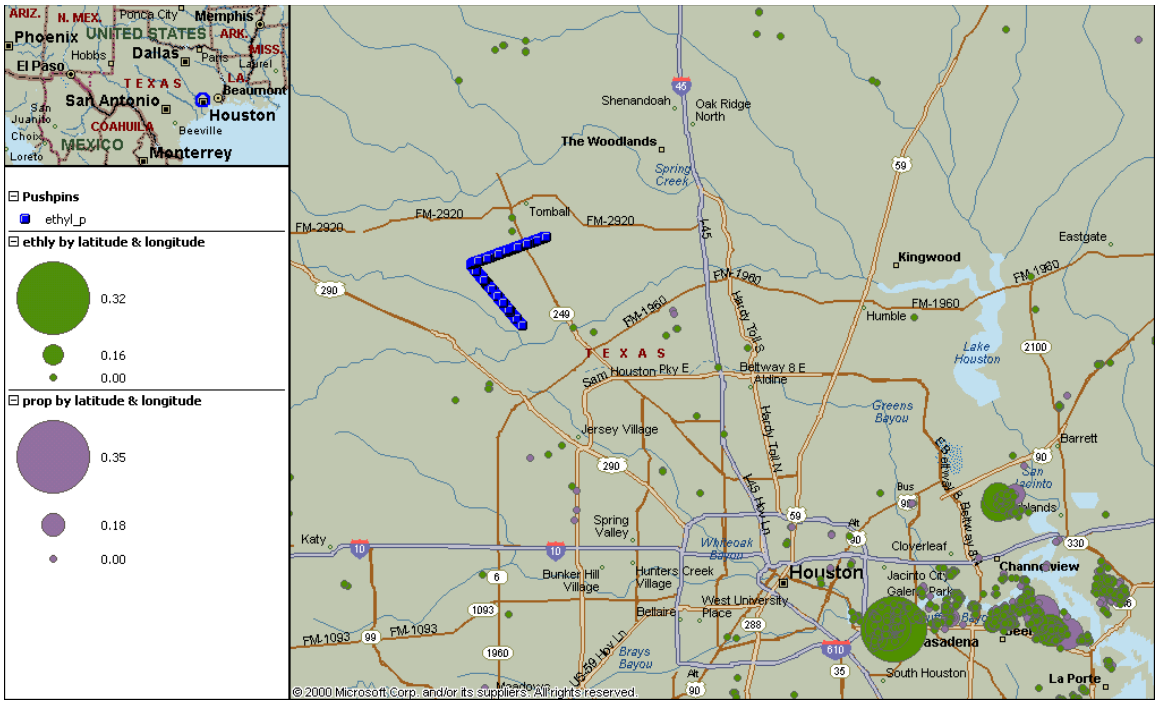

Houston Site 482010029 Northwest Harris Co. C26
halogenates 0%
monoterpenes 0%
mtbe 0%
propylene 19%
ethylene 16%
butadiene 2%
butenes 7%
pentenes 3%
large_alkenes 0%
isoprene 0%
C2C3 11%
butanes 11%
pentanes 8%
alkanes 5%
toluene 5%
styrene 0%
xylenes 6%
trimethylbenzenes 1%
ethyltoluenes 0%
aromatics 1%
cyclos 4%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Northwest Harris Co. C26
Median of MIR Reactivity
70
60
50
40
30
20
10
0
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010029
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
0
1
2
3
0
30
60
90
120
150
180
210
240
270
300
330
360



ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
MISS.
Hobbs
Dallas
Paris
Laurel
El Paso
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Chobo
MEXICO
Loreto
Monterrey
Pushpins
ethyl_p
ethly by latitude & longitude
0.32
0.16
0.00
prop by latitude & longitude
0.35
0.18
0.00
Shenandoah
Oak Ridge North
The Woodlands
Spring Creek
Tomball
FM-2920
FM-1960
Kingwood
Eastgate
Humble
Lake Houston
TEXAS
Sam Houston Pky E
Beltway 8 E
Aldine
Greens Bayou
Jersey Village
Barrett
San Jacinto
Spring Valley
Whiteoak Bayou
Cloverleaf
Katy
Bunker Hill Village
Hunters Creek Village
Houston
Jacinto City
Galena Park
Channelview
West University Place
Bellaire
Brays Bayou
South Houston
La Porte
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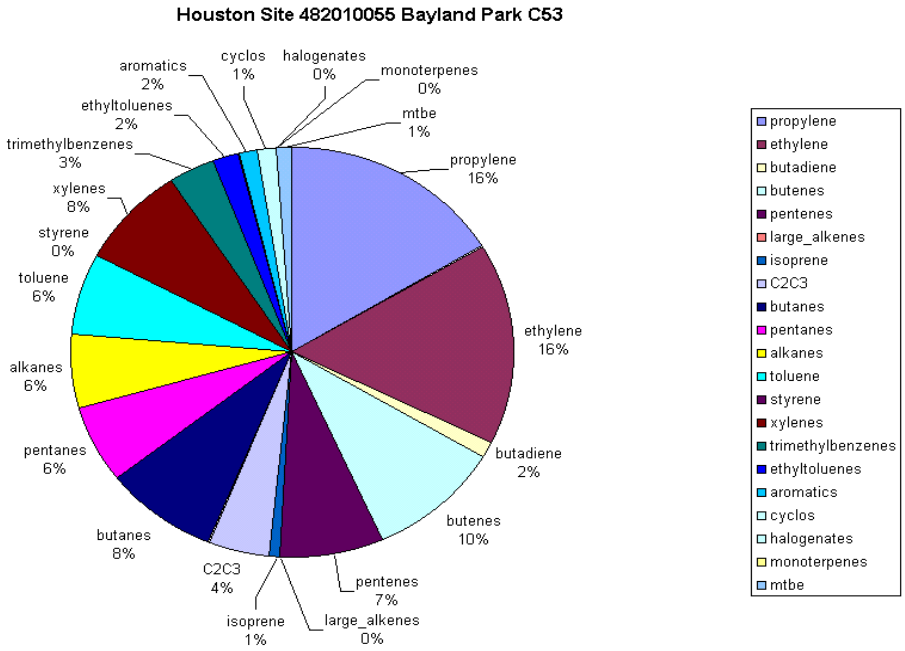
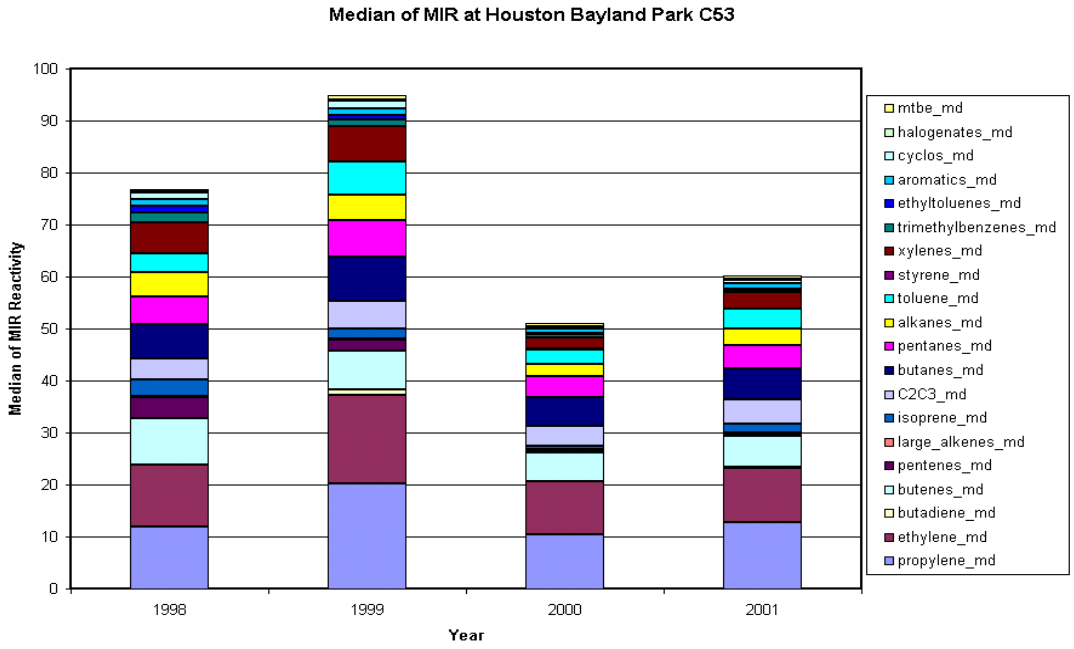
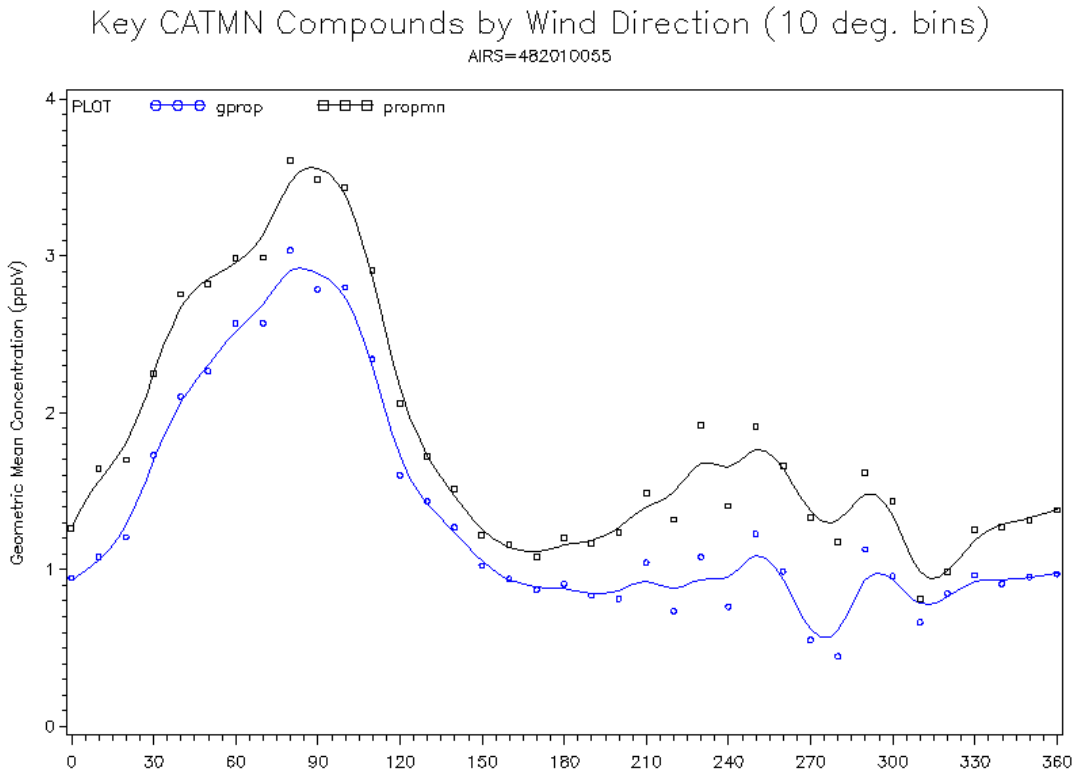
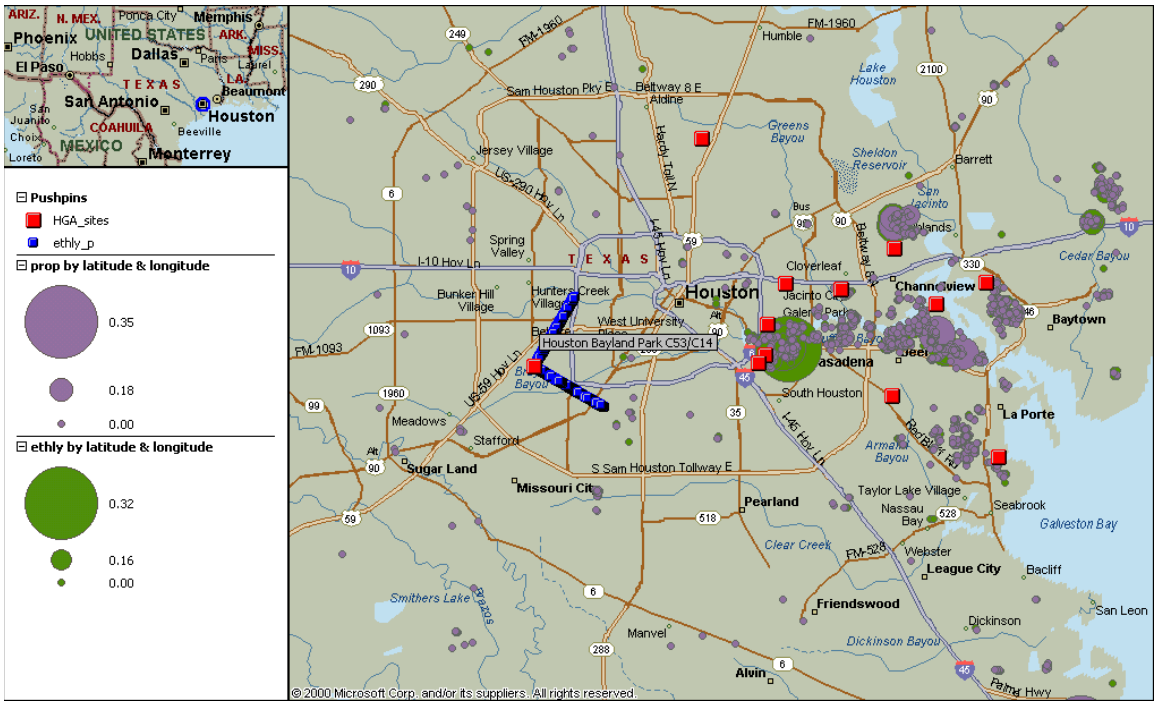

Houston Site 482010055 Bayland Park C53
aromatics 2%
cyclos 1%
halogenates 0%
monoterpenes 0%
ethyltoluenes 2%
mtbe 1%
trimethylbenzenes 3%
propylene 16%
xylenes 8%
styrene 0%
toluene 6%
ethylene 16%
alkanes 6%
pentanes 6%
butadiene 2%
butenes 10%
butanes 8%
C2C3 4%
pentenes 7%
isoprene 1%
large_alkenes 0%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Houston Bayland Park C53
Median of MIR Reactivity
100
90
80
70
60
50
40
30
20
10
0
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010055
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
0
1
2
3
4
0
30
60
90
120
150
180
210
240
270
300
330
360


ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
Hobbs
Dallas
Paris
MISS.
El Paso
Laurel
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Loreto
Monterrey
Pushpins
HGA_sites
ethly_p
prop by latitude & longitude
0.35
0.18
0.00
ethly by latitude & longitude
0.32
0.16
0.00
Humble
FM-1960
Lake Houston
Sam Houston Pky E
Beltway 8 E
Aldine
Greens Bayou
Sheldon Reservoir
Jersey Village
Barrett
US-290 Hov Ln
Hardy Toll N
San Jacinto
Spring Valley
I-45 Hov Ln
TEXAS
Cloverleaf
Cedar Bayou
I-10 Hov Ln
Bunker Hill Village
Hunters Creek Village
Houston
Jacinto City
Galena Park
Channelview
Baytown
West University Place
Houston Bayland Park C53/C14
FM 1093
Pasadena
Jeff
US-59 Hov Ln
South Houston
La Porte
Meadows
Stafford
Armand Bayou
Sugar Land
S Sam Houston Tollway E
Missouri City
Taylor Lake Village
Pearland
Nassau Bay
Seabrook
Galveston Bay
Clear Creek
FM-528
Webster
League City
Bacliff
Smithers Lake
Bayou
Friendswood
San Leon
Dickinson
Manvel
Dickinson Bayou
Alvin
Palma Hwy
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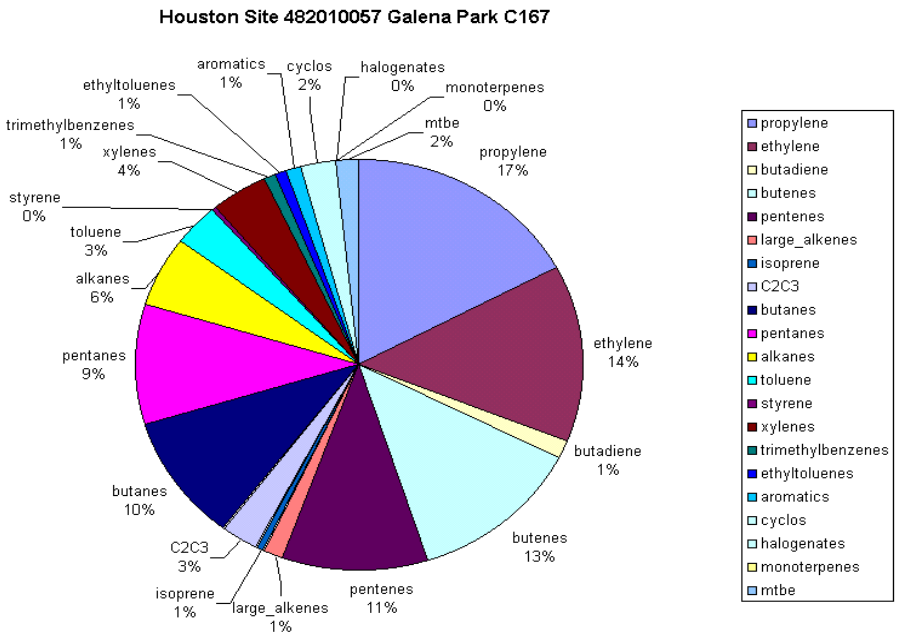
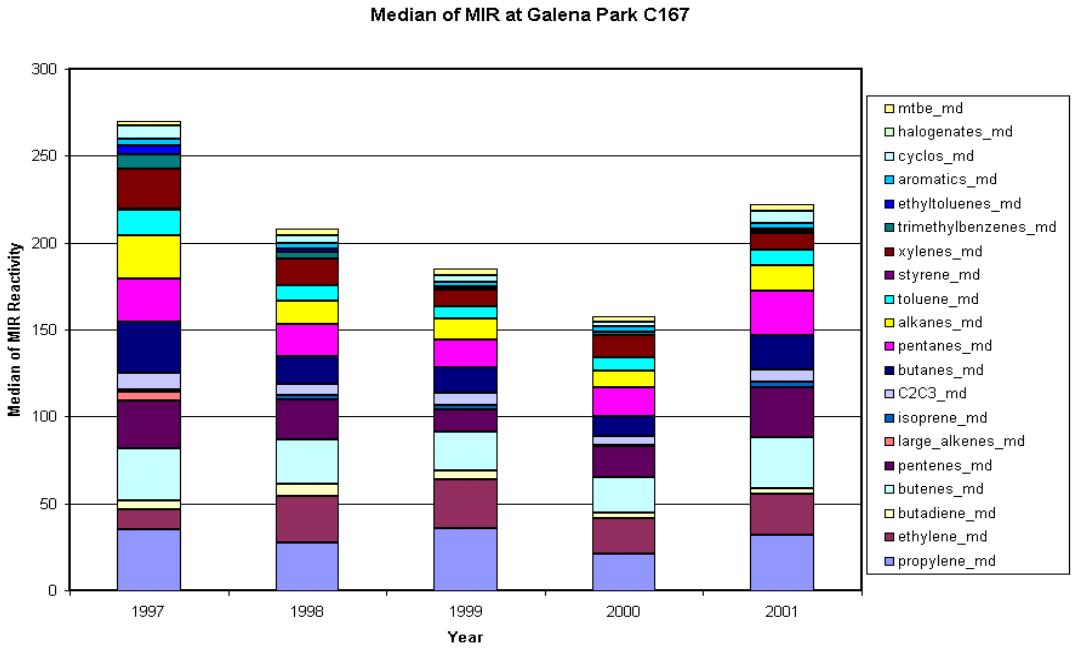
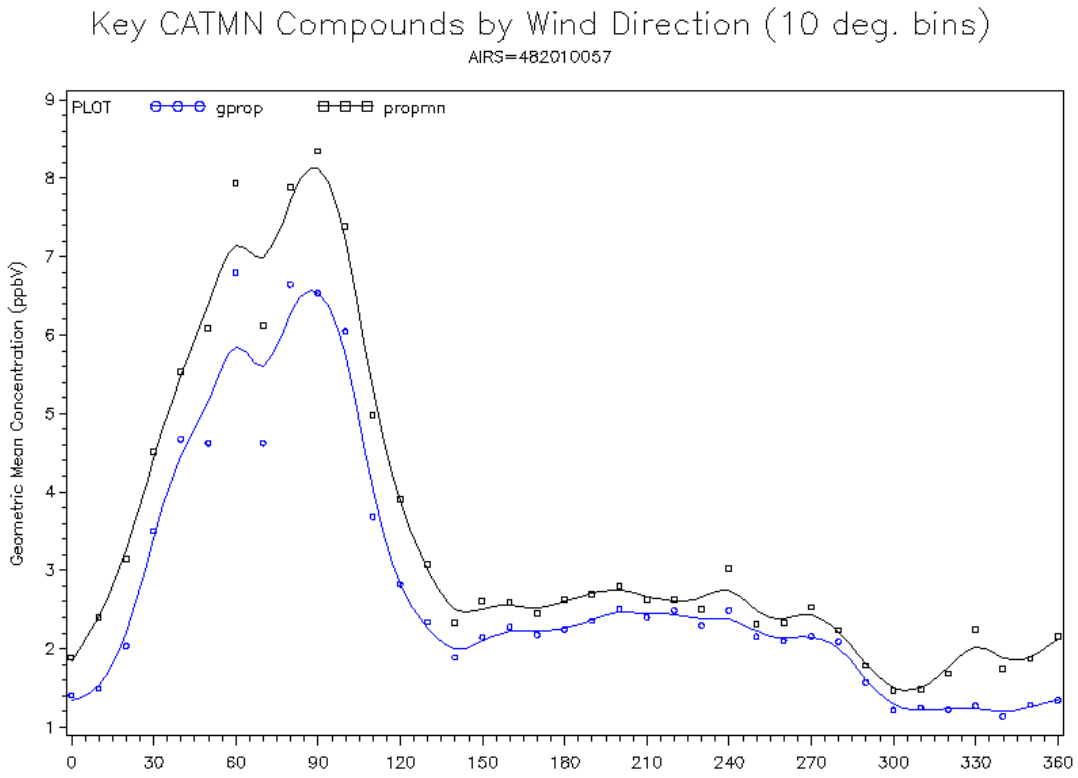
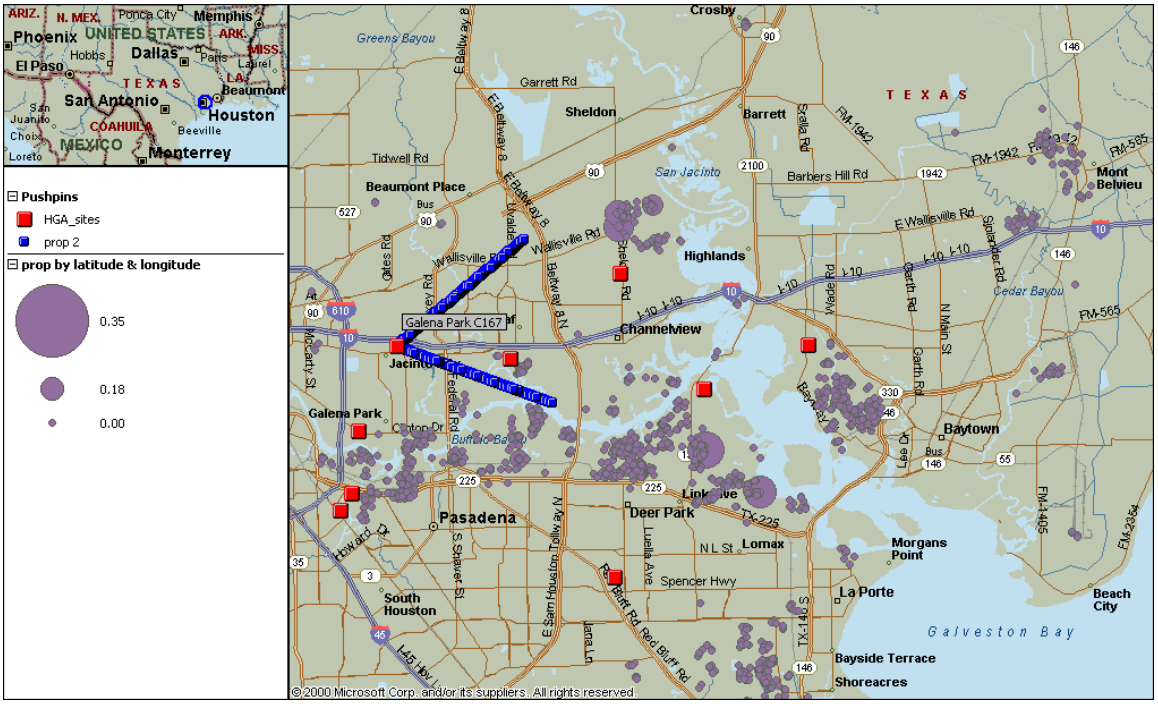

Houston Site 482010057 Galena Park C167
aromatics 1%
cyclos 2%
halogenates 0%
monoterpenes 0%
mtbe 2%
propylene 17%
ethylene 14%
butadiene 1%
butenes 13%
pentenes 11%
large_alkenes 1%
isoprene 1%
C2C3 3%
butanes 10%
pentanes 9%
alkanes 6%
toluene 3%
styrene 0%
xylenes 4%
trimethylbenzenes 1%
ethyltoluenes 1%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Galena Park C167
Median of MIR Reactivity
300
250
200
150
100
50
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010057
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
9
8
7
6
5
4
3
2
1
0
30
60
90
120
150
180
210
240
270
300
330
360



Pushpins
HGA_sites
prop 2
prop by latitude & longitude
0.35
0.18
0.00
Galena Park C167
Galena Park
Jacinto
Pasadena
Deer Park
Channelview
Highlands
Sheldon
Barrett
Crosby
Baytown
Lomax
Morgans Point
La Porte
Bayside Terrace
Shoreacres
Beach City
Mont Belvieu
Galveston Bay
Greens Bayou
San Jacinto
Cedar Bayou
Buffalo Bayou
Beaumont Place
Galena Park
South Houston
Tidwell Rd
Garrett Rd
Wallisville Rd
Barbers Hill Rd
E Wallisville Rd
Spencer Hwy
N L St
Clinton Dr
Howard Dr
Red Bluff Rd
Luella Ave
Wade Rd
Garth Rd
N Main St
Lee Dr
Bayway
Sralla Rd
Spiller Rd
Gates Rd
McCarty St
Federal Rd
S Shaver St
E Sam Houston Tollway N
Jana Ln
Hwy 8
Beltway 8
Beltway 8 N
Sheldon Rd
Crosby
Mont Belvieu
Baytown
Pasadena
Deer Park
Lomax
Morgans Point
La Porte
Beach City
Bayside Terrace
Shoreacres
Galveston Bay
TEXAS
UNITED STATES
MEXICO
Phoenix
Dallas
San Antonio
Houston
Monterrey
Memphis
El Paso
Beaumont
Beeville
Ponca City
Hobbs
Paris
Laurel
Loreto
Choix
San Juanito
Chaco
ARIZ.
N. MEX.
ARK.
MISS.
LA.
COAHUILA
TEXAS
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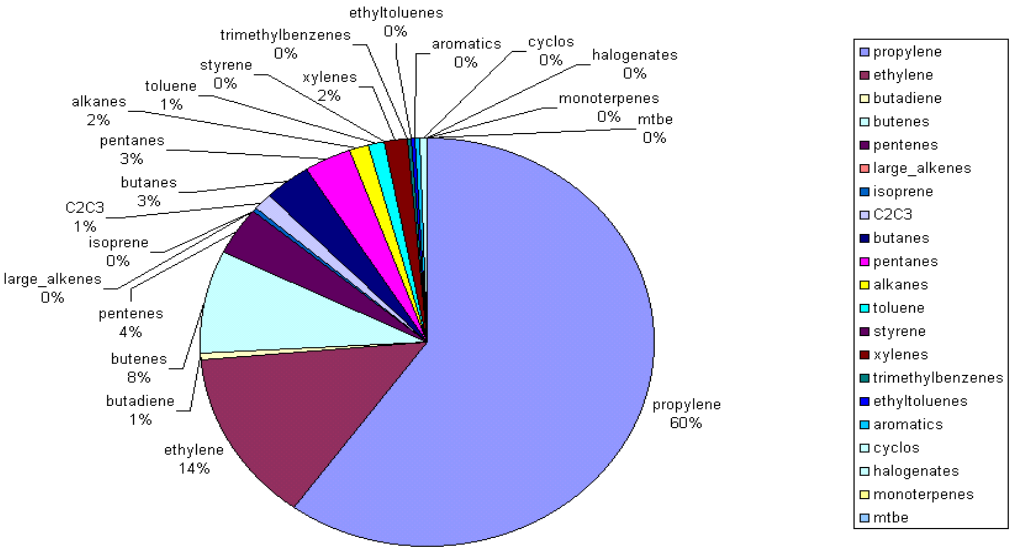
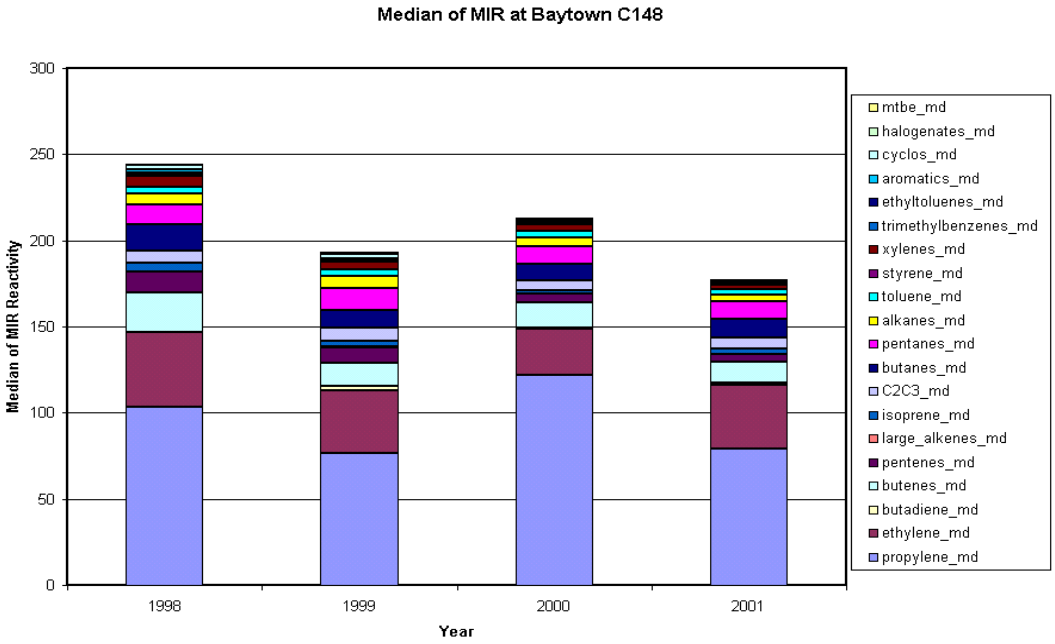
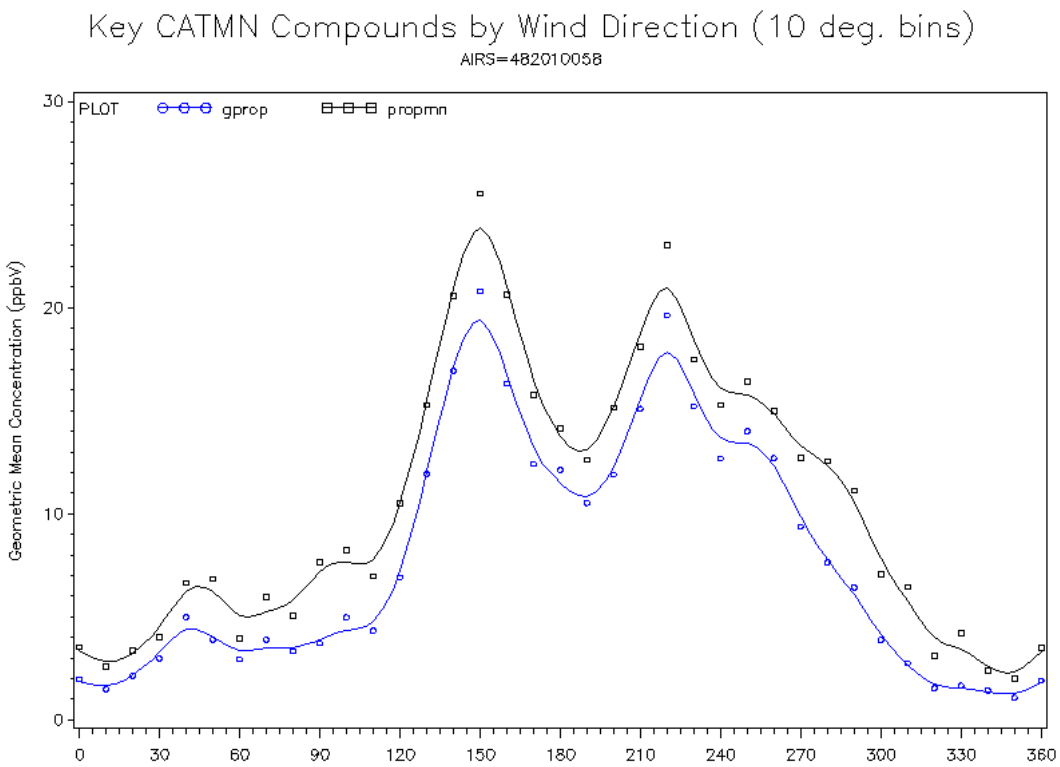
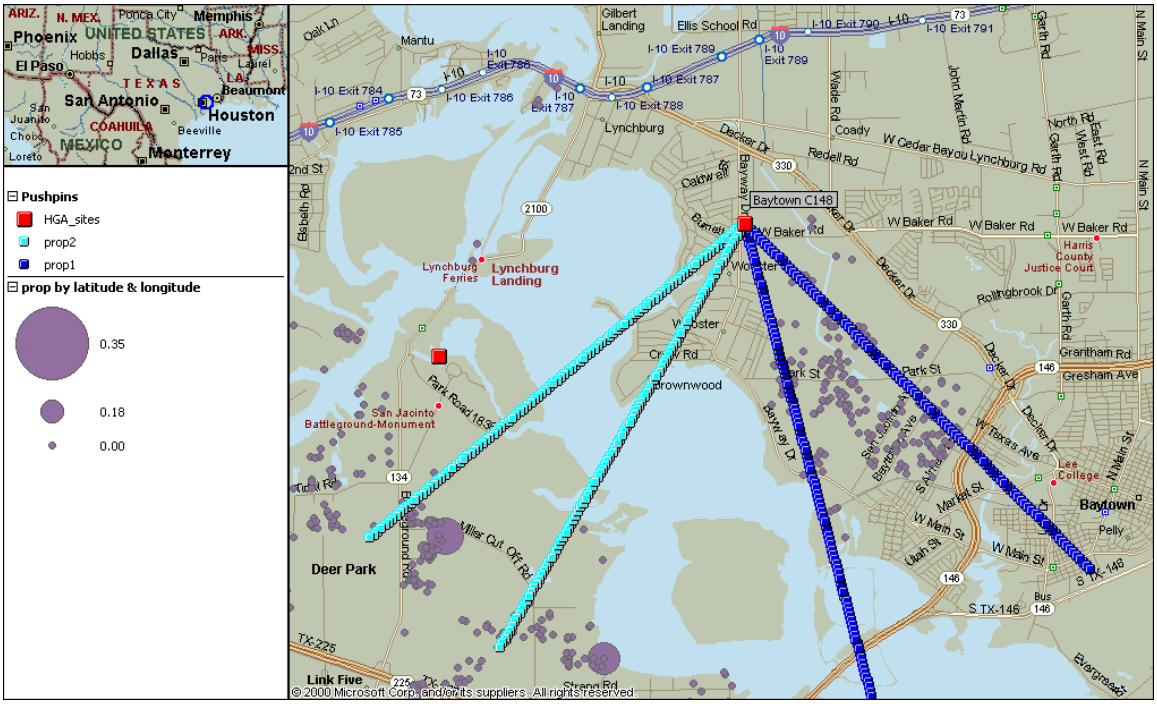
Houston Site 482010058 Baytown C148




Median of MIR at Baytown C148
Median of MIR Reactivity
300
250
200
150
100
50
0
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010058
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
0
10
20
30
0
30
60
90
120
150
180
210
240
270
300
330
360



Pushpins
HGA_sites
prop2
prop1
prop by latitude & longitude
0.35
0.18
0.00
Baytown C148
Lynchburg Landing
Lynchburg Ferries
San Jacinto Battleground-Monument
Harris County Justice Court
Lee College
Deer Park
Baytown
Link Five
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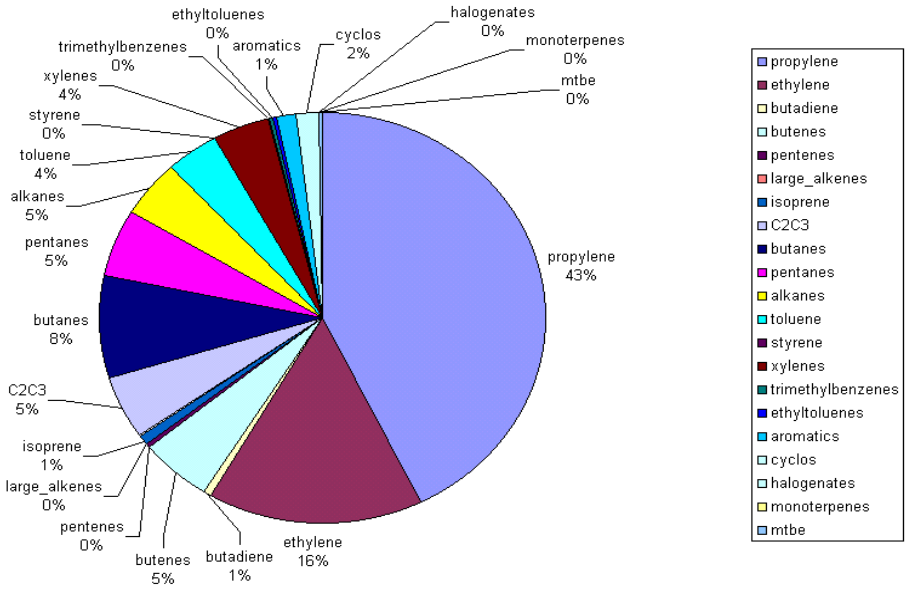
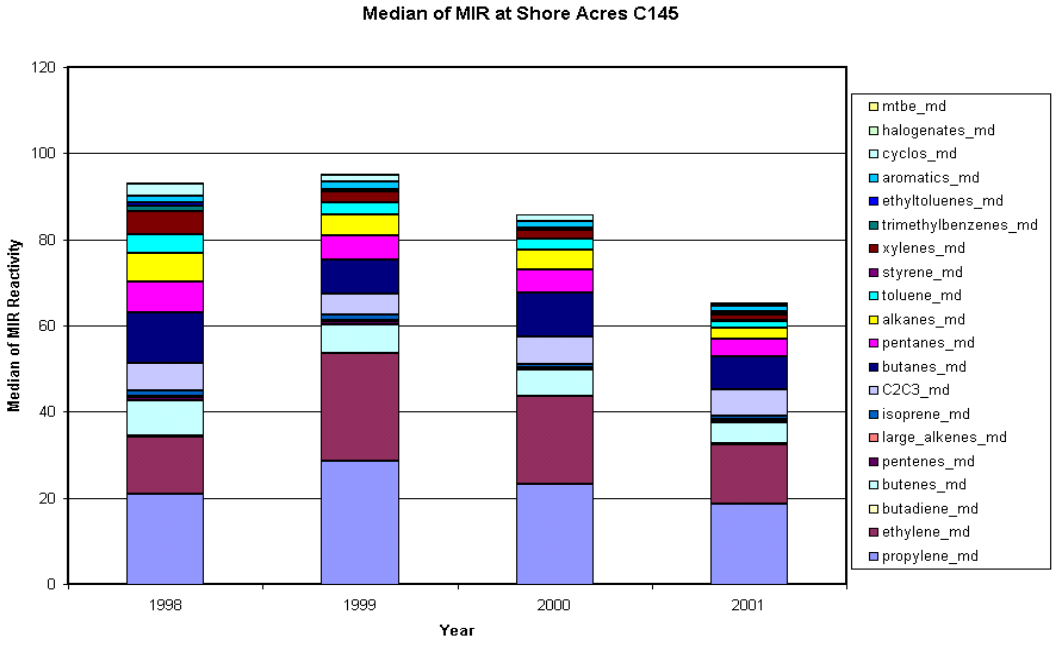
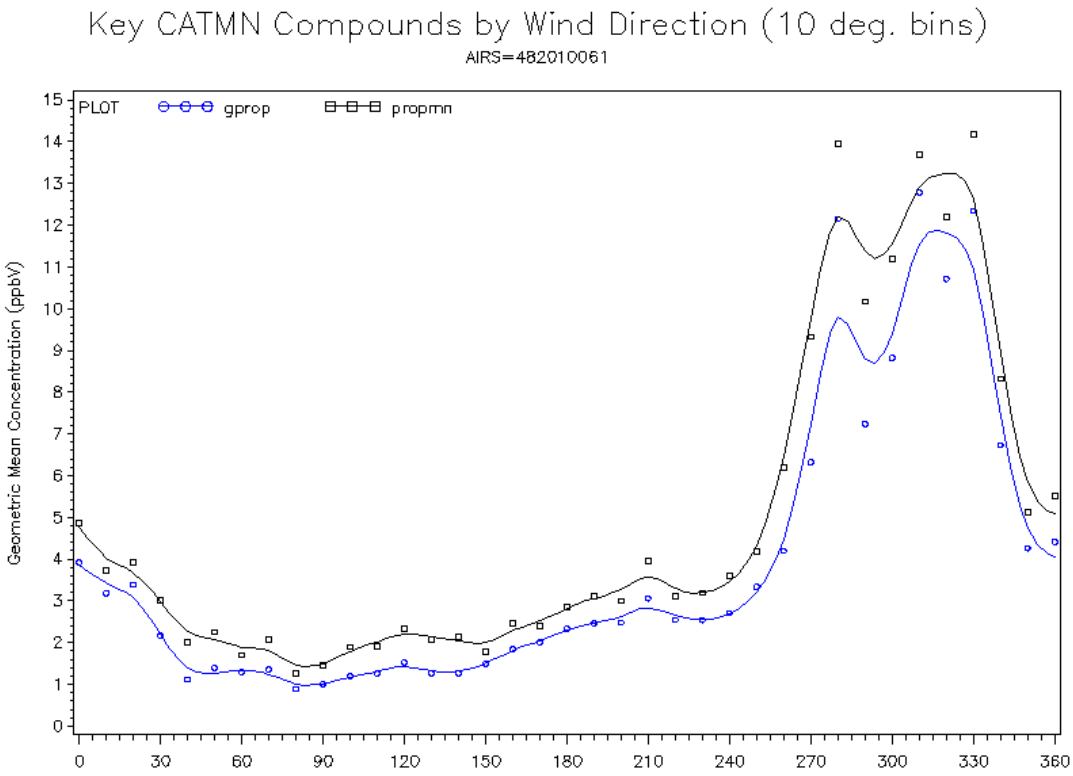
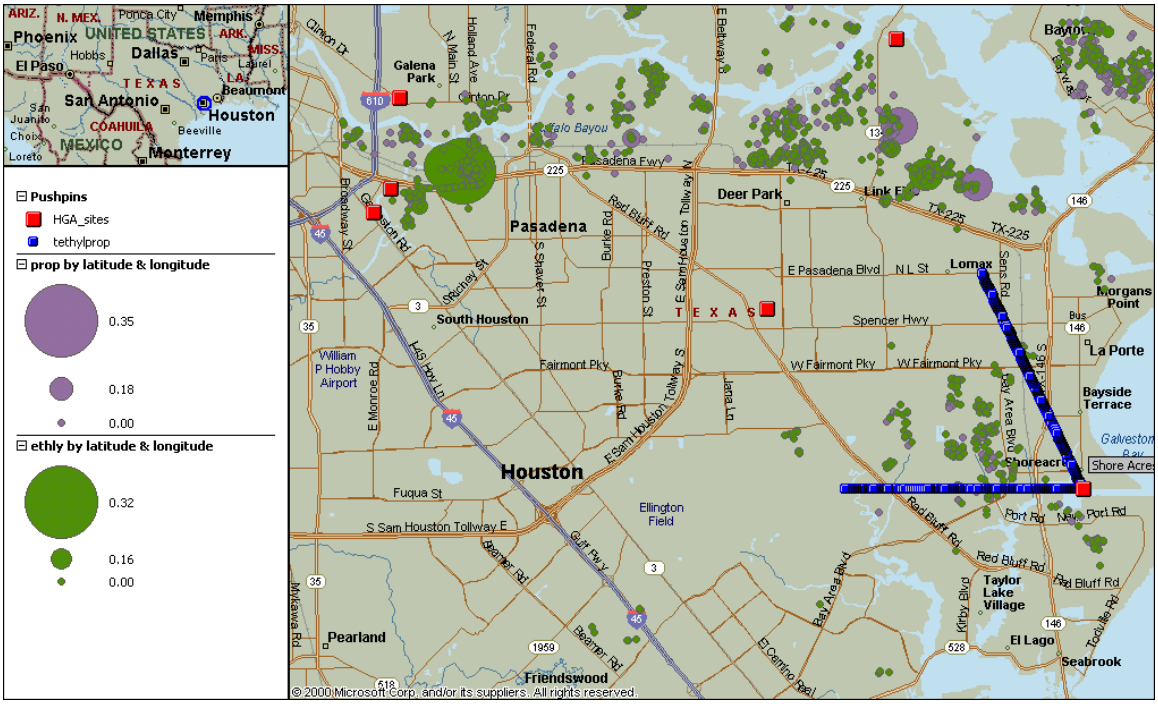
Houston Site 482010061 Shore Acres C145




Median of MIR at Shore Acres C145
Median of MIR Reactivity
Year
0
20
40
60
80
100
120
1998
1999
2000
2001
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010061
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
30
60
90
120
150
180
210
240
270
300
330
360



Pushpins
HGA_sites
tethylprop
prop by latitude & longitude
0.35
0.18
0.00
ethly by latitude & longitude
0.32
0.16
0.00
Phoenix
UNITED STATES
Dallas
El Paso
San Antonio
Houston
Beaumont
Memphis
Monterrey
MEXICO
Pasadena
Deer Park
Lomax
Morgans Point
La Porte
Bayside Terrace
Shoreacres
Galena Park
South Houston
William P Hobby Airport
Houston
Ellington Field
Pearland
Friendswood
Taylor Lake Village
El Lago
Seabrook
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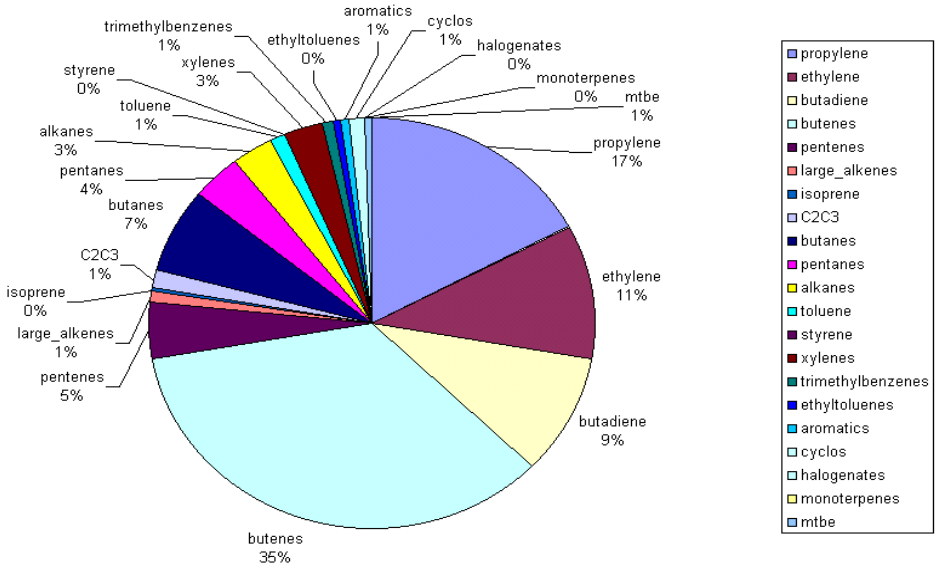
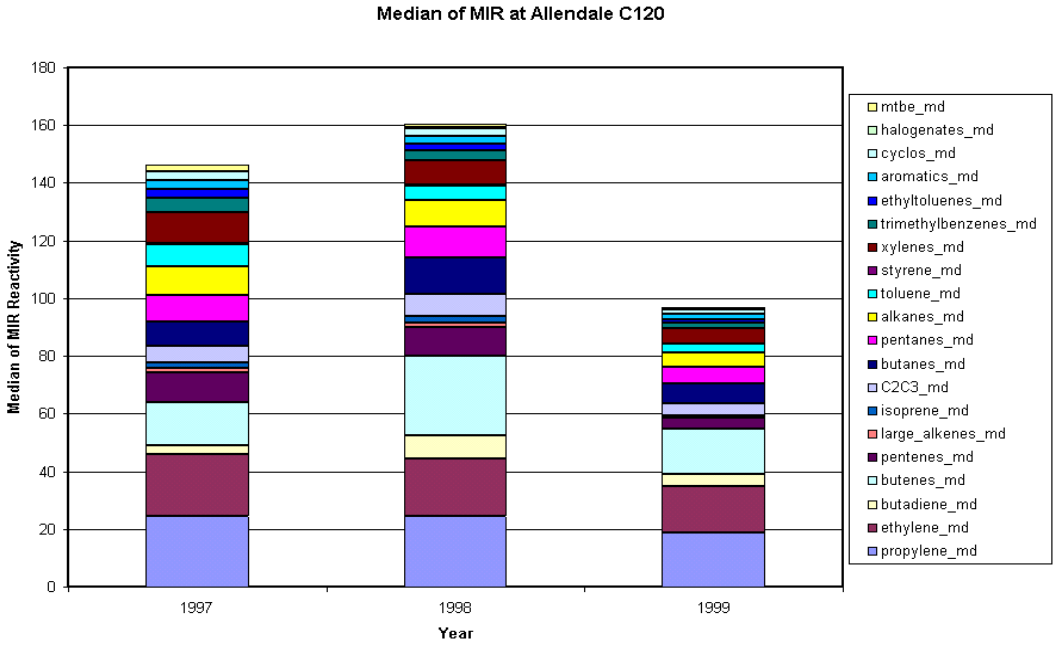
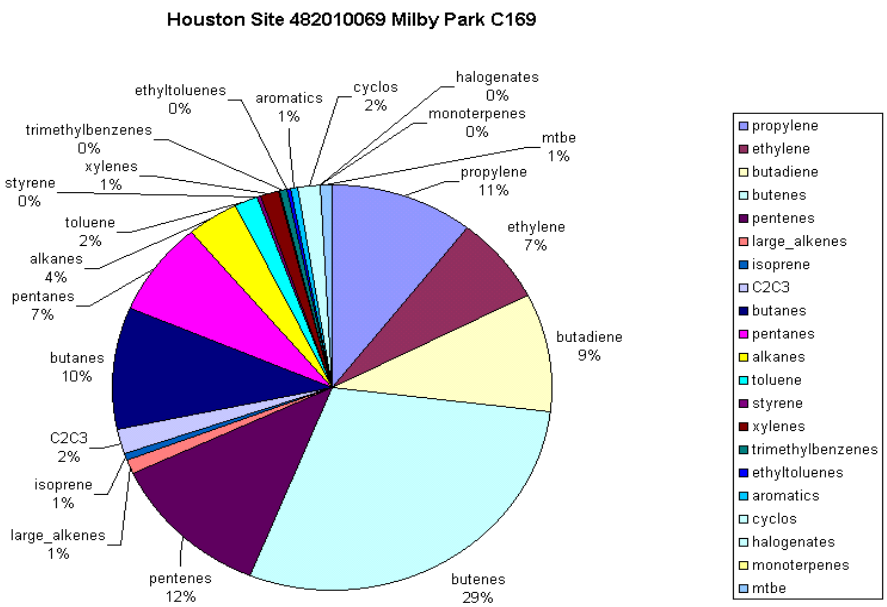
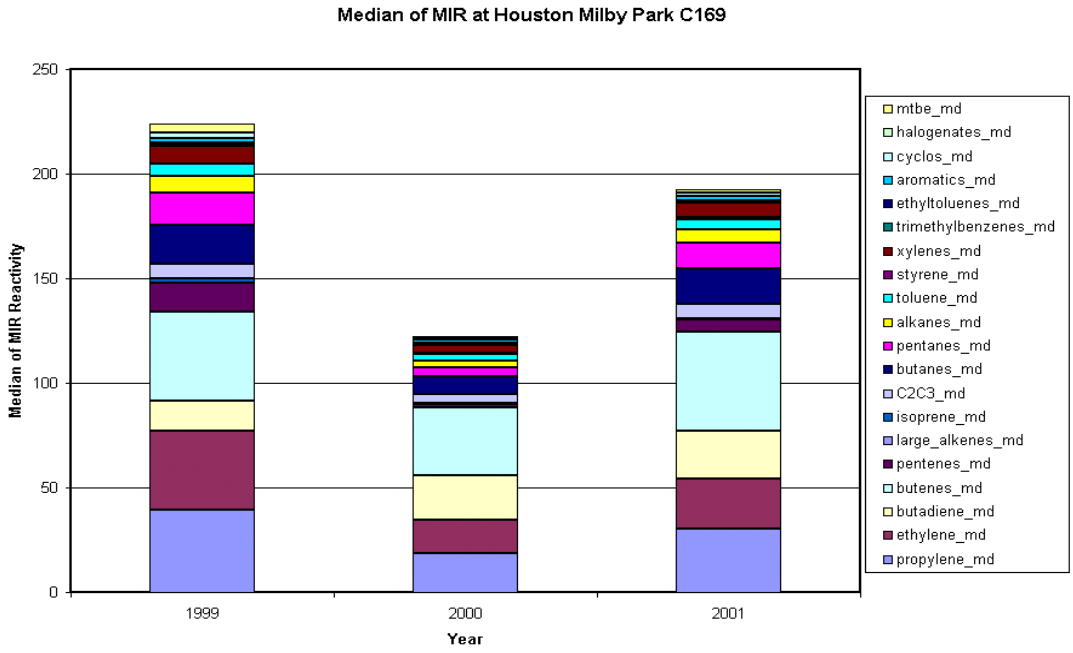
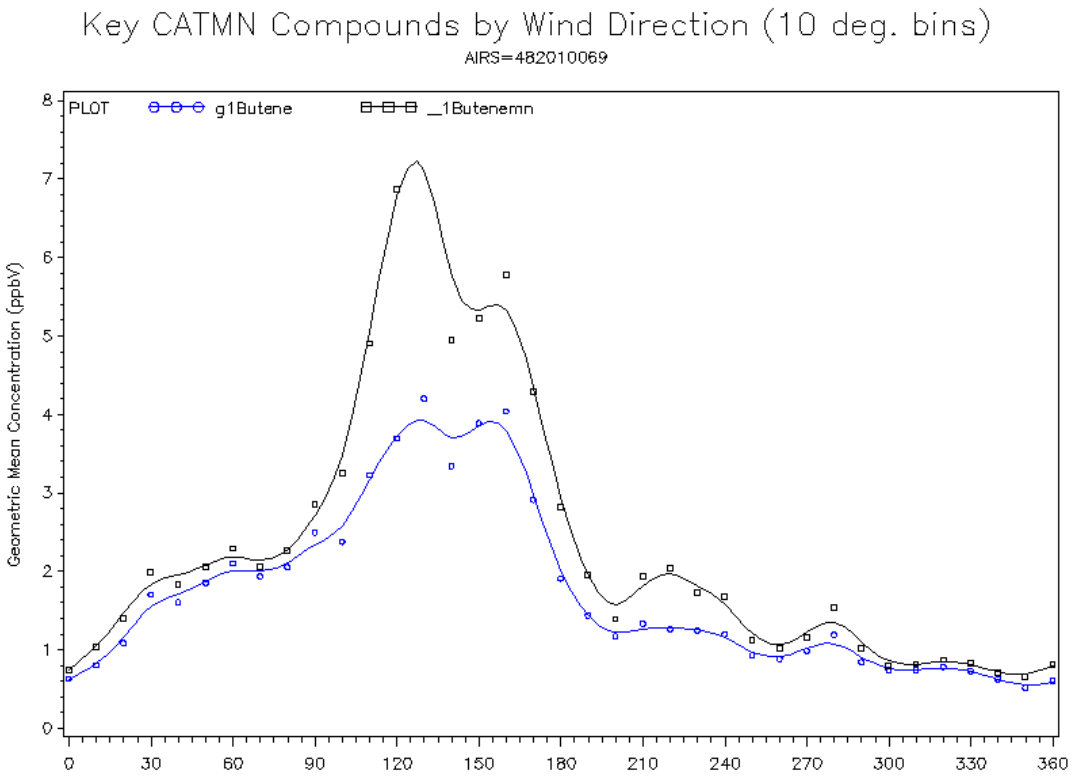
Houston Site 482010064 Allendale C120

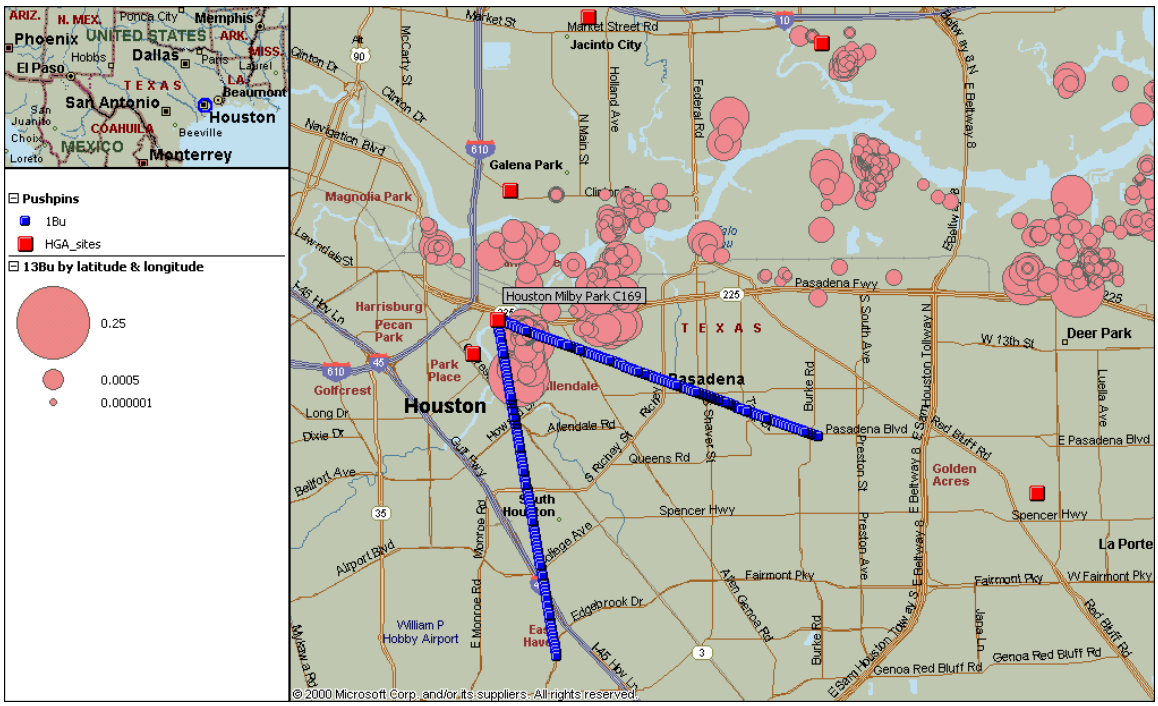



Median of MIR at Allendale C120
Median of MIR Reactivity
180
160
140
120
100
80
60
40
20
0
1997
1998
1999
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Houston Site 482010069 Milby Park C169
propylene 11%
ethylene 7%
butadiene 9%
butenes 29%
pentenes 12%
large_alkenes 1%
isoprene 1%
C2C3 2%
butanes 10%
pentanes 7%
alkanes 4%
toluene 2%
styrene 0%
xylenes 1%
trimethylbenzenes 0%
ethyltoluenes 0%
aromatics 1%
cyclos 2%
halogenates 0%
monoterpenes 0%
mtbe 1%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Houston Milby Park C169
Median of MIR Reactivity
250
200
150
100
50
0
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482010069
PLOT
g1Butene
_1Butenemn
Geometric Mean Concentration (ppbV)
0
1
2
3
4
5
6
7
8
0
30
60
90
120
150
180
210
240
270
300
330
360


Pushpins
1Bu
HGA_sites
13Bu by latitude & longitude
0.25
0.0005
0.000001
Houston Milby Park C169
Houston
Pasadena
Galena Park
Jacinto City
Deer Park
La Porte
Golden Acres
Harrisburg
Pecan Park
Park Place
Golfcrest
Magnolia Park
William P Hobby Airport
Pasadena Fwy
Spencer Hwy
Fairmont Pky
Genoa Red Bluff Rd
Market Street Rd
Allendale Rd
Queens Rd
Edgebrook Dr
Pasadena Blvd
E Pasadena Blvd
W 13th St
Market St
Clinton Dr
Navigation Blvd
Lawndale St
Airport Blvd
Monroe Rd
Holland Ave
Federal Rd
Burke Rd
Preston St
Preston Ave
Luella Ave
Red Bluff Rd
Jana Ln
Shaver St
Allen Genoa Rd
Gulf Fwy
Long Dr
Dixie Dr
Bellfort Ave
Mykawa Rd
Edgebrook Dr
Ellendale
South Houston
Ealy Haven
TEXAS
UNITED STATES
MEXICO
Phoenix
Dallas
El Paso
San Antonio
Houston
Monterrey
Memphis
Beaumont
Beeville
Hobbs
Paris
Laurel
Ponca City
Loreto
Chico
San Juanito
ARIZ.
N. MEX.
ARK.
MISS.
LA.
COAHUILA
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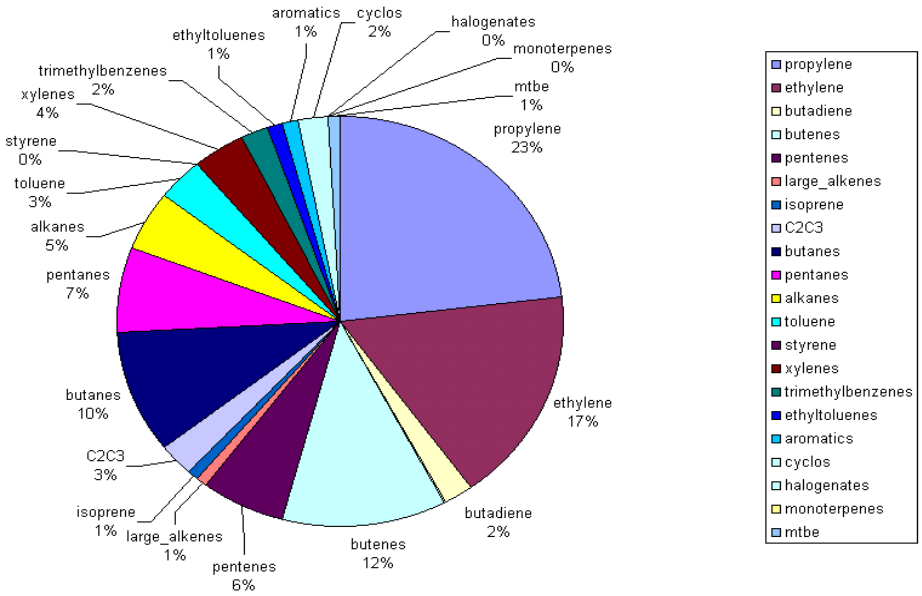
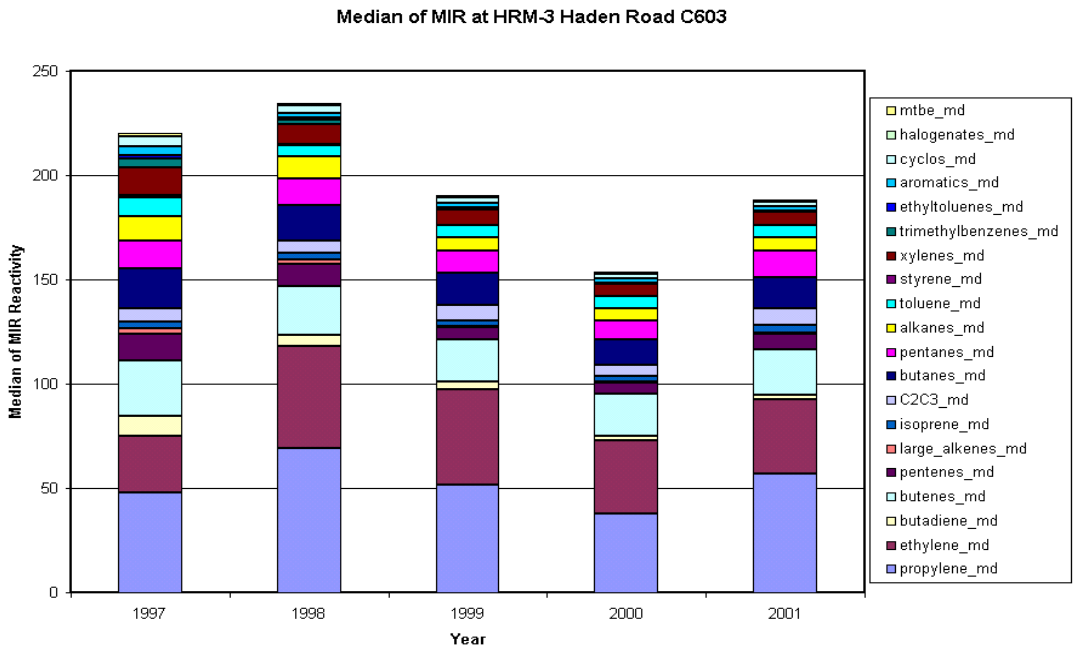
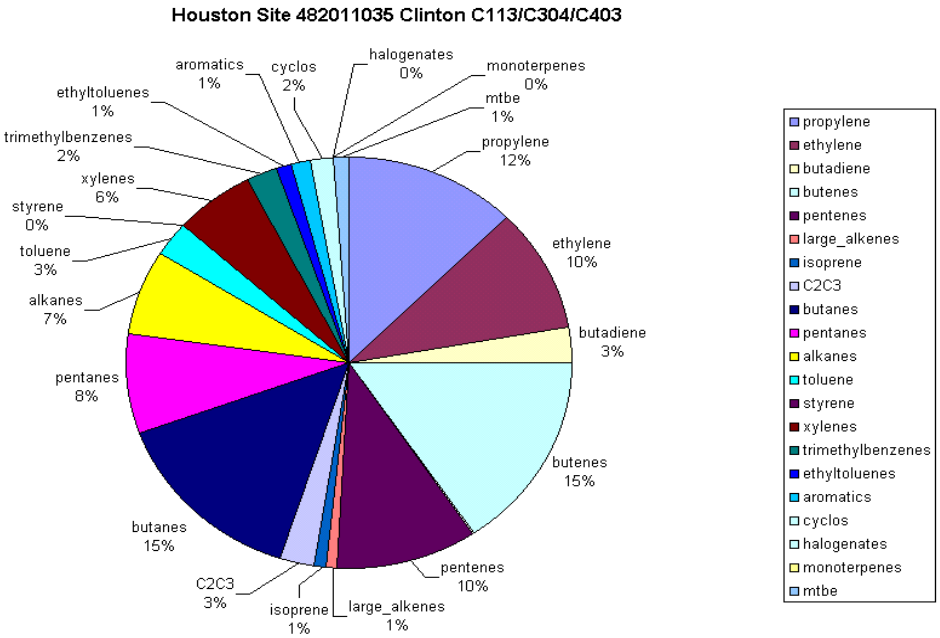
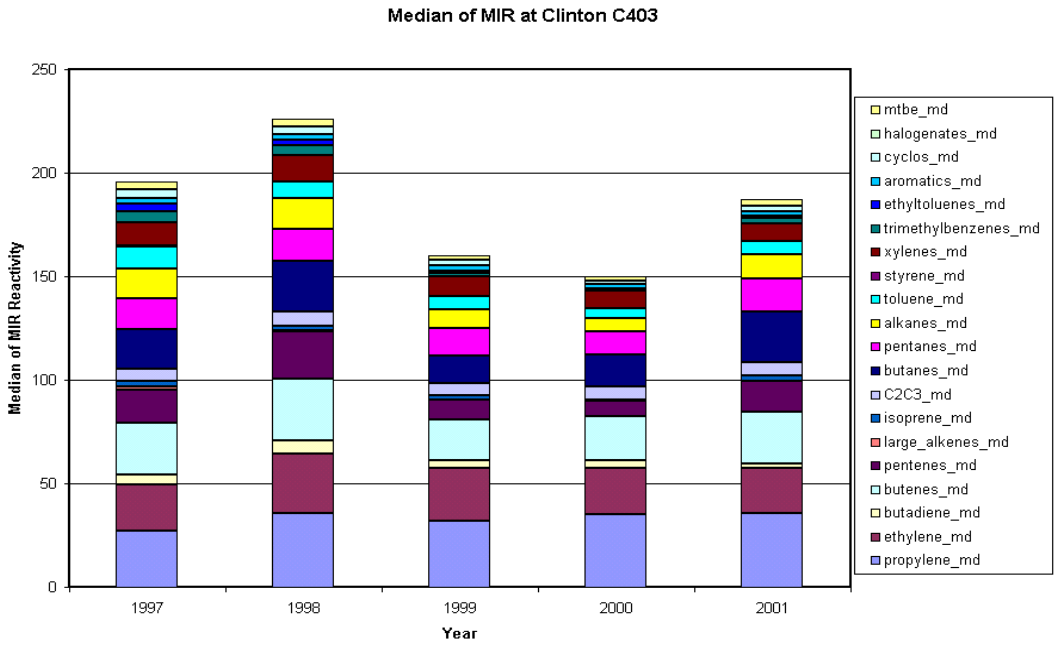
Houston Site 482010803 HRM-3 Haden Road C603/C114



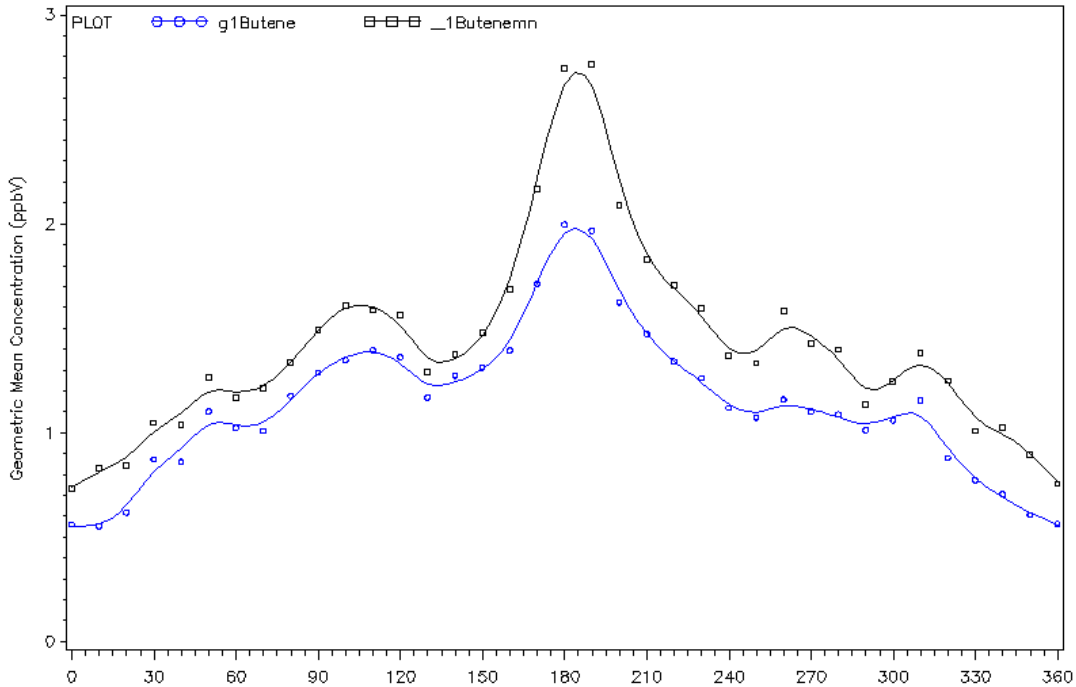

Median of MIR at HRM-3 Haden Road C603
Median of MIR Reactivity
250
200
150
100
50
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

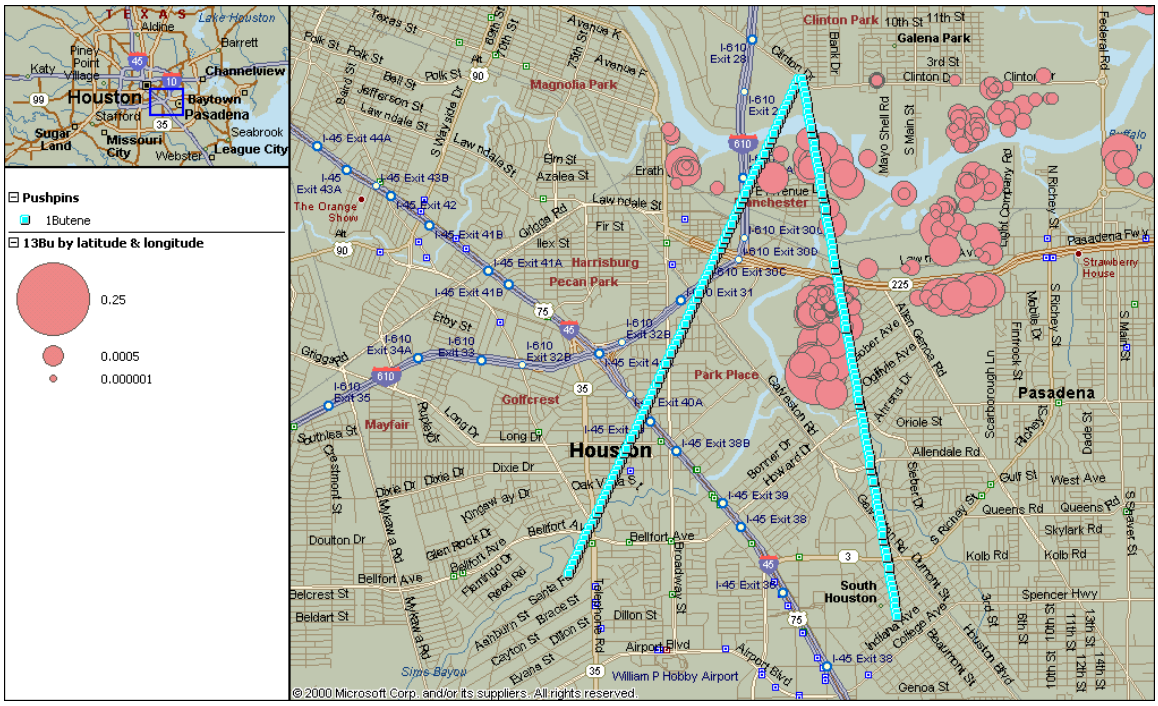

Houston Site 482011035 Clinton C113/C304/C403
halogenates 0%
monoterpenes 0%
mtbe 1%
propylene 12%
ethylene 10%
butadiene 3%
butenes 15%
pentenes 10%
large_alkenes 1%
isoprene 1%
C2C3 3%
butanes 15%
pentanes 8%
alkanes 7%
toluene 3%
styrene 0%
xylenes 6%
trimethylbenzenes 2%
ethyltoluenes 1%
aromatics 1%
cyclos 2%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at Clinton C403
Median of MIR Reactivity
250
200
150
100
50
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md

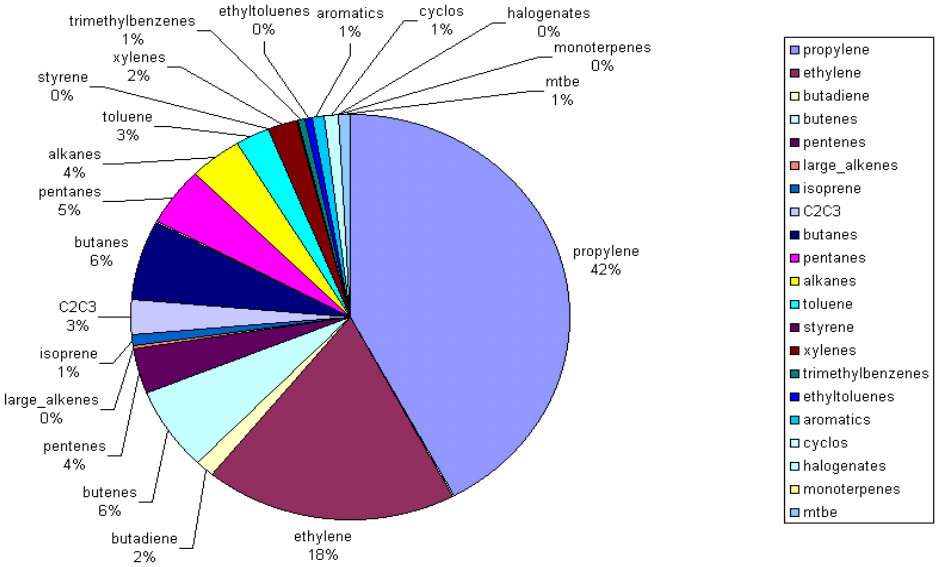
Key CATMN Compounds by Wind Direction (10 deg. bins)

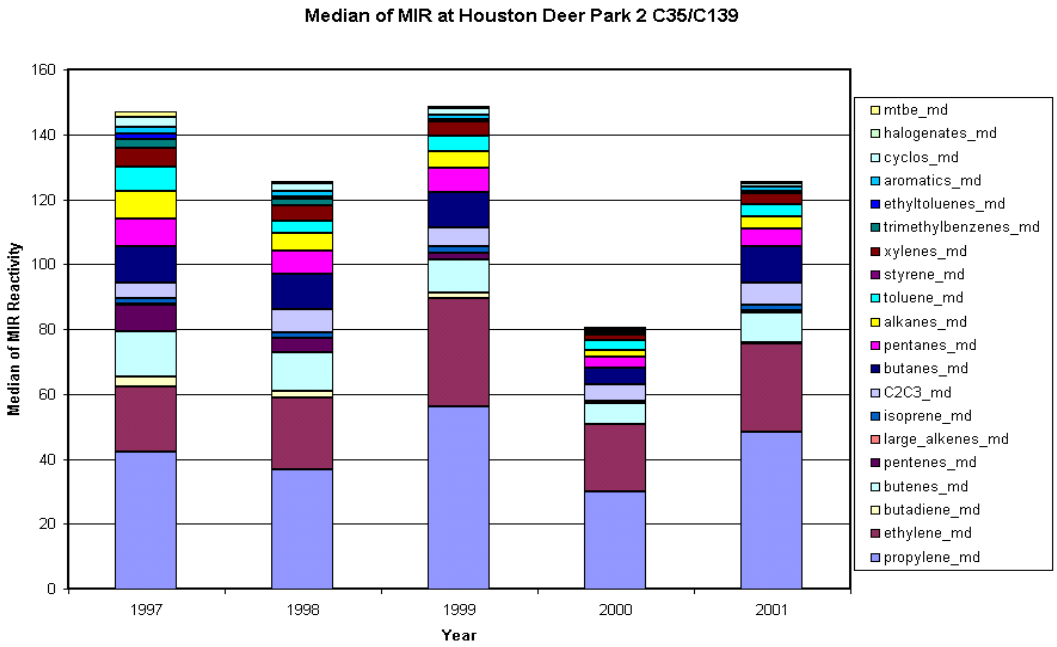
AIRS=482011035

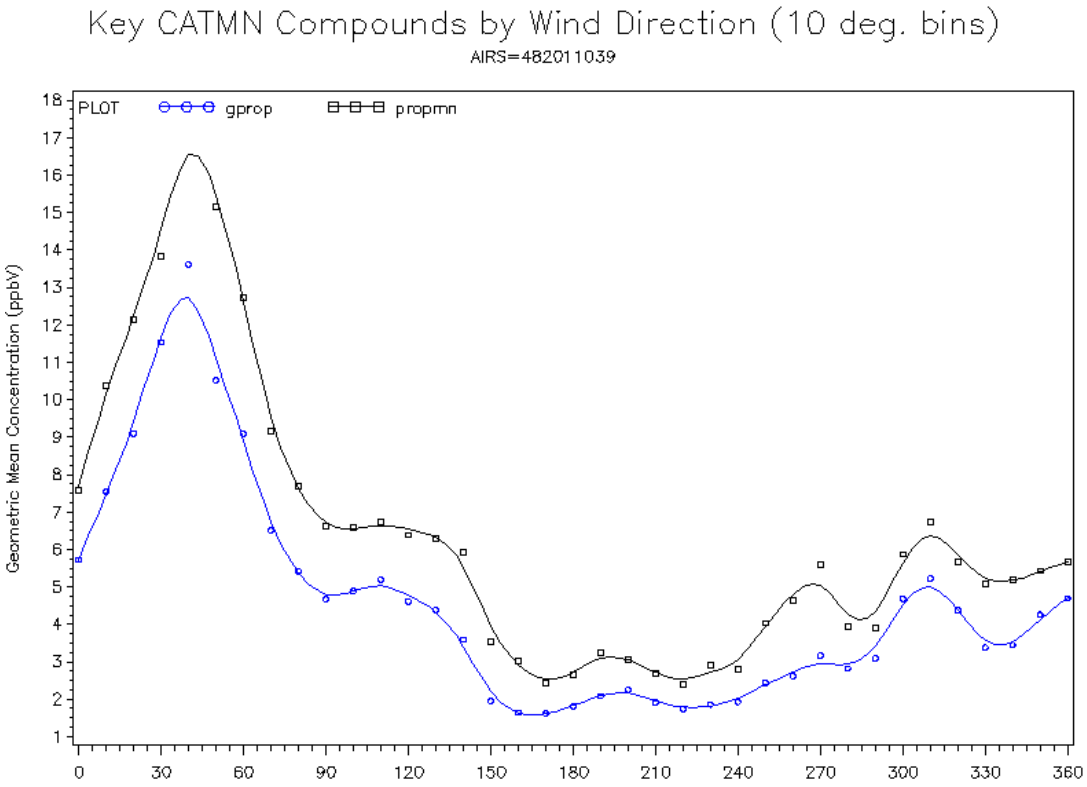


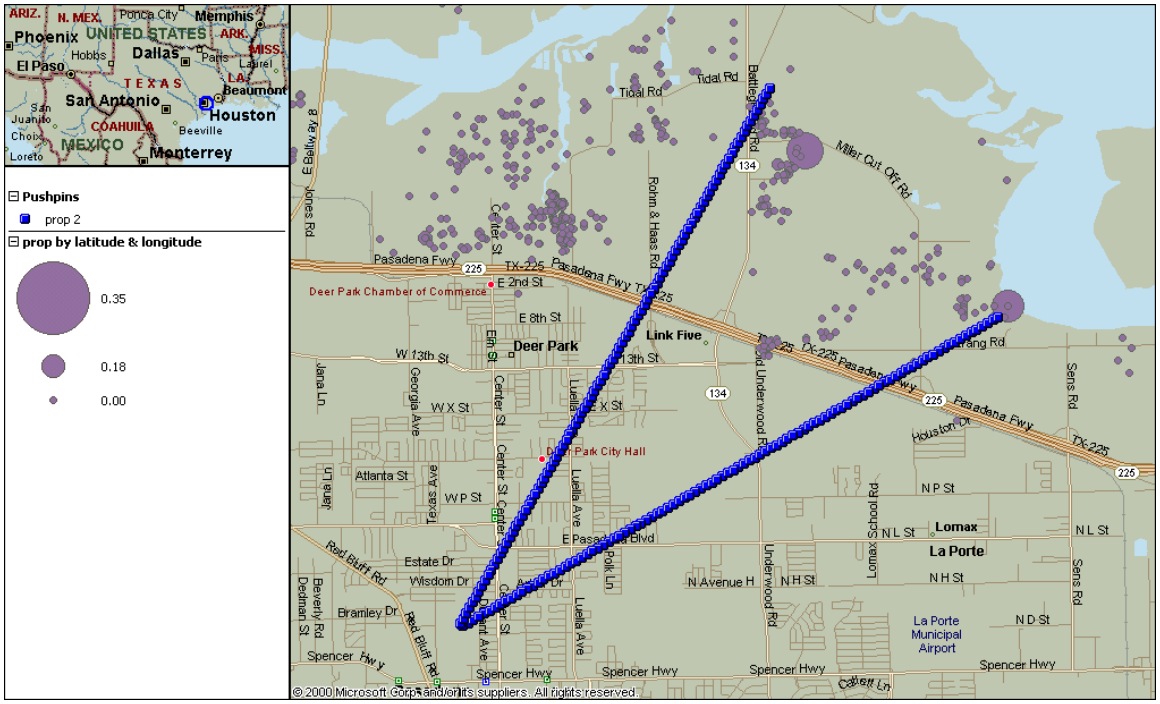


Houston Site 482011039 Deer Park 2 C35/C139




Median of MIR at Houston Deer Park 2 C35/C139
Median of MIR Reactivity
160
140
120
100
80
60
40
20
0
1997
1998
1999
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482011039
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
30
60
90
120
150
180
210
240
270
300
330
360


ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
Hobbs
Dallas
Paris
MISS.
El Paso
Laurel
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Loreto
Monterrey
Pushpins
prop 2
prop by latitude & longitude
0.35
0.18
0.00
Tidal Rd
Battleground Rd
Miller Cut Off Rd
Rohm & Haas Rd
Pasadena Fwy
TX-225
E 2nd St
Deer Park Chamber of Commerce
E 8th St
Deer Park
Link Five
W 13th St
Underwood Rd
Sens Rd
Jana Ln
Georgia Ave
W X St
Center St
Luella Ave
Deer Park City Hall
Atlanta St
Texas Ave
W P St
Houston Dr
N P St
Lomax School Rd
N L St
Lomax
La Porte
E Pasadena Blvd
Red Bluff Rd
Estate Dr
Wisdom Dr
Polk Ln
N Avenue H
N H St
Beverly Rd
Bramley Dr
La Porte Municipal Airport
N D St
Spencer Hwy
Calvert Ln
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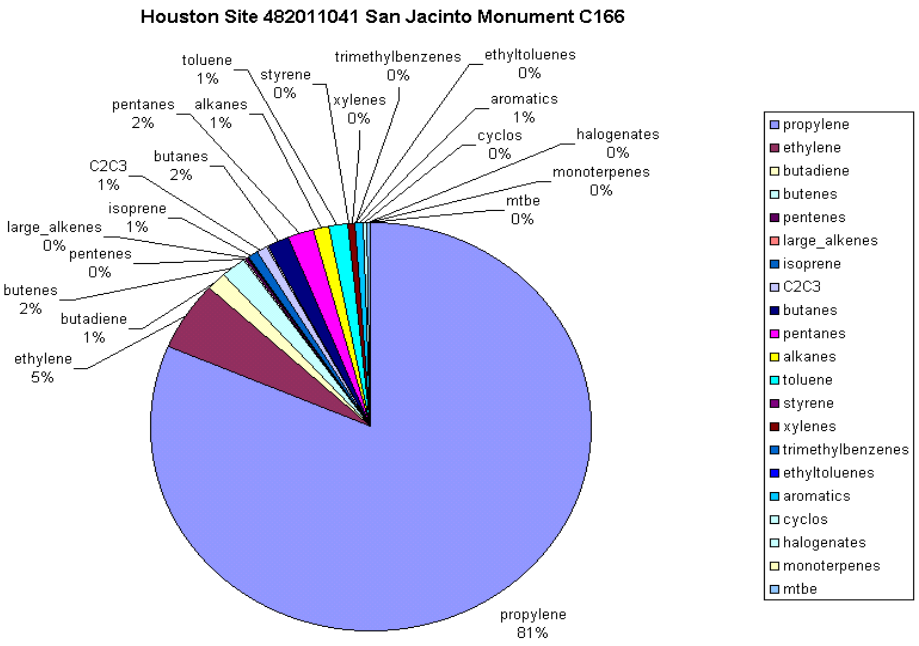
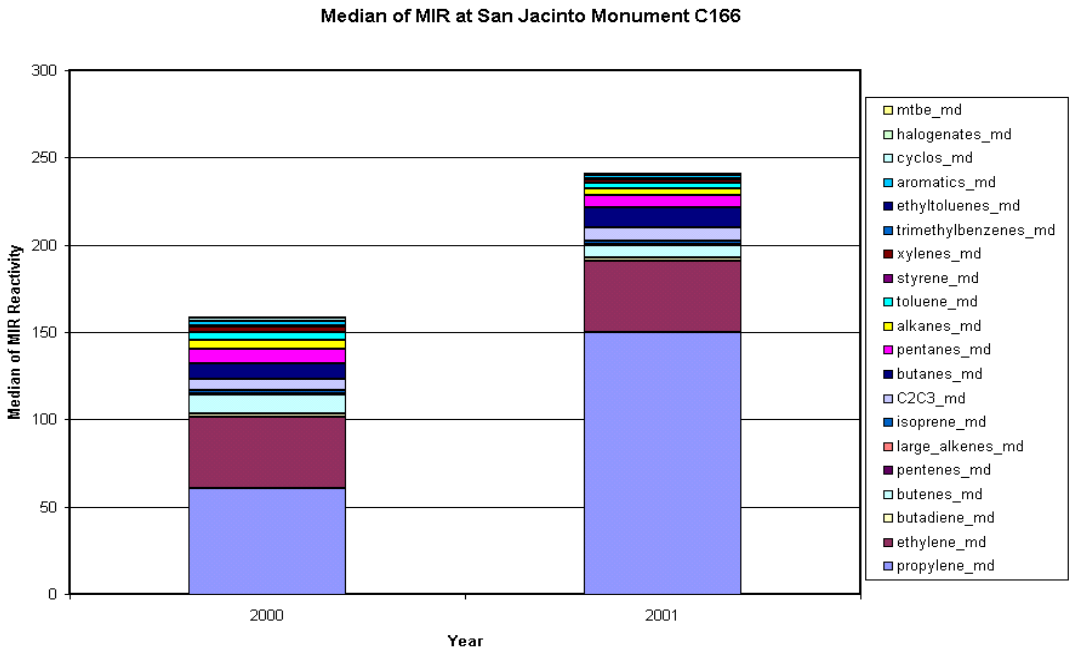
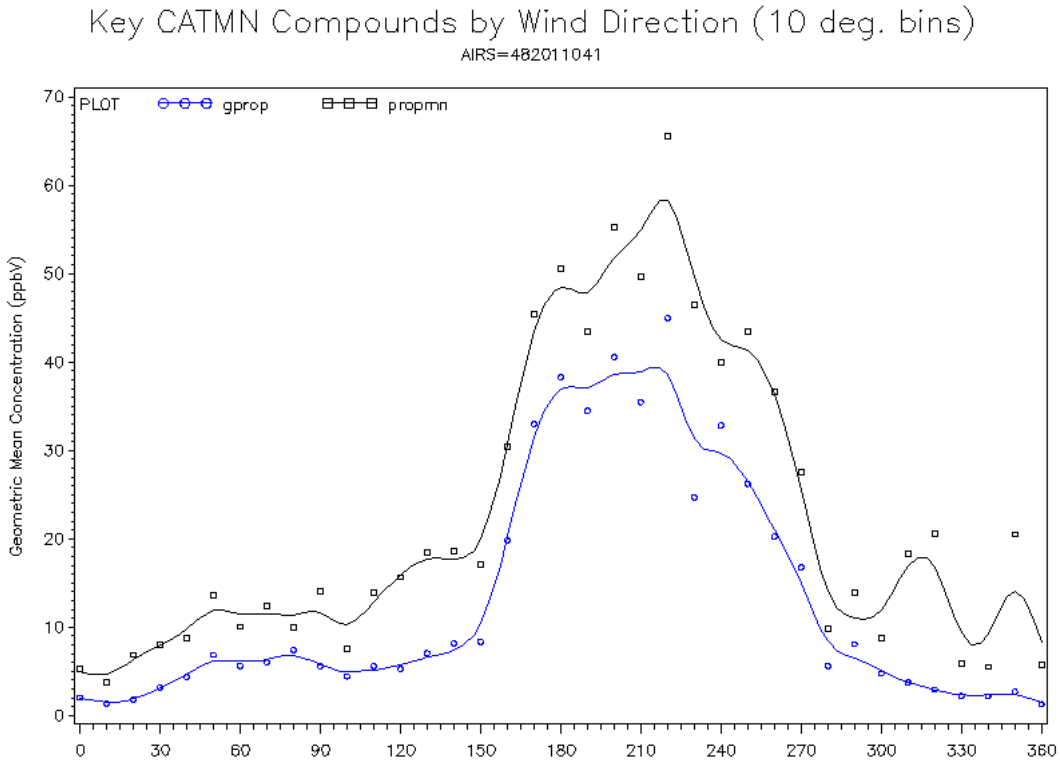
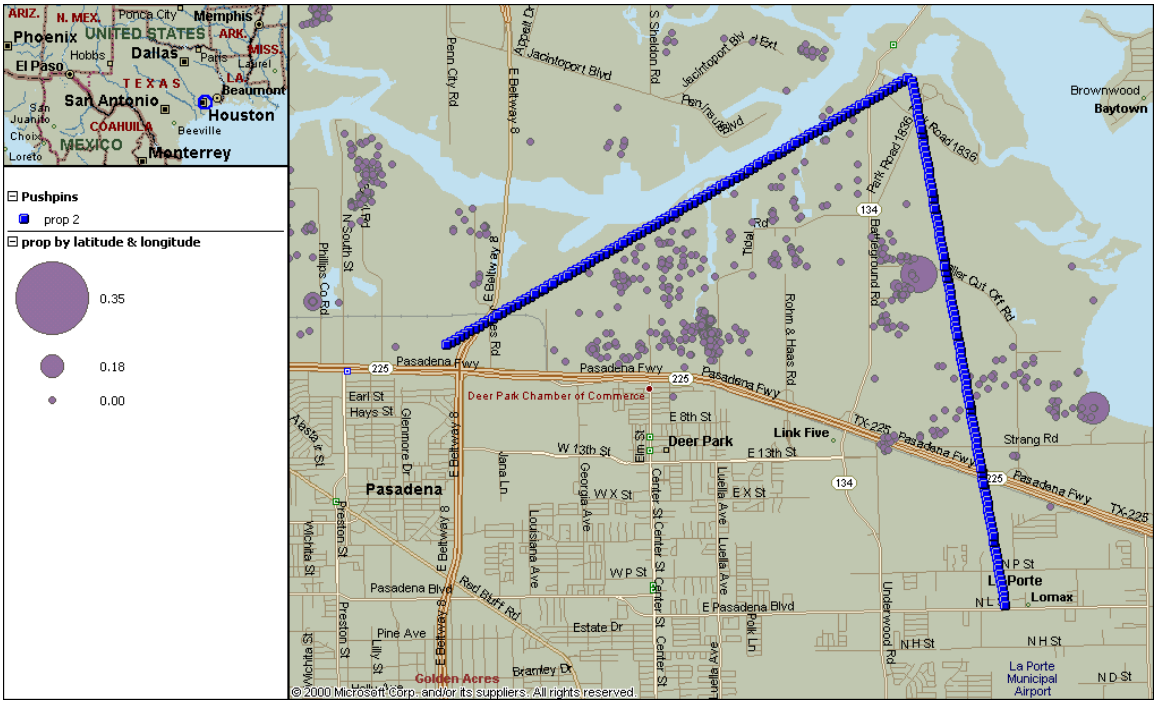

Houston Site 482011041 San Jacinto Monument C166
toluene 1%
styrene 0%
trimethylbenzenes 0%
ethyltoluenes 0%
pentanes 2%
alkanes 1%
xylenes 0%
aromatics 1%
cyclos 0%
halogenates 0%
C2C3 1%
butanes 2%
monoterpenes 0%
isoprene 1%
mtbe 0%
large_alkenes 0%
pentenes 0%
butenes 2%
butadiene 1%
ethylene 5%
propylene 81%
propylene
ethylene
butadiene
butenes
pentenes
large_alkenes
isoprene
C2C3
butanes
pentanes
alkanes
toluene
styrene
xylenes
trimethylbenzenes
ethyltoluenes
aromatics
cyclos
halogenates
monoterpenes
mtbe


Median of MIR at San Jacinto Monument C166
Median of MIR Reactivity
300
250
200
150
100
50
0
2000
2001
Year
mtbe_md
halogenates_md
cyclos_md
aromatics_md
ethyltoluenes_md
trimethylbenzenes_md
xylenes_md
styrene_md
toluene_md
alkanes_md
pentanes_md
butanes_md
C2C3_md
isoprene_md
large_alkenes_md
pentenes_md
butenes_md
butadiene_md
ethylene_md
propylene_md


Key CATMN Compounds by Wind Direction (10 deg. bins)
AIRS=482011041
PLOT
gprop
propmn
Geometric Mean Concentration (ppbV)
0
10
20
30
40
50
60
70
0
30
60
90
120
150
180
210
240
270
300
330
360



ARIZ.
N. MEX.
Ponca City
Memphis
Phoenix
UNITED STATES
ARK.
Hobbs
Dallas
Paris
MISS.
El Paso
Laurel
TEXAS
LA.
Beaumont
San Antonio
Houston
San Juanito
COAHUILA
Beeville
Choix
MEXICO
Loreto
Monterrey
Pushpins
prop 2
prop by latitude & longitude
0.35
0.18
0.00
Jacintoport Blvd
Penn City Rd
E Beltway 8
S Sheldon Rd
Brownwood
Baytown
Park Road 1836
Tidal Rd
Battleground Rd
Rohm & Haas Rd
Pasadena Fwy
Deer Park Chamber of Commerce
Earl St
Hays St
E 8th St
Deer Park
Link Five
W 13th St
E 13th St
Strang Rd
Pasadena
W X St
E X St
Jana Ln
Georgia Ave
Louisiana Ave
Center St
Luella Ave
Preston St
Wichita St
W P St
N P St
La Porte
Lomax
N L
Pasadena Blvd
Red Bluff Rd
E Pasadena Blvd
Underwood Rd
Estate Dr
Pine Ave
N H St
Golden Acres
Bramley Dr
La Porte Municipal Airport
N D St
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