

St. Bernard Air Monitoring Project

Interim Report



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December 8, 2006

St Bernard Air Monitoring Project

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Project Overview

Prior to the start of this project, DEQ received and investigated numerous odor complaints from some citizens living in the Chalmette, Louisiana area. At the request of the local citizens and through negotiation with the Chalmette Refinery, an administrative order on consent was signed with Chalmette Refinery on May 24, 2005. The refinery installed fixed ambient monitoring sites at three locations located and designed in accordance with department directives. Two of these sites are in St. Bernard Parish and one site is located across the Mississippi River in Orleans Parish. The monitors began operation in the spring of 2006 and are managed and serviced by DEQ personnel.

The primary purpose of this project is to make a scientifically sound determination on whether the Chalmette area is in compliance with the State and Federal ambient air quality standards. The methodology DEQ will use for this project is the same proven & legally defensible methodology being used nationwide for air pollutants. The resulting monitoring data should have a high standard of quality assurance and validity as set forth in the DEQ Quality Assurance Project Plans for air toxics and ambient air monitoring.

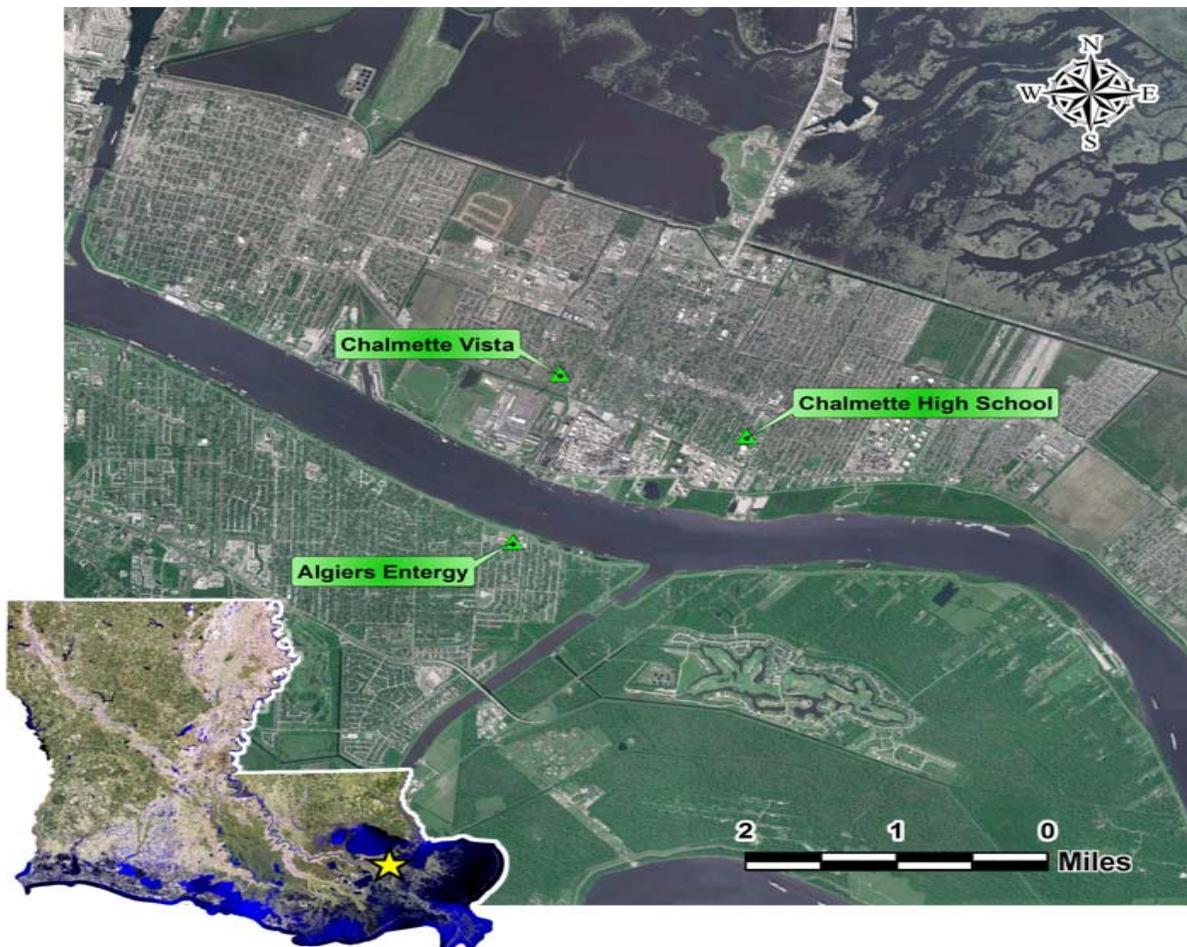


Figure 1. Sampling Site Locations

Odor

The DEQ has received a number of odor complaints from the public in the Chalmette area. Odors can be caused by a single chemical compound or by a combination of compounds. Nearly all state and federal air quality regulations are based on health impacts because compounds that pose known health risks are a more imminent concern to public welfare than those that are solely an odor issue. Although an odor may be offensive to a particular individual, it is more scientifically justifiable to establish limits based on the protection of public health than to try to establish more subjective odor standards. People can have markedly different perceptions about the magnitude and offensiveness of an odor based on their sense of smell. Although research is being conducted nationally on developing techniques to measure odors, the DEQ does not believe current methods are precise.

DEQ investigates odor complaints received from the public and uses ambient air data collected at the monitoring stations to make compliance determinations. Permit limits and upset releases are also evaluated during these investigations.

Study Focus

The focus of this monitoring project is to:

- Identify the chemical compounds that are most abundantly present in the ambient air in the St. Bernard Parish area.
- Identify any chemical component(s) that may be responsible for the odor complaints the department has received.
- Compare the measured chemical levels, along with appropriate statistical confidence limits, to the applicable ambient air standards established by DEQ and the EPA. EPA has National Ambient Air Quality Standards (NAAQS) for the criteria pollutants only. DEQ has set ambient air quality standards for toxic air pollutants under Chapter 51 of the air regulations.

The locations of the three ambient monitoring sites were chosen for two primary reasons. An examination of a wind rose generated for the greater New Orleans area shows the winds predominantly from southerly directions varying from Southeast to Southwest. Thus, emissions from the refinery and other industrial sources in the area should impact a sampler sited on the northwest side of the complex at a much greater frequency than at another location. The VISTA site, located on East Chalmette Circle is located in this ideal position. The Chalmette High School site will receive similar emissions when the winds from the southwest. In addition, the High School site is located fairly close to the Chalmette Refinery tank farm area that is located east of the refinery. This puts the High School site in an ideal position to receive emissions from the tank farm area when the winds are from the south. The Entergy site in Orleans Parish near General Meyer Avenue, monitors regional air quality & provides background information when the wind direction is from the south. This site also provides a reading of the industrial complex area emissions when the wind direction is from the north.

Many factors can influence the ambient concentrations of pollutants at any given time and location. Weather factors such as wind direction and mixing height must be considered along with permitted industrial emissions, mobile sources, natural background and transported pollutants when assessing the air quality in the area.

Ensuring the security of the sites was another important consideration, including the prevention of unauthorized access to or tampering with the monitoring equipment. All of the sites are surrounded with a chain link fence and a locked gate to prevent unauthorized access to the equipment.

Sampling & Analytical Methods

The sampling and analysis plan for this project considered several sampling and analysis strategies. The monitoring sites contain specialized instruments to measure concentrations of the pollutants ozone, sulfur dioxide (SO₂), hydrogen sulfide, volatile organic compounds (VOCs) and respirable particulate matter, in accordance with federal air monitoring requirements.

All VOC sampling and analysis was conducted using Method TO-15 of the U.S. Environmental Protection Agency's "Compendium to the Determination of Toxic Organic Compounds in Ambient Air." This method involves the collection of air samples in specially prepared stainless steel canisters with subsequent analysis using gas chromatography techniques with Flame Ionization Detectors (FID) and Mass Spectrometry Detectors (MSD). The samples were analyzed in the laboratory for nearly 100 Volatile Organic Compounds (VOCs).

In order to determine compliance with the state ambient air standards, the sites used a statistical canister sampler operating on a 24-hr/6-day schedule. Sampling was conducted with a Model 911A Portable Summa Canister manufactured by RM Environmental Systems Incorporated. The sampler was configured to collect single 24-hour duration samples following the statewide air toxics sampling schedule.

Because of public concern about sudden releases of chemicals into the air, the site was also equipped with a continuous methane/non-methane hydrocarbon analyzer and a triggered canister sampler. The continuous hydrocarbon monitor consisted of a TECO model 55C. This instrument was connected to an ESC data logger which recorded the data in 10 minute averages. When a 10 minute average concentration exceeded the set trigger level (usually 1.5 ppm), the data logger activated the strike canister sampler which collected a 25 minute duration canister sample. All samples collected were picked up within 24 hours after sample collection and returned to the DEQ Laboratory for analysis.

In addition to identifying approximately 100 compounds including Hazardous Air Pollutants (HAPs) and other VOCs, the laboratory also used the GC/MS Tentatively Identified Compound analysis to identify other compounds that may have been in the sample matrix. The laboratory identified and listed any compound that had an estimated concentration of 5 ppbv or higher.

All monitoring for SO₂ was conducted using the U.S. Environmental Protection Agency's reference method for SO₂ monitoring in ambient air. This method utilizes the fluorescence of SO₂ when it is subjected to an intense ultraviolet (UV light). While there is no EPA reference method for H₂S, the monitor utilized converts the H₂S present to SO₂ and then uses the SO₂ reference method to measure the concentration of the gas present.

All monitoring for ozone was conducted using the U.S. Environmental Protection Agency's reference method for ozone monitoring in ambient air.

Two monitoring methods were used to measure particulate matter. One sampler was operated using the U.S. Environmental Protection Agency's reference method for particulate monitoring in ambient air (PM_{2.5}). This sampler was operated on the federal 24-hr/6-day schedule. A second non-reference method particulate sampler (TEOM) was operated on a continuous basis.

All continuous monitoring data collected was stored on a data logger which recorded the hourly and 5-minute average concentration of each pollutant. Hourly wind speed and direction data was also collected and recorded on the data logger.

Analytical Results

Over 14,000 hours of continuous valid data has been collected since the project start on 5/1/2006. The summary reports below include all continuous hourly monitoring data collected through 12/6/2006

Entergy - 4021 1-hr readings

Pollutant	Min	Median	3rd Qu	Maximum	Mean
Sulfur Dioxide	0	2	3	154	3.5
Hydrogen Sulfide	0	1	2	81	2.0
TNMOC	0	80	230	4420	161

Chalmette High - 5022 1-hr readings

Pollutant	Min	Median	3rd Qu	Maximum	Mean
Calculated 8-hr Ozone	1	29	40	81	29.9
Ozone	0	29	42	107	30.4
Sulfur Dioxide	0	2	4	95	2.8
Hydrogen Sulfide	0	1	2	36	2.0
TNMOC	0	40	130	6380	129

VISTA - 4706 1-hr readings

Pollutant	Min	Median	3rd Qu	Maximum	Mean
Sulfur Dioxide	1	4	6	271	8.7
Hydrogen Sulfide	0	1	3	114	2.4
PM2.5 Fine 0-2.5 um	0	10	17	90.1	12.44
TNMOC	0	10	120	5840	115

The levels of sulfur dioxide (SO₂) measured at the three monitoring stations are somewhat higher than the measurements collected at other locations in the state. The EPA Primary (NAAQS) for SO₂ is an annual average concentration of 30 ppbv. As shown in the table above, the average concentration of SO₂ measured at all of the sites, at this point in the study, is well below the annual NAAQS.

EPA also has a 24-hour primary standard for SO₂ of 140 ppbv. The 24 hour standard consists of a block average of readings from midnight to midnight. The table below shows the maximum 24-hour SO₂ reading observed at Entergy was 38 ppb, which is less than 1/3 of the NAAQS standard. However, the maximum 24-hour average at the Chalmette VISTA site was 104 ppb which is about 75% of the NAAQS.

NAAQS	24-Hour SO₂ = 140 ppb	Annual SO₂ = 30 ppb
Entergy	38	3.5
Chalmette High School	18	2.8
Chalmette VISTA	104	8.7

The ATSDR acute (1–14 days) Minimal Risk Level (MRL) for SO₂ is 10 ppb. No intermediate or chronic MRLs are available. An ATSDR exposure investigation has indicated that some asthmatics sensitive to SO₂ exposure have developed some respiratory constriction symptoms when exposed to 100 ppb for 10 minutes. The SO₂ monitor at the VISTA site has recorded over 50 one hour averages which were over 100 ppb. While these elevated readings represent less than one percent of the monitored time period, these periodic spikes of SO₂ may explain some of the citizen complaints. A statistical analysis of the monitoring data collected so far, does suggest a slight possibility that the 24-hour NAAQS is at risk of being exceeded given worst case meteorological conditions.

The pollution roses presented in the Appendix indicate from which wind directions the concentration of SO₂ tend to be higher. At the Vista site, the highest concentrations are observed when the wind is directly from the south with half of the readings over 20 ppb. At the Chalmette High site the highest concentrations are observed when the wind is from a westerly direction with half of the readings over 5 ppb. At the Entergy site, which is located to the south across the Mississippi River, the highest readings occur when the wind is from the north-northwest with half of the readings being just over 1.5 ppb. When all three pollution roses are examined, the highest concentrations appear to converge in an area near the Chalmette Refinery and the adjacent CII Carbon facility.

While there is no EPA NAAQS standard for hydrogen sulfide, Louisiana has established an 8-hour ambient air standard of 330 ug/m³ (237ppb). None of the 8-hour average concentrations measured for hydrogen sulfide were above the annual average Louisiana Ambient Air Standard. The highest 8-hour concentration of 36 ppb was observed at the VISTA site and was less than 1/8 of the Louisiana standard.

The pollution roses presented in the Appendix for hydrogen sulfide show H₂S being emitted from multiple sources. At the Vista site the highest concentrations are observed when the wind is directly out of the south with half of the readings over 4 ppb. The rose also indicates small amounts of hydrogen sulfide also tend to come from all wind directions. This is most likely natural background. At the Chalmette High site the highest concentrations are observed when the wind is from a westerly direction with half of the readings over 2 ppb. The rose also indicates hydrogen sulfide tends to come from all directions with a second significant source to the northeast of the site. At the Entergy site, which is located to the south across the Mississippi River, the highest readings occur when the wind is from the north-northwest with half of the readings being just over 1 ppb. When all three pollution roses are examined, the directions of the highest concentrations converge in the area of the refinery,

but also show the presence of much smaller or distant sources including natural background. The calcined coke facility has indicated that it is not a source of hydrogen sulfide.

The diurnal profiles in the Appendix show that the highest concentrations of both hydrogen sulfide and SO₂ tend to occur in the evening and early morning hours. This is most likely due to the lower wind speeds and lower mixing levels during these hours. There also appears to be little distinction between the weekdays and the weekends. The diurnal profile for ozone is very typical of the other locations in the state, showing the highest concentrations during the mid-afternoon.

Fine particulate matter (PM_{2.5}) is currently only measured at the VISTA site. The annual NAAQS for fine particulate matter is 15ug/m³. Effective December 17, 2006, the EPA lowered the 24-hour PM_{2.5} standard from 65 ug/m³ to 35 ug/m³ (based upon the 3-year average of the 4th highest reading each year). The average reading for fine particulate at the VISTA site is 12.44ug/m³, which is below the standard and consistent with the air monitor at the DEQ's Kenner site. The single highest 24-hour reading was 36 ug/m³. The pollution rose for particulate at the VISTA site shows the particulate comes from all wind directions, with a slight increase when the winds are from the south.

Ozone is currently only measured at the Chalmette High School site. The NAAQS for ozone is based on the 4th highest 8-hour average reading over 85 ppb. The highest 8-hour ozone reading at the VISTA site was 81 ppb and the 4th highest 8-hour reading was 74 ppbv which is below the standard and consistent with the air monitor at the Kenner site. The pollution rose for particulate at the VISTA site shows the ozone is generated from all wind directions with a slight increase when the winds are from the northwest.

VOC canisters are collected at all three of the sites with analytical results from both the 24-hour canisters and the high TNMOC triggered "strike" canisters. Summary tables of the VOC results are listed in the Appendix.

Twenty-four Hour Samples

Site	Number of Samples	Average benzene ppbv	Average Toluene ppbv	Average Vinyl Chloride ppbv	Average 1,3-butadiene ppbv	Average Acetone ppbv
Entergy	37	0.36	0.67	0.0	0.07	5.66
Chalmette High	28	0.27	0.50	0.0	0.04	5.89
Chalmette VISTA	32	0.34	0.63	0.0	0.07	6.16

A total of 97 of the 24-hour samples have been collected so far in the study. All of these compounds were detected within the normal concentration range for an urban area and generally below the statewide averages. The general profile of compounds detected was very typical of an area dominated by mobile source emissions. All of the average concentrations for the toxic compounds are in compliance with the Louisiana Ambient Air Standards.

Triggered Canister Samplers

Site	Number of Samples	Maximum benzene ppbv	Maximum Toluene ppbv	Maximum Vinyl Chloride ppbv	Maximum 1,3-butadiene ppbv	Maximum Acetone ppbv
Entergy	25	2.50	4.75	0.06	0.42	18.5
Chalmette High	33	8.30	16.15	0.07	4.74	20.11
Chalmette VISTA	22	5.56	26.23	0.01	0.38	166.5

A total of 80 of the triggered canister samples have been collected so far in the study. The results for these samples were highly variable depending mostly on the wind direction at the time of collection and the point source emissions which triggered the sampler. The concentrations in these samples represent the likely maximum concentrations of the various toxic air pollutants. None of the concentrations measured exceed any of the ATSDR acute health based screening levels.

Conclusions

Since the monitoring project commenced in May 2006, over 20,000 individual air quality measurements have been collected. Ozone and fine particulate measurements appear to be consistent with the measurements collected at the Kenner monitoring site and seem to be typical of New Orleans and most other urban areas of the state. No exceedances of the eight-hour or the one-hour ozone standard have been observed at the Chalmette High School Site.

The average levels of Volatile Organic Compounds (VOCs) appear to be consistent with the levels observed in most other urban areas of the state where the VOC profiles are dominated by mobile source emissions. Some periodic spikes of VOCs have been observed at all three monitoring sites. Most of these VOC spikes are very characteristic of evaporative gasoline emissions and are typical of the emissions found in the area near refineries and fuel storage areas. The levels of benzene, 1,3-butadiene, chloromethane and other air toxics are all equal to or below the levels measured statewide, and are well below the State air toxics standards.

The levels of hydrogen sulfide (H₂S) appear to be consistent with other H₂S measurement collected at other locations in the state. An analysis of the monitoring data with the meteorological data collected has determined there are multiple small sources of H₂S emissions in the area including some natural sources. No exceedances of the State 8-hour H₂S standard have been observed

An analysis of the monitoring data with the meteorological data collected has identified the area where most of the SO₂ emissions appear to come from. Some spikes of SO₂ and hydrogen sulfide have been periodically observed at all three monitoring sites. These spikes are occasionally high enough to be a possible cause of some odor complaints from citizens living in the area. While no exceedances of any of the ambient air standards have been observed to date so far, the data distribution does indicate there is a slight possibility the 24-hour NAAQS for SO₂ is at risk of being exceeded as the monitoring project progresses. As more data is collected during the study, the department will be able to assess the SO₂ impact with much more certainty.

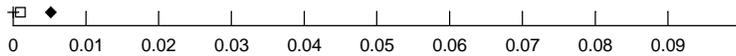
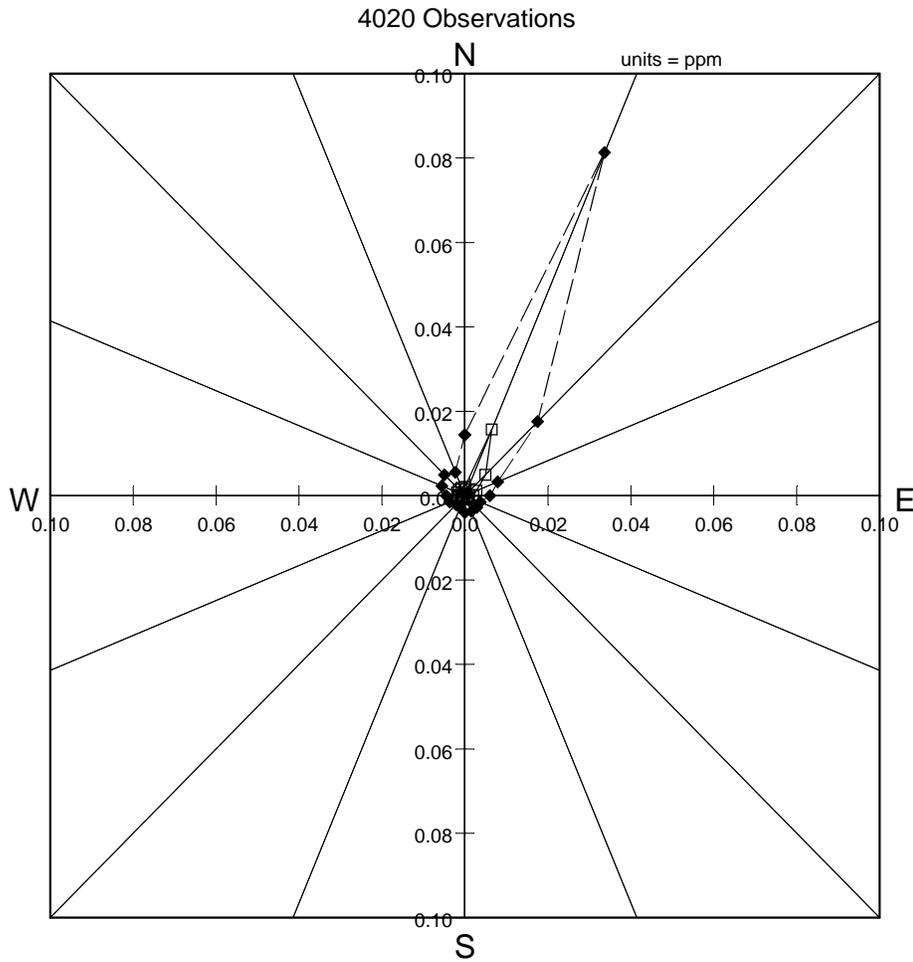
The averaged readings for the fine particulate matter at the VISTA site are about 80% of both the annual and 24-hour standards. While these numbers are consistent with other monitors in this area of the state, the numbers are close enough to the NAAQS to indicate a possibility that both the annual and the 24-hour NAAQS for fine particulate matter is at risk of being exceeded given the right meteorology.

In conclusion, the data collected so far has indicated the air quality in the St. Bernard area is meeting all EPA & State ambient air standards. The SO₂ & particulate readings however, should be closely watched by the DEQ & the industrial community and preventative action taken in case of prolonged elevated readings.

Appendix

Pollution Roses

Sulfur Dioxide
 ALGERS 2006
 by Resultant Wind Direction



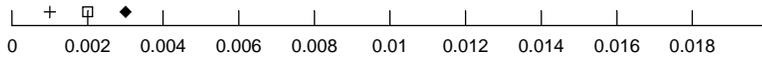
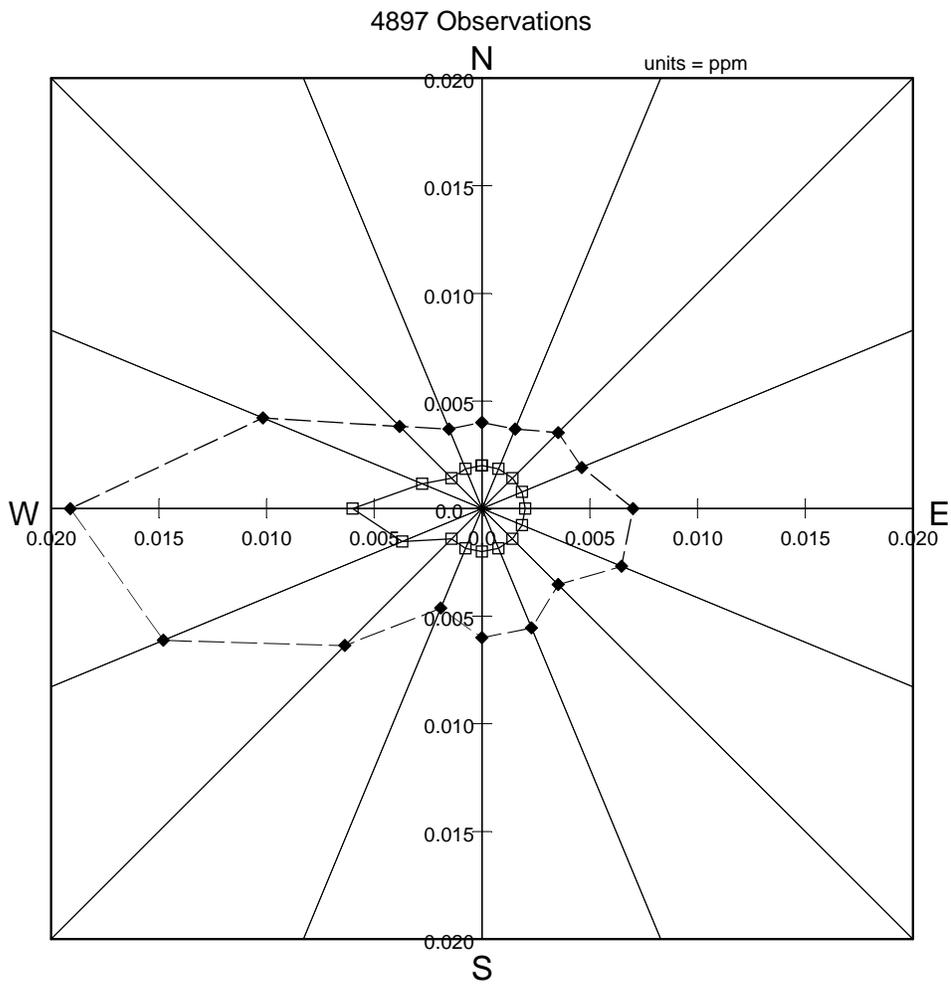
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 No time period excluded.
 Includes hours of day from 0 to 23.
 No flags excluded.

Percentiles
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¹ Issues with the formatting of the wind rose titles and legend are generated by that software program. “Algers” on wind rose refers to the Entergy Site.

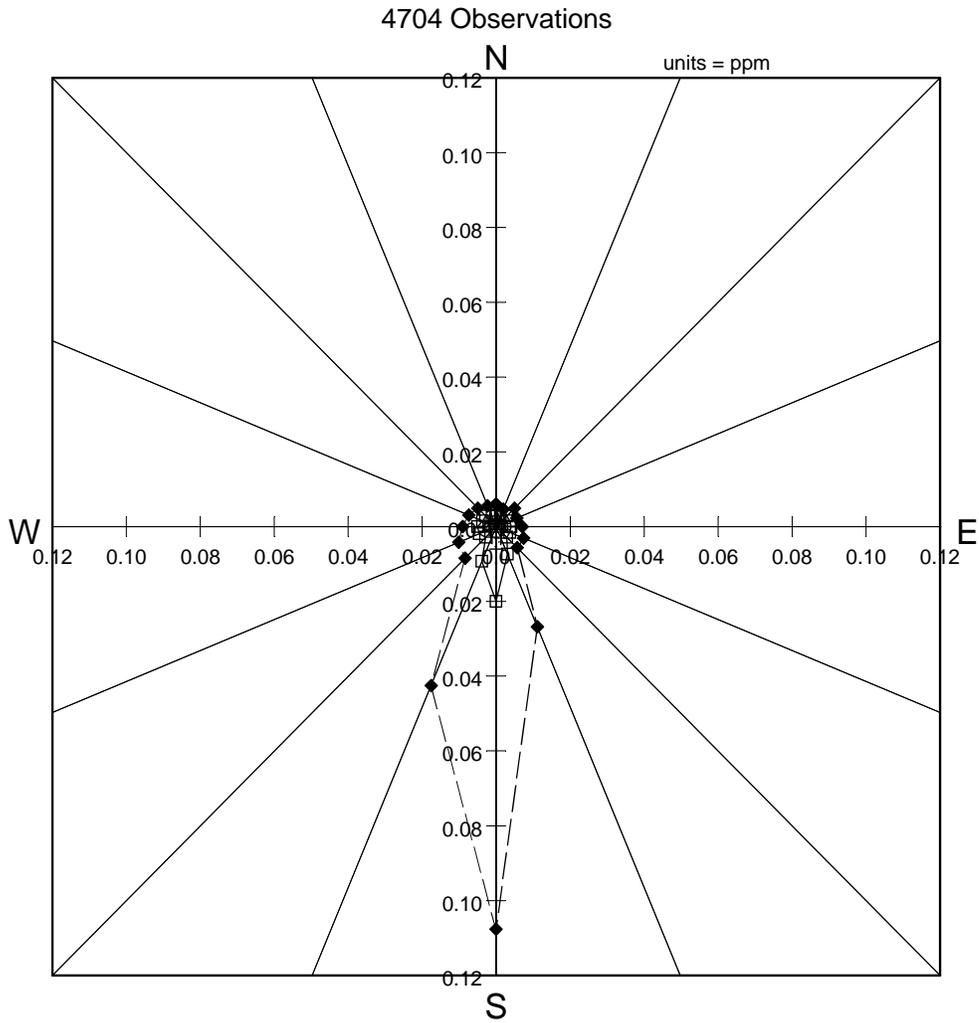
Sulfur Dioxide ChalmetteHigh 2006
by Resultant Wind Direction



Data from: ChalmetteHigh.2006.aq1hr and ChalmetteHigh.2006.m1hr
Includes data from 5/1/2006 to 12/6/2006.
No time period excluded.
Includes hours of day from 0 to 23.
No flags excluded.

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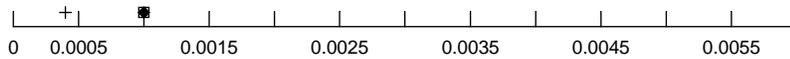
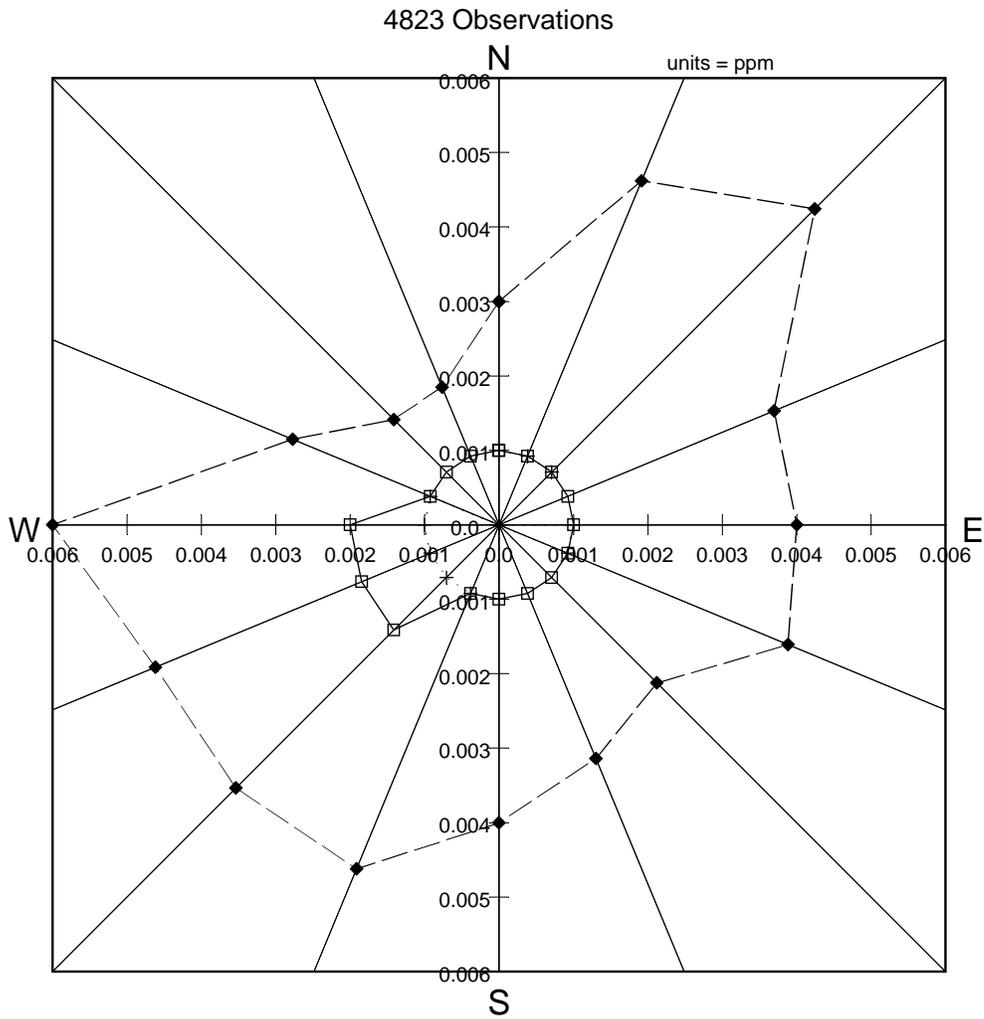
Sulfur Dioxide
VISTA 2006
by Resultant Wind Direction



Data from: VISTA.2006.aq.1hr and VISTA.2006.meta
Includes data from 5/1/2006 to 12/6/2006.
No time period excluded.
Includes hours of day from 0 to 23.
No flags excluded.

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ChalmetteHigh 2006 Hydrogen Sulfide by Resultant Wind Direction

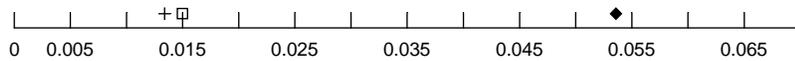
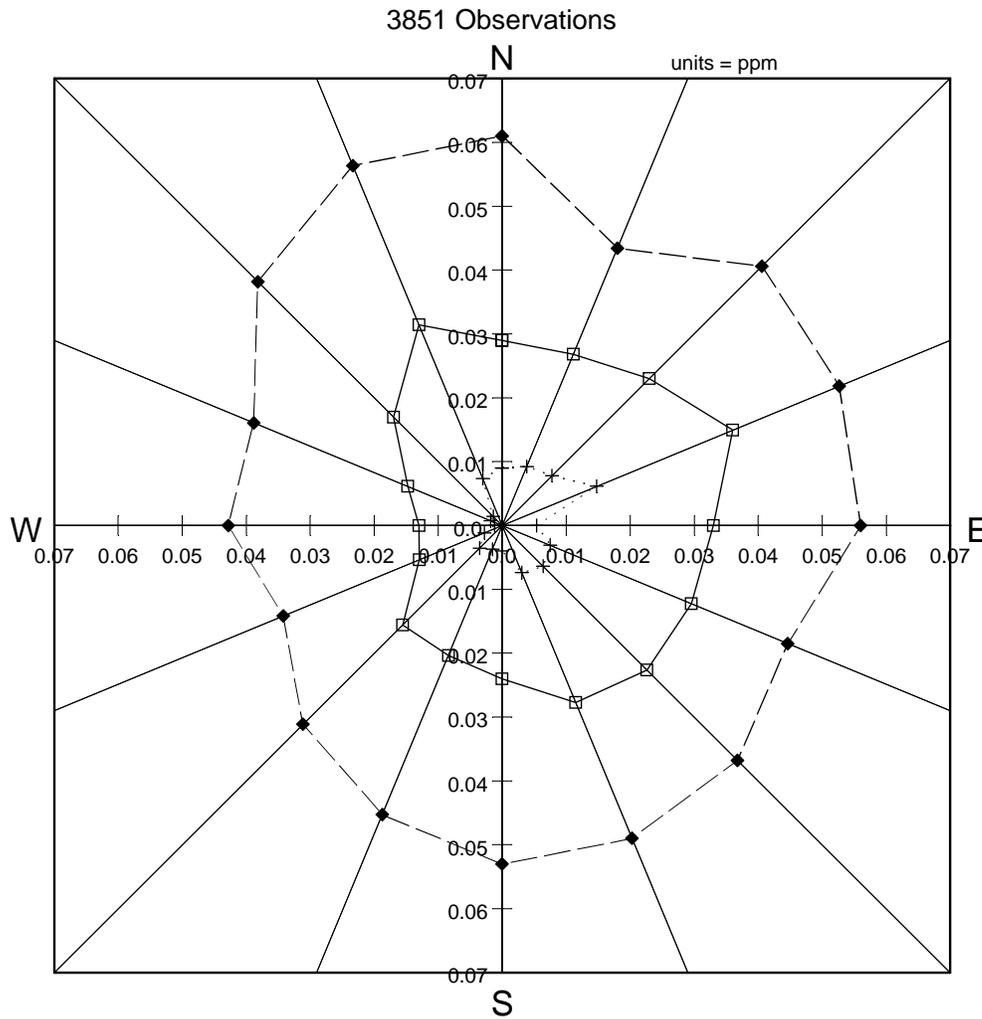


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 No time period excluded.
 Includes hours of day from 0 to 23.
 No flags excluded.

Percentiles

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ChalmetteHigh 2006 Ozone by Resultant Wind Direction



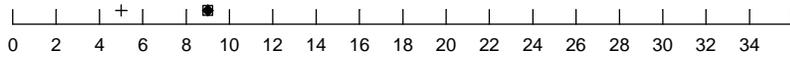
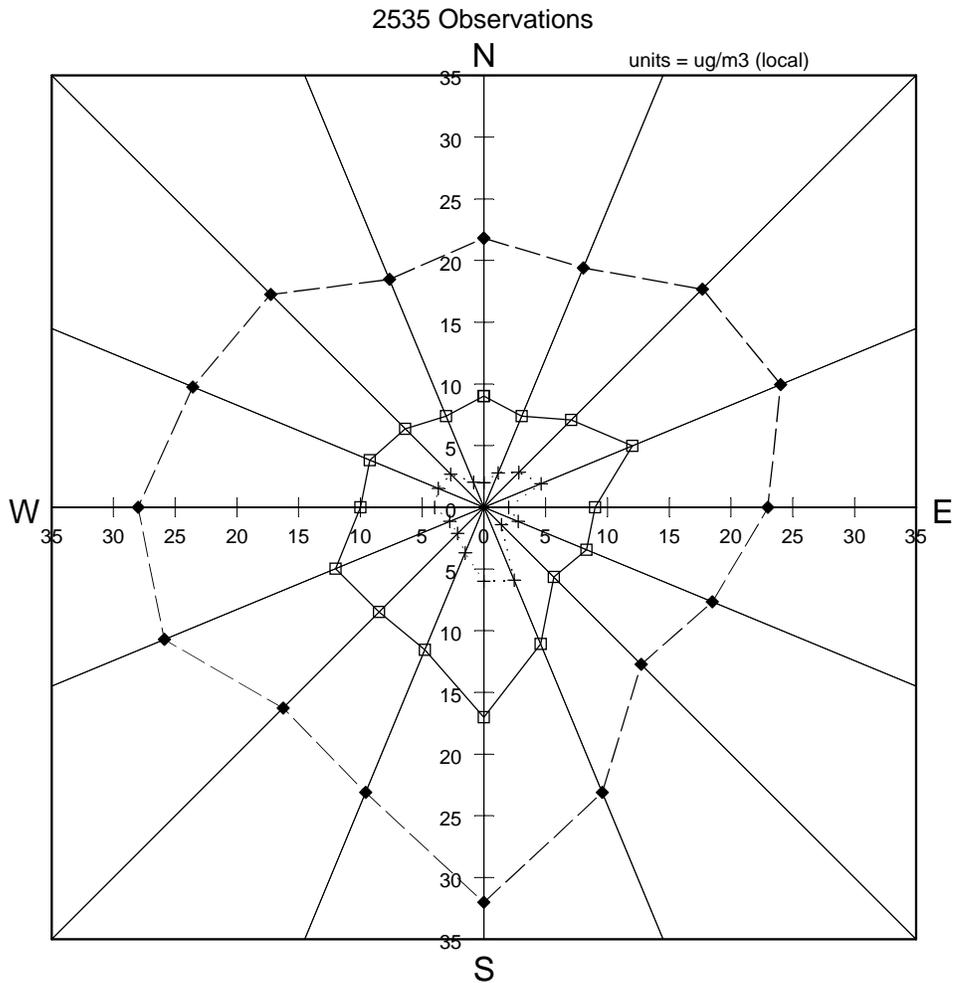
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 No flags excluded.

Percentiles

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VISTA 2006

PM2.5 Fine 0-2.5 um, Local Cond by Resultant Wind Direction



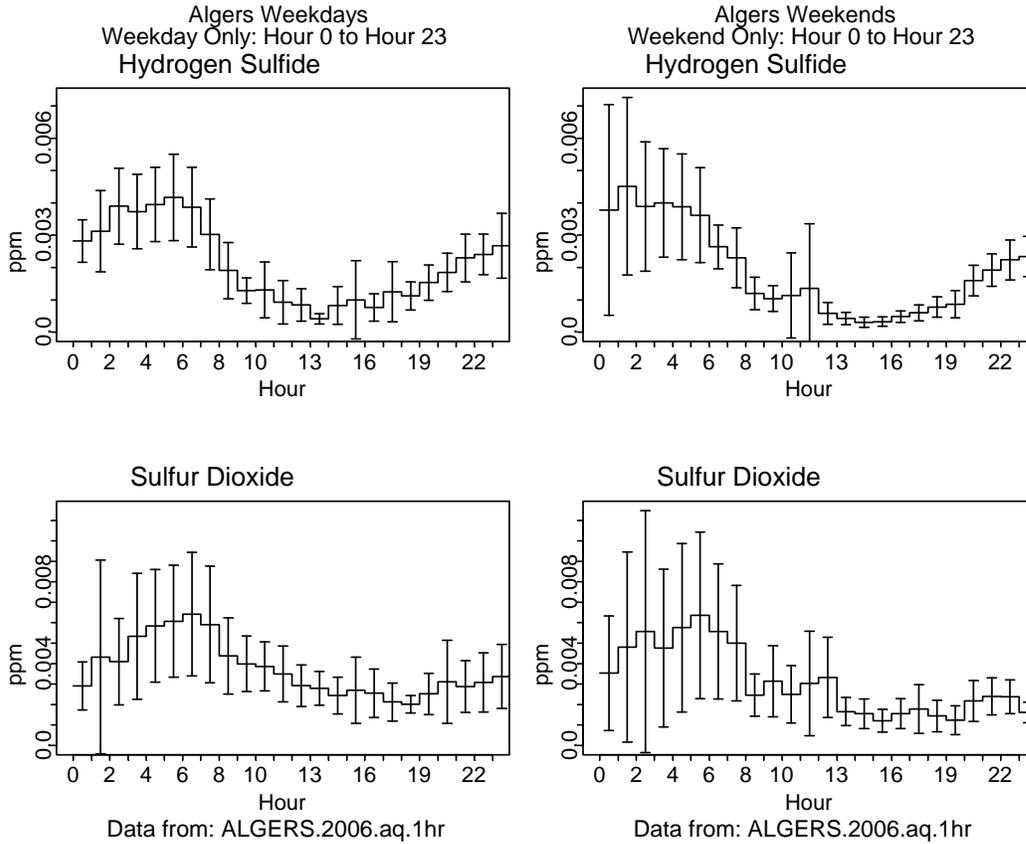
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Percentiles

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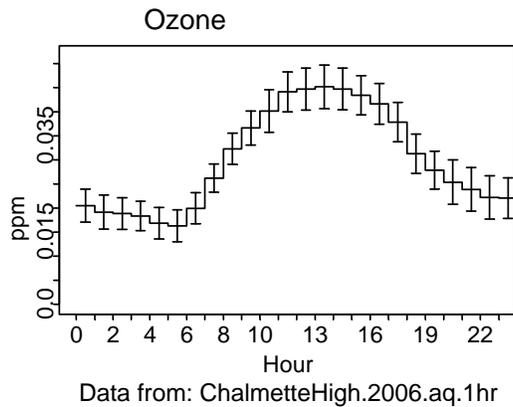
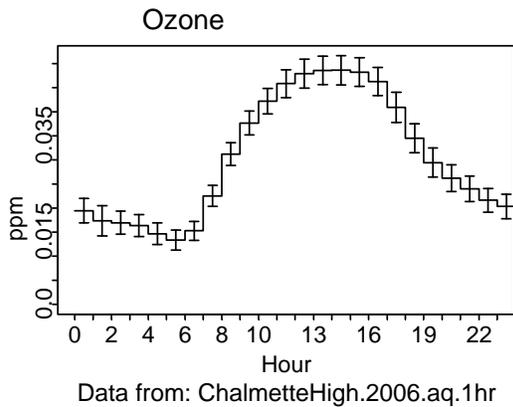
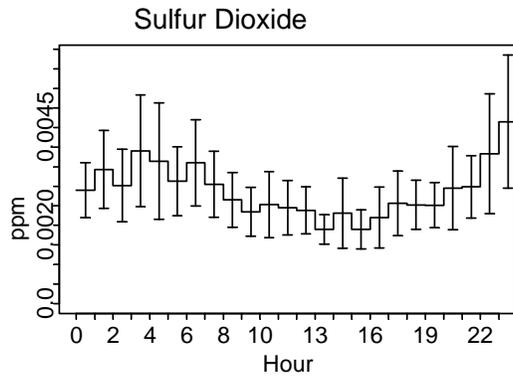
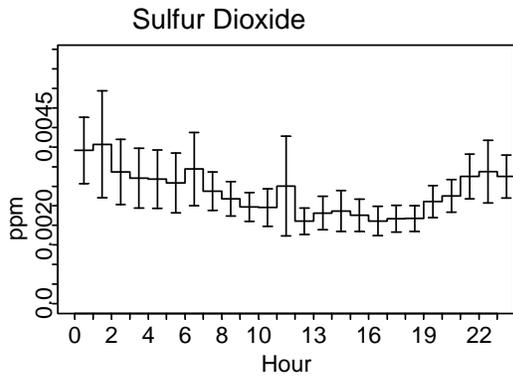
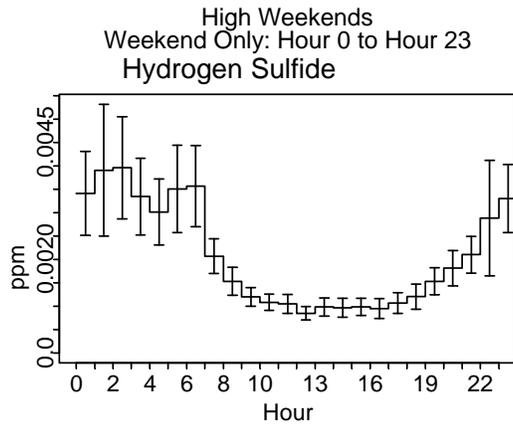
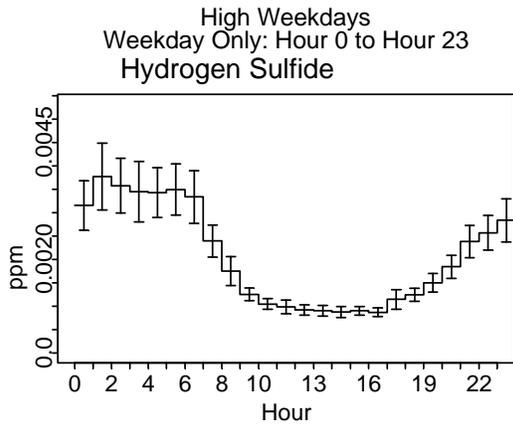
Diurnal Profiles

Diurnal Profile



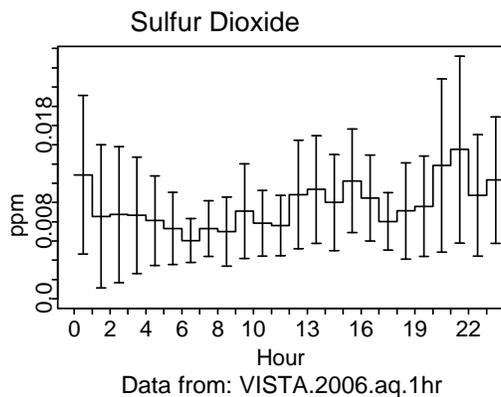
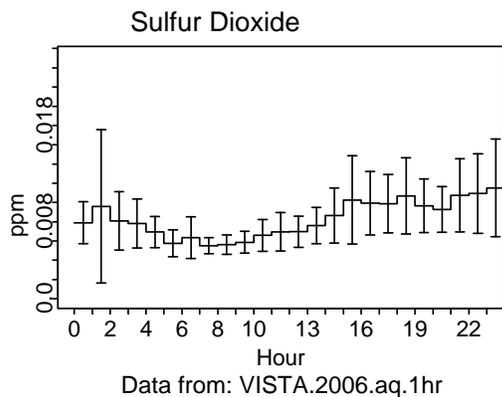
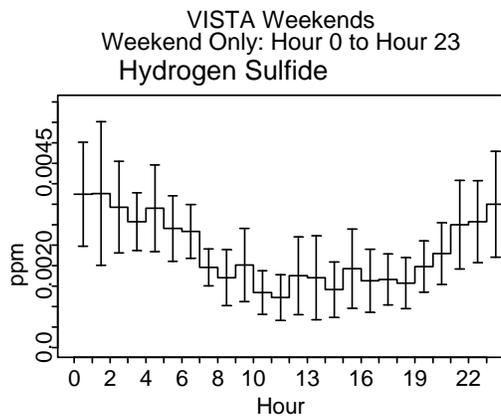
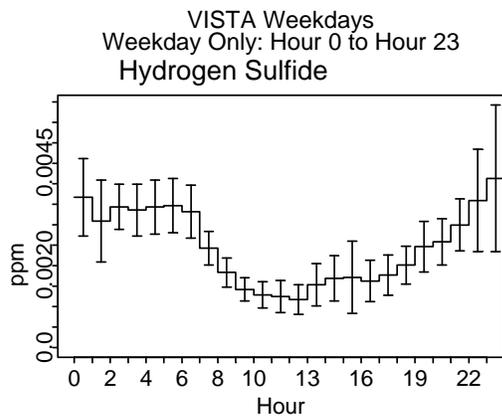
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No time period excluded.

Diurnal Profile



Includes data from 5/1/2006 to 12/6/2006.
No time period excluded.

Diurnal Profiles



Includes data from 5/1/2006 to 12/6/2006.
No time period excluded.

VOC Summaries
Louisiana Department of Environmental Quality
Air Toxics Summary

12/6/2006

Monitoring Site Code Chalmette VISTA

Sample Duration: 24 hour

Samples Collected: 32

Sample Date Range: 3/18/2006 - 11/7/2006

All Concentrations are in parts per billion molar volume (ppbv)

Compound	Mean	Max	Compound	Mean	Max
Freon-12	0.55	0.65	trans-1,3-dichloropropene	0.00	0.00
Chloromethane	0.65	1.37	1,1,2-trichloroethane	0.00	0.02
Freon-114	0.02	0.05	Toluene	0.63	2.09
Vinyl Chloride	0.00	0.03	2-Butanone	0.60	2.22
1,3-butadiene	0.07	0.74	1,2-dibromoethane	0.03	0.90
Bromomethane	0.01	0.04	Tetrachloroethylene	0.02	0.06
Carbon disulfide	0.10	1.00	Methyl Acrylate	0.00	0.04
Chloroethane	0.00	0.03	Chlorobenzene	0.01	0.03
Freon-11	0.26	0.32	Ethylbenzene	0.15	1.45
Acetonitrile	0.20	0.36	Vinyl Acetate	0.00	0.00
1,1-dichloroethene	0.00	0.03	m/p Xylene	0.50	2.13
Methylene Chloride	0.11	0.23	Styrene	0.08	1.65
Freon-113	0.11	0.86	o Xylene	0.19	1.45
Acetone	6.16	17.15	2-nitropropane	0.00	0.00
1,1-dichloroethane	0.03	0.79	1,1,2,2-tetrachloroethane	0.00	0.02
cis-1,2-dichloroethene	0.00	0.02	1,3,5-trimethylbenzene	0.07	0.93
Acrylonitrile	0.05	0.84	1,2,4-trimethylbenzene	0.16	1.26
Chloroform	0.03	0.08	Chlorobutane	0.02	0.57
1,2-dichloroethane	0.05	0.86	Benzyl Chloride	0.00	0.00
Diethyl ether	0.00	0.00	4-methyl-2-pentanone	0.01	0.16
1,1,1-trichloroethane	0.02	0.04	Chloroacetonitrile	0.00	0.00
Benzene	0.34	1.20	1,3-dichlorobenzene	0.00	0.02
Carbon Tetrachloride	0.08	0.10	1,4-dichlorobenzene	0.01	0.03
Allyl Chloride	0.00	0.00	1,2-dichlorobenzene	0.00	0.02
1,2-dichloropropane	0.00	0.00	1,2,4-trichlorobenzene	0.07	0.90
Trichloroethylene	0.01	0.17	1,3-hexachlorobutadiene	0.06	0.98
cis-1,3-dichloropropene	0.00	0.01	2-Hexanone	0.02	0.27
MTBE	0.00	0.09	Methyl Methacrylate	0.00	0.00
Tetrahydrofuran	0.02	0.58	Ethyl Methacrylate	0.00	0.00
Methacrylonitrile	0.00	0.07	Nitrobenzene	0.00	0.12

Louisiana Department of Environmental Quality

Air Toxics Summary

12/6/2006

Monitoring Site Code Chalmette VISTA

Samples Collected: 22

Sample Duration: Strike Samples

Sample Date Range: 5/13/2006 - 11/10/2006

All Concentrations are in parts per billion molar volume (ppbv)

Compound	Mean	Max	Compound	Mean	Max
Freon-12	0.53	0.71	trans-1,3-dichloropropene	0.00	0.00
Chloromethane	0.61	0.77	1,1,2-trichloroethane	0.00	0.04
Freon-114	0.02	0.02	Toluene	4.40	26.23
Vinyl Chloride	0.00	0.01	2-Butanone	1.22	6.95
1,3-butadiene	0.06	0.38	1,2-dibromoethane	0.01	0.02
Bromomethane	0.01	0.03	Tetrachloroethylene	0.01	0.06
Carbon disulfide	0.07	0.40	Methyl Acrylate	0.00	0.06
Chloroethane	0.00	0.00	Chlorobenzene	0.01	0.03
Freon-11	0.26	0.41	Ethylbenzene	0.78	8.11
Acetonitrile	0.20	0.61	Vinyl Acetate	0.00	0.00
1,1-dichloroethene	0.00	0.00	m/p Xylene	3.39	33.80
Methylene Chloride	0.09	0.21	Styrene	0.06	0.25
Freon-113	0.08	0.09	o Xylene	0.77	3.85
Acetone	14.79	166.56	2-nitropropane	0.00	0.00
1,1-dichloroethane	0.00	0.02	1,1,2,2-tetrachloroethane	0.00	0.00
cis-1,2-dichloroethane	0.00	0.00	1,3,5-trimethylbenzene	0.43	6.26
Acrylonitrile	0.02	0.40	1,2,4-trimethylbenzene	1.18	17.12
Chloroform	0.03	0.07	Chlorobutane	0.00	0.00
1,2-dichloroethane	0.01	0.05	Benzyl Chloride	0.00	0.00
Diethyl ether	0.00	0.00	4-methyl-2-pentanone	0.04	0.90
1,1,1-trichloroethane	0.02	0.03	Chloroacetonitrile	0.00	0.00
Benzene	1.21	5.56	1,3-dichlorobenzene	0.00	0.07
Carbon Tetrachloride	0.08	0.10	1,4-dichlorobenzene	0.01	0.07
Allyl Chloride	0.00	0.00	1,2-dichlorobenzene	0.00	0.01
1,2-dichloropropane	0.00	0.00	1,2,4-trichlorobenzene	0.06	0.11
Trichloroethylene	0.00	0.02	1,3-hexachlorobutadiene	0.04	0.08
cis-1,3-dichloropropene	0.00	0.00	2-Hexanone	0.00	0.00
MTBE	0.00	0.01	Methyl Methacrylate	0.00	0.00
Tetrahydrofuran	0.13	2.78	Ethyl Methacrylate	0.00	0.00
Methacrylonitrile	0.01	0.16	Nitrobenzene	0.00	0.00

Louisiana Department of Environmental Quality

Air Toxics Summary

12/6/2006

Monitoring Site Code Chalmette High Site

Sample Duration: 24

Samples Collected: 28

Sample Date Range: 4/29/2006 - 10/26/200

All Concentrations are in parts per billion molar volume (ppbv)

Compound	Mean	Max	Compound	Mean	
Max					
Freon-12	0.51	0.60	trans-1,3-dichloropropene	0.00	0.00
Chloromethane	0.67	1.17	1,1,2-trichloroethane	0.00	0.00
Freon-114	0.02	0.03	Toluene	0.50	1.26
Vinyl Chloride	0.00	0.02	2-Butanone	0.62	1.54
1,3-butadiene	0.04	0.22	1,2-dibromoethane	0.00	0.03
Bromomethane	0.02	0.04	Tetrachloroethylene	0.01	0.04
Carbon disulfide	0.09	0.54	Methyl Acrylate	0.00	0.07
Chloroethane	0.00	0.05	Chlorobenzene	0.01	0.03
Freon-11	0.24	0.29	Ethylbenzene	0.08	0.21
Acetonitrile	0.23	0.36	Vinyl Acetate	0.00	0.00
1,1-dichloroethene	0.00	0.01	m/p Xylene	0.26	0.67
Methylene Chloride	0.08	0.14	Styrene	0.03	0.07
Freon-113	0.08	0.10	o Xylene	0.10	0.25
Acetone	5.89	13.02	2-nitropropane	0.00	0.00
1,1-dichloroethane	0.00	0.04	1,1,2,2-tetrachloroethane	0.00	0.00
cis-1,2-dichloroethene	0.00	0.00	1,3,5-trimethylbenzene	0.03	0.12
Acrylonitrile	0.21	1.68	1,2,4-trimethylbenzene	0.10	0.42
Chloroform	0.06	0.30	Chlorobutane	0.00	0.00
1,2-dichloroethane	0.02	0.06	Benzyl Chloride	0.00	0.01
Diethyl ether	0.00	0.00	4-methyl-2-pentanone	0.00	0.02
1,1,1-trichloroethane	0.02	0.03	Chloroacetonitrile	0.00	0.00
Benzene	0.27	0.74	1,3-dichlorobenzene	0.00	0.01
Carbon Tetrachloride	0.08	0.09	1,4-dichlorobenzene	0.01	0.03
Allyl Chloride	0.00	0.00	1,2-dichlorobenzene	0.00	0.01
1,2-dichloropropane	0.00	0.00	1,2,4-trichlorobenzene	0.04	0.09
Trichloroethylene	0.01	0.06	1,3-hexachlorobutadiene	0.03	0.07
cis-1,3-dichloropropene	0.00	0.00	2-Hexanone	0.01	0.11
MTBE	0.00	0.02	Methyl Methacrylate	0.00	0.03
Tetrahydrofuran	0.02	0.52	Ethyl Methacrylate	0.00	0.00
Methacrylonitrile	0.04	0.51	Nitrobenzene	0.00	0.00

Louisiana Department of Environmental Quality

Air Toxics Summary

12/6/2006

Monitoring Site Code Chalmette High Site

Samples Collected: 33

Sample Duration: Strike Samples
Sample Date Range: 5/7/2006 - 10/24/2006

All Concentrations are in parts per billion molar volume (ppbv)

Compound	Mean	Max	Compound	Mean	Max
Freon-12	0.50	0.59	trans-1,3-dichloropropene	0.00	0.02
Chloromethane	0.64	0.77	1,1,2-trichloroethane	0.00	0.08
Freon-114	0.02	0.04	Toluene	4.15	16.15
Vinyl Chloride	0.00	0.07	2-Butanone	0.73	2.45
1,3-butadiene	0.20	4.74	1,2-dibromoethane	0.01	0.02
Bromomethane	0.01	0.08	Tetrachloroethylene	0.04	0.39
Carbon disulfide	0.06	0.26	Methyl Acrylate	0.02	0.24
Chloroethane	0.00	0.05	Chlorobenzene	0.03	0.40
Freon-11	0.24	0.28	Ethylbenzene	0.56	2.96
Acetonitrile	0.15	0.29	Vinyl Acetate	0.00	0.00
1,1-dichloroethene	0.00	0.05	m/p Xylene	1.70	6.68
Methylene Chloride	0.10	0.53	Styrene	0.05	0.18
Freon-113	0.08	0.10	o Xylene	0.63	2.42
Acetone	8.12	20.11	2-nitropropane	0.00	0.00
1,1-dichloroethane	0.00	0.04	1,1,2,2-tetrachloroethane	0.00	0.01
cis-1,2-dichloroethene	0.00	0.00	1,3,5-trimethylbenzene	0.15	0.61
Acrylonitrile	0.09	2.65	1,2,4-trimethylbenzene	0.49	2.04
Chloroform	0.06	0.28	Chlorobutane	0.00	0.15
1,2-dichloroethane	0.04	0.21	Benzyl Chloride	0.00	0.02
Diethyl ether	0.00	0.03	4-methyl-2-pentanone	0.00	0.04
1,1,1-trichloroethane	0.02	0.05	Chloroacetonitrile	0.00	0.00
Benzene	2.39	8.30	1,3-dichlorobenzene	0.00	0.02
Carbon Tetrachloride	0.08	0.16	1,4-dichlorobenzene	0.02	0.04
Allyl Chloride	0.00	0.00	1,2-dichlorobenzene	0.00	0.02
1,2-dichloropropane	0.00	0.00	1,2,4-trichlorobenzene	0.06	0.12
Trichloroethylene	0.00	0.03	1,3-hexachlorobutadiene	0.04	0.07
cis-1,3-dichloropropene	0.00	0.02	2-Hexanone	0.01	0.17
MTBE	0.01	0.06	Methyl Methacrylate	0.00	0.00
Tetrahydrofuran	0.25	3.65	Ethyl Methacrylate	0.00	0.03
Methacrylonitrile	0.01	0.12	Nitrobenzene	0.00	0.15

Louisiana Department of Environmental Quality

Air Toxics Summary

12/6/2006

Monitoring Site Code Algers Site

Samples Collected: 37

Sample Duration: 24

Sample Date Range: 4/5/2006 - 11/7/2006

All Concentrations are in parts per billion molar volume (ppbv)

Compound	Mean	Max	Compound	Mean	Max
Max					
Freon-12	0.51	0.57	trans-1,3-dichloropropene	0.00	0.00
Chloromethane	0.65	0.81	1,1,2-trichloroethane	0.00	0.06
Freon-114	0.02	0.03	Toluene	0.67	1.97
Vinyl Chloride	0.00	0.08	2-Butanone	0.52	1.25
1,3-butadiene	0.07	0.47	1,2-dibromoethane	0.01	0.07
Bromomethane	0.01	0.04	Tetrachloroethylene	0.02	0.16
Carbon disulfide	0.08	0.74	Methyl Acrylate	0.00	0.04
Chloroethane	0.00	0.07	Chlorobenzene	0.01	0.07
Freon-11	0.25	0.29	Ethylbenzene	0.11	0.35
Acetonitrile	0.20	0.76	Vinyl Acetate	0.00	0.00
1,1-dichloroethene	0.00	0.08	m/p Xylene	0.39	1.13
Methylene Chloride	0.10	0.29	Styrene	0.04	0.11
Freon-113	0.08	0.15	o Xylene	0.15	0.44
Acetone	5.66	12.98	2-nitropropane	0.00	0.00
1,1-dichloroethane	0.01	0.07	1,1,2,2-tetrachloroethane	0.00	0.04
cis-1,2-dichloroethene	0.00	0.00	1,3,5-trimethylbenzene	0.05	0.14
Acrylonitrile	0.07	0.94	1,2,4-trimethylbenzene	0.15	0.43
Chloroform	0.03	0.11	Chlorobutane	0.00	0.04
1,2-dichloroethane	0.03	0.09	Benzyl Chloride	0.00	0.00
Diethyl ether	0.00	0.06	4-methyl-2-pentanone	0.00	0.00
1,1,1-trichloroethane	0.02	0.10	Chloroacetonitrile	0.00	0.00
Benzene	0.36	1.00	1,3-dichlorobenzene	0.00	0.00
Carbon Tetrachloride	0.08	0.14	1,4-dichlorobenzene	0.06	0.16
Allyl Chloride	0.00	0.00	1,2-dichlorobenzene	0.00	0.01
1,2-dichloropropane	0.00	0.00	1,2,4-trichlorobenzene	0.05	0.12
Trichloroethylene	0.01	0.10	1,3-hexachlorobutadiene	0.04	0.10
cis-1,3-dichloropropene	0.00	0.00	2-Hexanone	0.01	0.13
MTBE	0.00	0.00	Methyl Methacrylate	0.00	0.05
Tetrahydrofuran	0.01	0.32	Ethyl Methacrylate	0.00	0.00
Methacrylonitrile	0.00	0.06	Nitrobenzene	0.00	0.14

Louisiana Department of Environmental Quality

Air Toxics Summary

12/6/2006

Monitoring Site Code Algiers Site

Samples Collected: 25

Sample Duration: Strike samples

Sample Date Range: 5/15/2006 - 11/6/2006

All Concentrations are in parts per billion molar volume (ppbv)

Compound	Mean	Max	Compound	Mean	Max
Max					
Freon-12	0.49	0.57	trans-1,3-dichloropropene	0.00	0.01
Chloromethane	0.66	1.03	1,1,2-trichloroethane	0.00	0.03
Freon-114	0.02	0.03	Toluene	1.10	4.75
Vinyl Chloride	0.00	0.06	2-Butanone	0.64	1.09
1,3-butadiene	0.05	0.42	1,2-dibromoethane	0.01	0.02
Bromomethane	0.01	0.06	Tetrachloroethylene	0.01	0.04
Carbon disulfide	0.07	0.29	Methyl Acrylate	0.00	0.04
Chloroethane	0.00	0.05	Chlorobenzene	0.01	0.04
Freon-11	0.25	0.31	Ethylbenzene	0.19	0.79
Acetonitrile	0.70	3.64	Vinyl Acetate	0.00	0.00
1,1-dichloroethene	0.00	0.00	m/p Xylene	0.83	4.28
Methylene Chloride	0.10	0.38	Styrene	0.04	0.15
Freon-113	0.08	0.10	o Xylene	0.26	1.08
Acetone	7.41	18.50	2-nitropropane	0.00	0.00
1,1-dichloroethane	0.00	0.03	1,1,2,2-tetrachloroethane	0.00	0.02
cis-1,2-dichloroethene	0.00	0.00	1,3,5-trimethylbenzene	0.07	0.39
Acrylonitrile	0.71	3.20	1,2,4-trimethylbenzene	0.22	1.25
Chloroform	0.03	0.09	Chlorobutane	0.00	0.03
1,2-dichloroethane	0.03	0.14	Benzyl Chloride	0.00	0.03
Diethyl ether	0.00	0.00	4-methyl-2-pentanone	0.00	0.00
1,1,1-trichloroethane	0.02	0.03	Chloroacetonitrile	0.00	0.00
Benzene	0.77	2.50	1,3-dichlorobenzene	0.00	0.04
Carbon Tetrachloride	0.08	0.09	1,4-dichlorobenzene	0.05	0.45
Allyl Chloride	0.00	0.00	1,2-dichlorobenzene	0.00	0.04
1,2-dichloropropane	0.00	0.00	1,2,4-trichlorobenzene	0.07	0.21
Trichloroethylene	0.01	0.07	1,3-hexachlorobutadiene	0.05	0.10
cis-1,3-dichloropropene	0.00	0.01	2-Hexanone	0.03	0.28
MTBE	0.00	0.03	Methyl Methacrylate	0.00	0.00
Tetrahydrofuran	0.00	0.00	Ethyl Methacrylate	0.00	0.00
Methacrylonitrile	0.02	0.24	Nitrobenzene	0.01	0.28