

Tonawanda Community Air Quality Study

Division of Air Resources

Bureau of Air Quality Analysis & Research

Bureau of Air Quality Surveillance

EPA Air Toxics Webinar Series

June 25, 2009



Purpose of Study

- Evaluate the effectiveness of the 1990 Clean Air Act Air Toxics Program;
- Participate in the National Ambient Air Toxics Monitoring Strategy;
- Characterize the degree and extent of local-scale air toxics problems;



Purpose of Study

- Provides information for the community and State/Federal government to identify the need for implementing risk reduction strategies.
- Community education - understanding air toxics regulation to foster community involvement.



Why Was Tonawanda Selected ?

- Community concerns about ambient concentrations of benzene and odors;
- EPA's 1999 National-scale Air Toxics Assessment (NATA) results for Erie County;
- Coke Oven Residual Risk Assessment prepared by EPA



Community Outreach

- Small meetings with community prior to study;
- Three major public meetings held in affected community to discuss study.
 - Presentation of study design and six months of monitoring results;
 - Presentation of one year of monitoring results and individual risk;
 - Presentation of study conclusions, current actions, future actions and our data analysis.



Commitment to the Public

- Keep public informed by holding public meetings to discuss project and results
- Continue to work on air pollution reduction strategies
- Collaborate with the Clean Air Coalition of Western N.Y. (CACWNY)



Tonawanda Study Plan

- Collected monitoring data from four sites for one year
- Analyze pollutant specific data
 - Evaluate influence of wind direction on monitored concentrations
 - Compare annual average concentrations to health-based guidelines and characterize risk
 - Assess emissions and potential contribution to monitored concentrations
 - Mobile sources, large (major) and small (area) industrial and manufacturing sources

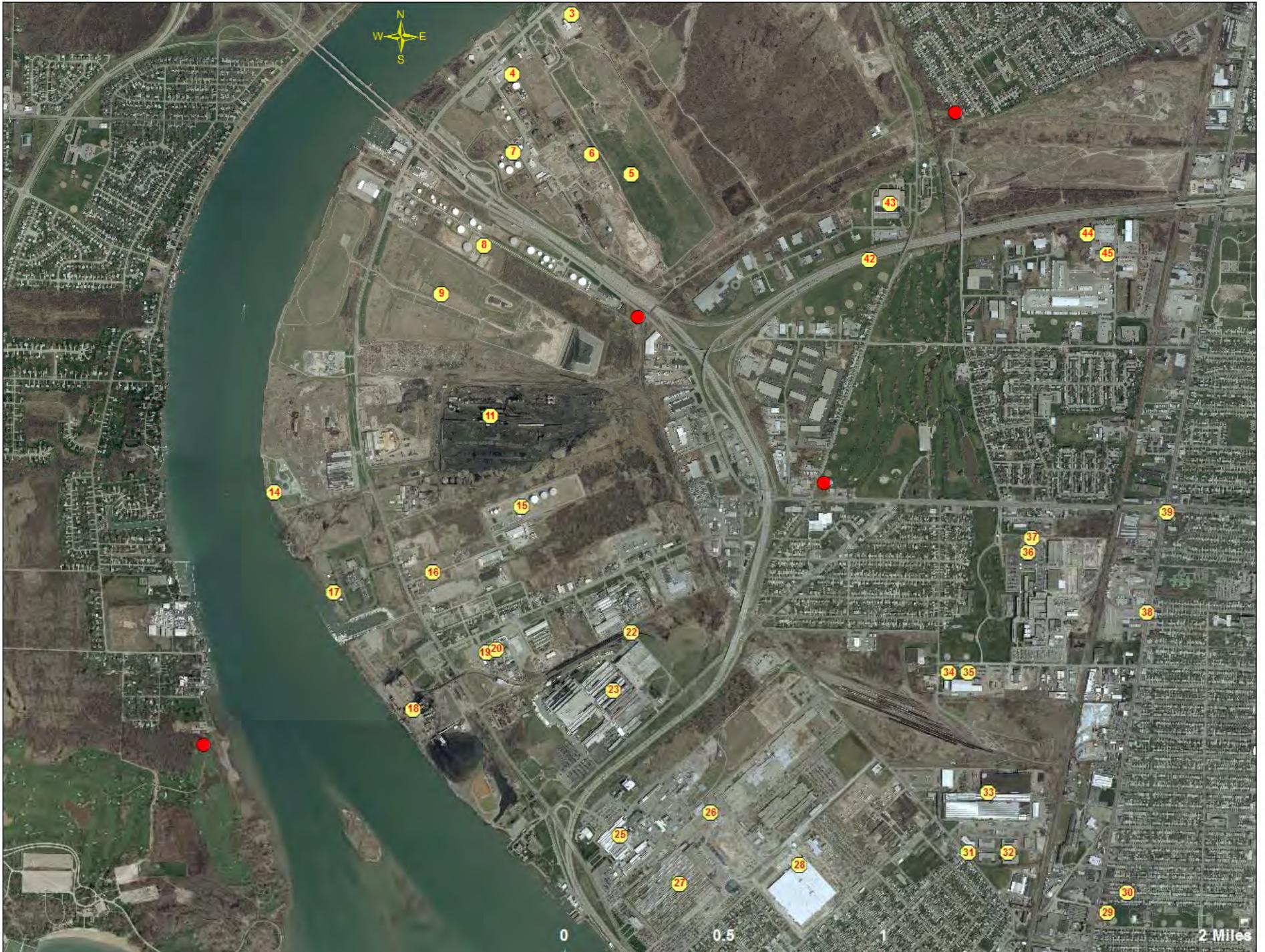


Tonawanda Study Plan

- Enhance emission inventory for large and small sources
- Model these emissions to:
 - Allow for comparison to monitored values
 - Allow for analysis of previously modeled air toxics (EPA's NATA)
 - Evaluate a new multi-facility modeling tool developed by EPA
 - Evaluate previous Coke Oven modeling results, conducted for Residual Risk Assessment





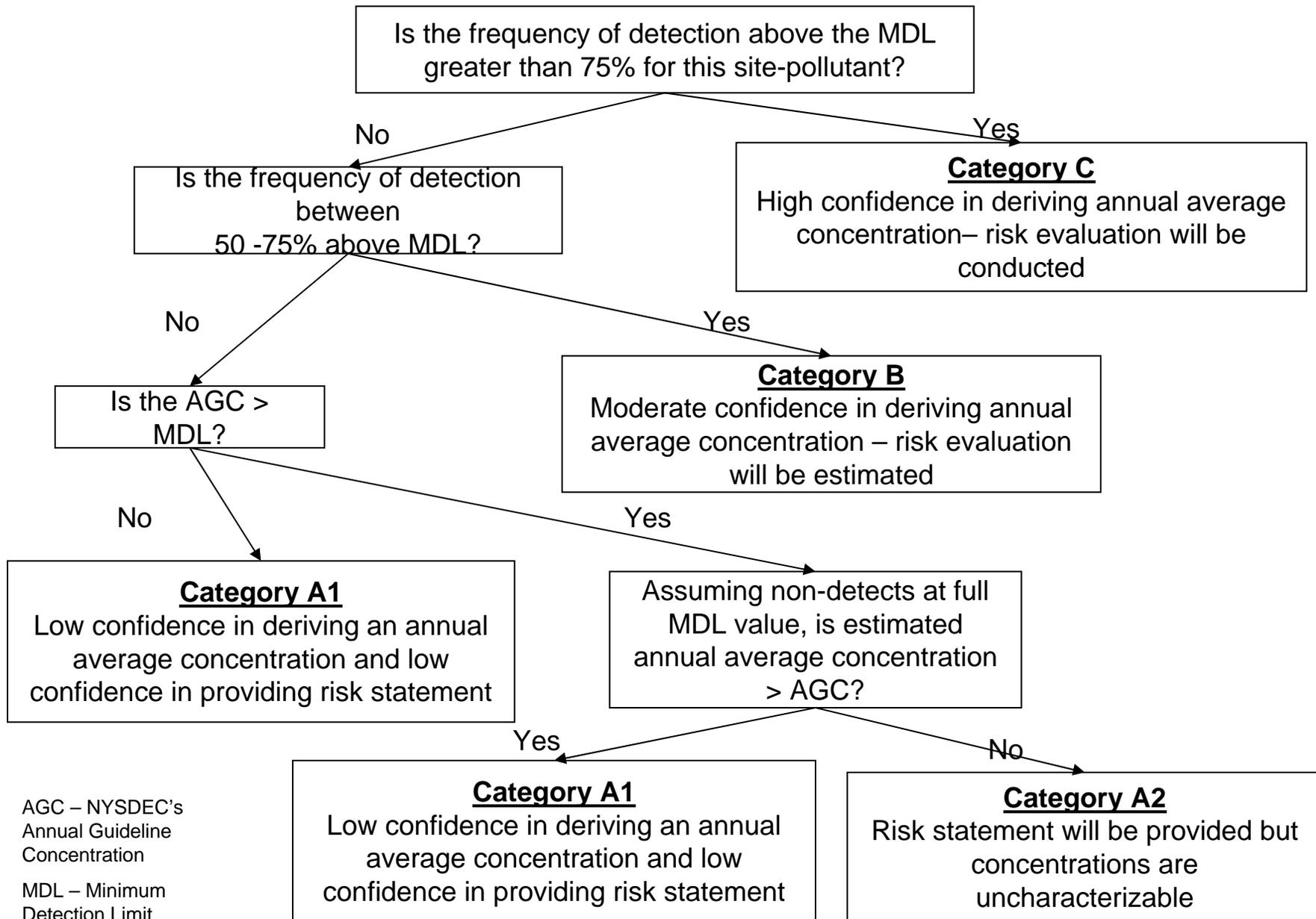


Air Toxics Measured July 2007 – July 2008

- 44 Volatile Organic Compounds (VOCs) and 12 Carbonyls;
- 1 in 6 day sampling schedule (24 hour sample);
- 15 of the chemicals are high priority urban air toxics targeted for reductions by the 1990 Clean Air Act.



Decision Matrix - To assess suitability of characterizing annual averages for health risk evaluation



Compounds greater than the AGC

- Volatile Organic Compounds

- Benzene
- Acrolein
- Carbon tetrachloride

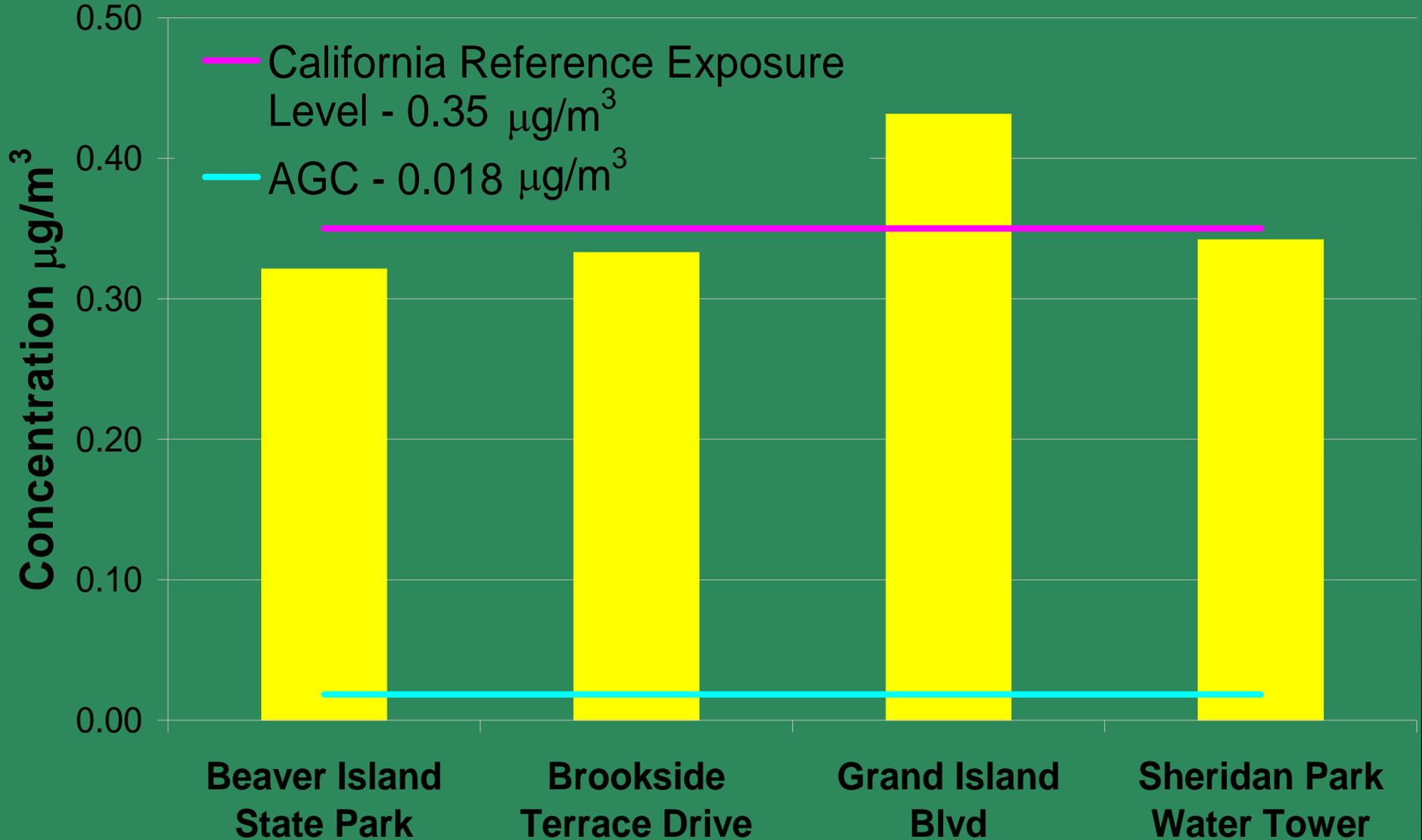
- Carbonyls

- Formaldehyde
- Acetaldehyde



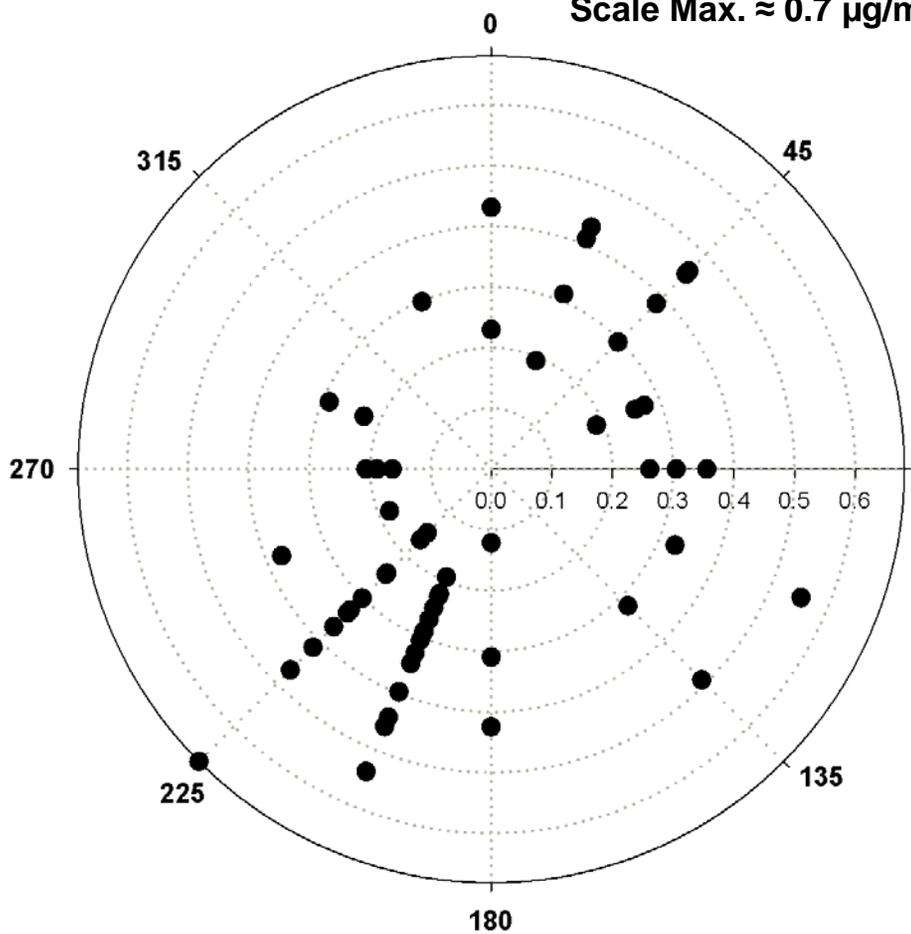
Acrolein

12 month average



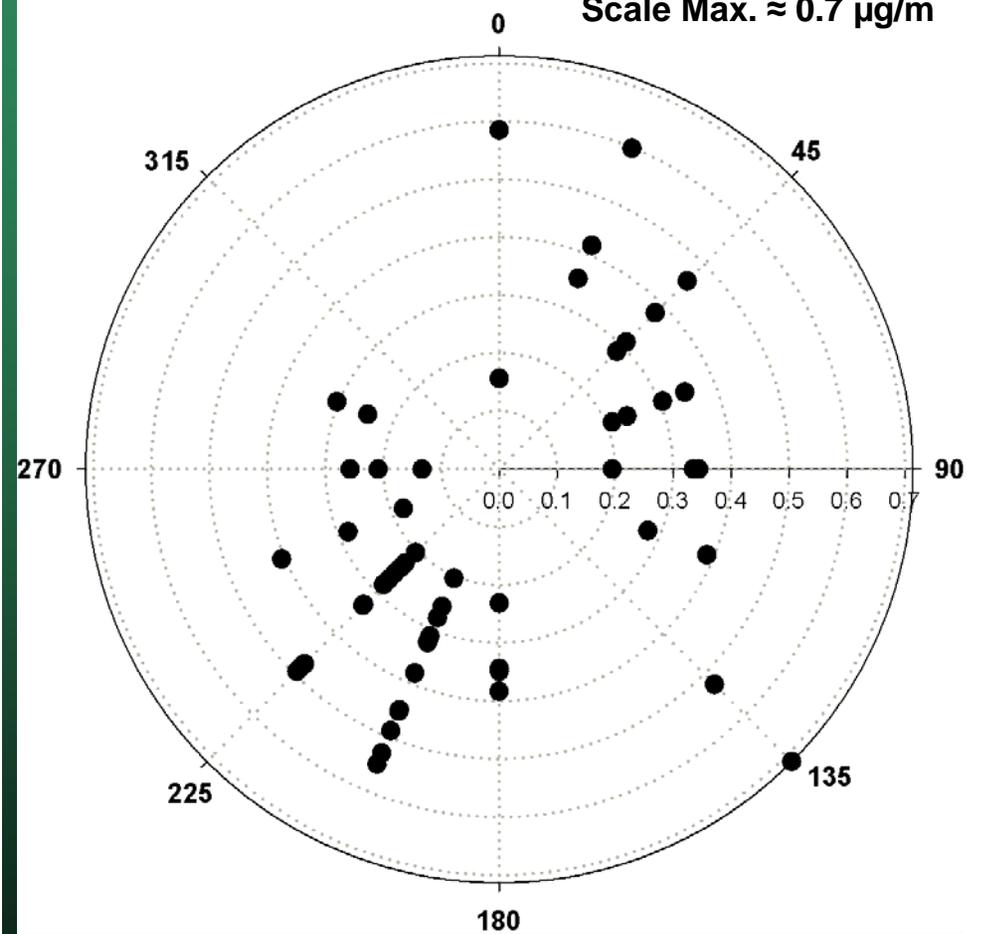
BISP Acrolein

Scale Max. $\approx 0.7 \mu\text{g}/\text{m}^3$



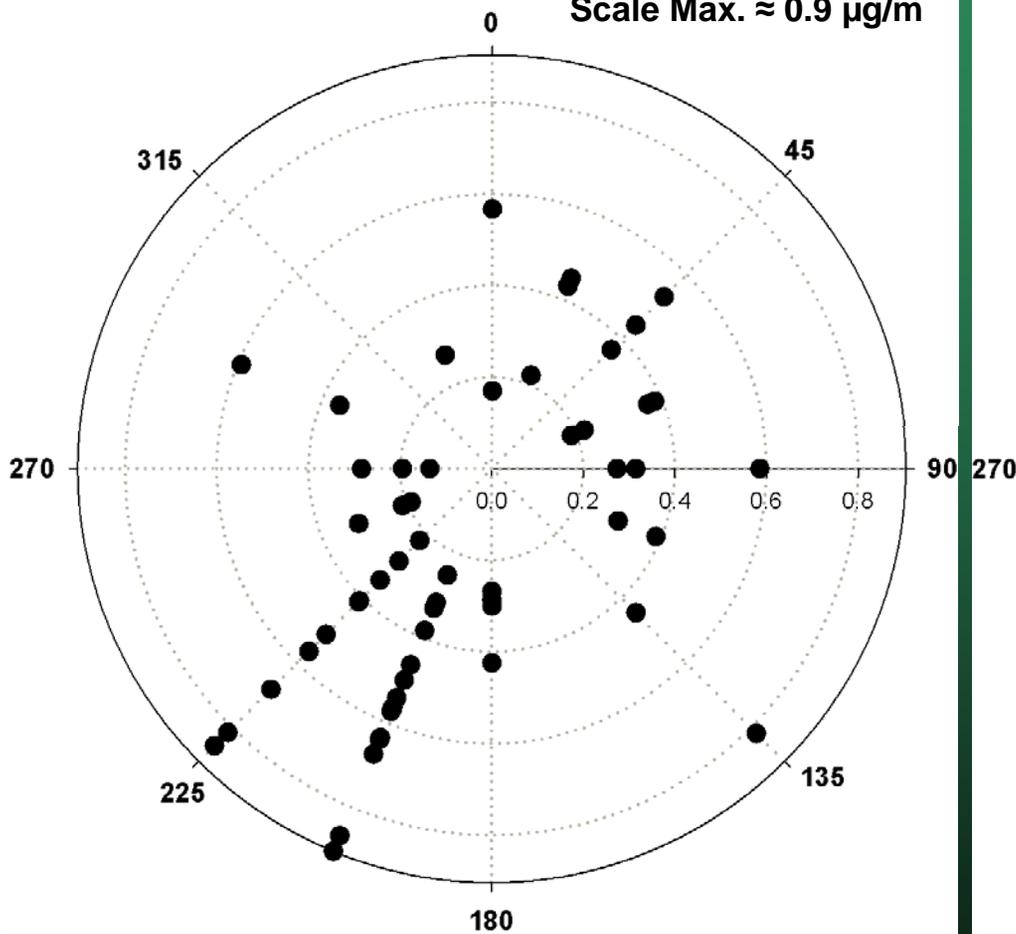
SPWT Acrolein

Scale Max. $\approx 0.7 \mu\text{g}/\text{m}^3$



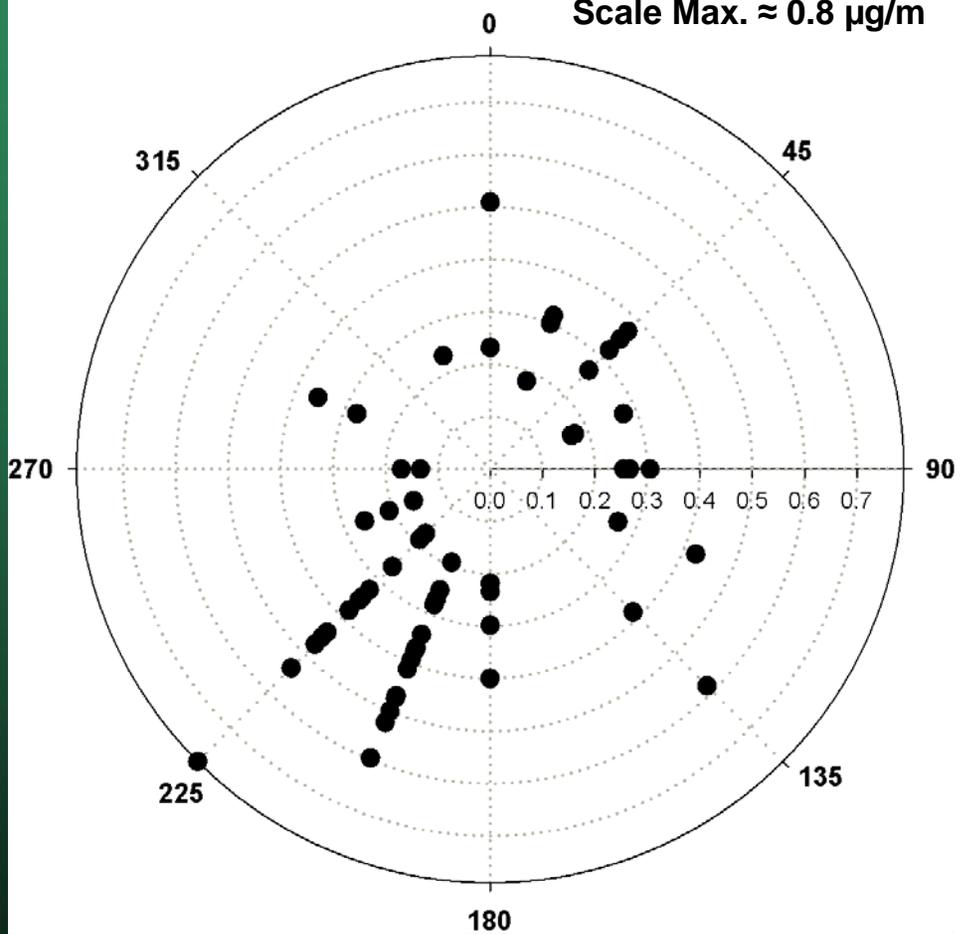
GIBI Acrolein

Scale Max. $\approx 0.9 \mu\text{g}/\text{m}^3$



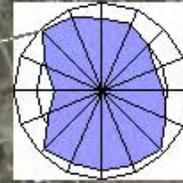
BTRS Acrolein

Scale Max. $\approx 0.8 \mu\text{g}/\text{m}^3$

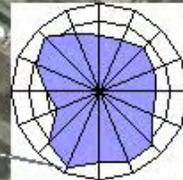


Acrolein Pollution Roses

TWA CONC. = 0.4 $\mu\text{g}/\text{m}^3$



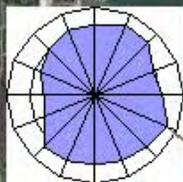
TWA CONC. = 0.5 $\mu\text{g}/\text{m}^3$



TWA CONC. = 0.4 $\mu\text{g}/\text{m}^3$

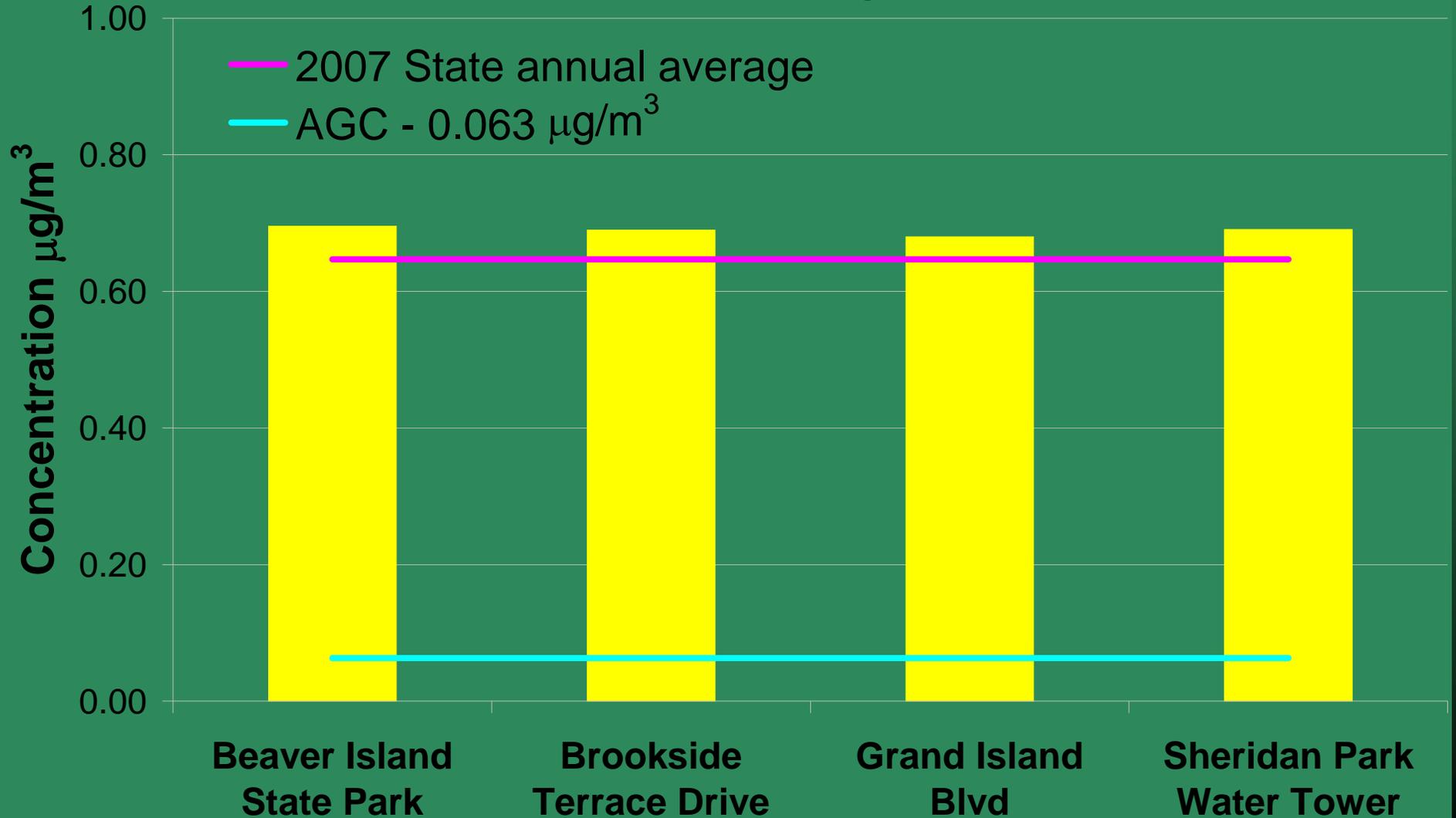


TWA CONC. = 0.4 $\mu\text{g}/\text{m}^3$



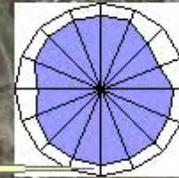
Carbon tetrachloride

12 month average

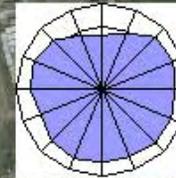


Carbon Tetrachloride Pollution Roses

TWA CONC. = 0.7 $\mu\text{g}/\text{m}^3$



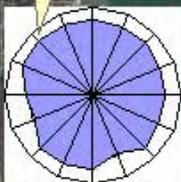
TWA CONC. = 0.7 $\mu\text{g}/\text{m}^3$



TWA CONC. = 0.7 $\mu\text{g}/\text{m}^3$

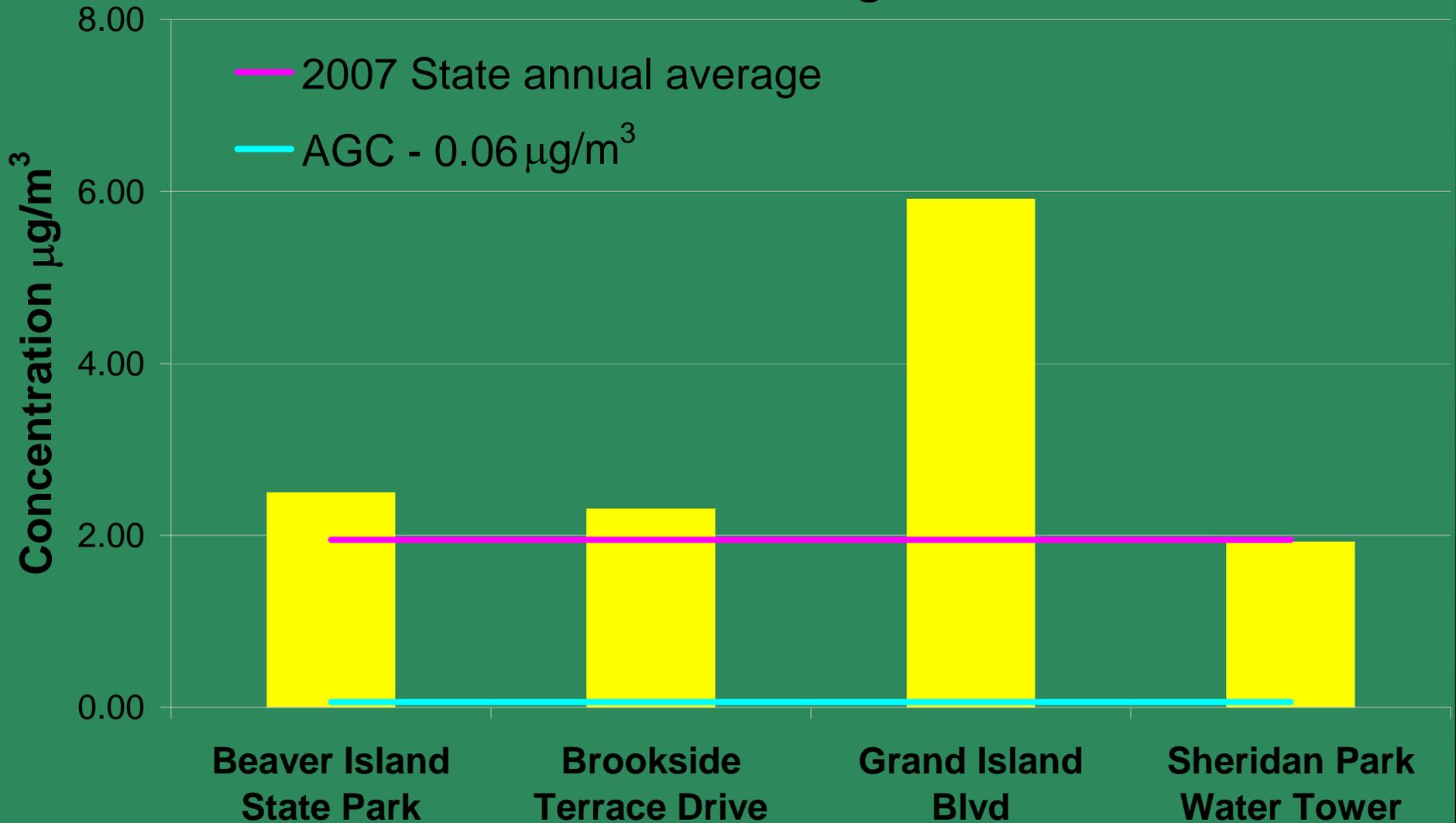


TWA CONC. = 0.7 $\mu\text{g}/\text{m}^3$



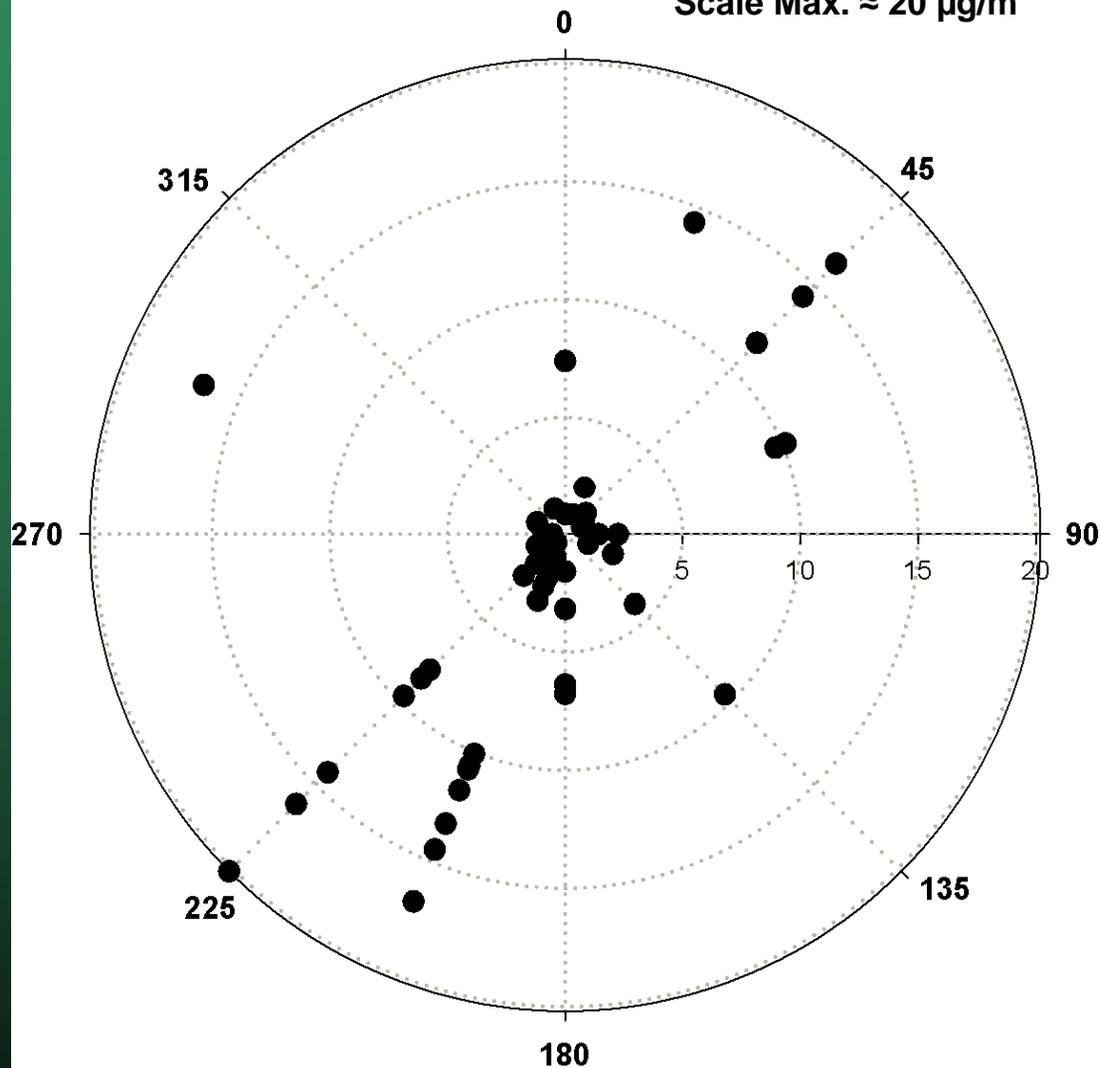
Formaldehyde

12 month average



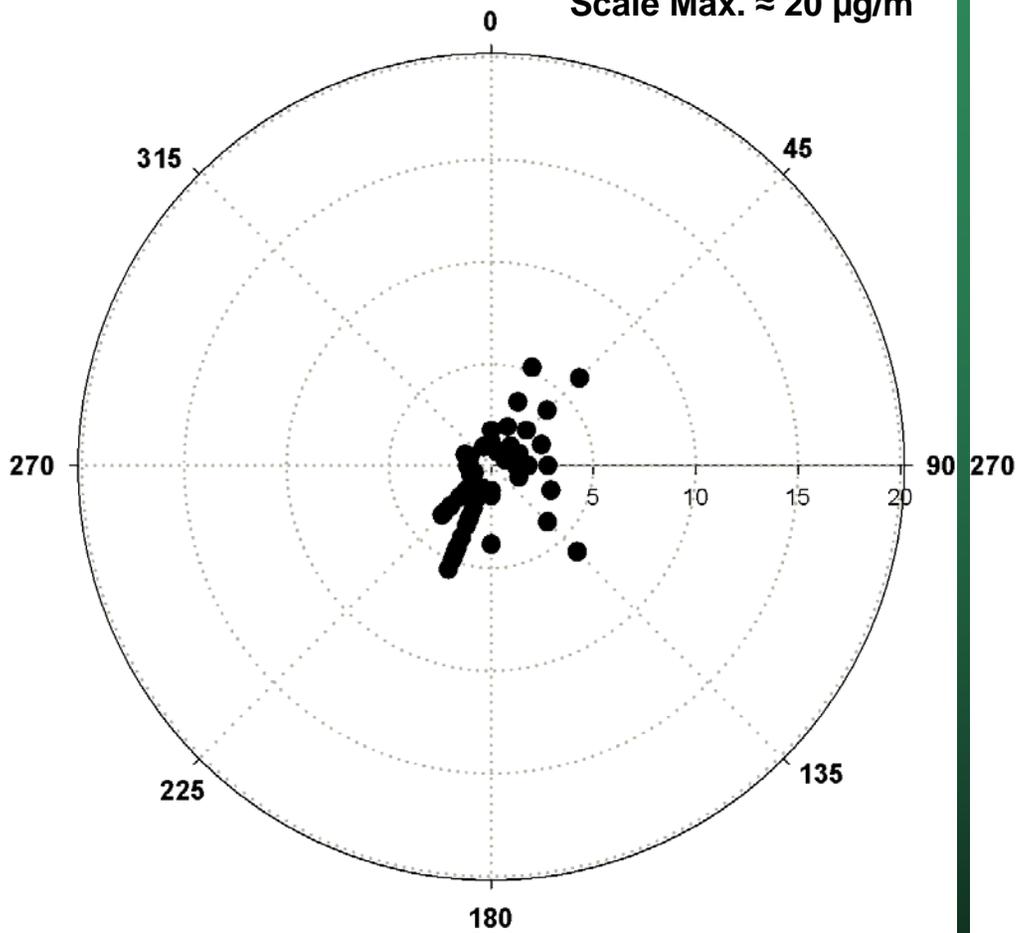
GIBI Formaldehyde

Scale Max. $\approx 20 \mu\text{g}/\text{m}^3$



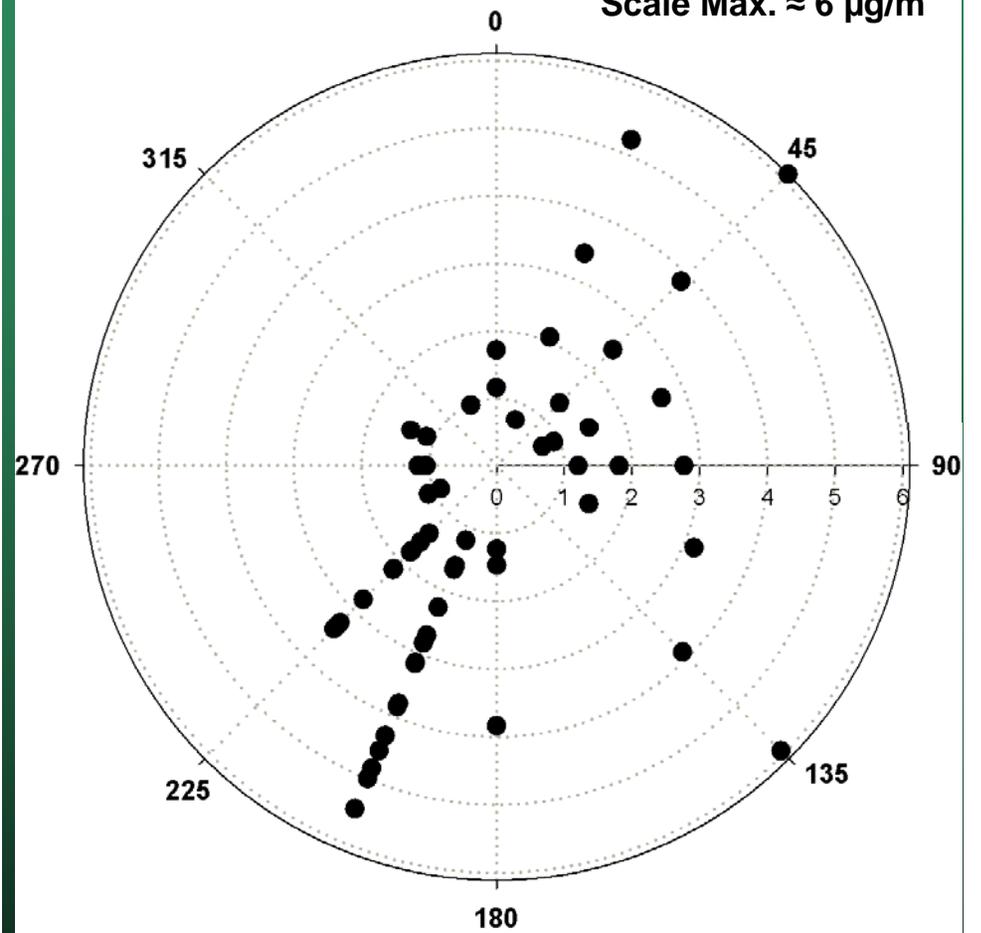
BISP Formaldehyde

Scale Max. $\approx 20 \mu\text{g}/\text{m}^3$



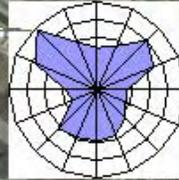
BISP Formaldehyde

Scale Max. $\approx 6 \mu\text{g}/\text{m}^3$

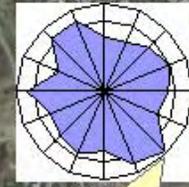


Formaldehyde Pollution Roses

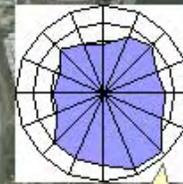
TWA CONC. = 9.5 $\mu\text{g}/\text{m}^3$



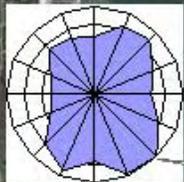
TWA CONC. = 2.9 $\mu\text{g}/\text{m}^3$



TWA CONC. = 2.5 $\mu\text{g}/\text{m}^3$

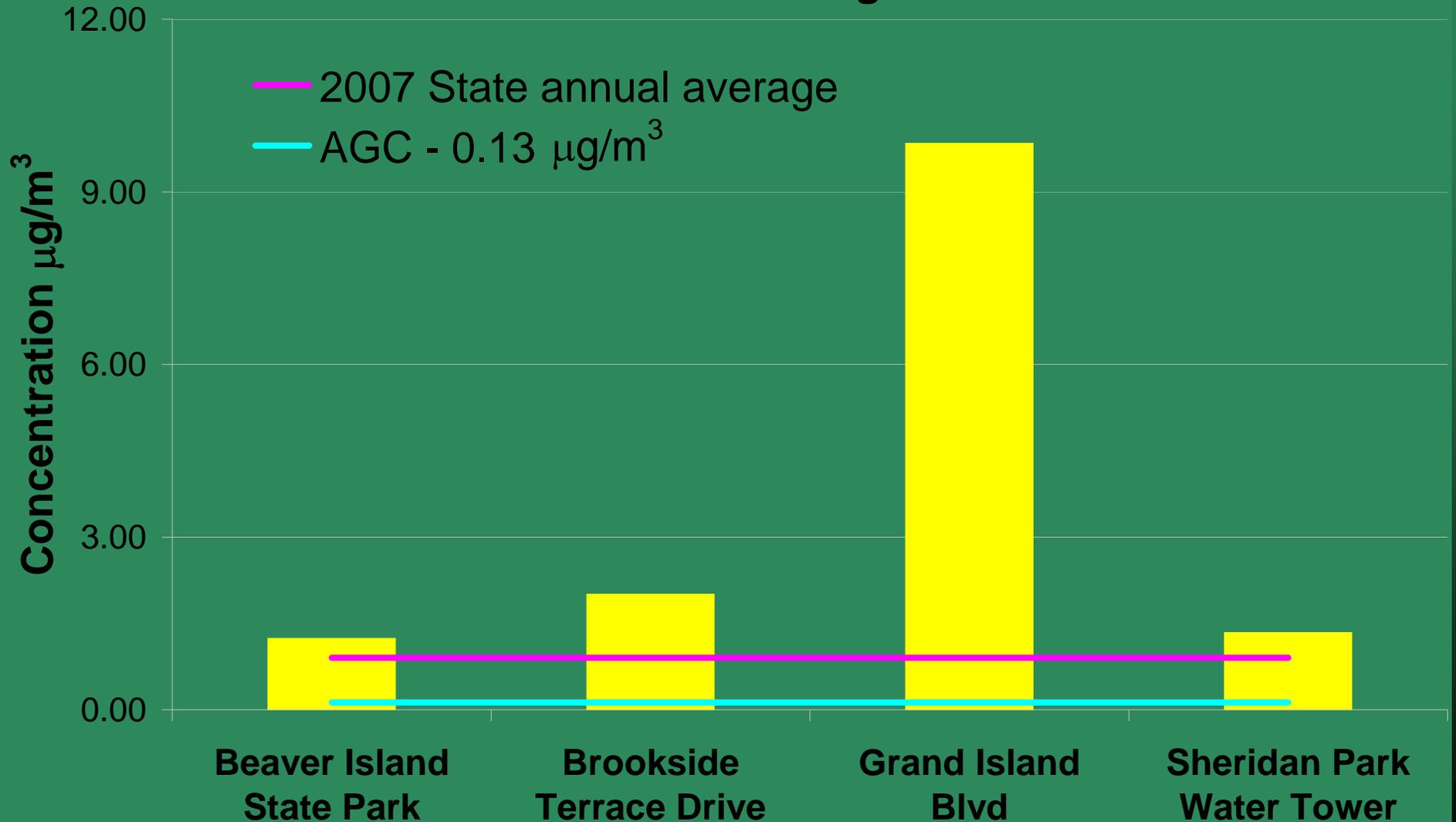


TWA CONC. = 3.2 $\mu\text{g}/\text{m}^3$



Benzene

12 month average



NYS Benzene Monitoring Data 2005-2007

