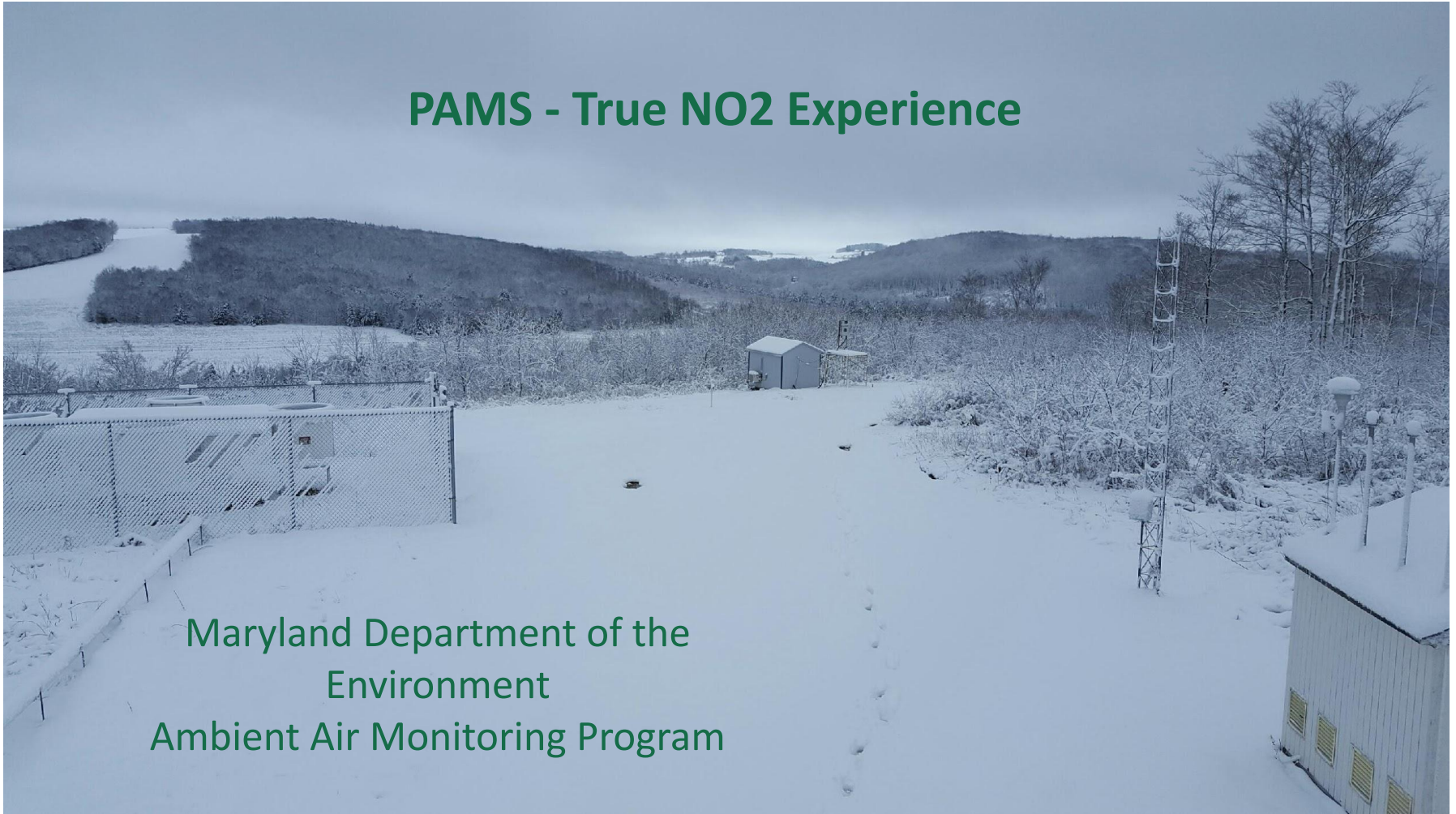




Maryland
Department of
the Environment

PAMS - True NO₂ Experience

Maryland Department of the
Environment
Ambient Air Monitoring Program





Early Impressions / Testing

- TAPI T500U – CAPS - Cavity Attenuated Phase Shift
- Internal Components
- Calibration with NO₂ Tank



TAPI T500 CAPS

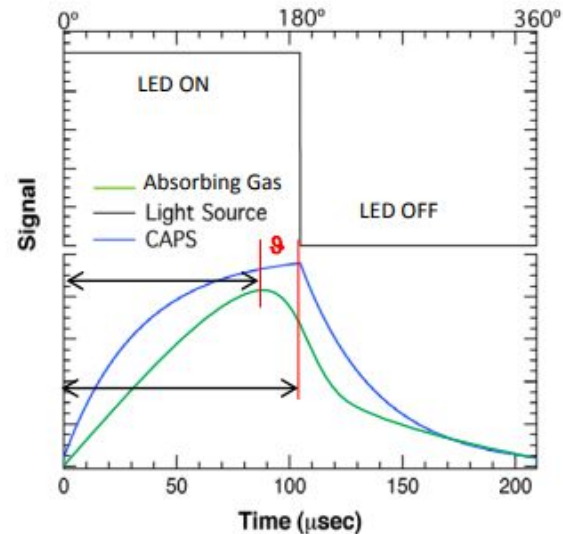


Figure 14-2: Phase Shift Representation of Increased Concentration of NO₂

(Black = LED State, Blue = Light build up in the absence of NO₂, Green = phase shifted/attenuated light)



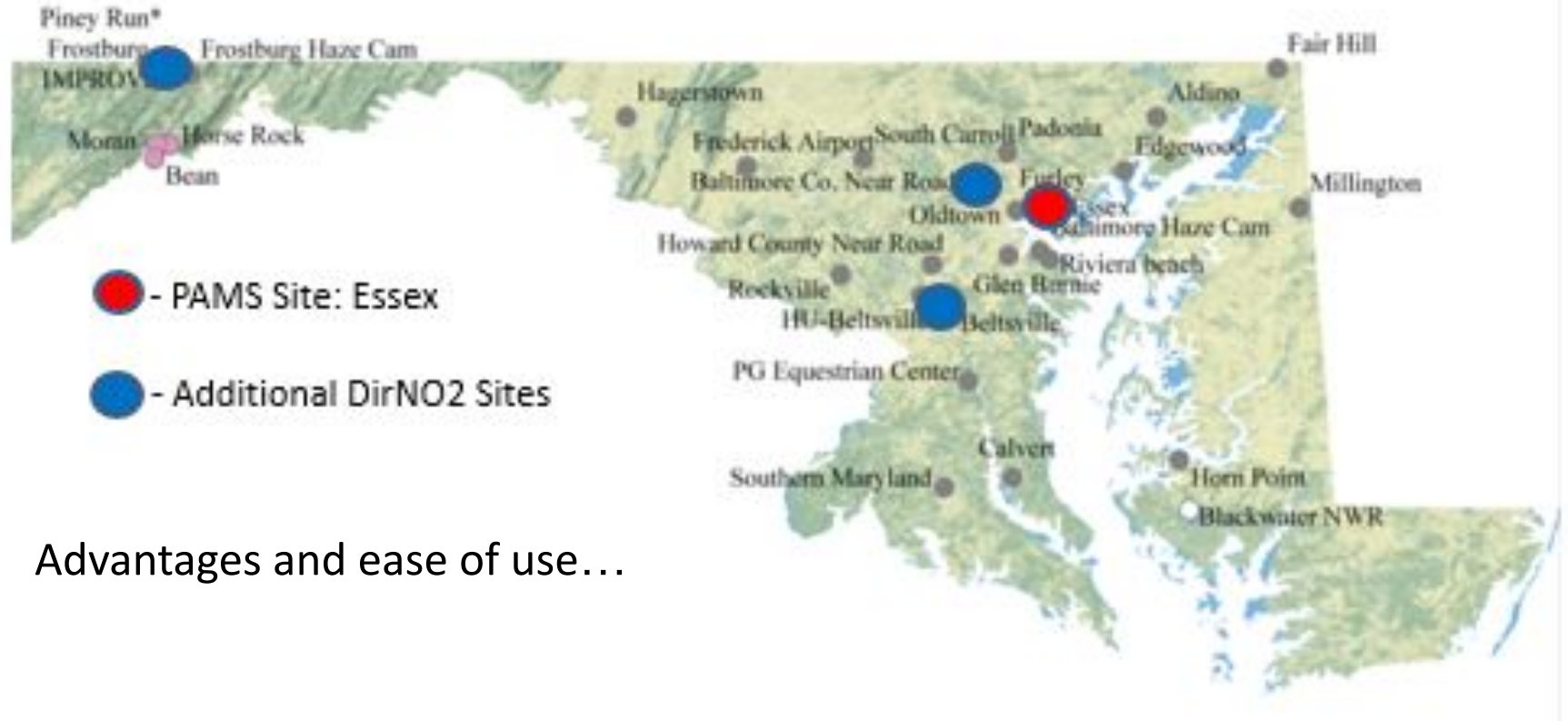
Analyzer Differences – NO_x vs True NO₂

- Differences from Traditional Chemiluminescence Method NO_x–
 - Faster response and lower noise than traditional methods for measuring NO₂
 - Faster calibrations
 - Frees up channels in data loggers (if that is a limiting factor)
 - Data logger configuration differences, in nightly z/s and auto PC setups, slightly more complex configurations need to be programmed for these sequences
 - *Zero's take longer to stabilize*
 - *No active flow reading on the front panel, need to check flows with a meter on the back, we do this once per month in conjunction with a particulate filter change*
 - *NO values*





T500U 'Network'

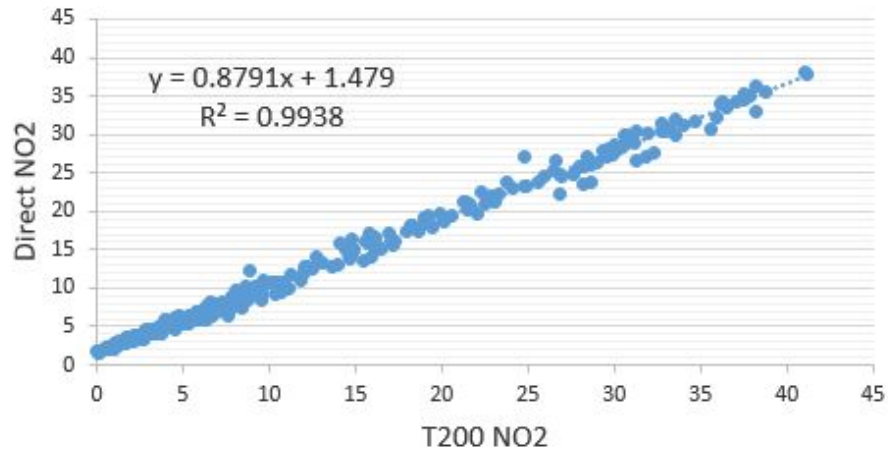


□ Advantages and ease of use...

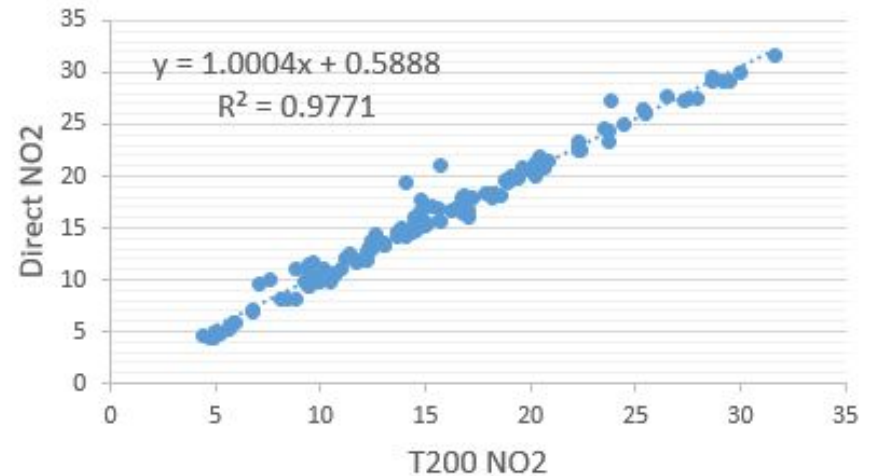


Collocated Comparison

Essex NO2 Comparison



BCNR NO2 Comparison



- Essex and BCNR data – True NO2 and NO2 (NOx analyzer) comparison



2019 True NO2 from EPA's Data Quality Dashboard

Monitor ID	Local Site Name	Method Code	N Days	Percent Completeness	One-Point QC Checks Count (All)	Precision CV (All)	Bias (All)
240050009	BCNR	212	362	99.2	62	4.6	4.2
240053001	Essex	212	364	99.7	62	4.7	3.8
2019 National Average	NA	All	NA	NA	NA	5.2	3.8

- Precision and Bias Statistics
- Percent Completeness
- 1 Pt QC Checks
- Maintenance Issues



Next Steps

- Hoping for better compressed tank technology to keep stable NO₂ gas so to go away from the traditional GPT method for calibrations
- API N500 received FEM status in May – CAPS True NO₂ plus NO and NO_x values



TAPI N500 CAPS True NO₂-NO_x-NO



Questions?



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