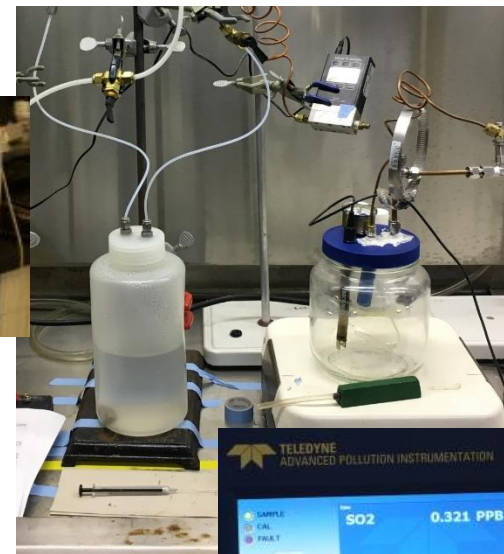
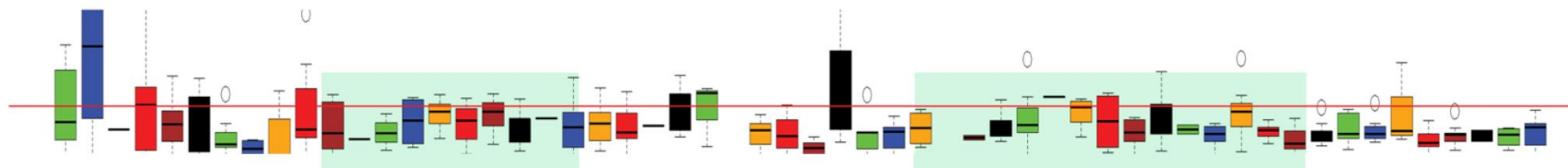


Prairie Research Institute Air Monitoring Capabilities



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Full-Service Analytical Facility Specializing in Air Quality

- Sample Preparation and Trace-Level Analysis
- Air Quality Surveys
- Field Site and Sampling Support / Training
- Data Analysis and Interpretation
- Quality Assurance Reporting
- Interlaboratory Analysis Coordination and Standards Preparation

Ambient Air Quality

Criteria Air Pollutants:

- Ozone
- Particulate Matter
- Sulfur Dioxide
- Nitrogen Dioxide
- Carbon Monoxide

Bondville, Champaign County, Illinois



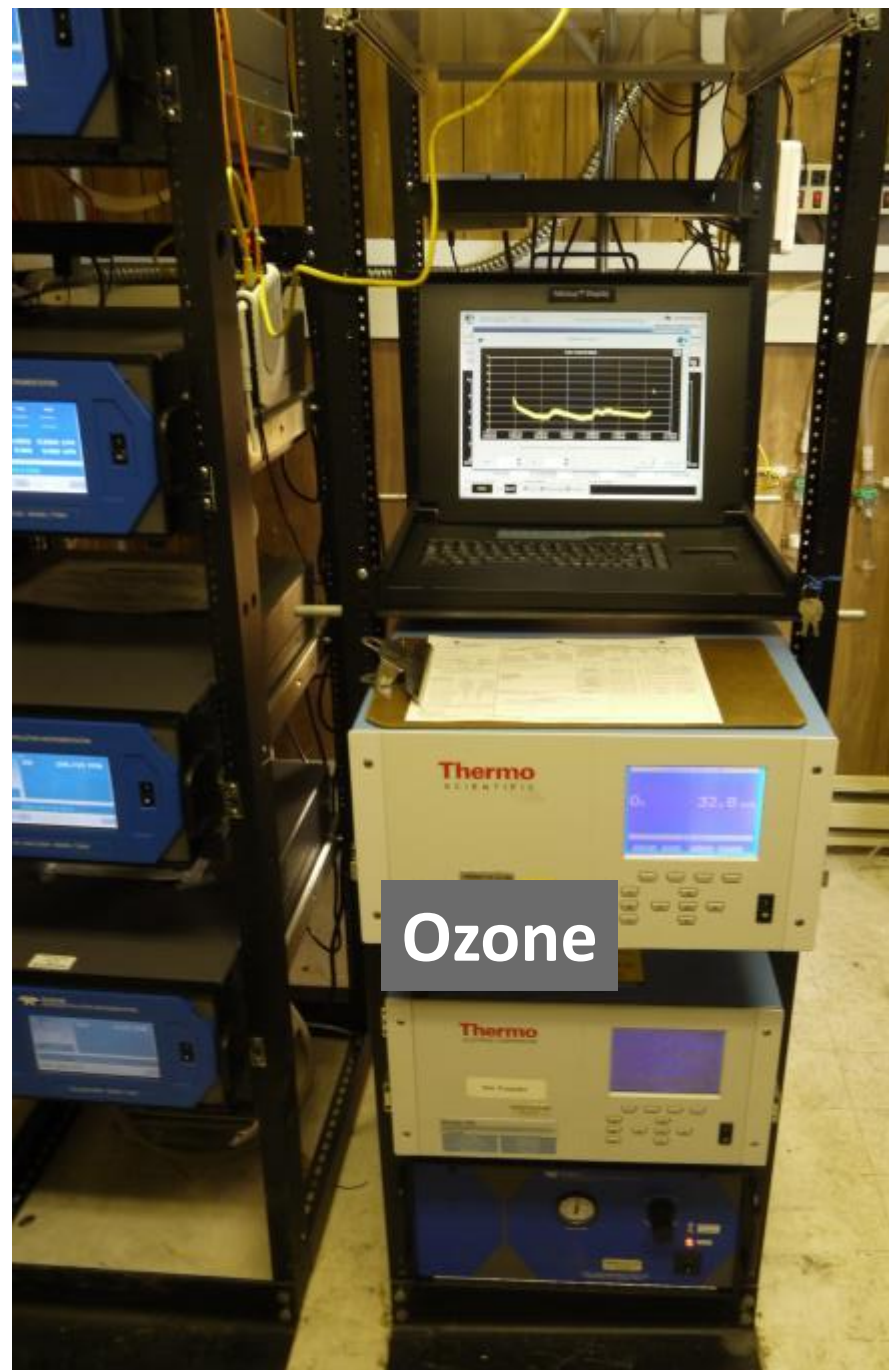
Sulfur Dioxide



Nitrogen Oxides



Carbon Monoxide



Ozone

Bondville, Champaign County PRI Field Research Station



Gaseous Elemental Mercury



Gaseous & Particulate
Anions/Cations (MARGA)

Lab Capabilities: Trace-Level Sample Analysis

Analysis / Analyte	Instrument Detection Limit (IDL)
pH	0.01
Conductivity	0.9 $\mu\text{S/cm}$
Inductively Coupled Plasma Spectrometry (ICP)	
Calcium (Ca^{2+})	0.0005 mg/L
Potassium (K^+)	0.0008 mg/L
Magnesium (Mg^{2+})	0.0009 mg/L
Sodium (Na^+)	0.0008 mg/L
Ion Chromatography (IC)	
Chloride (Cl^-)	0.003 mg/L
Nitrate (NO_3^-)	0.001 mg/L
Sulfate (SO_4^{2-})	0.001 mg/L
Bromide (Br^-)	0.001 mg/L
Flow Injection Analysis Colorimetry (FIA)	
Ammonium (NH_4^+)	0.006 mg/L
Orthophosphate (PO_4^{3-})	0.002 mg/L



Air Quality Surveys

Passive Air Samplers

Ammonia

Sulfur Dioxide

Nitrogen Dioxide

Hydrochloric Acid

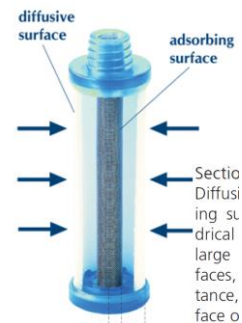
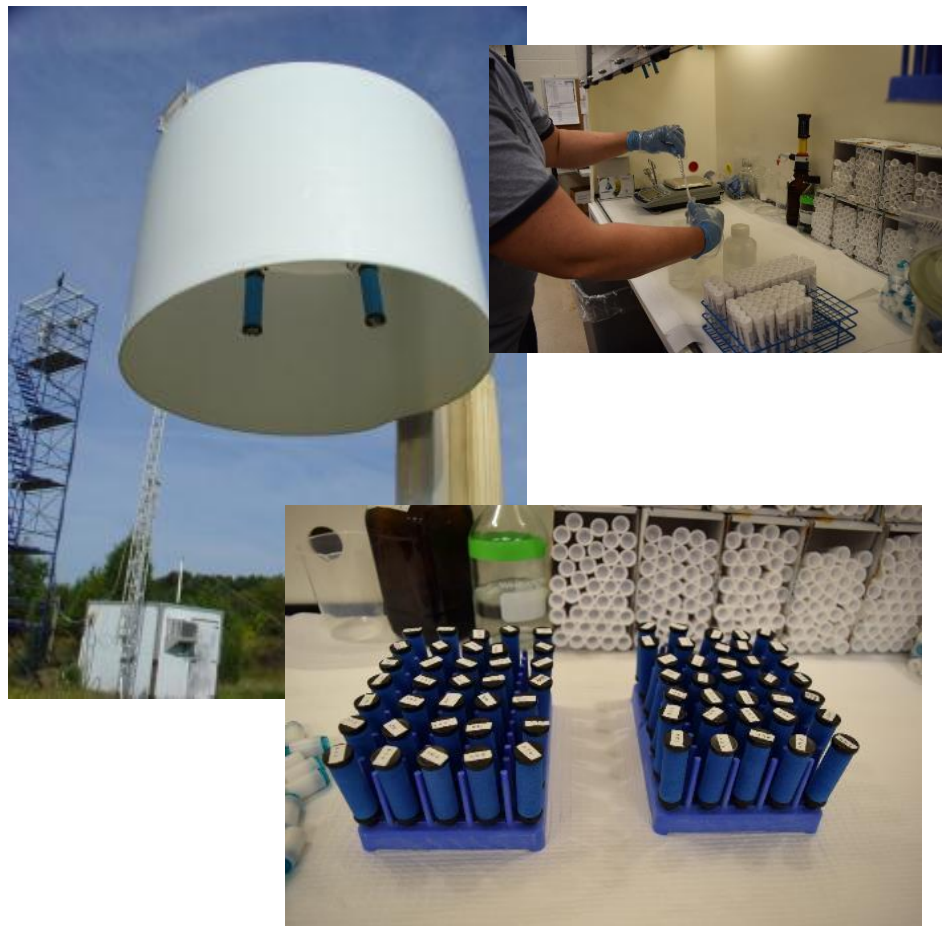
Ozone

Volatile Organic Compounds

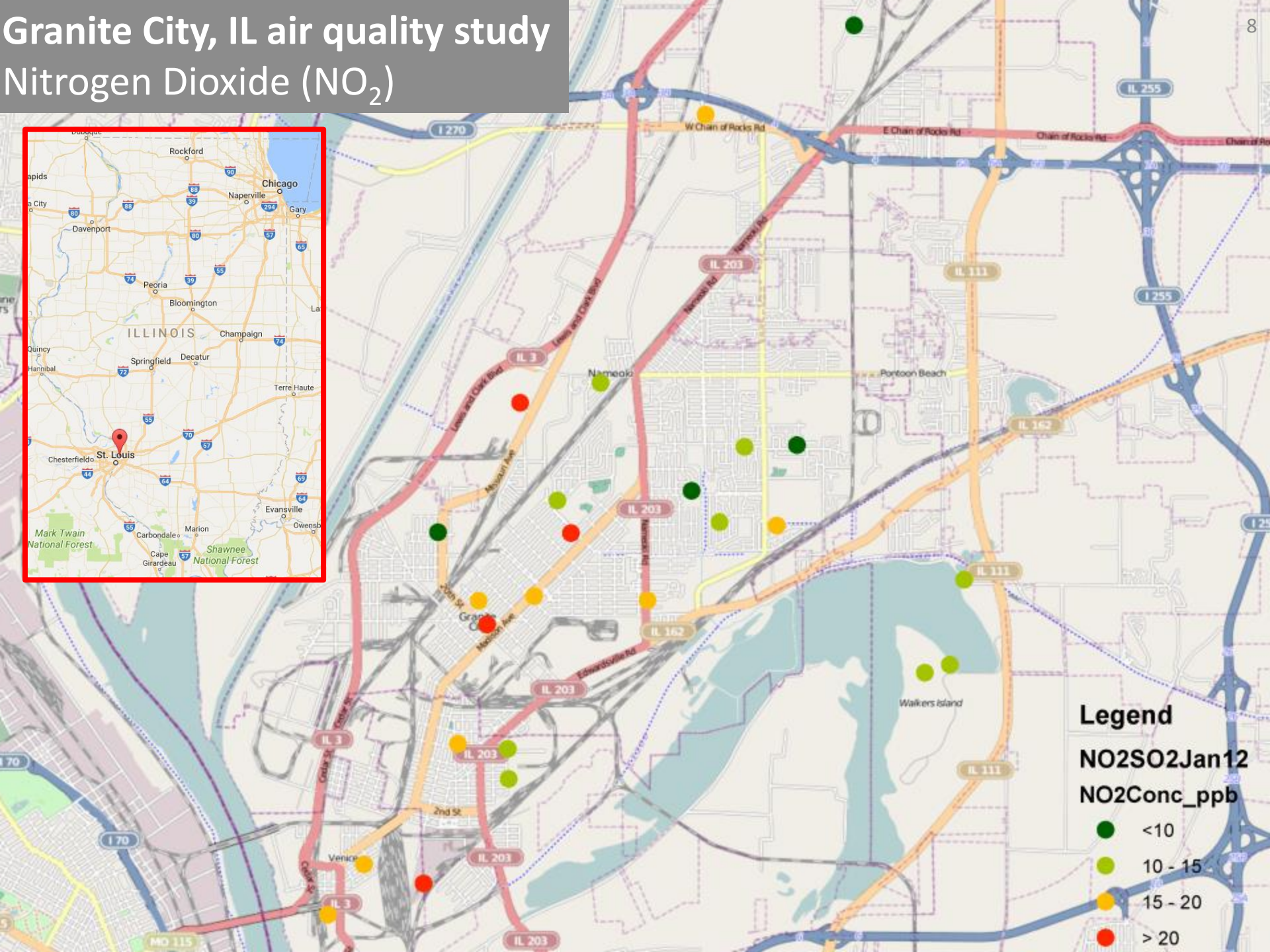
Aldehydes

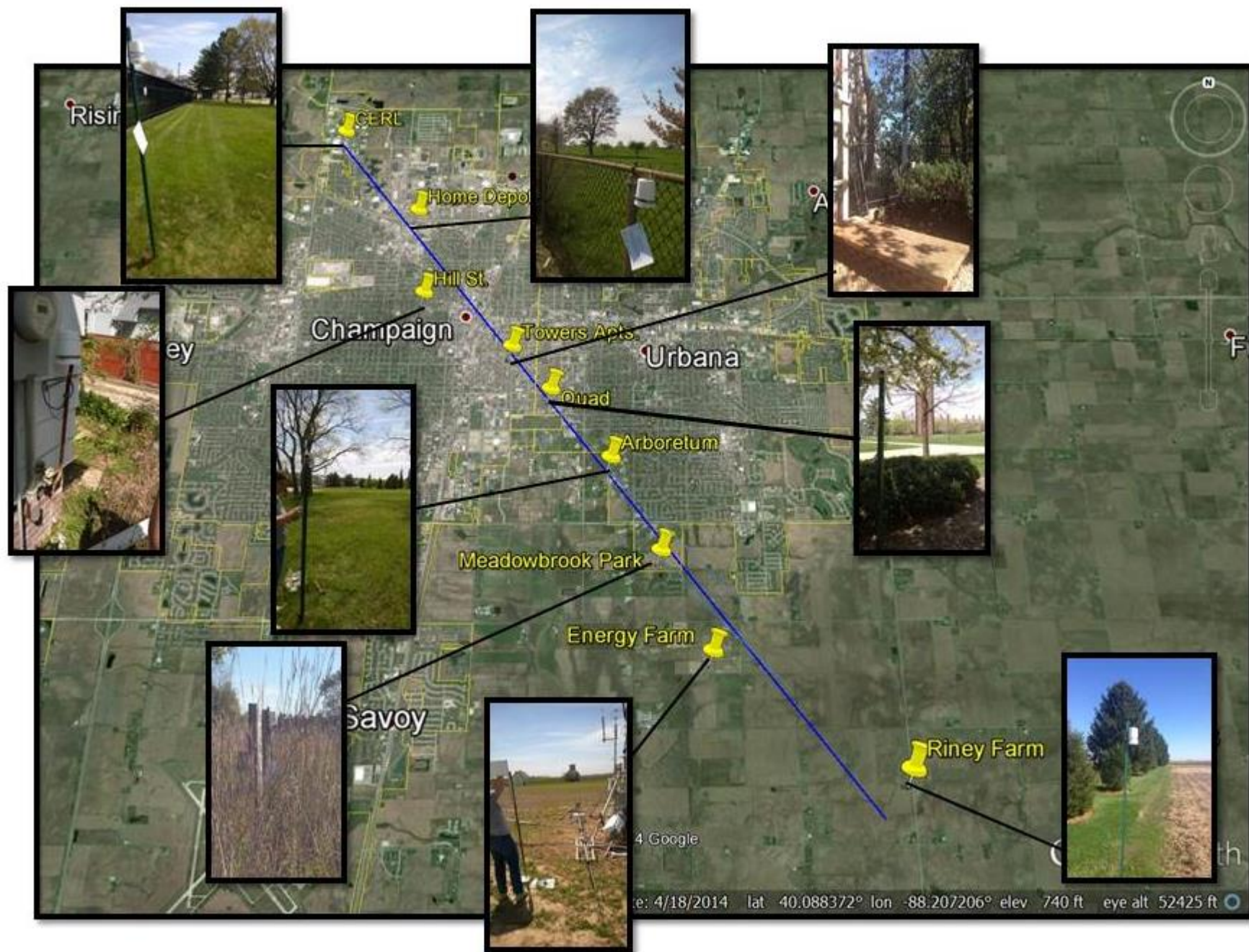
**BTEX (benzene, toluene,
ethylbenzene, xylenes)**

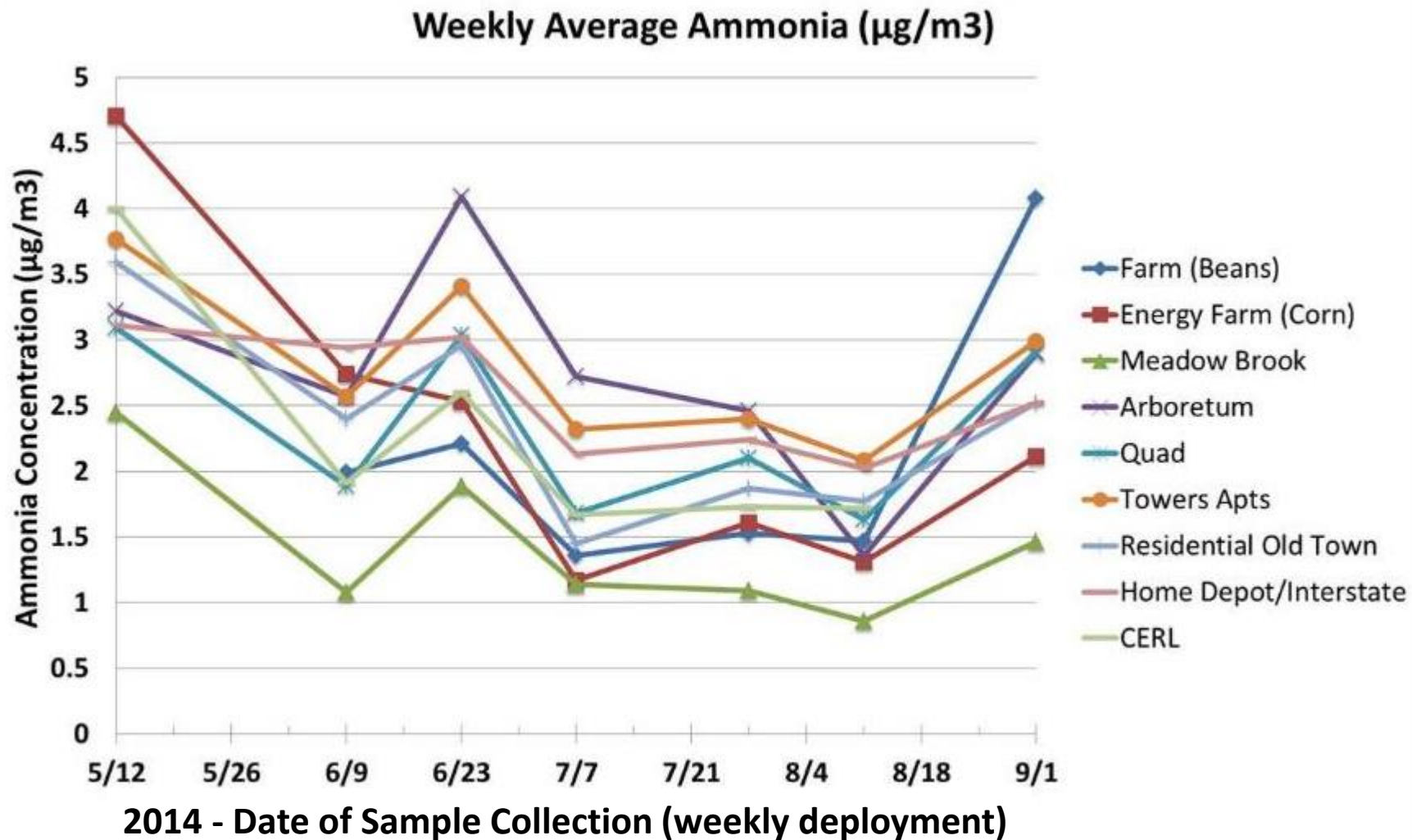
And more....



8







Research Applications

Ammonia Emissions from Agricultural Operations

Motivation:

- 4.6×10^6 hogs in IL, increasing
- 200-lb hog produces ~13 lbs manure a day

Objective: Acidify swine manure with CO_2 to facilitate nutrient recovery and reduce ammonia emissions

Experimental:

- Treat 1L of swine manure with CO_2 until $\text{pH} < 6$
- Utilize passive samplers to measure ammonia emissions over 21 days, sample weekly
- Also evaluating methane emissions



Radiello sampler built into reaction system to monitor ammonia

Other Applications

- Indoor Air
- Personal / Hygiene
- Industrial
- Urban Air Quality
- R&D

Don't hold your breath

The problem of contaminated air on planes

Why you should worry if your cabin smells of wet dogs



Gulliver

Aug 14th 2017 | by H.G.

The
Economist

Leveraging Capabilities - Collaboration

IL State Water Survey (ISWS)

- Air Monitoring
- Atmospheric Science
- Modeling

IL Sust. Tech. Center (ISTC)

- Methods Development
- Chromatography-Mass Spectroscopy

New Applications:

- Volatile Organic Compounds
- Ambient Pollutants
- Pesticides
- Microplastics

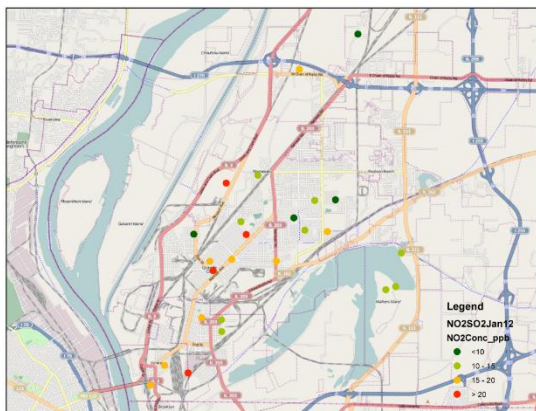
Potential for additional partners

Questions & Discussion

For more information, please contact us:

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