Geospatial Monitoring of Air Pollution – H₂S and CH₄ in Region 5

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Communities impacted by hydrogen sulfide (H$_2$S) from landfills, CAFOs, pulp and paper mills, and oil and gas facilities

- CH$_4$/H$_2$S CRDS
  - R5 purchased
  - AMI GEOSS grant - EPA's Advanced Monitoring Initiative Global Earth Observation System of Systems (GEOSS) - international effort to achieve comprehensive, coordinated, and sustained observations of the Earth system in an integrated manner
Phase 1 – AMI GEOSS

- In collaboration with ORD
  - CRDS Performance Testing
  - Transport Case procurement
  - Mast Construction
  - Software construction/System Integration
  - Training/Technology Transfer
  - Field testing - feedback for improvements
3-D sonic anemometer
sampling inlets
compact weather station
gps
telescoping mast
vehicle hitch
sample line fed through vehicle window to instrument
Applications

- Siting
- Scouting for non-compliance
- Mapping plumes
- Quantifying & assessing fence line measurements
- Processes within a facility
- Methane surrogate - VOCs
Successful Field Campaign Components:

- Approved Quality Assurance Project Plan
- Measureable Objectives
- Safety Plan/Personal Protective Equipment Assessment

Communication Plan:
- Vehicle handouts
- Notify Facility/City/State Officials
- Desk Statements
- Public Meeting

- Budget
  - Travel and other expenses

- Collaboration
Planning and Reassessing
Major Industrial Sources of Concern to Community in Area

- Marathon Petroleum Oil
- Great Lakes Petroleum
- Carmeuse Lime Inc.
- EES Coke
- Ford Motor Company – Rouge Complex
- Severstal NA, Inc.
- Detroit Wastewater Treatment Plant
- Detroit Salt Mine
- DTE Energy Company (coal burning power plant)
Run 1

October 05, 2011 time

H2S ppb
Current/Future Needs:

• Perpetual:
  – Audit/Calibration gases (H2S and CH4)
  – Spare Mounting hardware, sample line, cables, etc.
  – Maintenance contract
  – Communication service contract
  – Dedicated vehicle
  – Travel Budget

• Leveraging R5 resources to enhance monitoring:
  – PID
  – IR Camera
  – VOC SUMMA cans

• Further Enhancements:
  – Web Camera
Phase 2

• Working with ORD
  – Software updates/corrections
  – Real-time, remote data review capabilities
  – Non-vendor mapping capabilities
  – Projected Summer 2012
Bridgeport campaign – R5 AMAS and ORD - May 2011