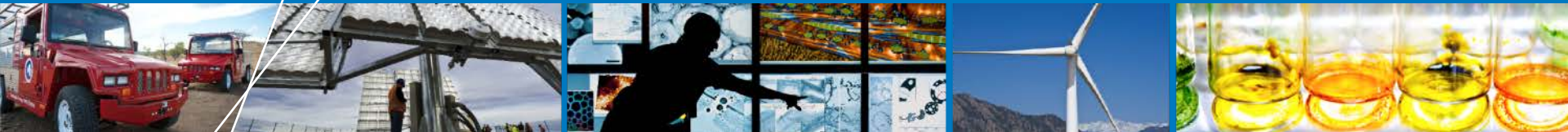


Air Quality Considerations for Bioenergy Landscapes



**BETO Landscape Design
Second Workshop**

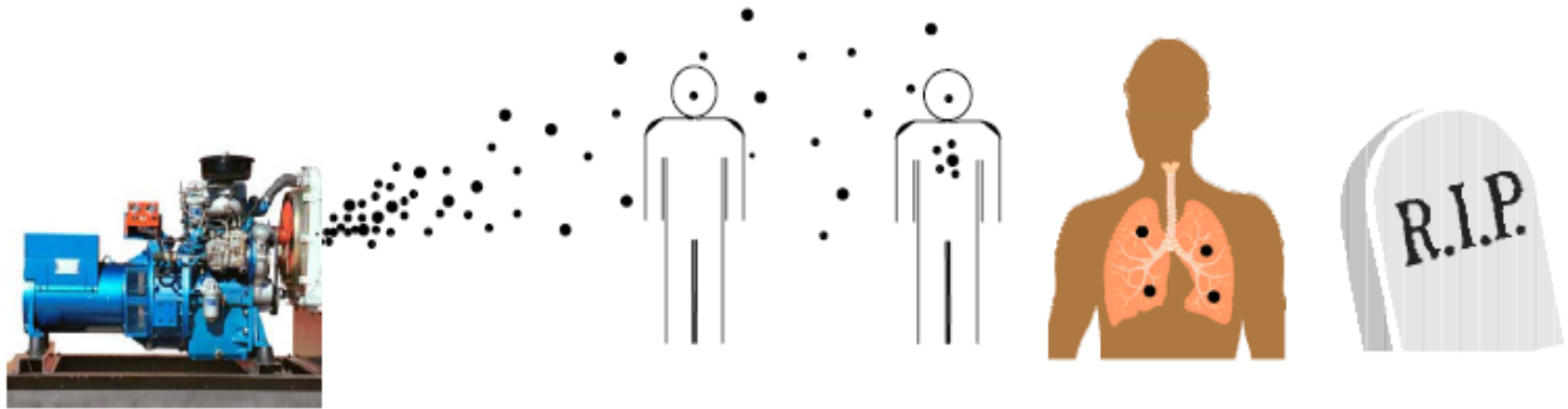
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National Oceanic and Atmospheric Administration**

June 25, 2014

Air pollutants – sources, species, impacts, metrics

Environmental Health Continuum



emissions → concentration → exposure → intake → dose → health effects

Sources

- (large) points / (small) “area” / Mobile
- Anthropogenic/ Biogenic

Species

- Primary / secondary
- Reactive / stable
- Individual / classes (VOCs)

Impacts

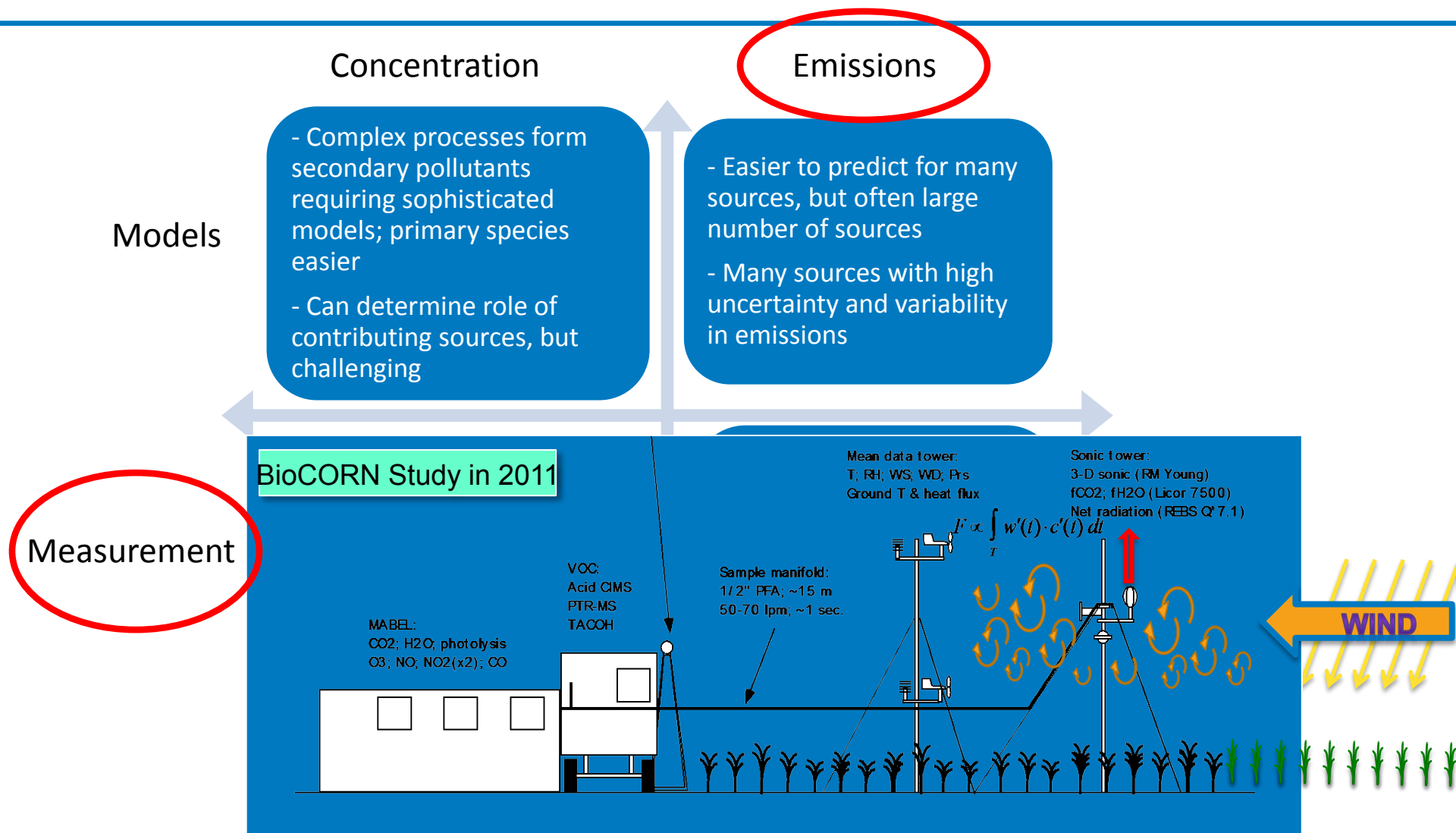
- Health effects
- GHGs
- Reactivity leading to secondary products of concern

Metrics and regulatory structure

- Concentrations (NAAQS)
- Emissions (NSPS, NESHAPS, permits)

Image source: Heath 2006

Estimation approaches, and challenges



<http://www.esrl.noaa.gov/csd/groups/csd7/measurements/2011biocorn/>

Considerations and Recommendations

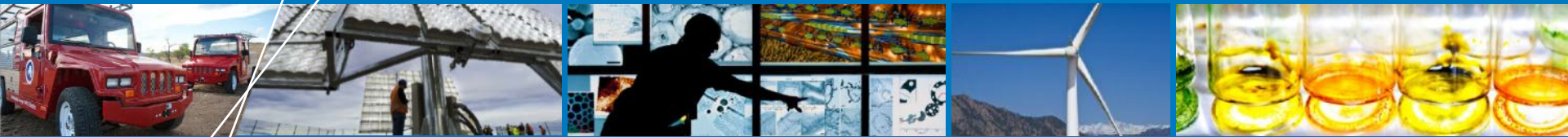
Considerations

- Site selection
- Establishing a baseline
- Clear research question and metrics
- Attribution of any estimated change in metric to source contribution (good experimental design)

Recommendations

- Concentration of NAAQS is simple to measure, but leaves open questions of source contribution and is not specific
- Need for both modeling and field measurement to discern source contribution to emissions and concentrations

Thank you



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