

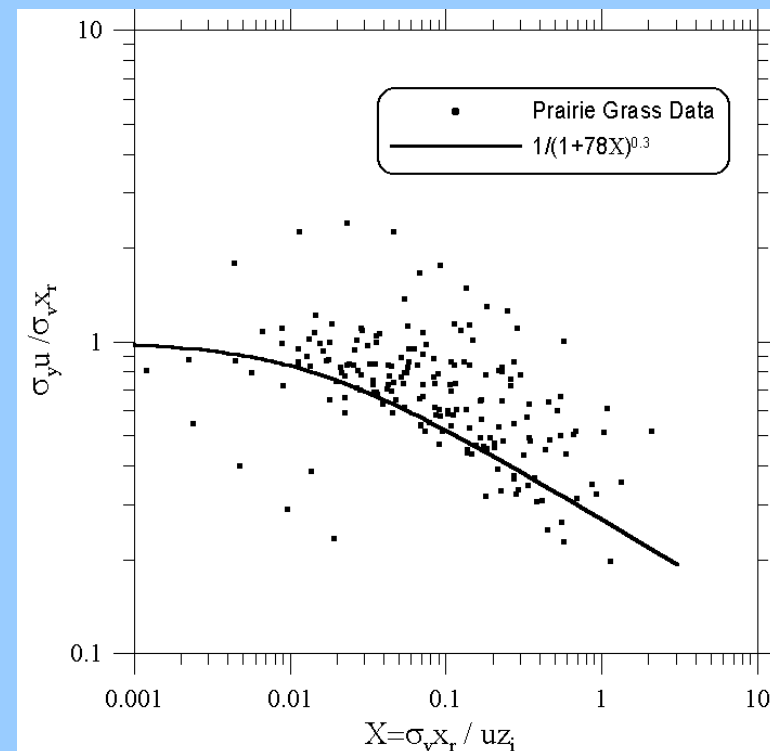
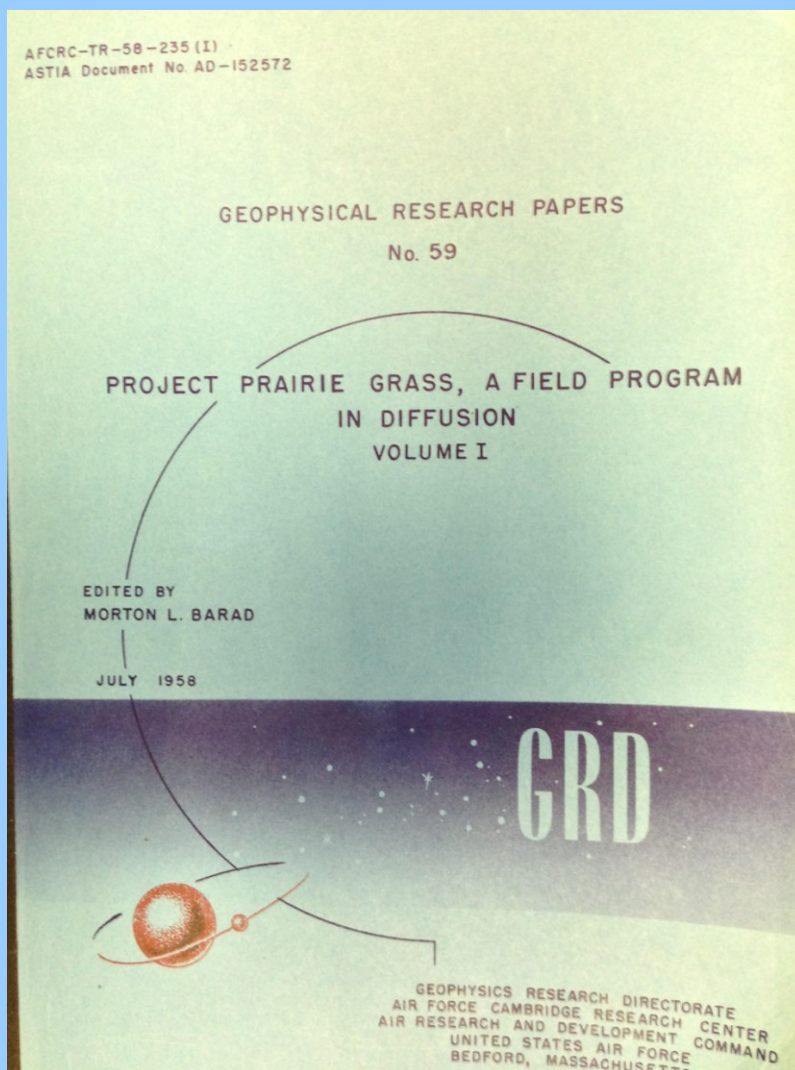


Project Sagebrush: Revisiting Short-range Dispersion Using Modern Instrumentation



Richard M. Eckman
Field Research Division, Idaho Falls, Idaho

Project Prairie Grass 1956



Cimorelli et al. (2004) AERMOD:
Description of Model Formulation.
EPA-454/R-03-004



Limitations of Old Dispersion Data

- Restricted times of year, locations, and averaging times
- Limited direct turbulence measurements
- Limited data on vertical plume growth
- Rarely data on concentration fluctuations
- Often used reactive or depositing tracers

Tracer and turbulence measurement technologies
have greatly improved since 1956

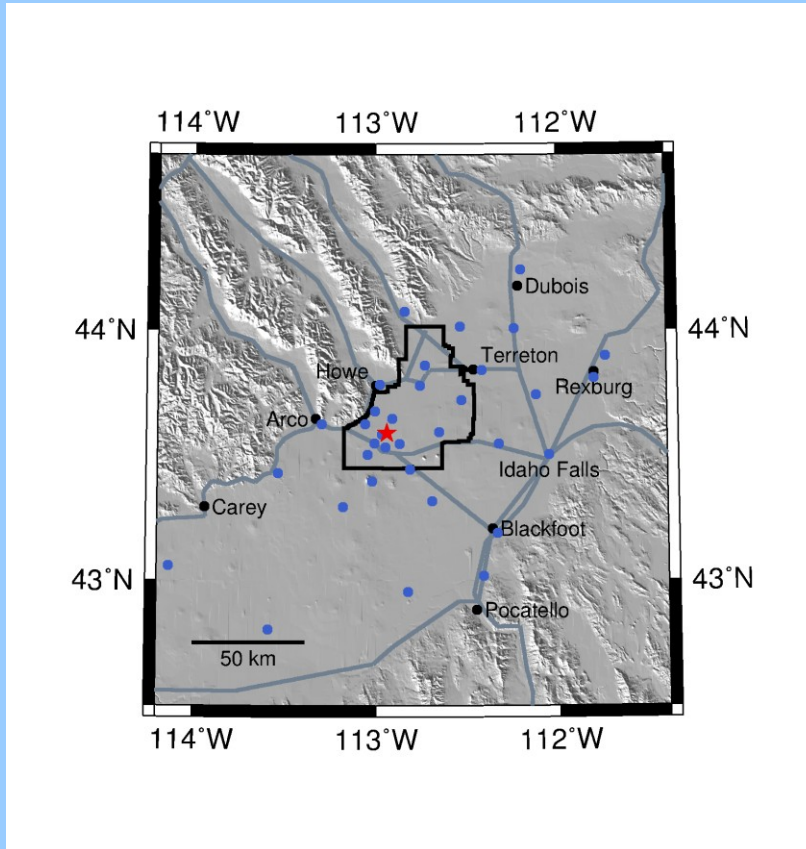


Project Sagebrush

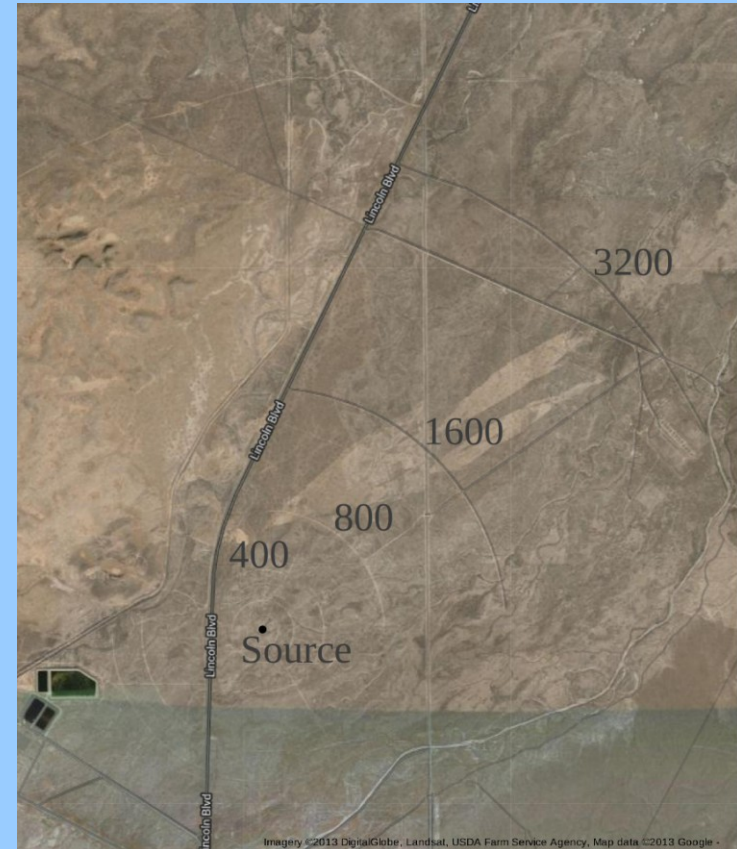
- Revisit short-range dispersion using modern tracer technology and meteorological instrumentation.
 - Concentration means and fluctuations
- Conducted at NOAA tracer release facility at DOE Idaho National Laboratory
- Multiyear effort starting in 2013; limited funding each year
- Additional capabilities in 2013 from external collaborators
 - University of Tennessee Space Institute
 - Washington State University
 - Idaho National Laboratory



Tracer Release Facility



Mesonet towers: blue dots
Tracer source: red star
INL boundary: black outline

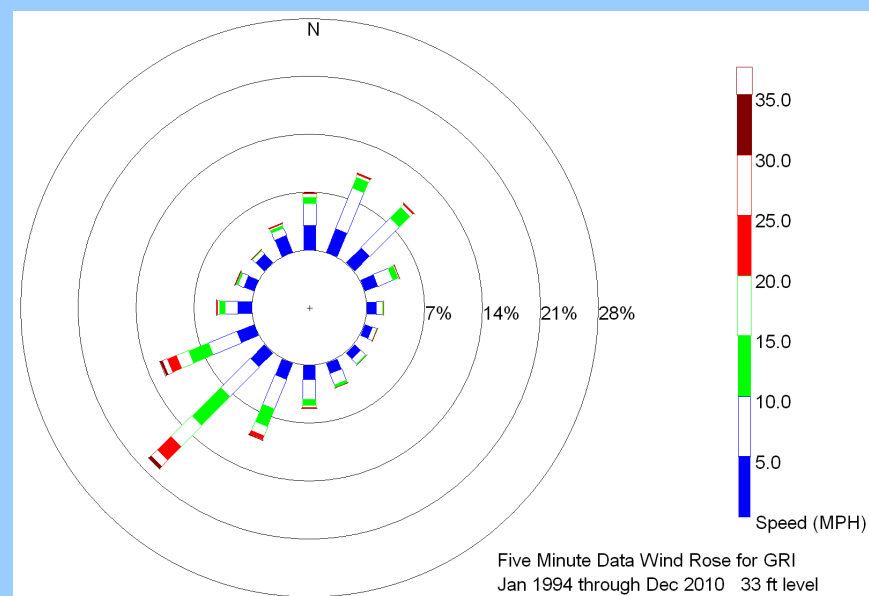


Sampling arcs out to 3200 m

Valley Floor



10 m AGL Wind Rose

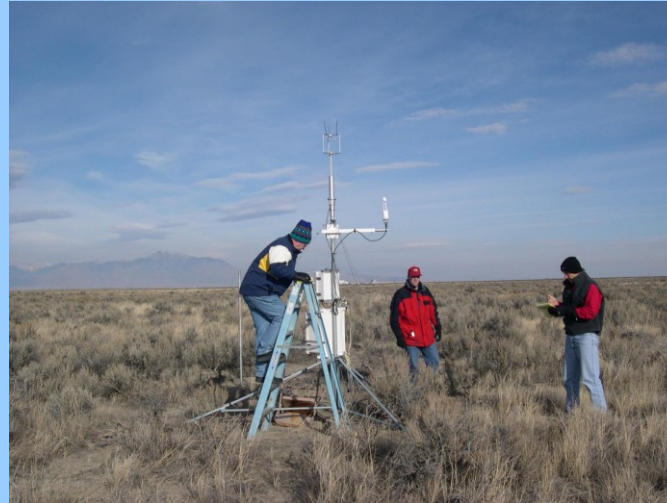


Meteorological Measurements

Towers



Flux station + sonics



Sodars



Radiosondes



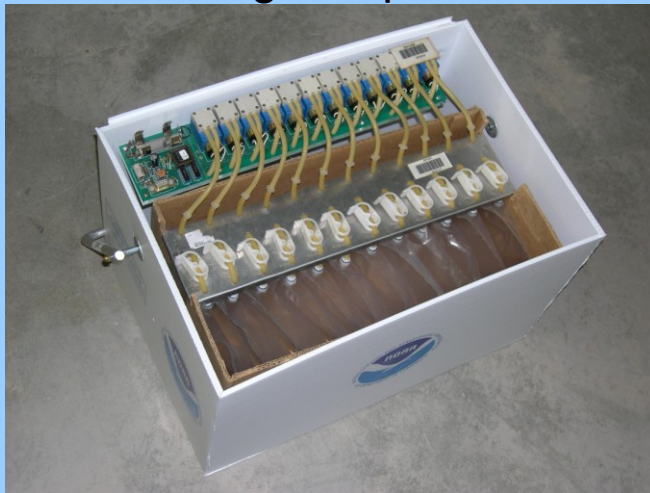
915 MHz radar profiler





Tracer Measurements

Bag samplers



Tower samplers



Trace Gas Analyzer

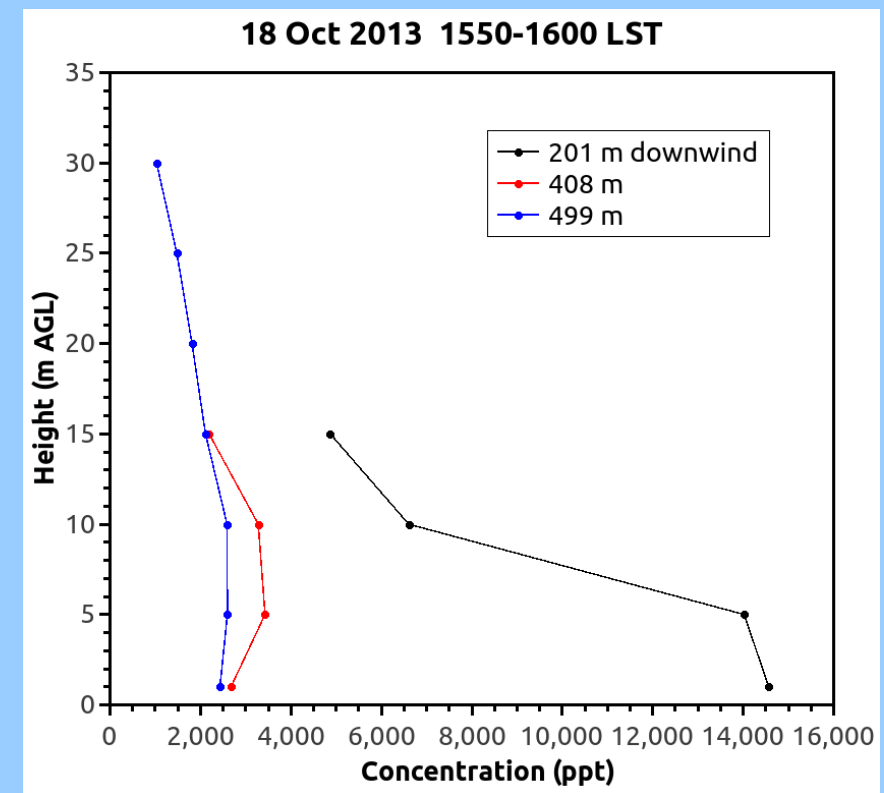
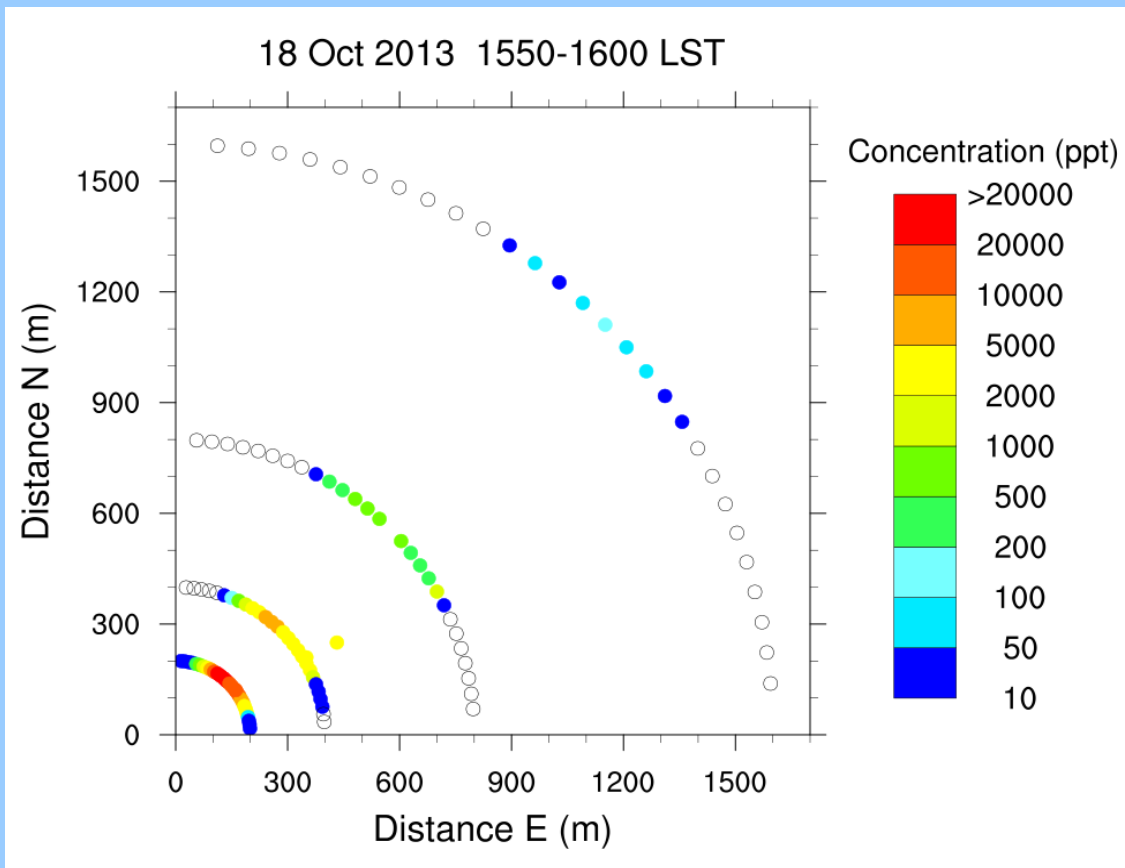


UTSI aircraft





Phase 1 October 2013





Concentration Histogram

