1-hour NO2 Modeling Issues

NACAA Spring Membership Meeting
2011

The Issues for New Mexico

- Many NOx sources in the state
- Refined methods needed to demonstrate compliance
- Statutory deadlines for permit issuance
- USEPA guidance suggests myriad of analyses not possible to accomplish within deadlines, especially for minor source permit issuance

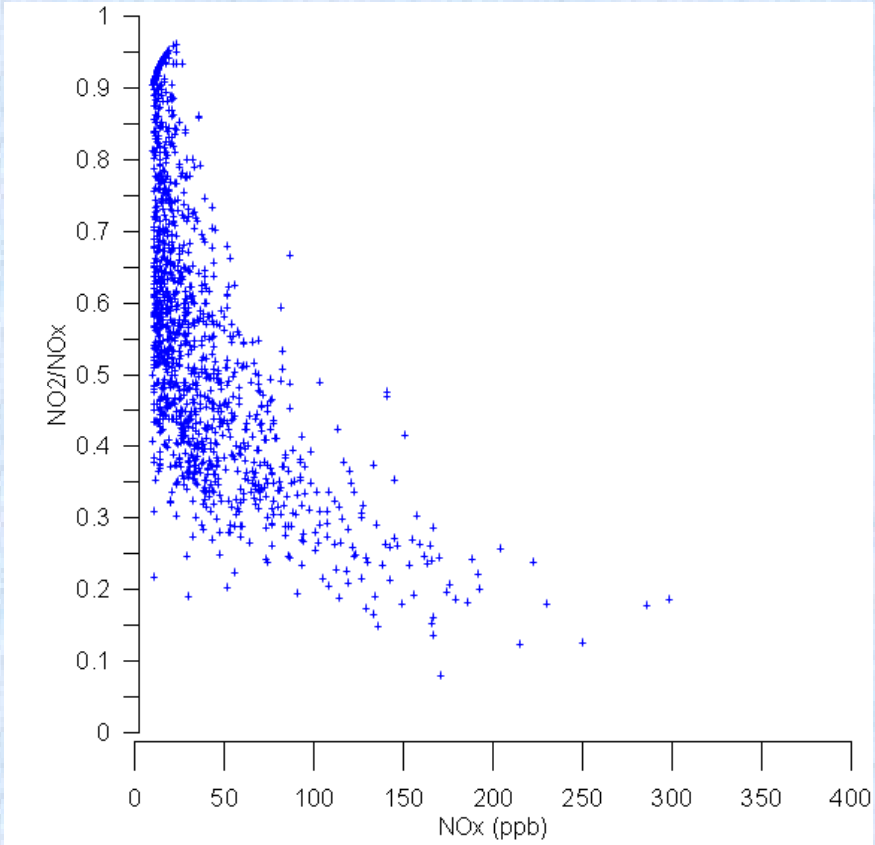
Issues with PVMRM/AERMOD method

- NO + O3 → NO2
- PVMRM assumption: the entire plume is well-mixed
- Testing of PVMRM/ISCST3 for accuracy was limited
- Testing of PVMRM/AERMOD not done
- Ozone monitor location is critical to avoid underestimation of NO2

NMED analysis of rural monitoring data

- NMED monitoring sites include areas of dense NOx emissions from oil and gas exploration and production
- At high NOx concentrations, NO2/NOx ratio is consistently low
- Upper bound conversion rates can be conservatively calculated based on NOx concentrations
- Conclusion: At high NOx concentrations near sources, there is insufficient entrainment for complete conversion of NO to NO2

Empire Abo Monitoring Data



Empire Abo Gas Plant, New Mexico, North Monitor - June 1993 - June 1995
Wind direction 180 - 255 degrees
NO2/NOx versus NOx

What is MRM?

- Monitored Ratio Method
- Compares NOx concentrations to NO2/NOx ratios to determine upper bound conversion
- In-stack ratio determines lower bound conversion
- Easily applied as a post-processor to modeling results

NMED Contacts

Eric Peters: Eric.Peters@state.nm.us

Sufi Mustafa: Sufi.Mustafa@state.nm.us