



1-hour SO₂ Modeling Examples

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Can AERMOD Estimate 1-hr SO₂ Impacts?

- This question has been posed frequently in the context of the new 1-hr SO₂ NAAQS
- The significant role of modeling in 1-hr SO₂ designations and the 110(a)(1) SIPs has highlighted the importance of this question
- Fortunately, the extensive model validation conducted to support promulgation of AERMOD provides relevant information



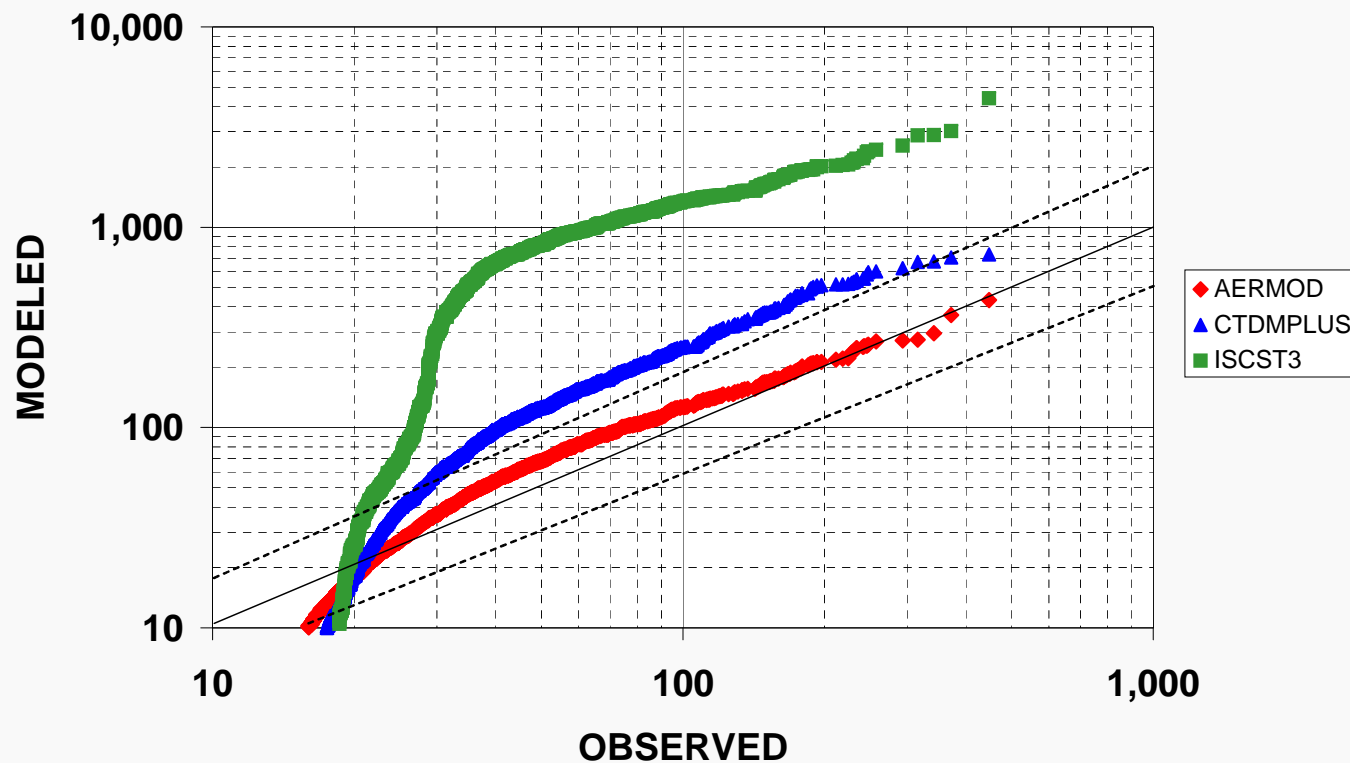
AERMOD Performance Evaluation

- Evaluated on total of **17 Field Study Databases**
 - 10 without Building Downwash, 7 with Downwash
 - 13 with Flat or Rolling Terrain, 4 with Complex Terrain
- Developmental and Independent Evaluations
- Compared to ISCST3 for non-downwash databases and CTDMPPLUS for complex terrain databases
- Compared to ISC-PRIME for downwash databases
- AERMOD consistently outperformed ISCST3, ISC-PRIME and CTDMPPLUS



AERMOD Performance: Complex Terrain

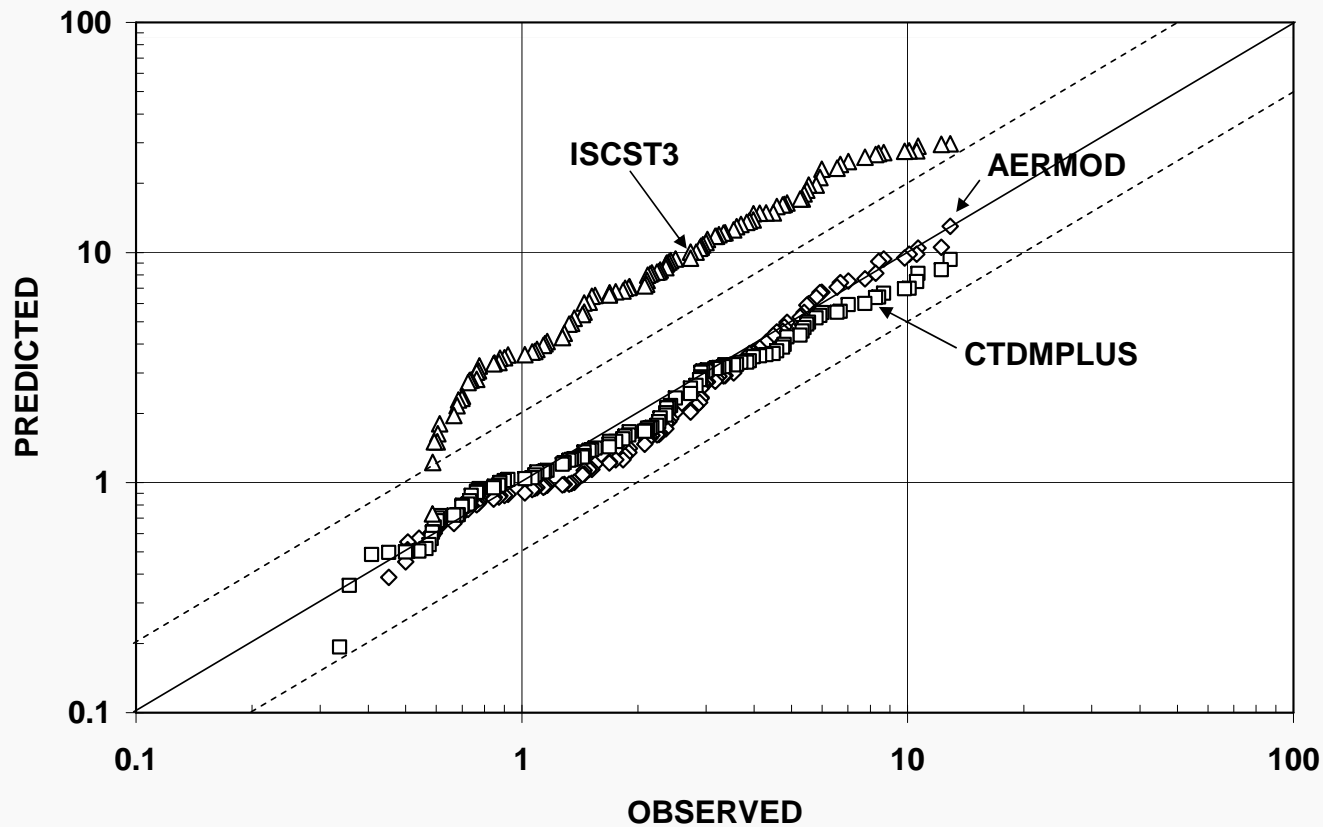
LOVETT SO₂ COMPLEX TERRAIN EVALUATION
Q-Q Plot of 1-Hour Concentrations





AERMOD Performance: Complex Terrain

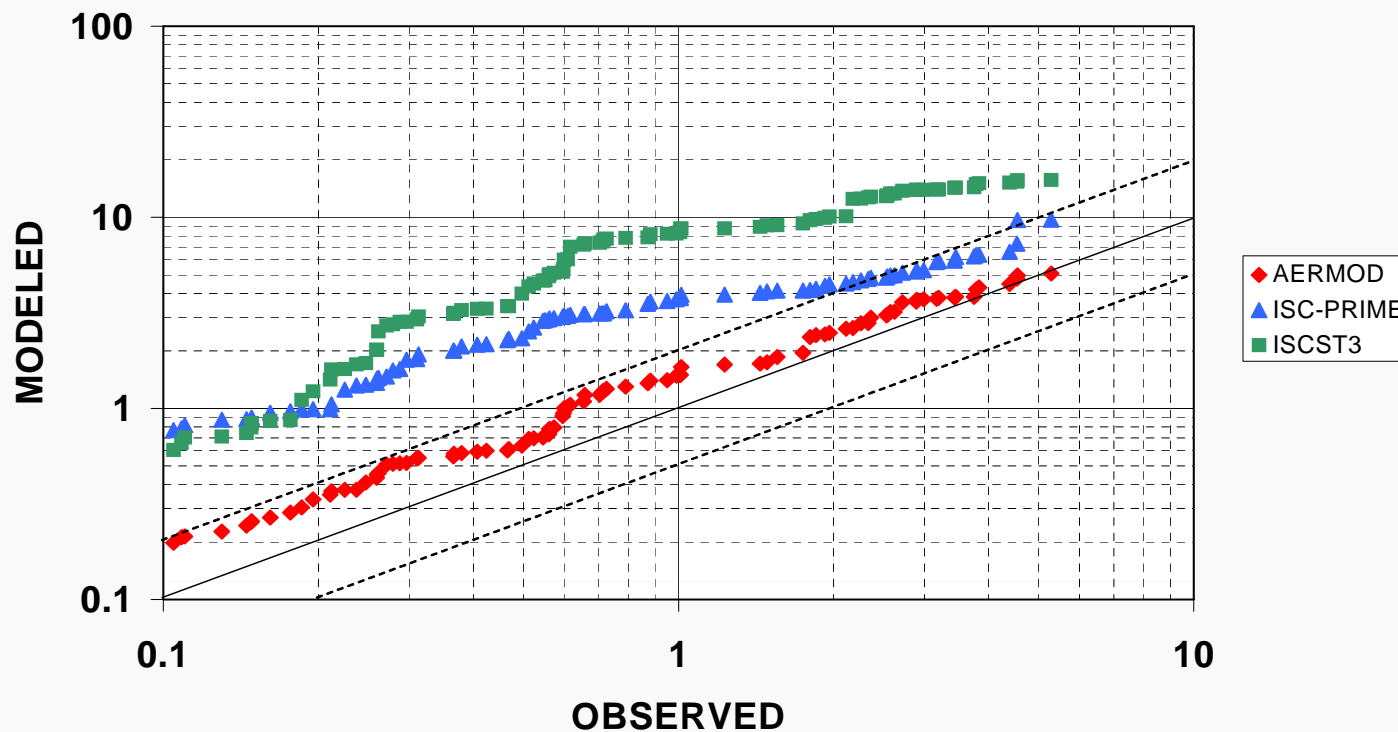
Tracy SF6 1-Hr Q-Q Plot (Conc.) - Version 02222





AERMOD Performance: Building Downwash

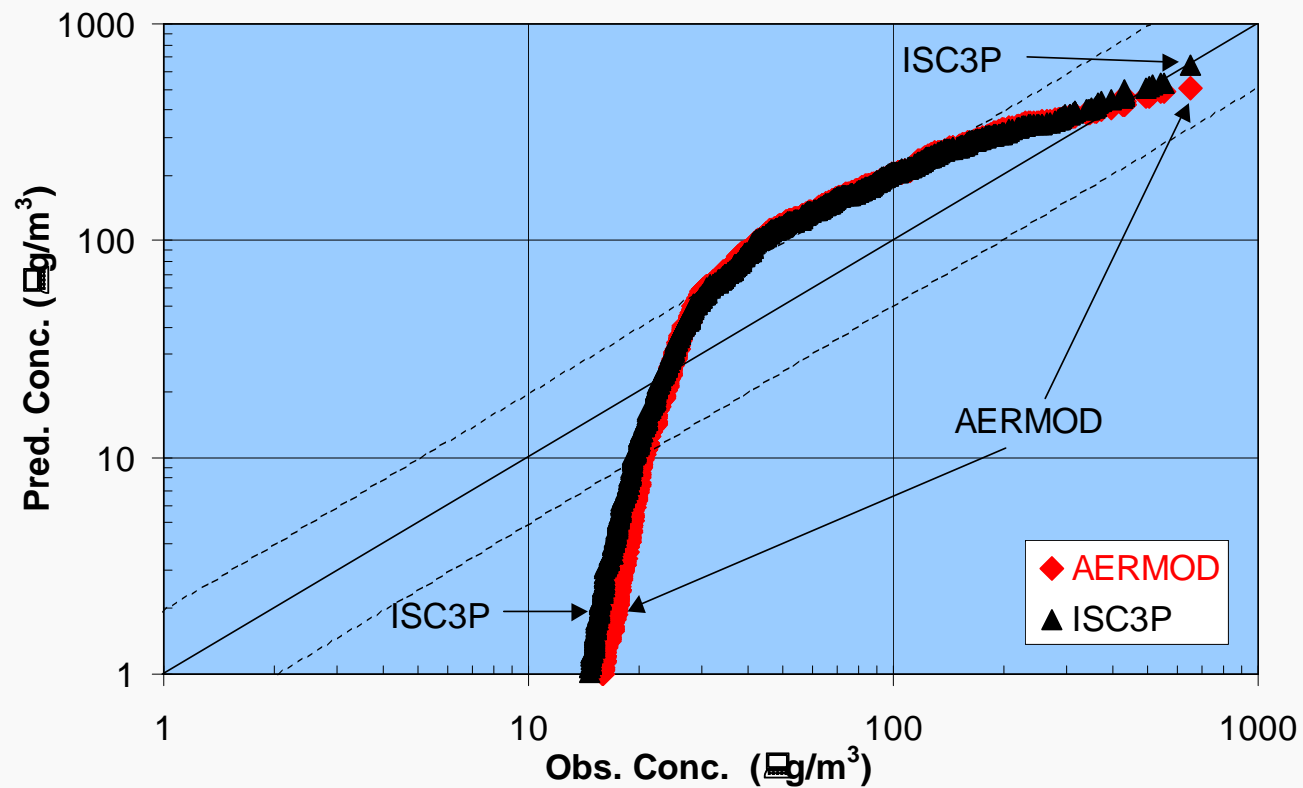
ALASKA SO₂ DOWNWASH EVALUATION
Q-Q Plot of 1-Hour Concentrations





AERMOD Performance: Building Downwash

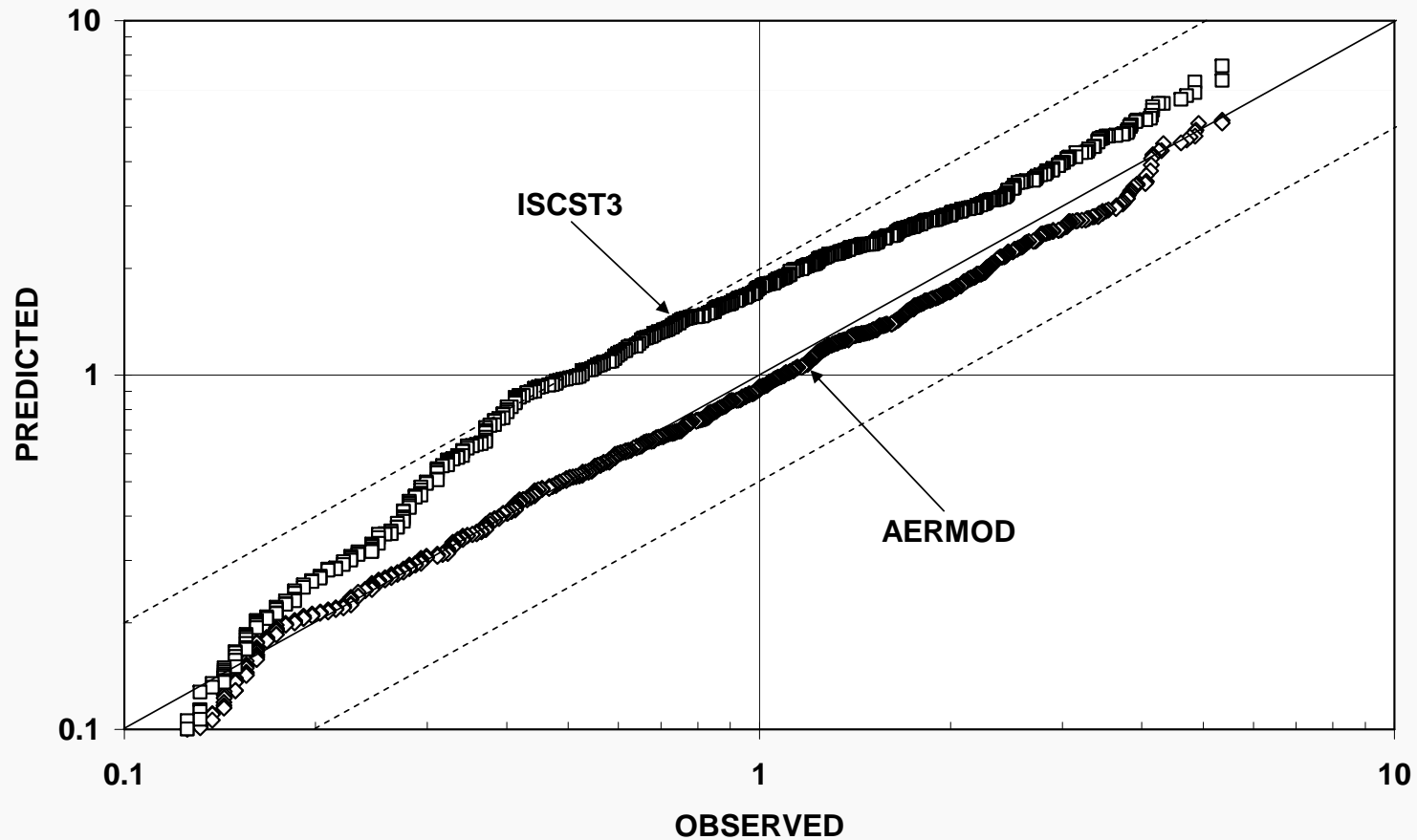
Bowline 1-hr Q-Q Plot (↔) - 87m Stack





AERMOD Performance: Urban Dispersion

INDIANAPOLIS SF6 1-HR Q-Q PLOT (CONC) - Version 02222





Conclusion

- AERMOD can predict 1-hr SO₂ concentrations with a good degree of accuracy
- However, these comparisons are based on field studies typically conducted with robust site-specific **meteorology** and good estimates of actual **emissions**, minimizing uncertainties associated with these key model inputs
- Your results may vary