12th Conference on the Applications of Air Pollution Meteorology

Panel Discussion: Status of New EPA Guideline Models

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CALPUFF – Current Status

- Beta-test version on ET web site
  - CALMET, CALPUFF & postprocessor output structure are self-documenting
  - Use of turbulence-based dispersion coefficients as default dispersion method (rather than PG curves)
  - Computer issues: Fortran ’90 and ’95 compatible, Lahey and Microsoft/Compaq compiler compatible
  - DATSAV preprocessor – converts hourly surface met. data into proper format for CALMET
  - Preprocessors allow user-specification of datum for UTM calculations

CALPUFF – New Developments

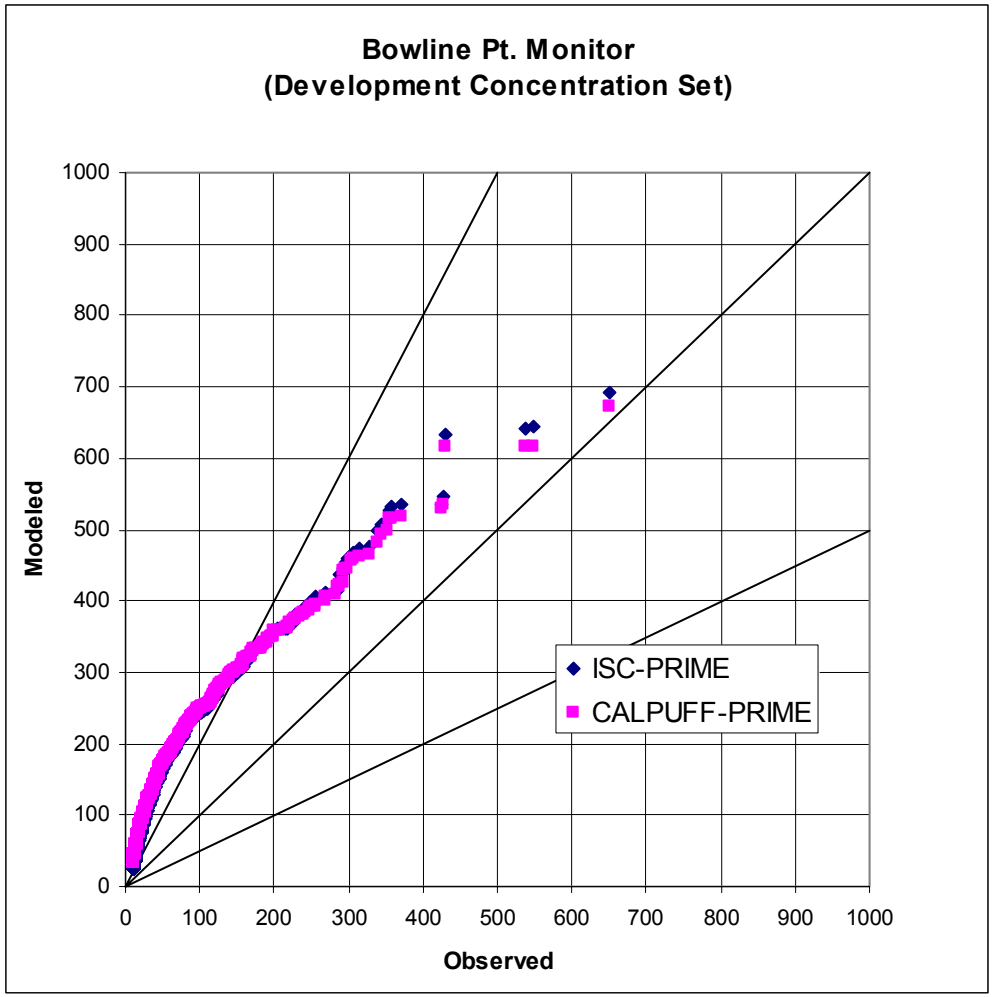
- PRIME building downwash model has been introduced into CALPUFF
  - Ongoing model evaluation and comparisons with ISCST3-PRIME
  - Comparisons show PRIME's performance in CALPUFF as good or better than in ISCST3
- Remaining Issues
  - Evaluation with turbulence-based dispersion coefficients
  - BPIP issues related to long buildings

PRIME Downwash Model

- Includes:
  - Source-building separation effects
  - Explicit streamline ascent/descent
  - Velocity deficit due to presence of building
  - Integrated cavity (near-wake) and far-wake modules
  - Effects of downwash on plume rise and turbulence (spatially-varying)
  - Partial capture of plume into cavity allowed
  - Enhancement of sigma y and sigma z

Comparison of ISCST3 and CALPUFF with PRIME Module

Bowline Pt. Monitor



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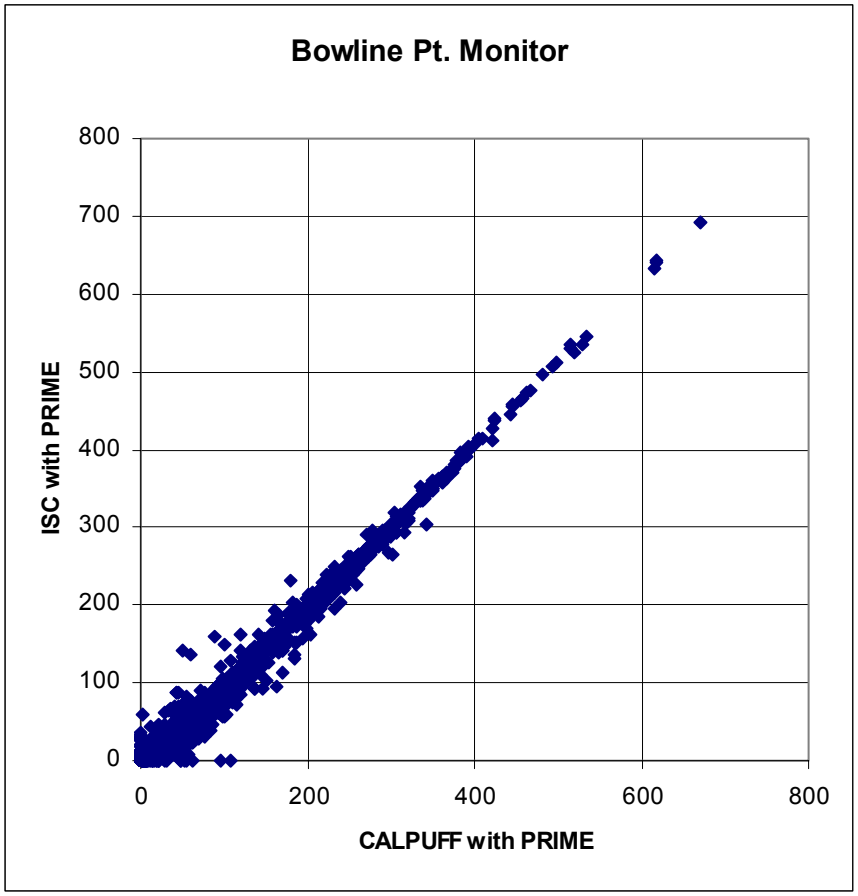
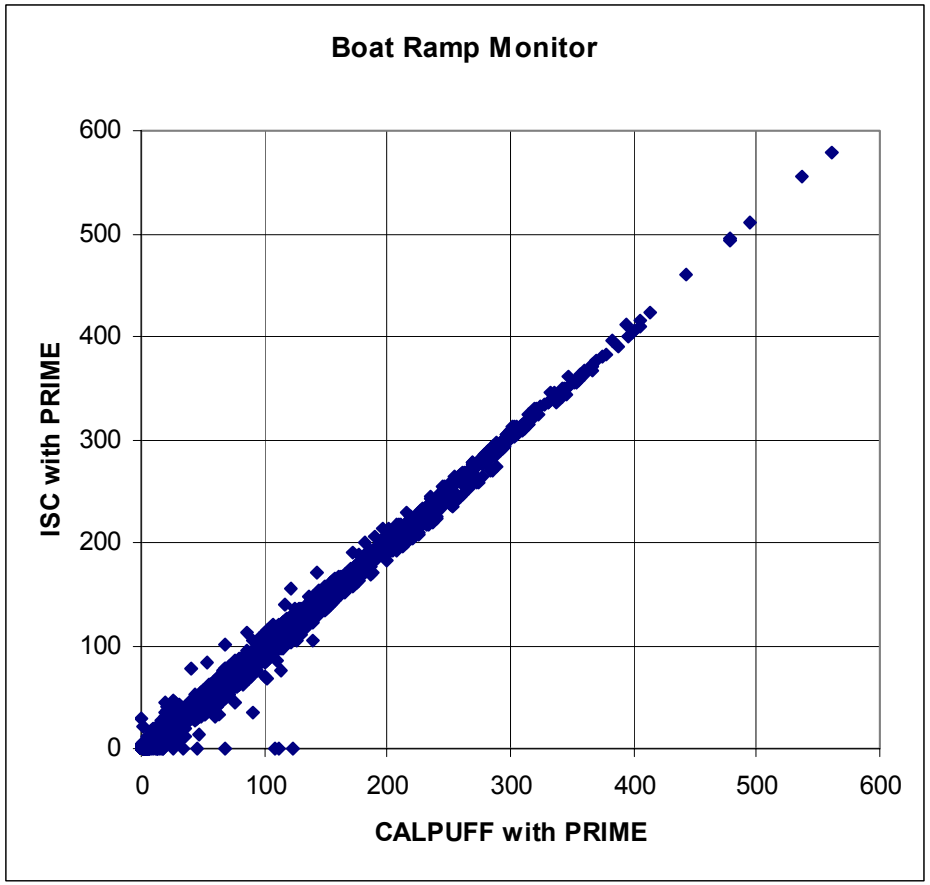


Comparison of ISCST3 and CALPUFF with PRIME Module

Boat Ramp Monitor



New Developments

- CALMET
  - New option for “No-observations” mode, i.e., using MM5 data only
  - Re-organized MM5.DAT file structure allowing stronger coupling between CALMET & MM5
  - New vertical coordinate options (e.g., sigma coordinates) - ongoing
  - Direct coupled to NCEP ETA model for forecasting applications (No-Obs mode)

New Developments

- CALPUFF/Postprocessors
  - Ammonia-limiting method
  - New input structure and graphical user interface (GUI) for entire suite of preprocessors and PRTMET postprocessor

Future Developments

- CALPUFF
  - Sub-hourly emissions, met. & sampling time step
  - Couple to CFD model (complex building configurations)
  - Additional work on aqueous phase chemistry
- CALMET
  - Multiple nesting grid options
  - Soil moisture module
  - Meteorological model evaluation software package
  - Refinements to terrain, sea breeze and divergence parameterizations