AERMOD White Papers Update

12th Modeling Conference on Air Quality Modeling

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AERMOD Development Site

- AERMOD Modeling System Development website:

  https://www.epa.gov/scram/aermod-modeling-system-development
- Original AERMOD White Papers from 2017
- Current AERMOD White Papers
- Can be updated anytime
  - New NO_2 White Paper added
  - New deposition White Paper under development
- Open to submissions from the community
  - White Paper template available
    - Statement of issue with the model
    - Review of current scientific development
    - Considerations for implementation in the model
    - Must be a potential update to AERMOD, within the context of Appendix W requirements
  - Penetrated Plume White Paper submitted in August, under review

AERMOD White Papers

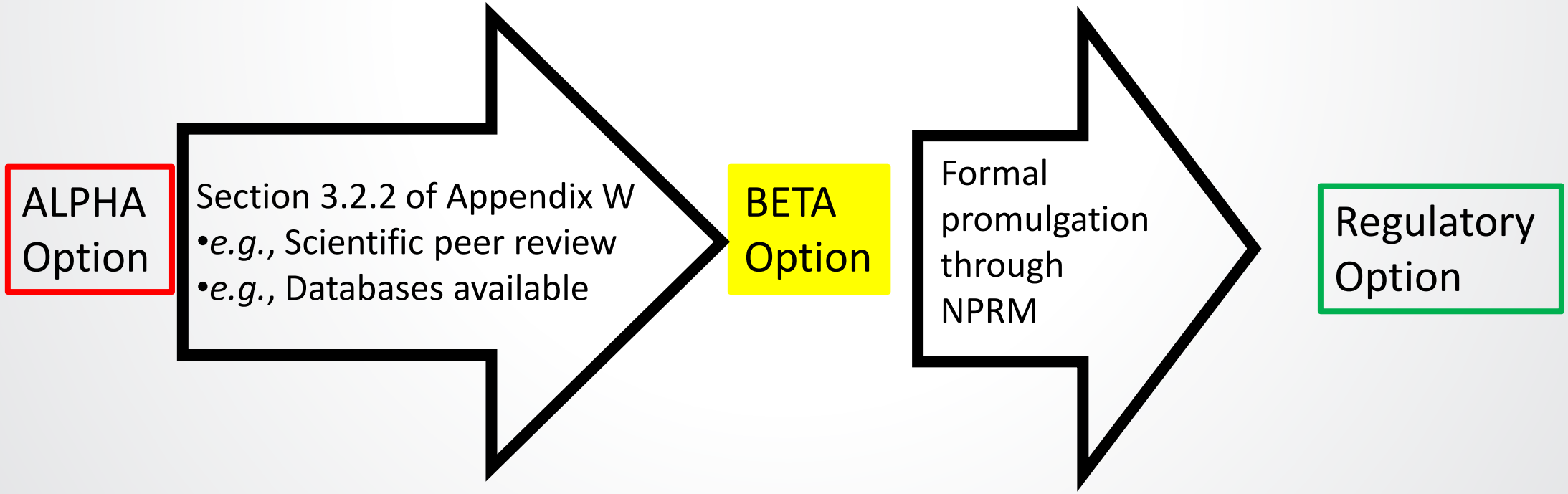
- AERMOD near-term system updates
  - Low wind conditions
    - LOW_WIND keyword (Minimum σ_v value, Minimum wind speed, FRANMAX)
    - Considering additional options for minimum Monin–Obukhov length and associated parameterizations of vertical temperature gradient scale (θ*)
  - Downwash
    - ORD and PRIME2 alpha options added to 19191
    - EPA planning additional evaluations
    - ORD conducting additional development work to address other downwash issues
  - NO_2 enhancements
    - New field studies (API, BLM, PRCI, ERM, AECOM, EPA, City of Denver, other O&G industry groups)
    - New Tier 3 method, based on ADMS approach (API collaboration)
    - New Tier 2 method, based on NO/O3 reaction rate limitations, released by (EPA)
  - Mobile sources
    - RLINE added to 19191 (FHWA Collaboration)

AERMOD White Papers

- Overwater
  - IWAQM agreement with the Dept. of Interior's Bureau of Ocean and Energy Management (BOEM)
  - Downwash effects that are unique to offshore platforms which are raised, often open lattice structures
    - BLM planning additional wind tunnel studies to inform algorithm development
    - OCD has platform downwash algorithms, EPA/BOEM discussing integration into AERMOD
  - Shoreline/Coastal Fumigation
    - Evaluation of screening algorithms in AERSCREEN, Shoreline Dispersion Model (SDM), and more recent published research.
  - Marine Boundary Layer Parameterization
    - Some work in using AERCOARE preprocessor for overwater meteorological data available as a counterpart to AERMET
- Saturated plumes/Plume rise
    - PLURIS is generic plume rise model (AECOM)
    - BLP-like sources been important recently
    - Additional focus on merged plumes & industrial heat islands resulting in increased plume rise

Providing Non-Regulatory Options

- ALPHA options – "experimental", i.e., developmental options not available for regulatory use
- BETA options – Peer-reviewed options that are potentially ready for consideration as alternative model(s)



What makes a BETA option?

- Section 3.2.2.e – no preferred model
  i. Technique has received a scientific peer review;
  ii. Technique is applicable to the problem on a theoretical basis;
  iii. Databases to perform the analysis are available and adequate;
  iv. Performance evaluations have shown that the model or technique is not biased to underpredict; and
  v. A protocol on methods and procedures has been established.

- Section 3.2.2.b.2 – there is a preferred model
  - A statistical performance evaluation has been conducted with air quality data showing that the alternative model performs better.
- Section 3.1.1.c – selecting a preferred model
  i. Complete test dataset must be packaged with the model.
  ii. The model must be useful to typical users.
  iii. The model documentation must include a robust comparison with air quality data.

AERMOD "Top 10" Download Facts

- August 21st through Sept 30th (41 days)
- 1241 downloads of AERMOD (~1 year since last release)
- SCREEN3 (253) vs AEMET (233)

aermod_implementation_guide.pdf	659
aermod_userguide.pdf	647
aermod_mcb14_v19191.pdf	550
aermod_quick-reference-guide.pdf	373
appw_17.pdf	348
twelfth_modeling_conference-draft_agenda.pdf	331
aermet_userguide.pdf	189
aermod_sample_run.pdf	174
aermet_mcb9.pdf	156
epa_rtp_hotel_info.pdf	126

aermod_exe.zip	779
aermod_source.zip	257
screen3.zip	253
aermet_exe.zip	233
samplerun.zip	216
aermod_exe-32.zip	205
aerscreen_code.zip	164
aermod_test_cases_19191.zip	119
aermap_exe.zip	98
sample_aerplot_run.zip	86