MMIF Status and Updates

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Meteorological Inputs

- Current Acceptable Inputs for Dispersion Model Applications
    - 1 year of adequately representative on-site observational data
    - 5 years of adequately representative NWS/ASOS observational data
    - 3 years of adequately representative prognostic data (e.g., WRF modeling)
- Use of prognostic data was allowed under the latest revision to the Guideline
- Use of these data is dependent upon:
    - Sound scientific understanding of the meteorological complexities of the source
    - Performance evaluation of the simulated meteorological data against nearby stations

Consultation

- While the use of prognostic meteorological data has been in place for a few years, we are still asking for the applicant to discuss use of prognostic data with the reviewing authority.
  - Reduce unnecessary technical burden
  - Confirm understanding of situation and feasibility of use
  - Possibly use of readily available data
  - Understanding the requirements for model evaluation
- 'Measure twice, cut once'

WRF Data Availability

- AQMG has made multiple years of WRF data available
  - 12km resolution
  - AERMET-ready inputs (from MMIF) for all land-based grid cells
  - 2013-2018
  - Multiple MJOs have access to the data
- 2019 and 2020 WRF data have been generated but are currently not processed through MMIF
- Future Plans Include:
  - Housing WRF data in a cloud-based environment to make it easier to obtain
  - Potential to run MMIF on a server
  - Data **will not** be adequate for off-the-shelf use without evaluation

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- Current Version: v3.4.1 (available on SCRAM here)
- WRF Default Vertical Coordinate System has changed
  - Hybrid vertical coordinate system is now default, MMIF not able to read that data at this time
  - Impacts of terrain features do not propagate continuously through upper atmosphere
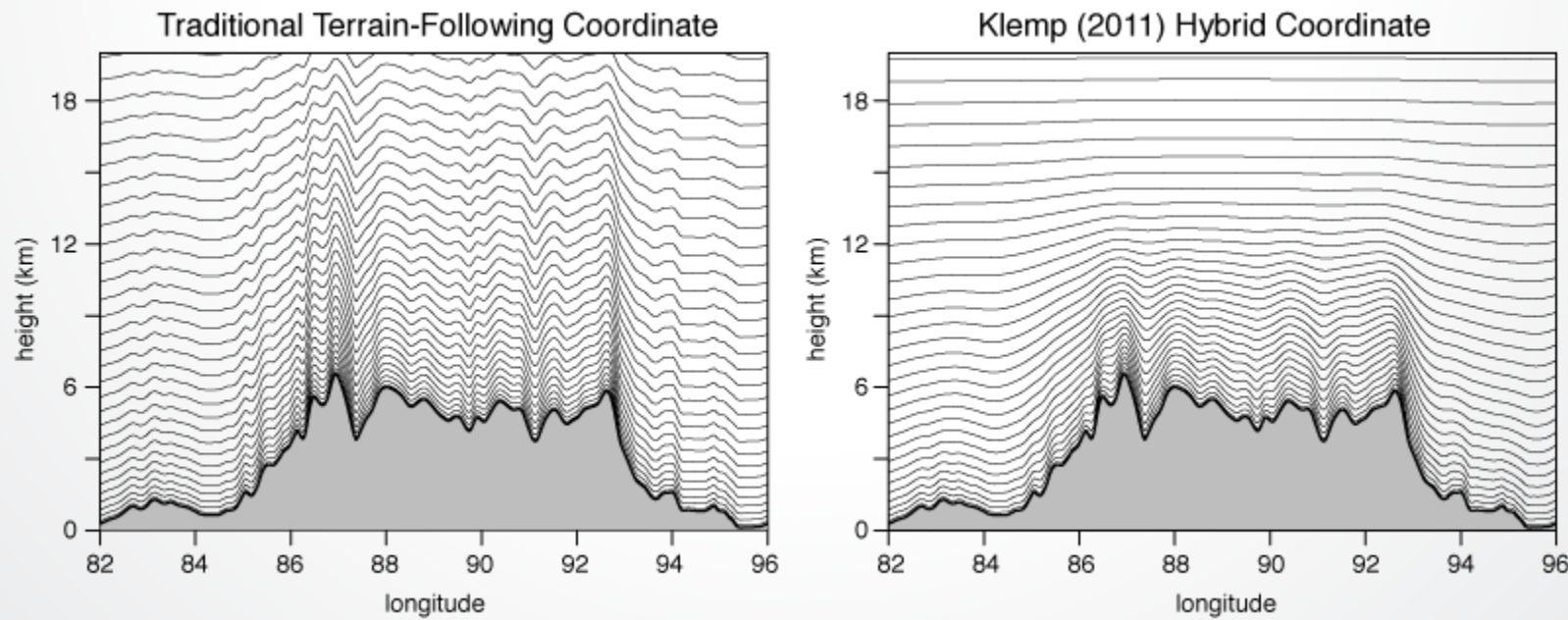
Source: MPAS

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- Several earlier applications utilized WRF and MMIF in complex terrain scenarios:
  - Allegheny County, PA
  - PacWest in WA
- More recently, most prognostic met applications have been for overwater sources:
  - R6 in Gulf (opted not to do prog)
  - R1 for offshore wind farms
- Currently, MMIF doesn't treat overwater extractions in a way that is compliant in a regulatory fashion

Source: MPAS

MMIF Code Update

- MMIF currently is unable to process WRF simulations with this coordinate system – Planned Update 1
  - *v3.4.2 coming with this fix in short order*
  - *Once this occurs, 2019 and 2020 MMIF-processed data will be available*
- Planned AERMET overhaul will require some tweaking of formatting for file outputs – Planned Update 2
- Given increased number of overwater applications, will build in capability for MMIF to determine if source is overwater and extract additional variables from WRF if necessary – Planned Update 3
- Once code is tested, will be released a MMIF v4.0

- Continuing to explore the use of upper-level prognostic data from MMIF paired with observed surface data
  - Sparse upper-level network in US
  - MMIF generates a 'profile' at the source location
- Still not allowing the use of blended data
  - For example, not allowed to fill missing surface observational data with surface-level prognostic met
  - Previous guidance on data substitution in AERMET still valid

Questions?

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