

NETAC Ozone Planning Activities for FY 2008-2009

Presentation to the NETAC
Technical Committee

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Topics

- Monitoring
- Ozone modeling
- Emission Inventory Improvement
- Control Strategy Assessment

Current Monitoring Projects

- HRVOC monitoring with RAD instrument was carried out at CAMS 19 during August-October, 2008
- Monitoring completed successfully
- Data analysis is underway
 - Initial results presented today

Potential Monitoring Projects

- Additional HRVOC monitoring at CAMS 19
 - Which HRVOCs? Ethylene, propylene, etc.
 - Canister samples triggered by RAD
- Tracking oil and gas development
 - Resume TNMHC monitoring at Longview CAMS 19
 - VOC “saturation monitoring” throughout the region
- Working with TCEQ to enhance CAMS
 - NO_Y at Longview or Karnack
 - Fresh vs. aged NO_x; local vs. transported ozone
 - SO₂ at Tyler
 - Power plant impacts

Status of 2005 Ozone Model

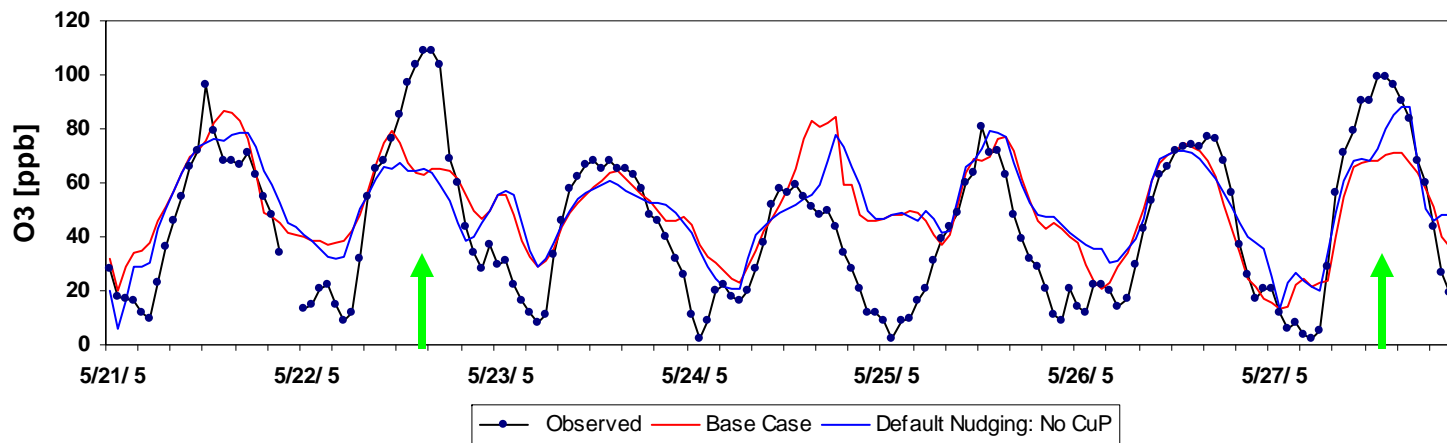
- Model performing well for 2005 base year
 - Improve model performance on 3 Longview high ozone days
- Seeking improvement in MM5 winds
 - Modeled winds critical to simulating impacts of plumes from local point sources
 - Some success with stronger nudging of MM5 winds to observed winds, but further nudging degraded winds

MM5 Winds: TCEQ Suggestions

- Use newly available wind profiler data
 - Add one profiler in Louisiana to our 4-km grid
- MM5 can overestimate cloud cover and rainfall on high ozone days; this will cause CAMx to underestimate ozone
 - Overestimate related to method of cloud simulation without cumulus parameterization
 - TCEQ had success in their Houston modeling using Grell cumulus parameterization (CuP) on the 4-km grid to reduce wind errors from spurious clouds/rain
- Ran MM5 for May 2005 using Grell on the 4 km grid and then ran CAMx

Ozone Model Results

1-hour Ozone at Longview CAMS 19: May, 2005



- Green arrows indicate high ozone days
- Significant improvement in simulation of peak ozone for May 27, but not May 22.
- Nudging/CuP tests show May 22 ozone to be less sensitive to changes in wind field than May 27
- Better overall ozone simulation at Longview with Grell CuP than with increased nudging, effects small at Tyler and Karnack

Proposed Ozone Modeling: 2005 Base Year

- Further tests to improve wind field/plume simulation
- Improve simulation of regional ozone background
 - Include satellite estimates of fire emissions based on recent work for TCEQ
 - Test LAI-driven dry deposition algorithm from Environment Canada
 - Improve boundary conditions based on recent work for TCEQ
- Tests with very high model resolution around CAMS 19
 - High-resolution (1 km) grid
 - More detailed Plume-in-Grid model (IRON PiG) for large point sources near CAMS 19

Proposed Ozone Modeling: Future Year

- Select future year for ozone modeling
 - Usually related to an area's designation
 - 2012 or 2015 appear likely
- Future year emission inventory development
- Control strategy modeling

Emission Inventory Projects

- 2005 Base Year Emission Inventory
 - Incorporate any recent updates to TCEQ 2005 emission inventory that are significant
 - Update 2005 compressor inventory using new Pollution Solutions survey data
- Develop Future Year Inventory
 - Projected growth in oil and gas exploration and production, e.g., Haynesville shale
 - Changes to local point source emissions
 - “No-CAIR” power plant emissions: work with TCEQ

End