

Appendix G-8
CMAQ Configuration

Table G-8. OTC CMAQ Air Quality Model Configuration

| Science Options | Configuration | Details/Comments |
|--|--|--|
| Model | CMAQ Version 4.4 | |
| Horizontal Grid Mesh | 36km/12km | |
| 36-km grid | 145x102 cells | |
| 12-km grid | 172x172 cells | |
| Vertical Grid Mesh | 22 Layers | |
| Grid Interaction | One-way nesting | |
| Boundary Conditions | GEOS-CHEM | |
| Emissions | | |
| Baseline Emissions Processing | SMOKE (Version 2.1) model configuration | MM5 meteorology input to SMOKE & CMAQ |
| Sub-grid-scale Plumes | No Plume –in-Grid (PinG) | |
| Chemistry | | |
| Gas Phase Chemistry | CBM-IV | |
| Aerosol Chemistry | AE3/ISORROPIA | |
| Secondary Organic Aerosols | Secondary Organic Aerosol Model (SORGAM) | |
| Aerosol Mass Conservation Patch | Yes | Schell et. al., (2001) |
| Cloud Chemistry | RADM-type aqueous chemistry | Includes sub-grid cloud processes |
| N ₂ O ₅ Reaction Probability | 0.01-0.001 | |
| Meteorological Processor | MCIP Version 3.0 | |
| Horizontal Transport | | |
| Eddy Diffusivity Scheme | K-theory with Kh grid size dependence | Multi-scale Smagorinsky (1963) approach |
| Vertical Transport | | |
| Eddy Diffusivity Scheme | K-theory | |
| Diffusivity Lower Limit | Kzmin = 1.0 | |
| Planetary Boundary Layer | No Patch | |
| Deposition Scheme | M3dry | Directly linked to Pleim-Xiu Land Surface Model parameters |
| Numerics | | |
| Gas Phase Chemistry Solver | Euler Backward Iterative (EBI) solver | Hertel et. Al. (1993) EBI solver ~2x faster than MEBI |
| Horizontal Advection Scheme | Piecewise Parabolic Method (PPM) scheme | |
| Simulation Periods | 2002 | |
| Platform | Linux Cluster | |

