Table H-11-1. OTC CMAQ Air Quality Model Configuration

Science Options	Configuration	Details/Comments
Model	CMAQ Version 4.5	
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_2O_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	