BREEZE® AERMOD Parallel

The input meteorological data requirements and technical enhancements incorporated in AERMOD, the U.S. EPA approved refined air dispersion model for most modeling applications, cause model runs to take significantly longer as compared to the predecessor regulatory model ISCST. In order to address this issue, *BREEZE* offers AERMOD Parallel, a version designed to minimize runtimes through the use of a distributed computer network (cluster) or multi-CPU environment.

Same Results, Faster Run-Times

BREEZE AERMOD Parallel produces pollutant concentration estimates identical to EPA's Fortran executable. The only code changes contained in the product are additions to implement the parallel features. The product runs the exact algorithms but on different processors. Improvements in the product's performance enhancements are based directly on the number of CPUs (or cores) utilized. Furthermore, it accepts AERMOD input files created for use with any version of EPA's AERMOD and is available in both Windows and Linux versions.

When purchasing AERMOD Parallel, users also receive a parallel version of AERMAP, the AERMOD terrain preprocessor. This functionality further expedites run times by speeding the computation of receptor elevations and effective height scales for numerous types of digital terrain formats.

How it Works

Licensing for *BREEZE* AERMOD Parallel is based on how many CPUs/cores and computers will be used to run the application, from a single computer with a dual core CPU to a network of dual (or greater) core computers. The efficiency gains associated with using AERMOD Parallel are largely dependent upon the hardware configuration and illustrated in the table below.

AERMOD Runtime Comparisons

Scenarios	EPA Serial (h:m:s)	*BREEZE* Parallel (h:m:s)	Improvement (%)
AERMOD			
39 area sources; 2921 gridded receptors Dual core, 1.83 GHz processors with 2 Gb RAM	19:15:00	9:30:00	203
16 point sources; 22500 gridded receptors Dual core, 1.83 GHz processors with 2 Gb RAM	8:37:50	3:53:02	222
39 area sources; 2921 gridded receptors Dual processors with hyperthreading 2.2 GHz processors with 2 Gb RAM	39:09:00	9:42:00	403
6 circle area sources; 2500 gridded receptors Dual core, 1.83 GHz processors with 2 Gb RAM	1:41:02	0:44:51	225
6 polygon area sources; 1600 gridded receptors Dual core, 1.83 GHz processors with 2 Gb RAM	2:07:46	0:56:33	226
6 volume point sources; 2500 gridded receptors Dual core, 1.83 GHz processors with 2 Gb RAM	0:15:29	0:6:59	222
AERMAP			
14743 receptors in 2 DEM file Dual processors with hyperthreading 2.2 GHz processors with 2 Gb RAM	01:17:52	0:32:10	242
2602 receptors in 1 DEM file Dual core, 3.2 GHz processors with 3 Gb RAM	0:15:36	0:09:11	170

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