

JOINT CENTER for Intelligent Spatial Computing



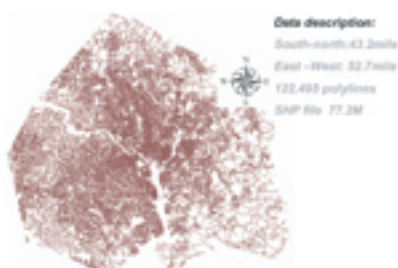
Grid-enabling Models & Applications

Grid computing can be used to solve computing-intensive geospatial problems by leveraging distributed computing resources. We grid-enable real-time traffic simulation & routing, the Weather Research and Forecasting (WRF) model, and the Chesapeake Bay model.

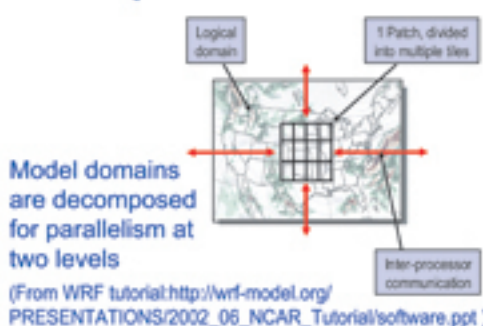
Grid-enabled near real-time traffic simulation



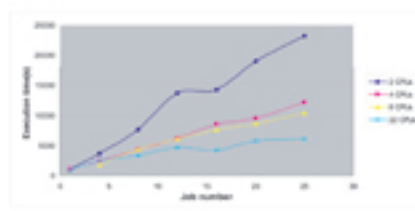
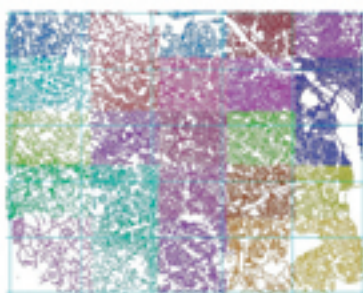
Study area



WRF Multi-Layer Domain Decomposition

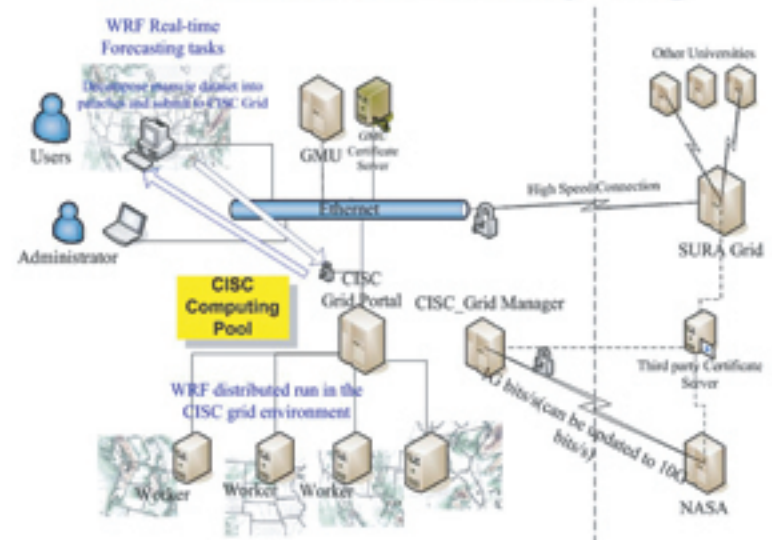


Data Decomposition



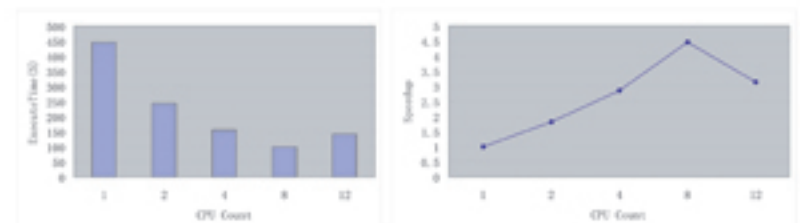
The Grid platform effectively improves the performance of traffic simulations

WRF model & Grid computing

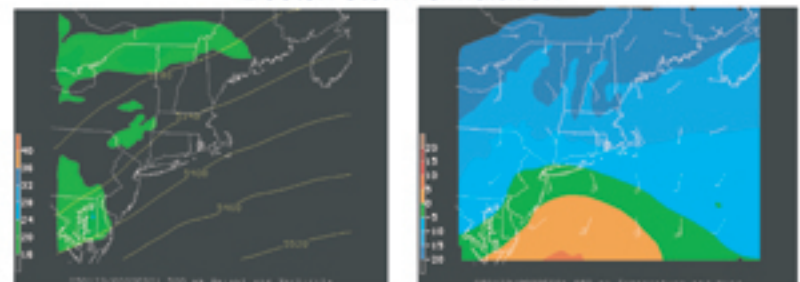


WRF(NMM) Performance test

(Using 2 linux servers with 16 CPU Cores Boston example, 8 hours, 1hour interval.)

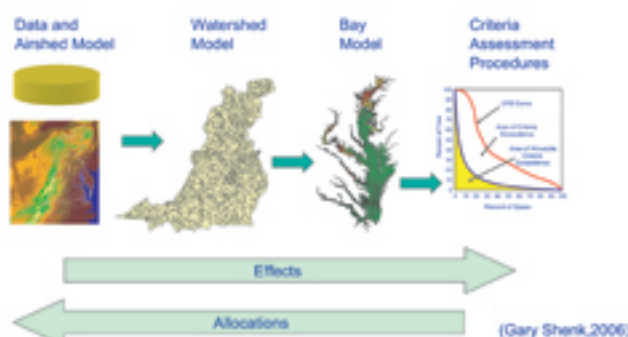


Boston storm simulation



Chesapeake Bay Decision Support System

Grid-enabled Chesapeake Bay Model



1. Land UCIs are generated (Decomposing big datasets based on county-bound)
2. Distributed computing (in condor pool)
3. The ETM is run converting land output to river input, incorporate land-to-water delivery factors. Output is stored in river
4. River UCIs are generated
5. Distributed computing (in condor pool)
6. Postprocessor reads river WDMs and writes ASCII output

