

SECTOR:
HI-TECH

OFFERINGS:
CUSTOM ENGINEERING
SOFTWARE

TECHNOLOGY:
FLUID DYNAMICS

SOFTWARE FOR SIMULATING FLOW OVER URBAN ENVIRONMENT

Our customer has a mandate to develop advanced computing systems based on state-of-the-art concepts and applications around them. The customer is engaged in developing a highly scalable application that fully exploits the latest advances in GPU technology. The application was intended to handle large datasets as input and includes a flow solver and visualization module. Zeus Numerix was engaged to develop some of the core modules of this application

Computing cluster at customer's premises was a hybrid CPU-GPU environment totaling 12 Teraflops of double precision data processing ability. Each node of the cluster had multiple Tesla and Quadro GPU cards. Zeus Numerix developed SPH based flow solver and demonstrated its scale up on 4,000 million mesh points. The code was optimized to run on the particular hardware. The application had ability to import and pre-process very detailed city models with areas up to 100 sq.km.

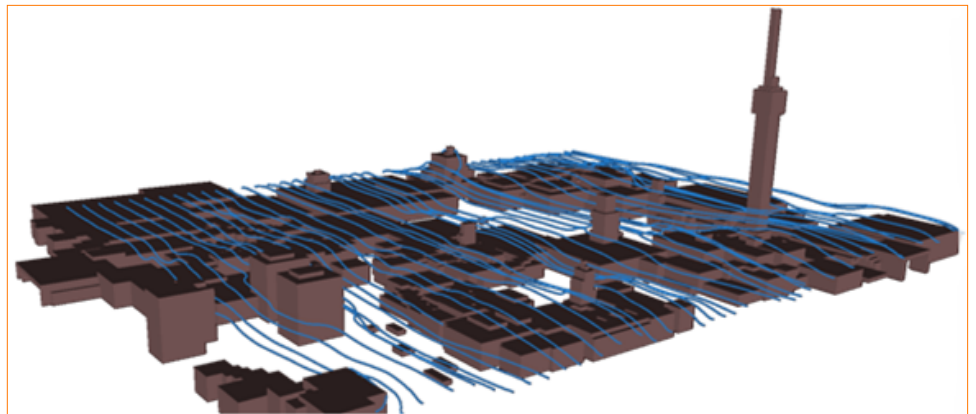


Figure 79: Wind movement over a large urban area

Customer was delivered the source code of the modules along with the software APIs. Zeus Numerix provided onsite support for integrating the preprocessor and flow solver modules into the parent application. Customer is now using the software to simulate pollutant dispersion over large areas.