

Running global seismic waveform simulation on Windows10

*Seiji Tsuboi¹

1. JAMSTEC, Center for Earth Information Science and Technology

Latest version of Windows10, which is Fall Creators Update, supports Windows Subsystem for Linux (WSL). This enables to use linux, such as Ubuntu, directly from Windows. Here we show examples of how we can use this system to run spectral-element method to calculate global seismic waveform on Windows PC and its performance of typical simulation. We use Ubuntu 18.04 available from Windows store and installed it on the latest version of Windows 10. Then we install gcc 5.4.0, gfortran 5.4.0, and OpenMPI 4.0.0 on Ubuntu. We also install SPECSEM3D_GLOBE 7.0.0 and configured under the above linux environment. We use Windows PC equipped with Core i7-3840QM CPU (2.8GHz) and 16GB memory. Since this CPU has four cores, we use one chunk simulation of SPECSEM3D_GLOBE and set the angular distance of the chunk to be 20 degree with NPROC=2. We set NEX=128, which enables to get synthetics with the accuracy of about 30 second and longer. Preliminary results of this simulation show that it takes about 4hours to compute 5 minutes synthetic seismograms over the chunk by using four cores of this CPU. We will show if this performance may be improved with further optimization of the compilation.

Keywords: Spectral Element Method, Numerical Simulation, theoretical seismograms