

Regional On-Demand Simulations



- Near real-time simulations of all $M > 3.5$ earthquakes
- Analysis of past events
 - Scientific database: 3D synthetic seismograms cross-linked with the SCSN database
 - General public & Media: ShakeMaps & ShakeMovies

Currently being implemented for the SCSN with ISTI using Seismo Lab resources



Global On-Demand Simulations

- Near real-time simulations of all $M > 6$ earthquakes
- Analysis of past events (more than 20,000 events)
 - Scientific database: 3D synthetics cross-linked with IRIS database
 - General public & Media: ShakeMovies
- On-demand seismology
 - Select Earth model
 - Select source parameters
 - Select station parameters
 - Control run parameter
 - Save movies

Pilot collaboration between SDSC, NCSA, CACR and the Seismo Lab (TeraGrid application)

Blue Skies

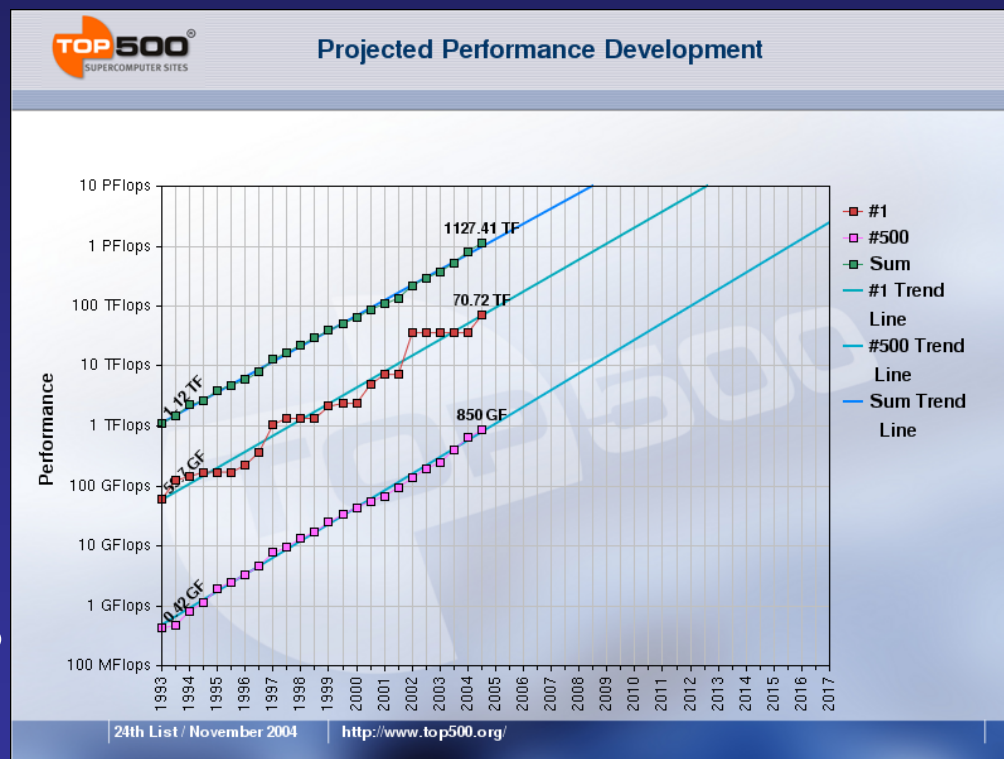
3D global simulations at 1-2 Hz

Requirements:

- Petaflop machine

Occasional reanalysis of entire database

- New REM
- Multiple Earth models



Blue Skies

Full Waveform Tomography

Requirements:

- Adjoint capabilities
- $4 * (\# \text{ earthquakes}) * (\# \text{ iterations})$
- Serious hardware

Kernels from Yorba Linda Earthquake to HEC station for SOCAL model

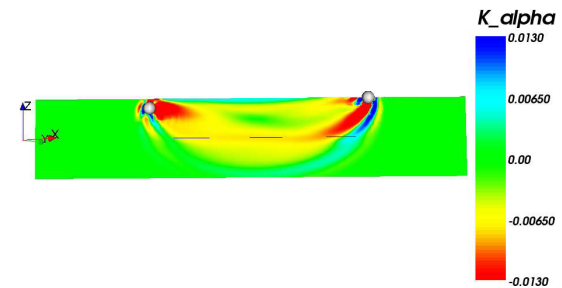


Figure 1: P Kernel

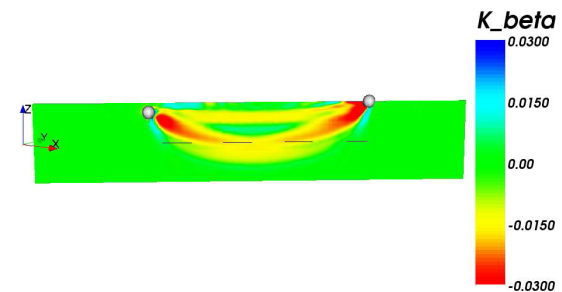


Figure 2: S Kernel