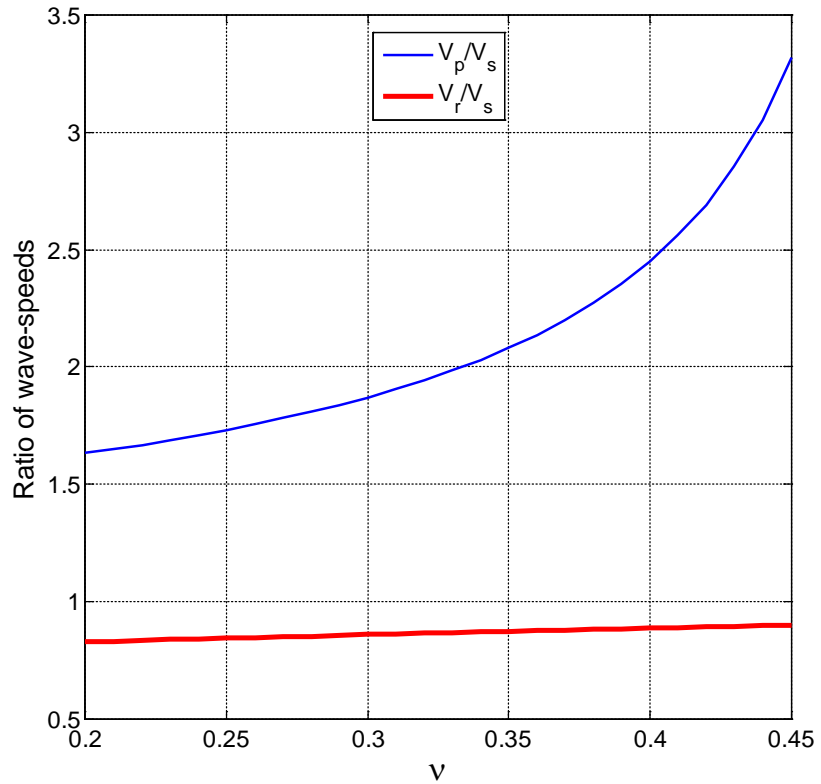


Spatially varying ground motion

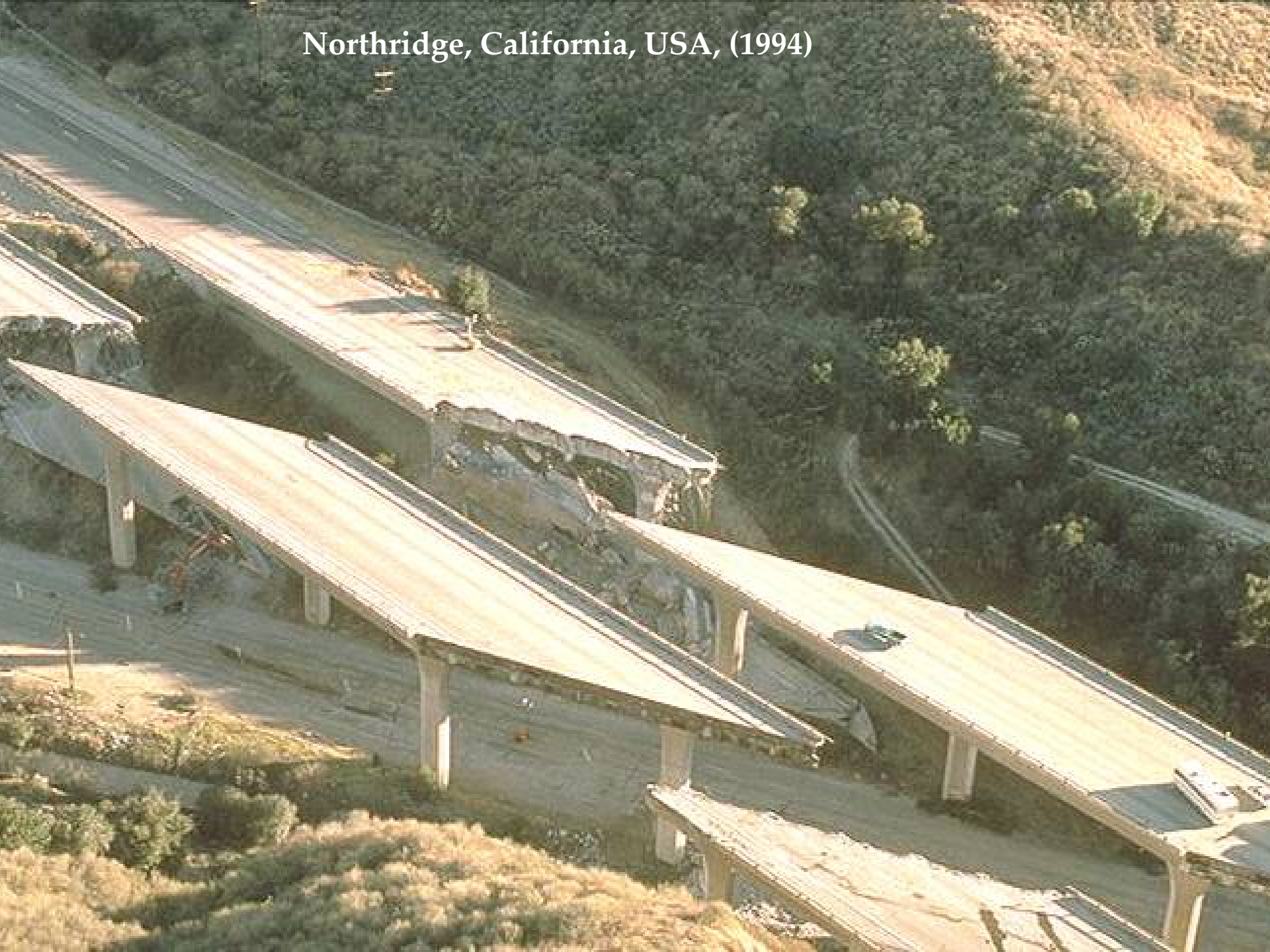
Dr Nicholas A. Alexander

Civil Engineering Department

Seismic wavelengths, $\lambda = \frac{V}{f}$



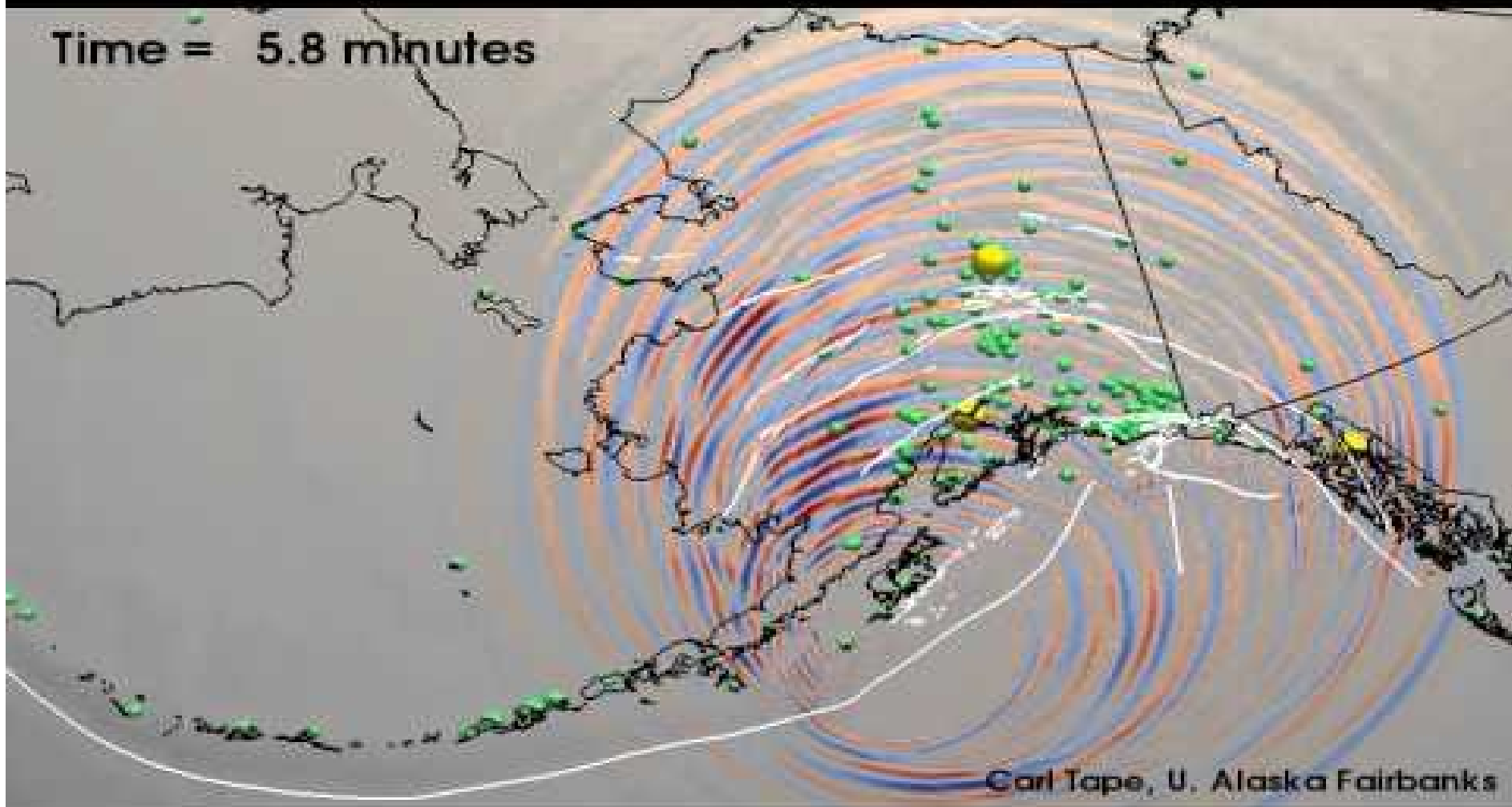
Northridge, California, USA, (1994)





Kobe , Japan, (1995) , Hanshin Expressway

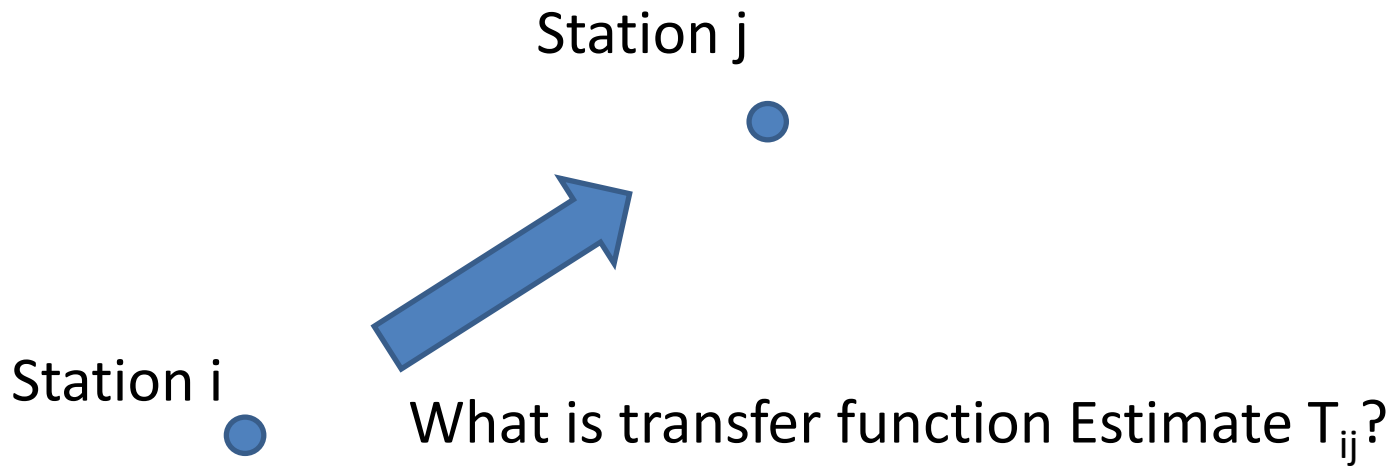
Time = 5.8 minutes



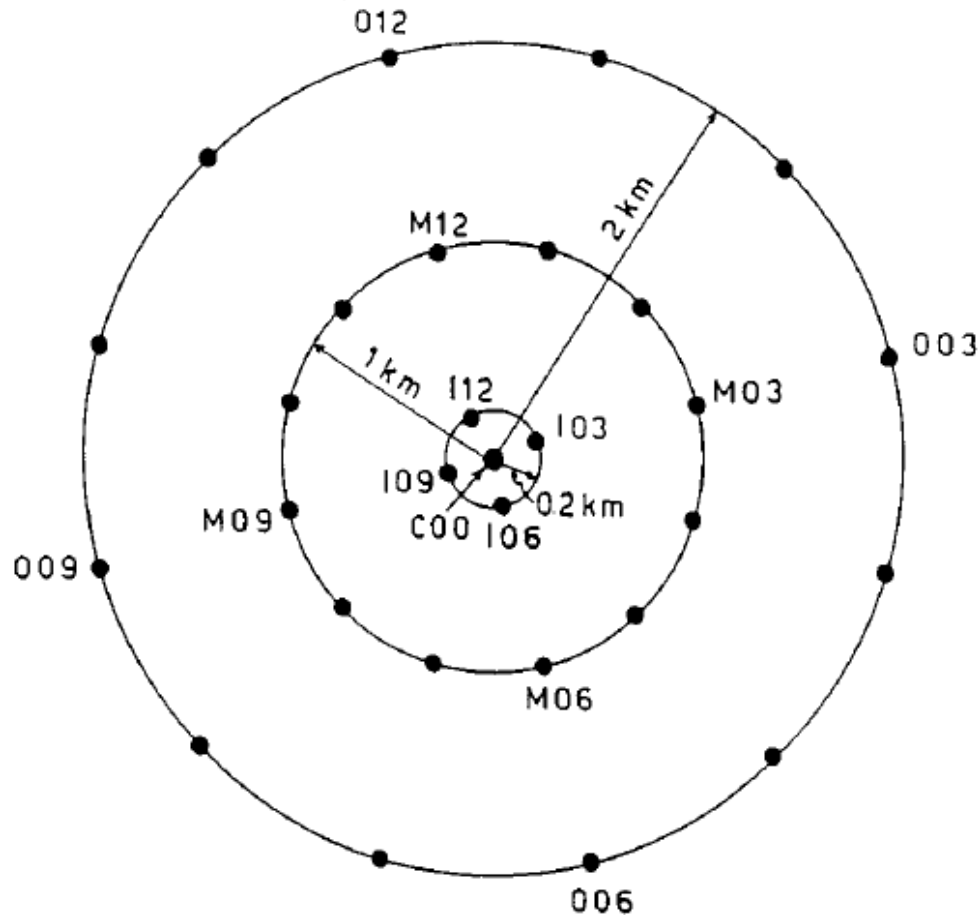
Carl Tape, U. Alaska Fairbanks

We have limited spatiotemporal ground motion data

Given an earthquake timeseries at Station i can we determine the a reasonable estimate of the timeseries at any station j?



Multi-station (SMART-1) Array, Taiwan (1980-1991)



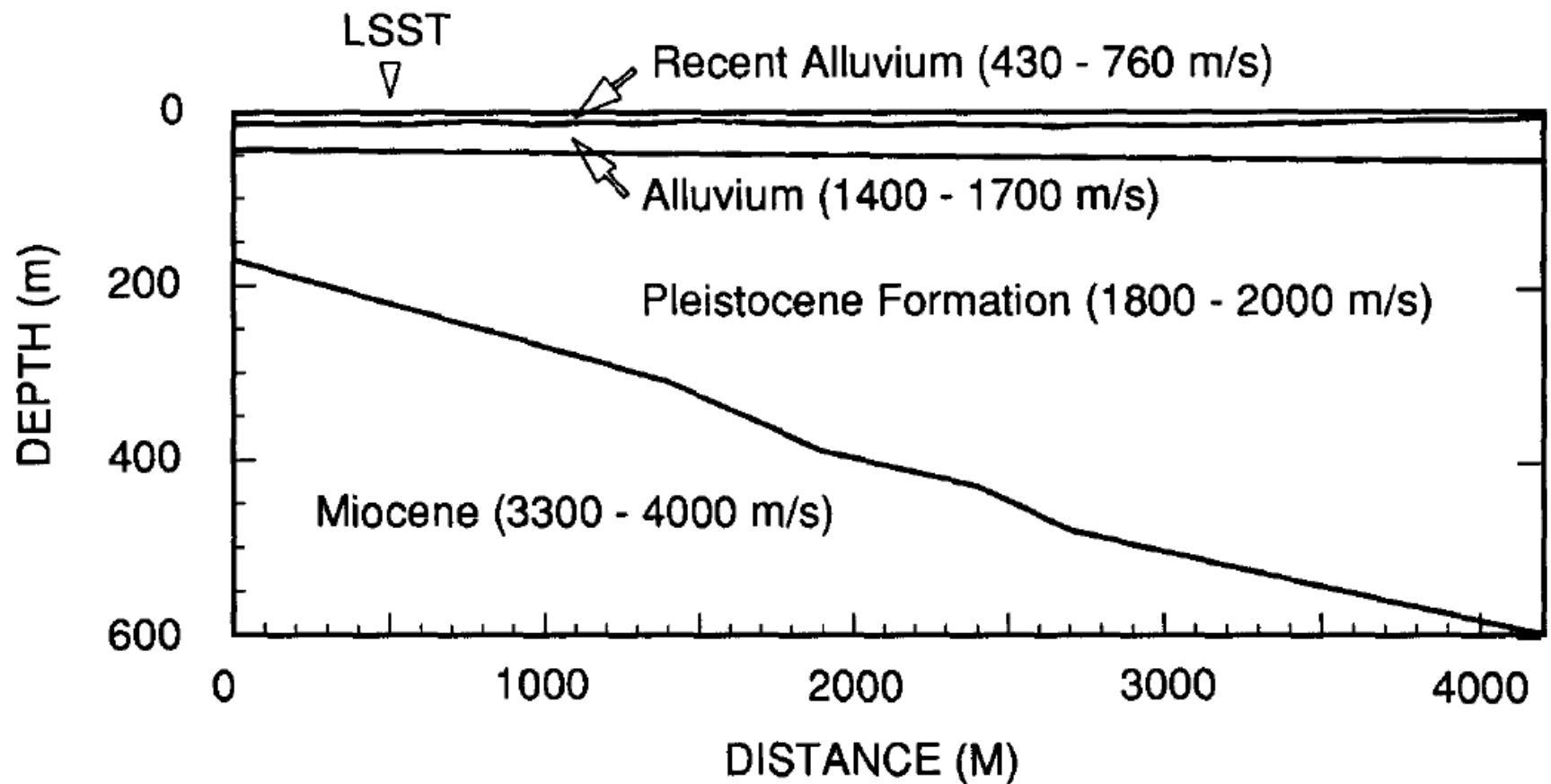
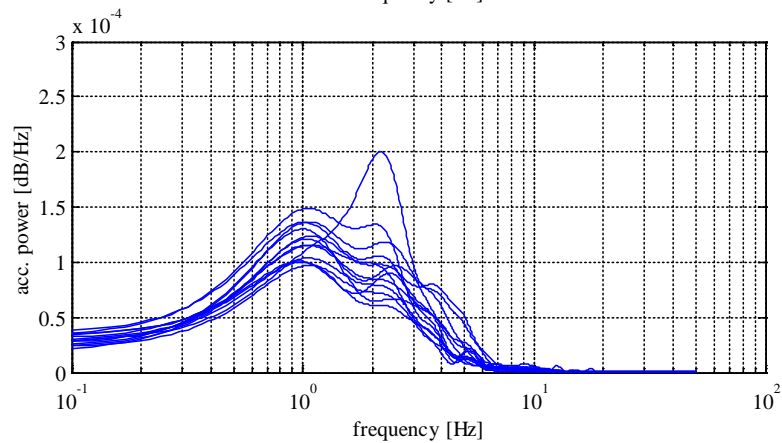
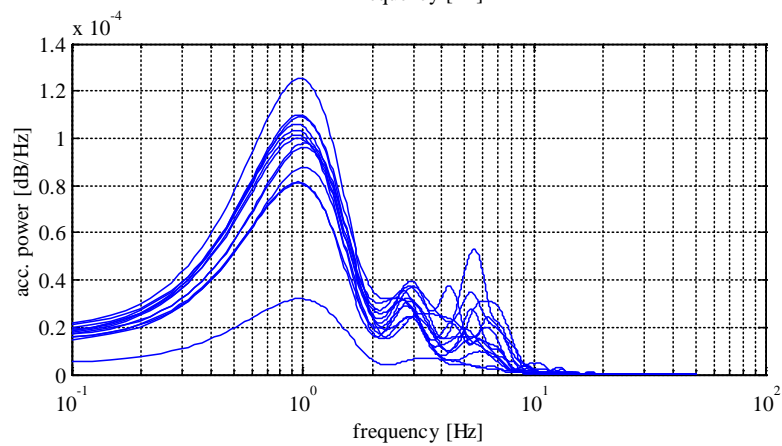
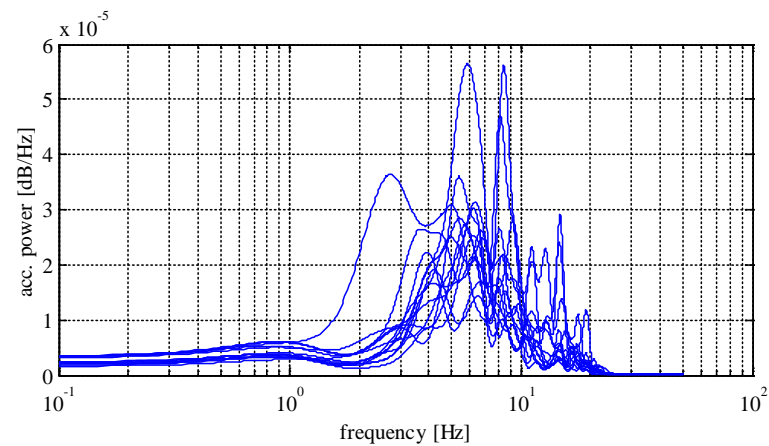
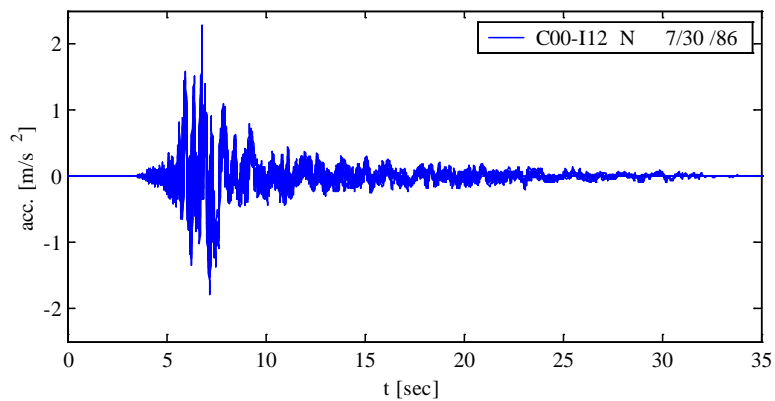
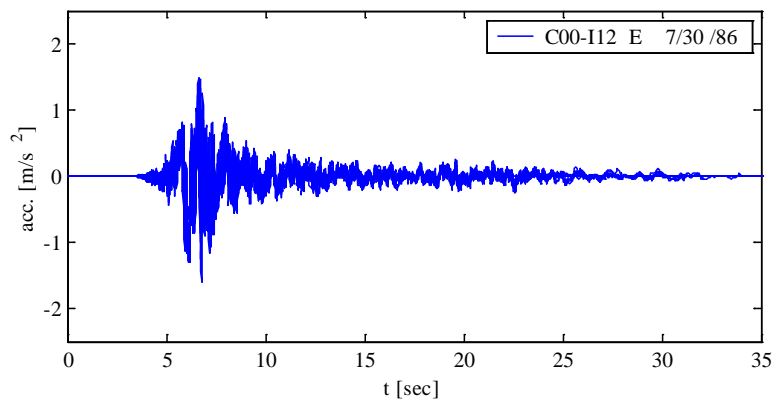
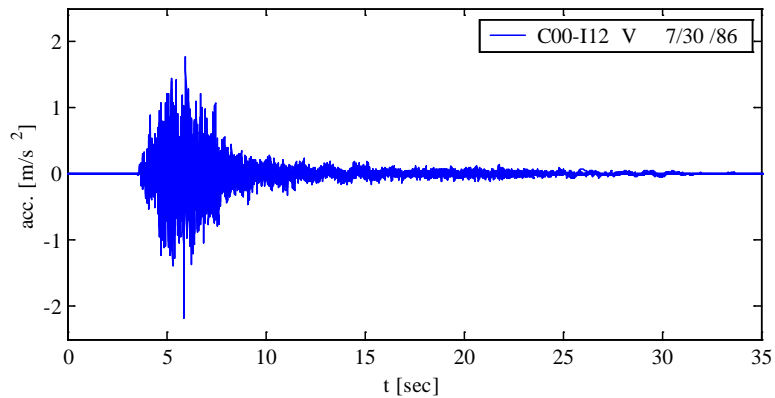
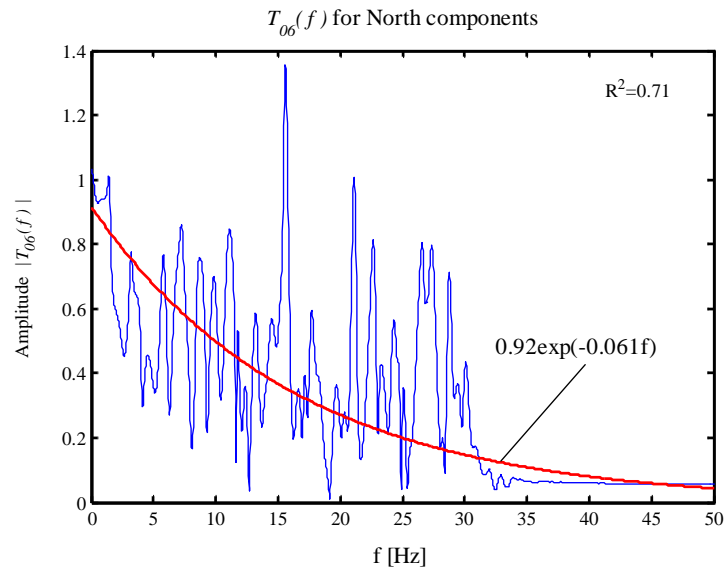
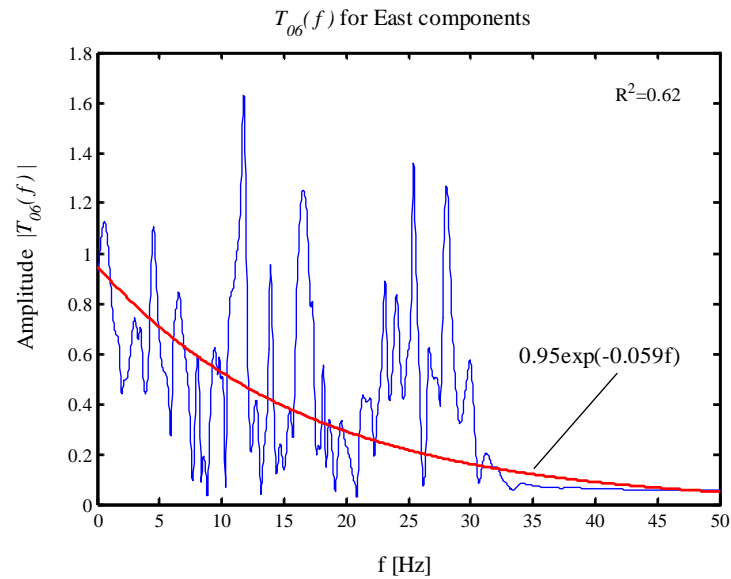
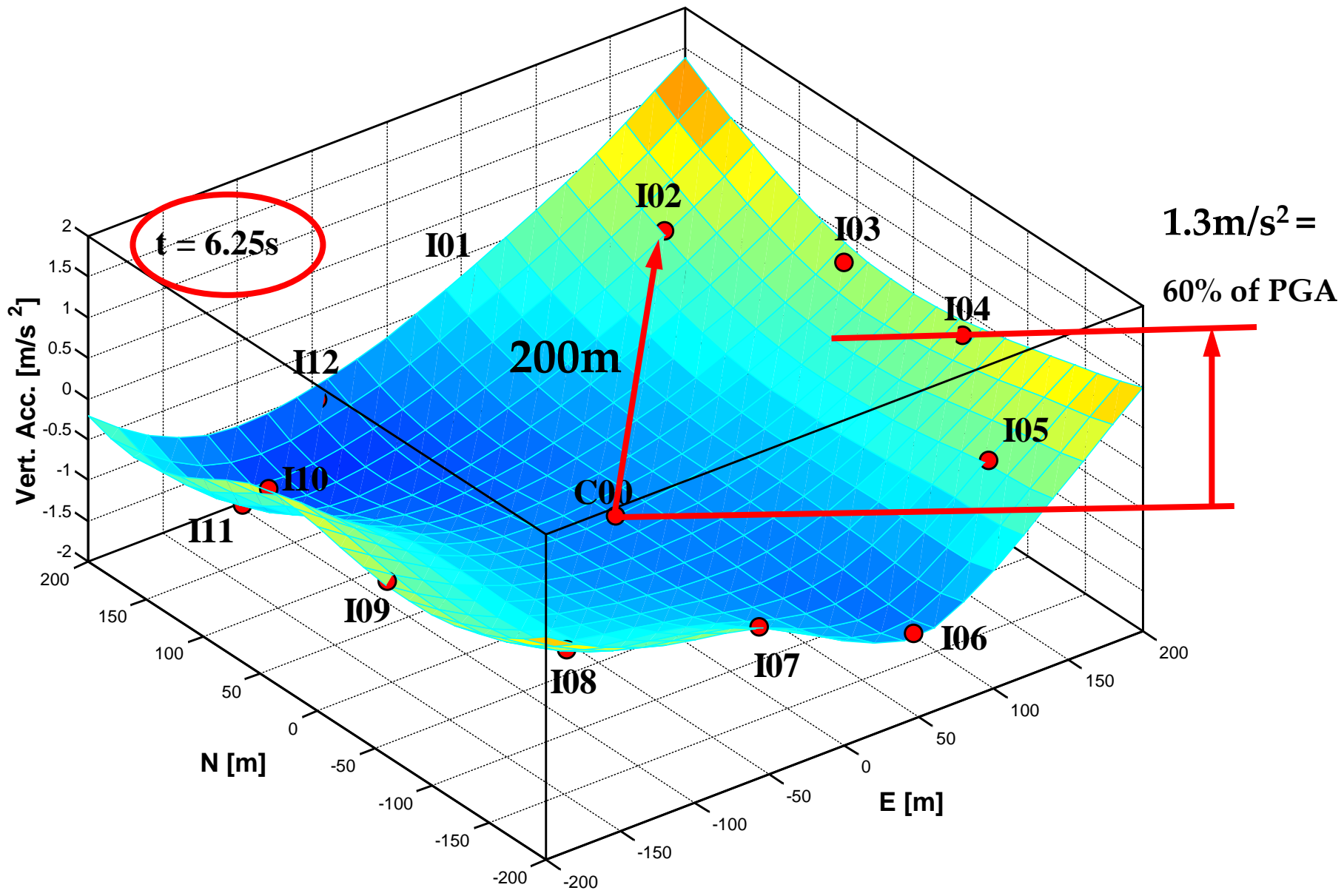


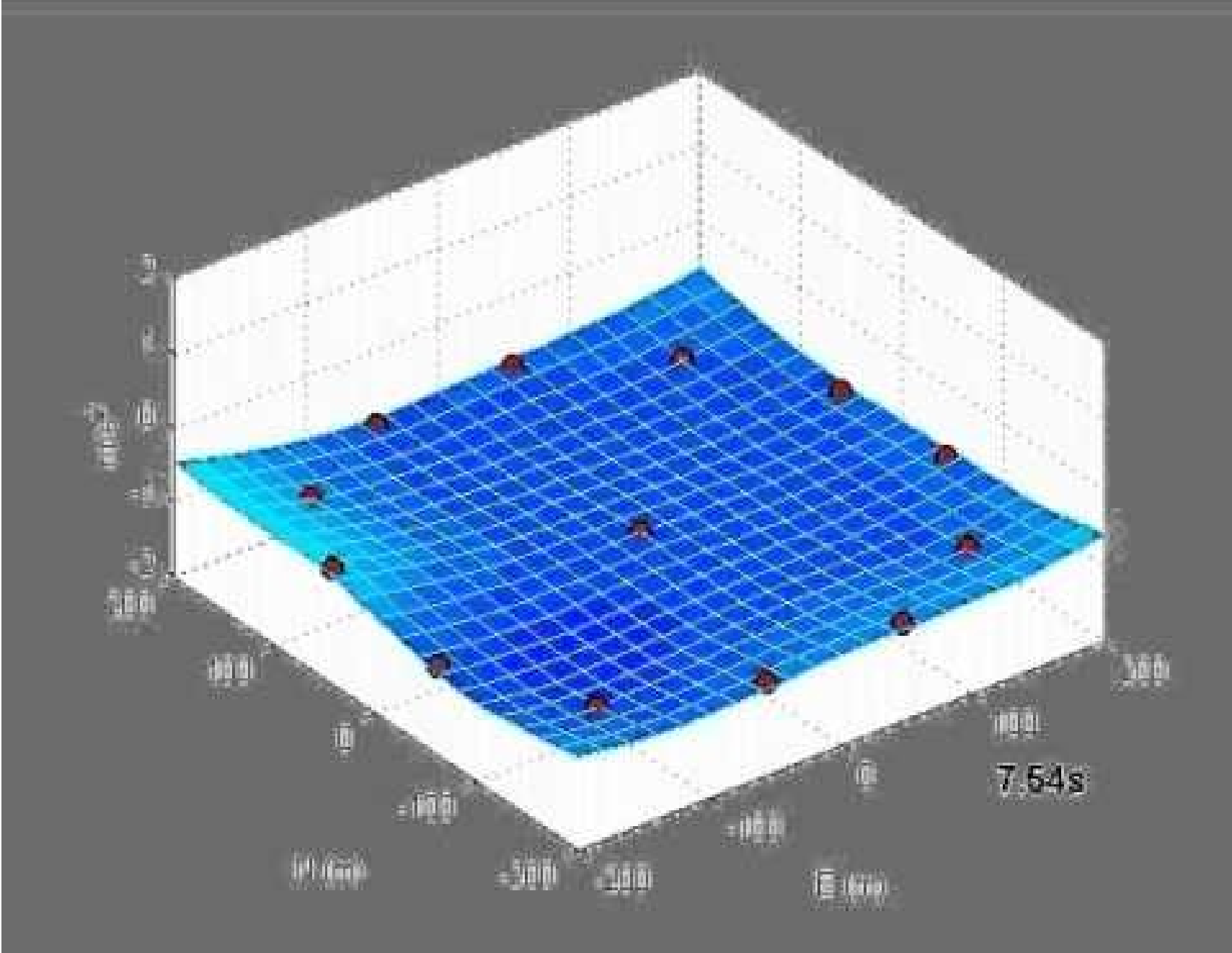
Figure 2 - Geological profile and compressional wave velocity structure along a NS cross-section centered on the SMART 1 array. The profile is approximately perpendicular to the dip of the Lanyang basin. (From Wen and Yeh, 1984)



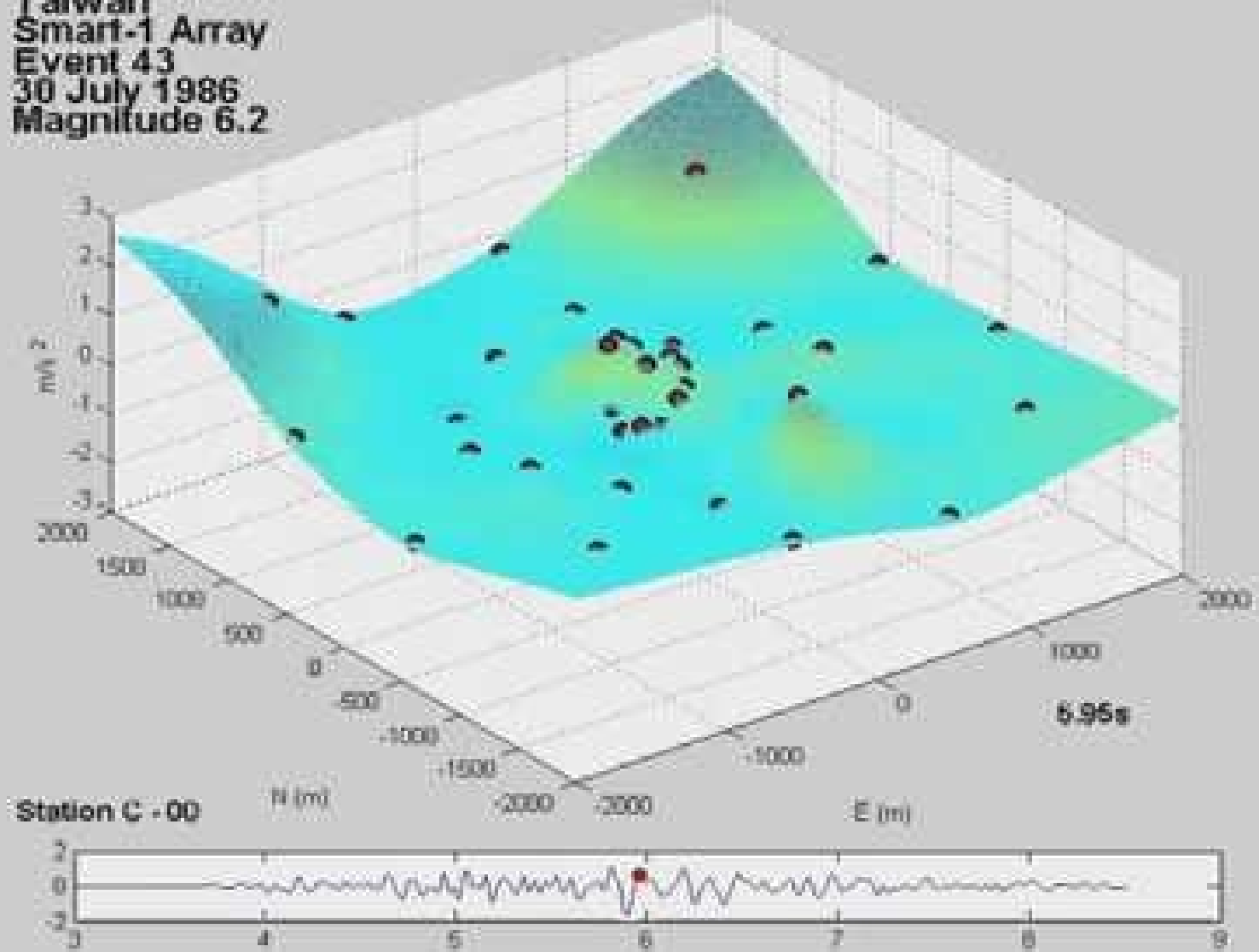
Example of ground transfer functions



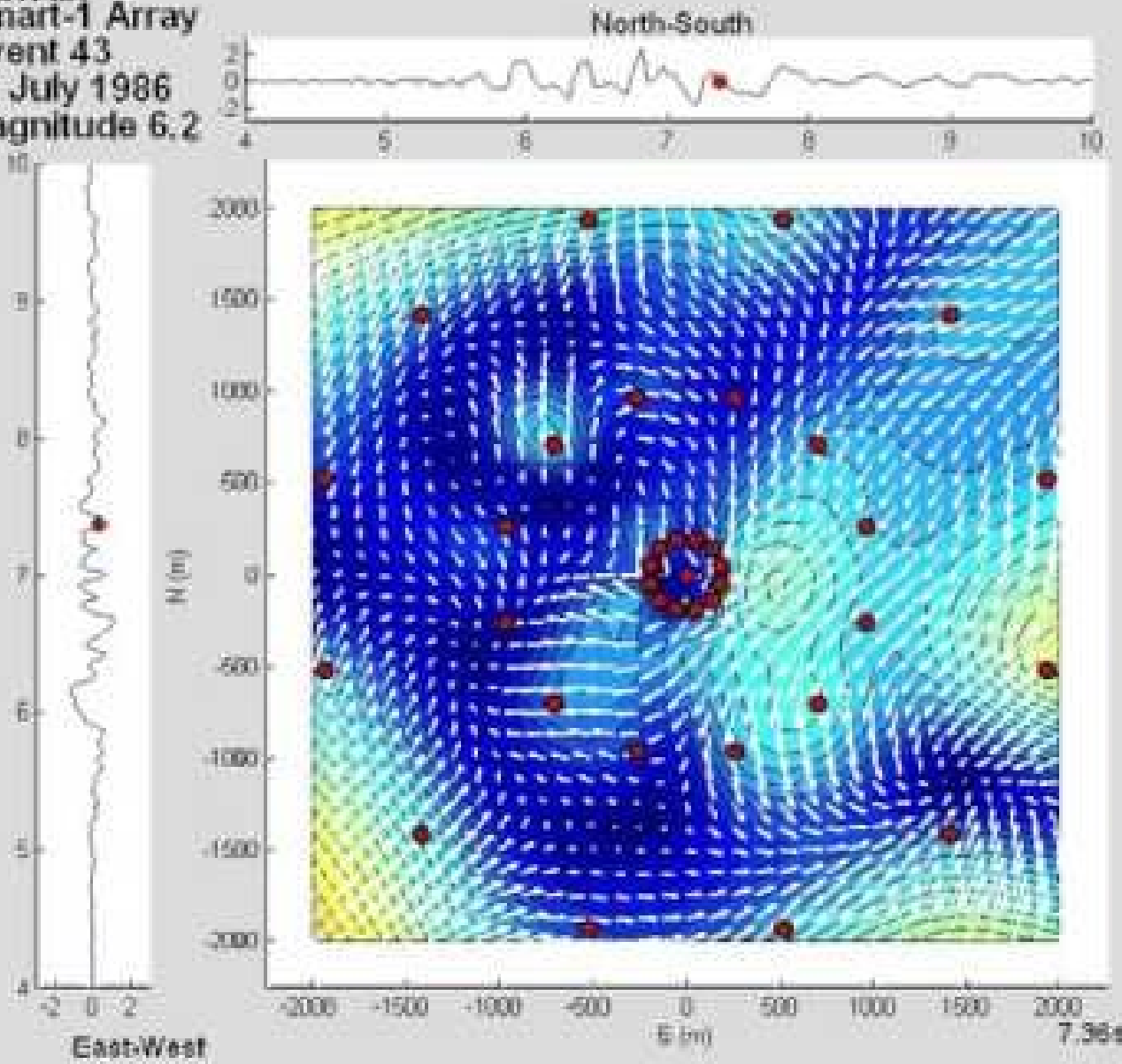




Taiwan
Smart-1 Array
Event 43
30 July 1986
Magnitude 6.2



Taiwan
Smart-1 Array
Event 43
30 July 1986
Magnitude 6.2



Taiwan
Smart-1 Array
Event 43
30 July 1986
Magnitude 6.2

