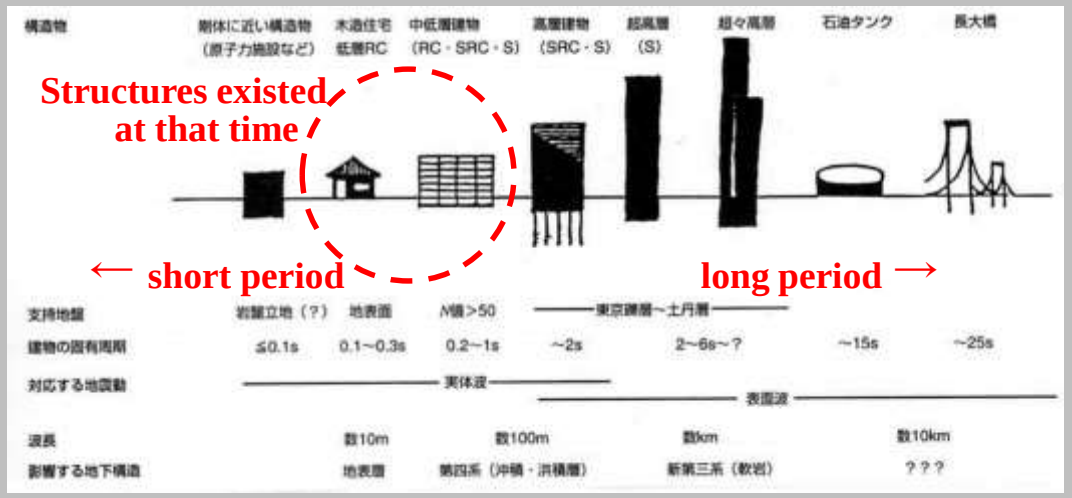
Big Fire

after the earthquake

東京都復興記念館

東京都慰霊堂



What is common and what is different between 1923 and the present?

Big fire ----- maybe common
Long period bldg. --- quite different

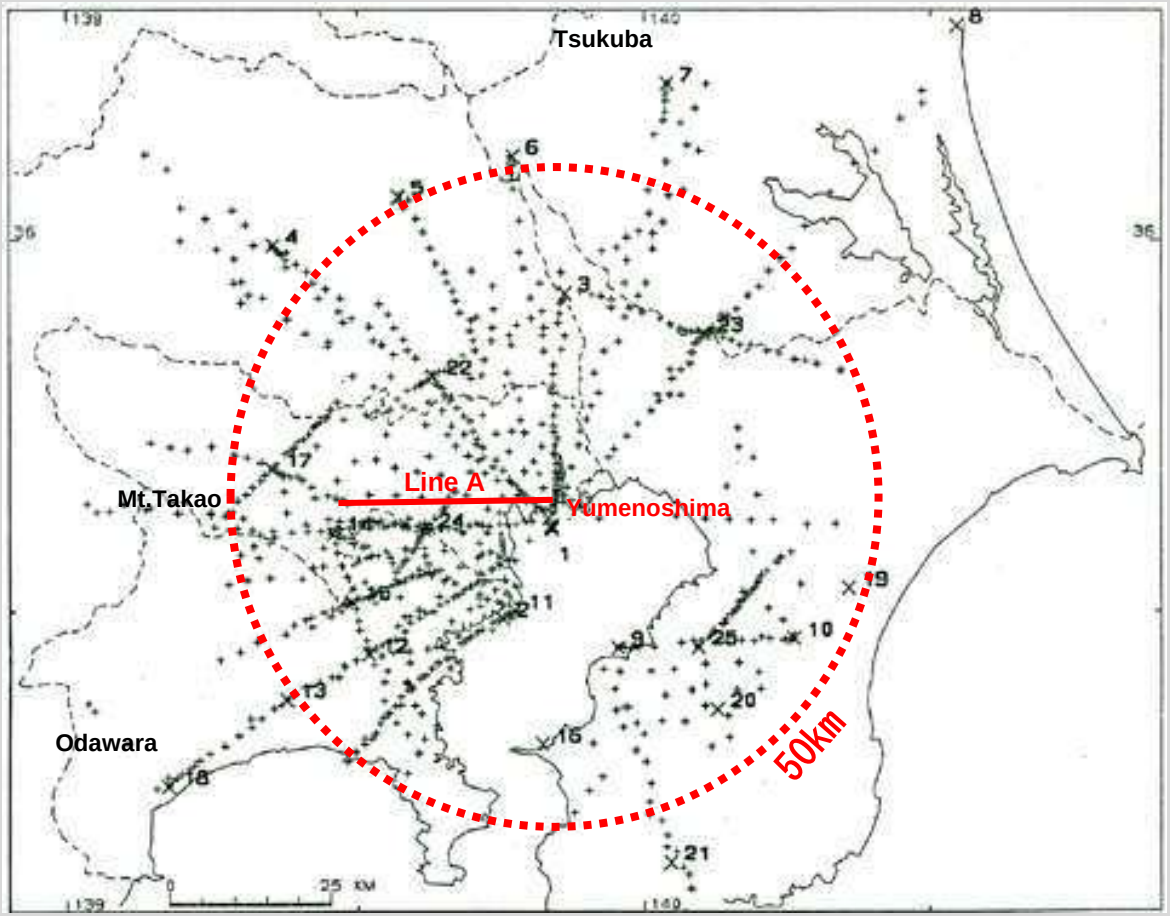
Site Geological Condition

My research bases on deep structure and long-period ground motions of Kanto basin

Destiny of Tokyo Metropolis

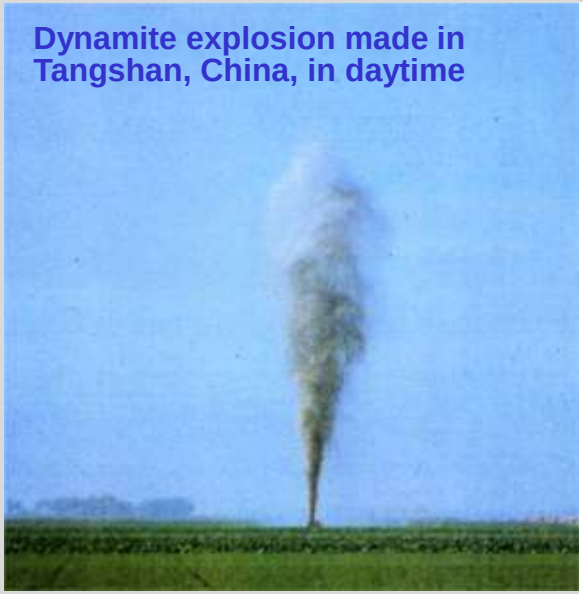
☆Tokyo Metropolis is located not in a plain, but in a big basin.
☆Kanto basin is still active (sinking down) even now.
☆Sedimentary layers are very thick and very soft.
☆Therefore, earthquake ground motion could be enlarged in amplitude, period, and duration.

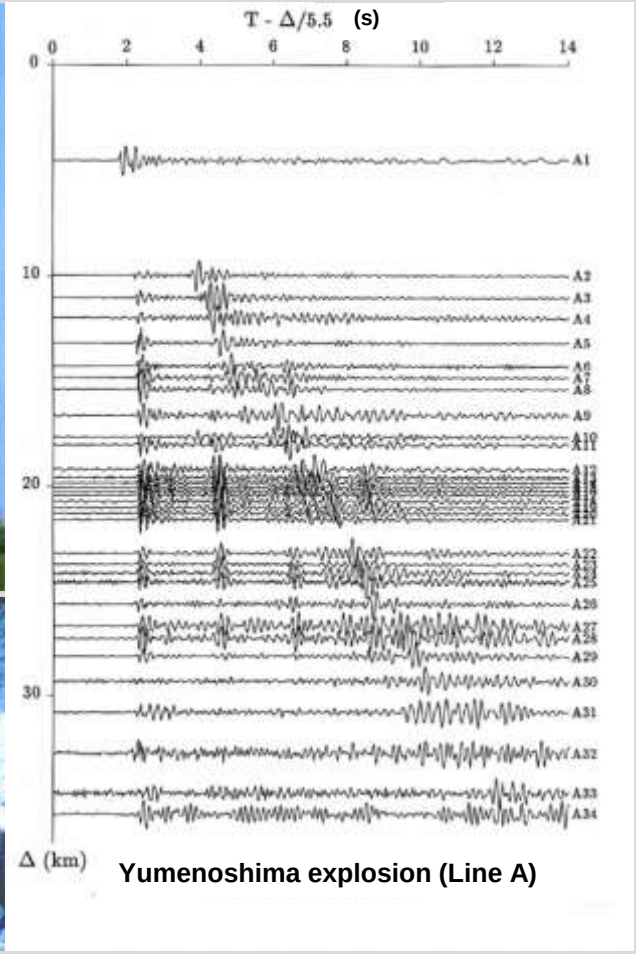
Explosion experiments surveying deep structure of Kanto basin



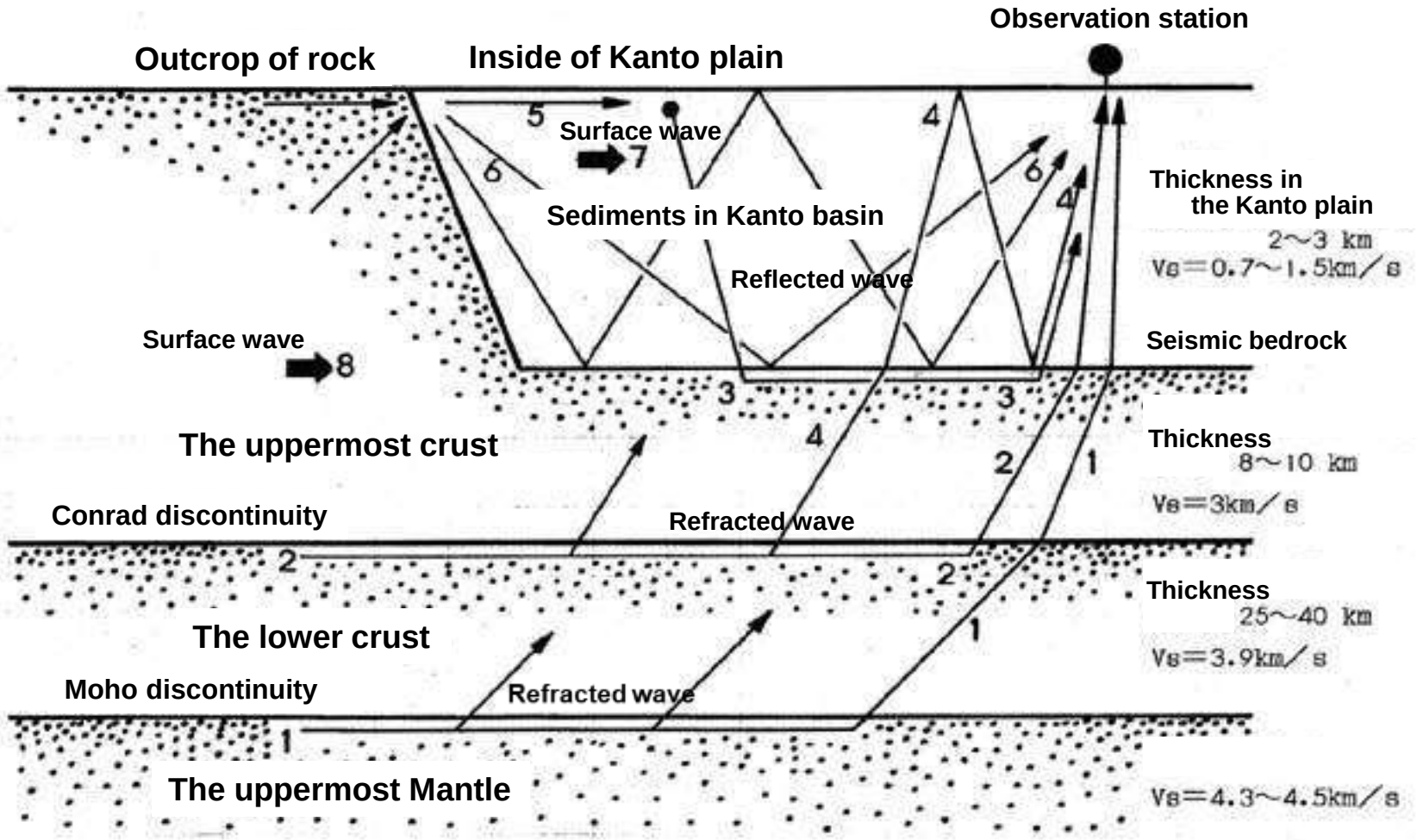
Tokyo Metropolitan Office organized the Yumenoshima explosions 27 times in 15 years since 1974. Distribution of the interface between sedimentary layers and the uppermost crust, so-called seismic bedrock, was found from 2.3 to 2.5 km in depth.

Explosion source and a typical observed motion along Line A in the experiments



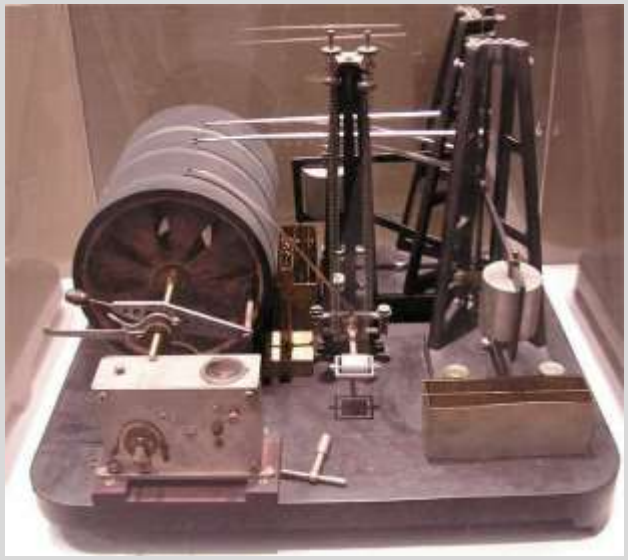


Deep structure of the Kanto basin will be made clear through inversion analyses using explosion data-set.

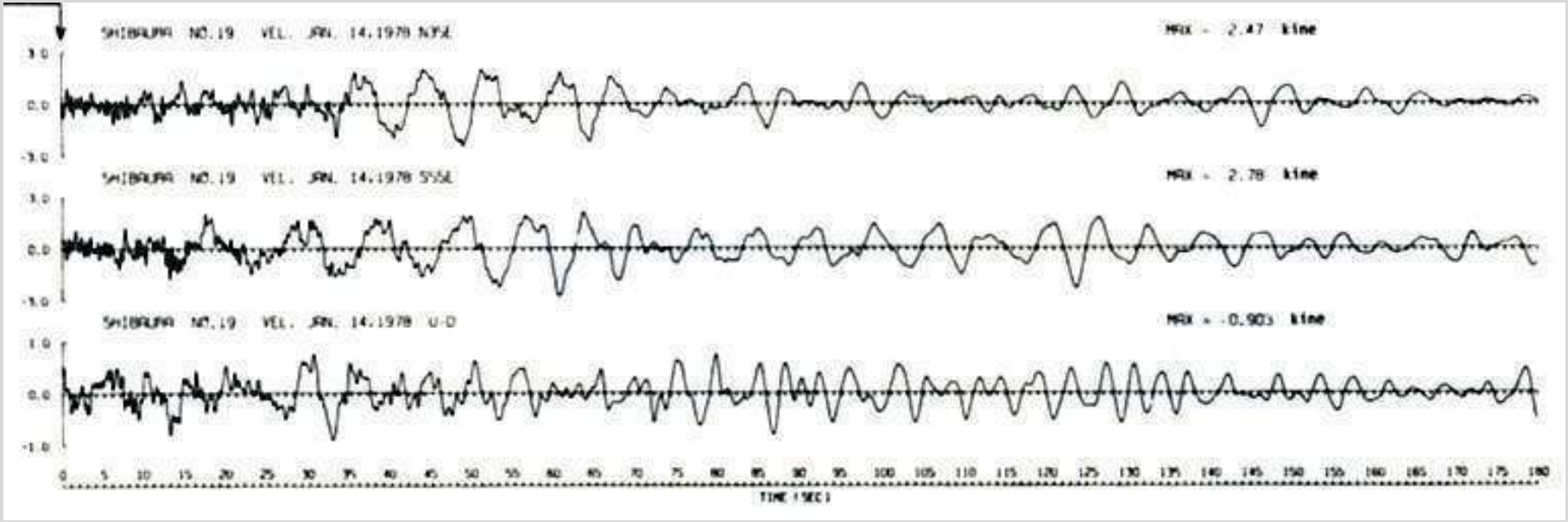


Conceptual diagram of seismic wave propagation in the deep structure of Kanto region

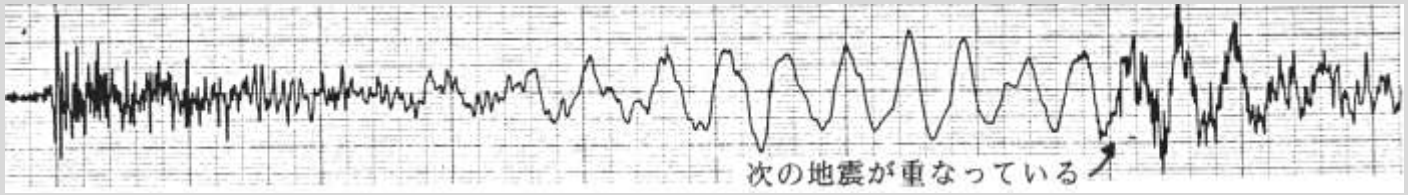
Observed seismic record of the 1923 Kanto earth-quake in Hongo campus of Univ. Tokyo. Seismometer was made by Akitsune Imamura.



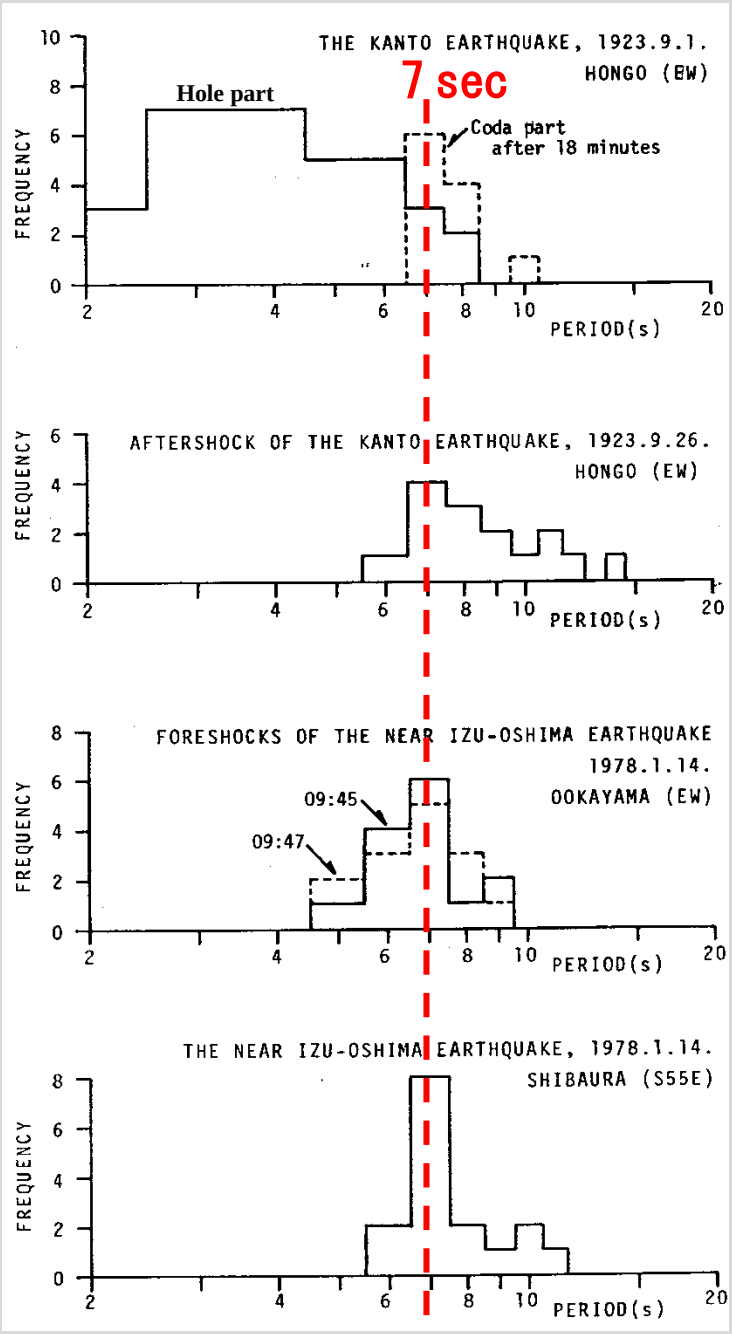
Observed seismic motion in Shibaura, Tokyo, during the 1978 Izu-oshima M7 earthquake



Observed seismic motion in Ohokayama, Tokyo, during the 1978 Izu-oshima M4.9 earthquake



Period-frequency relationship, that can be seen in seismic motions



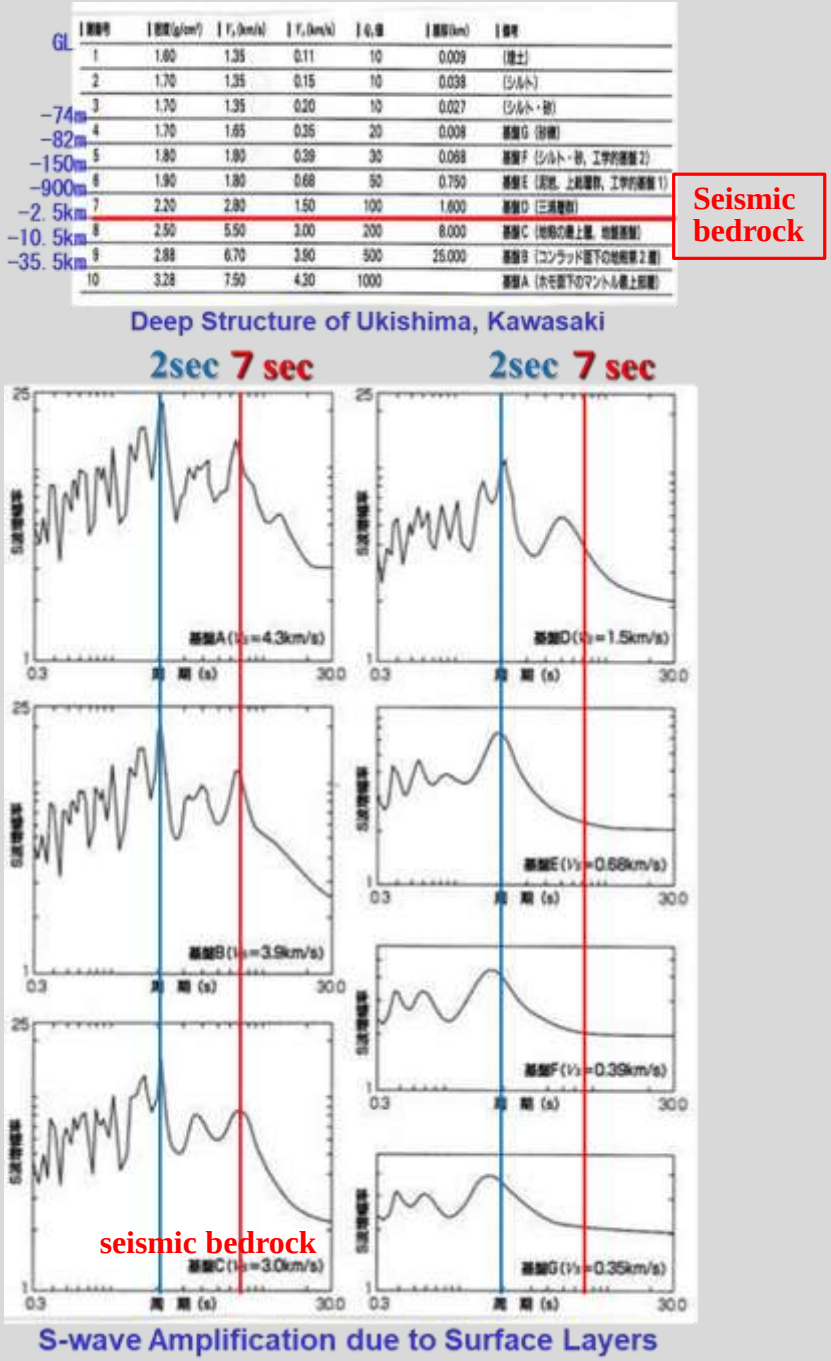
The 1923 Kanto M7.9 earthquake

An aftershock of the 1923 Kanto earthquake

Two foreshocks of the 1978 Izu-oshima M4.9 earthquakes

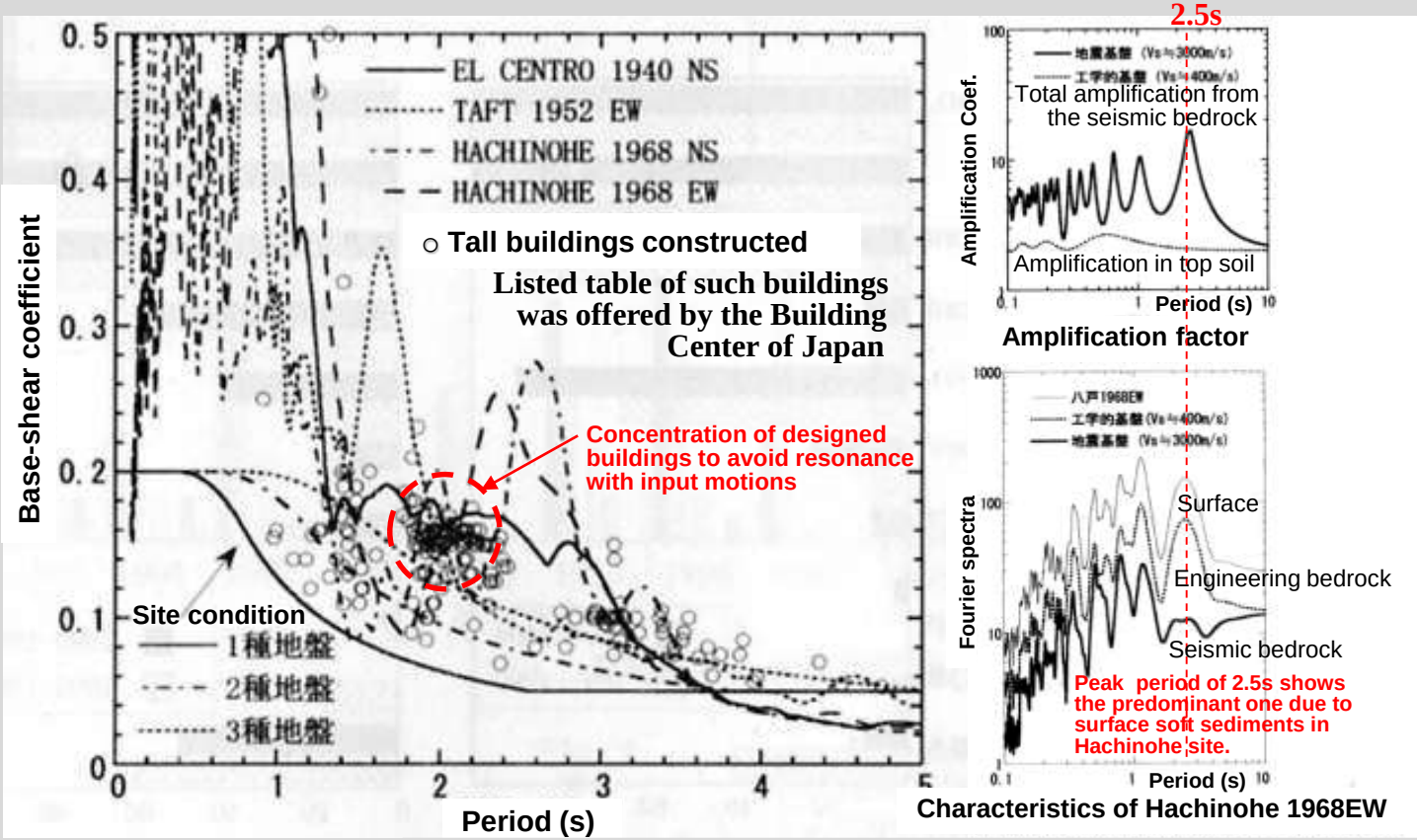
The 1978 Izu-oshima M7 earthquake

Kawasaki structure model and amplification characteristics assuming different seismic bedrocks.



As results, the component of 2 second period appears always in any cases, but the component of 7 second period appears only in the case assuming very deep structure.

Japanese seismic code and input strong motions used in practical dynamic analyses



The characteristics of Hachinohe 1968 was examined very carefully, not to mis-understand the meaning of the component of 2.5 second period.