

## Estimation of Vp/Vs ratio in the Western Nagano

# Masaya Takeuchi[1]; Atsuki Kubo[2]; Yoshihisa Iio[3]; Shigeki Horiuchi[4]; Shunta Noda[5]

[1] Dist. Prev.Sci., Grad. Sch. of Integ. Arts and Sci., Kochi Univ.; [2] Kochi Earthq. Obs., Kochi Univ.; [3] DPRI, Kyoto Univ.; [4] NIED; [5] RTRI

We estimated the Vp/Vs ratios of a series of earthquakes in the Western Nagano with the method introduced by Lin and Shearer (2007). We analyzed about the area where latitude and longitude were delimited to 1 degree and delimited to 2km in depth in the research until last year. The result of this analyzed, local Vp/Vs ratios were higher than upside crust. Especially, high Vp/Vs ratios exist in deeper part.

In this study, we set the grid with 0.5km spacing within the area of 10km length in both horizontally and vertically. We conducted Vp/Vs ratio analyses with two different radius (0.5km, 1.0km) of analyzed area (Vp/Vs ratio is assumed to be constant) for each grid point. Result of analyzing area with 1.0km radius, shows average of Vp/Vs ratio in the entire analytical area was estimated 1.79. This value is higher than the value estimated by the method of Wadachi diagram or seismic wave tomography. Then, Vp/Vs ratios become smaller up to 2km with depth. And are rising in the depth deeper than 2km.

Results of analyzing local area with 0.5km radius show average of Vp/Vs ratios in the entire analytical area was estimated 1.87. This value is higher than result of 1.0km radius. Vp/Vs ratios become smaller up to 4km in depth. In turn Vp/Vs ratio become larger with depth in deeper than 4km. Especially, Vp/Vs ratios exceed 1.95 deeper than 7km.

From these results, we think that high Vp/Vs ratios were estimated near the earthquake fault when analyses are becoming small. But the degree of error was becoming high when local area becoming small. Thus to reveal detailed Vp/Vs distribution, we need more accurate hypocenter and arrival time.

In this study, smoothed increase of Vp/Vs ratio with depth and high Vp/Vs ratios in western Nagano. In general, these features are consistent with of upward fluid migration from deep origin suggested from higher  $3\text{He}/4\text{He}$  ratios (Takahata et al., 2002).