

SSS027-P02

Room:Convention Hall

Time:May 23 16:15-18:45

## Seismic anisotropy apparently caused by contamination of P-S or S-P converted wave

Yoko Tono<sup>1\*</sup>, Yoshio Fukao<sup>1</sup>, Seiji Tsuboi<sup>1</sup>

<sup>1</sup>JAMSTEC

Shear wave splitting measurement is a powerful tool for characterizing anisotropy of the crust and mantle. Analysis of shear wave splitting requires records of well-isolated shear waves little contaminated by other phases. Contamination occurs, for example, by sP or SP wave arriving around the expected arrival time of direct s or S in a wide epicentral distance range for a source depth greater than 25km. The consequent waveform distortion of s or S is examined using synthetic seismograms calculated by the Direct Solution Method [Takeuchi et al., 1996] for the model of PREM [Dziewonski and Anderson, 1981]. The synthetics are accurate to a period of 10 sec.

We calculate the synthetics for vertical-dip slip sources placed at 8 depths of 25, 100, 300, 400, 450, 500, 550 and 600 km. For example, the s waveform in an epicentral distance range less than about 5 deg, calculated for the depth of 100 km is contaminated by not only sP but also Rayleigh waves. The waveforms show the arrival of the weak sP and distortion of the radial component by Rayleigh waves. The S arriving at distances larger than about 20 deg is contaminated by SP. The synthetics calculated for the other source depths also show the similar contaminations, the detail of which changes complexly according to the epicentral distance and the source depth. It is difficult to analyze the anisotropy using the direct s or S at periods longer than 10s.

We also examine the cases of ScS and ScS2. For a source depth between 450 and 600 km, the ScP and ScSScP arrive almost simultaneously as the ScS and ScS2, respectively. We use a correlation method for the synthetic ScS and ScS2 phases for the shear wave splitting measurement to see the effect of the ScP and ScSScP. The effect is found to be minor at epicentral distances less than 20 deg, where the amplitudes of ScP and ScSScP are very weak. The effect can be large at the epicentral distances greater than 25 deg. For the shear wave splitting measurement, we have to examine the vertical component and check against the synthetics test more carefully.

Keywords: anisotropy, Shear wave splitting