

## Error analysis of an inversion scheme for estimating slab upper boundary and the Moho boundary by using converted wave

# Toshihiko Andoh[1], Hiroshi Takenaka[2], Sadaomi Suzuki[1]

[1] Earth and Planetary Sci., kyushu Univ, [2] Dept. Earth & Planet. Sci., Kyushu Univ.

Takenaka and Andoh (2002) developed an inversion scheme to determine the location and local plane (facet) of velocity discontinuity by using the horizontal slowness vector and travel time of a converted wave. We evaluate the influence of the error contained in the data on the inverted results when this method is applied to the estimation of a slab upper boundary or the Moho boundary. We first setup the inversion problem for estimating the slab upper boundary. We consider a slab structure model (true model), and create imitation data that are travel time and horizontal slowness vector of a converted wave generated at the upper boundary of the slab at an observation point. We add some errors to the data and apply the inversion scheme to these data. Changing the error levels added to the data and the assumed structure model used for the inversion calculation, we check the results to evaluate the influence of the added errors.

When using SP converted wave, as a result, we found that the estimated dip angle of the slab upper boundary is affected by the errors of the five parameters: horizontal slowness, azimuth, travel time, distance of epicenter, and source depth; the estimated dip direction is influenced by the errors of the four parameters: horizontal slowness, azimuth, distance of epicenter, and source depth; and the estimated depth of the conversion point is affected by the error of only one parameter: source depth. In the presentation we will also show the results of the error analysis for the Moho boundary estimation.