

Estimate of slip distribution by tsunami height data inversion

Takashi Yokota[1]; Makoto Nemoto[2]; Tetsu Masuda[2]

[1] JMA; [2] Oyo Corporation

We estimated slip distribution of the 2003 Tokachi-oki earthquake by inversion analysis of tsunami height data. Although some researchers performed inversion analysis using tsunami waveform, the analysis using the tsunami height data has not been tried. We propose inversion method which uses tsunami height data and an example of results is shown.

We performed a non-linear least square inversion with Gauss-Newton method. The linearized observation equation is as bellow.

$$d = Gm + E,$$

d : maximum tsunami height of each station

G : computed tsunami green function

M : slip distribution of the earthquake source

E : error vector

The slip distribution determined from the inversion analysis is shown in the figure. This slip distribution is approximately consistent with distributions of earthquake waveform inversion researches. However, unlikely large amount of slip at deeper part is uncertain, where resolution is poor. We will improve our method in this point in future.

Since this method uses the tsunami heights as observation data, it is applicable to historical earthquakes. So, in the following step, we will analyze historical earthquakes to estimate the slip distributions.

インバージョン計算結果

