

# Source process of the 2003 Tokachi-oki earthquake inferred from strong motions and geodetic data

# Kazuhito Hikima[1]; Kazuki Koketsu[2]; Shin'ichi Miyazaki[3]; Satoshi Ide[4]

[1] Oyo Corporation & ERI ; [2] Earthq. Res. Inst., Univ. Tokyo; [3] ERI; [4] Dept. EPS, Univ. of Tokyo

The strong motion and geodetic data are individually inverted for the source process of the 2003 Tokachi-oki, Hokkaido, earthquake with a hypocenter 25 km deep and a fault plane above the subducting Pacific slab. Both the results show a simple slip distribution with a single major asperity, but the strong motion inversion may include a trade-off between slip location and rupture time and the geodetic inversion does not have sufficient resolution for far slips. We then carry out a joint inversion of the two datasets in order to overcome these weaknesses of the single dataset inversions. The resultant slip distribution still keeps the simple pattern with a seismic moment of  $2.2 \times 10^{21}$  Nm ( $M_w=8.2$ ). The asperity with a peak slip of 7.1 m is located in the center of the fault plane 50 km away from the hypocenter in the dip direction. The slip rate functions in subfaults around the hypocenter and asperity indicate that the rupture propagates with a supershear speed on the upper part of the fault plane and slows down to 100-90% of the S-wave velocity on the middle and lower parts. These simple slip pattern and near-supershear rupture may imply the maturity of the Hokkaido subduction zone around the source region.

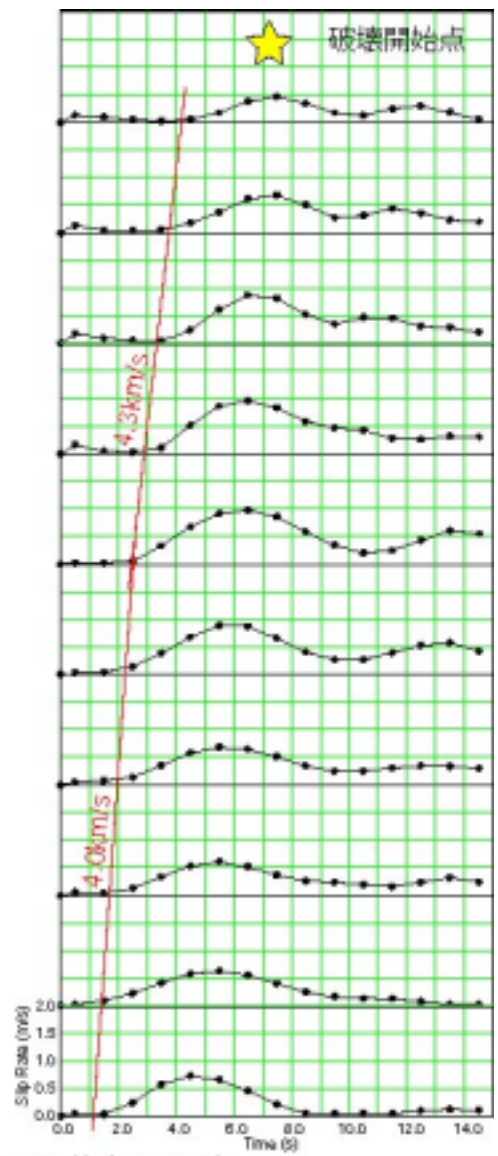
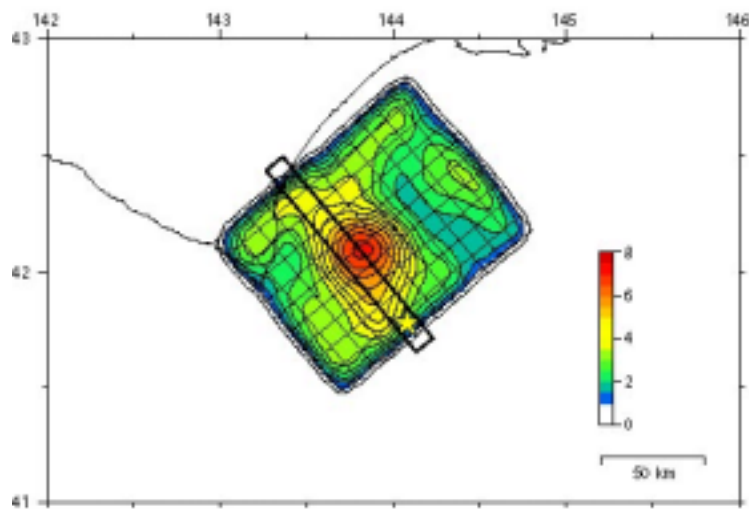


図 ジョイントインバージョンによる最終すべり量とすべり速度関数(すべり分布の四角で囲った範囲) 右図の開始時刻は $V_r=3.6\text{km/s}$ のときの各点の時刻