

## 断層物質からのすべりパラメータ推定における水理・熱的特性の影響 Sensitivity analyses of slip parameter estimation to hydrological and thermal properties

濱田 洋平<sup>1\*</sup>, 坂口 有人<sup>2</sup>, 谷川 亘<sup>1</sup>, 山口 飛鳥<sup>1</sup>, 亀田 純<sup>1</sup>, 木村 学<sup>1</sup>

HAMADA, Yohei<sup>1\*</sup>, SAKAGUCHI, Arito<sup>2</sup>, TANIKAWA, Wataru<sup>1</sup>, YAMAGUCHI, Asuka<sup>1</sup>, KAMEDA, Jun<sup>1</sup>, KIMURA, Gaku<sup>1</sup>

<sup>1</sup> 東大・理・地惑, <sup>2</sup> 海洋研究開発機構, <sup>3</sup> 独立行政法人海洋研究開発機構高知コア研究所

<sup>1</sup>Department of Earth and Planetary Science, The University of Tokyo, <sup>2</sup>Japan Agency for Marine-Earth Science and Technology, <sup>3</sup>Japan Agency for Marine-Earth Science and Technology, Kochi I

Sensitivity analyses of slip parameter estimation to hydrological and thermal properties

Yohei Hamada<sup>1,\*</sup>, Arito Sakaguchi<sup>2</sup>, Wataru Tanikawa<sup>3</sup>, Asuka Yamaguchi<sup>1</sup>, Jun Kameda<sup>1</sup>, Gaku Kimura<sup>1</sup>

<sup>1</sup>Department of Earth and Planetary Science, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

<sup>2</sup>Institute for Research on Earth Evolution, Japan Agency for Marine-Earth Science and Technology, 3173-25 Showa-machi, Kanazawa-ku, Yokohama 236-0001, Japan

<sup>3</sup>Kochi institute for Core Sample Research, Japan Agency for Marine-Earth Science and Technology, 200 Monobe Otsu, Nankoku-city, Kochi, Japan

\* yhamada@eps.s.u-tokyo.ac.jp

### Abstract

Enormous earthquakes repeatedly occur in subduction zones, and the slips along megathrusts, in particular those propagating to the toe of the accretionary prism, generate ruinous tsunamis. Although quantitative evaluation of slip parameters (i.e., slip velocity, rise time and slip distance) of past slip events for the shallow, tsunamigenic part of a fault is a critical component of characterizing such earthquakes, it is very difficult to constrain these parameters. Here we quantify these parameters for slip events that occurred along the shallow part of a megasplay fault and a plate boundary decollement in the Nankai Trough, off Japan. We applied a kinetic approach to profiles of vitrinite reflectance data obtained from Integrated Ocean Drilling Program (IODP) cores that intersected the slip planes of the two thrusts, and identified extremely slow and long-term slips in the megasplay fault and the frontal decollement.

The chemical kinetic method is useful to evaluate fault temperature and slip parameters. This has been introduced into various natural faults, however, this contains uncertainty due to its sensitivity to temperature which is dependent on various natural properties complicatedly. Therefore, we also discussed the effect of temperature dependence of thermal property or dynamic weakening mechanism for temperature calculation. We assessed the sensitivity of the calculation results to the measured thermal property and dynamic weakening effect caused by thermal pressurization.

キーワード: 断層物質, すべりパラメータ

Keywords: fault material, slip parameter, parameter sensitivity