

STT075-P02

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## Stress field in the source region of the 2009 Suruga-Bay earthquake

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The 2009 M 6.5 earthquake occurred on August 11, 2009, in the Suruga-Bay. Although this earthquake occurred at the eastern end of the assumed source region of the Tokai earthquake, the hypocenter and focal mechanism of the mainshock suggest that it occurred not along the plate boundary but in the subducting slab. Clarifying the stress field where this earthquake occurred becomes important information for discussing the state of stress of the assumed source region of the Tokai earthquake. In this study, we analyzed about 400 aftershocks that occurred in one month after the occurrence of the 2009 Suruga-bay earthquake to reveal the stress field in the source region.

We first determined aftershock locations without station-corrections. These aftershocks were then relocated by introducing the station correction, which was obtained using the average of the differences between observed and theoretical travel times at each station. We repeated the above procedure three times and obtained final locations. The aftershock distribution suggests that there are an ENE dipping plane in the northern part and a south dipping plane in the southern part.

We then determined focal mechanism solutions using absolute amplitudes and P-wave polarity, which made it possible to increase the number of uniquely constrained focal mechanism solutions. The aftershock focal mechanisms suggest that a half of aftershocks were reverse-faulting type and about 20% were strike-slip faulting type. The aftershocks of the remainder were the mixture of the reverse and strike-slip faulting type. It should be noted that the aftershocks of reverse-faulting type were surrounded by those with large strike-slip components.

Before the occurrence of the 2009 earthquake, most of earthquakes occurring in the source area are strike-slip faulting type (e.g., NIED, <http://www.bosai.go.jp/kotai/kanto/kanto-tokai/data/indexm.html>). In contrast, the aftershocks were dominated by reverse faults. This observation suggests that the stress release associated with the mainshock perturbed the stress field in the source region and stimulates our interest on inferring the level of stress at seismogenic depths. In the presentation, we will discuss an adequate pre-shock stress field by comparing the spatial pattern of aftershock focal mechanisms with the theoretical one which is computed by using an observed non-uniform slip distribution of the mainshock and variously assumed pre-shock stress fields.

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**Keywords:** stress field, the 2009 Suruga-Bay earthquake, source region, focal mechanism