

## Frictional properties of the Bungo Channel slow slip region deduced from geodetic data

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Although slow slip events are detected in many of subducting plate convergence zones, they have various slip, slip rates, magnitudes, periods of duration and occurrence intervals and it is considered that they are controlled by frictional properties on sliding surface. There were some researches that estimated the relationships between slip and stress change or slip rate and stress change by spatiotemporal slip distribution of slow slip until now, but that analyses of them lacked credibility themselves and they had problems with the interpretations as frictional properties because they analyzed only one event. Therefore, we analyzed slow slip events that occur with a period of about six years in Bungo Channel by use of the identical estimation method and intended to estimate frictional properties in slow slip occurring area by affirming the reproducibility of the results. Three slow slip events in 1996~1998, 2003~2004 and 2010 were detected in Bungo Channel, and we analyzed all of these events. We used the daily positions of F3 components of GEONET that were eliminated secular velocities and seasonal changes estimated from the period with no large seismicity (2007~2008) as the data. We estimated spatiotemporal slip distributions of each event by the time-dependent inversion method (Segall and Matthews, 1997). Based on estimated results, we calculated stress change on the plate interface by using the elastic dislocation theory (Okada, 1992). We considered that the relations of slip and stress change, slip rate and stress change represented frictional properties and compared those results each other. In the result, we obtained similar spatial distributions of eventual slip with the maximum slip of 20cm in 40km-depth although the slip, slip rates and periods of duration were different in each event. In the first event we found the center of slip migrated from 25km-depth to deeper area, but this slip migration was not seen in the other events. The area with large stress drop corresponded to that with large slip and maximum stress drop were 0.1-0.12MPa. The areas that had little stress change or increase of stress were extended around stress drop area. The plots of slip and stress change of three events were almost in a linear manner in common, and they did not vary with time, therefore this indicates that the estimated results represented the properties of the field. The relationships between slip and stress change were negative gradient in the area of large slip and it means that the area has a property of weakening. On the other hand, the area with zero or positive slope, that is, the area in which stress change was nearly zero or decreased extended around the negative-gradient-area. That area with a property of strengthening inhibits the expansion of slip, so it is suggested that slow slip events occur in episodic manner in Bungo Channel area because of such a spatial variation of frictional properties.