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Block Modeling of The Sunda Block Using GPS Velocities in South East Asia
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The Sunda block in Southeast Asia has its own independent block rotation. It covers most of Southeast Asia including Indo-China Peninsular, Sumatra, Borneo, Java, and the shallow waters that lies in between. The GPS network data in Southeast Asia derived by campaign and continuous observations are used in this study to simultaneously estimate the Euler rotation parameters of the Sunda block, and the elastic deformation due to the slip deficit on the block boundaries. In order to see the precise block rotation of the Sunda block, all effects contained in the data such as elastic deformations due to the inter-plate coupling in the southern boundary of the block have to be removed. We used the method devised by Meade (2009) and elastic deformation rates are computed for each fault segment assumed in a homogeneously elastic half-space using triangular dislocation elements to accurately represent complex fault system geometry. The Zone between 110^{o}E to 116.5^{o}E in the southern plate boundary of the Sunda block indicates interpolate coupling, while that between 107^{o}E to 110^{o}E shows postseismic slip after the 2006 interplate earthquake with M7.7. The optimum Euler pole parameters of the Sunda block are estimated as follows: the latitude of 24.629 $\pm$ 1.962 ^{o}N, the longitude of 117.369 $\pm$ 0.788 ^{o}E, and the angular velocity of 0.692 $\pm$ 0.066 ^{o}/Myr. This study excludes the effect of elastic deformations due to the slip deficit on the block boundaries in estimating the Euler rotation parameters, while the previous studies estimated the parameters by assuming the block rotation only.

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