Expectations to more realistic Green's function with modeling errorfor the real-time estimation of the coseismic fault model

*Yusaku Ohta[1]

1. Research Center for Prediction of Earthquakes and Volcanic Eruptions, Graduate School of Science, Tohoku University

Rapid understanding of the magnitude of large earthquakes and their associated fault dimensions are extremely important. Recently, Geospatial Information Authority of Japan (GSI) and Tohoku University are jointly developing the GEONET real-time analysis system (REGARD). REGARD system rapidly estimates two types of coseismic fault models, which are slip distribution along the plate interface and single rectangular fault model, using permanent displacement field based on the real-time GNSS time series. Currently, REGARD adopted the maximum likelihood approach to estimate the optimum model. The system, however, has problem to be improved. The current system is difficult to estimate the quantitative uncertainty estimation of the obtained result because of the estimated result should contain both of the observation error of the real time GNSS and modeling error caused by the model settings including uncertainty of the Green’ s function. Among them, the uncertainty of the Green’ s function is the most serious problem. Currently, REGARD adopted the simple elastic half-space model. It should cause the large estimation uncertainty in the coseismic slip fault model especially in offshore region whose structure is complex due to plate subduction. Thus, the more realistic Green’ s function with quantitative uncertainty will be needed. I will briefly introduce current development status of REGARD and show the expectations to more realistic Greens’ function with modeling error realized by Monte Carlo simulation using the HPC technology.

