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Correlation of generation interval and scale of large-scale submarine landslides using 3D seismic data off Shimokita Peninsula, Northeast Japan

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To clarify timing and scale of past submarine landslides is important to understand formation processes of the landslides. The study area is in a part of continental slope of the Japan Trench, where a number of large-scale submarine landslide (slump) deposits have been identified in Pliocene and Quaternary formations by analysing METI's 3D seismic data "Sanrikuoki 3D" off Shimokita Peninsula (Morita et al., 2011).
As structural features, swarm of parallel dikes which are likely dewatering paths formed accompanying the slumping deformation, and slip directions are basically perpendicular to the parallel dikes. Therefore, parallel dikes are good indicator for estimation of slip directions. Slip direction of each slide was determined one kilometre grid in the survey area of 40 km x 20 km. The remarkable slip direction varies from Pliocene to Quaternary in the survey area. Parallel dike structure is also available for the distinguishment of the slump deposit and normal deposit on time slice images. By tracing outline of slump deposits at each depth, we identified general morphology of the overall slump deposits, and calculated the volume of the extracted slump deposits so as to estimate the scale of each event.
We investigated temporal and spatial variation of depositional pattern of the slump deposits. Calculating the generation interval of the slumps, some periodicity is likely recognized, especially large slump do not occur in succession. Additionally, examining the relationship of the cumulative volume and the generation interval, certain correlation is observed in Pliocene and Quaternary.

Key words: submarine landslides, 3D seismic data, Shimokita Peninsula [U+3000]