

## Effectiveness of luminescence dating of tsunami deposits examined from the March 2011 Tohoku-oki Tsunami deposits

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Optically Stimulated Luminescence (OSL), which determines depositional age of sediments using minerals such as quartz and feldspar, may be useful for dating tsunami deposits. Furthermore, OSL dating is occasionally used for transport-depositional processes of sediments in terms of bleaching achievements, which might be able to apply tsunami deposits. In spite of these potentials, OSL dating studies on tsunami deposits have been hardly conducted. The current study was undertaken in order to confirm these effectiveness of OSL dating on tsunami deposits using the 2011 Tohoku-oki tsunami deposits at Soma city and Minamisoma city, Fukushima Prefecture, northeastern Japan.

Single grain OSL dating was able to extract the grains indicating true depositional age of the 2011 Tohoku-oki tsunami deposits at 11 locations (26 samples), which shows nearly zero OSL intensities. It is interpreted from the results that single grain OSL dating is a feasible method to estimate appreciate depositional age of tsunami deposits. Meanwhile, some grains were overestimated depositional age remarkably. Therefore general OSL dating, which measures a number of grains on one aliquot, is probably difficult to estimate accurate depositional age of tsunami deposits. The results of OSL dating indicated most of sand grains in tsunami deposits had not been exposed to daylight during tsunami transport processes. This means that sand grains in tsunami deposits preserving bleaching achievements of sediment sources. OSL dating is able to calculate bleaching achievements of minerals, therefore, it might be able to estimate sediment sources of tsunami deposits.

Keywords: OSL dating, transport and depositional processes, tsunami deposits, the 2011 off the Pacific coast of Tohoku Earthquake, feldspar