Tsunami behavior using spatial analysis of onshore tsunami deposits from the 2011 Tohoku-oki Earthquake, Fukushima prefecture, Japan

*Yasuhiro Takashimizu[1], Rei Shigeno[1], Atsushi Urabe[1], Yuka Hatori[2]

1. Niigata University, 2. Maebashi City Dairoku Junior High School

The behavior of the 2011 Tohoku-oki tsunami using spatial analysis of onshore tsunami deposit in the Odaka area, Minamisoma City, was reconstructed based on a field survey, facies descriptions, bed thickness, magnetic susceptibility, anisotropy of magnetic susceptibility (magnetic fabric), grain size distribution, and topographical data. The results are summarized as follows;
1. In the Odaka area, two tsunamis struck from the northeast and east. The water collided with the embankments of the prefectural road 260 and the Odaka River, and joined at the western part of the area. The head part of the tsunami eroded the soil in the rice paddy fields and the eroded mud clasts were taken in by the tsunami waters. As a result of this, the mud content increased in the fluid inland.
2. The integrated tsunami inflow at western part changed direction and started to outflow toward the northeastern mouth of the river. This outflow caused accumulation of the muddy fraction along the embankments, and resulted in lower mud content in the fluid toward the downstream area.
3. In the northern part of the area, tsunami deposits included abundant coarse materials with artificial tsunami debris derived from the residential area located toward the east of the study area.

Keywords: tsunami deposits, magnetic fabric, grain size characteristics, spatial analysis, mud clast

