

Sand volcanoes in the back-barrier area in relation to high tide event

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Many sand volcanoes were observed on the Sendai bay coast. It is thought that the origin is related to high tide.

The study area is a barrier beach which separates the Gamo tidal flat from the Sendai bay. Much mounds of sand were observed in the lowlands between marsh and beach ridge. A sand volcano consists of very well sorted medium sand of selection like a beach sand. These mounds were dug and the level section was observed. The central part and the circumference were discriminable with the difference in a color tone. The central part was carrying out cross-sectional form of a circle - an ellipse.

Because it was very loose sand, it was difficult to survey and observe a section. Then, the sediment sampling inspection used note type Geoslicer. The extracted section was the form of the shape of a convex cone near a half-spindle shape.

The sand volcano was covered with grass. Since field survey was on February 16, 2003, formation at least of this sand volcano is formed after the spring in 2002. Formation of a sand volcano needs movement of underground pore water, and the rise of pore pressure. Judging from a seepage flow, it is thought that the tide level increased by high tide. The observed sand volcano is distributed over the place somewhat higher than high tide level.

According to the weather bulletin of the Sendai suburbs last year, it applied on 1-October 2, 2002, the large-scale record typhoon No. 21 since 1987 landed, and the tide level became high (based on the Geographical Survey Institute tide level data). Sand volcanoes has a high possibility of having been made by the high tide of this typhoon.