

## Distribution of water contents in alluvial muddy deposits of the Echigo Plain and its geological interpretations

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There are many cases the depth distribution of natural water contents in Japanese alluvial deposits shows the form of the bow-shape that has a maximum in the center of the layer. Shimizu (1972) reported that the forms of the depth distribution of natural water contents, clay contents and liquid limits in the Yuurakucho layer of Pacific Ocean side, are in general agreement with the change of the proportion of marine diatom species, and the depth that these soil properties have a maximum value is equal in the time of maximum transgression stage. However, there is few examination result in the Japan Sea side.

The author carried out the measurement of natural water content and diatom analysis of alluvial muddy sediments, in two of areas (the center/Shirone area and also north/Kajikawa area) of the Echigo Plain.

From the relationship between the depth distribution of natural water contents and sedimentary environments, the following conclusions are reached.

Clear correlation is seen in natural water contents and clay contents. Therefore, the peak of natural water contents in the depth distribution chart is considered to mean the environment where finest sediment accumulated.

The depth distribution of water contents presents the form of a bow-shape. The next two points are able to point out from the relation with the Holocene transgression.

The depth that water content shows the maximum value is equal in the time when a water area expanded most, namely the maximum transgression stage, which is common with the plain of Pacific Ocean side. But the horizon is not in marine sediments, and be in brackish sediments. This point differs from the plain of Pacific Ocean side. A barrier-lagoon system was formed by the rise of sea level in the Echigo Plain. A brackish water lagoon was widespread in the maximum transgression stage.

Some discontinuous points of natural water content in the depth distribution chart are identical with the horizon indicating inflow of marine water into a brackish lake or lagoon in the Kajikawa area. This is one example that some detail environmental changes in a closed lake system, were caught with the change to natural water contents.