

Groundwater discharge mechanism and hydro- geological structure in Tottori sand dune

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Tottori sand dune is located in Sanin Kaigan national park, Japan. This dune is a valuable worldwide natural landscape and is registered in the global geoparks network. There is a small water area, called an oasis, in this sand dune. The oasis is grows after the rainfall, and an important factor of a natural landscape in the dune. There is a groundwater discharge point that is not dry up throughout the year near the oasis. It has been thought that this groundwater discharge point greatly contributed to the generation of the oasis. But another groundwater discharge points are discovered in the dune. Then, the generation mechanism of the oasis is clarified by spatial water quality and hydro- geological structure.

The groundwater flow in the observation region was classified into two of the east and west. It is suggested that three groundwater discharge points located in the east region contributes to the growth of the oasis. It has been understood that there is a relation up to the oasis and B-1 discharge point from oxygen isotope ratio. A-1 discharge point doesn't have a strong relation in the generation of the oasis. From the resistivity tomography model, the low resistivity material below 200 ohm deposit horizontally at several meters depth from surface. The detected low resistivity material is thought to be a volcanic ash layer, for example, Daisen Kurayoshi pumice fall deposit. This volcanic ashes deposited as to be deep as the eastern, shallow as the western. This result explained the phenomenon that the eastern groundwater contributes to the generation of the oasis.

Keywords: Groundwater discharge, Tottori sand dune, Oxygen Isotope Ratio, Resistivity tomography