

Geological studies of beach development on the Ogata coast, in Niigata, Central Japan

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The Ogata coast is principally backed by the Katamachi Dune consisting of a Holocene "recent dune" (>3500 YBP-) and a Pleistocene "ancient dune" (>75000- >45000 YBP) unconformably overlain by the recent dunes. The sands of the recent and ancient dunes both consist predominantly of volcanic rock fragments originating in the Myoko Volcano group, distributed in the upper streams of a major river, and sedimentary rock fragments originating in Pleistocene beds distributed in the western sea cliffs. Sedimentary events on the Ogata coast are estimated to have occurred as follows on the basis of the grain size and the lithologic composition of the dune sands. In the phase of regression after the maximum phase of postglacial transgression, the recent Ogata beach developed through a supply of sediment from the fragmental volcanics of the Myoko volcano group produced by volcanic activity, in approximately 5000 YBP, and the clastics of eroded Pleistocene beds transported by eastward longshore sand drift resulting from beach stabilization processes. With the stabilization of volcanic activity, the Ogata coast has been changed from an accretion beach to an erosion beach owing to a predominance of seaward sand drift resulting from the character of a "Wave energy reflective beach". Similar sedimentary events are estimated to have occurred in the phase of regression after the maximum phase of transgression in the Riss-Würm interglacial epoch. Thus, sedimentary events related to glacial eustasy can be estimated based on the features of coastal dune sand beds.