

Causal correlation between water-use of the Tedor River and coastal erosion of Chirihama Nagisa Driveway, Ishikawa, Japan

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Awarded as the best beach of Japan (Reported by TripAdvisor, Inc. 2016), Chirihama Nagisa Driveway is a sandy beach located in Ishikawa, attracting people as the place that allows for driving cars and even large tourist buses along the shore. The source of the Chirihama sand is debris from Mt. Haku-san, which is transferred by the Tedor River and the Tsushima Current. At the river mouth, the finer sands are transferred to further offshore, and then drifted to further beach such as the Chirihama coast (50 km far from the river mouth). Due to the natural sand drifting process, the Chirihama coast is composed of the sands with fine and uniform grain size, the feature which guarantees for comfortable drive on the beach. The Chirihama coast is a treasure of Ishikawa; however, it faces a crisis of disappearance due to beach erosion.

According to Ishikawa prefectural government, the amount of sand loss of the Chirihama coast is 70000 m³/year and its width decreases at 1 m/year. While the Chirihama coast is disappearing, a large-scale landslide of 1300000 m³ occurred at upstream region of the Todor River in 2015 and the massive derbies moved downstream. The turbid water released for the ocean seemed to contribute to the formation of the Chirihama coast, but there are no reports on the recovery of the Chirihama coast. Where do the sands released from the Tedor River move?

Field investigations along the coast have found that the beach sediment at 4 –5 km far from the river mouth has the same feature as the Chirihama sand. From the viewpoint of recent water-use of the Tedor river, this presentation explains a possible reason why the fine sand released from the Tedor River cannot move to the Chirihama coast.

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