

Evaluation of geomorphological changes on Kujukuri beach based on UAV SfM

*Mergen Kungaa¹, Toshihiko Sugai¹, Natsuki Sasaki¹, Taiga Kimori¹, Taro Funatsu

1. Tokyo University, Graduate School of Frontier Sciences, Department of Natural Environmental Studies

Nowadays, structure from motion (SfM) photogrammetry became a powerful tool in the hands of coastal researchers. During 2018-2019 we conducted 4 aerial survey by UAV on the 4 km long stretch on Kujukuri beach between Nabakigawa and Horikawa rivers, Chiba Prefecture. These 2 rivers separate research area from rest of 60-km long Kujukuri beach, forming separate morpho- and lithodynamical unit. The results of the research were high-resolution digital elevation models (DEM) and orthomosaics for February 2018, June 2018, September 2018 and February 2019. Based on DEM and orthomosaics we were able evaluate geomorphological changes throughout the year. From February 2018 to September 2018 we recorded active accumulation along the entire length of the beach. But accumulation intensity varied in different zones of beach as if foreshore, backshore or dunes. Also, the accumulation processes did not occur evenly for 7 months, but mostly intensified in the summer. From September 2018 to February 2019 erosional processes prevailed having different intensity at various sites. Thus, we were able to record in high resolution the process of transition from the winter profile of the beach to the summer profile and back.

Keywords: Coastal geomorphology, UAV SfM, Kujukuri beach