

Architecture and Civil Engineering	Coastal Engineering and Management Laboratory	Key Word : Sediment dynamics, Coastal management, Coastal topography/bathymetry change, Coastal disaster mitigation
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Researches on coastal environment and disaster mitigation are conducted from the viewpoint of Coastal Engineering which is a part of Civil Engineering. We are trying to solve problems and to make clear phenomena in coastal region using field observation, data analysis and numerical simulation. We hope to create useful results for our life and community.

### Subject 1 :Sediment Dynamics and Topographic Change in River-mouth and Coastal Region

Sediment transport in coastal zone has a great influence on coastal erosion, topographic changes and coastal environment. We are conducting the researches on the generation of the sediment transport in coastal region (sea and river mouths), their spatial and/or temporal characteristics, the relationship among coastal high waves and currents, volumes of the sediment transport and coastal topographic changes, to aim for the protection of coastal erosion and the preservation of coastal environment. Various approaches, such as field observation, laboratory experiment and numerical simulation, are used for the elucidation of related phenomena and the investigation of countermeasures. This theme is the fundamental research for preservation and management of rich coastal environment.

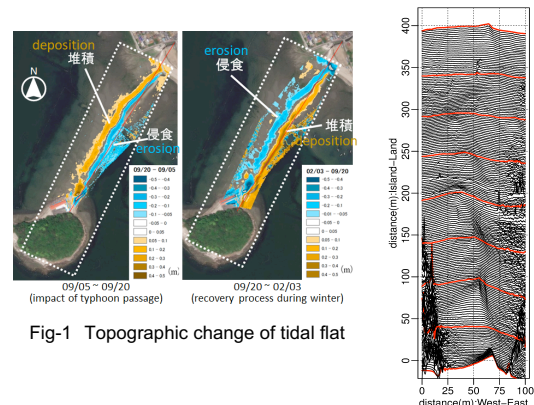


Fig-1 Topographic change of tidal flat

Fig-2 Spatial distribution of cross-sectional profile of tidal flat

### Subject 2 :Measurement and Monitoring of Sediment Movement and Coastal Morphology

We are trying to develop and propose various measurement and monitoring methods to understand the characteristics of sediment movement and topographic/bathymetric changes in a coastal areas such as rivers, beaches and sea. For example, investigation of monitoring / measurement method for topographic changes in tidal flat area efficiently and in detail using UAV, development of new measurement method for sediment transport and its amount using ultrasonic waves, simple and easy method to obtain sand particle size information using image analysis.

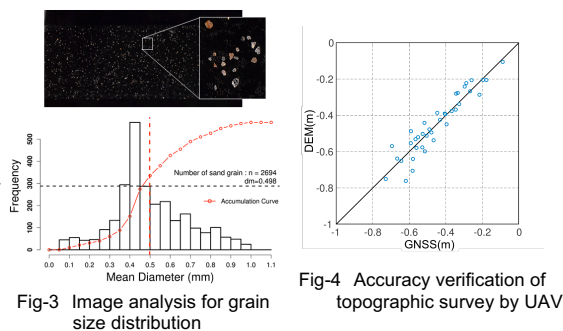


Fig-3 Image analysis for grain size distribution

Fig-4 Accuracy verification of topographic survey by UAV

### Subject 3 :Coastal Disaster Mitigation

For various disasters occurring in the coastal area, numerical simulation, field survey and their data analysis are conducted to clarify the cause of the occurrence and understand the phenomenon. For example, with regard to tsunamis generated by earthquake, storm surges and high waves caused by typhoon, we conduct the analysis of the mechanism of the disaster occurrence by numerical simulation and data analysis, consider measures for the spread of disasters into inland and urban areas, evacuation when disasters occur. In addition, we also analyze the occurrence mechanism of shoreline change and coastal erosion based on the field surveys on the Omotehama coast facing the Enshu-nada coast. Through these researches, we aim to contribute to regional disaster prevention.

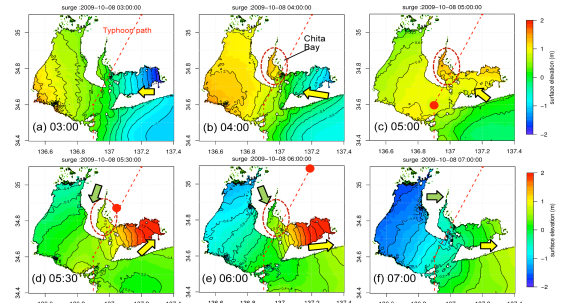


Fig-5 Storm surge simulation caused by Typhoon 0918