

Division of Environmental Studies

Department of Socio-Cultural Environmental Studies

Laboratory	Faculty	Introduction of research activities and laboratory	Key words	Projects or activities summer program students can participate
Jun SASAKI Laboratory	Dr. Jun SASAKI	<p>We have been studying on estuarine and coastal engineering in the field of Civil Engineering, such as (1) numerical modeling of physical and biogeochemical processes, (2) coastal disaster mitigation, (3) adaptation to climate change, and (4) sustainability of mangrove coastal areas in developing countries. Tokyo Bay, at short distance from our campus, is one of our main fields for studying environmental restoration and disaster mitigation based on field observation and development and application of numerical models. The bay has suffered from degradation in fishery and water quality, especially hypoxia and anoxia, for long time. We have been considering strategies for environmental restoration, rehabilitation and mitigation in the bay based on scientific evidence. Disaster mitigation against storm surges and tsunamis is also our research targets, including development and application of prediction systems for coastal hazards using open source models. Studies on coastal zone management for sustainability in developing countries, especially in mangrove coastal areas influenced by climate change, including sea level rise, are also our main focus.</p>	<p>Coastal engineering, numerical model, estuarine and coastal environment, coastal disaster mitigation, information technology</p>	<p>Students will firstly learn environmental or disaster related processes in estuarine and coastal waters, which may include some of coastal circulation, water quality, ecosystems, sediment quality, water waves, sediment transport, coastal erosion, tsunamis and storm surges. Secondly students will choose one of the problems related to estuarine and coastal processes, learn its mechanism and consider measures for resolving the problem by applying a numerical model. At the same time students will learn basics of computer literacy on Linux machine, pre-processes and post-processes in performing numerical model applications using, e.g., Python based tools. Students will select one of the open source numerical models written in Fortran, such as FVCOM (unstructured mesh coastal circulation and water quality model), SWAN (wave model), WRF (regional meteorological model), and TEEM (coastal circulation, water quality and sediment quality model), and learn how to develop a mesh system, how to prepare initial and boundary conditions, as well as how to compile and execute the model code. Learning post-processes, students will draw figures for computed results and interpret and discuss the computed results. Students will be requested to present their outcomes at the last of the seminar. We welcome students who are</p>

				interested in estuarine and coastal processes and application of numerical models using computer.
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