

# 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
<a href="#">Jun SASAKI</a> <a href="#">(Estuarine &amp; Coastal Environment)</a> <a href="#">Laboratory</a>	<a href="#">Prof. Jun SASAKI</a>	<p>We study estuarine and coastal environment in the field of civil and coastal engineering, such as (1) numerical modeling of physical and biogeochemical processes, (2) environmental restoration in enclosed coastal waters, (3) disaster mitigation, (4) adaptation to climate change, and (5) sustainability of 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 decline in fishery and water quality, including 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>	<ol style="list-style-type: none"> <li>1) Coastal engineering</li> <li>2) Numerical simulation</li> <li>3) Data science</li> <li>4) Estuarine and coastal environment</li> <li>5) Coastal disaster mitigation</li> </ol>	<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 related problems, learn its mechanism and consider measures for resolving the problem by applying , e.g., a numerical model or data analysis. Students will also learn some of the basics of computer literacy, e.g., pre-processes and post-processes for numerical computation using, e.g., Python based tools. Students will select some of the open source models written in Fortran, including FVCOM (unstructured mesh coastal circulation and water quality model), SWAN (wave model), and TEEM (coastal circulation, water quality and sediment quality model), or Python based data science tools for statistical data analysis. Students will create graphs for showing results and interpret and discuss them. Students will be requested to present their outcomes at the last of the seminar. We welcome students who are interested in estuarine and coastal processes, numerical simulation and data analysis.</p>