Division of Geosciences and Civil Engineering	Research field	Hydraulic Engineering	Lab. ID
			GC03
Laboratory web site	http://hyd-eng.w3.kanazawa-u.ac.jp/		

Research subjects

1. Long-term and large scale morphological change in coastal areas (M. YUHI)
The ongoing research projects include the following topics: inter-annual systematic migration of multiple sandbars, human-induced erosion of river-coastal watersheds, development of low-cost monitoring system using image processing, numerical modeling of waves, currents, and sediment transport in nearshore areas, development of an integrated predicition model for wave run-up and overtopping, and numerical simulations for tsunami propagation and run-up along the coastline of Ishikawa Prefecture.

2. Fluid-sediment-bed interactions for coastal and river structures (S. UMEDA)
Toward understanding of the physical processes of interactions between wave, current, sediment bed around structures in coast and river, we have been studied the following subjects: initiation of sediment motion under waves, modeling of vortex ripple morphodynamics, scour and recovery process around structures, bed evolution in river and estuary. The collaborative investigation on coastal defense structures has been carried out to clarify the mitigation effects of wave barriers on inundation and forces induced by tsunami and waves.

3. Effects of climate change on watercycle and mitigation of flood damage (K. TANIGUCHI)
For future river planning, we are investigating future variations in water cycle with global warming projections and numerical weather prediction model, distributed hydrological model, and inundation simulation model. We are also researching the mitigation of flood damage through the development of structures countermeasures and urban planning methods. Furthermore, we are conducting research on the use of rainfall forecast information in the flood disaster prevention.

4. Improvement of Air-Sea-Wave coupled model and assessment of climate change on coastal disaster (J. NINOMIYA)
Our research topics: Field observation of air-sea-wave, Development of bulk model for air-sea interaction, Improvement of numerical models, Analysis of coastal disaster, Future change of coastal hazards and environment of sea-wave.

5. River flow dynamics monitoring using advanced tomography system and watershed assessment (M.B. ALSAWAF)
The presence of robust, accurate, and continuous monitoring system is necessary for understanding river flow dynamics under both normal and flood conditions. This research focuses on utilizing an advanced tomography system capable of providing continuous, automated, and accurate river flow measurements. Additionally, the current research includes a comprehensive assessment of rainfall-runoff records to provide a holistic image of the hydrological processes occurring within and across watersheds using versatile schemes.

Master/Doctor course: Education policy, curriculum, typical activity in the laboratory

All graduate students join weekly seminars with their supervisor's research group. The students present and discuss their research progress, related literature and textbooks with other members. In addition, individual meetings with their supervisor are conducted on regular basis. Students also attend the monthly research seminar for the whole laboratory scale and other institutes.
Graduate students are required to present their research at relevant international conferences. At the end of the 1st year of the master course, a pre-defense is held. All faculty members evaluate the research progress and provide comprehensive suggestions and tips for future research plans. Doctoral students are also required to publish their research outcomes in peer-reviewed academic journals. For international students, all these activities above are done in English.

Daily life in the laboratory, etc.

There are five staff members and about 30 students in our lab. Each staff member works on his own research themes. Furthermore, members in other groups go on field survey or make experiments together. Students can discuss with all staff members and obtain knowledges from wide diciplines.
We have several parties with all members in a year, and you can make friends with senior and junior student, international students, and sometimes you can also find diffrent aspects of professors.

Message or comments by the laboratory faculty staffs

The specialty of our lab's faculty staff is meteorology, river, coast and ocean engineering focused on hydrosphere and hydrologic circulation. Hence, our students will be able to discuss actively with each expert in a very relaxed environment. Enjoy campus life with our faculty staffs and master course students. After graduation from master course, the rate of employment is 100%, and graduates are active as public servants, engineers of construction companies and construction consultants. Many working doctor course students are also active.

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