

KITAZAWA LAB.

Marine Food and Energy Utilization



Large-Scale Experiment and Advanced-Analysis Platform (LEAP)

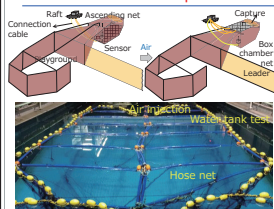
Marine Ecosystem Engineering

Department of Systems Innovation, Graduate School of Engineering

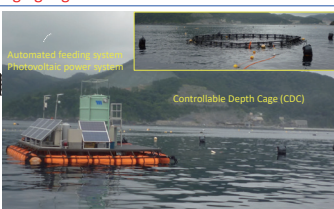
http://mefe.iis.u-tokyo.ac.jp/index_e.html

Utilize Marine Food / Energy and Preserve Ecosystem

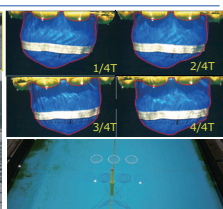
We are engaged in research on **the use of food and energy resources in harmony with the marine ecosystem**. We are conducting a **water tank model experiment** to investigate the interaction between structures and aquatic lives, **simulation** by a hydrodynamic and ecosystem coupled model, and an easy-to-use **monitoring system** for observing the aquatic lives. In the ocean, there are many issues that cannot be predicted by experiments and numerical analysis, so we will elucidate the issues for **social implementation** by **field demonstrations**. With the achievement of the SDGs and the realization of Society 5.0 in ocean use, we will aim for **food and energy security, revitalization and sustainable development of the aging region**.



Automated Fish-guiding System
Human-saving and labor-saving of net-hauling operation



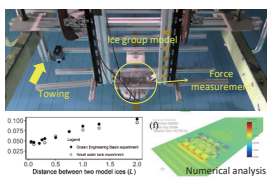
Controllable Depth Cage and Automated Feeding System (Onagawa Bay)
Controllable depth cage (CDC) can be installed at any depth.



Innovative Aquaculture System
Sea area for aquaculture will be enlarged.



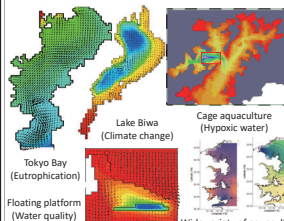
Wave Harmonizer (Yuya Bay, off Hiratsuka)
Motion-controlled ship with wave energy harvester



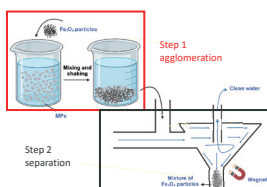
Ice Group Interfering with Marine Structure
Hydrodynamic force on a single ice in the group of ices



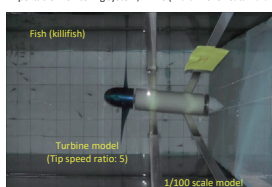
Reef-effect Observation around Marine Structure
A portable monitoring system, MMC (Multi Over Catamaran)



Numerical Simulation Using Hydrodynamic and Ecosystem Coupled Model



Efficient removal of microplastics from water
By integrating magnetic adsorption and hydro-cyclone technology



Collision Risk of Marine Animal to Turbine Blades
Observing collision and behavior of fish considering similarity law

