Laboratory of hydraulic Structures and GeoEnvironmental engineerinG
EGGs

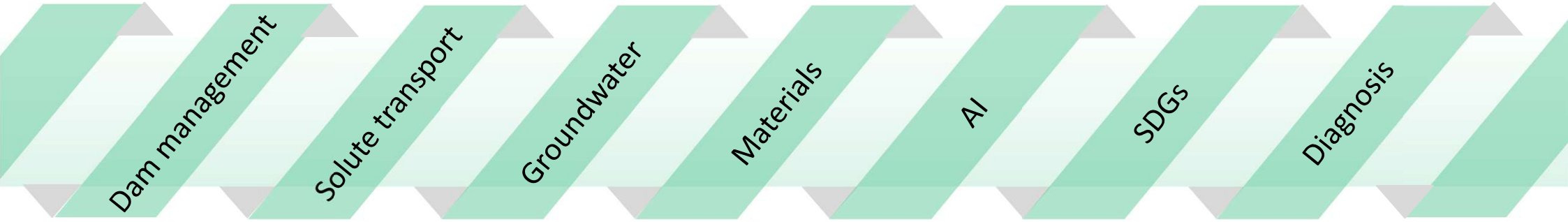
2023 autumn version

KOBE UNIVERSITY

OUR MOTTO

Pursuit of Knowledge and Technology for Future Generations

Several *keywords* we have are



REPRESENTATIVE RESEARCH TOPICS:

Quantification of groundwater and solute transport phenomena in heterogeneous aquifers

Development of eco-friendly construction materials and high-performance concrete

Diagnosis of surface and subsurface dams using machine learning and artificial intelligence

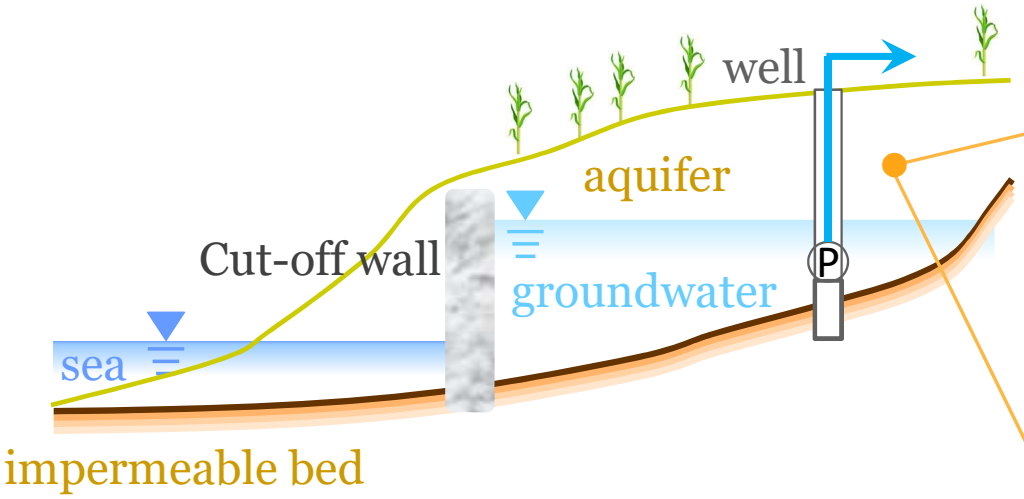
Research topics

OUR RESEARCH TOPICS

SUBSURFACE DAM

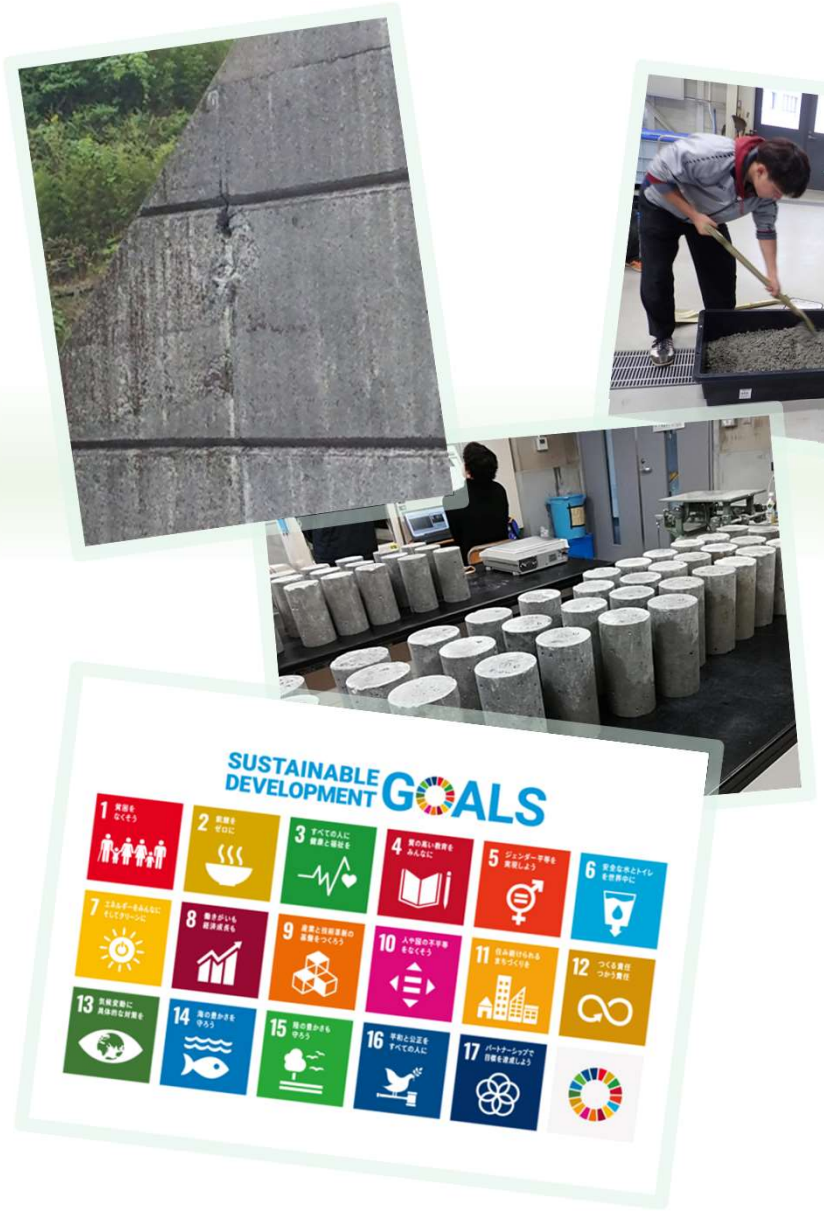
We have a research field in KIKAI island, Kagoshima prefecture in order to clarify the water and solute transport phenomena and to contribute an effective management of subsurface dam reservoir. Laboratory scale experiments related to salt water intrusion and solute transport in highly heterogeneous porous formations are also conducted.

Subsurface dams



Groundwater is stored within these pores.

Subsurface dam is a wall structure designed to dam up the groundwater flow and store groundwater in a suitable geological formation and contribute to the increase of agricultural production and sustainable water use.



OUR RESEARCH TOPICS

UNIQUE CONCRETE

The deficit of natural sand arises the need of alternative materials for replacement of natural sand. As for concrete structure, we explore the utilization of crushed stone powder which is locally available stone waste material. This study is expected to reduce the material cost and construction cost and to promote the SDGs. We are also developing some concrete materials involving porous concrete and fiber-reinforced concrete.

OUR RESEARCH TOPICS

ARTIFICIAL INTELLIGENCE

Seepage rate through, below, or around dams is an essential indicator of the health and condition of the dam. Any abrupt change in the amount of leakage may be a serious sign of deterioration of dam body. We aim to create an artificial intelligence capable of predicting seepage rate and giving an alert for dam management.

Meet our professors and students

Professors

Dr. Mariko SUZUKI

Assistant Professor

- Eco-friendly construction materials
- High performance concrete
- Embankment

Dr. Kazuya INOUE

Professor

- Seepage & solute transport
- Inverse analysis & random walk theory
- Machine learning & artificial intelligence

Meet our students

Tomoka INAGUCHI, M2

Development of function diagnosis of subsurface dams

Naoki KAYASHIMA, M2

Strength comparison of expansive mortar and deterioration mechanism of soil mixing wall

Naoki YAMASHITA, M2

Non-Fickian and anomalous solute transport phenomena

Meet our students

Kentarou ISHIMOTO, M1

Mechanical properties of crashed stone dehydrated cake treated by cement

Yui TAKEUCHI, M1

Anomalous solute transport in highly heterogeneous porous media

Momoko MAKINO, M1

Seawater intrusion phenomena in subsurface dams

Meet our students

Nagi HONDA, B4

Unique concrete

Hokuto OKABE, B4

Chaos and fractal

hydraulic conductivity modelling

Mio SUNAGUCHI, B4

Effective use of concrete sludge

Yuta TERAMOTO, B4

Application of persistent homology to artificial intelligence

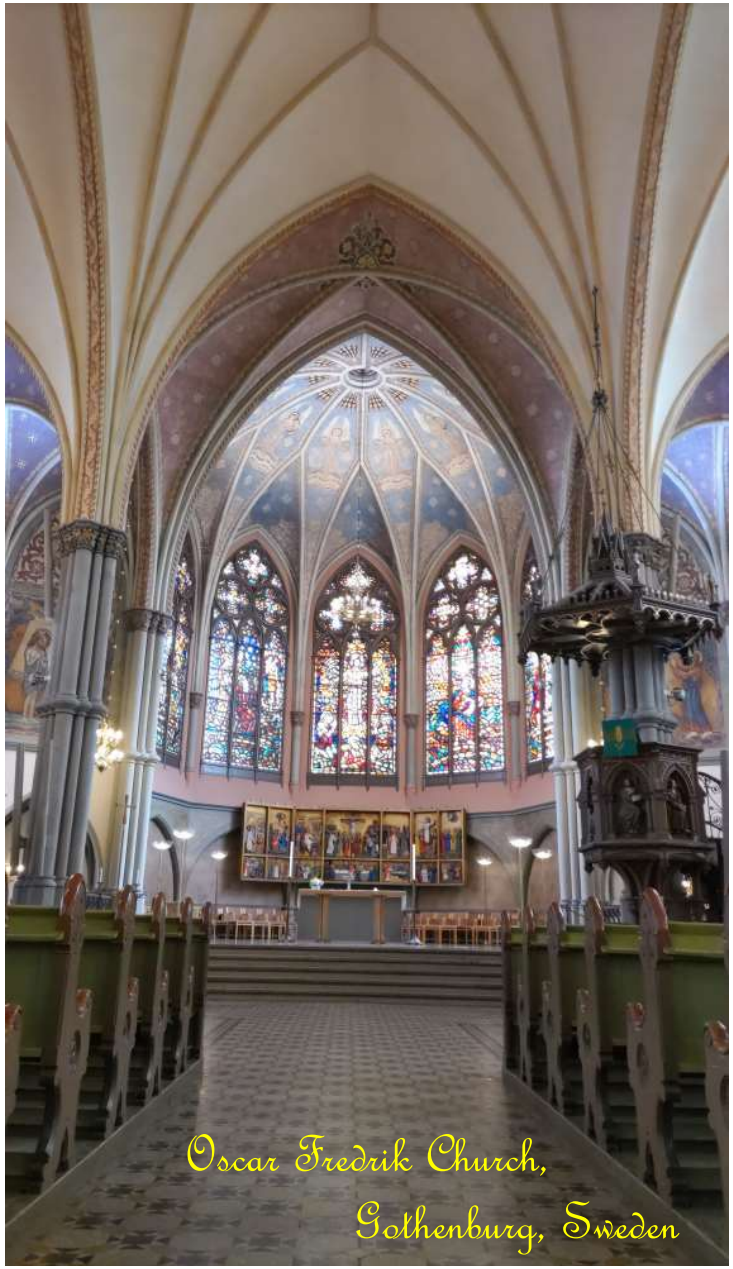
Jerónimos Monastery,
Lisbon, Portugal

Shun INOUE, B3

Alerting water resources in aquifer using artificial intelligence

Tamami KOMOIKE, B3

Mechanical properties of crashed stone dehydrated cake treated by cement



Oscar Fredrik Church,
Gothenburg, Sweden

Kanako FUJIEDA, B3

Solute transport phenomena in randomly heterogeneous aquifers

Honatsu FUJITA, B3

Identifying aquifer characteristics using swarm intelligence

Get in touch with us!

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