

# Terada Lab Research Topics 寺田研 研究テーマ

Kazumi Terada

Dep. Civil Engineering, Tokai University

## 1. The list of topics テーマリスト

- a. Microplastics マイクロプラスチック
- b. Ishigaki island 石垣島
- c. Disaster reconstruction (the Great East Japan Earthquake in March 2011 and Kumamoto earthquake in April 2016) 復興調査 (東北、熊本)
- d. Kaname river and Rice terrace in Kanagawa prefecture (金目川、棚田)
- e. Others (at students' request) その他 (希望に応じて)

## 2. Topics in detail 詳細

### a. Microplastics マイクロプラスチック

#### a-1. Shizunami coast in Shizuoka prefecture 静波海岸

- Measure the microplastics in surface soil in the coast line 海岸表土中の現存量を測定
- Seasonal difference 季節変化
- Difference between high and low tide line 満潮・干潮線の違い
- Assume the origin of plastics プラスチックの起源推定

(B4 Oshio and B3 students)

#### a-2. Shiraho in Ishigaki island 白保@石垣

- Assume the origin of plastics 起源推定
- Establish the method to assume the origin 起源推定法の確立

(M1 Endo, B4 Oshio and B3 students)

#### a-3. Fukido mangrove river in Ishigaki island 吹通@石垣

- Measure the microplastics in surface soil in mangrove swamp マングローブ湿地帯の表土中含有量
- Distribution in mangrove swamp マングローブ湿地帯内での分布
- Age measurement of mangrove soil 土の年代測定
- Origin of plastics 起源推定

(M1 Endo and B3 students)

#### a-4. The method of measuring the origin of microplastics 起源推定法の確立

- Analyze familiar plastic materials (pet bottle, sponge, etc) and confirm the method of assuming the origin of microplastics 身近なプラスチックを分析  
(M1 Endo and B3 students)
- Check the repeatability 再現性の確認

## b. Ishigaki 石垣島

### b-1. GIS analysis GIS 解析

- Compare the difference between before and after opening New Ishigaki Airport (March 2013) 新空港開港前後の比較
- Landuse, Population, Sightseeing population, Hotel and commercial facility, the amount of garbage and waste water treatment 土地利用、人口、観光人口、ごみ・下水処理量
- Fequency of eco-tour in Fukido river エコツアーの頻度
- Area of mangrove マングローブ面積
- Economic outcomes research 経済効果

### b-2. Material flux 物質循環

- Already analyzed data before opening the new airport 開港前は既にデータあり
- After opening the new airport (March 2013) 開港後
- Material flux in the river mouth 河口でのフラックス
  - ◇ Continuous data of current and turbidity in the river mouth + SSC data -> Assume the SS flux to coastal area 流量、濁度の連続データ+SSC データで沿岸域へのSS 流出量を推定
  - ◇ + N, P data -> Nutrient flux 窒素とリンの流入出量
  - ◇ Compare with data taken in before 2013
- Turbidity comparison between sea and river (measured in 2016) 海、川の濁度比較
  - ◇ How much and when muddy water comes from the mangrove river and reach the coastal area
  - ◇ Time lag?
  - ◇ Link between sea and river! <- Our final target
  - ◇ Current profile in the estuary. When and how SS

(turbidity) spread in the estuary

- Sediment analysis 底質分析
  - ◇ Sediment sampling -> N, C, P amount
  - ◇ Effect to water quality
- Input flux from upstream 上流からの流入量
  - ◇ Comparison between before and after opening the new airport
  - ◇ Difference between clear and rainy days
  - ◇ Comparison with data taken in 2007?
- Underground water 地下水
  - ◇ Concentration of nutrients change with tide?
  - ◇ Comparison with the water quality of river
  - ◇ Assume the amount of elution to river
- Nutrient elution experiment of sediment 溶出実験
  - ◇ Regarding with groundwater
  - ◇ How much and when does groundwater (including N, P) sink in
  - ◇ Change with tide? I guess Yes, and it's difficult to measure accurate amount of elution
- Simulation シミュレーション
  - ◇ Diffusion of SS in the estuary. How much and when does the outflux from mangrove river spread in the estuary? Where do they sink (accumulate)?
  - ◇ Relationship with the distribution of seagrass and coral reef
  - ◇ Plane and vertical distribution of SS
  - ◇ Assuming the annual flux
  - ◇ + mangrove forest dynamics? In the future...

### b-3. Distribution of seagrass and coral reef サンゴ・海草の生息状況調査

- How much, where and what kind of seagrass and coral reef live in the Fukido estuary?
- Seasonal difference?
- Change over the years?
- Monitoring of coral bleaching and recovering
- Web site construction and data release

- Relationship between current and SS profile
- The method of measuring and considering the data

b-4. Benthos and sediments ベントスと底質

- Benthos distribution and relationship with sediment character (C/N ratio, particle size)

c. Disaster reconstruction (the Great East Japan Earthquake in March 2011 and Kumamoto earthquake in April 2016) 復興調査 (東北、熊本)

- be involved in collaboration investigation with School of Information and Telecommunication Engineering 情報理工学部と共同研究

d. Kaname river and Rice terrace in Kanagawa prefecture (金目川、棚田)

- be involved in collaboration investigation with School of Human Environmental Studies 教養学部と共同研究

e. Others (at students' request) その他 (希望に応じて)

- Plankton
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