

## Groundwater flow and solute transport around Takehara port, Hiroshima.

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### 1.Introduction

Eutrophication in Seto Inland Sea is one of important problems in Japan. However nitrate load of groundwater to sea was not clear. The objective of this study is to confirm the groundwater flow and solute transport around sea.

### 2.Methods

I observed groundwater levels in 10 wells at Takehara city around the port, Hiroshima prefecture. Measurements of electric conductivity, pH, water temperature were carried out as well as water collection at wells. Chemical components of water sample were analyzed ,using Ion chromatography and ICP.

### 3.Results and Discussion

1) When tidal variation was 2m, groundwater level changed 20cm at 100m from a coast line, and 3cm at 200m from there. Groundwater flow had the direction from land to coast with 2mm/h of Darcy flux. At the seepage part of groundwater, flux was 0.5mm/h to 3mm/h during usual period. On the other hand, flux changed -3mm/h during maximum sea level.

2) Chloride concentration of seawater was 16000mg/L. Groundwater at 50m, 100m and 200m from coastline had 720mg/L, 70mg/L, and 15mg/L of concentrations, respectively. Mixing ratio of seawater in groundwater at 50m, 100m and 200m was 5%, 0.5%, and 0.08%, respectively. This results indicated a significant effect of seawater on groundwater at 50m site.

3) Nitrate concentration in groundwater at 200m, 100m and 50m from the coast line were 3.2mg/L, 1.1mg/L, and 0mg/L, respectively. This results indicate no nitrate load from groundwater to sea. This suggests denitrification in groundwater discharge area.