



# 日本地球惑星科学連合 (JpGU) 2022 年大会 A-HW24 Material transportation and cycling at the land-sea interface: from headwaters to the ocean 開催報告

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## 1. はじめに

日本地球惑星科学連合(JpGU)2022年大会は、米国地球物理学連合(AGU)とのジョイント大会「JpGU-AGU Joint Meeting 2022」として開催された。本大会は新型コロナウイルス感染症の影響により現地とオンラインでのハイブリッド開催となった。本稿では本大会で企画されたセッション A-HW24「Material transportation and cycling at the land-sea interface: from headwaters to the ocean (流域圏生態系における物質輸送と循環：源流から沿岸海域まで)」の開催概要について報告する。本セッションは、2021年大会で開催された「Materials transport and nutrient cycles in watersheds; from headwaters to coastal seas (流域の物質輸送と栄養塩循環 — 源流域から沿岸海域まで —)」の後継企画である。従来通り、源流域から沿岸海における水・物質輸送および栄養塩循環のプロセスとメカニズムの理解を軸に据え、幅広い議論を行うことを目指した。今回も英語セッションとした。セッション概要については以下の大会 WEB サイトも参照された。

<https://www.jpгу.org/meeting-j2022/sessionlist-jp/detail/A-HW24.html>

コンピーナ：安元 純 (代表) (琉球大), 小林政広 (森林研究・整備機構), 奥田 昇 (神戸大), Adina Paytan (カリフォルニア大)

準コンピーナ：知北和久 (北大), 入野智久 (北大), 齋藤光代 (広島大学), 小野寺真一 (広島大学), 伴 修平 (滋賀県立大), 細野高啓 (熊本大), 前田守弘 (岡山大) (登録可能なコンピーナ数は4名であるが準コンピーナもセッ

ションの企画・運営に参画している)

共催学会：日本海洋学会, 日本水文科学学会, 水文・水資源学会, 日本堆積学会, 日本第四紀学会, 日本地下水学会, 土壌物理学学会

## 2. プログラムと講演内容

本大会では口頭 24, ポスター 20 の合計 44 タイトルの発表があった (Table 1)。源流域, 河川, 地下水, 湖沼, 沿岸海域を研究フィールドとした研究が揃い, 窒素やリンをはじめとする物質の流入と流出, 移動過程における形態変化, それをコントロールする微生物の作用まで, マクロからミクロの幅広いアプローチに分野を超えて触れることができる機会となった。気候変動が生物多様性に及ぼす影響や, COVID-19 の影響を扱う研究も見られた。本セッションは現地とオンラインのハイブリッドで行うこととしたが, ポスター発表を口頭発表と同日に現地で行った発表者が少なく, オンライン発表日が約一週間後となったため, セッションの一体感という点では課題が残った。

## 3. おわりに

源流域から沿岸域までの水と物質の輸送・循環における物理, 化学, 生物プロセスを一体的に理解することを目指す本セッションは, 前身となる 2003 年開催セッション「山地流域の水文地質と物質循環」から数えて 20 回目の開催となった。2023 年大会では代表コンピーナを熊本大学の細野高啓氏が務め, 引き続き開催する。土壌物理学学会会員諸氏の参加を歓迎する。

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**Table 1** 発表タイトル一覧.  
List of the presentation titles.

発表者	発表タイトル
ORAL SESSION	
Okuda	Climate impacts on benthic biodiversity in a deep ancient Lake Biwa
Kobayashi	Spatial variation in methane oxidizing bacterial communities in the bottom boundary layer of Lake Biwa under warming
Fujibayashi	Spatial pattern of methanotrophic food webs in Lake Biwa under changing climates
dela Paz	Nitrogen subsidy from profundal methane-oxidizing bacteria cascades across pelagic food web in a deep meso-oligotrophic reservoir
Poblete	Southern urban hydrosystem syndrome in Marikina watershed revealed by taxonomic and functional diversity of benthic macroinvertebrates”
Saito	Effect of seagrass-seaweed bed dynamics on carbon and nitrogen cycles on a tidal flat scale
Iguchi	Research for setting local environmental thresholds that contribute to coral reef conservation in the era of high CO <sub>2</sub>
Yasumoto	The terrestrial impact evoked by the land-originated phosphate adhering to coastal calcareous sediments on coral reef ecosystem in Sekisei Lagoon
Yasumoto	Estimation of the terrestrial phosphate loading by integrated hydrological modelling for evaluation of phosphorus accumulated in calcareous sediments
Shinjo	LINKAGE project: Adaptive governance of multiple resources based on land-sea linkages of the water cycle at coral reef islands
Kawashima	Conservation of coastal ecosystem and coral reef with the management of settling basin: The usefulness and its economic assessment
Hirose	Sediment yield and sedimentation rate at several settling basins in the northern part of Okinawa Island
Kato	Impact of groundwater in the Kanogawa riverine system
Mori	Impact of the groundwater in the Kanogawa riverine system: Numerical modeling bridging hydrogeological and ecological systems from the headwaters to the estuary of the Kanogawa River
Onodera	Nitrogen and phosphorus ratios in various groundwater in Japanese agricultural areas
Kimbi	Variation of water balance components in the Kurose river basin between the 1980s and 2000s using SWAT
Wang	Long-term Phosphorus balance changes influenced by anthropologic factors in Yamato river catchment
Nang	Estimation of soil erosion under major land covers of Inle lake watershed in Shan state, Myanmar
Kobayashi	Evaluation of water and solute flux in a forest soil
Imamura	Simulation of suspended sediment yields in forested headwatershed at Ibaraki prefecture by using SWAT
Ando	Relationship between transportation and palynofacies/palynomorph assemblage of suspended sediments in the rivers around Lake Shinji and Nakaumi Lagoon
Perera	Iron oxides and biochar incorporation into sediment to reduce phosphorus release
Peng	Estimation of freshwater discharge from the Gulf of Alaska drainage basins
Rahman	Episymbiotic infection on cyclopoid copepods during the stagnation period of 2020–2021 in Lake Biwa, Japan

**Table 1** 発表タイトル一覧 (続き).

List of the presentation titles.

発表者	発表タイトル
POSTER SESSION	
Maruyama	Shotgun metagenomic analysis on the groundwater microbial communities and creening of the functional genes related to the nitrogen cycling in Ryukyu Limestone area
Hermawan	Identification of the occurrence of denitrification in the Ryukyu limestone aquifer in southern Okinawa
Maruyama	Development of a method to reconstruct past winter monsoon variability based on the inter-annual variabilities of river discharges and snowfall in Hokkaido, northern Japan
Ishida	Sources and dynamics of phosphorus in the sediments of Lake Biwa using phosphate oxygen isotope analysis
Kimbi	Evaluation of sources and fate of nitrate in the agricultural island of Osakishimajima (Seto inland sea, Japan) using nitrogen isotope
Wang	Does weekly data could fill the bridge between daily and monthly data in modeling work
Nang	Estimation of suspended sediment discharge in Takahashi river using Soil and Water Assessment Tool
Song	Pollution sources of groundwater contamination diagnosed by boron isotope composition in Okinawa, Yoron, and Tarama Islands, southern Japan
Iijima	Effects of the pumice pebbles on the survival rate of juvenile corals especially focusing on pH and concentrations of metal ions dissolved into seawater
Akinaga	Evaluation of the spatial distribution of seagrass-seaweed beds including different species in shallow coastal waters using UAV
Nguyen	Island-scale spatial variation in the coastal environmental factors: Case study in the Seto Inland Sea, western Japan
Tamura	Comparison and origin estimation of groundwater dissolved phosphorus in coastal agricultural waters
Saito	Seasonal variation in groundwater quality and greenhouse gas in agricultural areas
Tomozawa	Unconfined groundwater flow around saltwater — freshwater interface in a small granitic island
Tomoya	Quantitative evaluation of water and nutrient discharge by a hydrological model in the sub-catchments of Osaka Bay
Itoh	How COVID-19 pandemic affected air pollutants influx into forest ecosystems in Japan
Horisawa	Impacts on forest soil microbial ecosystems due to reduced declining activity in response to the spread of COVID-19
Xin	Different responses between copepod and cladoceran zooplankton to their growth and production by weather-mediated disturbance in Lake Biwa, Japan
Guyo	Estimation of spatial variation of groundwater recharge rate in Asahi River catchment, western Japan using SWAT
Itai	Hypolimnetic oxygen depletion rate of 8 Japanese mesotrophic lakes in 2021