Nutrient uptake in river networks controls nitrogen and phosphorus transports along the river-to-ocean continuum

*Tomoya Iwata[1], Syo Ishikawa[2], Hayato Aoyama[2]

1.Faculty of Life and Environmental Sciences, University of Yamanashi, 2.Faculty of Engineering, University of Yamanashi

Riverine transports of organic and inorganic matter from watersheds can be an important flux that supports the downstream and coastal food webs. Recent studies have identified that stream ecosystems uptake and/or mineralize the large amount of river-borne material leaking from terrestrial ecosystems, resulting in the decrease of material transports from land to the ocean. However, the uptake rates of nitrogen and phosphorus in the entire area of a river network from headwater streams to downstream rivers to estuary has remained unknown, especially in mountainous watersheds with high relief, such as watersheds in Japan.
We will present our recent empirical studies in the Fuji River watershed, which show the"basin metabolism"of nitrogen and phosphorus to identify the fate of river-borne material along the land-to-river-to-ocean continuum. Moreover, our study will show the relationship between fluvial geomorphology (e.g., channel size and river network structure) and the riverine transport of nitrogen and phosphorus. We emphasize that physical modifications of river network strucutre may affect the delivery of nutrients to coastal areas, resulting in change of the strength of land-ocean linkages through riverine nutrient flux.

