

Physical, chemical, and biological aspects of transport processes in aquatic ecosystems

Description

An aquatic ecosystem is an ecosystem in a body of water like a river, a lake, a reservoir, or an estuary. It includes the biotic interactions amongst plants, animals and micro-organisms, as well as abiotic physical and chemical interactions amongst its components. The transport process plays a key role in shaping the physical environment sustaining an aquatic ecosystem. For example, the movement of bed material forms bedforms that provide diverse habitats for macroinvertebrates, the interactions between suspended sediment and contaminants affect the water quality of the aquatic ecosystems, the dispersion of particulate organic material provides food sources for micro-organisms, the exchange of solutes between the hyporheic zone and ambient water is the key to degrading contaminants, the dispersal and movement of larvae determines the migration and expansion of a community of a species.

In recent years, fruitful progress has been achieved regarding the development and applications of analytical methods, numerical approaches, and experimental observations toward understanding the basic transport processes of passive (e.g. solute, contaminants, sediments) and active (e.g. micro-organisms) particles in different aquatic environments. Major challenges still exist in feasibly and correctly obtaining the statistical behaviors of these passive or active particles, which is the key to modeling their transport through complicated water environments. Moreover, great efforts are to be made connecting the physical, chemical, and biological aspects of these transports with the comprehensive analysis of the aquatic ecosystems.

This session invites contributions concerning all aspects of the transport processes in water bodies that may help us understand the function and evolution of the aquatic ecosystems.

Conveners:

- **Zi Wu**, Tsinghua University, Beijing, China
 - **Marwan Hassan**, The University of British Columbia, Vancouver, Canada
 - **Li Zeng**, China Institute of Water Resources and Hydropower Research, Beijing, China
 - **Ping Wang**, Beijing Forestry University, Beijing, China
- 