



# Donghwan Kim

PhD Candidate

[donghwan.kim@griffithuni.edu.au](mailto:donghwan.kim@griffithuni.edu.au)

[orcid.org/0000-0003-2692-8483](https://orcid.org/0000-0003-2692-8483)

## Summary

Increased nitrogen (N) loads from intensive agricultural activities are a significant environmental stressor. A large amount of N exported from agriculture land use in South East Queensland (SEQ) has affected the supply of safe and clean drinking water and degraded the ecosystems in Moreton Bay, accelerating eutrophication and destroying seagrass. Streams have an essential role in conveying N loads from agricultural catchments to coastal zones, but also have a role in N removal processes. The N cycle involves many complex in-stream N processes, resulting in high spatial and temporal variability under different flow conditions. In this study, a combination of a comprehensive literature review, monitoring data analysis, field and laboratory work, and modelling will be performed to understand in-stream N processes under different stream hydrological regimes of baseflow and flood flow. The use of process-based models will be used to help quantify the contributions of key processes in the N cycle, including critical loss processes of denitrification and sedimentation that may be able to be manipulated to enhance the removal. This research will contribute to supporting ongoing water management plans for mid-Brisbane and lower Brisbane Rivers, and Moreton Bay by providing detailed understanding of N processes in streams and how these activities are affected by environmental and anthropogenic actions.

## Research Expertise

- Water quality modelling
- WQ monitoring using sensor
- Organic matter cycling in lakes and rivers
- Non-point source research