



## Jas Singh

**B.Environmental Engineering (Hons)**

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### Summary

Remote sensing is the method of using satellites and other remotely operable tools such as drones to obtain data about our planet through images and measurements. Remote sensing helps researchers by first collecting images and analysing those images to: identify crop conditions, observe climate change, monitor land use and land cover, analyse water quality and more. Multiple freshwater bodies like lakes have been studied to analyse water quality changes for parameters which produce colour such as chlorophyll-a found in algae, suspended sediment, and coloured dissolved organic matter which are known as optically active constituents (OACs). However, very few studies have analysed the spatial (area related) and temporal (time related) behaviour of OACs over a region in order to understand whether there is synchronous behaviour in water quality. The research aims to quantify spatial and temporal behaviour of OACs in multiple lakes of south-east Queensland (SEQ) to understand the spatial and temporal trends and to understand whether there is any synchronicity in the inter-lake analysis. This will be undertaken by utilising a drone attached instrument known as a spectroradiometer which will obtain measurements like those produced by satellites but at a much finer scale. This data will be used to validate the satellite data. Similarly, monitoring buoys and field campaigns taken within the respective lakes to be studied will be used to validate satellite data as well. The main hypothesis for this study is, in relation to the temporal aspect, that there will be synchronous trends in the lakes as the lakes are situated in the same region however spatially, the lakes may vary due to the intrinsic physical make-up of the lake as well as land use surrounding the lakes. This research will help develop a regional study of water bodies in SEQ which will assist in research towards Australia first space mission, CSIRO's AquaWatch mission.

### Research Expertise

- Freshwater ecology
- Remote Sensing
- Hydrology
- Wastewater and water treatment