PhD PROJECTS 2018 – CLIMATE CHANGE CLUSTER (C3)

The Climate Change Cluster (C3) offers a diversity of exciting PhD projects in 2018 to talented students who want to work with internationally recognised scientists in a supportive and dynamic research institute. If you are interested in these projects, please contact the academic staff member listed as the principal supervisor.
More information about the research of these staff members can be found on their web pages linked from www.c3.uts.edu.au

International students: Scholarship applications close 20 August 2017
Domestic students: Scholarship applications close 31 October 2017

Productive Coasts

(Martina.Doblin@uts.edu.au)

Thinking big: Scaling up from cellular to regional scale estimates of primary production in Australian coastal waters

The aim of this project is to develop a satellite algorithm for Australia's coastal ocean, a hotspot for carbon and nutrient cycling. It will involve a combination of field and lab-based research, including work on boats.

Is snacking prevalent amongst marine phytoplankton? Understanding drivers of mixotrophy in coastal waters

The aim of this project is to understand the role of terrestrially derived organic nutrients in driving mixotrophy and pelagic metabolism in coastal waters. It will use a combination of innovative techniques such as non-invasive oxygen sensors to quantify metabolism, and fluorescence activated cell sorting and sequencing to progress knowledge about nutrient and energy flows and the ecological role of mixotrophs in coastal systems.

Ecosystem Health/Future Reefs

(Alfredo.Huete@uts.edu.au, David.Suggett@uts.edu.au)

Unlocking the habitat dynamics at the coastal interface between mangroves and reefs

This project aims to better understand the dynamic relationship that is evident between mangrove functioning and coral reefs. This aim will be achieved using a unique combination of in situ instrumentation, proximal remote sensing (fluorescence sensors, spectral cameras, spectroradiometry of leaves, coral, and water quality), and satellite observations of mangrove productivity, water quality, ocean colour, land and sea surface temperature, and 30-year historical reconstructions of mangrove - reef habitats.

Ecosystem Dynamics, Health & Resilience

(Alfredo.Huete@uts.edu.au)

Future Cities: Remote Sensing of Urban Ecology

Urban environments are increasingly recognised as unique ecosystems with important roles and applications in climate, regional carbon and water, and eco-health studies. In this interdisciplinary project we investigate the interactions among climate, green space, land cover change, urban heat island, air quality and pollen aerobiology urban ecology of urban environments in Australia and Asian region.

Vegetation Responses and Sensitivity to Climate Variability

This project utilises advanced satellite technologies in conjunction with in-situ sensors and ground datasets to gain a better understanding of Australian ecosystem (and global arid lands) vulnerability, resilience, and early warning signs of ecosystem fates, transitions, or collapse. Our focus is the development of meaningful satellite metrics of ecosystem health and sensitivity, encompassing the roles of ecosystem functioning and biodiversity.

Seafood Safety

(Shauna.Murray@uts.edu.au, Penelope.Ajani@uts.edu.au)

Novel genetic early warning systems for harmful algae in the NSW oyster industry

This project will involve examining the application of novel genetic based screening methods for harmful algae to the NSW oyster industry. This project will involve extensive field sampling at estuarine sites along the NSW coastline, lab based work using PCR, qPCR and other similar approaches, and ecological analyses of variables that may be related to the initiation of blooms of harmful species.

The genetic basis of diarrhetic shellfish toxins from Prorocentrum and Dinophysis

This project uses transcriptomic sequencing of strains of Prorocentrum that produce okadaic acid, in comparison with samples of Dinophysis species, in order to identify and/or localise polyketide synthase related genes that may be involved in toxin biosynthesis in producing strains. Techniques would include bioinformatics approaches such as assemblies, Blastogo searches and phylogenetics approaches.