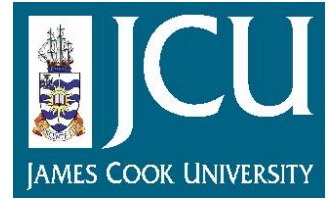


First Announcement and Call for Papers

# Challenges in Environmental Science and Engineering

## CESE-2009



Organized by James Cook University, Townsville,  
Queensland, Australia

14-16, July 2009 in Townsville  
Including technical visit to Magnetic Island

### DEADLINES

Abstracts	November 20, 2008
Notification of acceptance	January 20, 2009
Papers	March 30, 2009

Topics will include:

### ❖ Environmental Challenges: From Catchments to Consumers

- Catchment Management
- Water Quality Monitoring and modeling for Surface Water and Groundwater
- Water Treatment, Wastewater Treatment, Water Reuse
- Application of Membrane Technology
- Persistent Pollutants, Trace Organic Substances
- Coastal and Reef Processes
- Environmental Education

### ❖ Sustainability and Renewable Energy

- Sustainable Science
- Sustainable Power Supply
- Solar Energy, Solar Energy Devices, Wind Energy
- Resource Recovery
- Cleaner Production
- Ecological Buildings

### ❖ Green Processes

- Applications in Mining and Minerals Industry
- Applications in Chemical and Pharmaceutical Industries
- Applications in Food Industry
- Applications in Agriculture and Aquaculture
- Biotechnology and Public Health

## **CESE-2009 ORGANIZATION**

**Conference Chairman**                    A/Professor Jega V Jegatheesan  
**Co-Chairmen**                            Dr Li Shu and Professor Michael Ridd

**Honorary Chairman**                    Professor Roger Ben Aim

### **International Advisory Board**

Professor Miriam Balaban, Italy  
Professor Ramaraj Boopathy, USA  
Professor Chris Cocklin, Australia  
Professor Menachem Elimelech, USA  
Professor Tony Fane, Australia  
Professor Baoyu Gao, China  
Professor Donald Huisingh, USA  
Professor Seung-Hyun Kim, South Korea  
Professor Max Lu, Australia  
Professor Ashok Pandey, India  
Professor Russell Richert, Australia  
Professor Zaini Ujang, Malaysia  
Professor Chettiyappan Visvanathan, Thailand  
Professor David Waite, Australia

### **Scientific Committee**

A/Professor Jon Brodie, James Cook University  
Professor Richard Keene, James Cook University  
A/Professor Hua Hao Ngo, University of Technology Sydney  
Professor Rocky de Nys, James Cook University  
A/Professor Peter Ridd, James Cook University  
Professor Saravanamuthu Vigneswaran, University of Technology Sydney  
Dr. Gordon Xu, University of Queensland  
A/Professor Ahmed Zahedi, James Cook University  
Dr. Chaoshu Zeng, James Cook University

### **Organizing Committee**

Dr. Mohan Jacob, James Cook University  
Mr. Greg Kier, James Cook University  
Dr. Govinda Pandey, James Cook University  
Mr. Diep Dinn Phong, James Cook University

Please email your abstract (less than 300 words) using the following format. Your presentation will be designated as oral or poster based on the evaluation of your abstract by the scientific committee.

## Abstract

# Pollutant Discharge Management Target Setting for Rivers in the Great Barrier Reef Catchment Area

*Jon Brodie<sup>1</sup>, Stephen Lewis<sup>1</sup>, Alan Mitchell<sup>1</sup>, Zoe Bainbridge<sup>1</sup> and Jane Waterhouse<sup>2</sup>*

1. Australian Centre for Tropical Freshwater Research, James Cook University, Townsville, Queensland 4811, Australia.
  2. CSIRO Sustainable Ecosystems, Townsville and the Reef Partnership.
- Corresponding Author Email: [jon.brodie@jcu.edu.au](mailto:jon.brodie@jcu.edu.au)
- 

As part of implementing the Great Barrier Reef (GBR) Water Quality Protection Plan (ReefPlan), Water Quality Improvement Plans (WQIPs) are being developed for individual river basins on the GBR Catchment. Within each WQIP targets are being set linking marine ecosystem objectives to end-of-river pollutant load objectives (the pollutants addressed are suspended sediments, nutrients and pesticides) to farm and industry level management practice objectives. Objectives (targets) at the different stages of the process are linked through quantitative models where possible e.g. one model connects GBR chlorophyll concentrations (a marine ecosystem objective) to end-of-river nitrate loads, a second model connects the end-of-river nitrate loads to fertiliser management targets in the catchment while a third model links fertiliser management practices to loss of nitrate at the farm scale. A further layer of economic modelling may be used on top of this process but this component is not discussed in this paper. The difficulties of applying these linked models to derive credible and practical management targets are great given the high degree of uncertainty in each model. Our overall understanding of the generation of suspended sediment, nutrients and pesticides in catchments and the relationship to on-farm management practices, the transport of these materials to the ocean, their transport in coastal waters and their effects on marine ecosystems is incomplete (to say the least) and this introduces a further large element of uncertainty. The challenge for scientists in this field is to produce estimates from the models with known levels of uncertainty but which are robust enough for management purposes. Examples of where this has been attempted from the Tully/Murray Basin and the Burdekin Basin in north Queensland will be presented.

---

**Keywords:** Great Barrier Reef, Water Quality Improvement Plan, Fertilizer Management, Pesticides, Burdekin Basin (up to 8 keywords)