

## **OBITUARY – PROFESSOR MICHAEL BONELL**

At 9:00am last Friday (July 11, 2014) in Paris, James Cook University and the global tropical environmental science community lost a true tropical rainforest pioneer with the untimely death of Professor Michael Bonell after a short but tough battle with cancer.

Mike Bonell was appointed as a Lecturer in Geography at James Cook University in 1973 soon after completing his PhD studies at the University of Hull on shallow groundwater movement in the glacial drift of Holderness in East Yorkshire. In 1975, he established a research partnership with Don Gilmour of the then Queensland Department of Forestry who was investigating the impacts of forest land change in a controlled experimental catchment facility located on the wet tropical coast near Babinda. Don's work as a PhD student in the JCU Geography Department had by then established the scale and direction of hydrological impacts of logging and clearing in these catchments. These included increases in annual water yield, base flow and sedimentation. However, unlike similar studies in catchment processes in the temperate latitudes, logging and clearing had little or no impact on flood flow generation.

Over the next decade, Mike led a research team drawn from the James Cook University, the Queensland Department of Forestry and the CSIRO Divisions of Soils and Forest Research to develop an understanding of the hydrological processes underlying these results and whether they would apply in other tropical environments.

Mike joined the Geography Department at a time when it was expanding rapidly and becoming renowned for its tropical emphasis. His hydrological interests added a somewhat unique strain to the Department complementing the tropical interests of his physical geography colleagues especially the Head of Department, Professor John Oliver. Through his teaching style as well as his interesting research background he did much to attract students to the Department. He liaised well with all other members of staff, both academic and technical.

Mike and the team established the presence of saturated overland flow in undisturbed rainforest catchments and used innovative isotope studies to clarify relations of surface flow with deep drainage processes. The team also undertook detailed soil physical investigations in the major rainforest soil landscapes elsewhere in the wet tropics to understand how the results from Babinda might be relevant to land management decision making on a wider scale. Mike personally developed a keen research interest in the relationship between the runoff generation and synoptic and meso-scale climatology, a key factor in assessing how and where tropical environments might be expected to behave to the conventional wisdom developed from studies in humid temperate environments.

Mike also established collaborative partnerships with scientists from CSIRO Division of Soils and the Queensland Department of Primary Industries to investigate runoff and

erosion generation processes in both the semi-arid rangelands west of Townsville and the cane lands of the wet tropics.

The results of this work influenced soil conservation and land management practices in North Queensland and beyond. The process understanding developed by Mike and the team underpinned the development of watershed management controls for forest harvesting in North Queensland. These were recognised as international best practice in the investigation of the 1987 global assessment of sustainability of forest management practices in the tropics by the International Institute for Environment and Development (IIED). They were subsequently used as an initial basis for developing reduced impact logging (RIL) practices in Malaysia and elsewhere. RIL practices have subsequently become a key performance requirement for independent certification systems for tropical forest management. Mike's hydrological process work was also used to support the nomination of the North Queensland Wet Tropics for World Heritage status.

Mike's teaching at James Cook University included innovative programs in hydrology and climatology and he has left a legacy of numerous students throughout the world who now contribute significantly to environmental understanding and management. He was most likely the first academic at James Cook University to produce a video presentation for his students, especially on a topic of great interest to him - overland flow.

Mike always brought an international perspective to his work in North Queensland. During the 1980s, Mike and other members of the Babinda team became active participants in the Asia-Pacific Forest Lands Program of the East-West Center in Hawaii. In 1986, Mike and the team undertook an investigation of the soil hydraulic conditions under a variety of land covers in the middle hills of Nepal to provide more science-based information to decision makers on the relations between forests, flooding, soil erosion and catchment denudation in the Indo-Gangetic ecosystem. Mike also became actively involved with the UNESCO Hydrological Sciences Program and in 1990 hosted UNESCO's decadal global review workshop on Tropical Forest Hydrology at JCU Townsville.

In 1989, Mike was appointed as both Reader in Geography at JCU and the Director of the Institute of Tropical Rainforest Studies (ITRS). ITRS was the precursor to the Rainforest CRC and the landmark work subsequently undertaken by JCU. In 1991, he gave a keynote address on tropical forest hydrology to the World Forestry Congress in Paris and was awarded the *Chevalier de l'Order du Merite Agricole* by the French Department of Agriculture and Forestry.

Mike left JCU in 1992 to take up an appointment as the Chief of the Hydrological Processes and Climate Section of the UNESCO Division of Water Sciences in Paris. Mike led UNESCO's humid tropics program and was a founding member and inaugural coordinator of the UNESCO HELP (Hydrology, Environment, Life and Policy) Program. At UNESCO, he was the lead editor of landmark global publications on the state of knowledge on tropical forest hydrology in 1993 and 2005.

After retiring from UNESCO in 2006, Mike remained active in forest land use hydrology research until the time of his death. He was Professor of Catchment Science in the Centre for Water Law, Policy and Science at the University of Dundee. He was also Professor at Large at the University of Western Australia and Adjunct Professor at JCU and Lancaster University. He had active research programs in assessing flood risks in Scotland and the hydrological impacts of afforestation in Nepal, the Western Ghats in India and the Loess Plateau of north-west China. Mike was a contributor to the EU LiveDiverse Project focusing on forest, water and people. As part of this later program, Mike had planned a comparative study with colleagues at JCU Cairns on Indigenous tropical forest-environments knowledge in the Wet Tropics of NE Queensland.

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