

# Plenty of water?

As dry southern eyes turn to north Australia for agricultural and water options, it is appropriate that a thorough evaluation take place of the capacity of our land and water to yield to development and the ecological consequences of doing so. This has sparked major commitments to research, including substantial funding for the Tropical Rivers and Coastal Research hub (TRaCK – <http://www.track.gov.au/>) based at Charles Darwin University. Research from various quarters is now beginning to emerge.

Petheram *et al.* (2008) provided a detailed analysis of flow characteristics of 99 unregulated rivers in northern Australia, comparing their flow characteristics with similar regions in the rest of the world. Compared to these regions, streamflow in northern Australia is more highly seasonal and more variable in size among years, characterising them as primarily “event driven” with “limited natural storage capacity”. In half of the rivers, over 80% of annual flow occurred in less than 3 months. The implications for exploitation of water are: there is “relatively little opportunity ... to actively harvest water for on-farm storage” especially under environmental-flow restraints, carry-over storages would need to be larger relative to river flow than elsewhere, and that irrigators would need to “have especially well developed drought contingency plans”.

One of the challenges in interpreting patterns of water flow in the north is that there are relatively few long-term gauging stations. Moliere *et al.* (2009) used data from three relatively well-gauged rivers, one of which was the Daly River, to characterise flows and test their ability to characterise flow regimes using remotely-sensed traits available for all rivers. They demonstrate that it is possible to “broadly classify the flow regime” of rivers as “(1) perennial, (2) seasonal, (3) dry seasonal, and (4) seasonal-intermittent” based on “digital elevation, topographical and geological data”.

Leigh & Sheldon (2008) modelled the consequences of development of water resources on currently unregulated rivers flowing into the Gulf of Carpentaria. They found that, depending on the river’s natural flow regime, development may either increase or decrease interannual variability in river flow, and concluded that “Either outcome is expected to have adverse effects on the biodiversity and ecological function of these relatively pristine rivers and floodplain habitats. In particular, reduced and homogenized habitat, loss of life-history cues, inhibited dispersal and shifts in community composition, as a result of WRD [water resource development], threaten the ecological integrity of rivers .... These findings serve as a caution for careful consideration of WRD options for rivers in the Australian tropics ....”.

## References cited

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