



Ecohydrological feedbacks mediate wetland habitat response to climate variability

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Wetland ecosystems contain various feedback mechanisms between their abiotic and biotic components. The feedbacks are triggered by climate and influence environment partitioning, here defined as the distinct zones of hydrological function, namely lake (L), saturated (S) and terrestrial (U) zones. These zones vary in time and space depending on climate, soil and vegetation interactions. The partitioning into U, S and L environments co-evolves with vegetation, governs the dynamics of carbon metabolism and creates niche habitats that shape patterns of flora and fauna abundance and distribution.

Using a minimalistic model for wetland ecohydrology, we explore vegetation adaptation to climate variability and the net C metabolism of a wetland ecosystem across a range of climate conditions found in Southwest Western Australia (SWWA). We demonstrate processes and sensitivities that govern how ecosystem services such as habitat provision and carbon storage are likely to respond to altered climate regimes.