

WIDS2017 Dynamic Landscapes

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that aquatic biota can impart regarding the health status of a wetland, it is critical that a basic understanding of their dynamics in different wetland types, under various periodicities and hydroperiods is established and developed. From recent field data, we now know that there are significant differences between some wetland types in terms of aquatic flora and faunal composition. This knowledge is important when characterizing successional changes in aquatic biota, in order to relate these shifts to natural abiotic changes and/or anthropogenic perturbations. Clearly our understanding of wetlands in drylands and their ecological role in the landscape is still developing with a number of unanswered questions. For example, how much do we know about the community successional patterns of wetlands in drylands around the world? Is our knowledge regionally, locally or project based? And if so, how can we extrapolate regional or local knowledge into generalisations that can help in regions where there is little or no data to make informed decisions regarding the management of wetlands elsewhere? In this session, we will share our understanding from a South African perspective with regard to the dynamics of ephemeral wetland ecosystems.

Rapid analysis of soil carbon in wetlands, using Laser Induced Breakdown Spectroscopy (LIBS)

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Measuring soil carbon stores and fluxes is important for our ability to understand ecosystem health and carbon sequestration. Soil carbon can be measured in a range of ways, most usually and simply by loss on ignition (LOI) at temperatures from 375 to 850 °C and durations from 0.5 to 16 h, with the application of a conversion factor to convert LOI to organic carbon. The lack of a standard method is not the only complexity; the loss on ignition metric is prone to error as waters of formation are lost from hydrated minerals including salts, clays and other minerals. In field measurements of soil carbon are now possible using Laser Induced Breakdown Spectroscopy (LIBS). Measurements are fast, inexpensive and have reasonable accuracies. Here, we present a measurement program for soil carbon from a wetland in semi-arid central NSW, and we will highlight some of the advantages and pitfalls of using LIBS for measurement of soil carbon.

Contemporary fluvial charcoal supply to floodplain wetlands of the Macquarie Marshes, NSW, Australia

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Fire plays a pivotal role in modifying and shaping the Australian landscape, including floodplain wetlands, which respond dynamically to flooding, fire and geomorphological changes. Buckieinguy Swamp, a key ecological asset in the Macquarie Marshes, has experienced numerous fires in the past. For example, a total of 32 fires occurred in the period 2004-2014 within a ~10 km² zone in and around the wetland, as shown on contemporary satellite imagery (Geoscience Australia Sentinel Hotspot data). However, the volumes of charcoal produced in situ by local fires and that supplied to the wetland from the upstream catchment (i.e. not representative of local fires) are unknown. This