

Lunchbox seminar series

Nathan

Spatiotemporal analysis of surface water dynamics and environmental change at subcontinental scale

Abstract: Surface water is a critical resource in semi-arid areas. In Australia, competing water demands, combined with changes in climate and the way we use our land as well as multi-year droughts, such as the Millennium Drought that ended in 2009, have led to water shortages, particularly in the Murray-Darling Basin (MDB). The MDB is a large (>1million km²), semi-arid basin that experiences extreme hydroclimatic variability and competing water demands, of high economic importance given that it accounts for 40% of Australia's gross value in agricultural production. In this seminar I will present (1) the development of a statistically validated surface water and flooding extent dynamics data product (SWD) based on 3 decades (1986-2011) of seasonally continuous Landsat TM and ETM + archives and generic random forest-based models, and on-going applications of the SWD, including (2) the quantification of key drivers of surface water extent dynamics, (3) spatiotemporal connectivity dynamics, and (4) vegetation response to flooding, including river red gum communities, an iconic riparian eucalyptus species that has suffered die-back.

Biography: Mirela is an environmental remote sensing scientist, working at the complex interface of geospatial science, landscape ecology and water dynamics. She has initiated and now leads a number of competitive research projects in applied ecological remote sensing funded by the Australian Research Council (ARC). In addition to receiving an ARC DECRA fellowship in 2014, Mirela is the lead CI on an ARC Linkage in partnership with the Murray-Darling Basin Authority. As a result of this work, she and her team have quantified the high spatio-temporal variability in surface water dynamics in the Murray-Darling Basin and its decline during the Millennium Drought. This work was featured by NASA, became NASA's image of the day (July 2016) and Mirela was awarded a NSW Tall Poppy Award (2015) for this work. Mirela is currently a senior lecturer with the University of New South Wales (Sydney), where in 2012 she has built the Geospatial Analysis for Environmental Change Lab with funding from the ARC. You can find her online at www.mirela-tulbure.com and follow her on twitter (@MirelaGTulbure).



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Friday 17th March
Nathan campus

Willett Centre,
Seminar Room
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12.00 - 12:50 pm