

SPATIAL TECHNIQUES FOR GRASSLAND CURING ACROSS AUSTRALIA AND NEW ZEALAND

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AIM

To predict fire danger and to assist in fire danger management, the aim of this research is to develop a satellite-based method for grassland curing (senescence) assessment that is robust and can be used across Australia and New Zealand.

METHOD

Field data were compared to satellite data from study sites across Australia and New Zealand (Fig. 1).

Field Data

Curing was measured using three techniques: visual observations, destructive sampling, and Levy rod sampling (counting live and dead grasses that come in contact with a thin steel rod placed vertically into the ground at several points along a transect).

Satellite Data

The Normalised Difference Vegetation Index (NDVI) was derived from a MODIS product; MOD09A1-Surface Reflectance: 8-day 500-m resolution.



Fig. 1 Study Sites in Australia and New Zealand

WHAT RELATIONSHIP WAS FOUND BETWEEN THE FIELD AND SATELLITE DATA?

Three sites have been presented to illustrate the time series of Curing and NDVI (Fig.2) and the relationship between curing and NDVI (Fig.3). Similar to results from past studies (Dilley et al., 2004; and Allan et al., 2003), an inverse relationship was found between Curing and NDVI at all study sites.

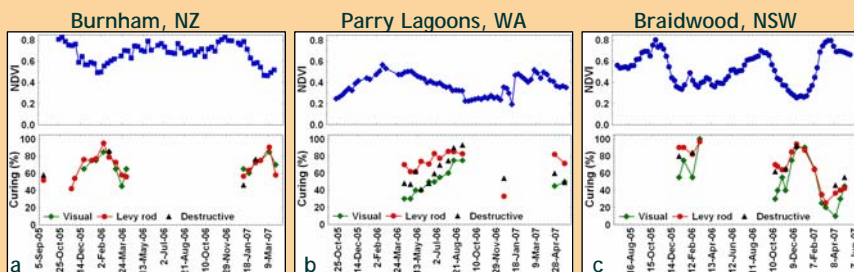


Fig. 2 Time series of NDVI (top) and grassland curing (bottom) from three study sites: a) Burnham (NZ), b) Parry Lagoons (WA), and c) Braidwood (NSW).

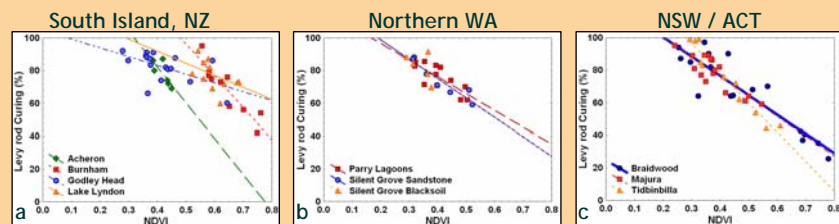


Fig.3 Levy rod curing and NDVI relationship from selected sites in a) New Zealand, b) Northern Western Australia, and c) New South Wales/Australian Capital Territory.

WHAT CAN WE DO WITH THIS RELATIONSHIP?

This work is not yet ready for application. However, to preview the products expected, Fig. 4 shows example products covering a portion of NSW, based on the NDVI-Curing relationship from Braidwood (Fig. 3c).

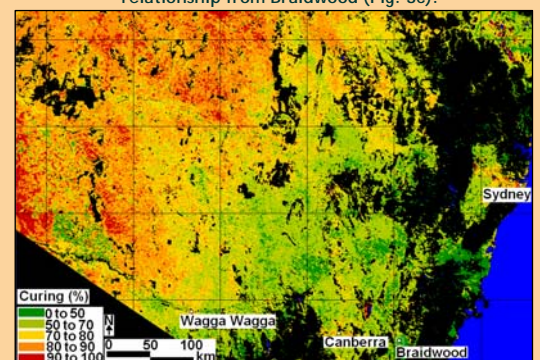


Fig.4a A sample curing product of NSW, 30/09/06.

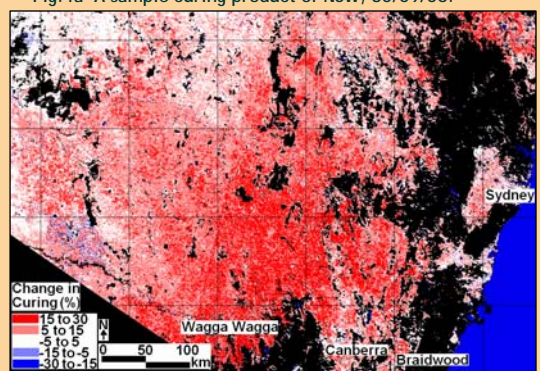


Fig. 4b Curing change from 30/09/06 to 16/10/06

SO WHAT NEXT?

The relationship between grassland curing and NDVI varied between sites due to climatic differences and variability in topography and grass type.

We will expand this study to understand these relationships across Australia and New Zealand, and assess the impact of grass and soil characteristics, with consideration of topography, climate and tree cover.

REFERENCES

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