Satellite monitoring of fire impact and recovery

Andrea Massetti\textsuperscript{2}, Marta Yebra\textsuperscript{2,3}, James Hilton\textsuperscript{2,4}, Christoph Rüdiger\textsuperscript{1}

\textsuperscript{1}Monash University, Clayton, VIC; \textsuperscript{2}Bushfire and Natural Hazard CRC, Melbourne, VIC; \textsuperscript{3}Australian National University, Canberra, ACT; \textsuperscript{4}Data 61 – CSIRO, Clayton, VIC | \textsuperscript{*}Contact author: andrea.massetti@monash.edu.

We propose an index for continuous monitoring of forested areas. It is based on the free of charge Landsat satellite imagery. The index allows the creation of fuel load maps and the reconstruction of post fire fuel re-accumulation curves. Possible applications:

- prescribed burns assessment,
- fire behavior simulation,
- fire risk assessment.

**Data and methods**

The values in the two short wave infrared bands arranged along a vegetation line (Fig. 1). Wildfires caused a disturbance perpendicular to this line. The values across time progressively fell back to the vegetation line. The perpendicular distance to this line is the Vegetation Structure Perpendicular Index (VSPI).

**Results**

We tested the index on Perth Hills fires (2005) against the Normalized Burn Ratio (NBR), the most used Landsat-based fire severity indicator (Figs. 2 and 3).

**Discussion and conclusion**

- The VSPI detected a disturbance in the burned vegetation for 30 months longer than NBR (Figs 2 and 3).
- The forest fuel re-accumulation was reconstructed and followed an exponential decay curve (Fig. 4).
- Applications in prescribed burns assessment, fire behavior simulation, fire risk assessment.