

From hectares to tailor-made solutions for risk mitigation: systems to deliver effective prescribed burning across Australian ecosystems

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Summary

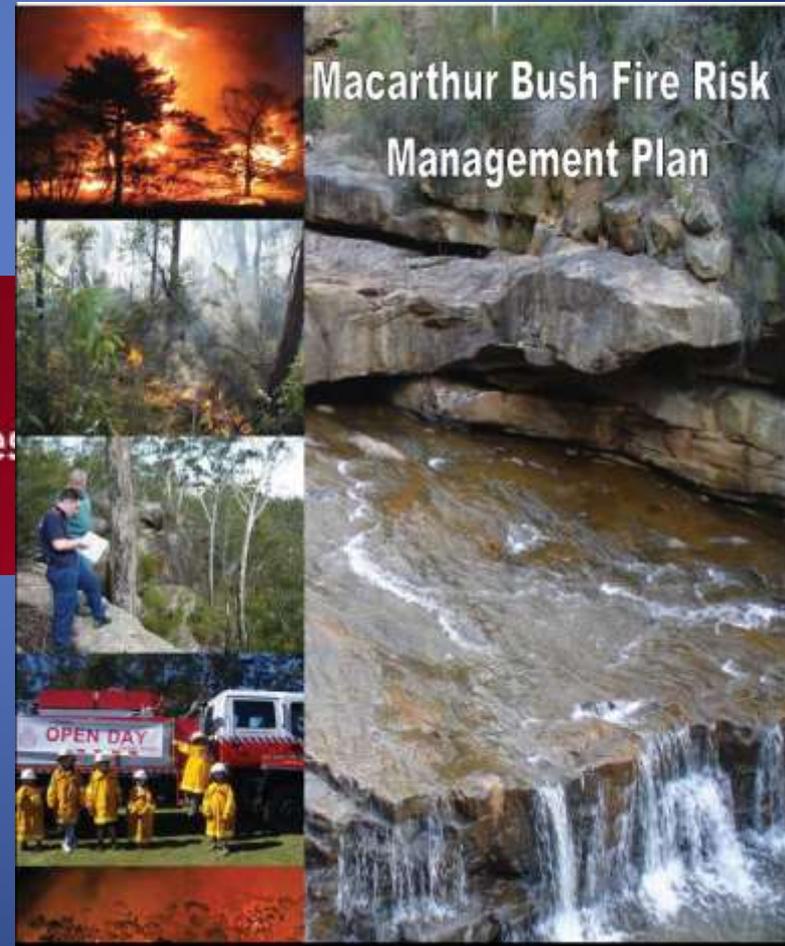
- Outline of the problem
- Project objectives
- Methods
- Team



The Problem: “Hectares” versus risk mitigation



2009 Victorian Bushfires
Royal Commission



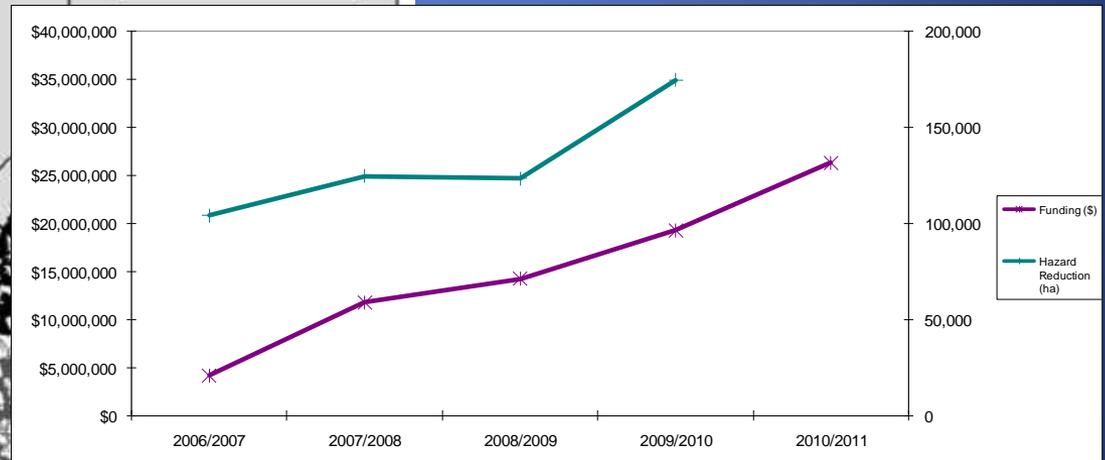
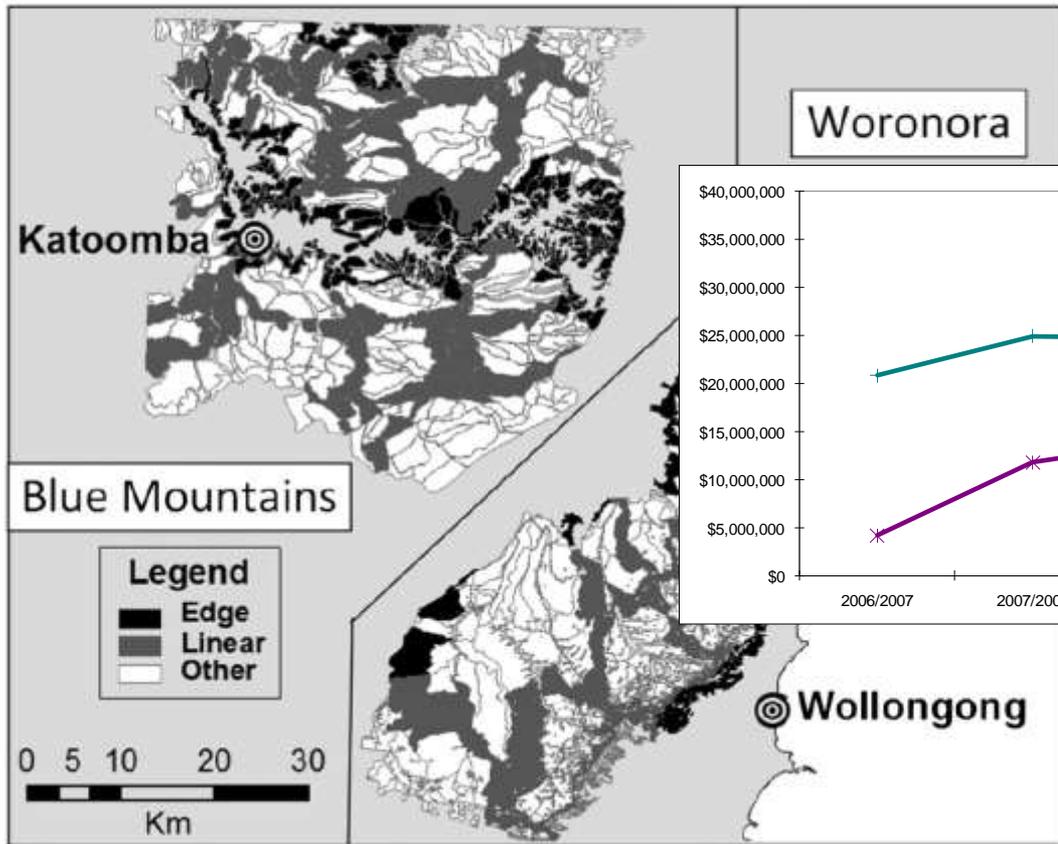
Is there a dilemma?

Not all assets are created equal



Strategic options: many are called but few are chosen

R.A. Bradstock et al. / Journal of Environmental Management 105 (2012) 66–75



Is there a one size fits all solution?



High

Effects of PB in reducing wildfire size

Low

The biophysical and human minefield

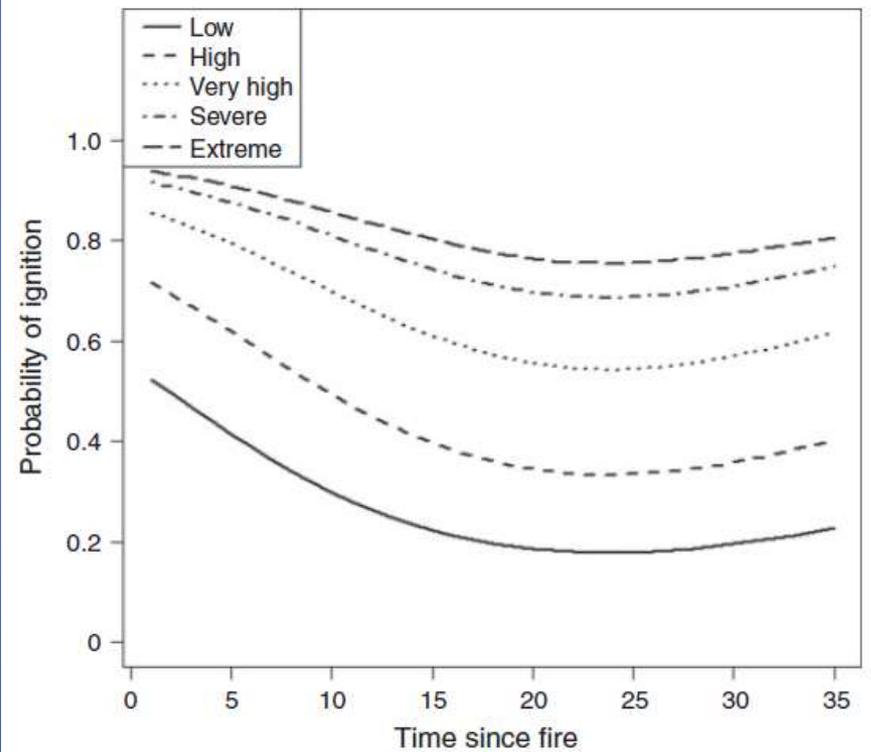
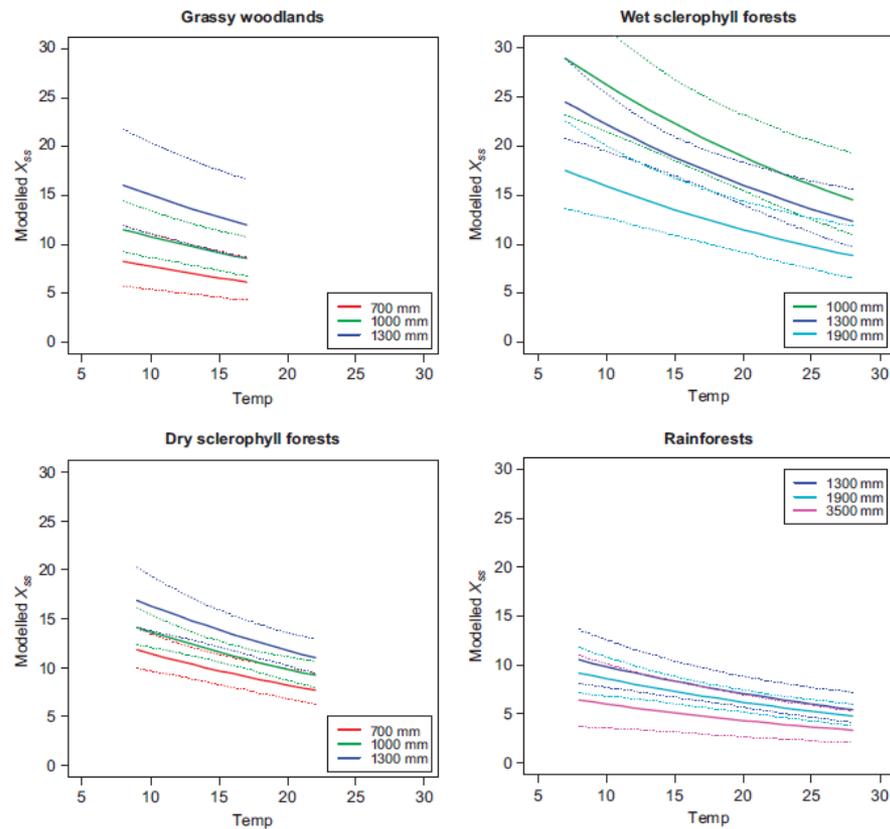
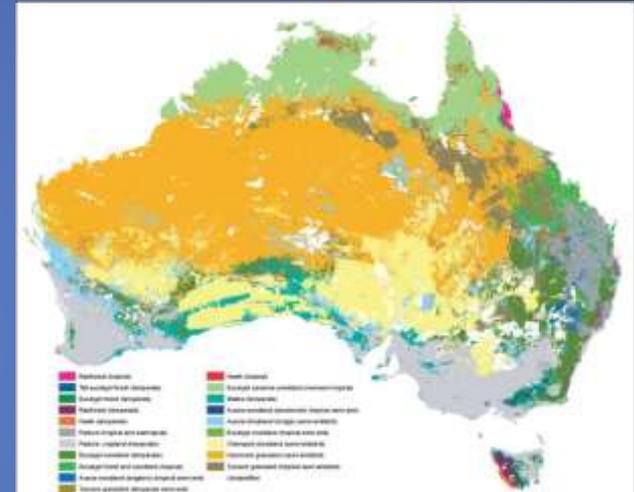
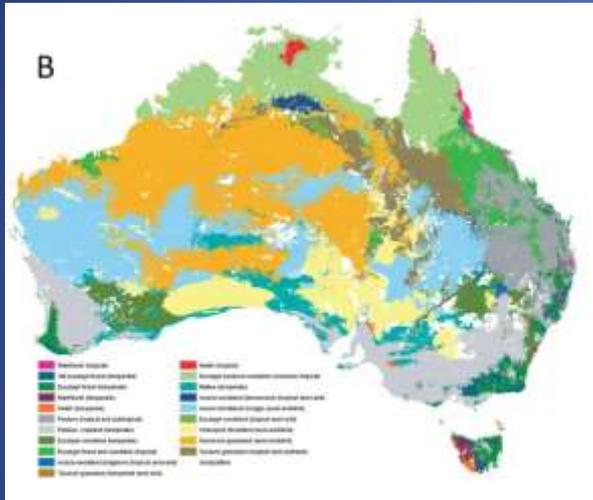


Fig. 3. Probability of arson as a function of time since fire (years) and FFDI. Predictions are made for mean values of all other variables in the best model.

Movable goal posts

Current climate

Projected 2070 climate



Problem Summary

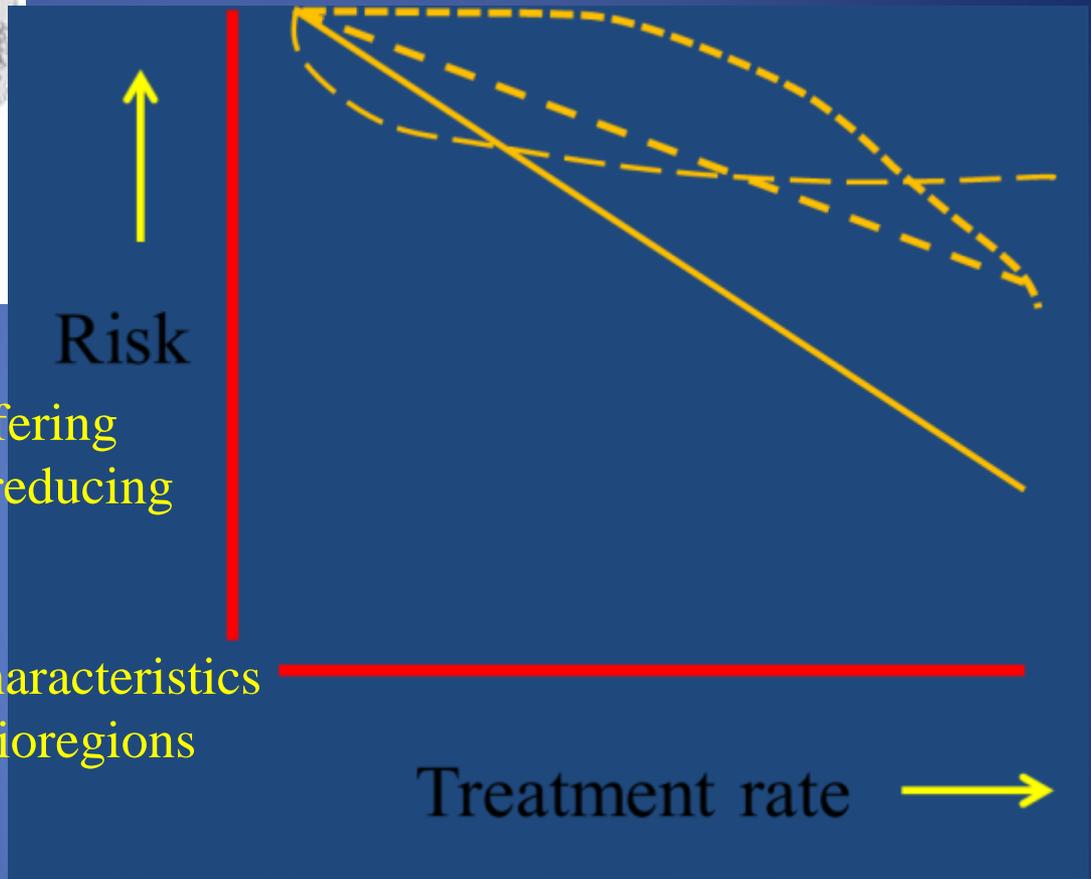
- There is 'no one size fits all solution' because PB effectiveness is related to biophysical underpinnings and human context
- The role for PB in risk mitigation is partly quantified
- Underpinnings and context are changing

The solution?



- The solution is a set of solutions that explicitly account for the range of biophysical influences and human context found in southern Australian Bioregions

The Prescribed Burning Atlas



Comparative performance of differing prescribed burning strategies in reducing risk to multiple values

Capacity to derive fire regime characteristics & risk solutions for individual Bioregions

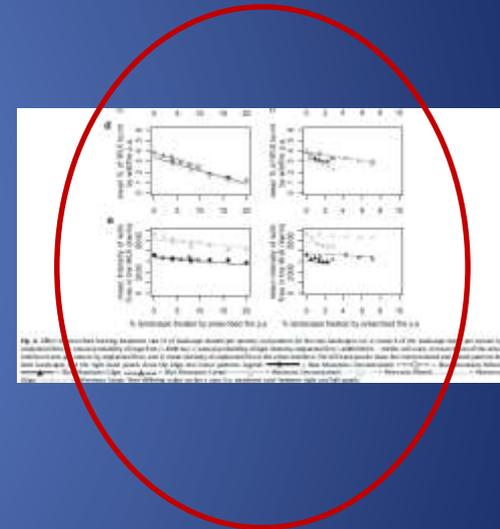
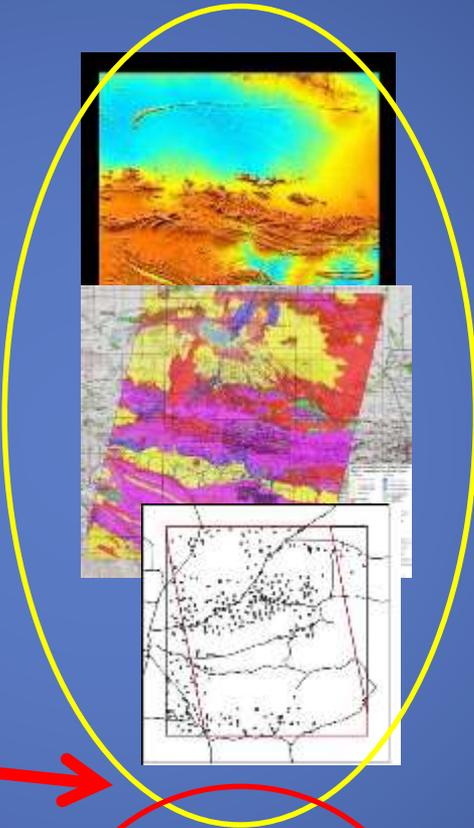
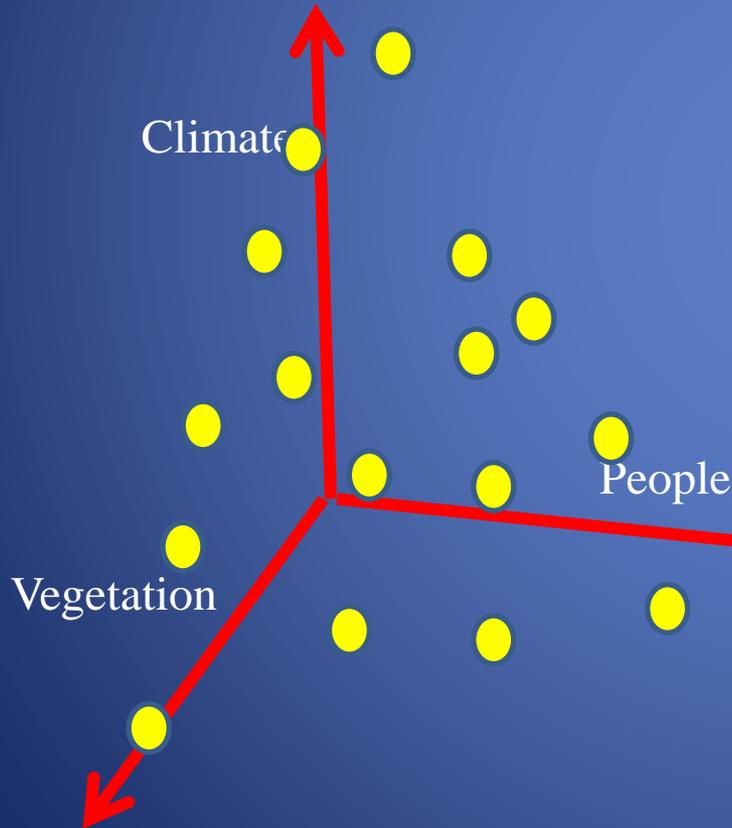
Present and future projections

Accessible interface

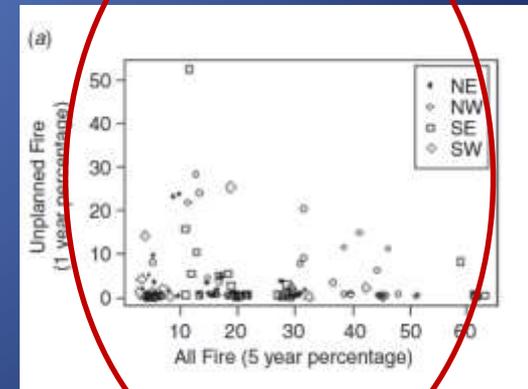
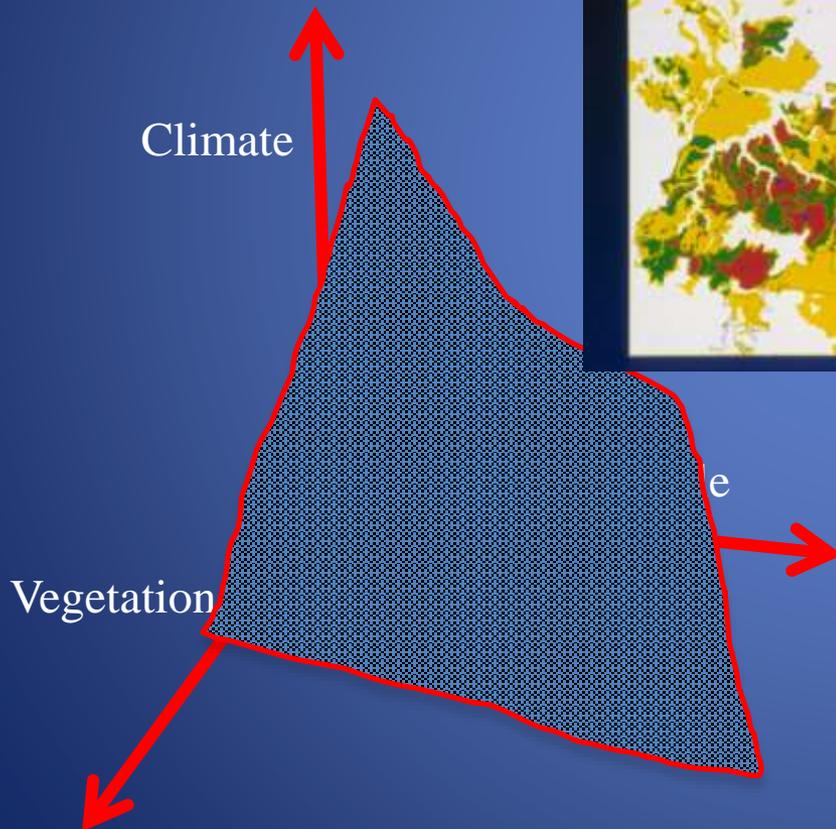
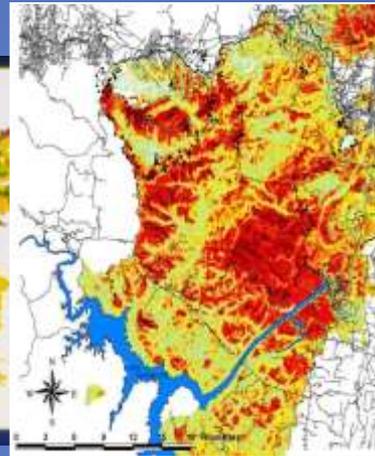
Amenable to updates via functional architecture that accounts for biophysical and human attributes of individual Bioregions

Treatment rate →

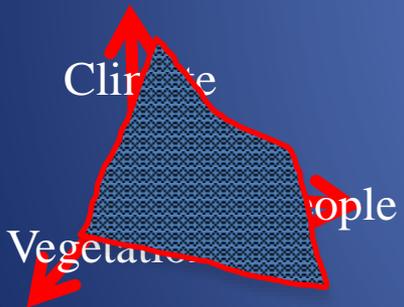
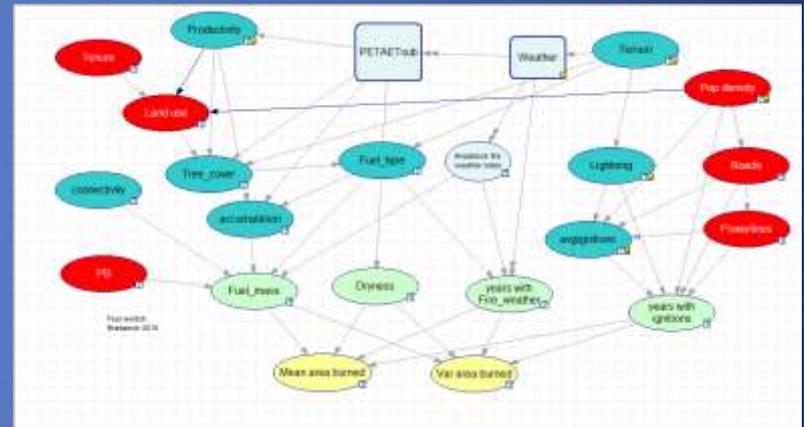
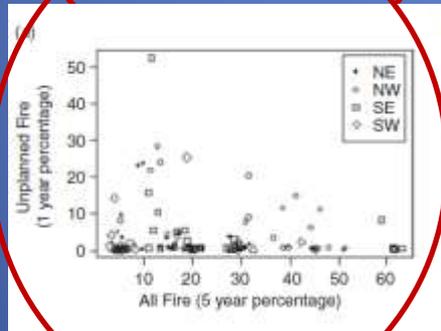
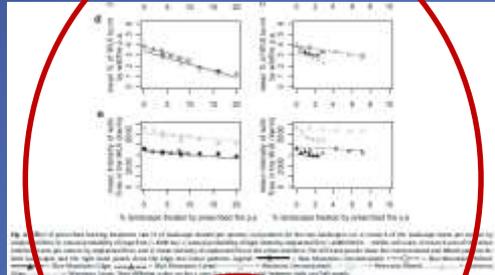
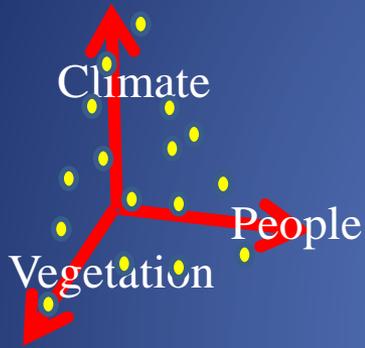
Stream 1: modelling of responses of fire regimes to alternative fire regime strategies via ordinated case studies (years 1 & 2)



Stream 2: validation via empirical analyses of responses of fire regimes across macro-environmental gradients (years 1 & 2)



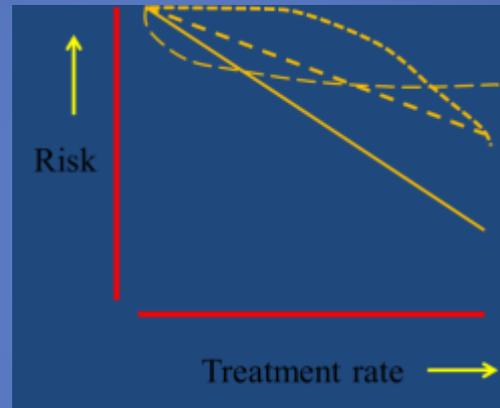
Stream 3: functional architecture for the Prescribed Fire Atlas (years 1 & 2)



Stream 3: Functional architecture for the Prescribed Fire Atlas (cont.) (years 2 & 3)

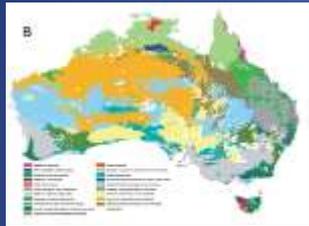


Response models for assessment of risk to water, carbon and vegetation

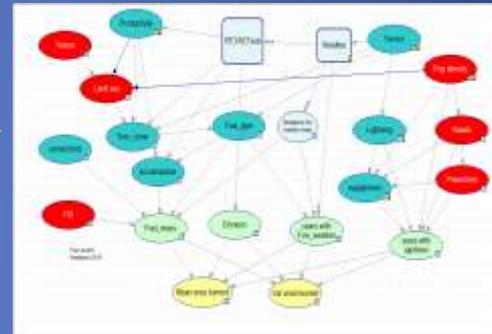
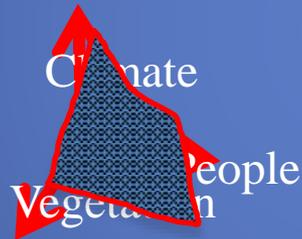


Risk in the future (years 2 & 3)

Current climate



Projected future climate



The Team

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Office of Environment & Heritage & UNSW ARC
Centre of Excellence for Climate System Science**

Mr Hamish Clarke

Additional Spin offs

Consolidated fire history (area burned and fire frequency) for southern Australia (mapped records plus RS)

Predictive models of fire severity (veg. consumption) as a function of weather, fuel age, terrain, veg. type

Predictive models for lightning and anthropogenic ignitions

Bioclimatic models of fuel parameters