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

Ross Bradstock

Centre for Environmental Risk Management of Bushfires,
University of Wollongong

Australian Government
Department of Industry and Science
Business
Cooperative Research
Centres Programme

University of Wollongong

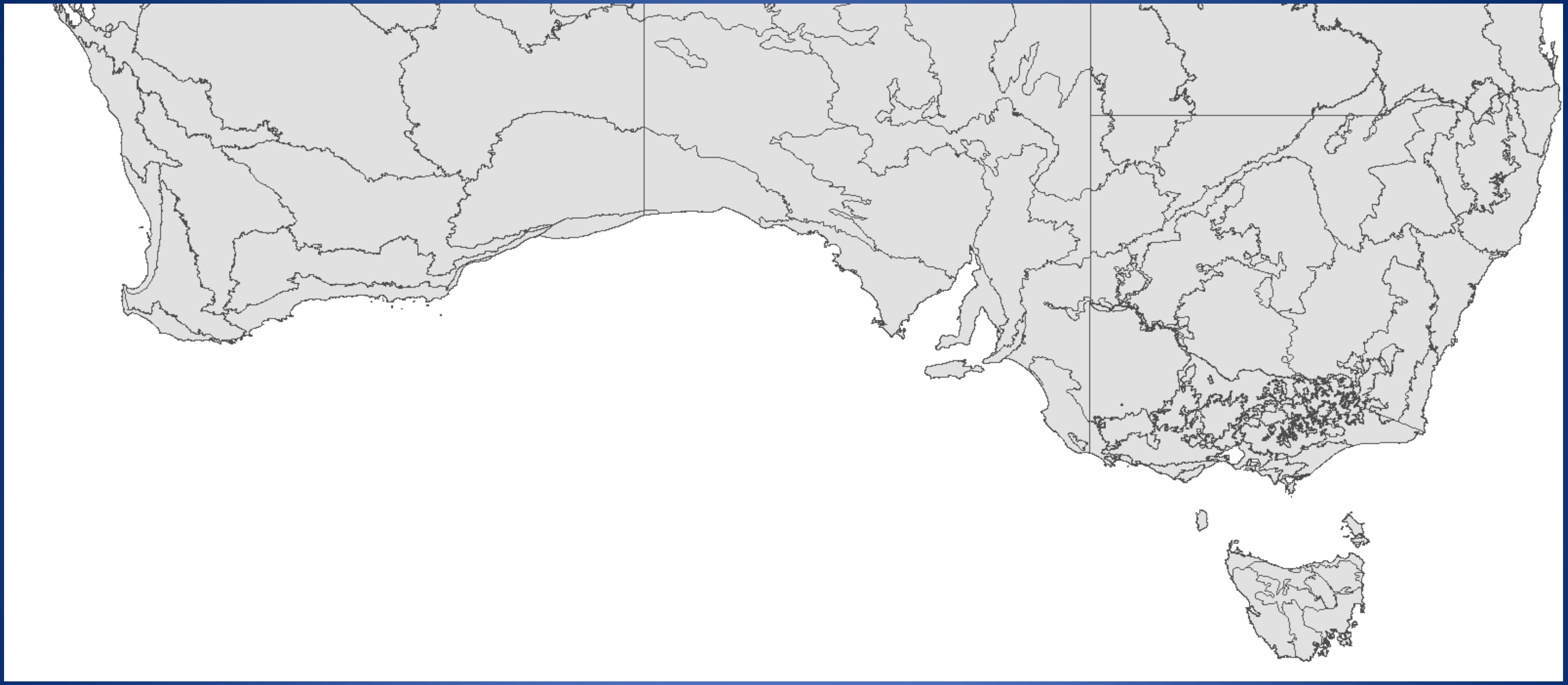
THE UNIVERSITY OF MELBOURNE

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

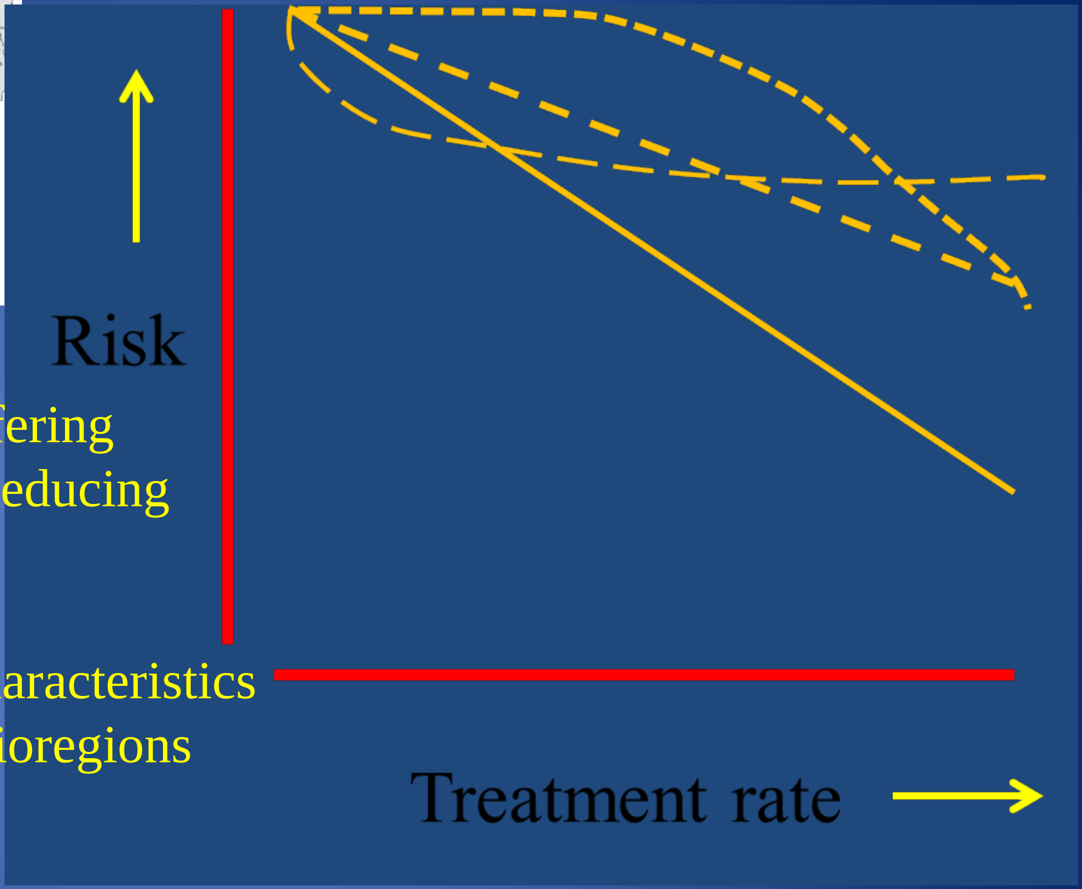
- Reiterate project approach
- Some cameos – importance of biophysical context

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



Treatment rate

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

The Team

CERMB, University of Wollongong
Professor Ross Bradstock, Mr Michael Bedward, Ms Bronwyn Horsey, Dr Owen Price
Research Fellow

Hawkesbury Institute for the Environment, University of Western Sydney
Dr Matthias Boer, Dr Luke Collins
Ms Tatiana Mondragon PhD Student (HIE funded – macro-scale fuel dynamics)

Department of Forest and Ecosystem Science, University of Melbourne
Dr Trent Penman
Research Assistant

Climate and Atmospheric Science Division, NSW Office of Environment & Heritage & UNSW ARC Centre of Excellence for Climate System Science
Dr Hamish Clarke

Project streams

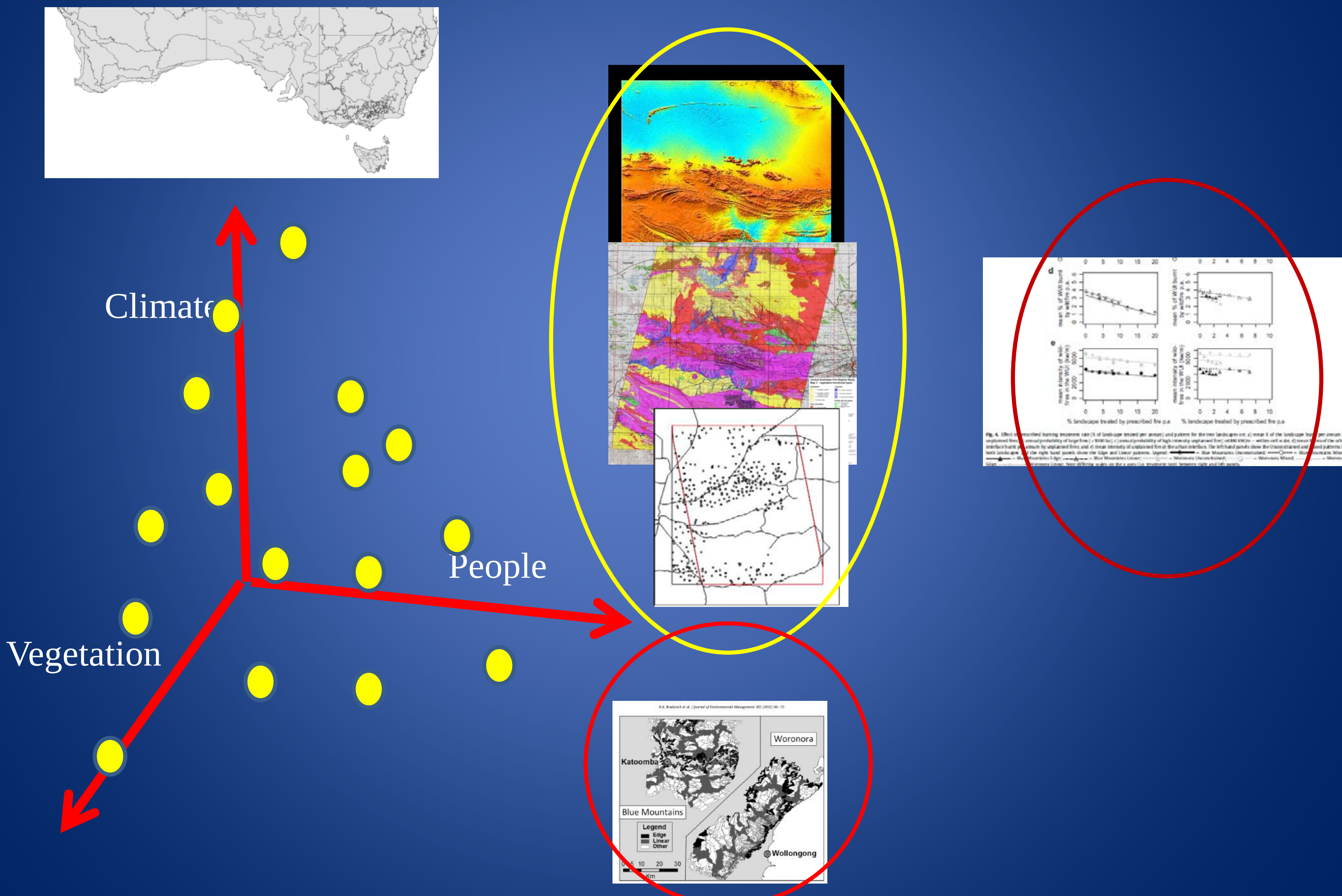
1: modelling of responses of fire regimes to alternative fire regime strategies via ordinated case studies (years 1 &2)

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

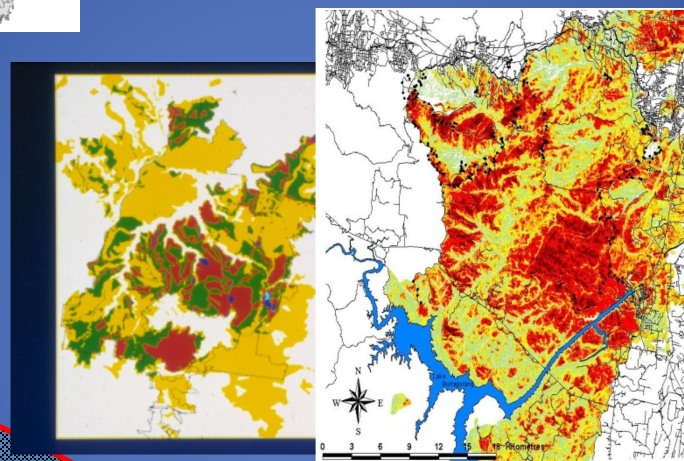
3: functional architecture for the Prescribed Fire Atlas (years 1 to 3)

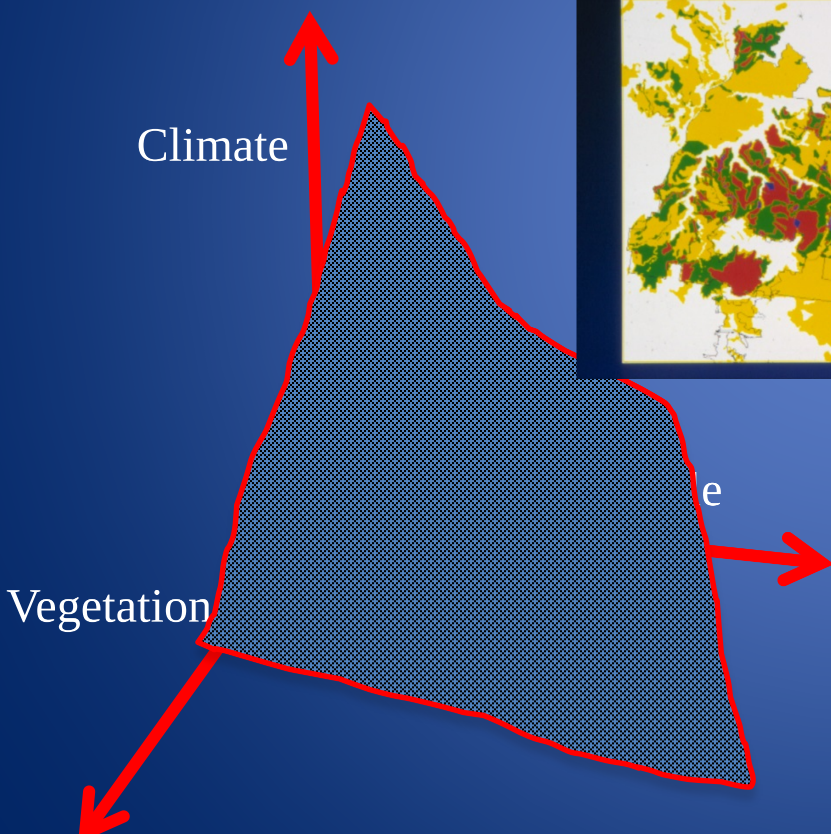
4. risk in the future (years 2 & 3)

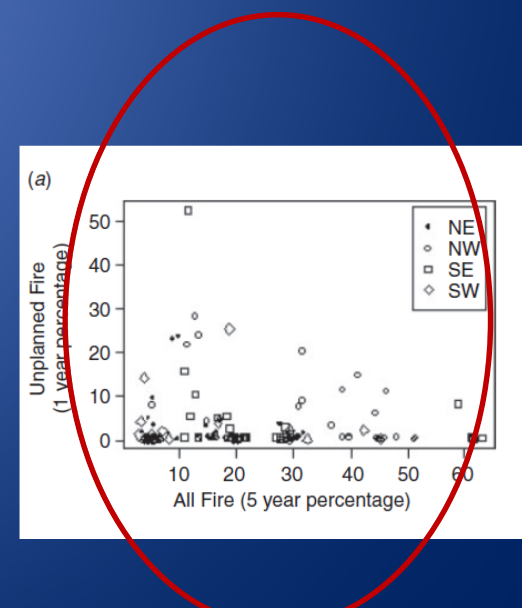
Stream 1: modelling of responses of fire regimes to alternative fire regime strategies via ordinated case studies (years 1 &2)



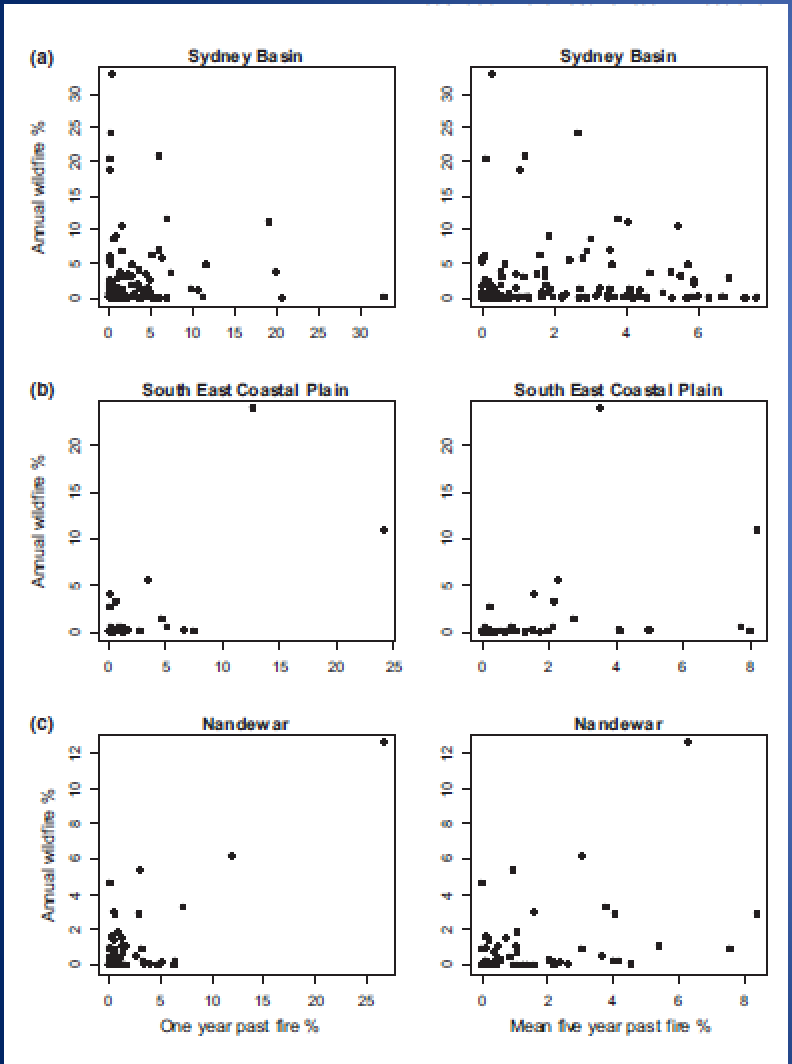
Stream 2: validation via empirical analyses of responses of fire regimes across macro-environmental gradients (years 1 & 2)

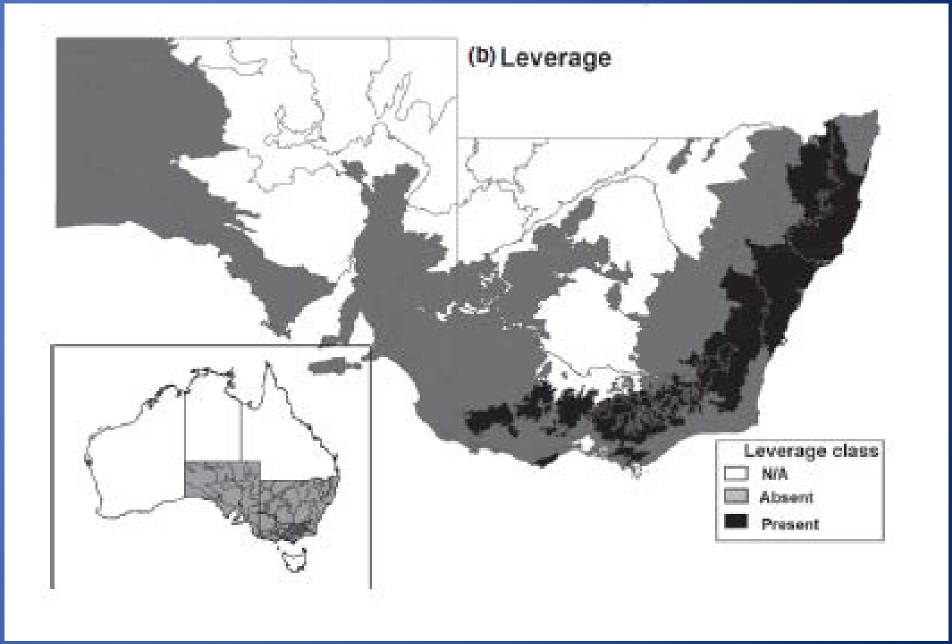






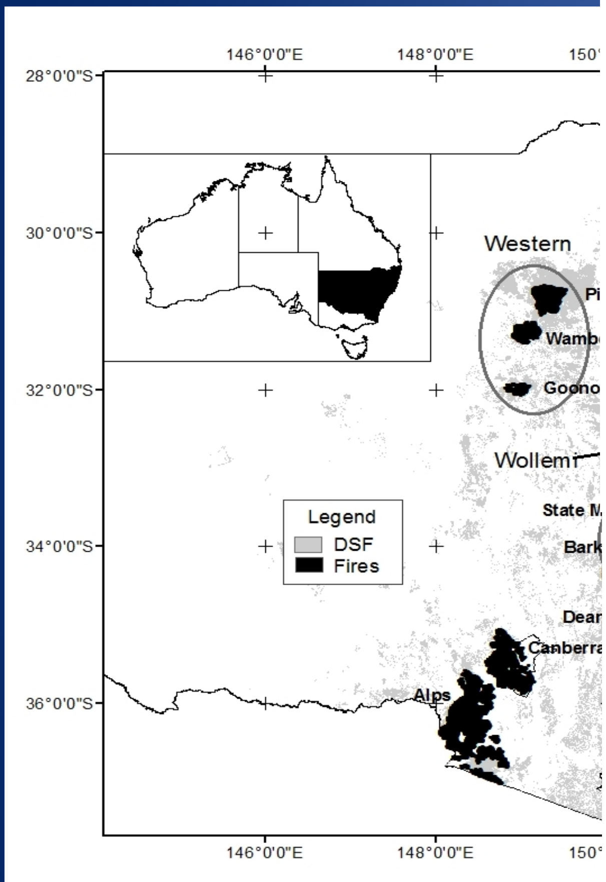
Use of fire history data to quantify potential for PB to reduce area burned by wildfires

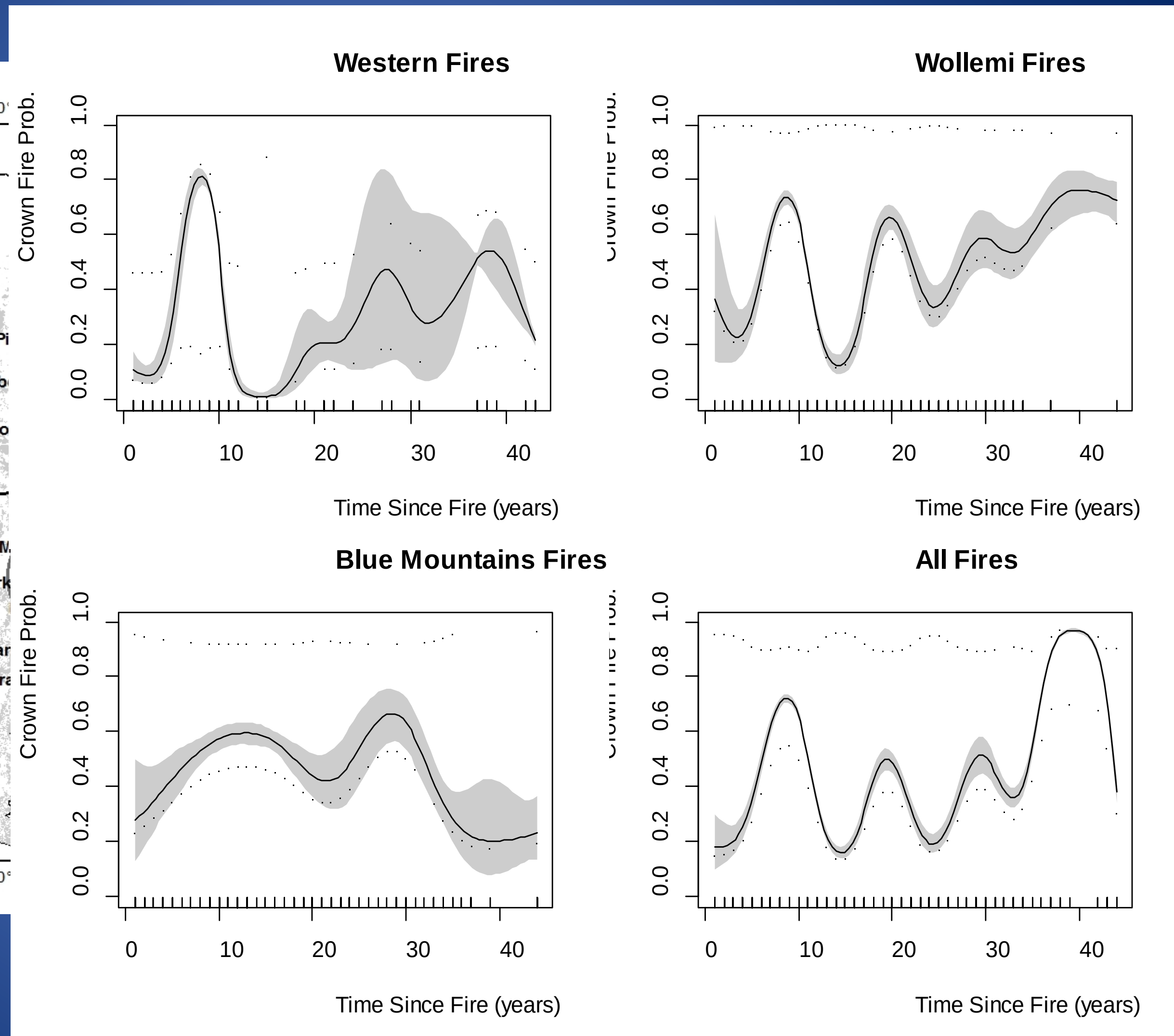




Price et al. (2015, *J Biogeog*)

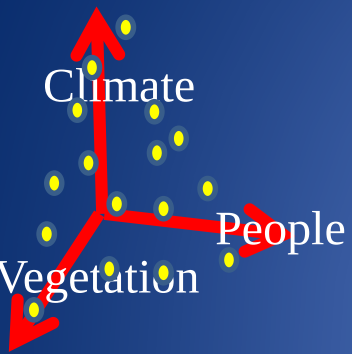
Meta analyses of biophysical controls on fire severity: e.g. effects of fuel age (TSF)

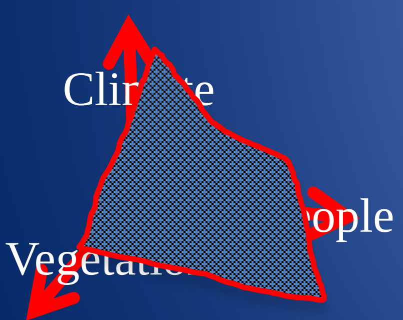


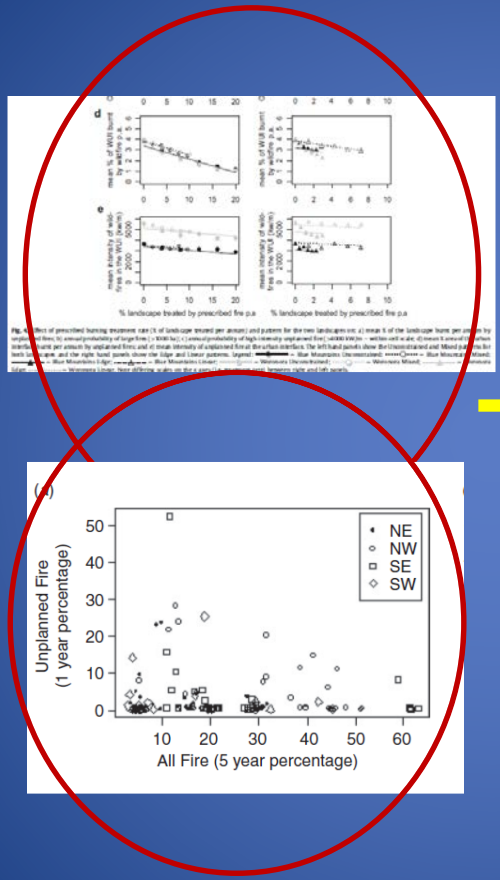


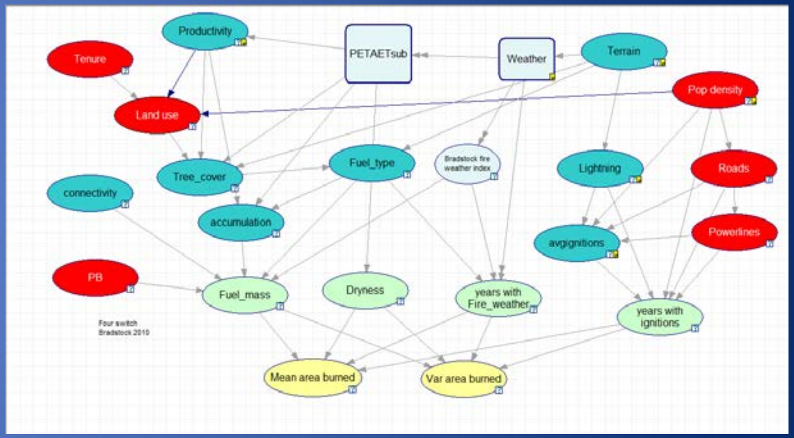
Storey & Price (in review)

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

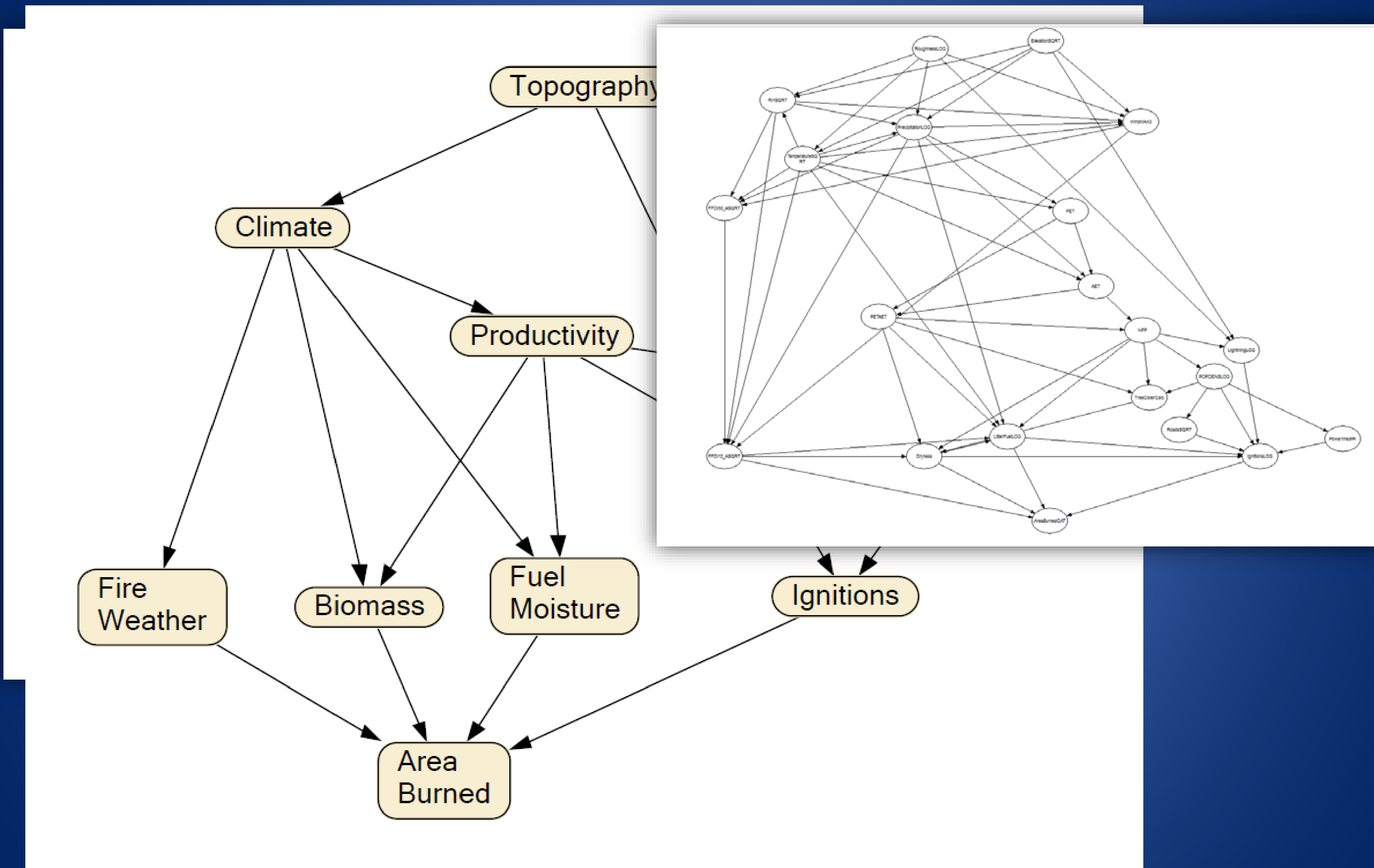






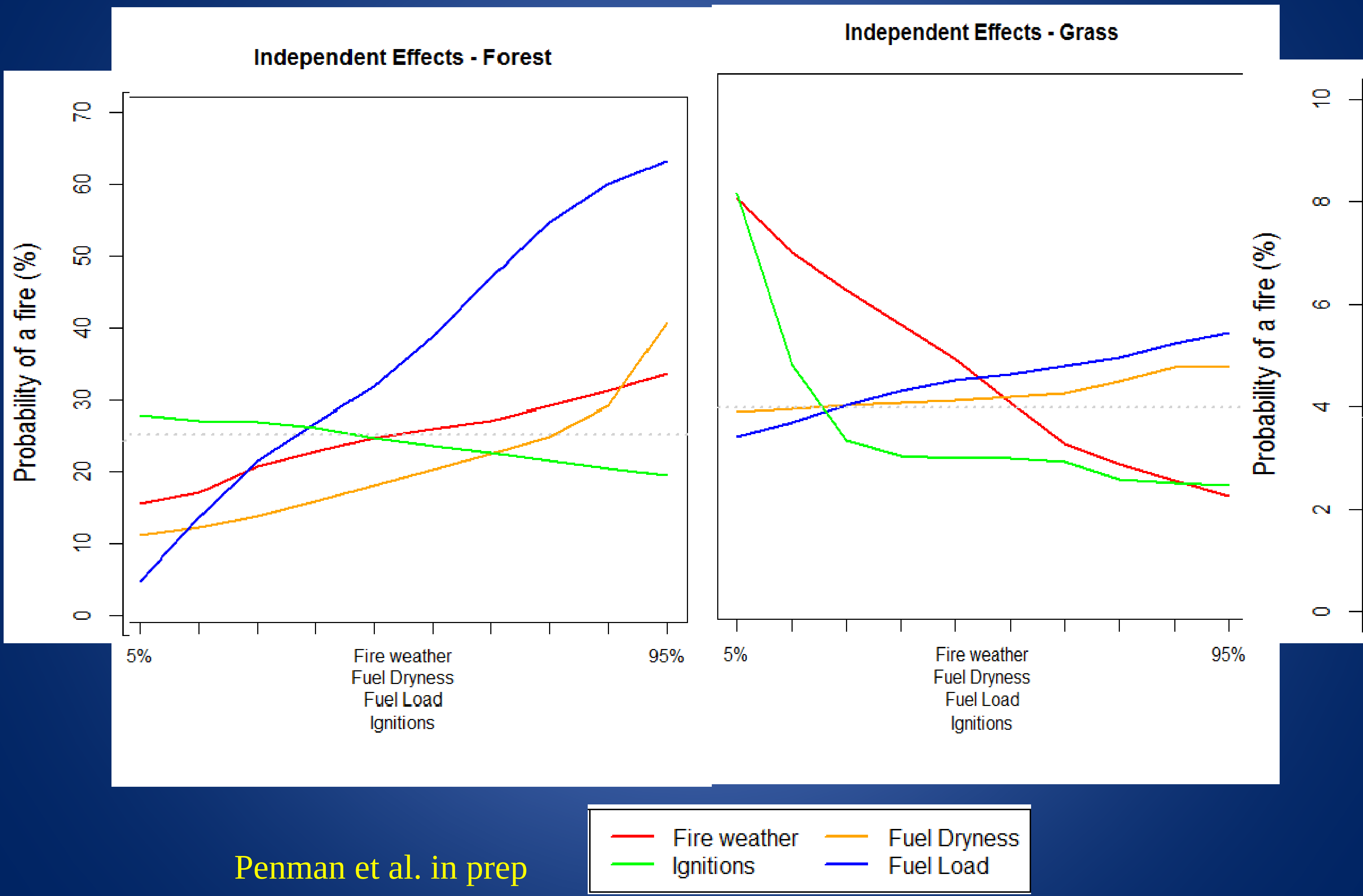


Development of ‘synthetic’ network modelling of biophysical influences on fire



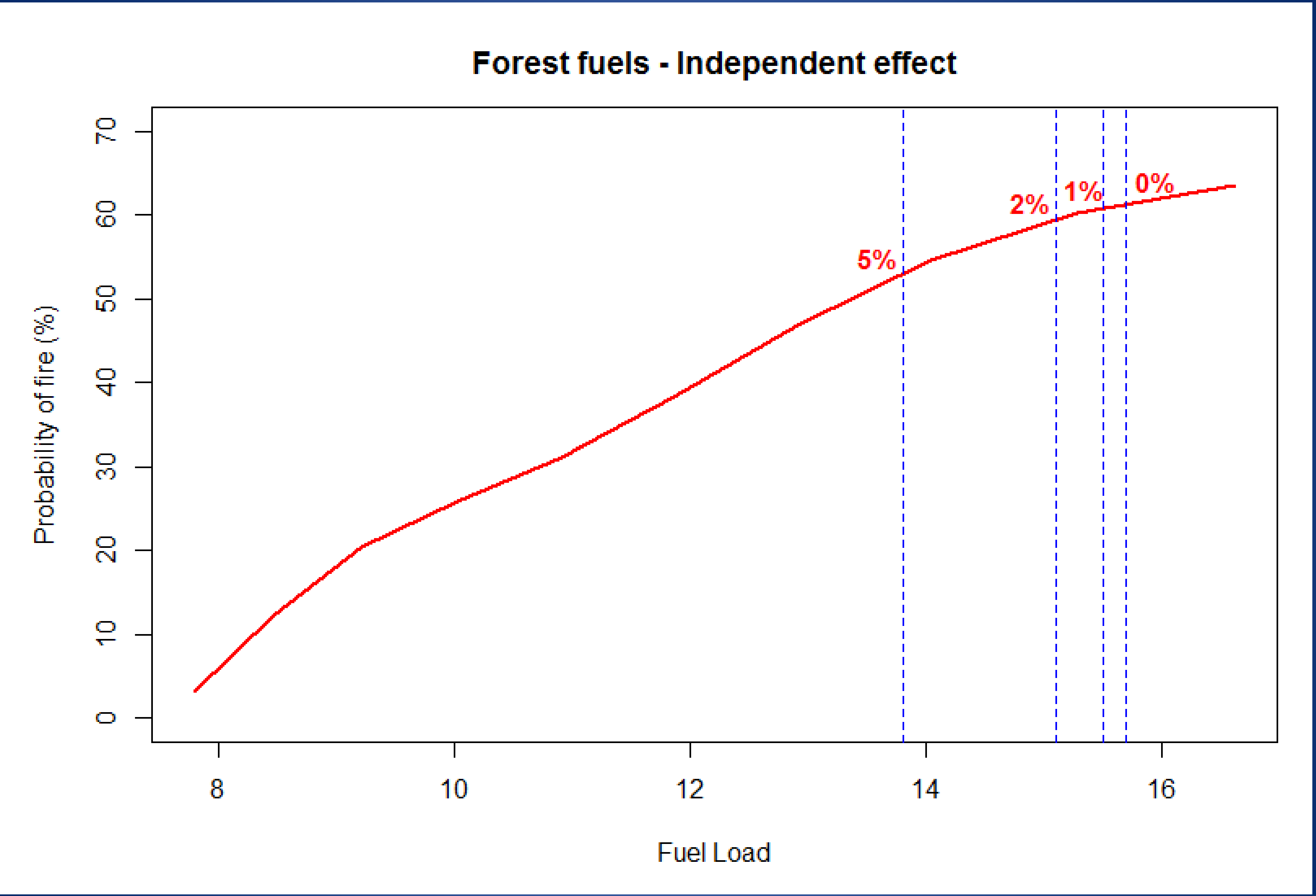
Penman et al. in prep

Effects of key biophysical influences on the probability of fire



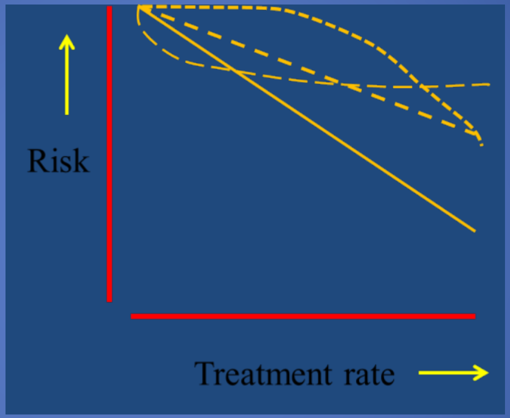
Penman et al. in prep

Effect of fuel treatment on probability of fire



Penman et al. in prep

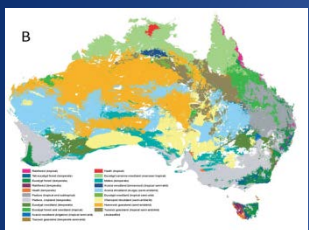
Stream 3: Functional architecture for the Prescribed Fire Atlas (cont.) (years 2 & 3)

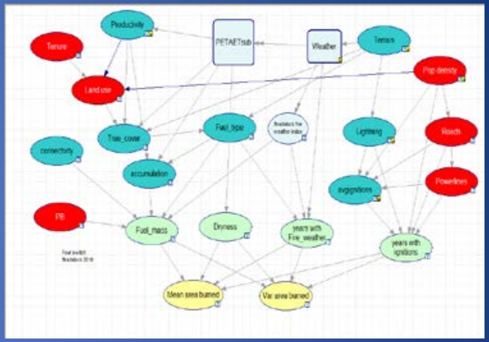


Reseponse models for assessment of risk to water, carbon and vegetation

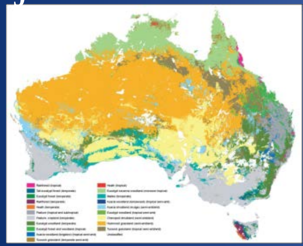
Risk in the future (years 2 & 3)

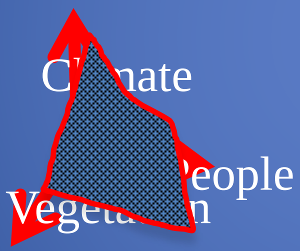
Current climate





Projected future climate





Questions?