bushfire&natural HAZARDSCRC

OPTIMISATION OF FUEL REDUCTION BURNING REGIMES FOR FUEL REDUCTION, CARBON, WATER AND VEGETATION OUTCOMES

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An Australian Government Initiative

CRC AUSTRALIA

THE UNIVERSITY OF SYDNEY

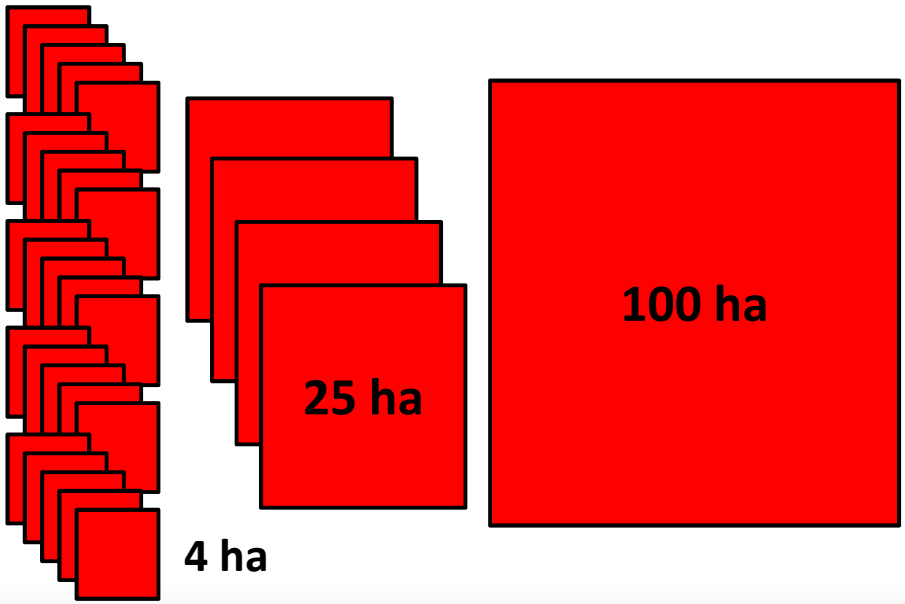
PROJECT TEAM

1) **University of Sydney Researchers**: Tina Bell, Tarryn Turnbull, Tom Buckley, Mark Adams, Postdoctoral Fellow-Data Manager/Field Coordinator (TBA), Postdoctoral Fellow-Spatial Modeller (TBA), Research Forester/Field Technician (TBA)
2) **End Users**: Belinda Kenny/Naomi Stephens (NSW NP&WS), Sandra Whight (Tasmania Fire Service), Neil Cooper (ACT Service/Parks), Susan Johnston (NSW RFS), Liam Fogarty (Vic DEPI), Craige Brown (Melbourne Water), Murray Carter/Lachie McCaw (WA DEC), Mike Wouters (SA DENR)
3) **Potential End Users**: Jacqueline Frzenchaff (SA Water), Bluey Devine (Vic CFA)

PROBLEM STATEMENT

Land mangers need to know:

1) What does it cost to implement each burn and how effective are they?
2) What is the cost to environmental values for the size of each burn?
   - Carbon outcomes
   - Water outcomes
   - Vegetation outcomes



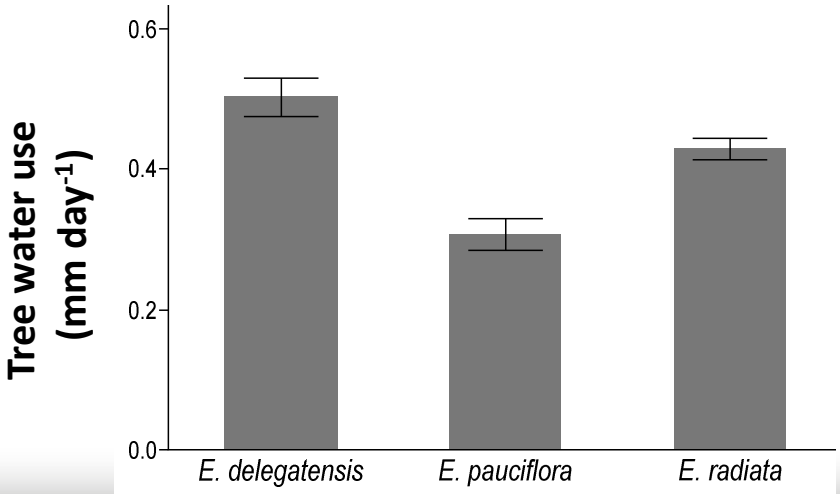
PROBLEM STATEMENT

Routine post-fire evaluation is already done by land management agencies. We will *value-add* by:

- Converting visual assessment to spatially explicit fuel loads (t ha^{-1})
- Quantify hydrological effects using our newly developed knowledge of hydrology, remote sensing and on-ground data
- Model carbon gains and losses using remote sensing and conversion rates of fuel consumption
- Assess vegetation variables as surrogates for diversity

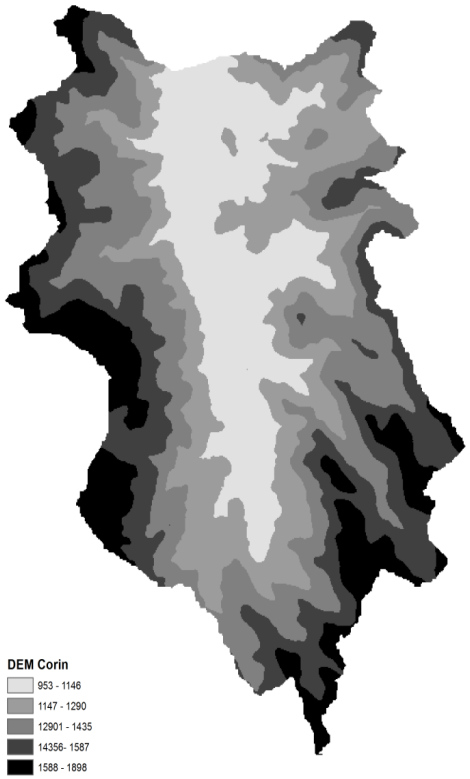
PROBLEM STATEMENT

- Alpine Ash forest is restricted to wet southern slopes
- Snowgum woodland restricted to higher elevations
- Peppermint forest is more generalist and grow in a range of conditions

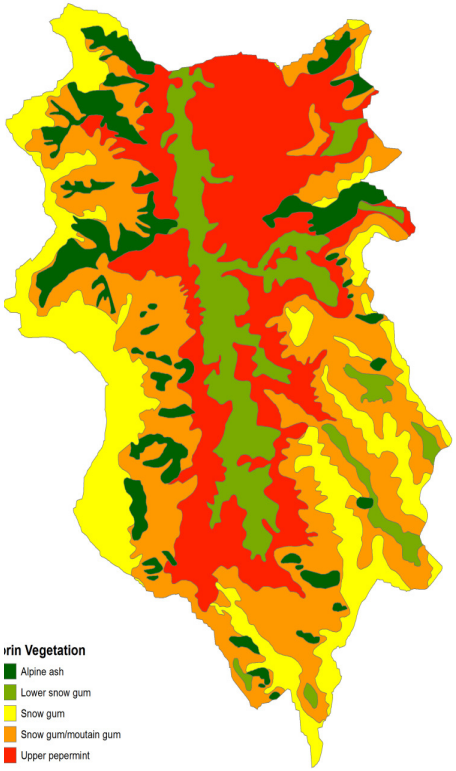


Corin Water Catchment – 197 km²

Elevation



Vegetation cover



OBJECTIVES

1) Design and test a statistical robust sampling scheme for use at each FRF
2) Development of field techniques to quantify key variables at an appropriate spatial scale
3) Application of sampling schemes and field techniques at each FRF (50-60 FRF by mid-2017)
4) Laboratory analysis of soil and plant samples
5) Data analysis and synthesis to assess the effects of size of FRF
6) Developing routine and reliable measures of effects of fire intensity on soil carbon
7) Developing spatially accurate measures of soil water storage and dynamics based on soil moisture content

MAJOR OUTCOMES EXPECTED

A predictive model and framework for planning of Fuel Reduction Burning (FRB)

Provision of projecting capacity of the effects of FRB on **fuel loads**, **broad vegetation types** and **carbon and water potential** (e.g. capacity for carbon sequestration, water yield) of the forests at a manageable spatial scale