Megafires in perspective

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CSIRO

What are Megafires?

- Mega whats?
- MegaWatts?
  - 10 MW – 20 MW?
- Mega numbers?
  - Number of ignitions decreasing since 1788
- Mega areas?
  - Area of large continuous burning increasing

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Historical fire

- 120 million years BP
  - Eucalypt pollen
  - Charcoal
  - Ignition by lightning
- 60 000 years BP
  - Ignition increased
- 200 BP – present
  - Ignition decreased
  - Suppression
  - More area burnt during extreme weather

The Aborigines

- Recognised that large continuous fire would threaten their livelihood
  - Lit multiple fires
  - Often on line ignition
  - Close to limits of extinguishment
- When aboriginal burning ceased
  - Number of fires decreased
  - Area and intensity increased

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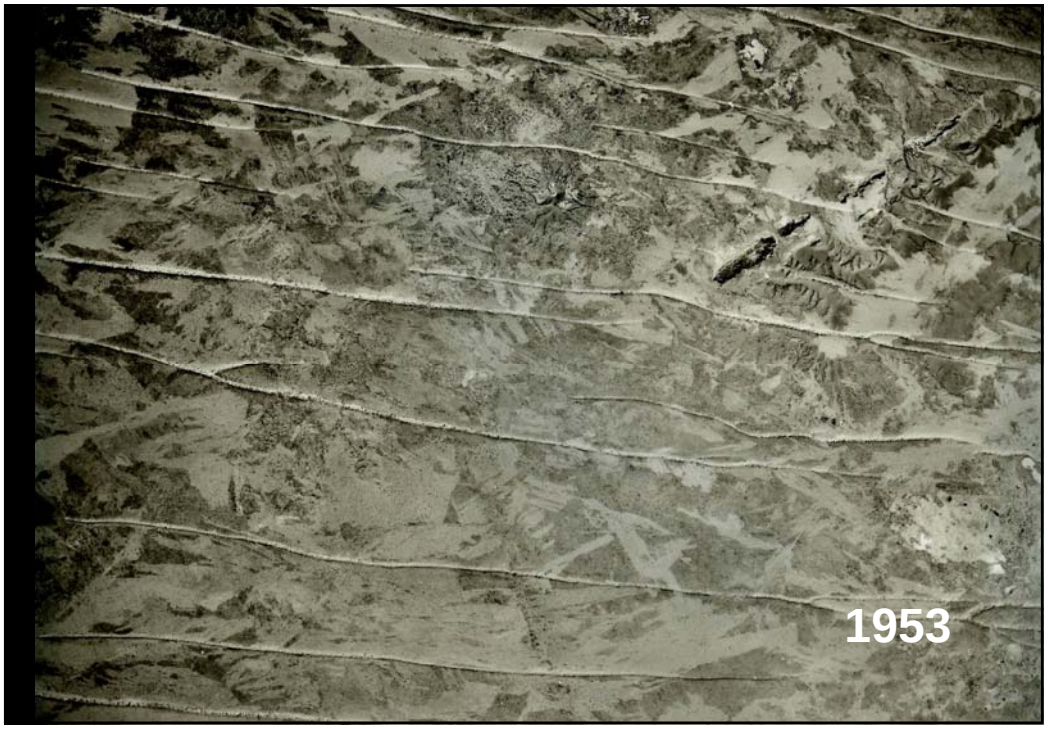
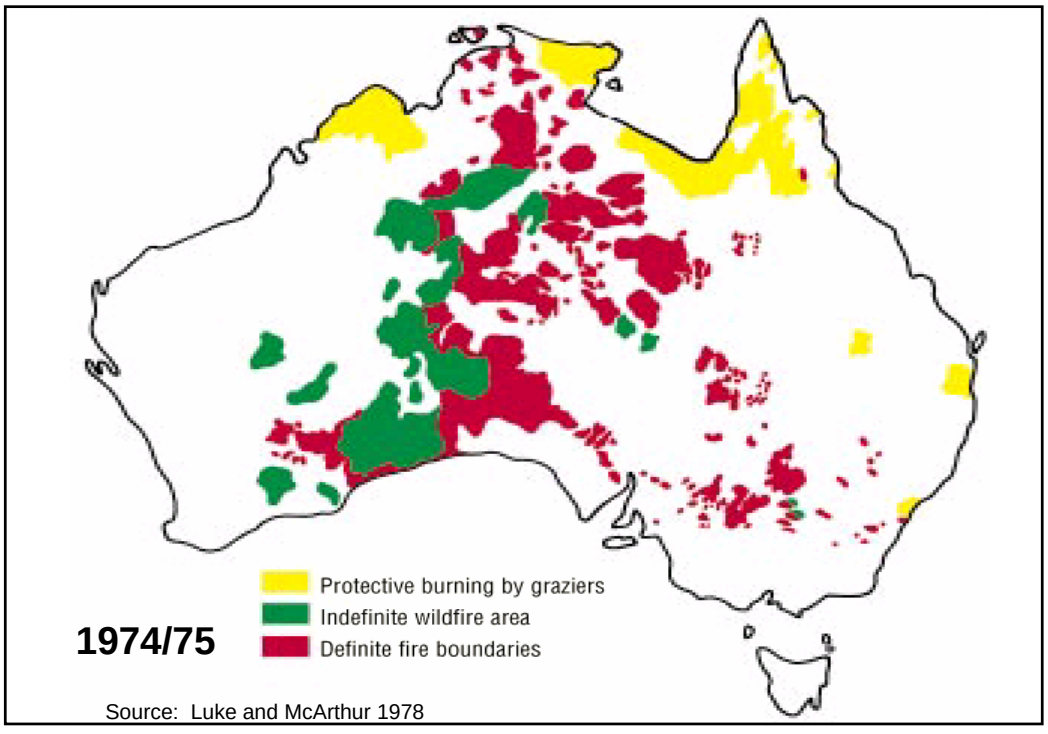
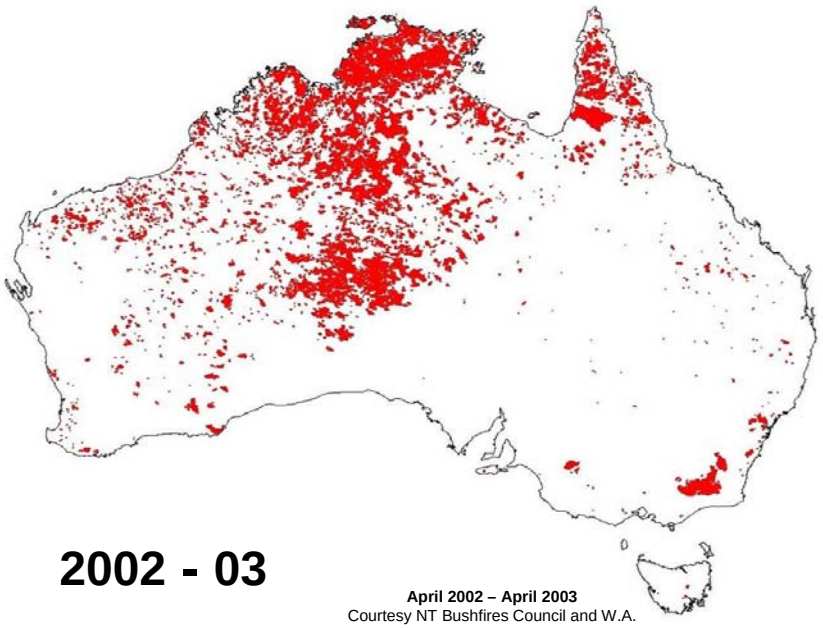




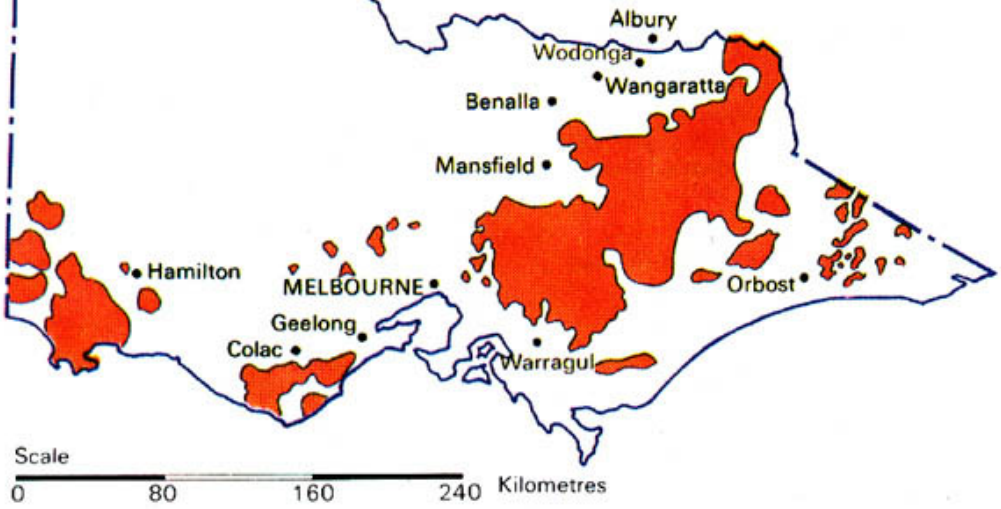
Source: Luke and McArthur 1978

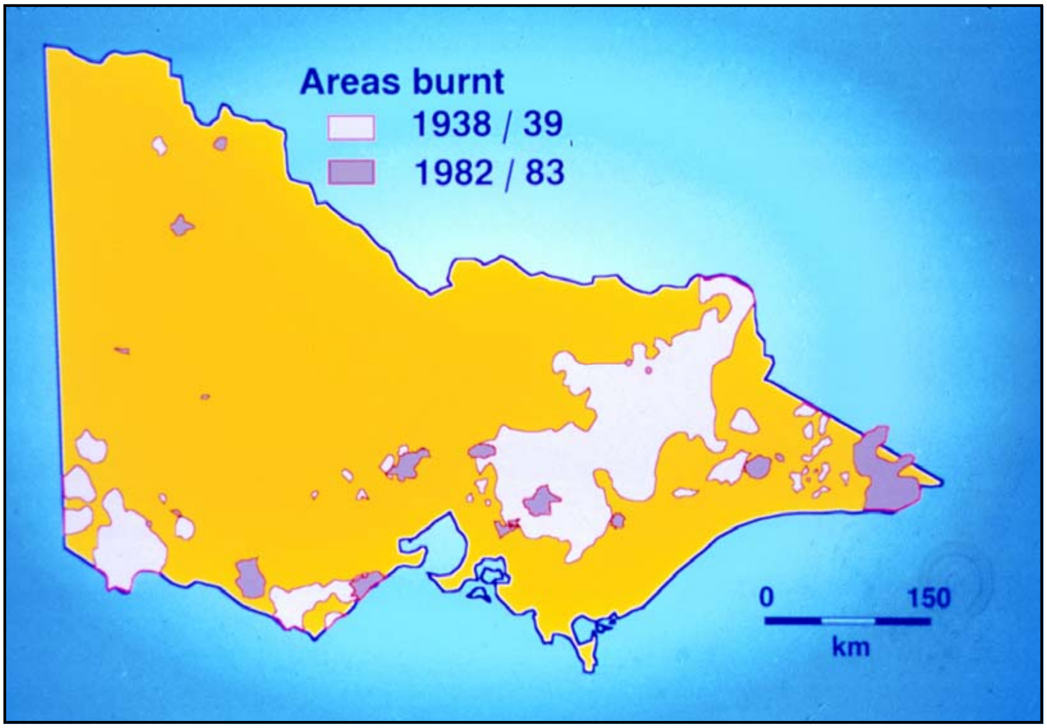


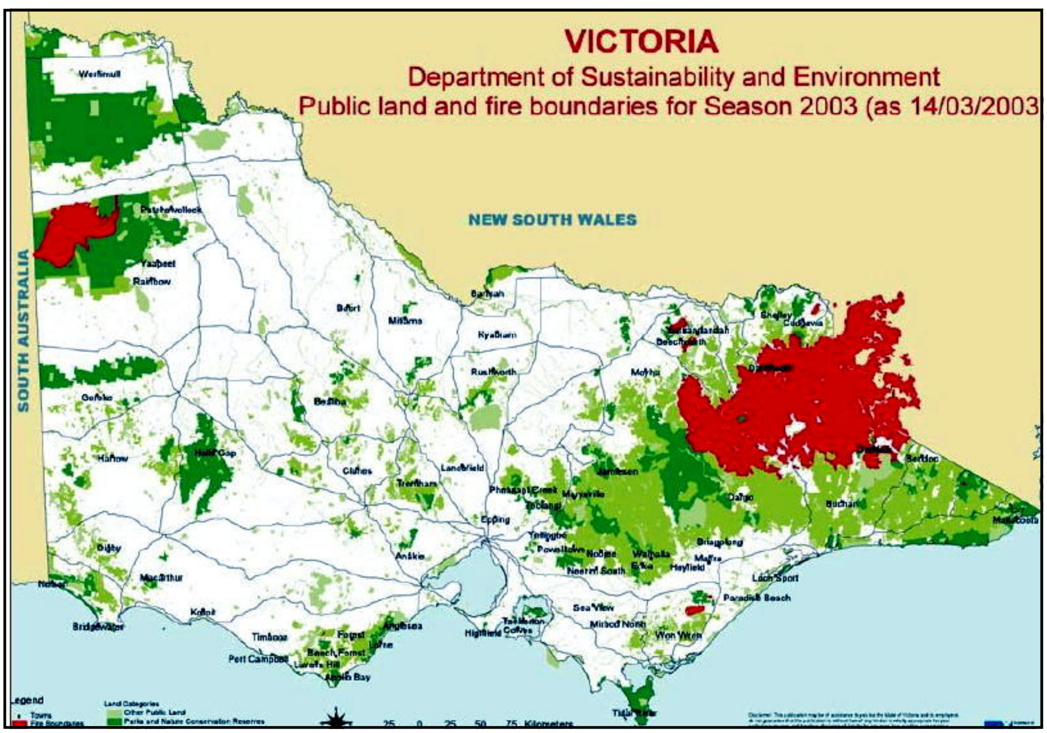
2002 - 03

April 2002 – April 2003
Courtesy NT Bushfires Council and W.A. DOLA

Victoria 1938/39




Areas burnt
1938 / 39
1982 / 83
0
150
km


VICTORIA
Department of Sustainability and Environment
Public land and fire boundaries for Season 2003 (as 14/03/2003
NEW SOUTH WALES
SOUTH AUSTRALIA

Characteristics of Megafires

- Any fire burning heavy fuel during prolonged drought under extreme weather
  - Duration of tall flames determined by fine fuel
  - Heat damage determined by total fuel consumption
  - 60-70% of total area burnt at high intensity
  - Very few unburned areas within perimeter
- Megafires may exhibit high rates of spread
  - Parts of perimeter exposed to high wind
  - Interaction between fires and convection

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Flame duration V Fuel diameter

$T_r=1.7d^{1.686}$
Where T_r= period of flaming (min)
d= diameter of fuel (cm)

2.5 mm	**10 seconds**
1.0 cm	**1.7 minute**
2.0 cm	**5.4 minutes**

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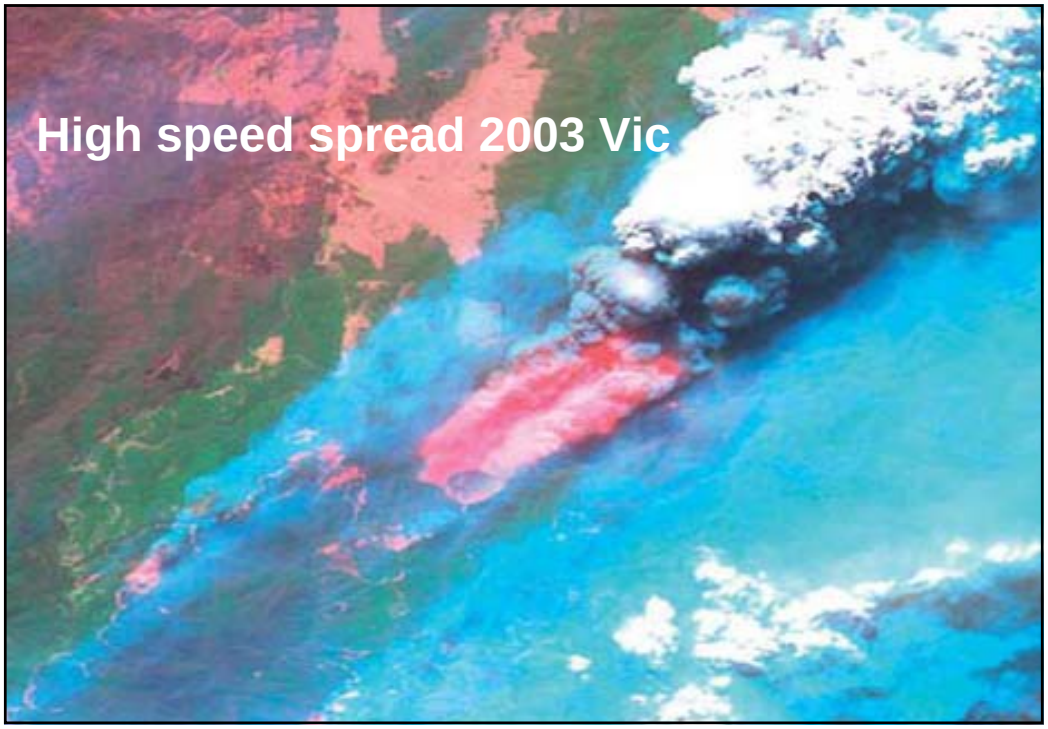
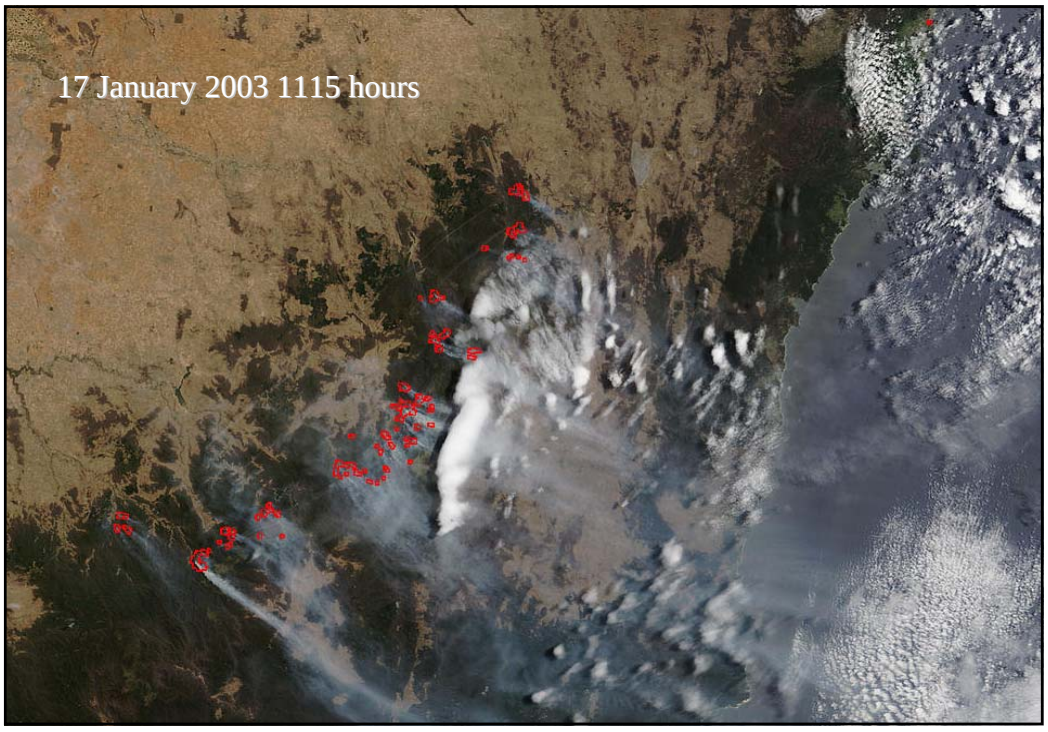
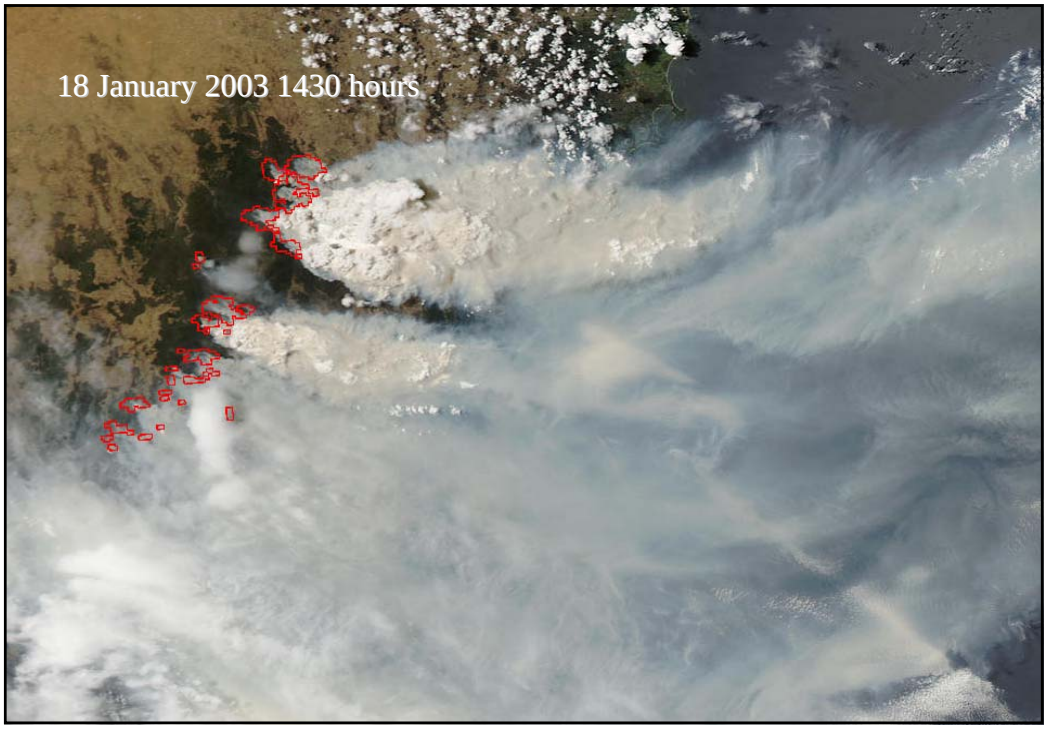
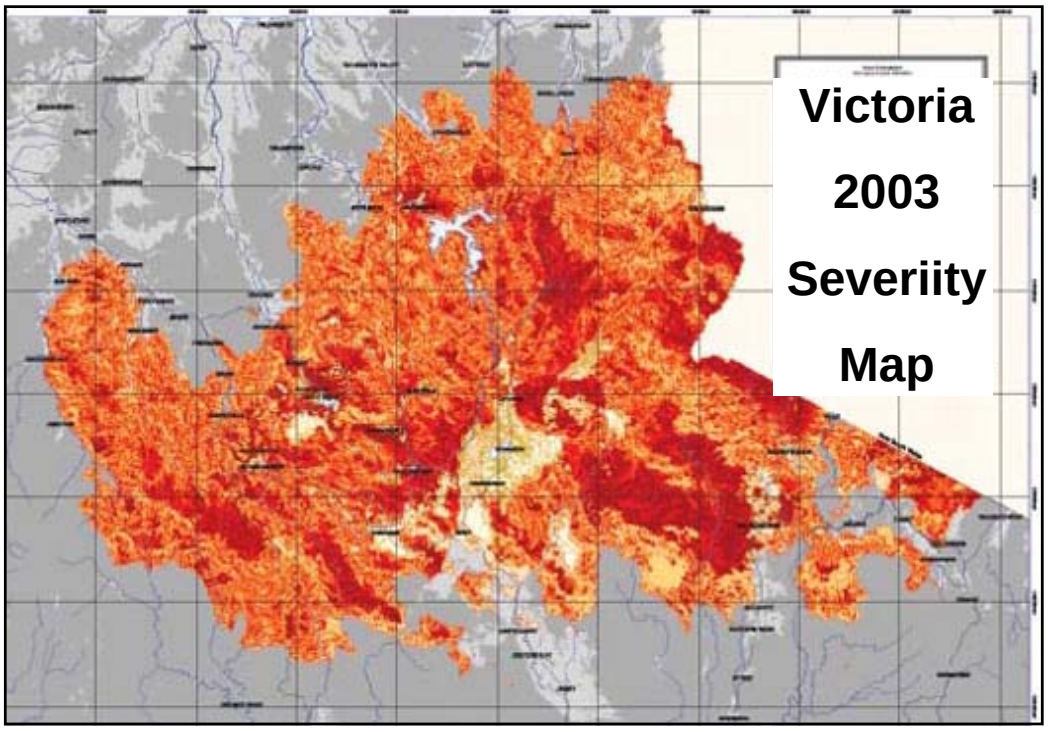
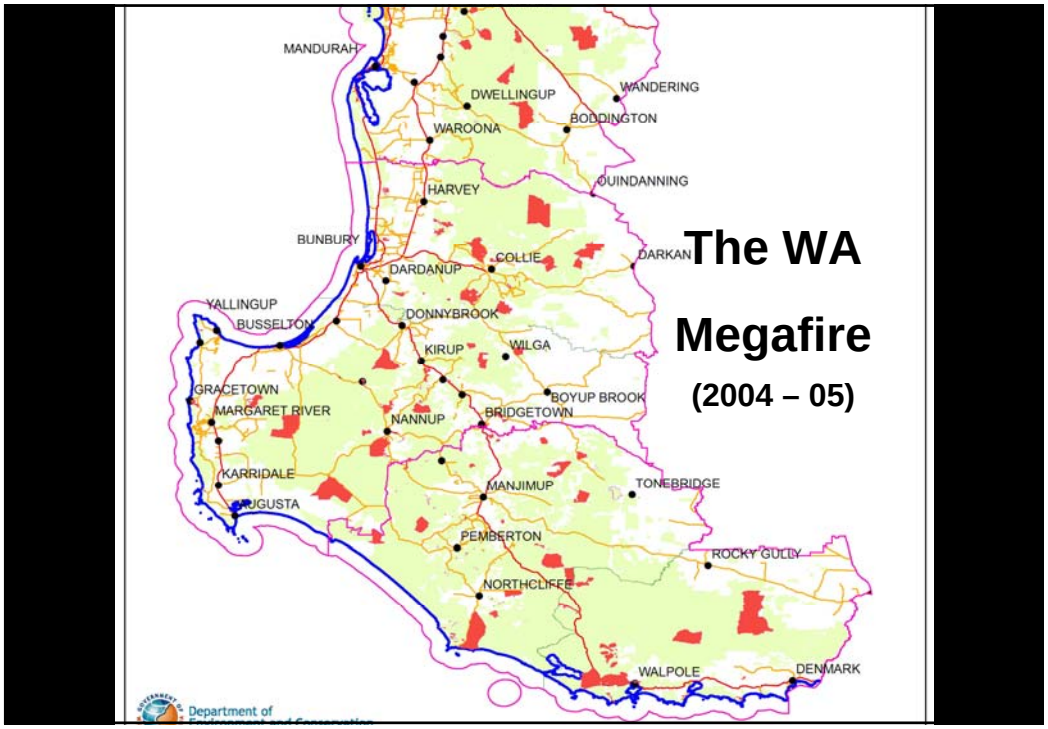
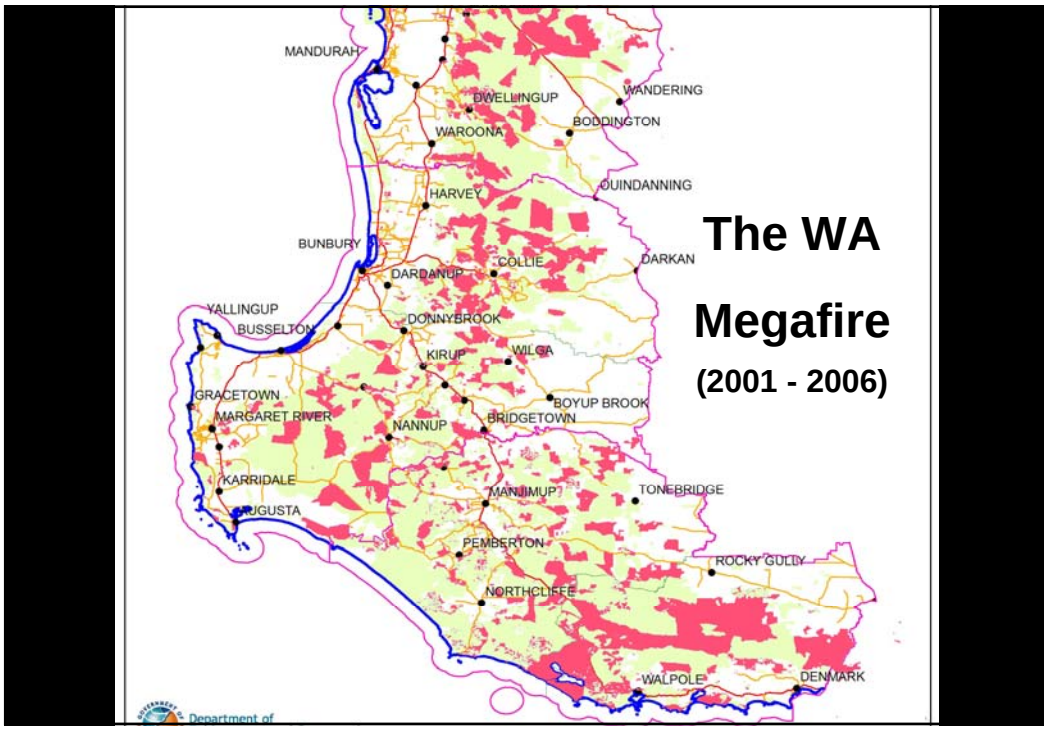

High speed spread 2003 Vic


17 January 2003 1115 hours


18 January 2003 1430 hours


Victoria
2003
Severiity
Map


MANDURAH
DWELLINGUP
WANDERING
BODDINGTON
WAROONA
QUINDANNING
HARVEY
BUNBURY
COLLIE
DARKAN
DARDANUP
YALLINGUP
BUSSELTON
DONNYBROOK
KIRUP
WILGA
GRACETOWN
MARGARET RIVER
BOYUP BROOK
NANNUP
BRIDGETOWN
KARRIDALE
MANJIMUP
TONEBRIDGE
AUGUSTA
PEMBERTON
ROCKY GULLY
NORTHCLIFFE
WALPOLE
DENMARK
The WA
Megafire
(2004 – 05)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TONEBRIDGE
AUGUSTA
PEMBERTON
ROCKY GULLY
NORTHCLIFFE
WALPOLE
DENMARK
The WA
Megafire
(2001 - 2006)

The Problem

We live in a highly fire prone environment. We have had megafires in the past and we will have them in the future.

There is nothing special about them other than large areas are burnt at high intensity.

We will always burn large areas – our choice is whether we burn at high or low intensity.

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Research

- Quantify the hydrological damage
  - 2007 fires (URGENT)
- Quantify losses of fauna
- Application of prescribed fire
  - Mega ignitions at minimal burning conditions
  - Burning prescriptions
- Responses of specific fauna to fire
  - Fauna management prescriptions

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Thank you