

HOW BIG IS THE BUSHFIRE SMOKE PROBLEM?

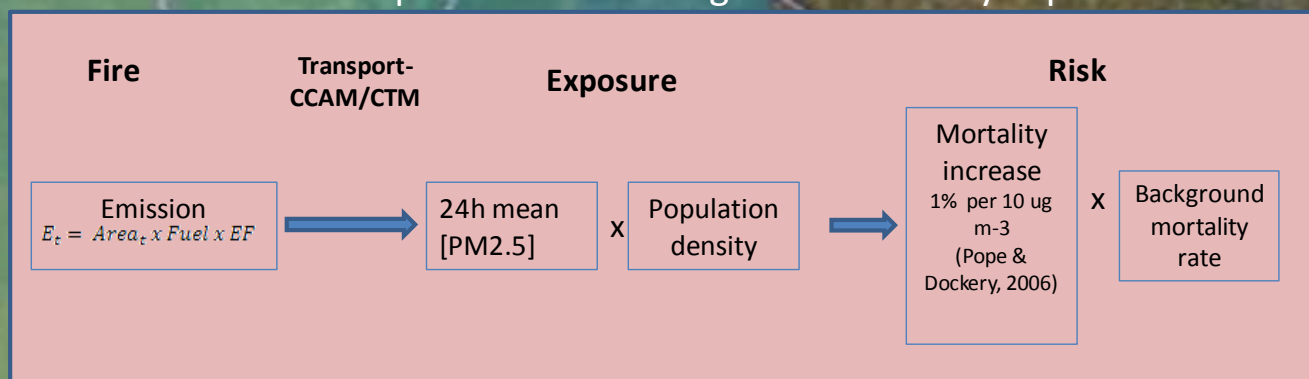
EMISSION TO IMPACT

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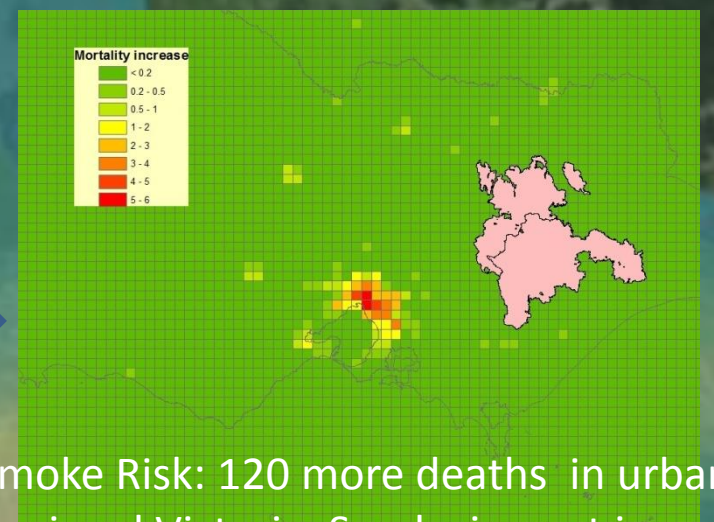
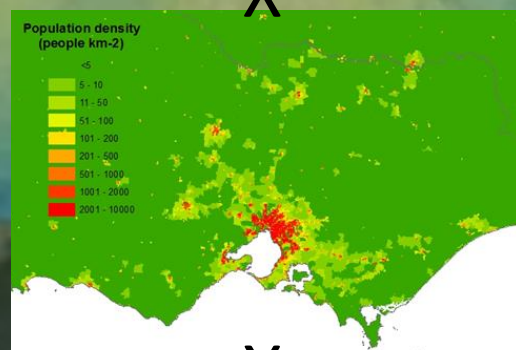
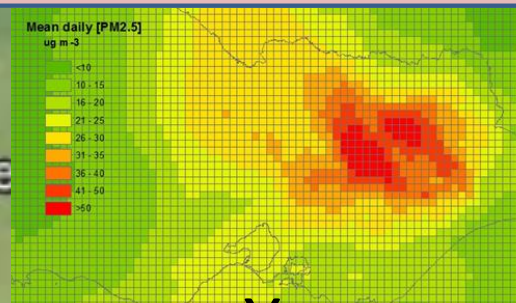
Smoke generated from fires can transport a health risk from the fire front to a very wide region, often extending beyond the state. The two big fire events of the last decade in Victoria show when and why smoke needs to be factored into the risk analysis. We look at impact on mortality as an indication of relative effect.

The method: Over the event duration and spatial domain Integrate mean daily exposure and risk to give total impact



CASE 1: 2006/7 Alpine fires

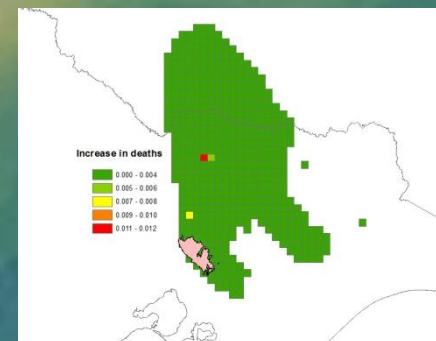
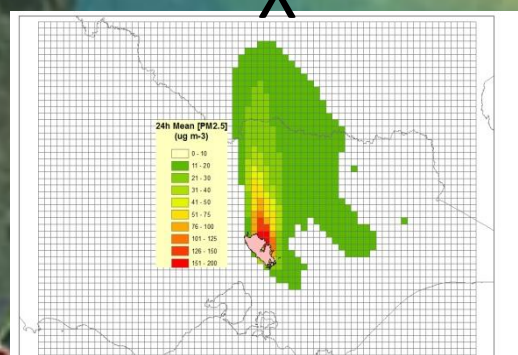
Area: 1.1 Mha
Duration: 60 days
Impact: No deaths at fire front



Smoke Risk: 120 more deaths in urban and regional Victoria. Smoke impact is severe.

CASE 2: Kilmore E, Black Saturday, 2009

Area: 0.28 Mha
Duration: 2 days
Impact: 173 deaths at fire front



Smoke Risk: 0.1 more deaths in regional Victoria. Smoke impact is minor

Kilmore E plume was injected initially high into the troposphere dispersing to the SW then was diverted north with the wind change. In contrast to the direct impacts, the smoke impact was minor and occurred mostly at night when the reduced mixing depth brought the smoke to surface. In contrast, long duration, lower injection height and widespread dispersion of large forest fires transport smoke to urban areas and regional centres where the number of people impacted is large. In these cases the smoke impacts are severe and can far outweigh other direct impacts on people.