

*Welcome to*

Session 34:

# Responding to the effects of climate change on communities, parks and protected areas



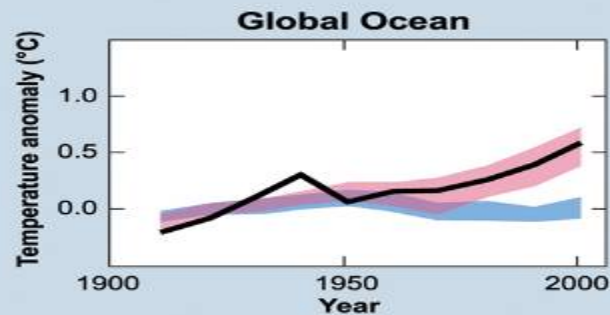
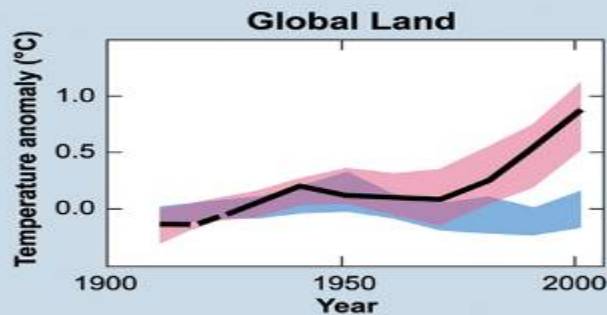
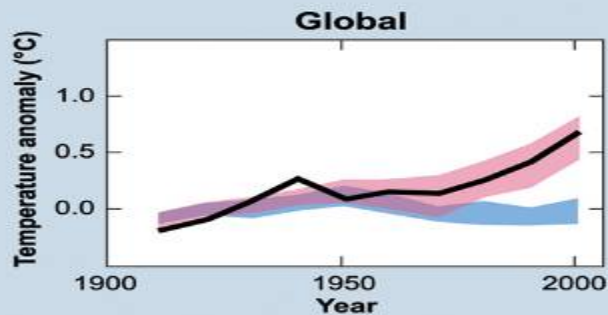
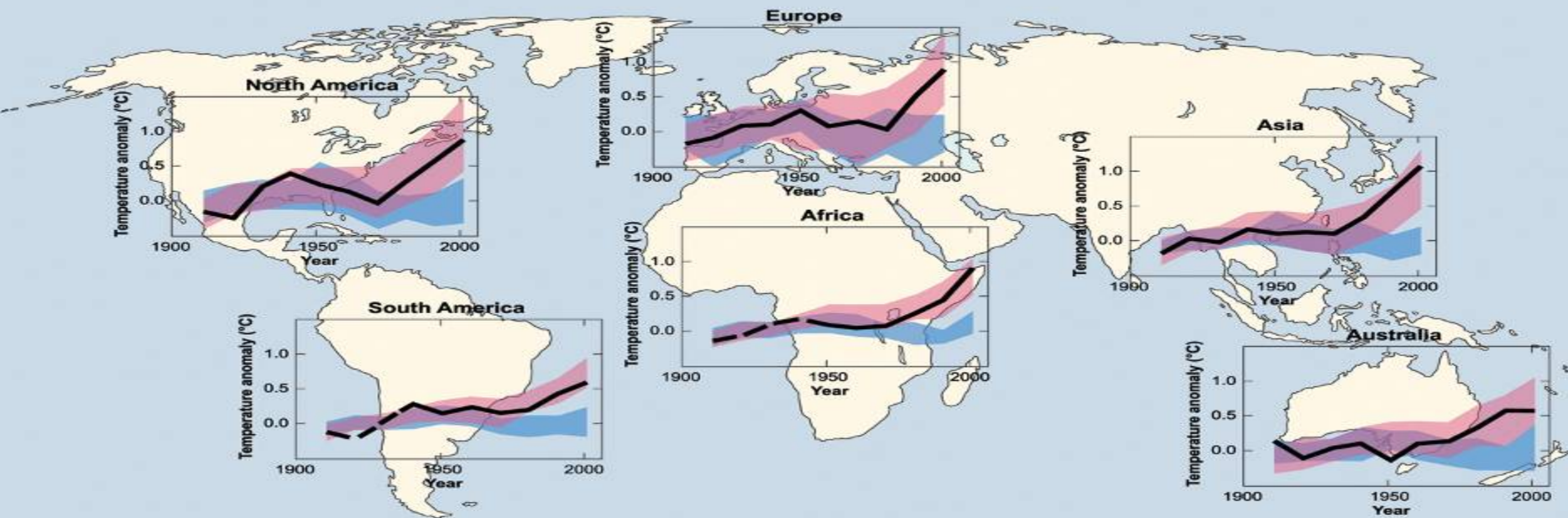


# **Protected Areas, Communities, and Climate Change**

**By**

**Jeffrey A. McNeely**

**Department of National Parks and Wildlife  
Conservation, Thailand**

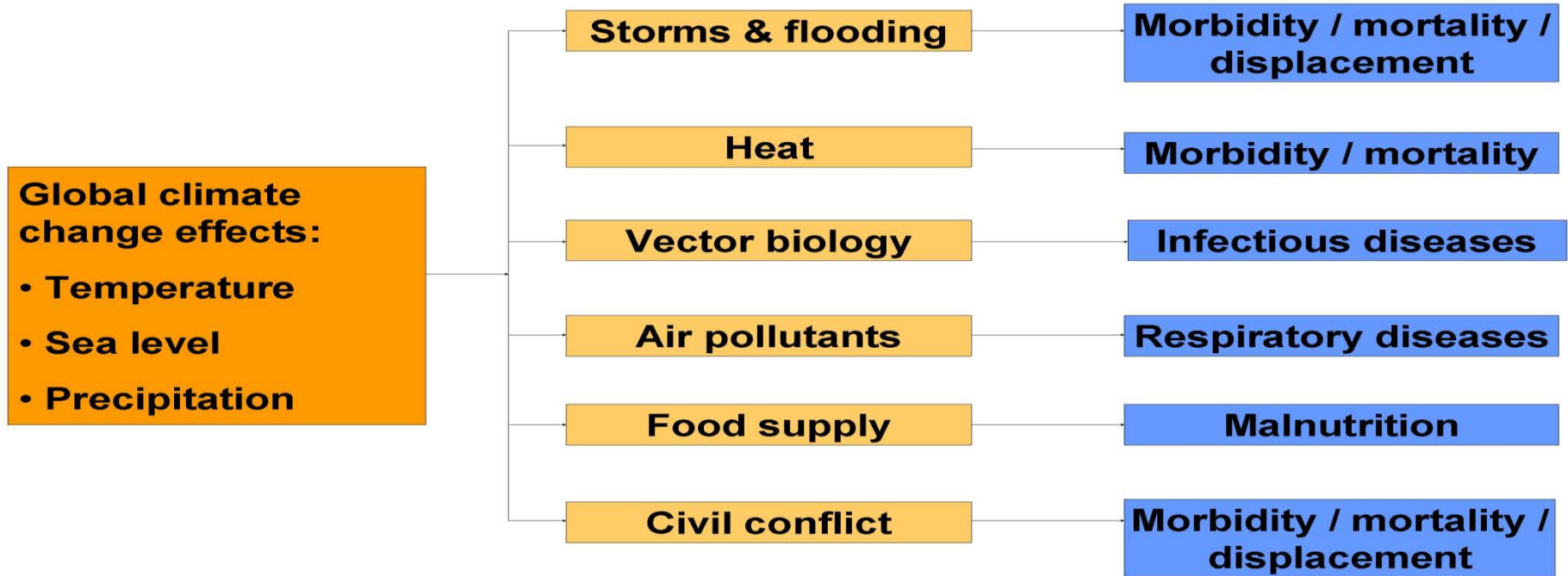


models using only natural forcings

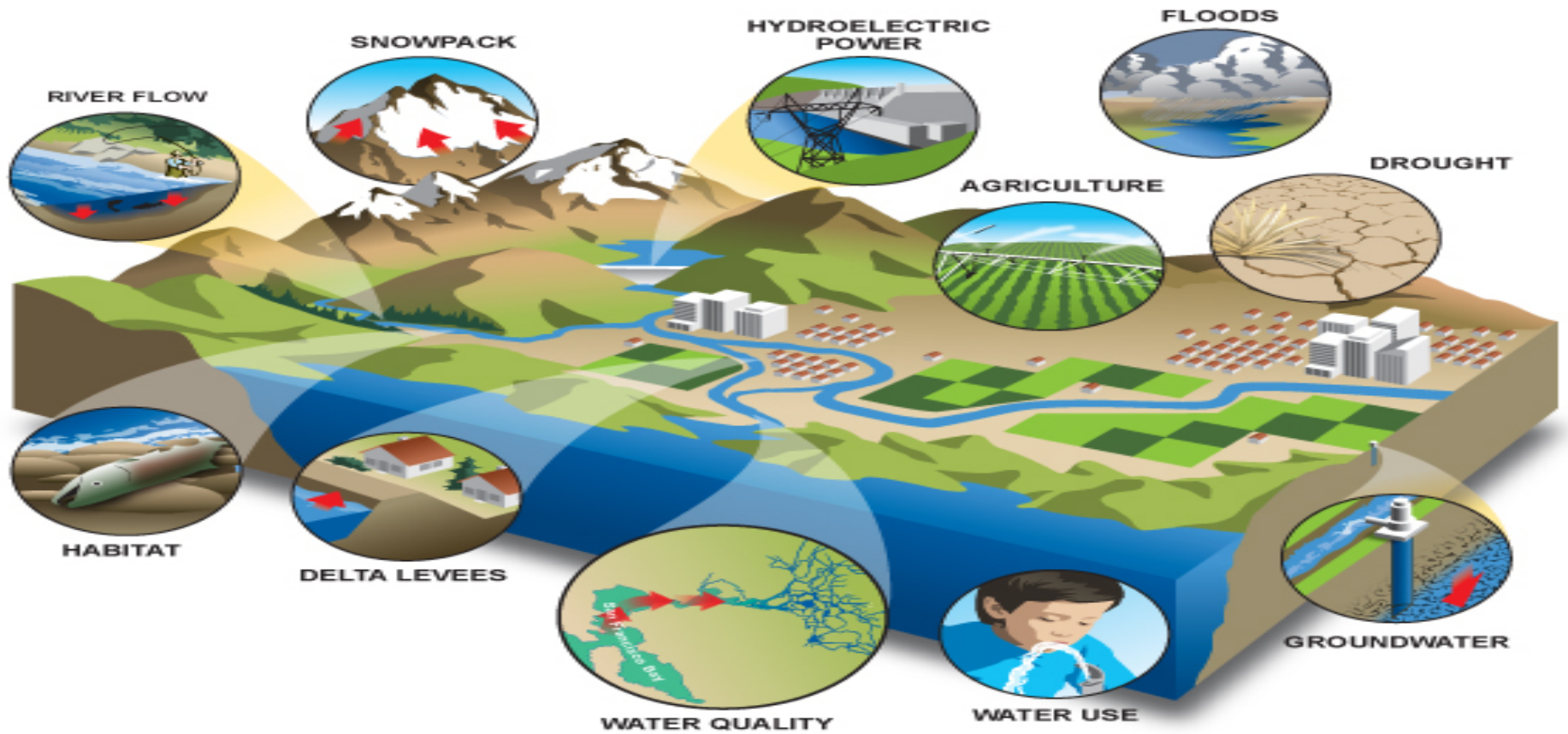
models using both natural and anthropogenic forcings

observations

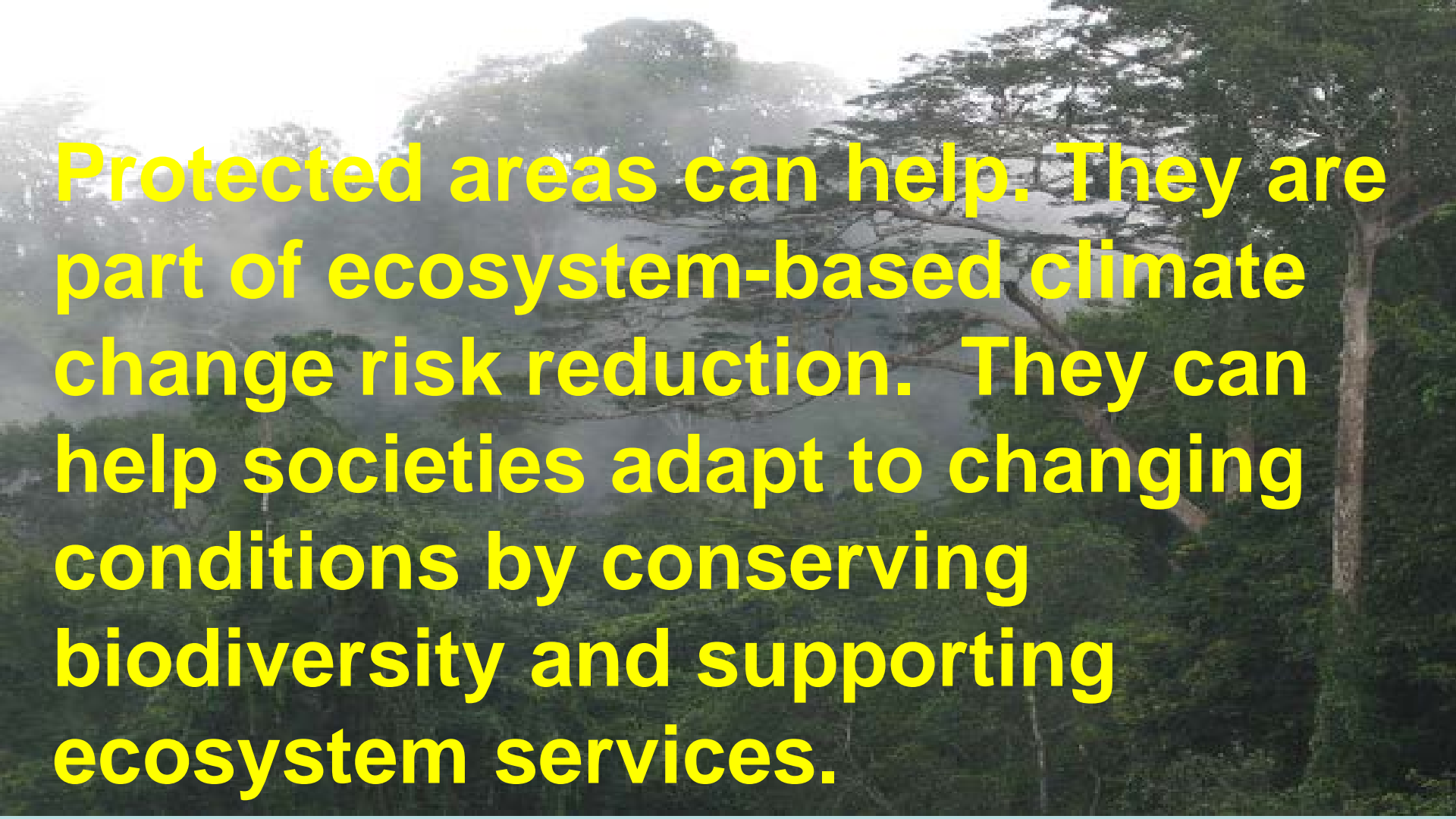
# Potential Impacts of Global Climate Change on Human Health







**The impact of climate change on humans is felt through changes in ecosystems and biodiversity**

A dense forest with tall trees and a misty background. The text is overlaid on the image in a bold, yellow font.

**Protected areas can help. They are part of ecosystem-based climate change risk reduction. They can help societies adapt to changing conditions by conserving biodiversity and supporting ecosystem services.**

Figure 3.2 Carbon stored in forests, using FAO ecozones

	Tropical rainforests	Tropical peat forests	Other tropical forests <sup>1</sup>	Sub-tropical forests	Oceanic temperate forests	Other temperate forests <sup>2</sup>	Mangroves	Boreal forests	Montane boreal forests	Boreal peat forest	Total
Current forest area M ha	1090	44	740	330	30	400	15	730	410	496 <sup>6</sup>	4285
Total above and below ground biomass (Mg C/ha)	145±53	206 ± 100	80±45	53±49	208±131	60±25	218±173	48±24	13±10	7±6	
Soil carbon <sup>4</sup> (Mg C/ha)	75	200 <sup>5</sup>	50	60	80	55	72	272 (est.) <sup>3</sup>	74 (est.) <sup>3</sup>	858 (est.) <sup>6</sup>	
Total carbon (Mg C/ha)	230	406	130	113	288	115	290	320	320	862	
Percent of atmospheric carbon <sup>7</sup>	32.5	2.3	12.5	4.8	1.1	6.0	0.6	30.3	17.0	55.5	162.6

<sup>1</sup> Includes moist deciduous, dry, and montane forests.

<sup>2</sup> Continental and montane forests

<sup>3</sup> Back-calculated from Kurz and Apps (1999) who estimated that boreal soils contain 85% of the total boreal carbon, using 48 Mg/ha as 15%.

<sup>4</sup> Soil to a depth of 1 m using IPCC (2006) default values unless specified .

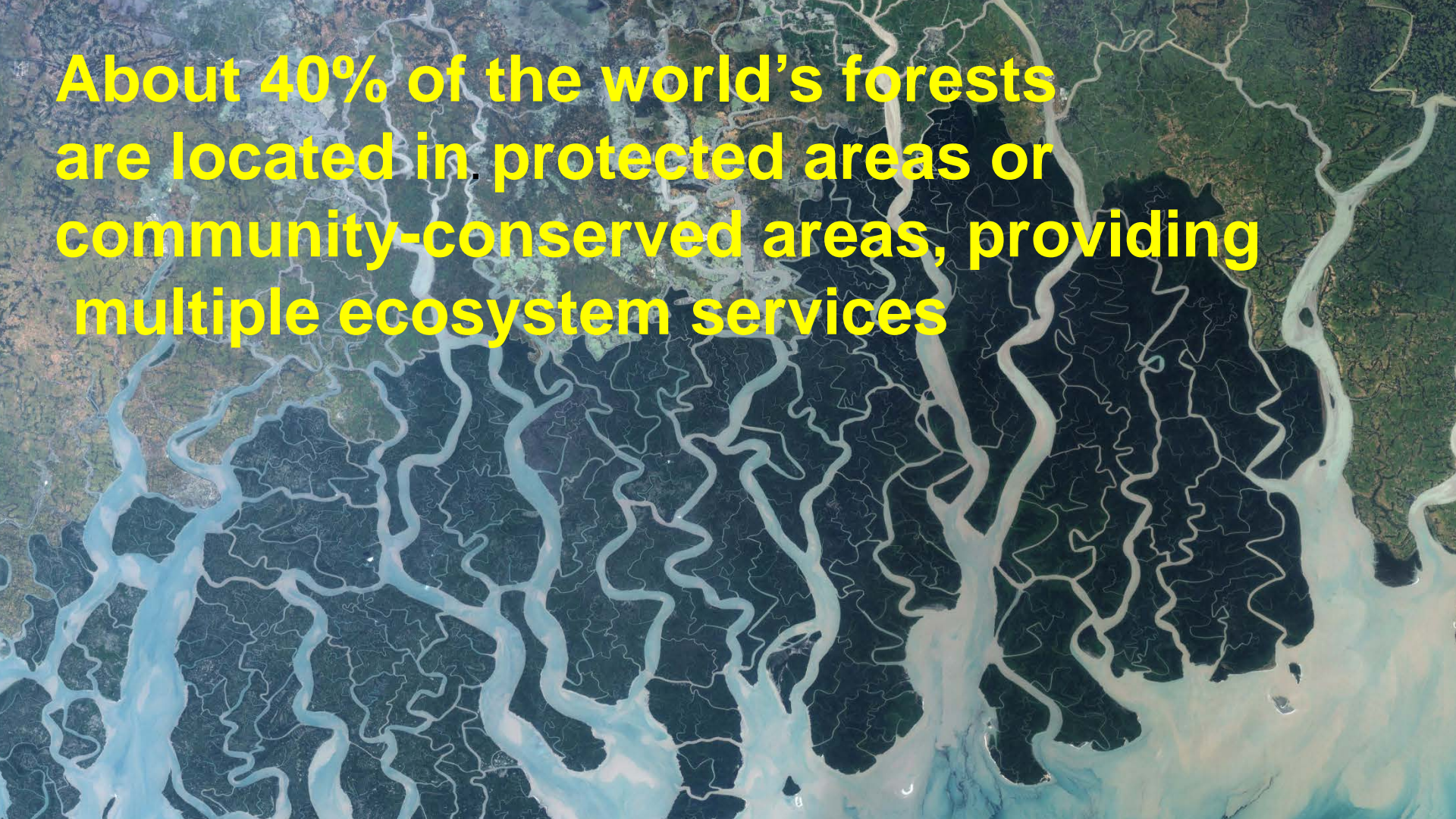
<sup>5</sup> From: Hirano et al. (2012) depth >3 m

<sup>6</sup> Calculated from Tarnocai et al. (2009) for total area of discontinuous plus sporadic permafrost (i.e., peatland forest) and considers soil depth >3 m

<sup>7</sup> Atmospheric carbon = 770 Gt (IPCC 2007)



**About 40% of the world's forests are located in protected areas or community-conserved areas, providing multiple ecosystem services**





# How protected areas provide ecosystem services to people

Air quality

Pest & disease control

Watershed protection and regulation

Conservation of biodiversity

Plant pollination


Carbon sequestration and storage

Soil formation and fertility


Decomposition of wastes

Landscape beauty



A vibrant, high-resolution photograph of a dense, old-growth forest. A river or stream flows through the center of the image, surrounded by thick vegetation. The trees are tall and varied in species, with a rich canopy of green leaves. The lighting suggests a bright, sunny day, with sunlight filtering through the trees. The overall scene conveys a sense of a well-preserved, natural environment.

**Old-growth forests, such as those found in protected areas, continue to accumulate carbon for centuries, more than young forests store (Luyssaert, et al. 2008)**

An aerial photograph showing a dense, lush green forest canopy. The trees are tightly packed, creating a textured pattern of various shades of green. The lighting suggests a sunny day, with some areas appearing brighter than others.

**What's more, trees continue to store more carbon as they grow bigger, so protected areas that support large trees are especially valuable in mitigating climate change (Stephenson, et al., 2014)**

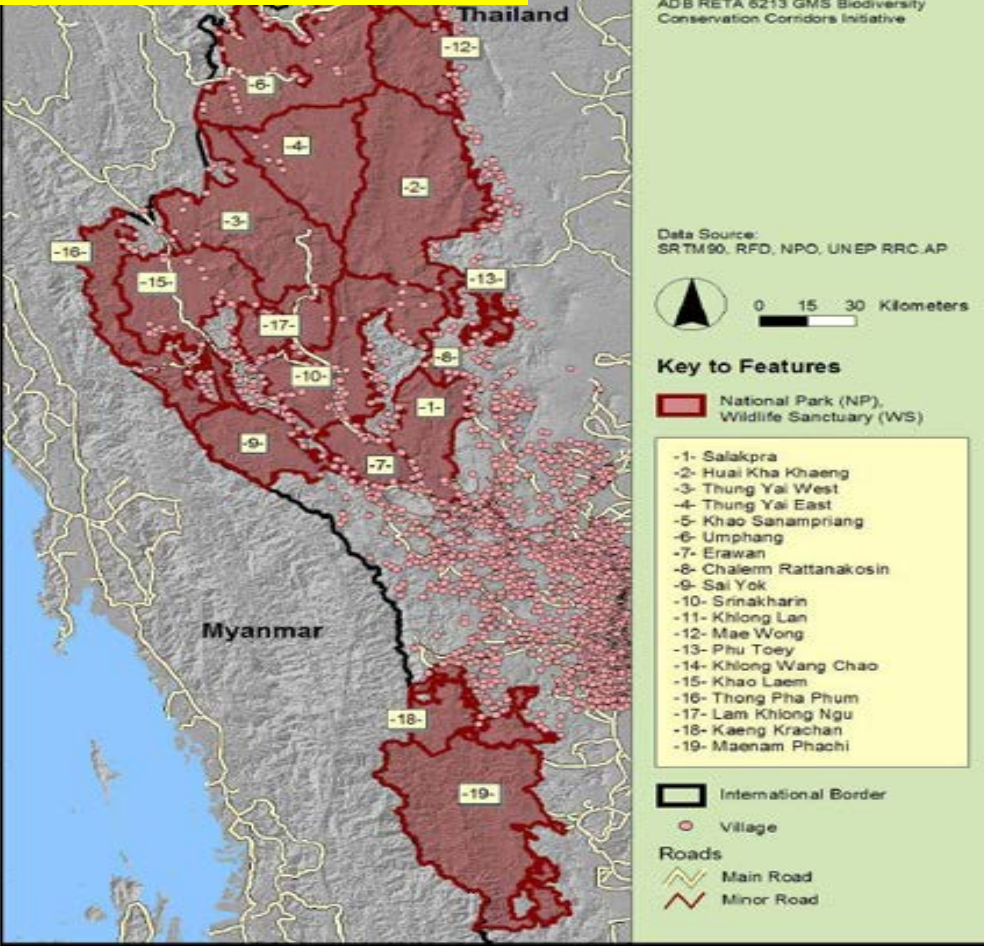
# How protected areas are enhancing the life of a climate-friendly hydropower plant



**Nakai Reservoir in Laos is protected by the PA**



# Establish conservation corridors



# **Make climate action pay**

**“Reducing Emissions from Deforestation and forest degradation in Developing countries.”**

**Definition of REDD+**

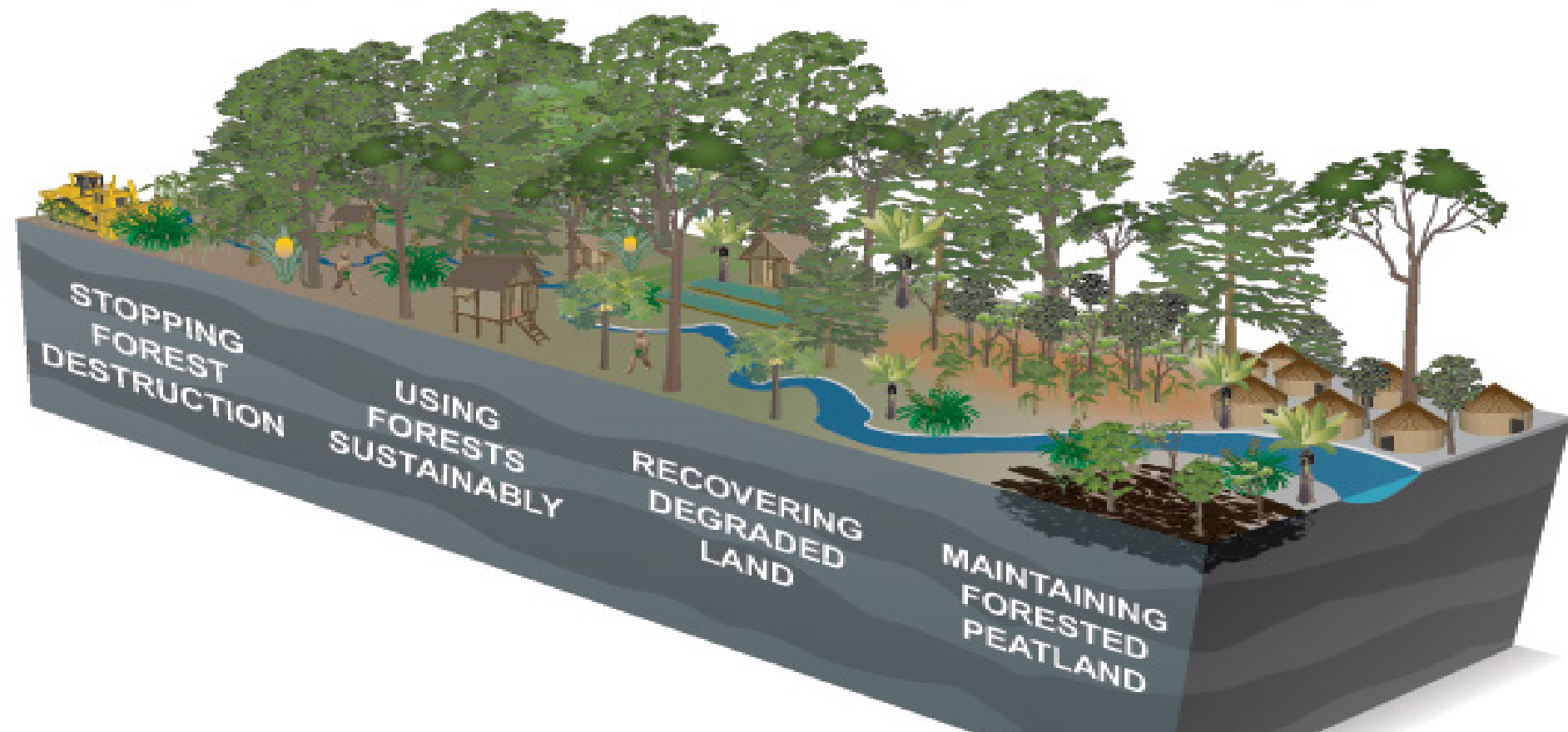
**Adds the role of conservation, sustainable management of forests and enhancement of forest carbon stocks**





# REDD+

REDD+ helps to mitigate climate change through forests, and provides social and environmental benefits. It includes these essential components: creating incentives for not clearing standing forests, maintaining and expanding forest cover, sustainably managing forest and recovering degraded lands.



# Action priorities:

- Invest in enhancing the management of protected areas that are providing multiple benefits to society.
- Explore possibilities for linking protected areas into larger landscapes that would enable species and ecosystems to adapt to climate change.
- Improve understanding of the relationship between biodiversity, development and ecosystem services in protected areas.
- Tap into emerging sources of funds, such as REDD+

*Welcome to*

Session 34:

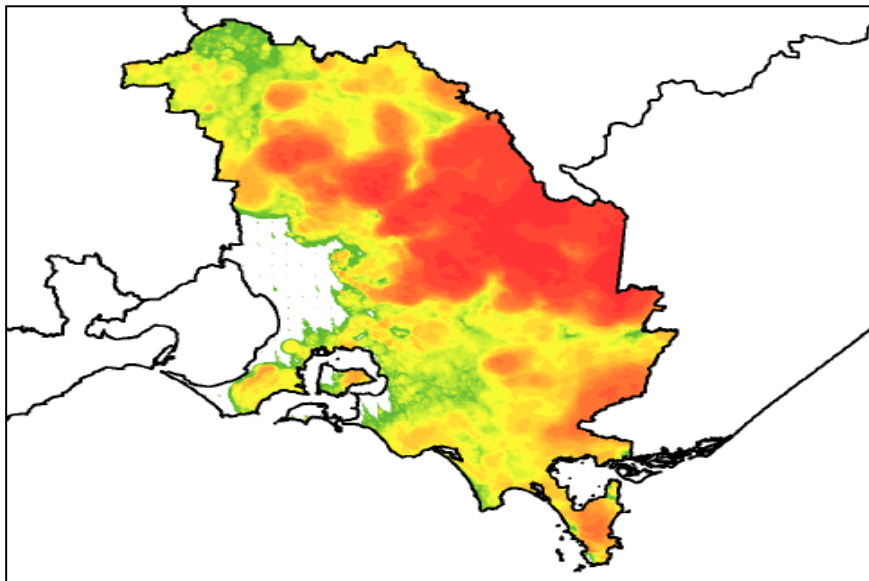
# Responding to the effects of climate change on communities, parks and protected areas



# Adaptively Managing Fire in Changing Landscapes

Liam Fogarty - DEPI Victoria  
David Nugent - Parks Victoria

18 Nov 2014

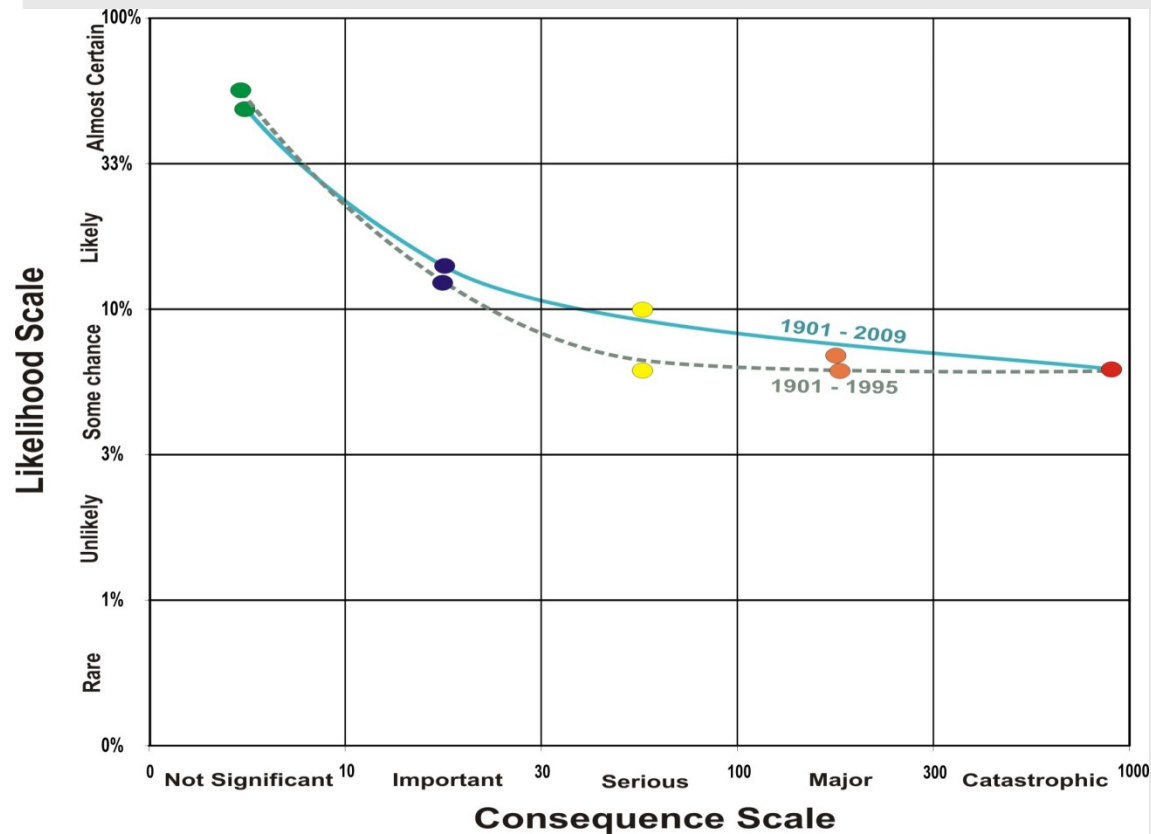


# Outline

- What's changing?
- What are we doing about it?
- What's next – Panel Discussion?

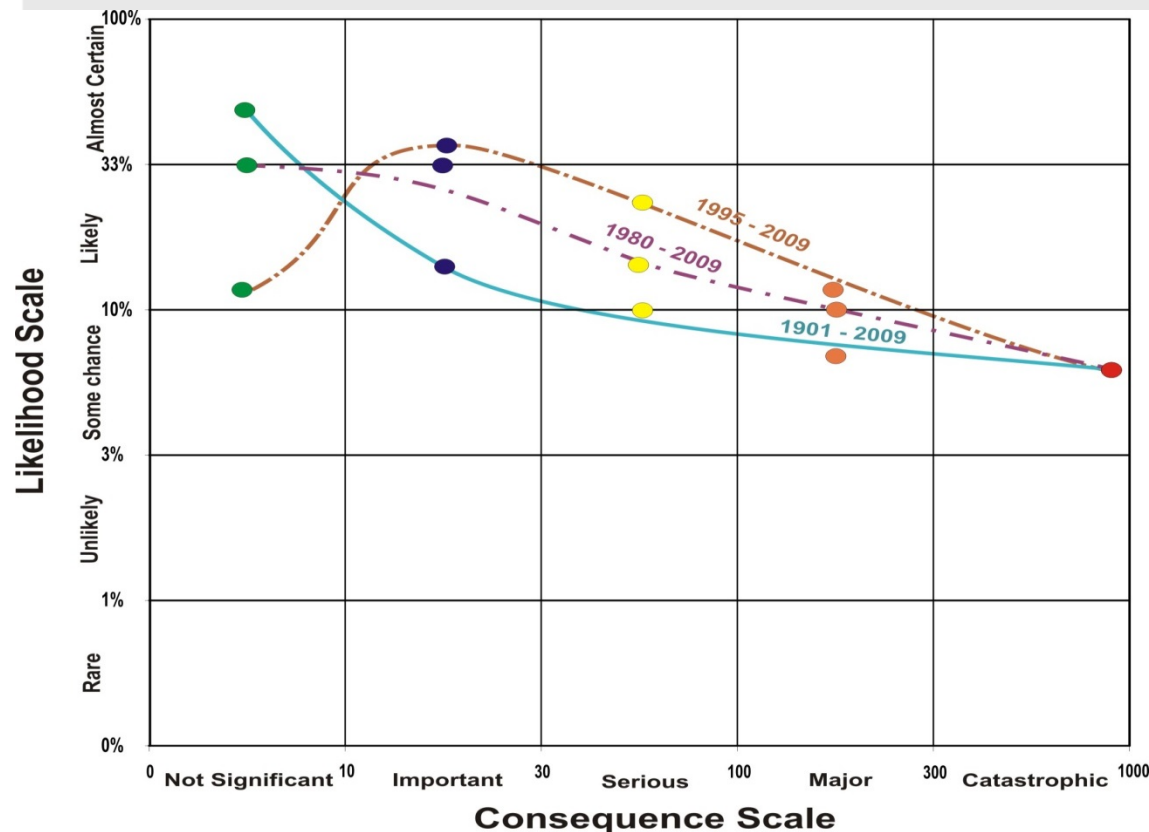


# Risk curves – how have they changed



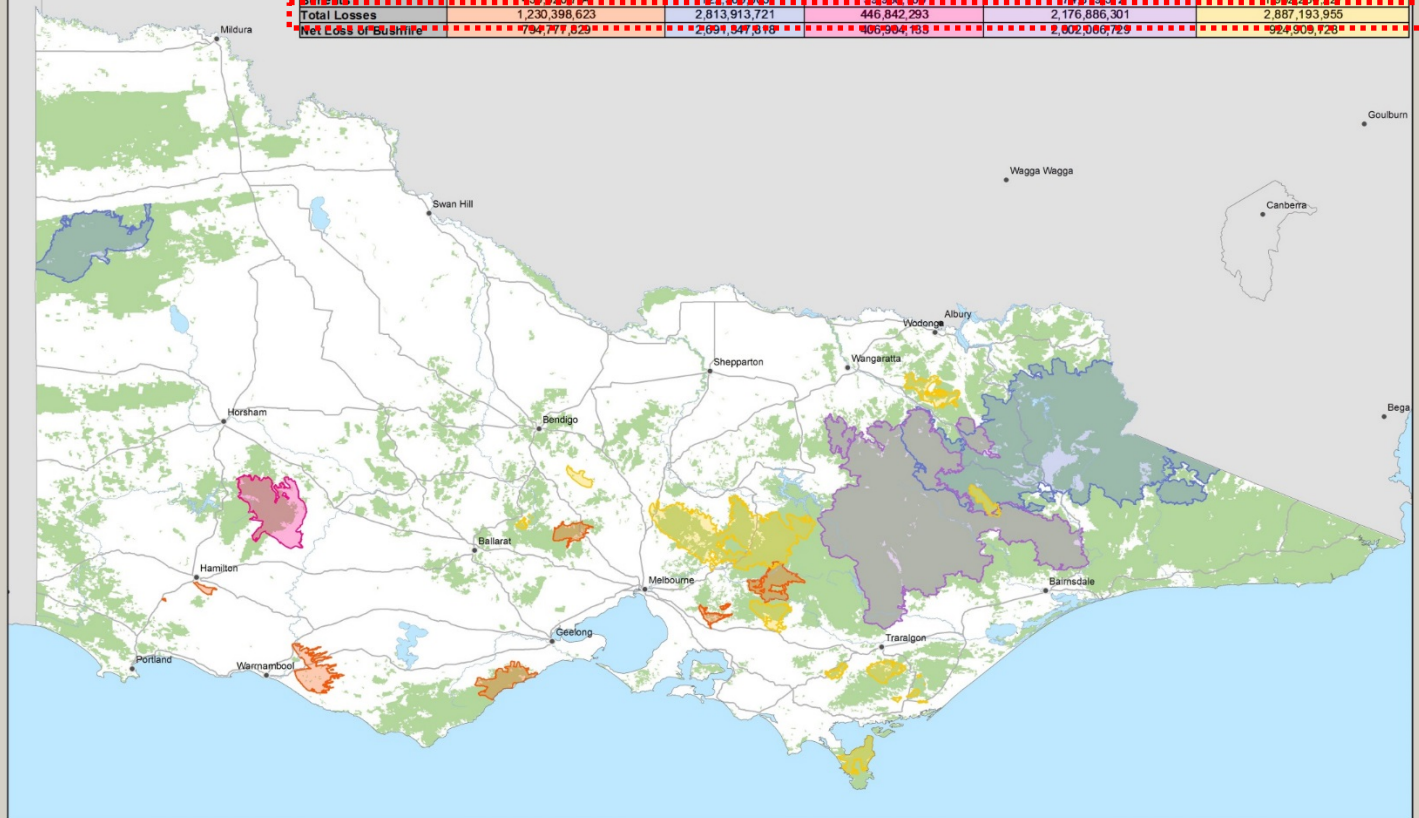
- Long term data can be used to generate risk curves – chance of a particular season/event occurring;
- 1901 to 2009 provides a “classic” curve with less significant seasons being the norm;
- 1995 significant test point:
  - Beginning of major growth in fire impacts in the US;
  - Close to the start of our current drying cycle;
  - Assumed to represent future climate by some sectors (eg., Water);
- 1901 to 1995 curve are similar.

# Risk curves – how have they changed



- More recent changes possibly better assessed by past 30 and 15 years;
  - 30 yrs considered minimum time period for a climate data set,
  - 15 years considered an option for our future climate – used by Water Sector;
- Moving away from “classic” curve.
- Strong climate driver?
- **Dramatic Increase in Serious and Major Fires**

Asset	1983 Ash Wednesday Fire	2003 Alpine Fires	2006 Grampians Fires	2006/07 Great Divide Fires	2009 Black Saturday Fires
Total Area (ha)	178,615	1,080,893	142,885	1,113,251	388,261
Economic Losses	946,581,042	1,715,286,629	124,372,271	1,077,615,049	1,826,197,051
Social Losses	206,883,954	3,652,000	7,304,000	3,652,000	701,857,540
Environmental Losses	77,933,627	1,094,975,092	315,166,022	1,095,619,252	359,139,365
Benefits	436,820,794	123,666,903	39,938,160	174,819,572	1,963,284,227
Total Losses	1,230,396,623	2,813,913,721	446,842,293	2,176,866,301	2,887,193,955
Net Loss or Gain	794,777,829	2,691,347,818	406,904,133	2,002,046,729	924,909,728



## Major Fires - Economic and Social Costs (2008 AU\$)

(c) The State of Victoria Department of Sustainability and Environment

Disclaimer: This map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.

\\vik\space\GIS\GIS\Projects\2002011\_Consultant\_Fragments\_Plan\_vic\work\2002011\_Fires\_24032011.mxd 12/3/2011



# Otway Coast After Ash Wednesday 1982

Fairhaven



Moggs Creek





Feb 13, 2010  
2:53pm

Anglesea

Google™

Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
© 2009 MapData Science, Pty. Ltd. PSMA  
Image © 2009 DigitalGlobe  
© 2009 China/Spot Image

elev. 82 m

Eye alt. 2.11 km

lat. -38.415786° lon. 144.155109°





**Lorne**

Image © 2008 DigitalGlobe  
© 2008 MapData Sciences PtyLtd, PSMA  
Image © 2008 TerraMetrics  
Image NASA

©2007 Google™

Pointer lat -38.498476° lon 144.005384° elev 17 m Streaming ||||| 100%

Eye alt 8.27 km



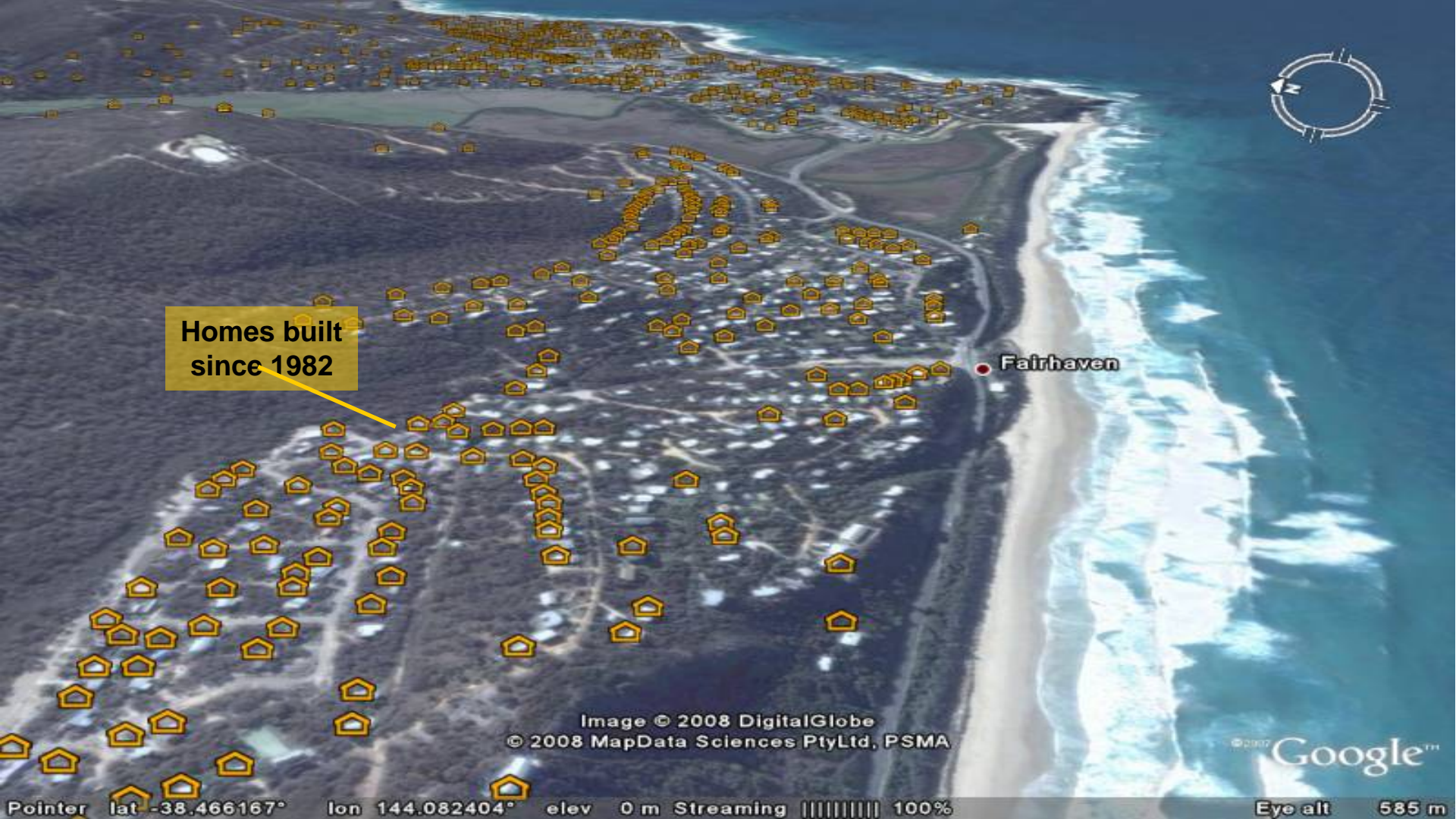
Homes built  
since 1982

Moggs Creek

Image © 2008 DigitalGlobe  
© 2008 MapData Sciences PtyLtd, PSMA

©2007 Google™





Homes built  
since 1982

Fairhaven

Image © 2008 DigitalGlobe  
© 2008 MapData Sciences PtyLtd, PSMA

©2007 Google™

Pointer lat -38.466167° lon 144.082404° elev 0 m Streaming ||||| 100% Eye alt 585 m





Homes built  
since 1982

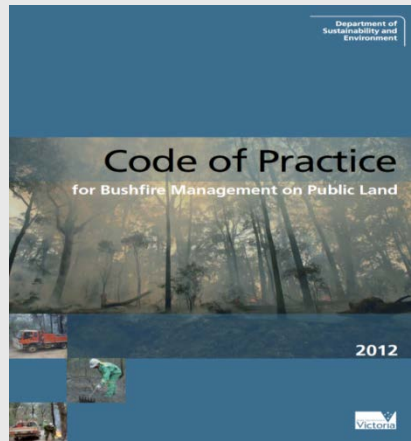
Aleays Inlet

Image © 2008 DigitalGlobe  
© 2008 MapData Sciences PtyLtd, PSMA

© 2007 Google™

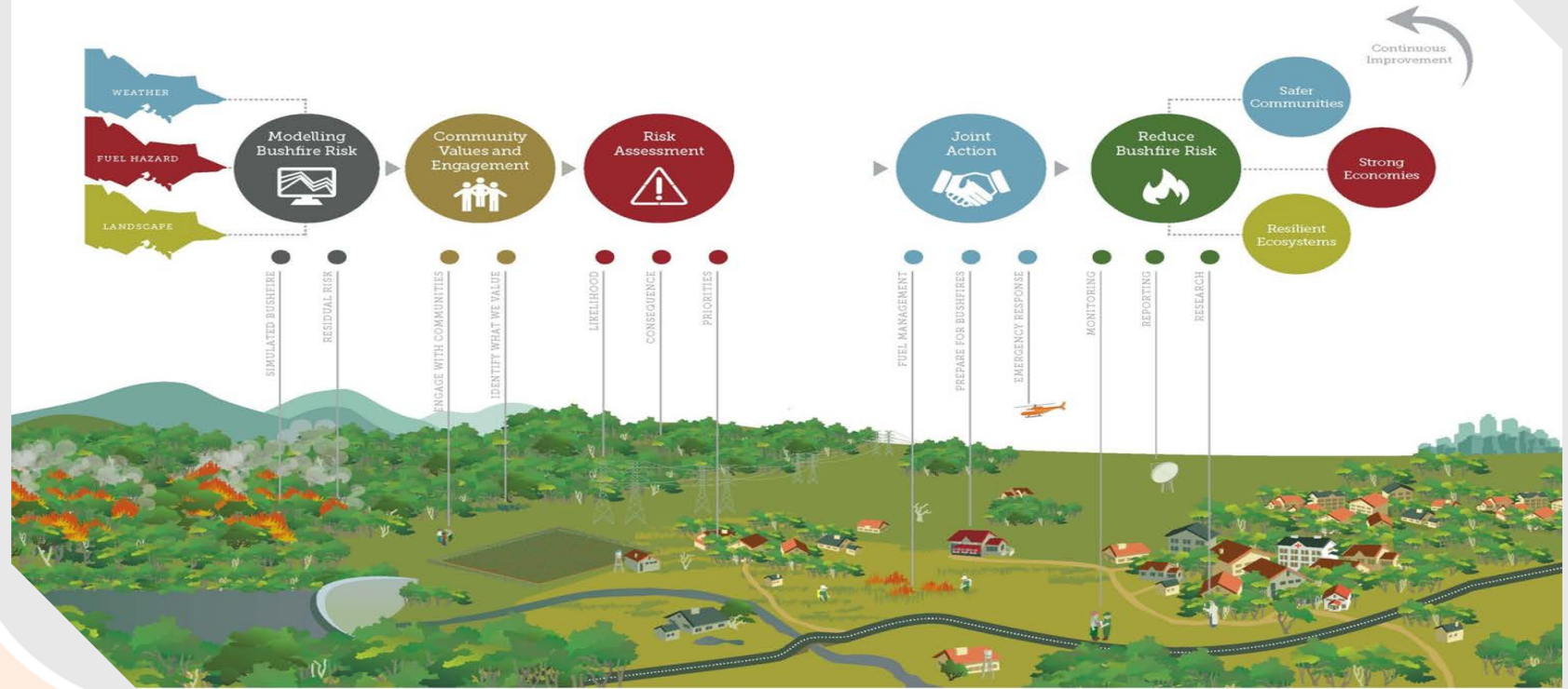


# What's Changing – Policy Context

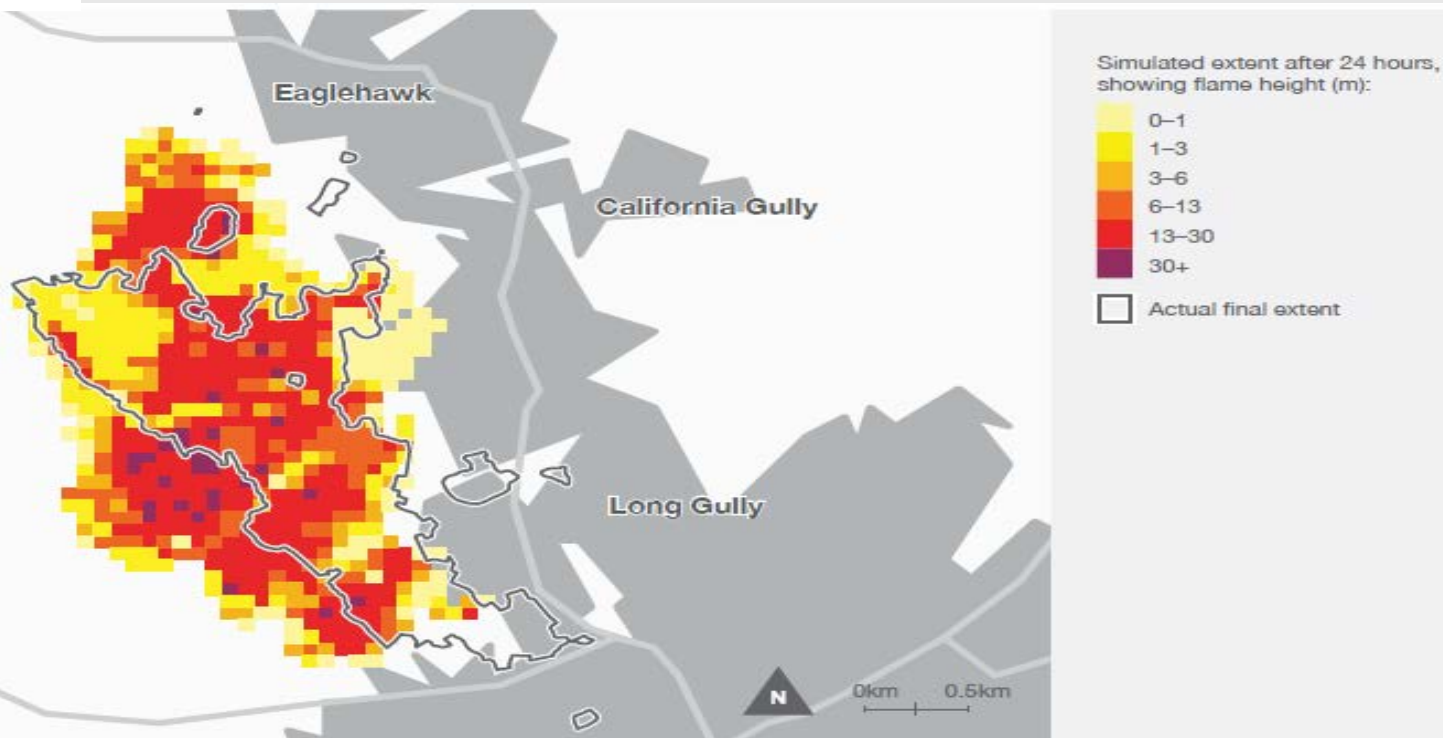


- Code of Practice (2012) sets two primary objectives for bushfire management on public land:
  - *To minimise the impact of major bushfires on human life, communities, essential and community infrastructure, industries, the economy and the environment. Human life will be afforded priority over all other considerations.*
  - *To maintain or improve the resilience of natural ecosystems and their ability to deliver services such as biodiversity, water, carbon storage and forest products.*

# Overview of the Planning Approach



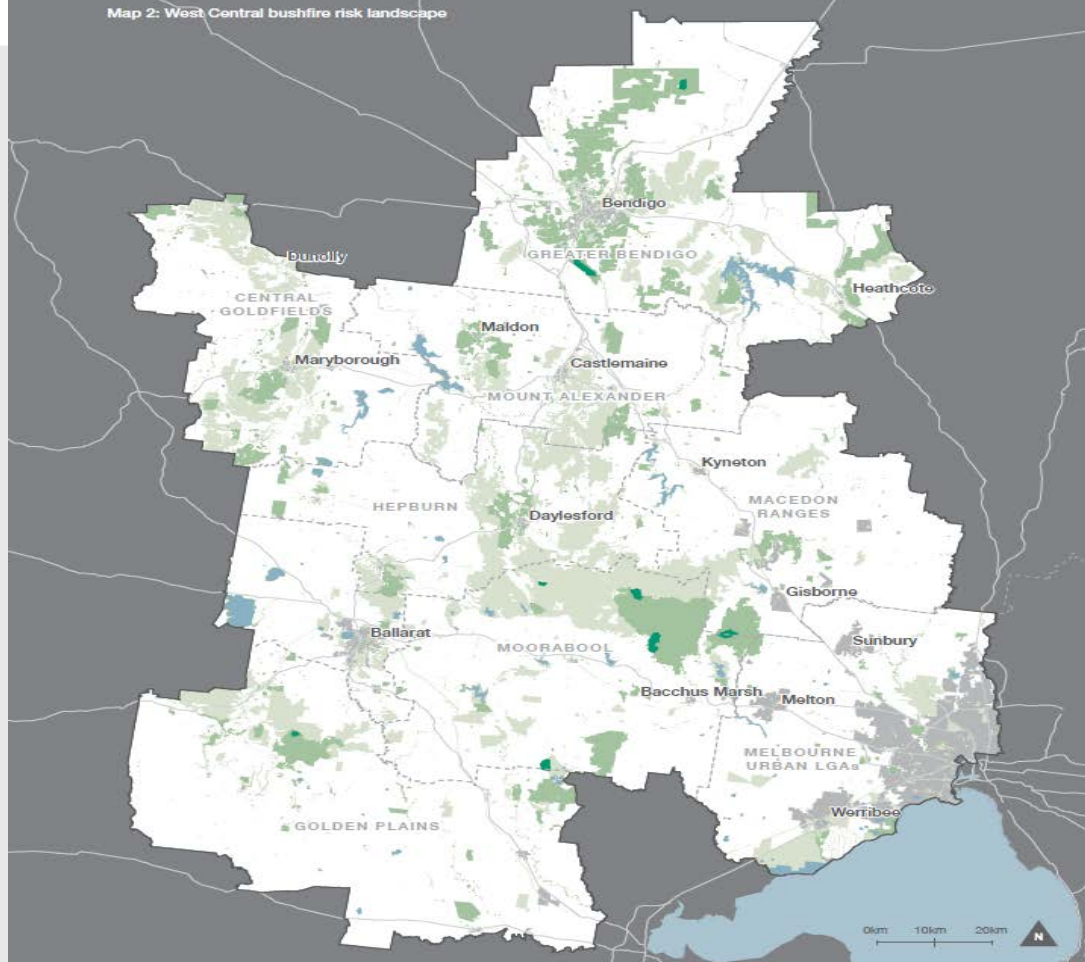
## Modelling Bushfire Risk



## Community Values and Engagement



Map 2: West Central bushfire risk landscape

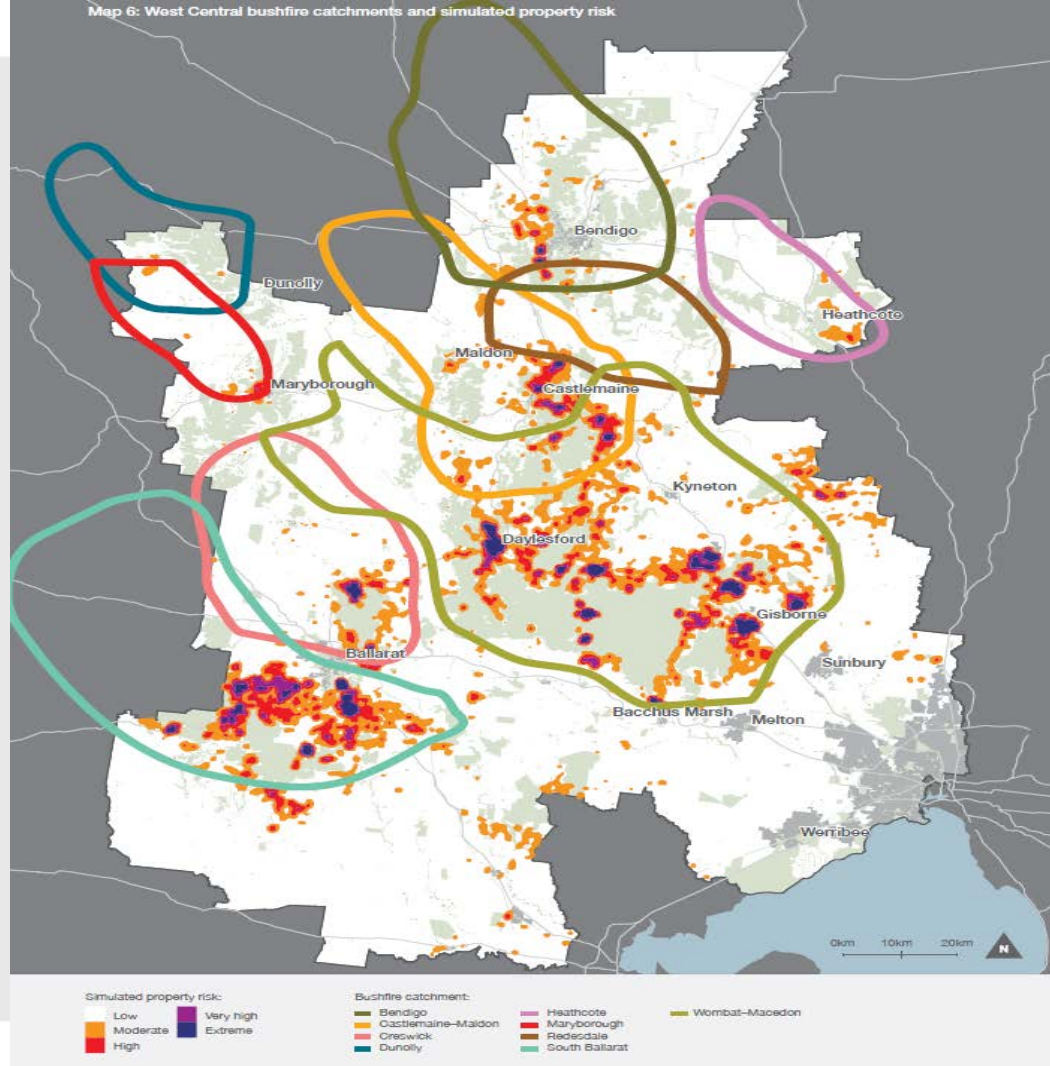




## Risk Assessment



Map 6: West Central bushfire catchments and simulated property risk

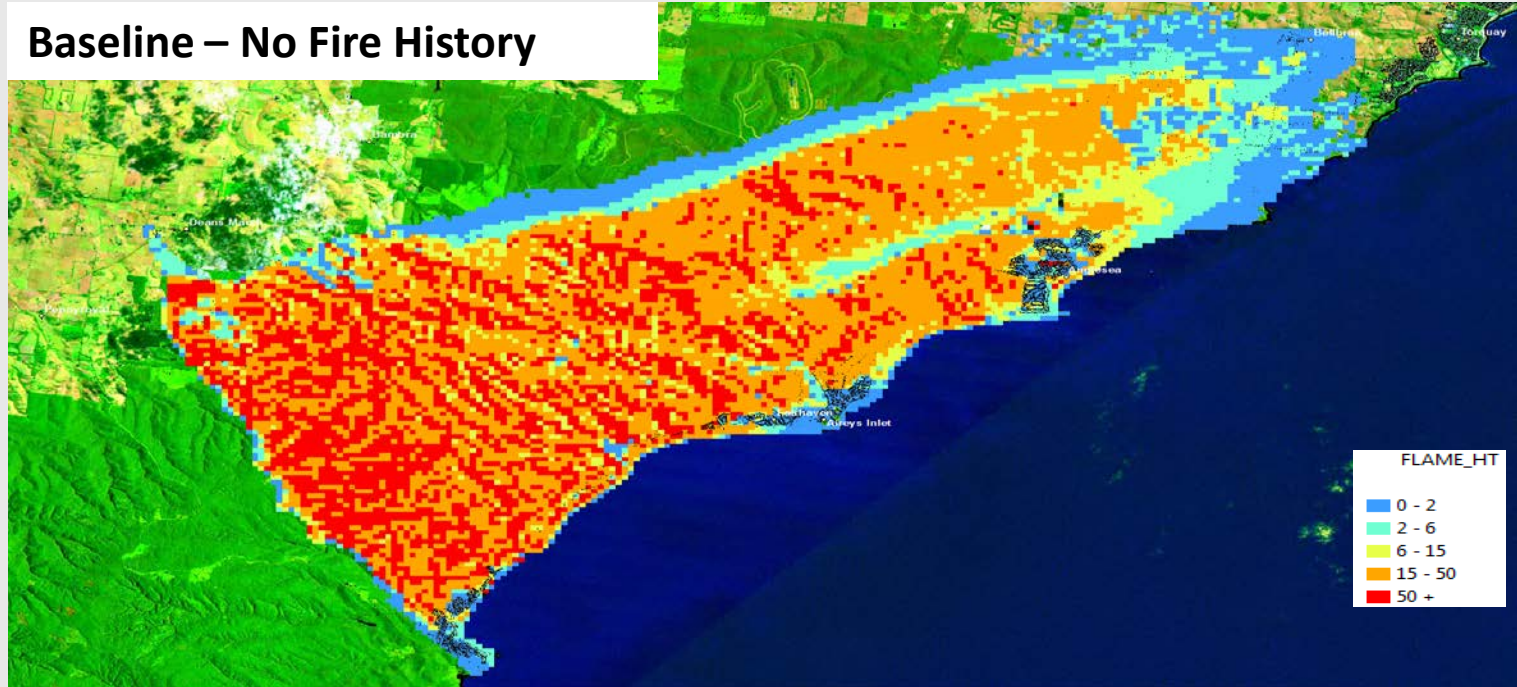


Risk  
Assessment



# Modelling Potential Property Impacts from Fire

**Baseline – No Fire History**

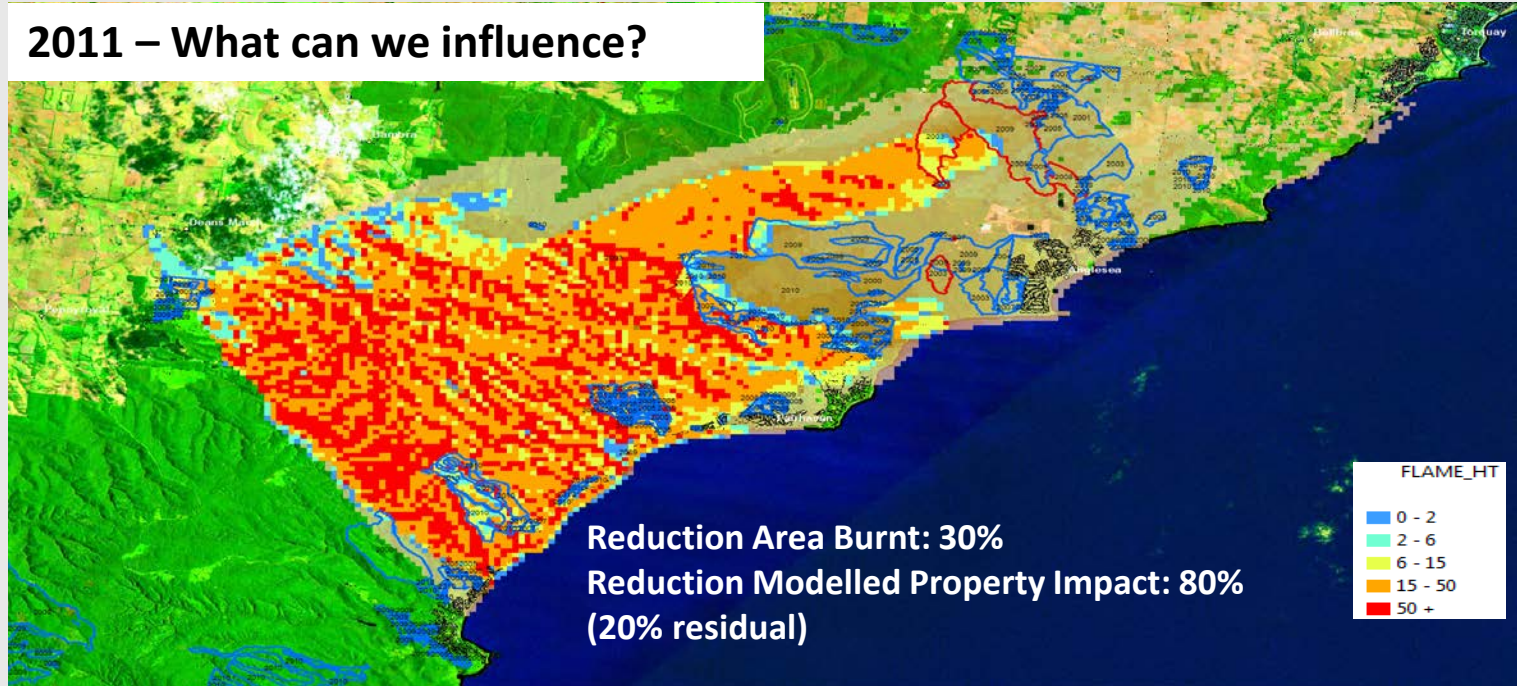


Risk  
Assessment



# Modelling Potential Property Impacts from Fire

2011 – What can we influence?







# Ecosystem Resilience – Scope for DEPI

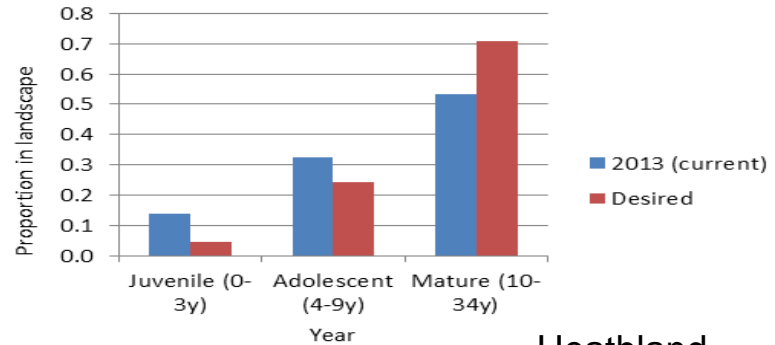
- Relates to strategic bushfire management across the public land estate
- Includes several elements:
  - Tolerable Fire Intervals,
  - Growth Stage/Habitat Optimisation - based on Geometric Mean Abundance,
  - Relative Entropy
- Will expanded over time – eg, climate change
- Draws on review work commissioned by DEPI (McCarthy 2012)



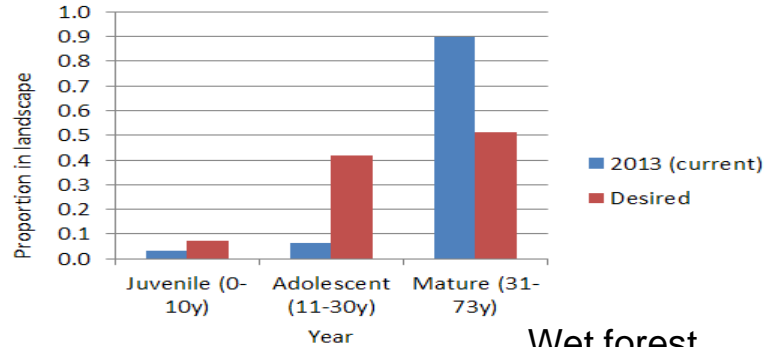




# Ecosystem Resilience Measures – Growth Stages



Heathland



Wet forest



# Evaluating Strategies



Joint  
Action





[illegible]

# The role of land and fire managers?



State Government  
**Victoria**

Department of  
Human Services



# What's different?

- Code of Bushfire Management Practice
  - **Clear Objectives**
  - Risk based approach
- Strategic Bushfire Management Planning
  - Acknowledges uncertainty
  - Sophisticated bushfire simulations
  - Sets long term strategies but enables learning and improvement
  - Tangibly considers health and resilience of ecosystems
  - Tangibly considers community values
  - Focus on influence as well as outcomes – connections vital
  - Enable science informed **values based** decision making - communities are key

*Welcome to*

Session 34:

# Responding to the effects of climate change on communities, parks and protected areas





# NPS CLIMATE CHANGE RESPONSE





## Crown of the Continent





*“Where Ice and Mountains and Oceans Meet...”*





# NPS CLIMATE CHANGE RESPONSE



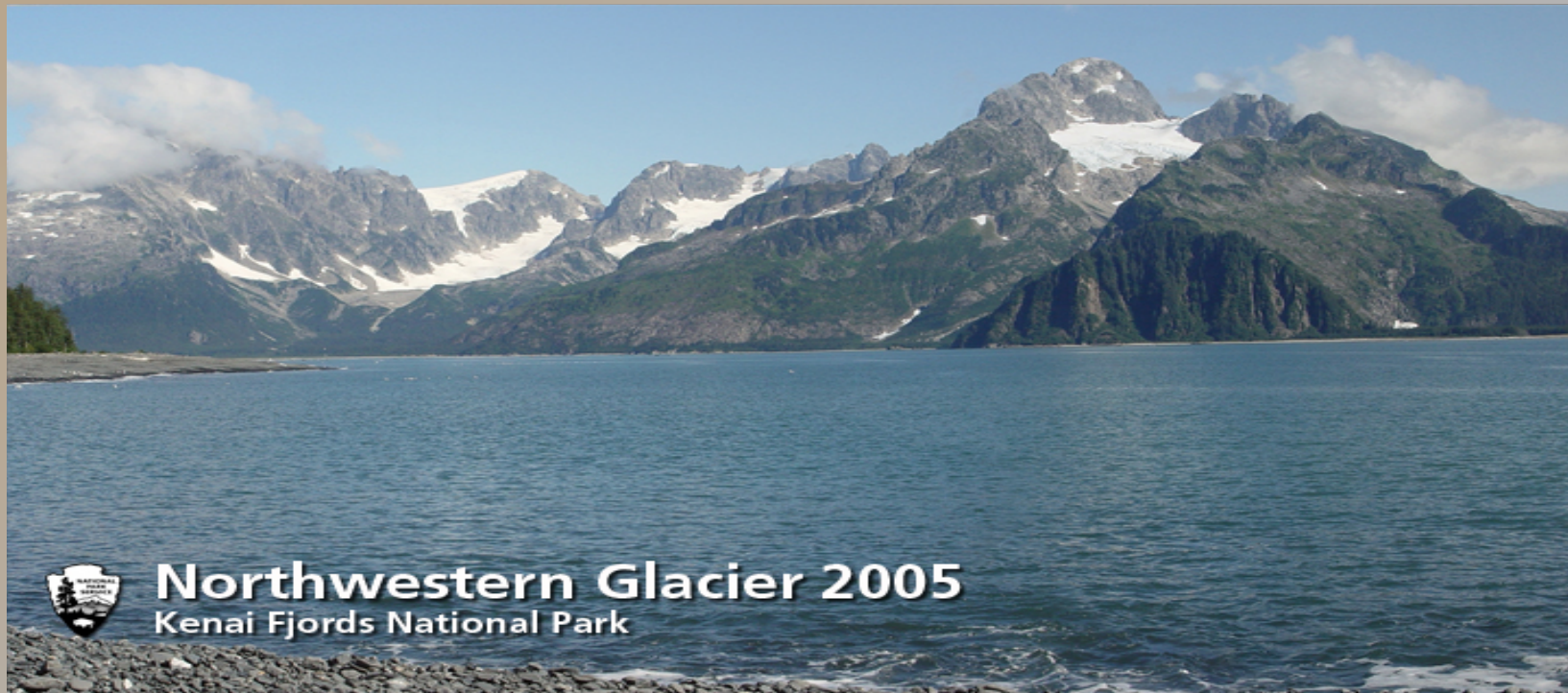




# NPS CLIMATE CHANGE RESPONSE







## Northwestern Glacier 2005

Kenai Fjords National Park



# NPS CLIMATE CHANGE RESPONSE



SEPT 1999



# Changing the Conversation about Climate Change





# NPS CLIMATE CHANGE RESPONSE





# Renewable Energy Credits







# NPS CLIMATE CHANGE RESPONSE







Bio-Fuels



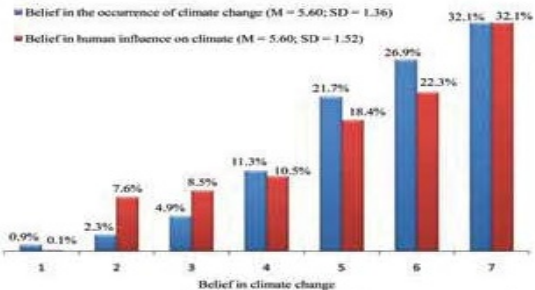
# The Power of Place



**Kenai Fjords National Park**



**Kenai National Wildlife Refuge**



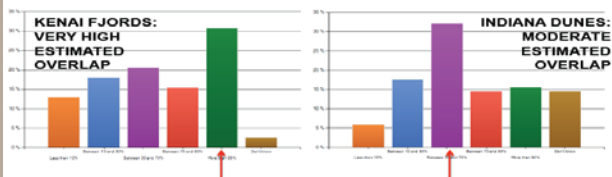
**Figure 2. Kenai Fjord visitor beliefs in the occurrence of human influence on global climate change (both) on seven-point scale using multiple response items extremely low belief; 7 = extremely high belief.**



## FINDINGS

### Perceived value of the national park

...reflected in estimations of overlap between their customers/constituents and park visitors



## FINDINGS

### Willingness to act?

Are they communicating with their own customers/constituents? Further indication that they are underestimating their customers/constituents level of interest

	Perception of Kenai Stakeholders	Actual Concern of Kenai Visitors*	Ind. Dunes Stakeholders	Actual Concern of Nat. Sample Visitors*
How concerned would you say your customers or constituents are about the future of this national park?	2.9 / 5.0	4.2 / 5.0	3.4 / 5.0	N/A
And how concerned would you say your customers or constituents are about climate change and its effects?	2.8 / 5.0	3.3 / 5.0	3.1 / 5.0	3.5 / 5.0
	38	485 / 493	93	4170

1=Not concerned / 2 = Slightly concerned / 3 = Somewhat concerned / 4 = Very concerned / 5 = Extremely concerned

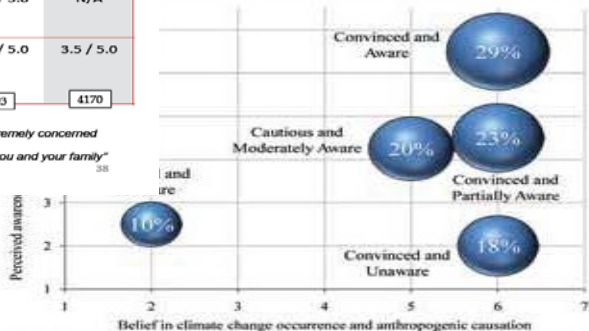
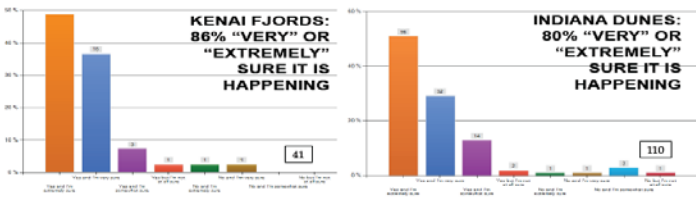
\* A rough comparison as CCEP visitor survey asked visitors to "rate the importance of the (park) to you and your family" and "how worried are you about climate change?"



## FINDINGS

### Opinions on climate change

Do you think that climate change is happening? Yes, with little doubt about it.



**Figure 4. Results of an analysis to segment Kenai Fjords visitors based on their beliefs in global climate change and their perceived awareness of biophysical climate related change at Kenai Fjords (both measured on a seven-point scale using multiple response items). Awareness: 1 = not aware at all; 7 = highly aware. Belief in climate change: 1 = extremely low belief; 7 = extremely high belief.**







# NPS CLIMATE CHANGE RESPONSE



# Alaska Travel Industry Association 2012 Annual Report



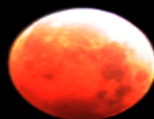




# Seward City News

read it, write it

Tuesday, November 4, 2014



Seward, AK

At 3:53 PM AST  
Clear  
37°F  
N 9 MPH  
WeatherForYou.com



ANNOUNCEMENTS

CITY -

WEATHER

BUSINESS

CALENDAR

EDUCATION

SPORTS

CLASSIFIED LINKS

ARTS & ENTERTAINMENT

OUTDOORS

EVENTS

LOCAL PHOTOGRAPHY

LIFE -

HOUSING

ADVERTISE

SEARCH RESULTS FOR: "KENAI FJORDS NATIONAL PARK"

## Kenai Fjords National Park Weather Summary – August 2014

The six month run of below-average monthly precipitation came to an end in August when the Seward airport received more precipitation in one month than it did from February-July 2014 combined. Most of this precipitation occurred early in the month when storms delivered impressive amounts of rain, particularly on August 8th when daily totals ranged from 1.59 inches at the Seward [...]

September 11, 2014 - 0 comments

## Kenai Fjords National Park Weather Summary – July 2014

July 2014 proved to be another warmer-than-normal and drier-than-normal-month in the Kenai Fjords area. Daily high temperatures ranged from 60 degrees F to 76 degrees F with a total of five days above 70 degrees F. Measurable precipitation was recorded on 12 days with more than half the total rainfall occurring on one day, July 9th. Winds were relatively calm [...]

August 25, 2014 - 0 comments

## Kenai Fjords National Park Monthly Weather Summary – June 2014

The Kenai Fjords area saw a return to more normal temperatures in June, but the dry conditions that characterized the spring

Open 7 Days a Week

**EUREKA PIZZA CO.**

Join Us For  
**Marathon Meatball Mondays**

Served with our famous fries,  
red cabbage slaw & 16 oz. fountain  
drink

**Only \$9.95 Every Monday**

**224-4433**

Find us on  
**Facebook**

LOGIN ~ REGISTER

Top Posts

Recent Comments

Subscribe



Firefighters mourn loss of Cliff  
Simons





*“Climate change is fundamentally the greatest threat to the integrity of our national parks that we have ever experienced.”*      **Jon Jarvis**



# Scenario Planning

“We use scenario planning to rehearse the future to avoid the management surprises”



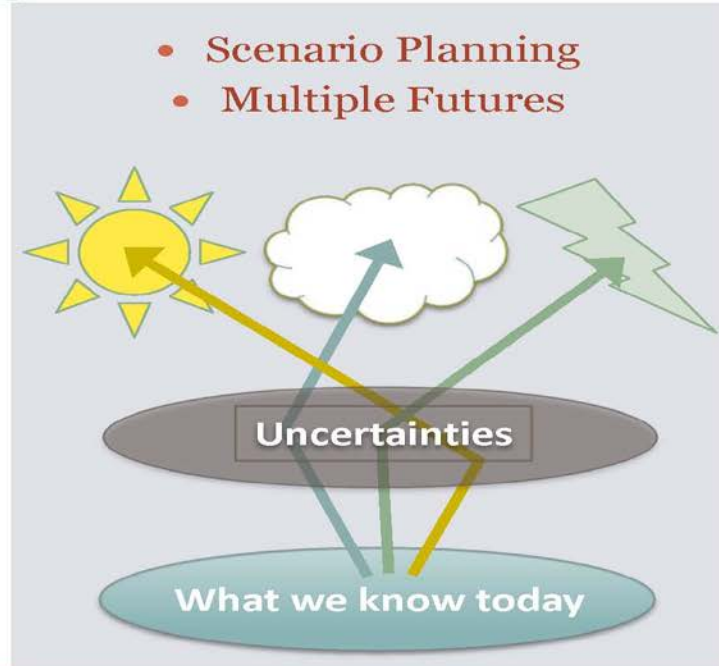
# Scenario Planning vs. Forecasting

- *Scenarios overcome the tendency to predict, allowing us to see multiple possibilities for the future*

- Forecast Planning
  - One Future



- Scenario Planning
  - Multiple Futures

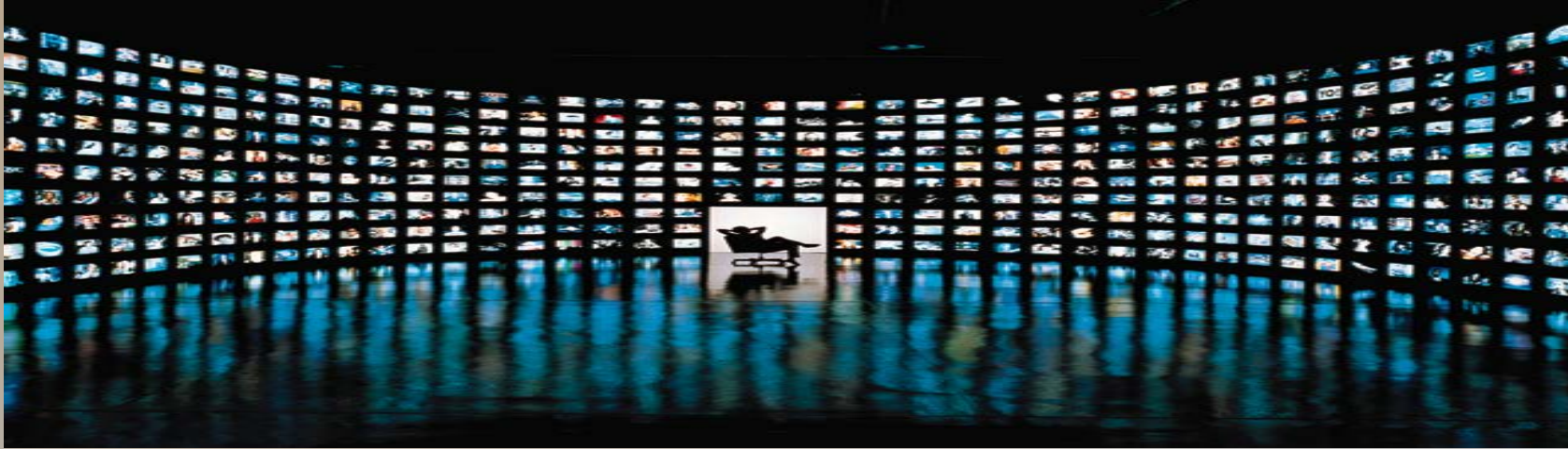






# Explaining Scenarios: Description

- Scenarios are **stories about tomorrow** that can help you make better decisions today

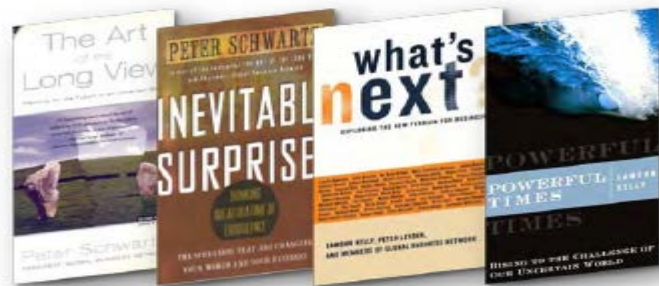


- They offer a **range of possibilities** for the future—not **predictions**
- Narratives that stretch thinking but are always **plausible and logical**
- Scenarios provide a framework for recognizing and **adapting to change** over time—ahead of time

# GBN Global Business Network

a member of the Monitor Group

## Select Client Organizations\*



# WELCOME to KENAI FJORDS NATIONAL PARK

Experience a moment of time in a landscape of change.



Jeff Mow  
Superintendent  
Kenai Fjords National Park  
October 2, 2012

“A Business  
Approach to  
Climate Futures”





## *“What is the Parks role in building community awareness around climate change”*

- ❑ Communicate the Impacts of climate Change on the Parks
- ❑ Be a role model for mitigation
- ❑ Do not underestimate the value of social science – know your audience
- ❑ The complexity of CC can be quite paralyzing (results in no action), use techniques like SP to break it down into bite size pieces.





# Thank You



*Welcome to*

Session 34:

# Responding to the effects of climate change on communities, parks and protected areas





# Climate Change: Risks & Opportunities for Health

IUCN World Parks Congress  
Parks, People, Planet  
Sydney, Nov. 18, 2014



**Jonathan Patz, Professor & Director**

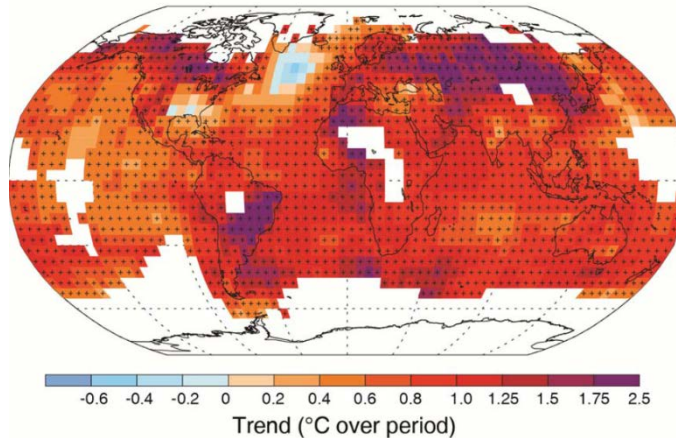
**Global Health Institute**

UNIVERSITY OF WISCONSIN-MADISON

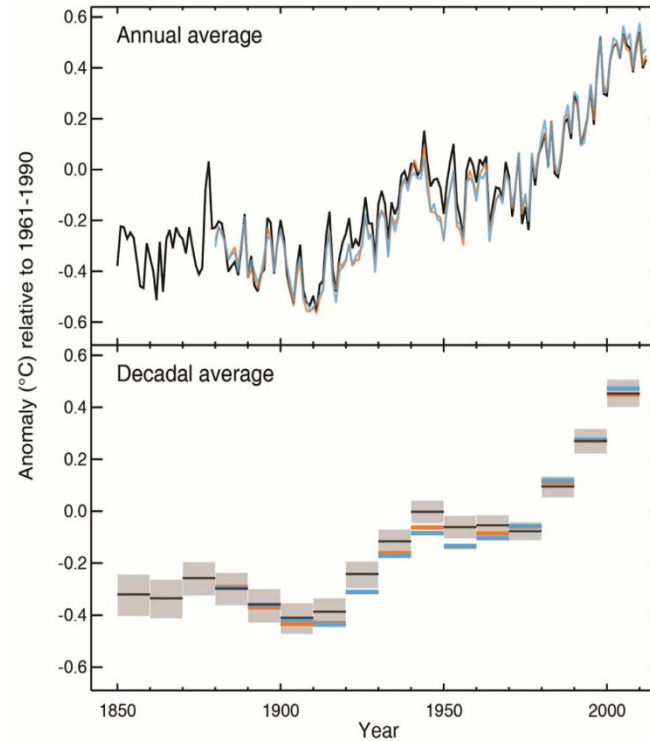
# Temperature data

“The globally averaged combined land and ocean surface temperature data .. show a **warming of 0.85 [0.65 to 1.06]° C, over the period 1880–2012**” IPCC AR5 WG1 2013

Observed change in average surface temperature 1901–2012

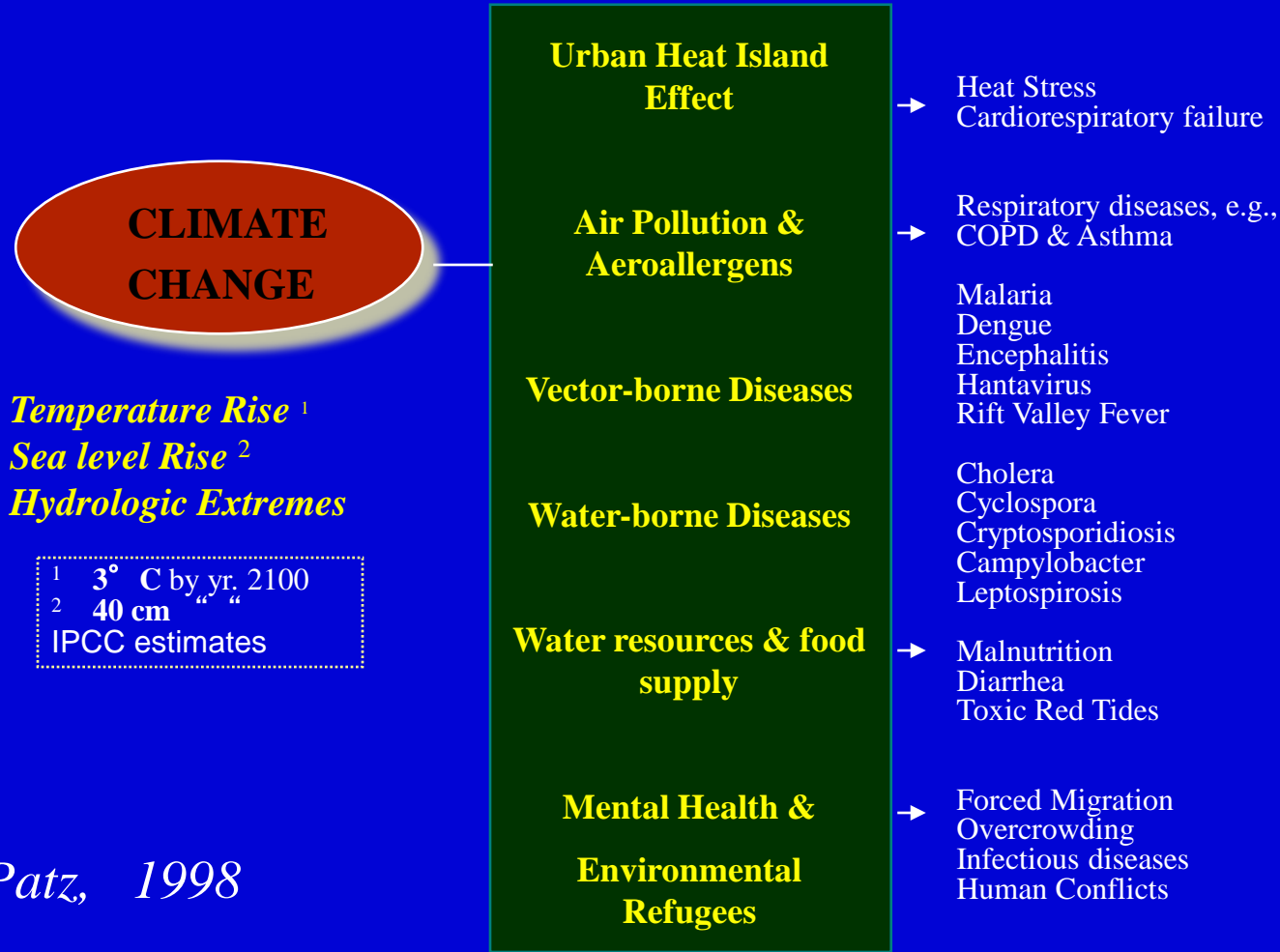


Global Temperature Anomaly 1850-2012



IPCC AR5 WG1 Figure SPM.1

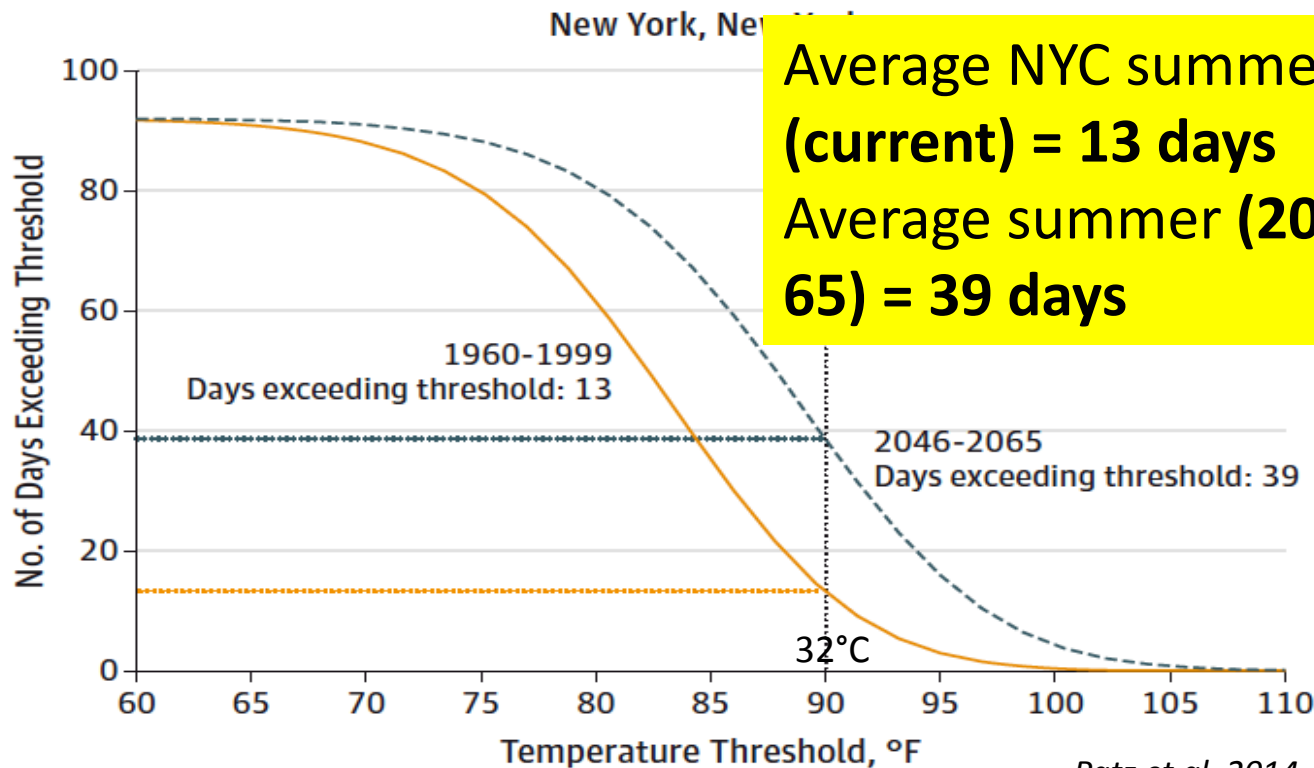
# HEALTH EFFECTS OF CLIMATE CHANGE



*Patz, 1998*



# Projected # of days over 32°C



Average NYC summer  
(current) = 13 days  
Average summer (2046-  
65) = 39 days

A high-angle, wide shot of a massive crowd of people participating in the Peoples Climate March in New York City. The crowd fills a wide city street, stretching far into the distance. Many participants are holding signs and banners. Prominent banners include "PEOPLES CLIMATE MARCH" at the bottom, "FRONTLINES OF CRISIS FOREFRONT OF CHANGE" in the middle, and "RESPECT ENVIRONMENT IS RIGHT" above it. Numerous smaller signs feature sunflower graphics and text like "KEEP THE OIL &amp; COAL ROUNDED", "DIE NO MORE", "PROTECT OUR EARTH", "FIRE", "WATER", "FOR CLIMATE", "NOW NOW NOW", "GREEN OVER", "LIFE", "full bloom", and "Climate Change is a Global Emergency". The crowd is diverse in age and appearance, and the atmosphere appears energetic. The street is lined with trees and city buildings, and the overall scene conveys a sense of large-scale civic action.

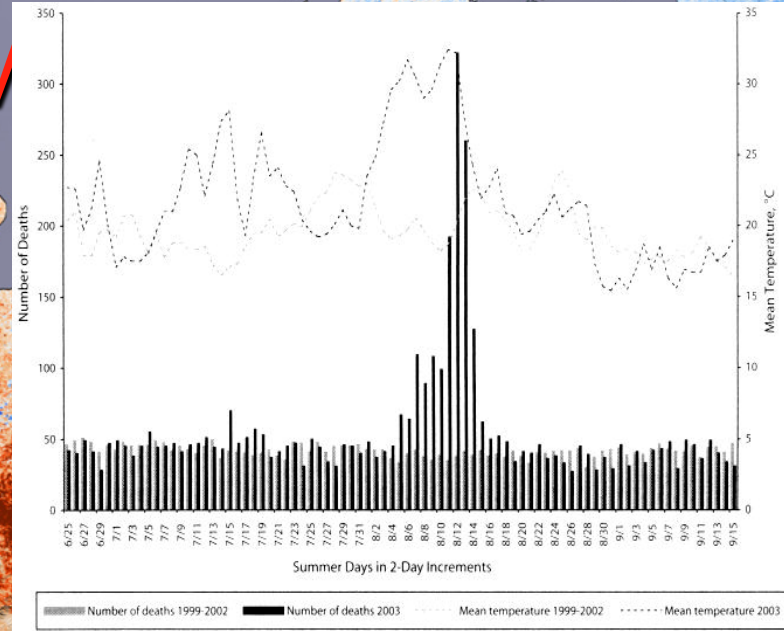




# HEAT WAVE

➤ 70,000  
deaths in 11  
days

TIME LINE (FRANCE)



Vandentorren et al. Mortality in 13 French cities during the August 2003 heat wave. *Am J Public Health* 2004; 94(9): 1518-20.

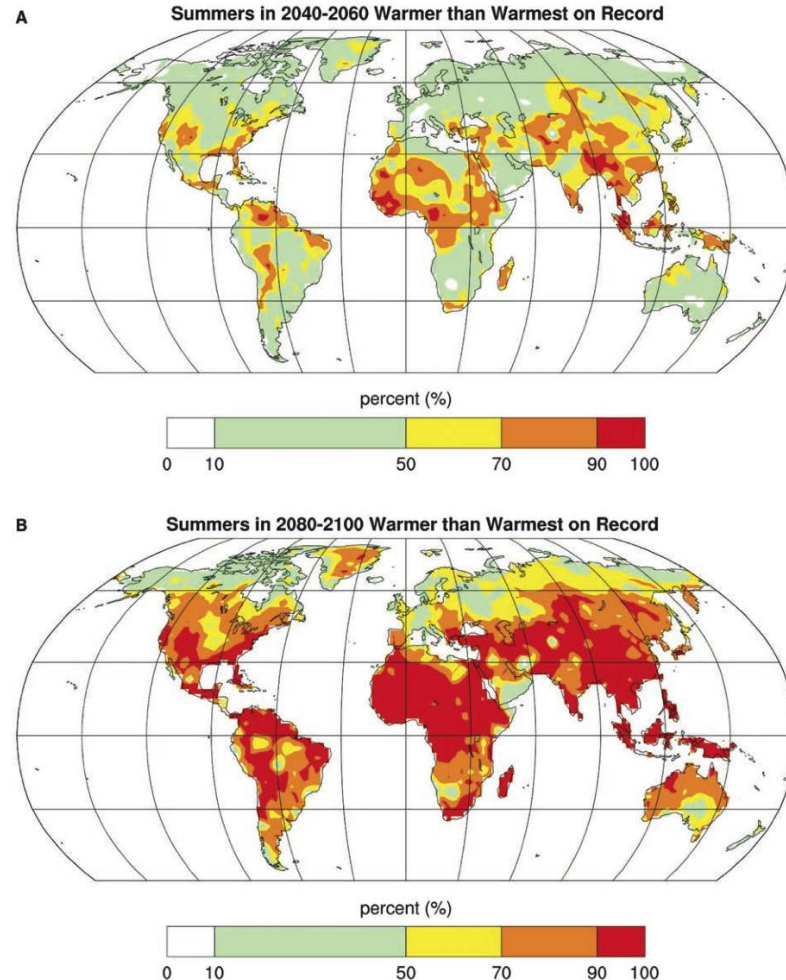
**Probability of 'mega-heatwaves' will increase by a factor of 5 to 10 within the next 40 years.**



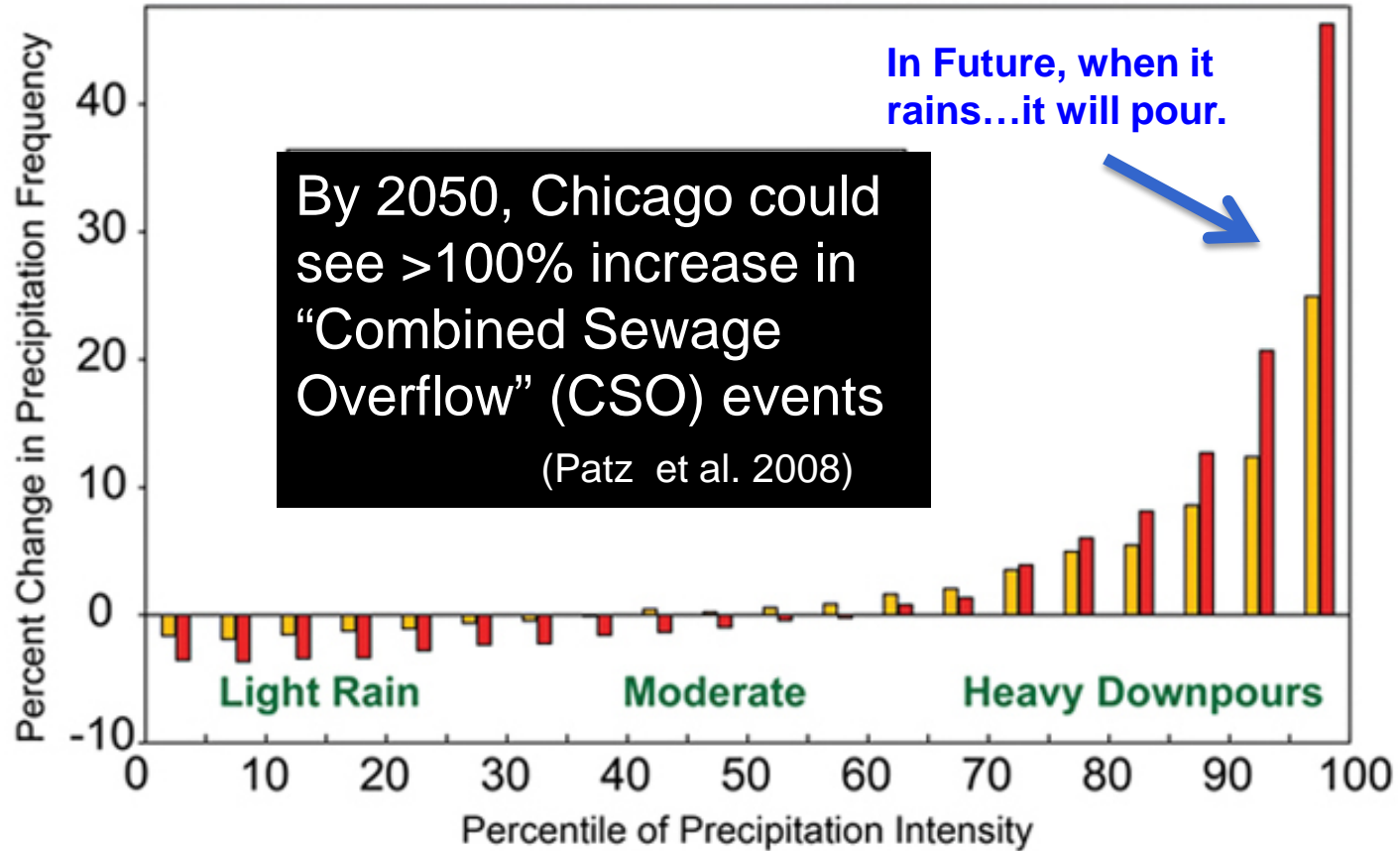
# Future summers warmer than warmest on record

Today's 900 million at risk for hunger could double by mid-century.

Battisi and Naylor, *Science* 2009



**Fig. 3.** Likelihood (in percent) that future summer average temperatures will exceed the highest summer temperature observed on record (A) for 2050 and (B) for 2090. For example, for places shown in red there is greater than a 90% chance that the summer-averaged temperature will exceed the highest temperature on record (1900–2006) (22).



Globally Averaged

U.S. CCSP, 2008

**So climate change  
is not just about  
warming.**

...and of course  
it's not **just** about  
**human health**





**Could Combating Climate  
Change be cost-free?**

**...or even a net gain?**

# The opportunity for improving health determinants

We can reduce:

The **3 million annual deaths**  
from urban air pollution

The loss of **3.2 million deaths**,  
from physical inactivity



# Examples from Transport Sector

## Study of the Day: Biking to Work Could Save 1,100 Midwesterners

Grabow et al. 2011

NOV 2 2011, 8:00 AM ET



0

Recommend

*New research from U. Wisconsin projects the benefits of active transport in terms of improvements in air quality and physical fitness*

Shanghai : 44-48% reduction in colon cancer

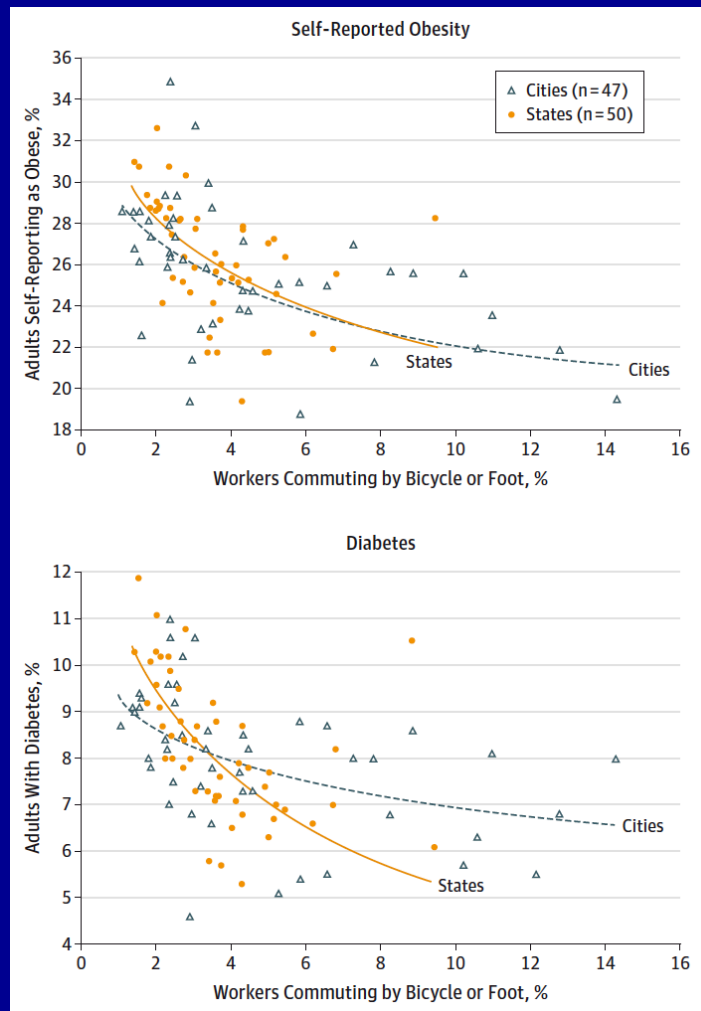
Hou et al. 2004

London, 12-13% reduction in breast cancer  
and 10-19% less heart disease

Woodcock et al. 2007



**Commuting to  
work by bike or  
on foot, yields  
health benefits  
in the US**



Data from Pucher et al. 2010

# Greenspace and Mental

Bever et al. 2014

**Table 3.** Difference in Symptoms of Depression, Anxiety and Stress Associated with 25% More Neighborhood Green Space §§.

Green Space Measure	Depression	Anxiety	Stress
25% More Tree Canopy	−1.005 (0.293) **	−0.273 (0.139)	−0.548 (0.261) *
25% Higher NDVI	−1.369 (0.464) **	−0.512 (0.227) *	−0.701 (0.432)
25% More Greenspace (NDVI & Tree Canopy Average)	−1.379 (0.397) **	−0.427 (0.185) *	−0.735 (0.349) *

# Co-benefits: Food and Agriculture



People's Climate March, Sept. 21, 2014,  
NYC

Photo: J Patz



# Diet and GHG Emissions

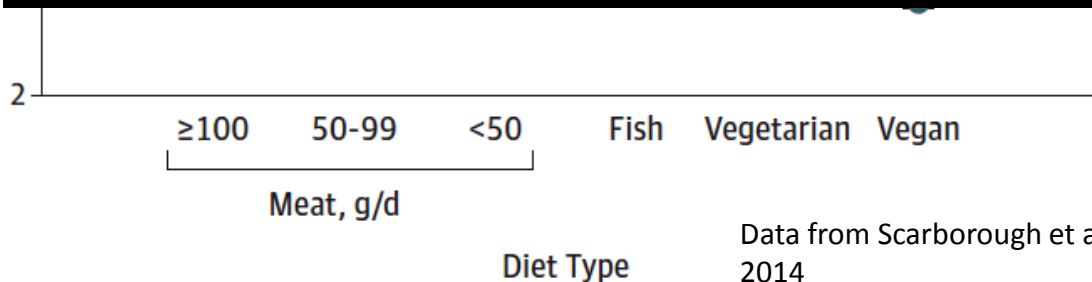
Mean Carbon Dioxide Equivalents per d, kg

If meat consumption was halved, GHGs could be reduced by 25–40% and intake of saturated fat could fall by 40%

Westhoek, 2014

Heart disease burden could fall by 15%

Friel, 2009



Data from Scarborough et al.  
2014

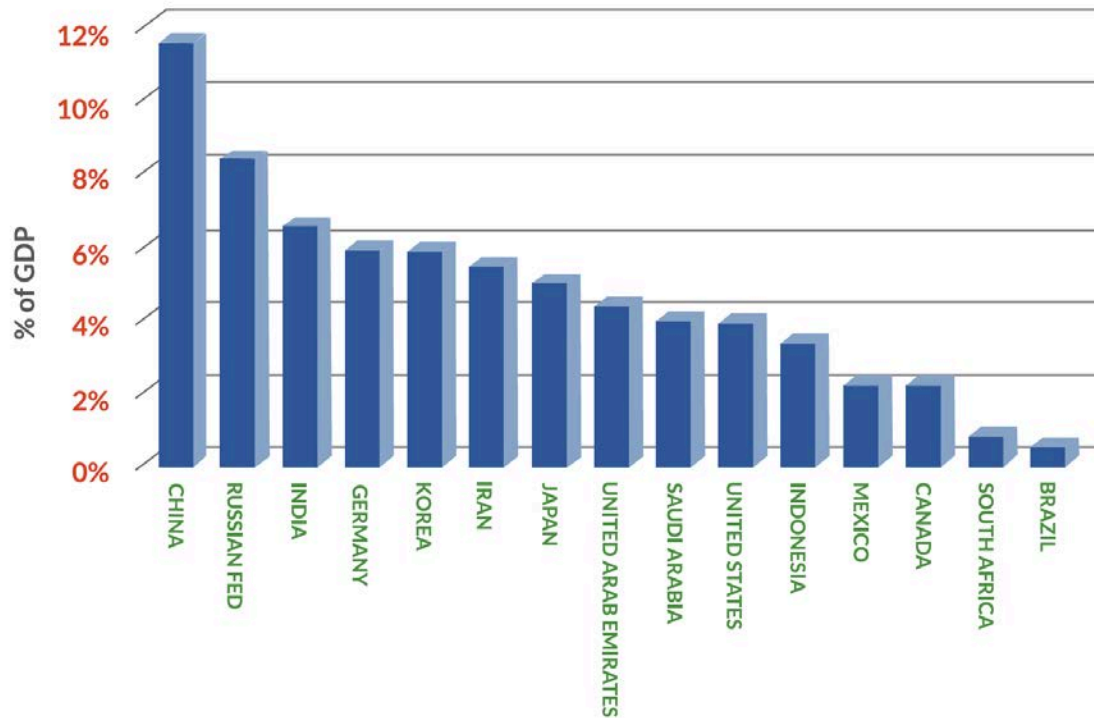
# A systems approach to evaluating the air quality co-benefits of US carbon policies

Tammy M. Thompson<sup>1\*†</sup>, Sebastian Rausch<sup>1†</sup>, Rebecca K. Saari<sup>2</sup> and Noelle E. Selin<sup>2,3</sup>

Because human activities emit greenhouse gases (GHGs) and conventional air pollutants from common sources, policy designed to reduce GHGs can have co-benefits for air quality that may offset some or all of the near-term costs of GHG mitigation. We present a systems approach to quantify air quality co-benefits of US policies to reduce GHG (carbon) emissions. We assess health-related benefits from reduced ozone and particulate matter (PM<sub>2.5</sub>) by linking three advanced models, representing the full pathway from policy to pollutant damages. We also examine the sensitivity of co-benefits to key policy-relevant sources of uncertainty and variability. We find that monetized human health benefits associated with air quality improvements can offset 26–1,050% of the cost of US carbon policies. More flexible policies that minimize costs, such as

“...health  
benefits...can offset  
26-1050% of the cost  
of US carbon  
policies”

**COST OF MORTALITY FROM OUTDOOR PM 2.5 EXPOSURE  
-AS % OF GDP (MEDIAN ESTIMATES), 2010, 15 LARGEST CO<sub>2</sub> EMITTERS**

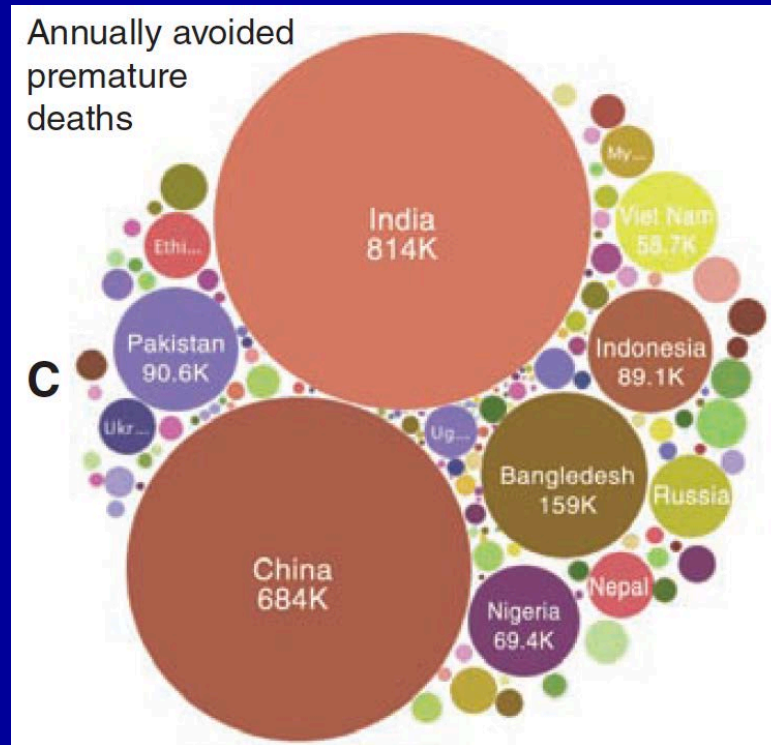


From Hamilton, 2014. In: "The New Climate Economy Report," 2014.



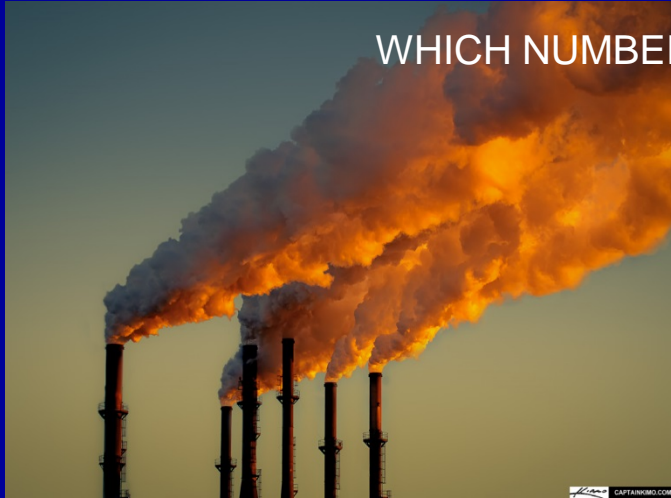
# Co-benefit of 0.7 to 4.7 million deaths/yr. Reductions in PM pollution in 2030

Shindell....J Schwartz... et.al. *Science*, 2012



- **Cost of cleaner energy:**

**< \$30/ tCO<sub>2</sub>**



WHICH NUMBER IS BIGGER???

- **Benefits of cleaner energy: \$200\*/ tCO<sub>2</sub>**



(\* Range: \$50 to \$380)

For E. Asia, co-benefits are **10 to 70 times** greater

# Conclusions

Health Promotion =

- Energy Policy
- Urban Planning & Transportation
- Agriculture & Food System Policy
  
- Therefore, the health sector must reach out & engage



# Thank You

(and G'day)!

[patz@wisc.edu](mailto:patz@wisc.edu)



**Global Health Institute**  
UNIVERSITY OF WISCONSIN-MADISON

# World Parks Congress

The potential for technology in dynamic landscapes

Bruce Esplin

Former Emergency Services Commissioner Victoria

A person is lying on their back in a field of dry, reddish-brown grass. They are holding a tablet computer up to their face, with their hands visible. The person is wearing a dark, textured sweater. In the background, a city skyline is visible under a bright, hazy sky. The overall image has a warm, golden-hour glow.

“Information, understanding, connection and engagement are the foundations of modern life”

# Connectivity

## Enhanced capabilities

## Data and Information



# Connectivity

---



# Enhanced capabilities

---







**Data &  
information**.....

“The Internet of Things will see  
30 billion connected devices by 2020”

Source: IDC





Thank you

*Welcome to*

Session 34:

# Responding to the effects of climate change on communities, parks and protected areas



*Coming up in Stream 3*

**Hall 3B1 Home Room, 10.30am-12pm**

**Session 33: Stream outcomes**



*Stay connected*

For more information on the *Healthy Parks Healthy People* approach visit [www.hphpcentral.com](http://www.hphpcentral.com)

Contribute to the Promise of Sydney at  
[www.worldparkscongress.org/about/promise\\_of\\_sydney](http://www.worldparkscongress.org/about/promise_of_sydney)

