

Impact of Climate Change on Public Health

September 23, 2004

Air Resources Board

California Environmental Protection Agency



Health Impacts of Fossil Fuels



Burning Fossil Fuels



Greenhouse Gas Emissions

Air Pollution

Climate Change

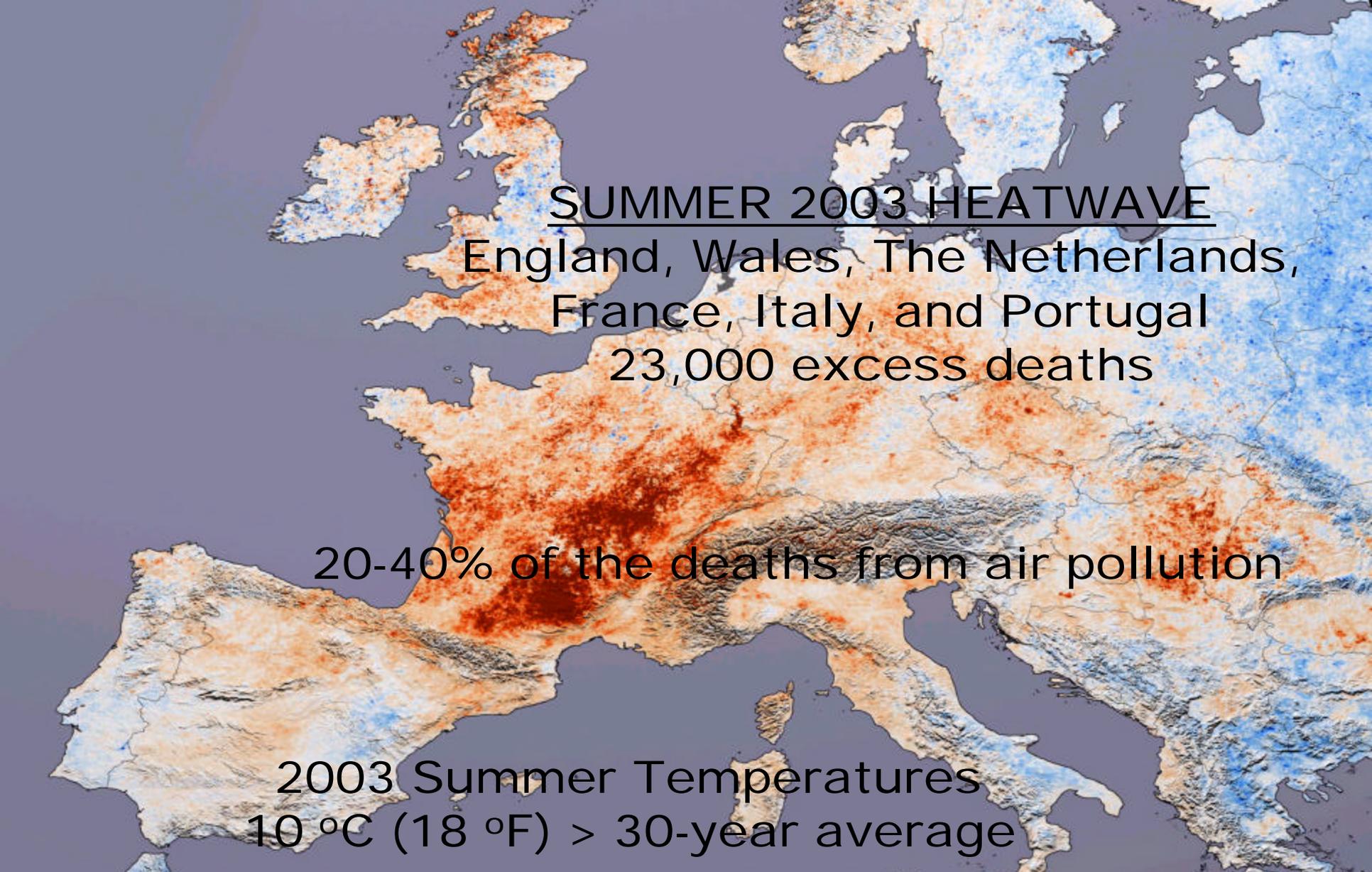
Asthma Attacks

Other Respiratory Illnesses
Premature Death from Heart and Lung Diseases

Heat-related Deaths
Injuries from Extreme Weather Events
Allergies
Infectious Diseases



Source: Harvard Medical School (2004)



SUMMER 2003 HEATWAVE
England, Wales, The Netherlands,
France, Italy, and Portugal
23,000 excess deaths

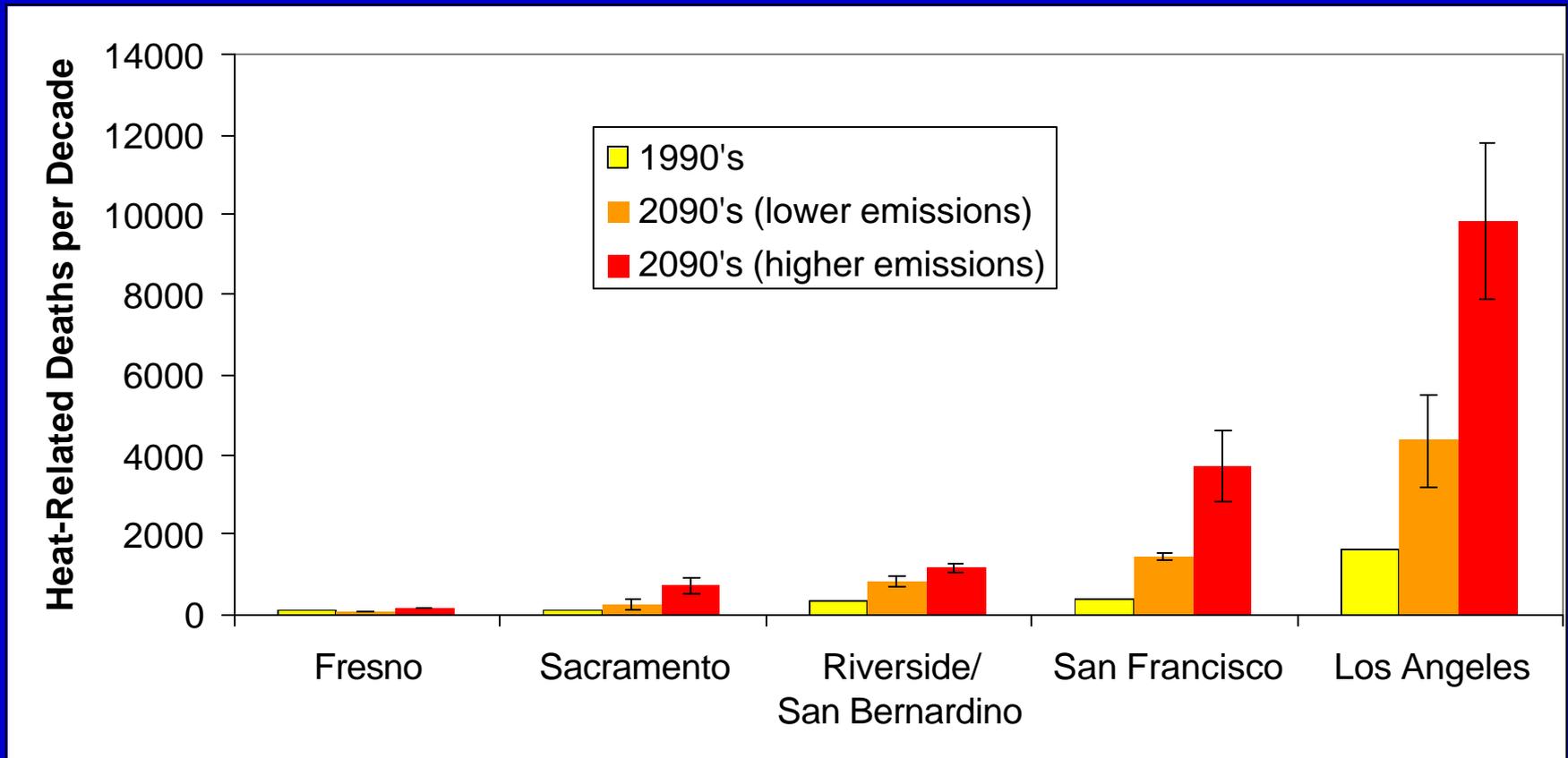
20-40% of the deaths from air pollution

2003 Summer Temperatures
10 °C (18 °F) > 30-year average



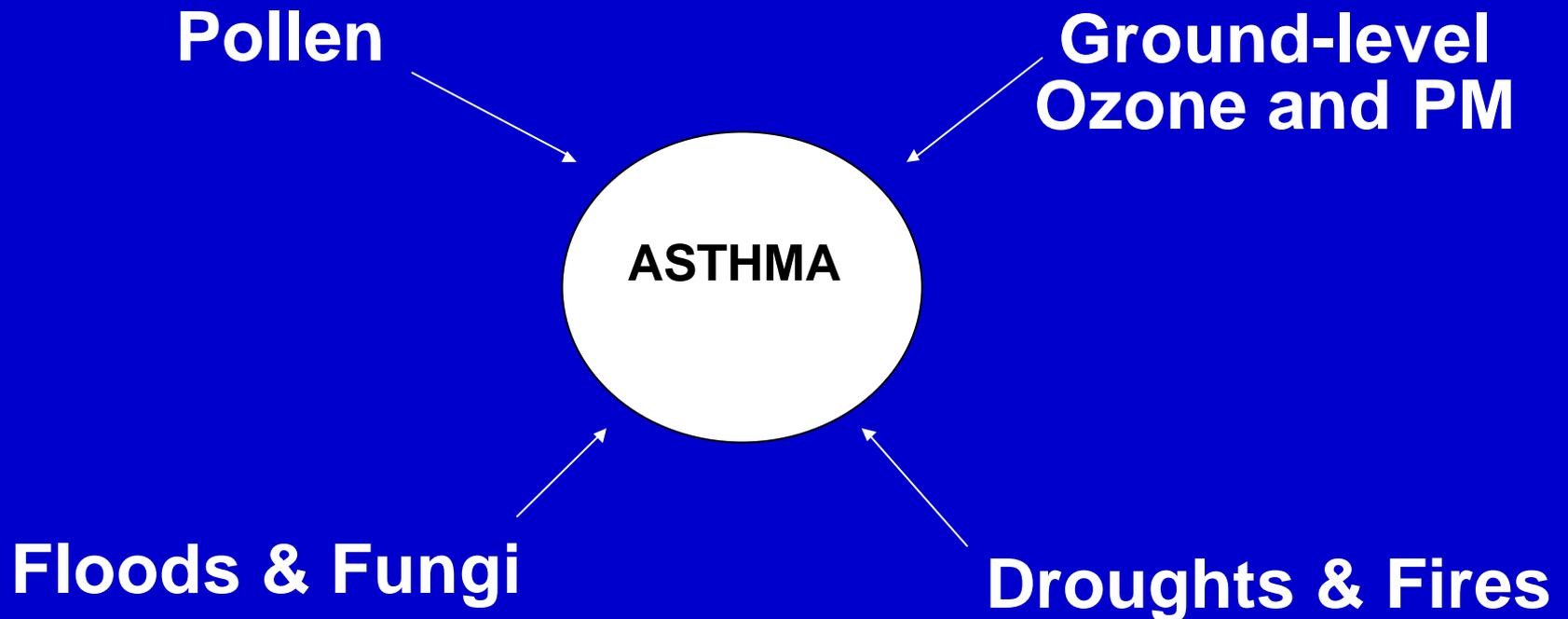
Sources: World Health Organization (2004), NASA (map),
Atmos. Environ., **38**: 1083-1085; 1087-1090 (2004)

Projected Deaths from Heatwaves



Sources: Proceedings of the National Academy of Sciences (2004),
Union of Concerned Scientists (2004)

Asthma and Climate Change



Source: Harvard Medical School (2004)

Ragweed and Climate Change

- Drought favors colonization
- Pollen increases with CO₂
- Common allergen in Eastern U.S.



Ambrosia artemisiifolia

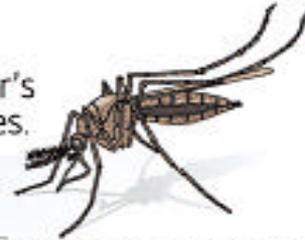


Source: Harvard Medical School (2004)
Owen K. Davis (photo)

A Case Study: West Nile Virus

West Nile virus activity

The virus is active in almost every state, but this year's outbreaks have been concentrated in Western states.

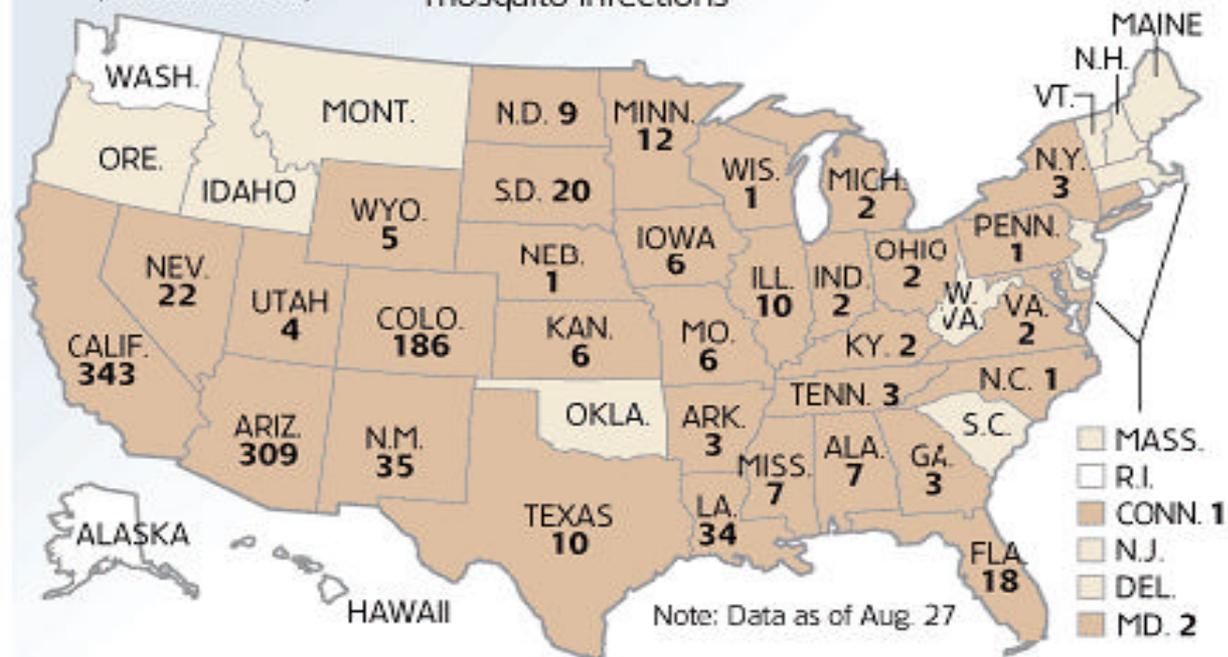


2004 activity

Human cases
(number in bold)

Avian, animal or
mosquito infections

No evidence of virus



Source: Centers for Disease Control (2004)

Environmental Justice and Climate Change

- At greater risk to heatwave mortality
- More asthma attacks

Sources: New England Journal of Medicine **335**: 84-90 (1996)
Morbidity and Mortality Weekly Report, **53(7)**: 145-148 (2004)
Harvard Medical School (2004)



Conclusions

- **Climate change impacts**
 - Heatwave-related deaths
 - Increased asthma effects
 - Increased allergen production
 - Increased infectious disease
 - Poor, minorities more affected

