GLOBAL WARMING AND EXTREME WEATHER EVENTS

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Panic Attack: Our Obsession With Risk
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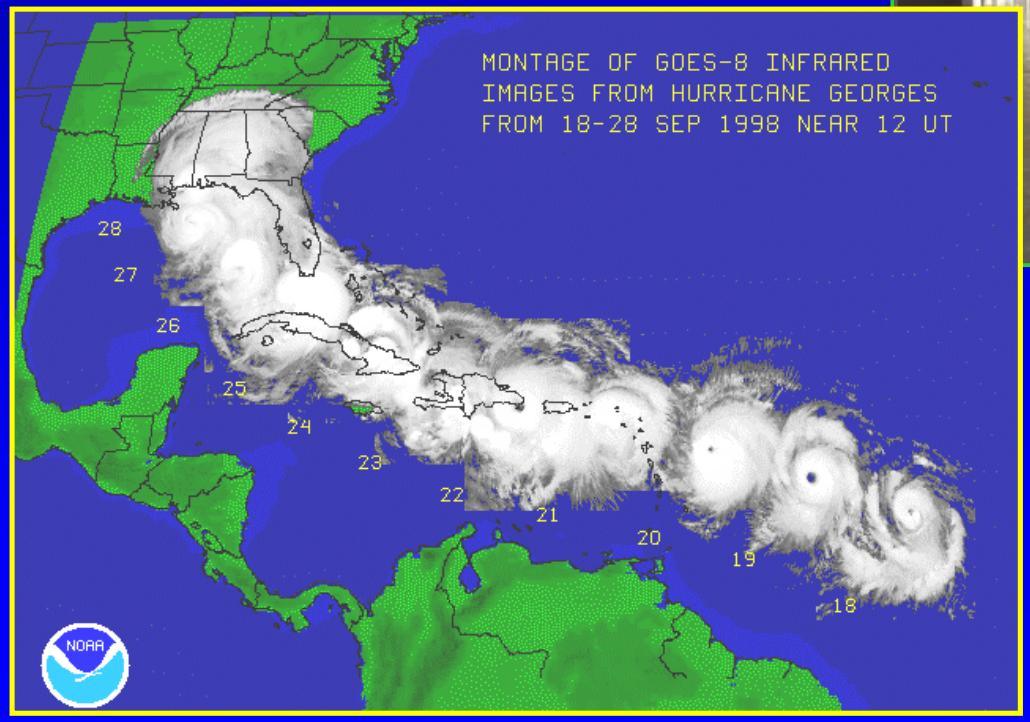
Are Climate Extremes Increasing?

UK Autumn 2000 Floods
(Loss ~ US $ 750 million)

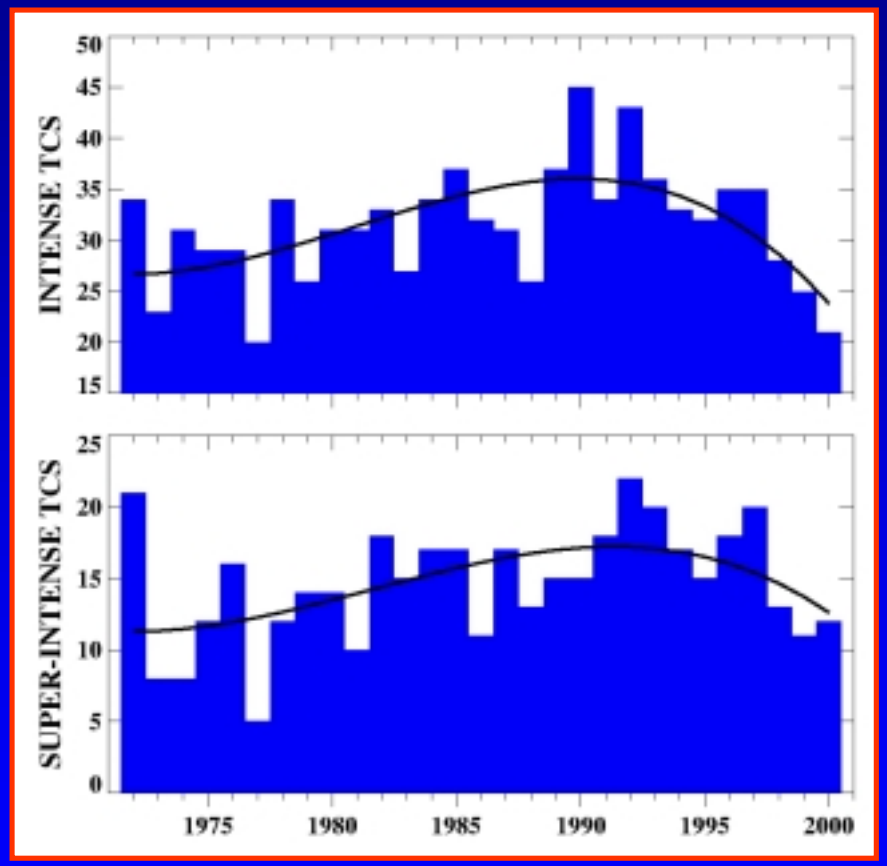


Hurricane Georges Strikes Caribbean 1998
(Loss ~ US $ 10 billion)

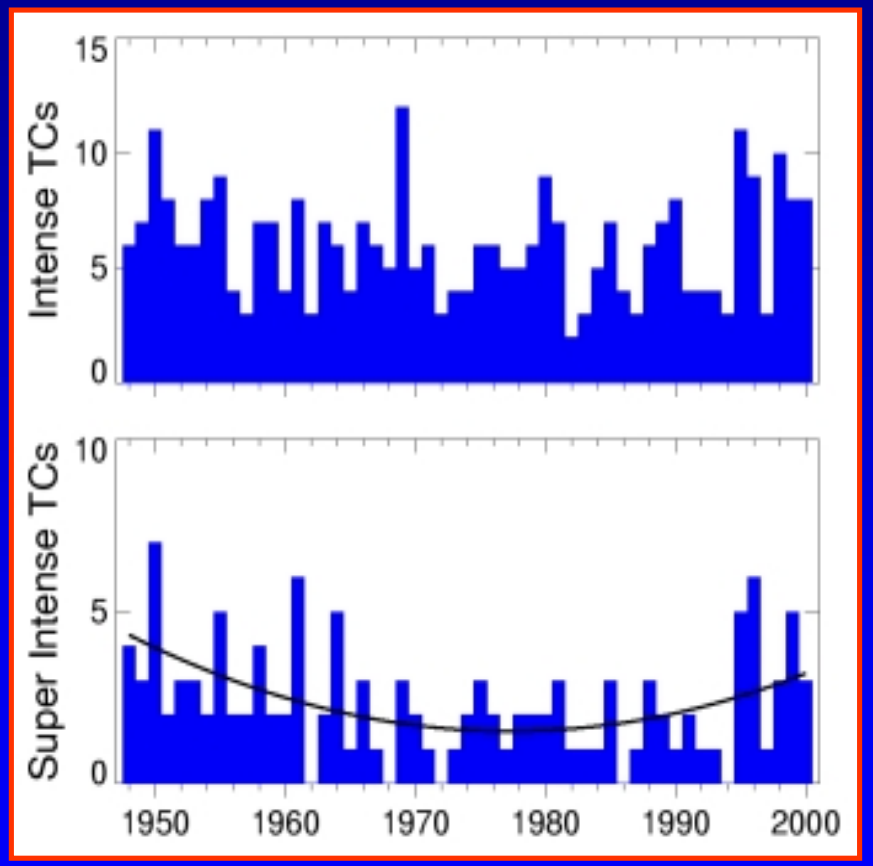
1. Hurricanes

Trends in Intense Tropical Cyclone Numbers

Northern Hemisphere 1971-2000



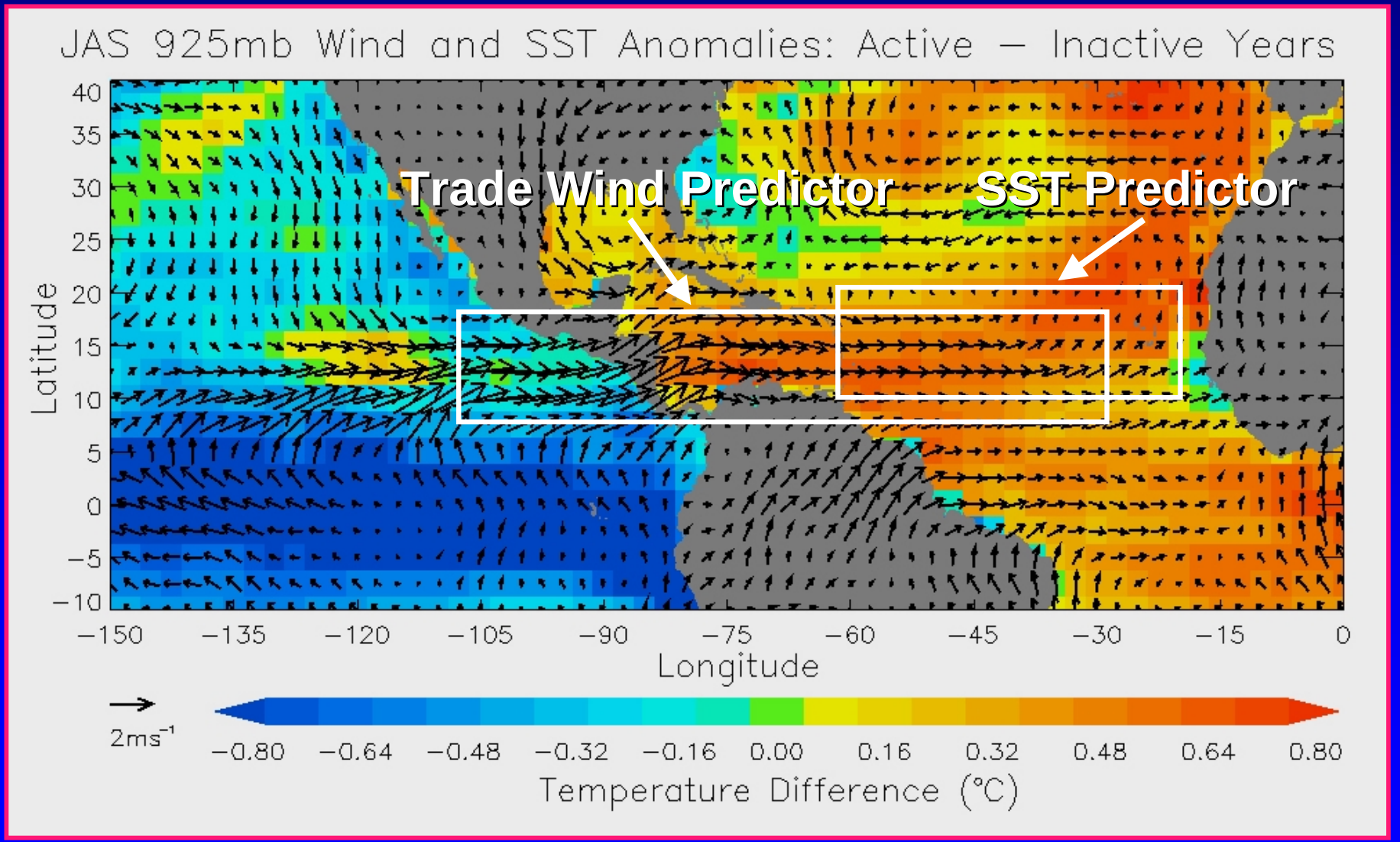
Atlantic Basin 1948-2000



Intense TCs = 1-min Sustained Winds > 73 mph

Super Intense TCs = 1-min Sustained Winds > 110 mph

Atlantic Hurricane Predictors

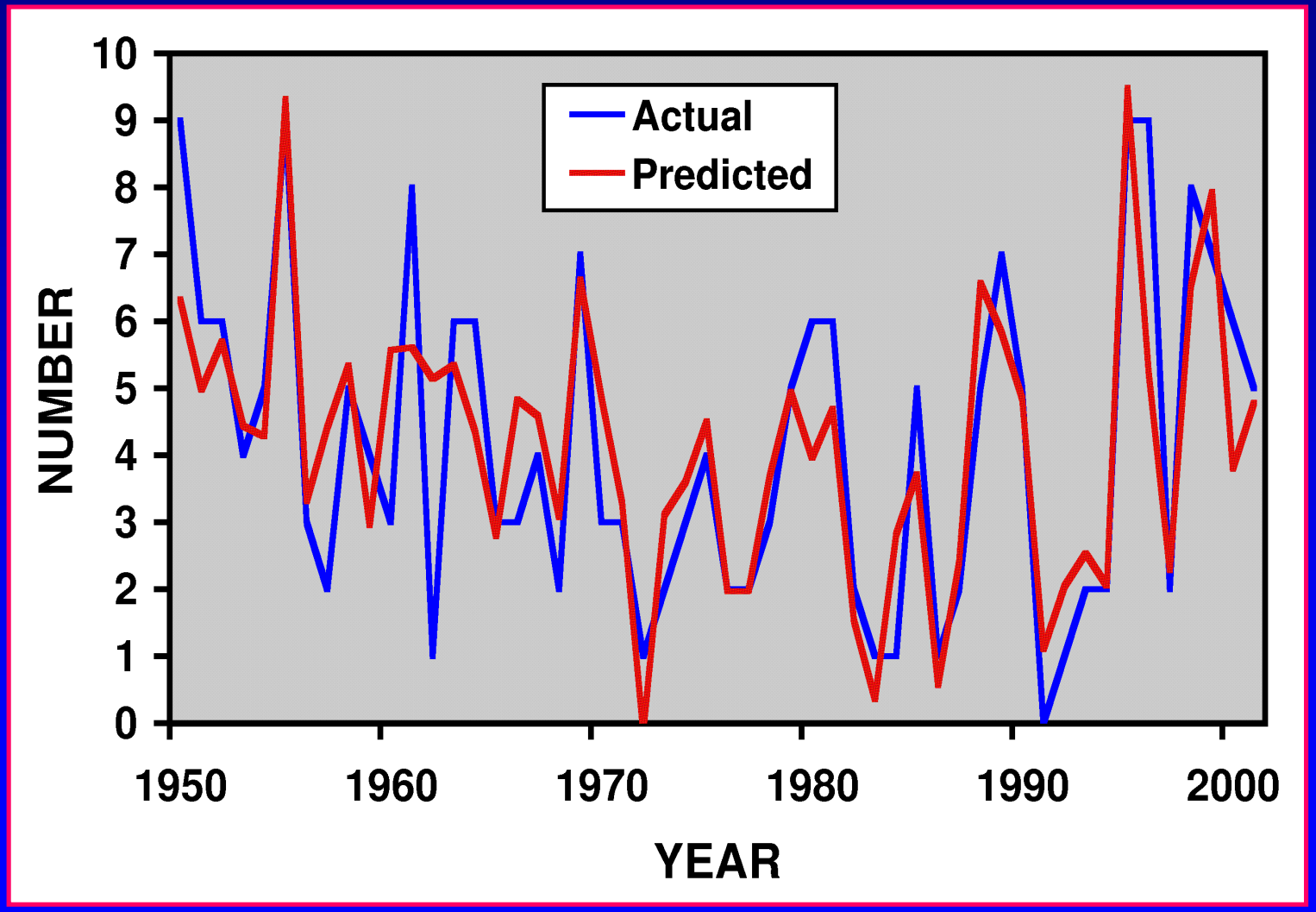


Hurricane Numbers 1950-2001

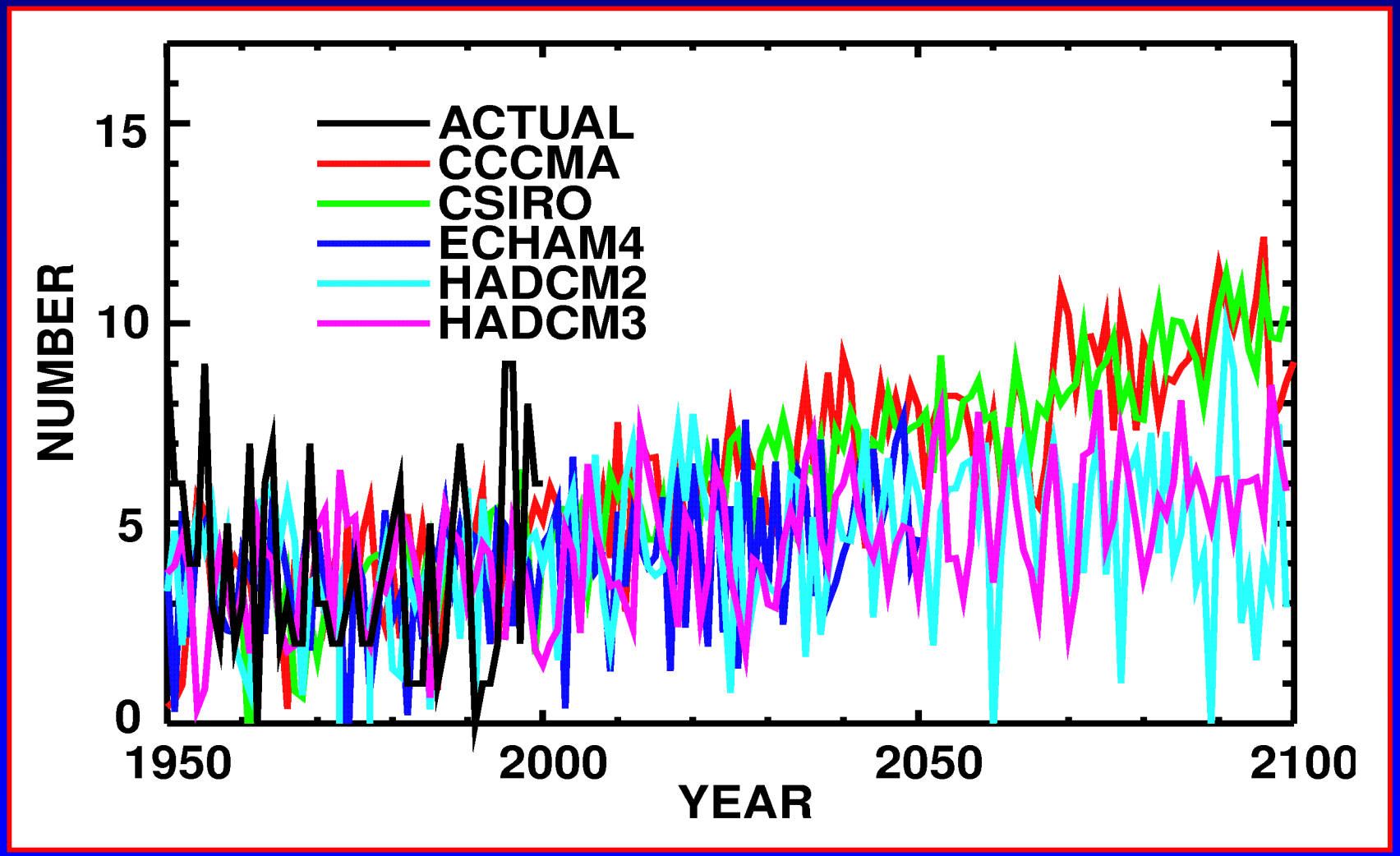
Tropical Atlantic, Caribbean Sea and Gulf

Perfect Predictors

$R^2 = 0.67$



Future Projections for Tropical Atlantic, Caribbean and Gulf Hurricane Numbers



Summary

- The number of Atlantic, US and Caribbean landfalling hurricanes may rise slowly due to global warming.
- However, the change in the mean number over the next 100 years is likely to be small compared to the current range of natural year-to-year variability.
- The large majority of future changes in US and Caribbean hurricane losses will continue to result from natural interannual and decadal variability.

2. Winter Storms

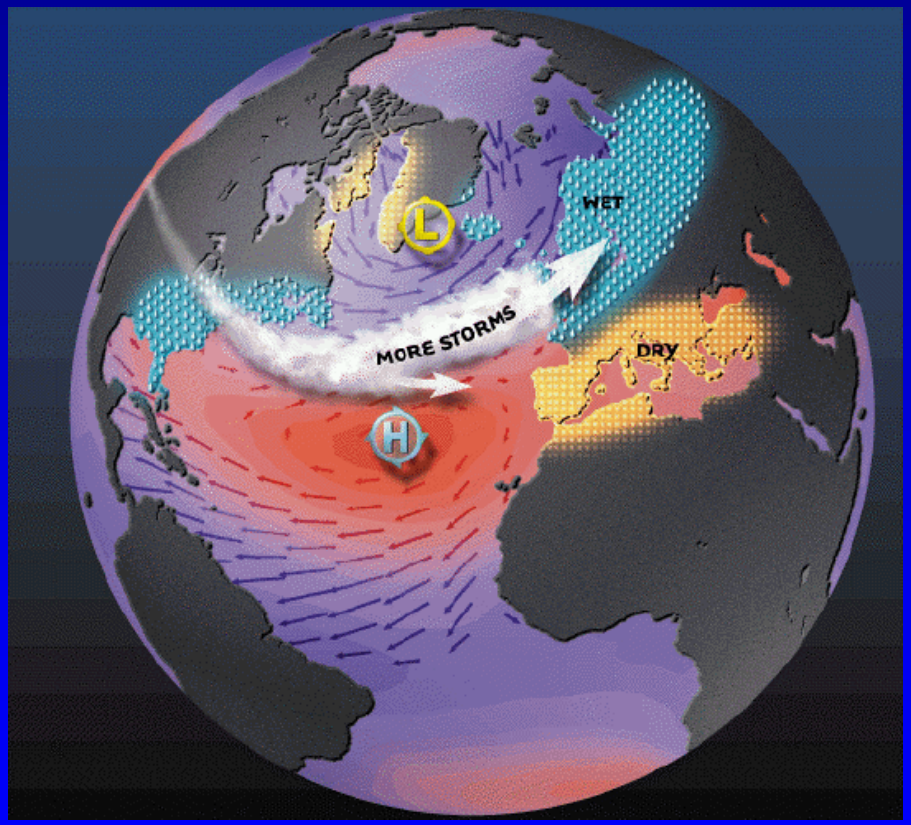
European Winter Storms

- European windstorms caused damages of £ 1.9 bn per year 1990-1999
- Rank as the 2nd highest cause of global insured losses after US hurricanes

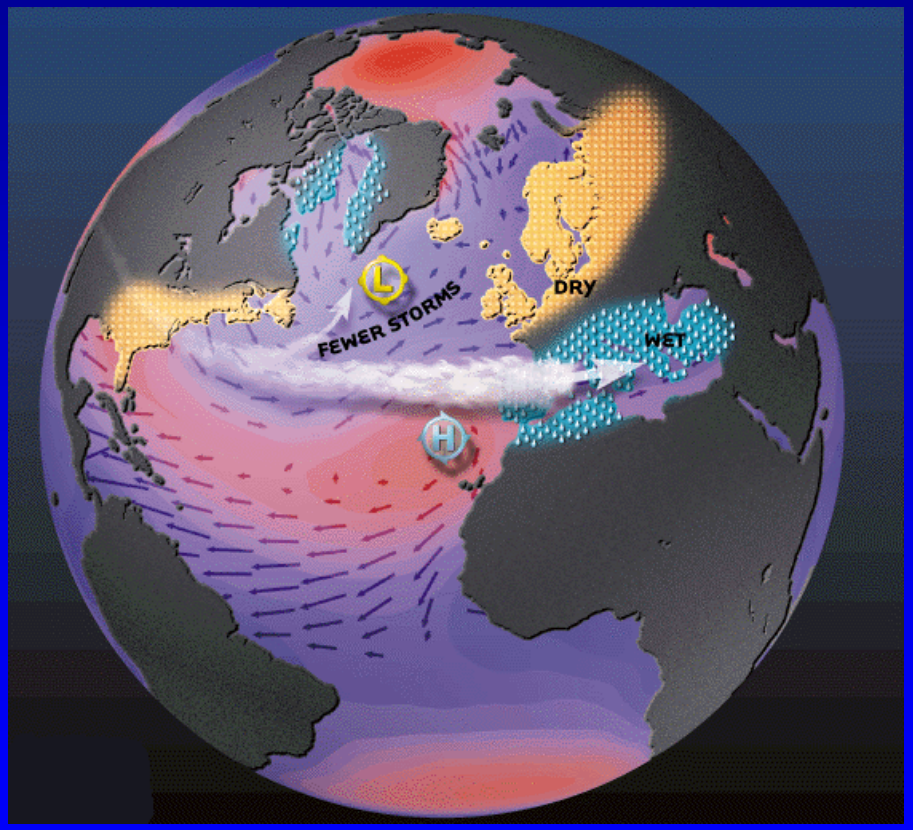
Porthleven, Cornwall: 4 Jan 1998 (Courtesy, Simon Burt)

North Atlantic Oscillation

+ve NAO

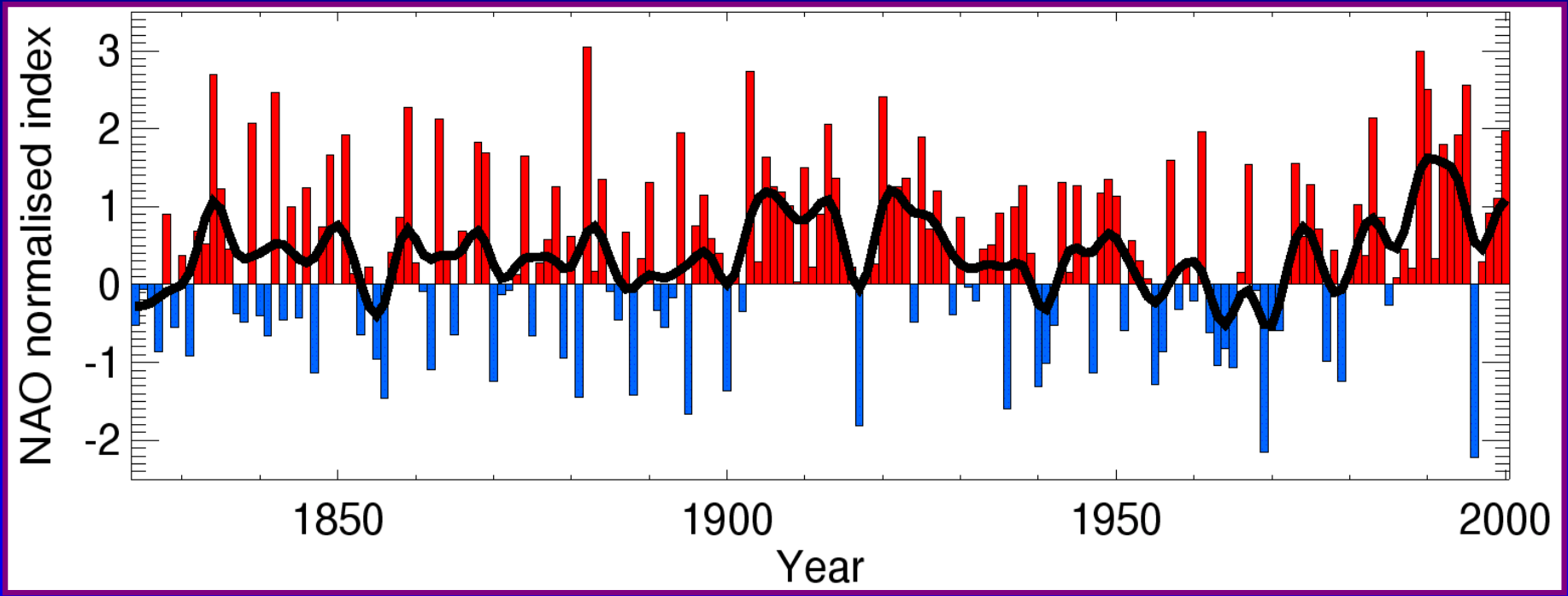


-ve NAO



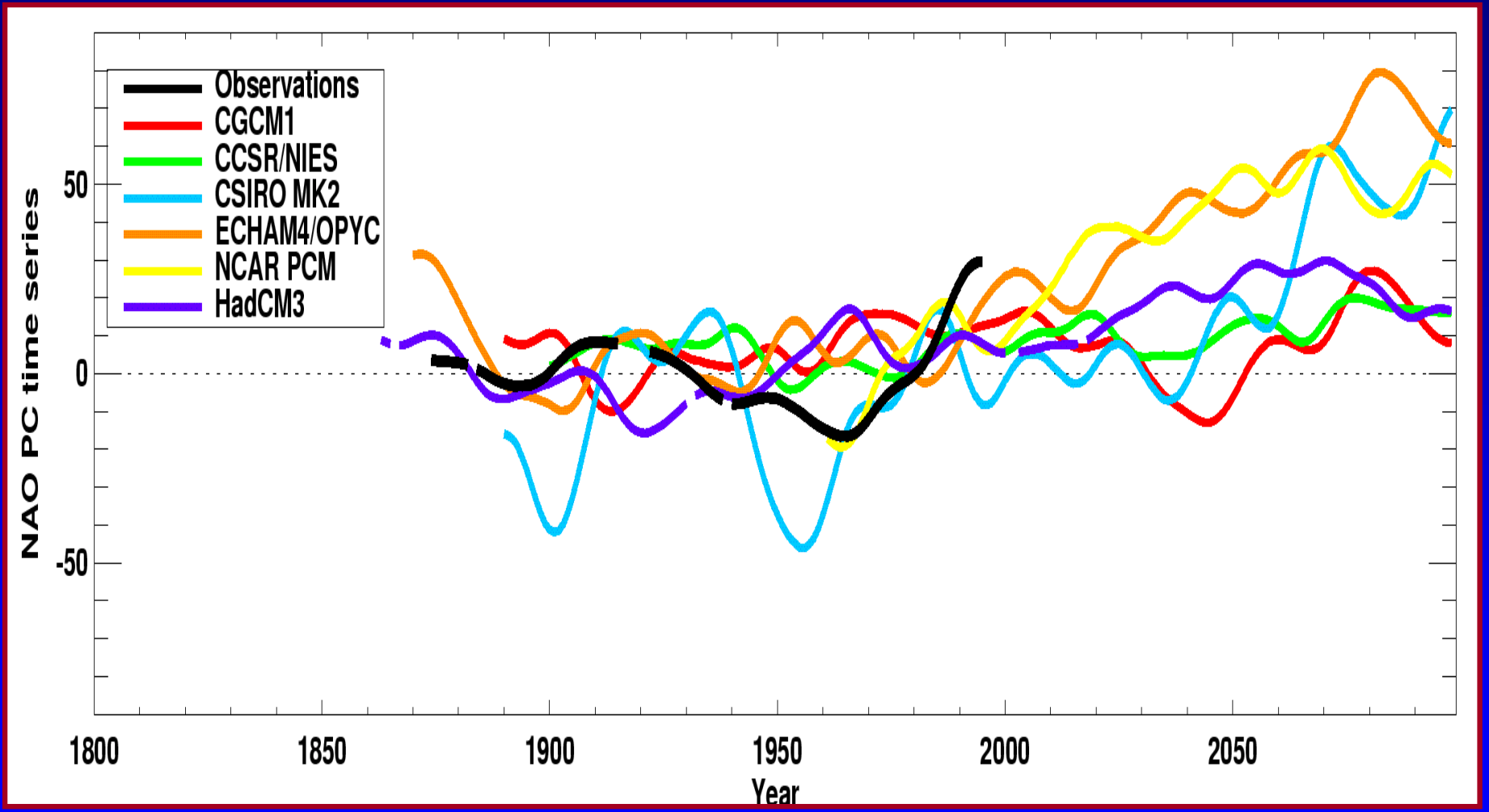
(Figures Courtesy of Martin Visbeck, Columbia University)

NAO Winter Index 1825-2000



(Figure Courtesy of Tim Osborn, University of East Anglia)

NAO Future Projections



(Figure Courtesy of Tim Osborn and Phil Jones, University of East Anglia)

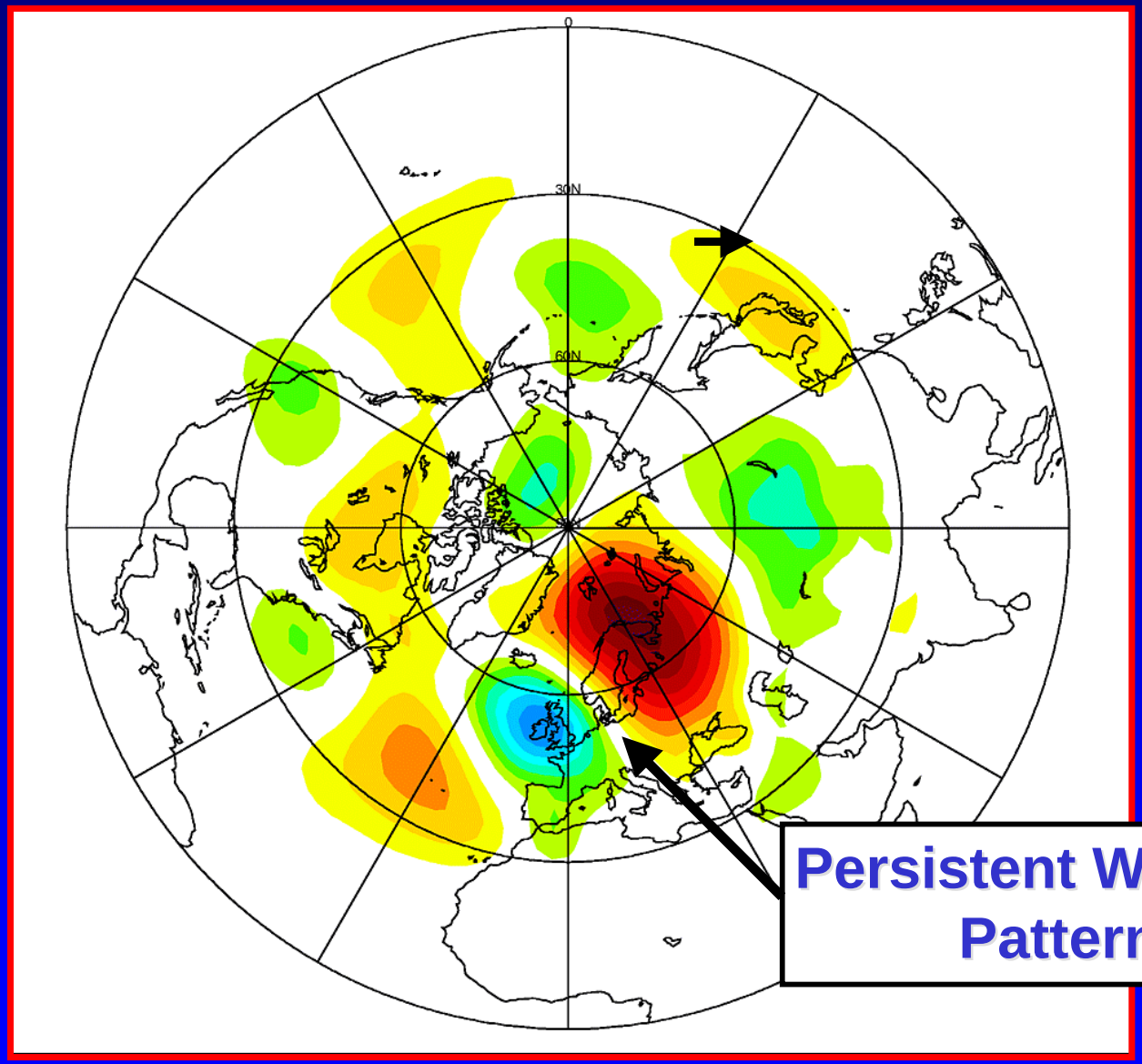
Summary

- The number of European winter windstorms may rise slowly due to global warming but trends (if any) are likely to be small.

- The large majority of European winter storm losses in the foreseeable future will continue to result from natural interannual and multi-decadal variability.

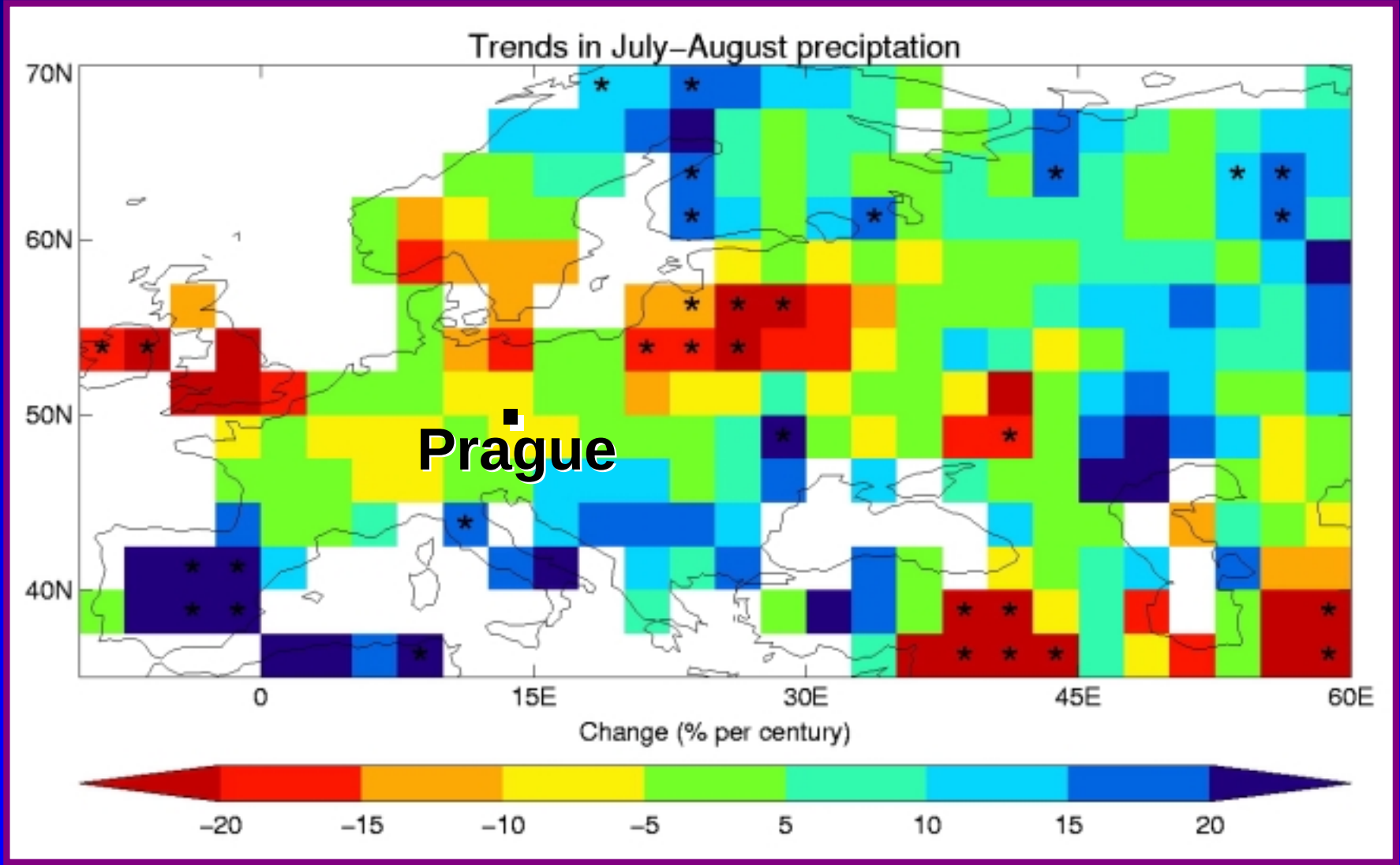
3. Floods

UK Floods of Autumn 2000



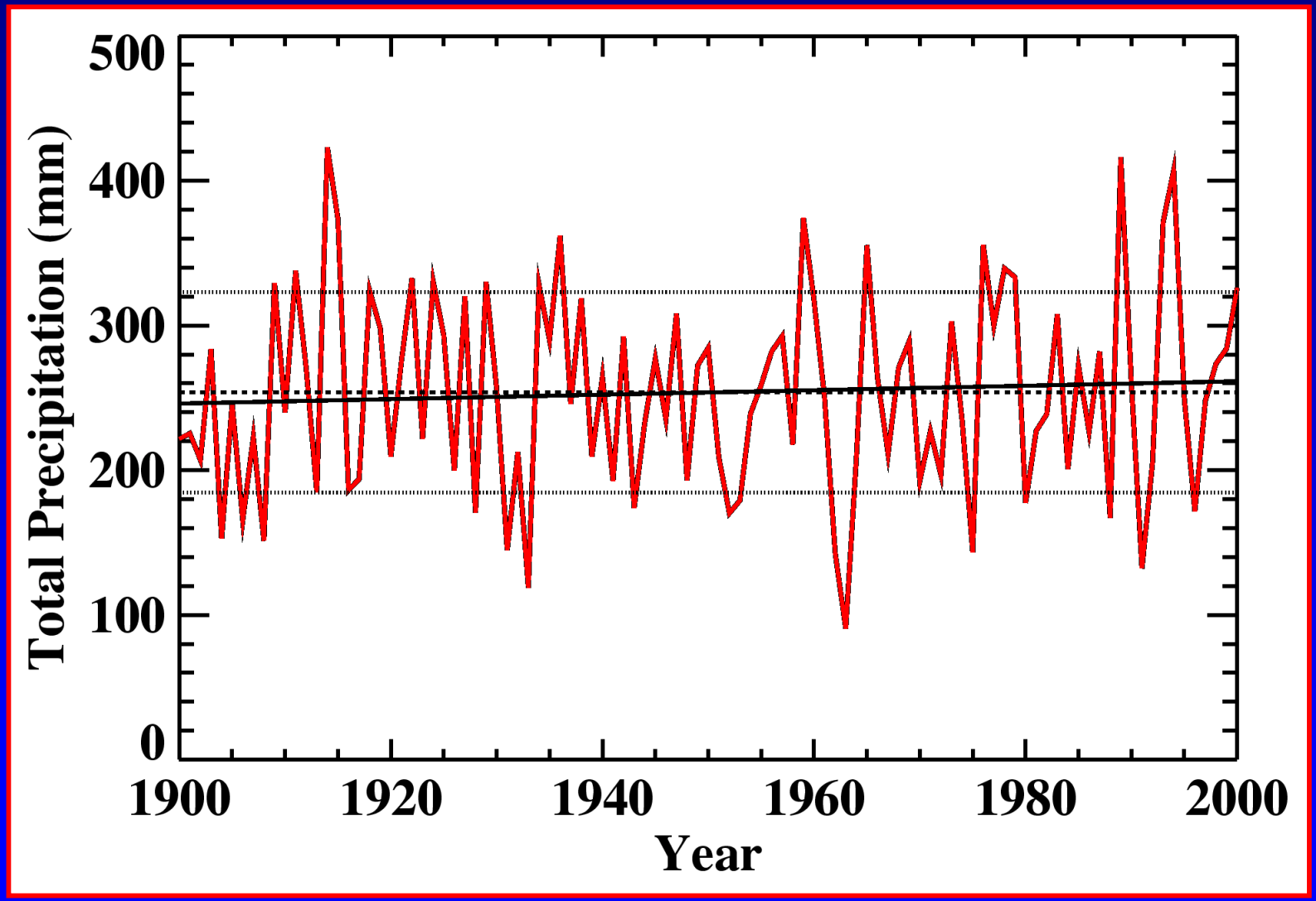
(Figure Courtesy of Mike Blackburn, University of Reading)

Czech Floods of Summer 2002



(Figure Courtesy of Ben Lloyd-Hughes, UCL)

England and Wales Winter Rainfall 1900/1-2000/1



Summary

- Climate change will slowly increase rainfall and the number of floods.
- There is little direct evidence to link the recent UK (autumn 2000) and European (summer 2002) floods to global warming.
- The large majority of floods in the foreseeable future will continue to result from natural climate variability and from non-global warming factors.

4. Overall Conclusions

Conclusions

- The large majority of future changes in the incidence of weather extremes will continue to result from natural interannual and decadal climate variability and not global warming.

- The economic impact of global warming - through its affect on extreme weather incidence - is likely to be small over the next 10-20 years.