"Residential Flood Insurance
- Lessons from around the World"
IBC, Toronto, Canada, 22nd October 2001

UK and Global Responses to Flood Hazard

Professor David Crichton

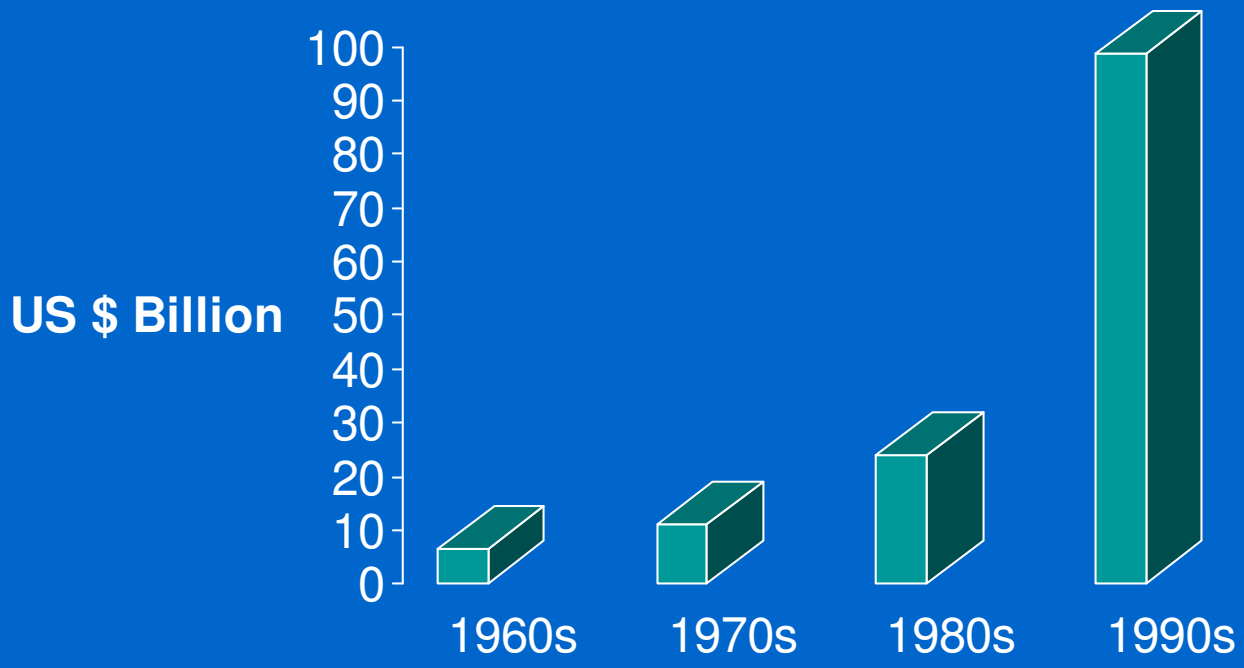
The year 2000...

- The eight warmest years on record have been since 1990. 2000 is the fifth warmest
- Record breaking severe cold affected India, Russia, China and South America
- Autumn 2000 was the wettest in England since records began 235 years ago
- Alaska had its first ever thunderstorm.

Source: The World Meteorological Organisation

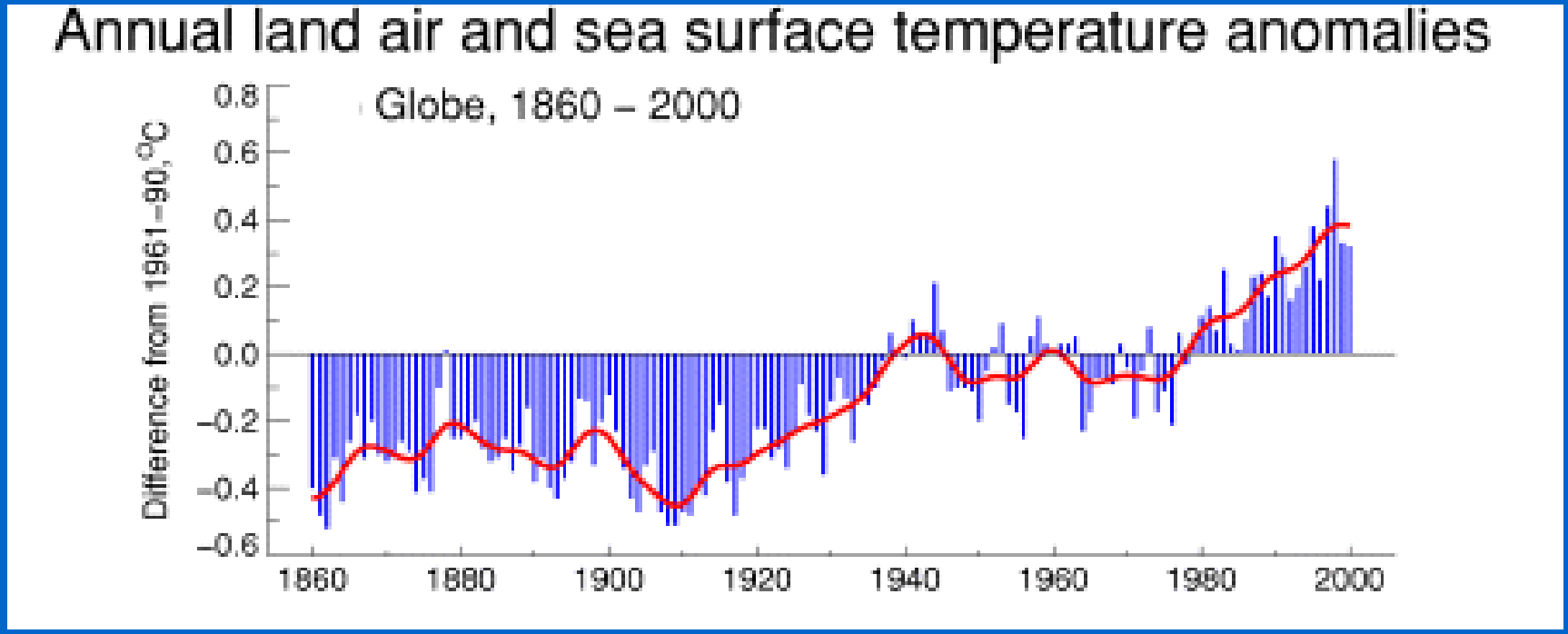
World wide insurance losses

Natural Catastrophe Losses - Decadal Totals



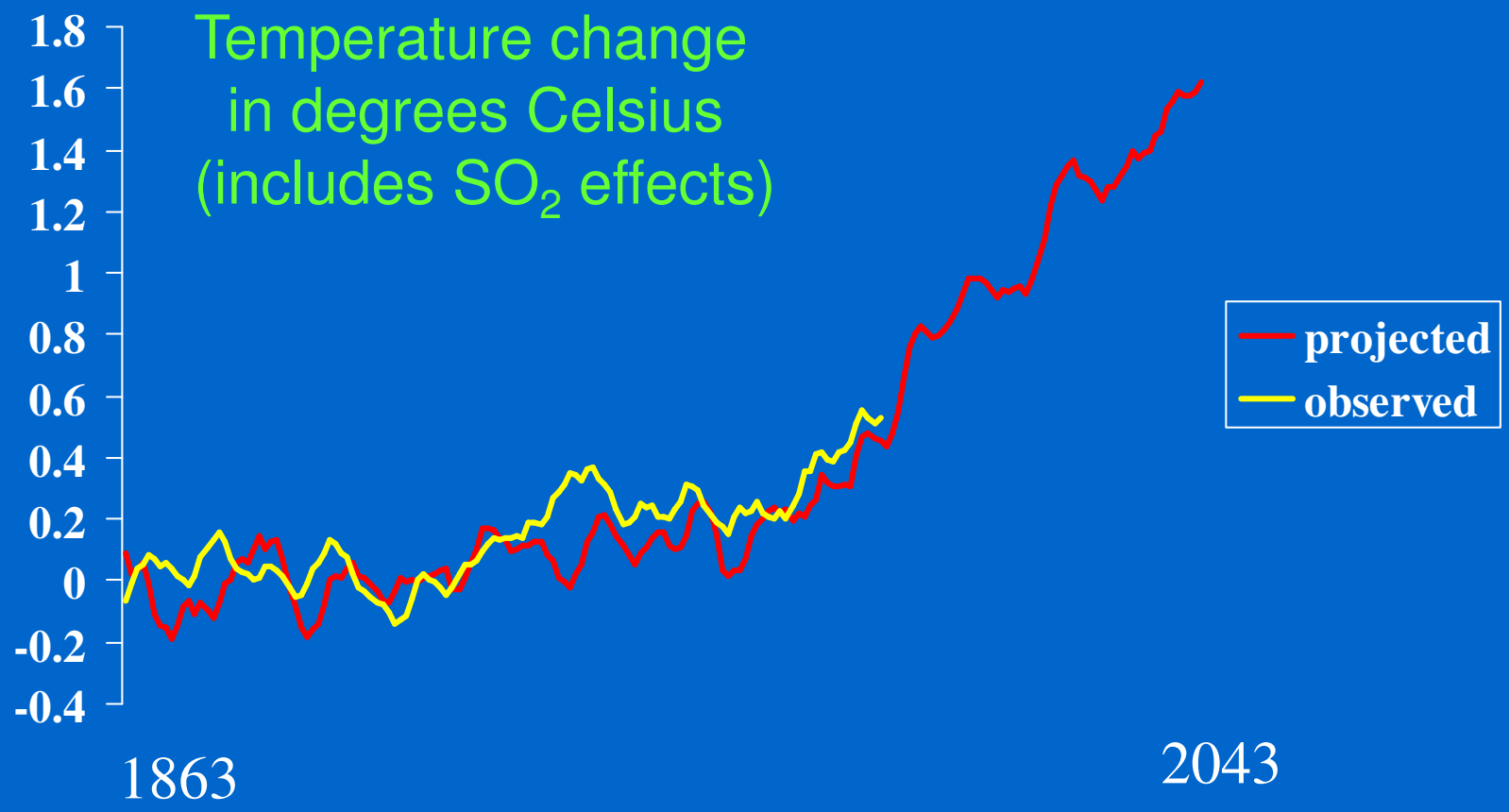
Source: Munich Re, January 2000

Is the Earth getting warmer?

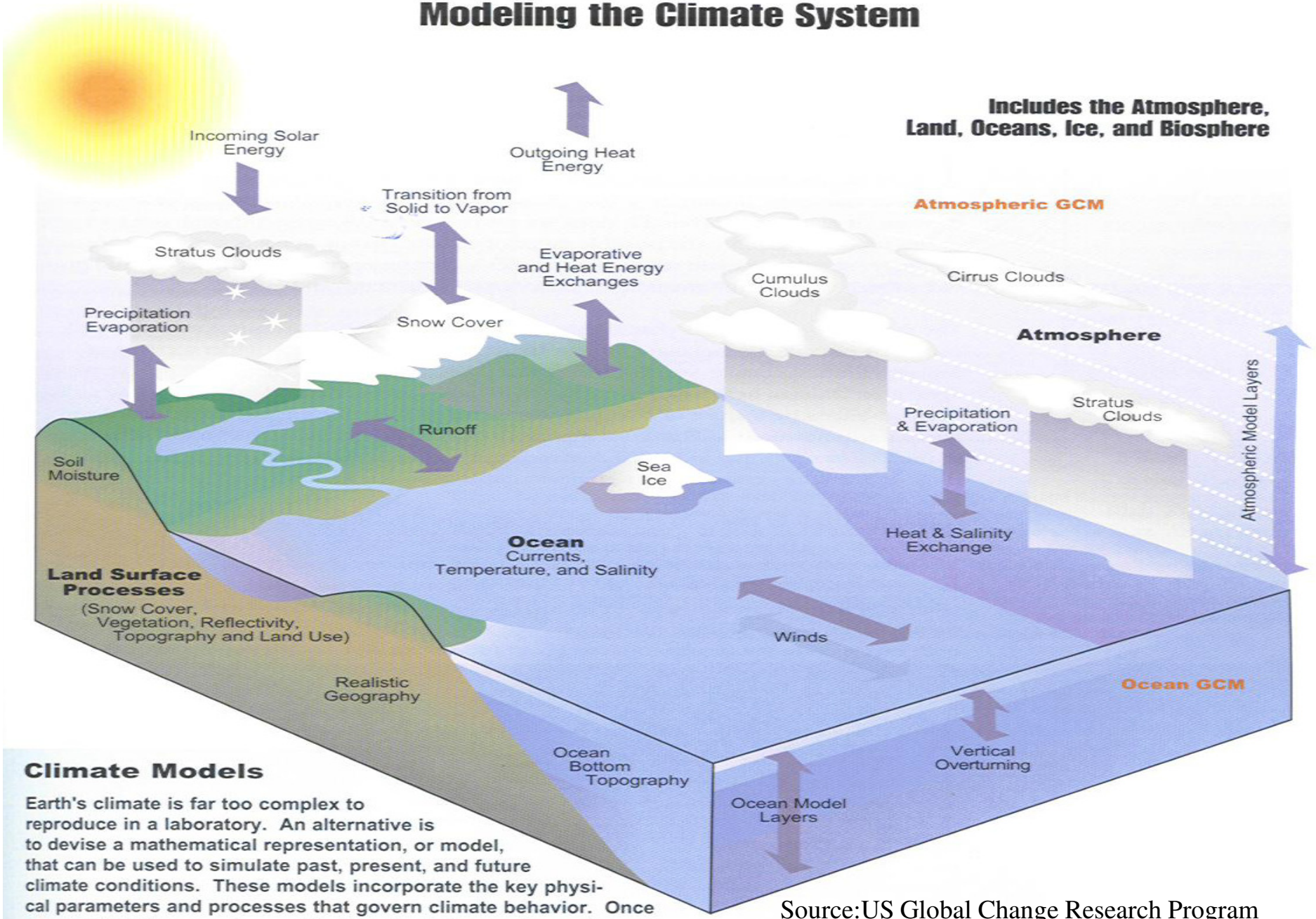


Source: World Meteorological Organisation, December 2000

Hadley Centre GCM



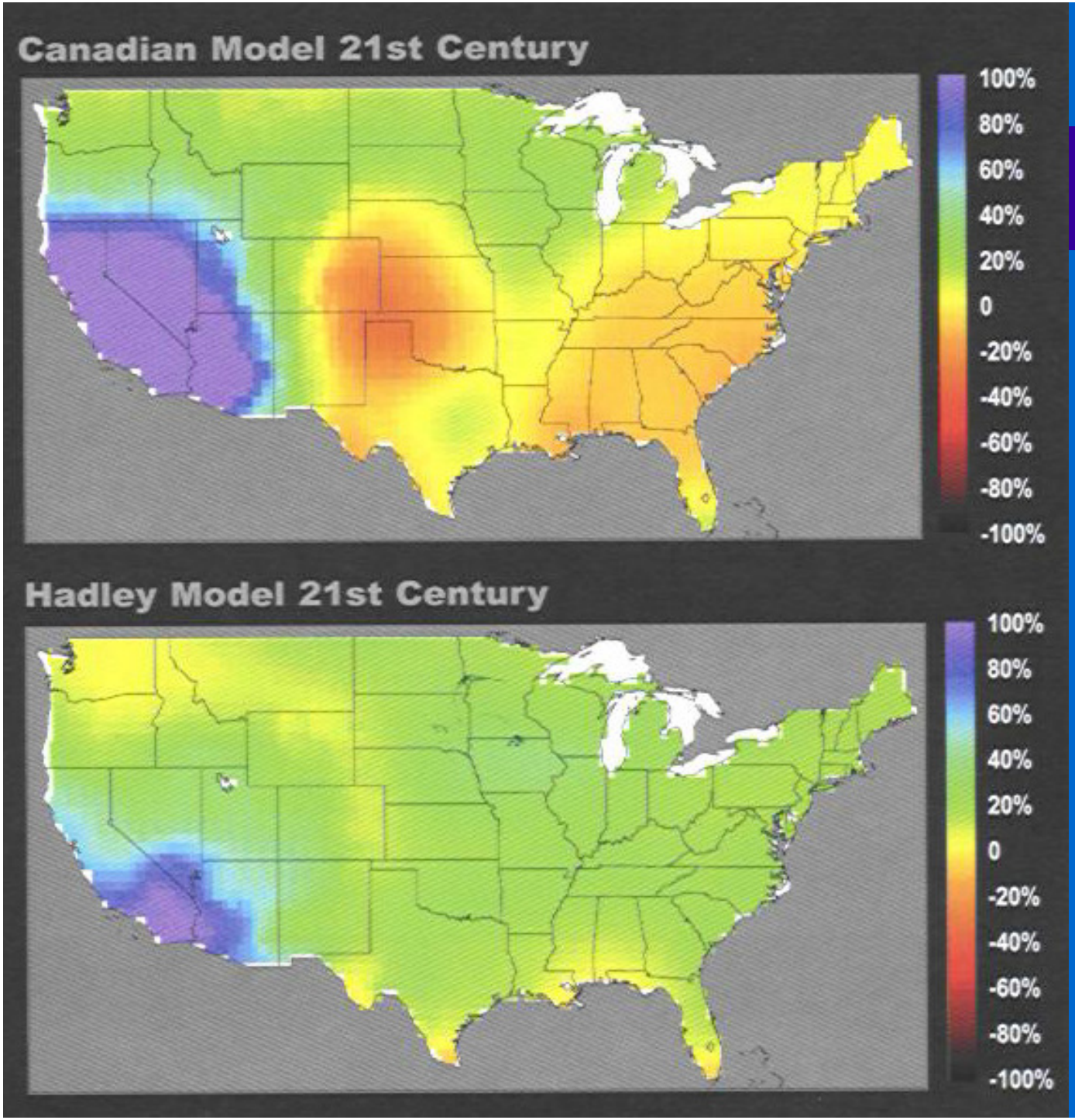
Modeling the Climate System



Climate Models

Earth's climate is far too complex to reproduce in a laboratory. An alternative is to devise a mathematical representation, or model, that can be used to simulate past, present, and future climate conditions. These models incorporate the key physical parameters and processes that govern climate behavior. Once constructed, they can be used to investigate how a change in greenhouse gases, or a volcanic eruption, might modify the climate.

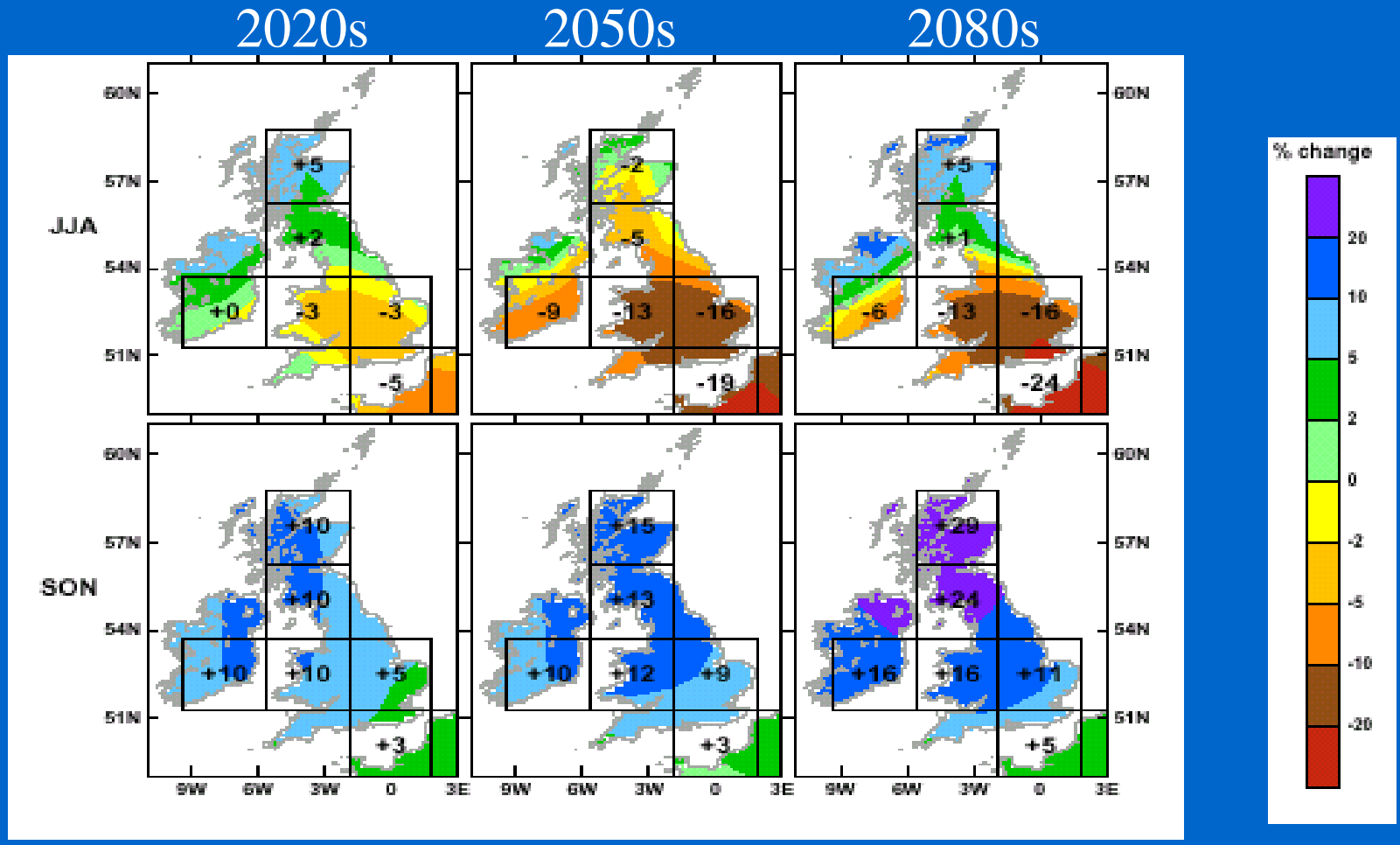
Source:US Global Change Research Program



"In both the Hadley and Canadian models, most regions are projected to see an increase in the frequency of heavy precipitation events."

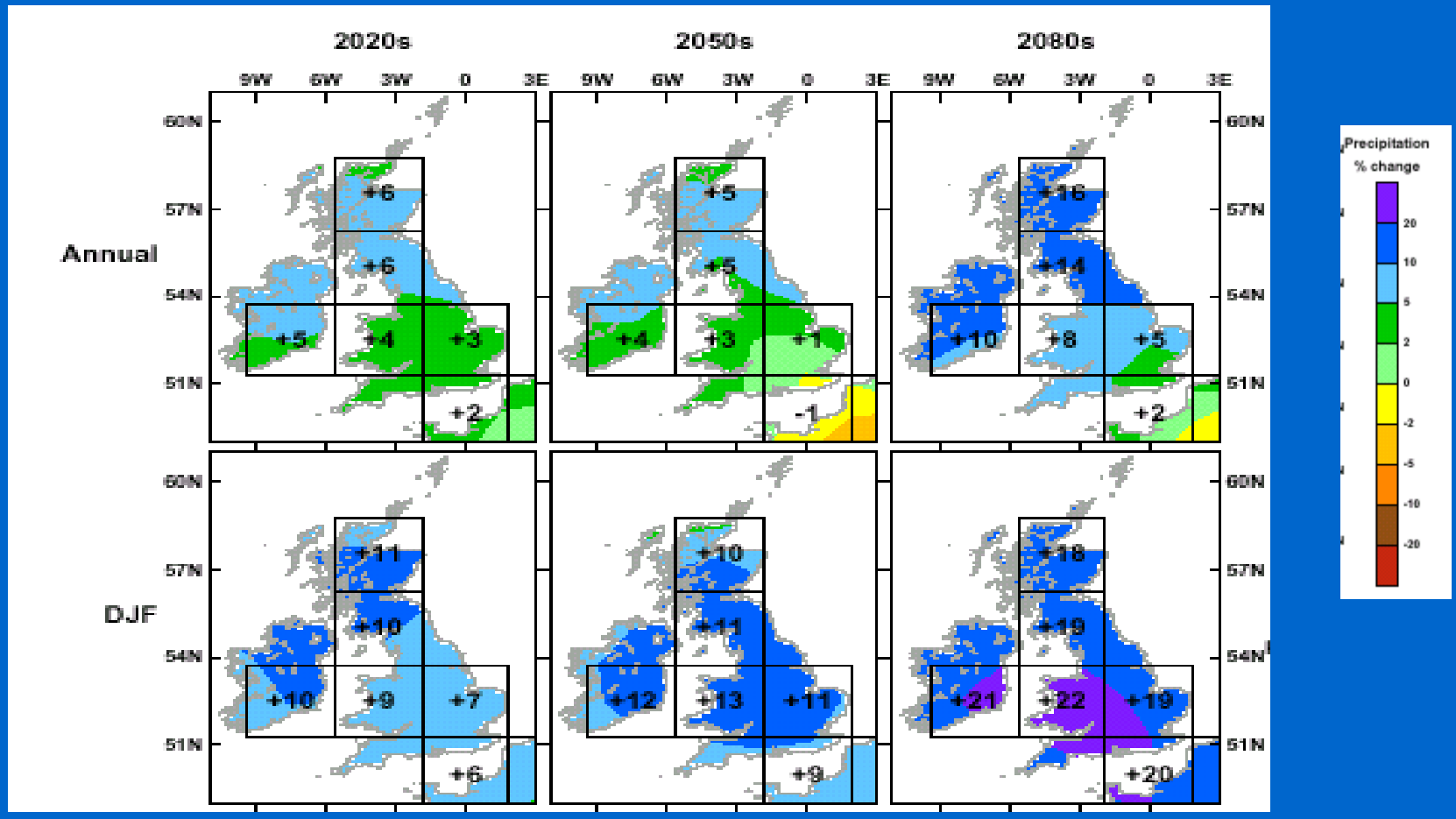
US Global Change Research Program

UK: Dry Summers, Wet Autumns



Source UK CIP98, Medium High Scenarios

… and Winters



Source UK CIP98, Medium High Scenarios

What are insurers doing?

- Mitigation
  - strong global lobbying on GHG emissions
  - encouraging energy conservation
- Adaptation - seeking to reduce
  - hazard - better sea defences
  - vulnerability - resilient building standards
  - exposure - stricter planning guidelines

Essentials for Insurance (1)

- **B**ig enough book of business
- **A**dverse selection minimised by knowledge
- **S**ustainable over many years
- **I**nformation about risk and claims
- **C**onsistent with law and institutions

"BASIC"

Essentials for Insurance (2)

- **M**oral Hazard low
- **U**ncertainty about loss
- **D**emand for insurance

"MUD!!"

Compensating Flood Victims

- State compensation
- Private compensation
- Mixed

Compensating Flood Victims

- State compensation procedures for hardship
  - Australia, Canada, and China
- State compensation by political decree after the event (if finance allows)
  - Belgium, France, Italy, Spain
- No state compensation at all
  - Argentina, Israel, Japan, UK

State -v- insurance...

- Benefits of private insurance
  - efficient administration
  - claims control
  - reinsurance
  - relieves burden on taxpayer
- Problems of private insurance
  - low income families cannot afford it

State -v- insurance (2) ...

- May 1998, Sarno floods in Italy, the Italian Government paid the equivalent of 150m Euros in compensation to victims.
- April 1998, Midlands floods in England, insurers paid the equivalent of 232m Euros in compensation to victims.

Private Insurance...

- "Option System"
  - Australia (Queensland and Northern Territories only),
  - Canada (Commercial property only)
  - Belgium, Germany and Italy

Private Insurance...

- "Bundle System"
  - Israel
  - Japan
  - Portugal and
  - UK

Option -v- Bundle

- Option
  - Adverse selection, cherrypicking, and red lining, expensive, low penetration
- Bundle
  - Risk well spread, everyone covered, avoids arguments about definitions, high penetration

The Risk Triangle

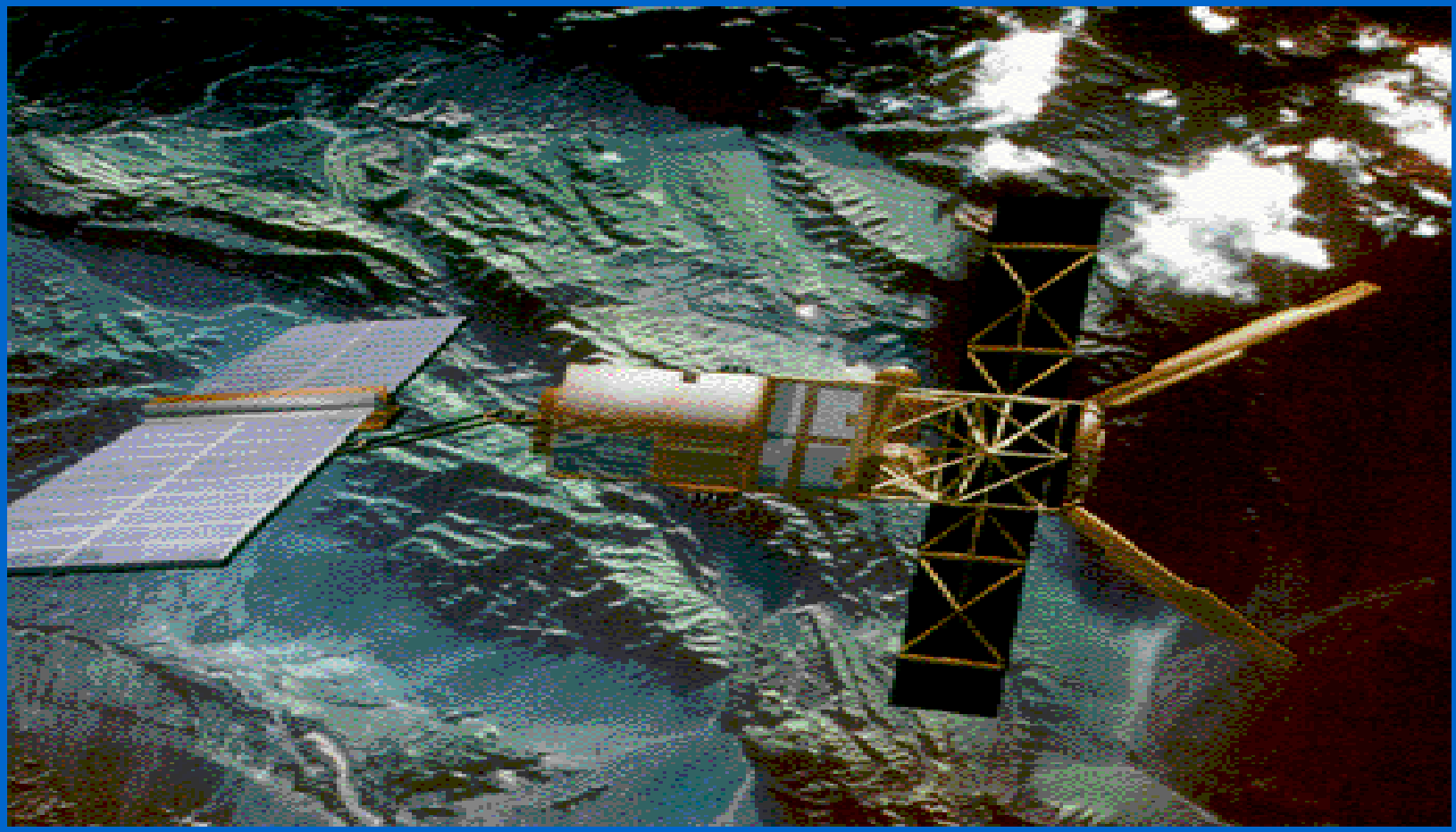
A Framework for Adaptation?

1. Hazard

- Manage by flood alleviation schemes
- Map using modern techniques
- New techniques for drainage design
- Model climate change projections

Needs state action, but insurers can help by funding research and lobbying

SAR Satellite (ERS)



European Space Agency

LiDAR Image of Newcastle

Environment Agency

Example: UK

- Insurers have funded major research projects on coastal and river flood risk and shared the results with Government.
- In some cases, sensitive findings have not been published except to Government
- Insurance models and data could be used to assist with priorities for funding defences.

Impact of a 50 year storm

	South and East Coast	South Coast	South and West Coast
No. of sea defences failing	431	438	905
% failures	31.5%	69.9%	63.5%
Area at risk (km2)	2,500	795	2,060

Source: Halcrow and Met. Office report for ABI, May 1997

Flood Defences

- 10% of the population of England live in flood hazard areas
- £200 billion of property is at risk
- Current levels of investment in flood defences will result in annual average damage increasing to £1.8 billion a year.

For full report see www.maff.gov.uk/environ/cfd/

UK Floods, Autumn 2000

- 700 locations affected
- worst cumulative rainfall for 270 years
- 10,000 homes flooded
- 37,000 homes almost flooded
- 280,000 homes would have flooded but for flood defences

Source: Environment Agency

Hazard is growing

- Precipitation - increasing due to climate change
- Defences and drainage systems - deterioration due to lack of maintenance
- Concerns over dam and reservoir safety

Dams and Reservoirs

- There are 2,500 large dams in the UK
- Most are earth dams over 100 years old
- A dam failure can release 10,000 cubic metres of water per second at 70mph
- Engineers' inspection reports are secret
- Dam break flooding maps are secret
- Planners have allowed housing in the hazard zones, not realising the risk.

2. Vulnerability

- National Flood Insurance Claims Database - 25 insurers contributing
- Building standards not being improved
- Resilient reinstatement?
- “FASTER” System

FASTER Form

The Flood and STorm Event Reporting System (FASTER)

Form completed by (name or initials) _____

Adjuster/contractor file reference _____

Event date: (dd/mm/yy) ____ / ____ / ____

Please fax/post/e-mail a copy of the completed form to:

1. Insurer (Policy No. _____) AND
2. Geography Dept, University of Dundee, DD1 4HN
   Fax 01382 344434 e-mail: a.z.black@dundee.ac.uk

From (Company Name and Address)

PART ONE: GENERAL INFORMATION about affected premises

1.1 Postcode* _____ House No*_____ Floors affected ☐ Basement ☐ Ground ☐ Other

(the University of Dundee is registered under the Data Protection Act to hold this information.)*

1.2 Location (please tick all that apply)

☐ Built up area ☐ Industrial estate ☐ Suburb ☐ Rural area
☐ On a hill crest ☐ Near a cliff edge ☐ Near the coast ☐ Near a river

1.3 Nature of occupation by policyholder (please tick all that apply)

☐ Residential ☐ Industrial ☐ Retail ☐ Office ☐ Motor trade
☐ Unoccupied ☐ Other (please insert

PART TWO: INFORMATION ABOUT THE PROPERTY

☐ Non conventional (e.g. caravan, boat, site cabin etc.) – in such cases, go to Part Five.

Otherwise

2.1 Walls (please tick any of the following which apply)

External ☐ Brick ☐ Stone ☐ Concrete ☐ Cladding ☐ Other
Internal ☐ As for external ☐ Plaster board ☐ Lath/plaster ☐ Other

Comments on any external/internal materials likely to be particularly vulnerable.

2.2 Height and type of building (tick the predominant one from each column)

Height	Type
☐ Mixed heights	☐ Residential type (even if business use)
☐ Single storey (not counting attic)	☐ Purpose built retail type building
☐ Single storey, lofty	☐ Purpose built office type building
☐ Two storeys (excl. attic)	☐ Industrial/agricultural shed type
☐ Over two – insert number:	☐ Recreation hall/cinema/theatre type

2.3 Date of construction (approximately) (tick the box for the oldest substantial part of the building)

☐ Pre 1918 ☐ 1918 to 1938 ☐ 1939 to 1970 ☐ 1971 to 1989 ☐ Post 1990

Comments – for example, is a significant part of the building of more recent construction? Or is the building a listed heritage building?

2.4 History of previous damage from flood, storm or freeze (if any)

Year	Flood	Storm	Freeze	Brief details (continue on a separate sheet if necessary)
.....	☐	☐	☐	.....
.....	☐	☐	☐	.....
.....	☐	☐	☐	.....

PART THREE: FLOOD AND FREEZE (if no flood or free damage, go to Part Four)

Please tick ✔ all that apply

3.1 Type of claim

☐ Burst water pipe or tank due to freeze (if this is the sole cause go to question 3.6)
☐ Freshwater flood from rainfall, snowmelt, blocked drains, burst water main, etc.
☐ Saltwater flood due to coastal storm surge/failure or overtopping of sea defences etc.

3.2 Immediate source or cause of flood: (please tick ✔ all that apply)

☐ Sea/tidal estuary ☐ Stream/river/lake/loch (insert name)
☐ Roof failure ☐ Failure of sea/river defences
☐ Rising groundwater ☐ Blocked drains or culverts outside the building
☐ Burst water main ☐ Backup into toilets or bath etc. inside the building

How far away was the nearest source? _____ metres

3.3 Factors contributing to damage: (please tick ✔ all that apply)

1. Contamination ☐ Salt ☐ Silt ☐ Oil/chemicals ☐ Sewage
2. Any impact damage caused by rapid flows of water and floating debris? ☐ Yes ☐ No

3.4 Warning received Hours – if none, insert zero and go to question 3.6.

1. Source of warning ☐ Telephone ☐ TV/radio ☐ Neighbour ☐ Other
2. Any action taken? ☐ Yes ☐ No (if "no," go to question 3.6)

3.5 Action taken by occupier or others to reduce damage (please tick ✔ all that apply)

Type of action?	Action taken?	Effective?
Movement of portable items/vehicles	☐ Yes ☐ No	☐ Yes ☐ No
Use of sandbags, flood screens etc.	☐ Yes ☐ No	☐ Yes ☐ No

Other – please give details

3.6 Internal inundation/humidity damage

1. Duration _____ Days _____ Hours Were pumps used? ☐ Yes ☐ No
2. Any damage from ☐ Condensation? ☐ Capillary action?

☐ Humidity?

3. What proportion of total damage costs is likely to be due to increased humidity?
4. Were/are dehumidifier machines available? ☐ Yes ☐ No
5. Were the waters topped up by successive tides? ☐ Yes ☐ No

Other comments

3.7 Maximum depth of water (Please use metric measures)

External ground level _____ cm
Internal ground floor level _____ cm
Internal basement level _____ cm

Conversion to centimetres
multiply inches by 2.54
multiply feet by 30.48
e.g. 4" = 10cm, 6' = 182cm
Show the maximum depth based on marks on walls.

Additional comments

3. Exposure

- UK insurance cover guaranteed since 1961
- In the last five years, the number of houses built in England in high flood risk areas has doubled
- Government are about to introduce new regulatory procedures (Nov. 2001) to ensure that insurers manage their risk accumulations

Insurance Availability

- Insurers will maintain cover until the end of 2002 on domestic property and small shops.
- Government will be expected to introduce satisfactory planning controls and improved flood defences, if cover is to be maintained after 2002.

Source: ABI

Partnerships

- For private flood insurance to be sustainable, there needs to be a partnership between the insurance industry and the State.
- In England, that partnership is breaking down
- In Scotland it is getting stronger

Scottish Flood Appraisal Groups

As at May 2001...

- 16 Flood Appraisal Groups in Scotland
- 22 Local Authorities involved (out of 32)
- 84% of the population covered.

Source: Survey by Crichton, Railtrack, and Scottish Executive.

The Insurance Template

Maximum exposure for insurers to write flood risk at normal terms.

• Sheltered Housing	1,000 year
• Hotels, hostels etc	750 year
• Basements	750 year
• Bungalows without skylights	500 year
• Near “Young” rivers	500 year
• All other residential	200 year

Source: Crichton

Flood Mapping Suggestions

- Zone A - risk of severe flood, danger to life
- Zone B - undeveloped flood plain
- Zone C - frequency greater than 200 year, taking defences into account
- Zone D - frequency 200 to 1,000 year, ignoring defences
- Zone E - safe from 1,000 year flood

ABI Strategy

- Support Flood Appraisal Groups in Scotland
- Lobby English Government on planning and defences, with the threat of withdrawal of cover
- Initiate and support research

Conclusions

- Private insurance is the best solution provided it works in partnership with the State **and provided**
- 1. Insurers have a “seat at the table”
- 2. Insurance is bundled with other covers
- 3. The State helps low income groups with premium payments

Conclusions

- The State must enable private insurance to work by ensuring:
  - adequate flood defences and drainage infrastructure and safe dams and reservoirs
  - effective warning systems
  - planning controls in high risk areas
  - resilient building standards

Not everything can be insured…

A personal view...

- Scotland has an effective system for compensating flood victims, and other countries could learn from its approach.
- In England, the system is breaking down, illustrating what could happen if the State fails to play its part.

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