



Geography (and more) @ Bristol

October, 2015

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School of Geographical Sciences, University of Bristol



Outline

- A bit about Bristol
- Studying Geography (and more) at University in the UK
- A “taste” of Geography



Easy access via London
(1:45 by train)





The University of Bristol: A city campus



University of
BRISTOL

🌟 An international, comprehensive university

- Students from >120 countries
- 400 Chinese Undergraduates, 900 Postgraduates

Six Faculties:

- Arts & Modern Languages
 - Engineering
 - Medicine & Dentistry
 - Medical & Veterinary Sciences
 - Social Sciences & Law
 - Science
- } **Geography**



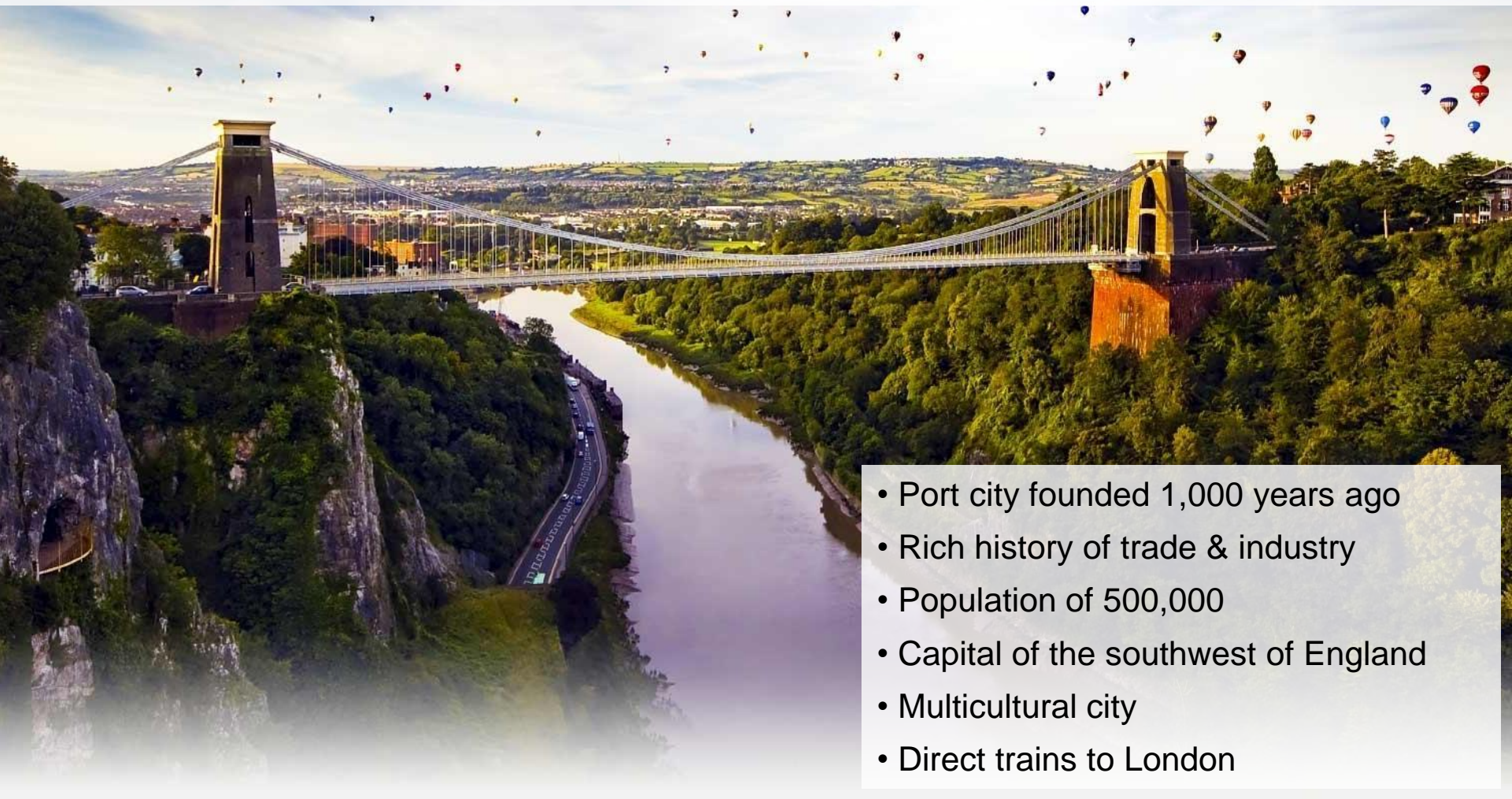


The University of Bristol

- Centrally located
- 20,000 students
- Great sporting facilities
- 37 in QS World Rankings 2015
- 66 in the Shanghai World Rankings 2015



Bristol – Best University voted for “City Life” by the WhatUni awards 2015

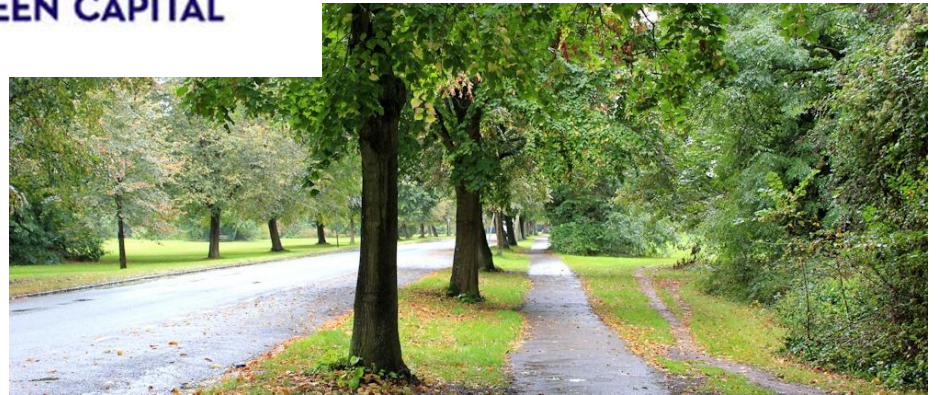


- Port city founded 1,000 years ago
- Rich history of trade & industry
- Population of 500,000
- Capital of the southwest of England
- Multicultural city
- Direct trains to London

Bristol is green!



BRISTOL
2015 EUROPEAN
GREEN CAPITAL



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BRISTOL

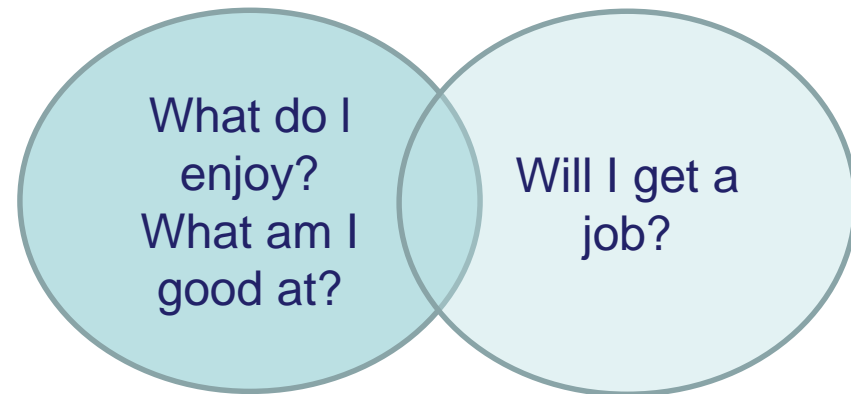
Bristol is **vibrant**



Bristol eats well!



🔥 How to choose a degree when you have a million options?

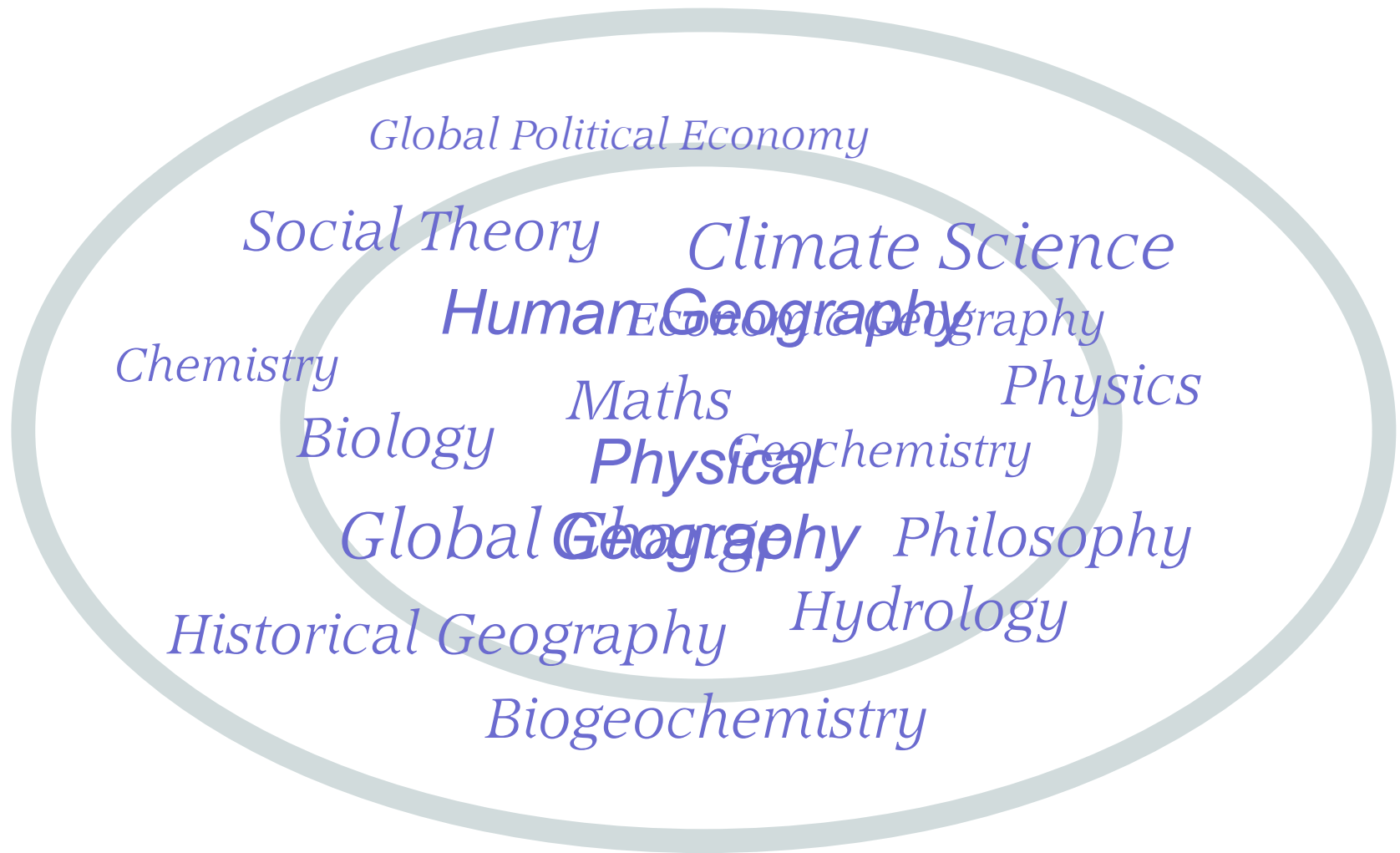




🔥 High level skills training

- A inter-disciplinary subject that has relevance to everything you see around you
- Great employability ...
 - Writing
 - Communication
 - Analytical skills
 - Statistical analysis
 - Spatial modelling
 - Critical thinking
 - Problem solving

Geography is everything



How are you taught?



Lectures – large classes (100s students), largely presented material, little two way discussion



Practical classes, variable numbers of students, desk, lab, computer exercises via an activity (continuous assessment, normally at least 1/3)



Tutorials – small group discussion, pastoral issues



Field courses
(50-100 students)

What to research?

- **Field courses/trips** – where do they go? Opportunity to go to exciting locations abroad?
- **Student support** - is there a tutorial system?
- **Range of methods** – chance to work in labs, be part of a research team?
- **Topics** – can you mix Physical and Human Geography, or do you have to specialise? (don't prejudge which you prefer!)
- **Social** – is there a Geography Society?
- **Check the entry grades** – A*AA (38 points, 18 at higher level) for Bristol



🔥 Do you want to do more than just your major subject?

- **Learn a language** Geography with Study in Continental Europe (BSc, 4 years, France, Germany, Spain etc.)
- **Study abroad in English** Geography with Study Abroad (BSc, 4 years – US, New Zealand, Australia, Singapore)
- **Convert to a masters** Geography Msci Degree (4 years)
- **Develop new skills/joint degrees**
Geography with Innovation (MSci, 4 years)
Geography with Quantitative Research Methods (BSc/MSci, 3 or 4 years), £19.5m UK-wide initiative to provide quantitative skills sought after by employers, focus on applied data analysis for social science, not about maths but how to deal with data)



Bristol Geography: research led teaching

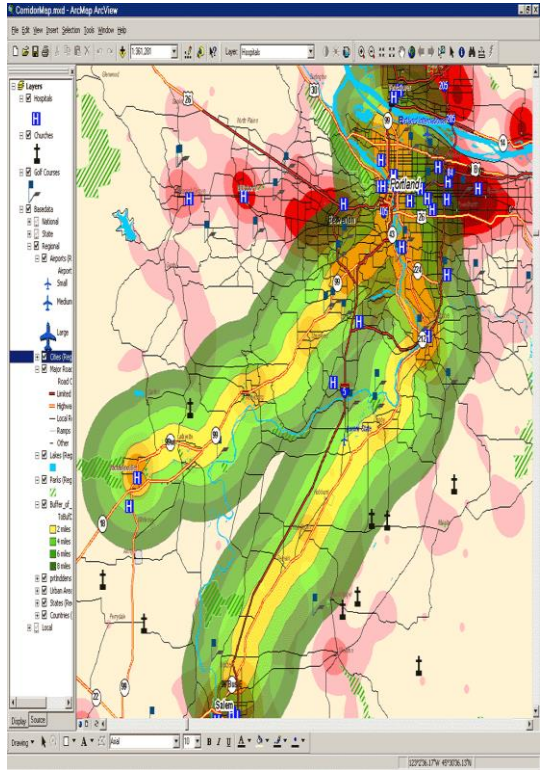
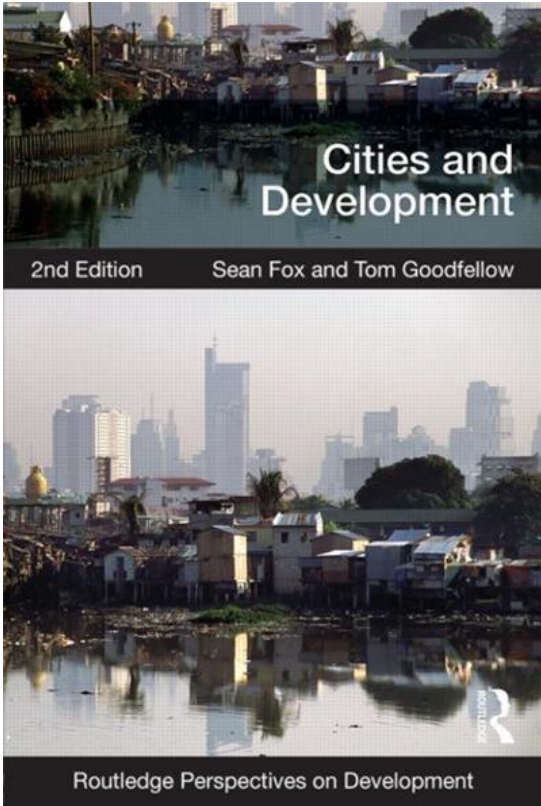
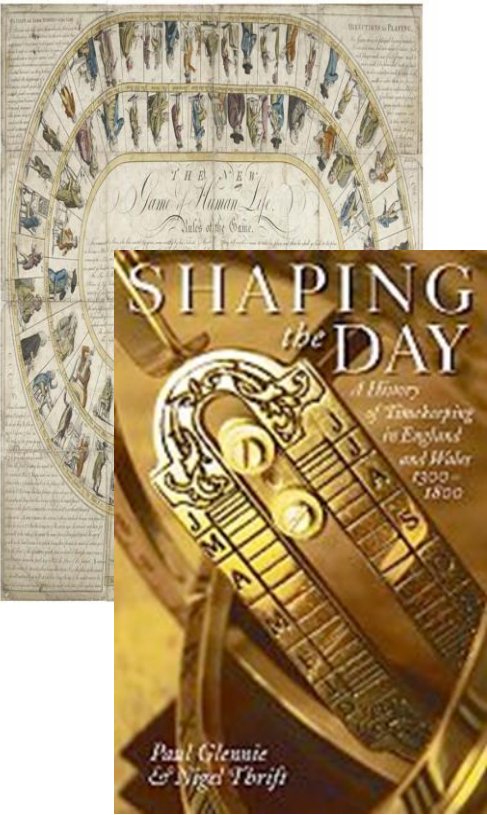
Overall						
2014 rank order by GPA	2008 GPA	Institution	Total number of FTE staff submitted	% of 4* research activity	GPA	Research power
17 Geography, Environmental studies and Archaeology						
1	n/a	Bristol A: Geography	46	51	3.33	155
=2	n/a	Cambridge B: Geography	46	44	3.26	149
=2	n/a	Royal Holloway	24	41	3.26	77
4	n/a	LSE	36	43	3.25	118
5	n/a	St Andrews	37	42	3.24	118
=6	n/a	Oxford B: Geography and Environmental studies	54	41	3.23	174
=6	n/a	Glasgow A: Geography	13	37	3.23	42
=8	n/a	UCL B: Geography	40	41	3.19	129
=8	n/a	Oxford A: Archaeology	33	41	3.19	106
10	n/a	Durham B: Geography	63	43	3.18	200

The **only**
Geography
department ranked
in the top category
in every UK national
research
assessment
exercise

Historical, Cultural & Philosophy

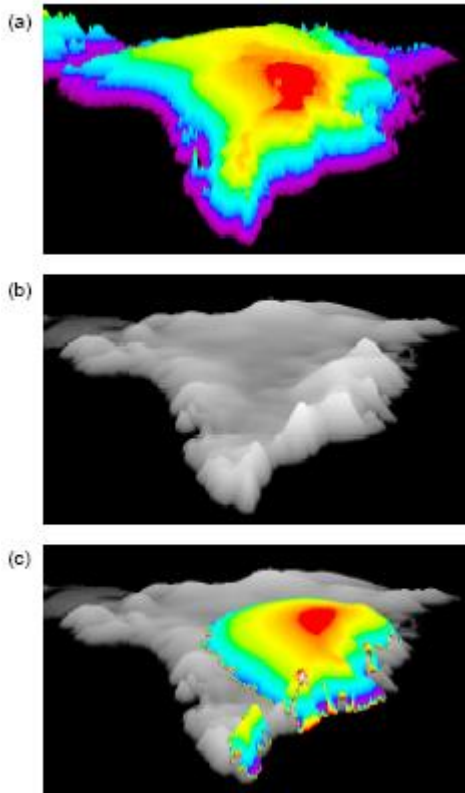
Political Economy

Spatial Modelling

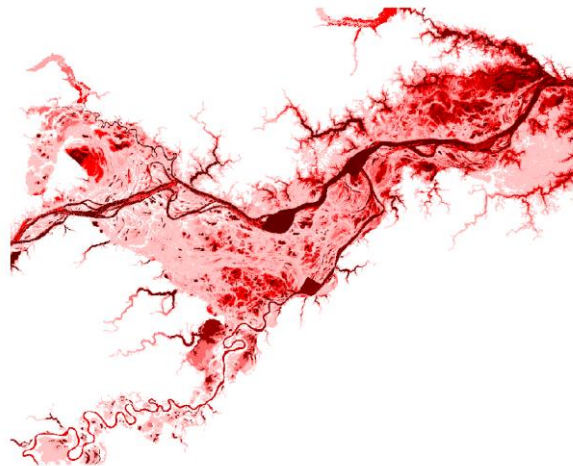


🔥 Main themes in Physical Geography

Glaciology



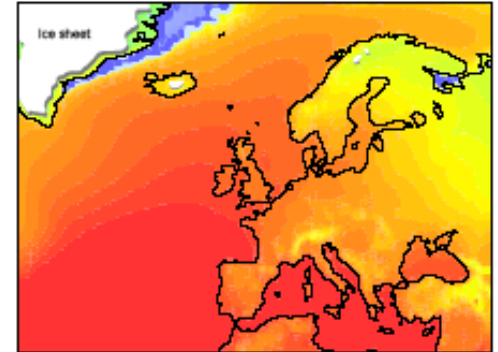
Hydrology



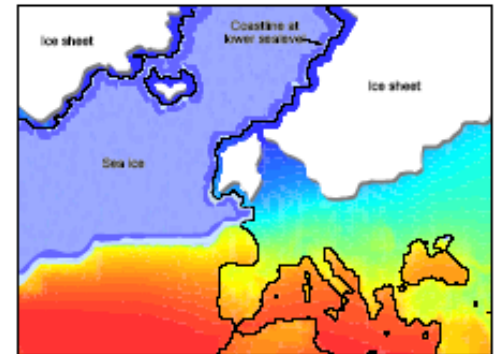
IPCC
Intergovernmental Panel On
Climate Change

Global Change

Temperature today

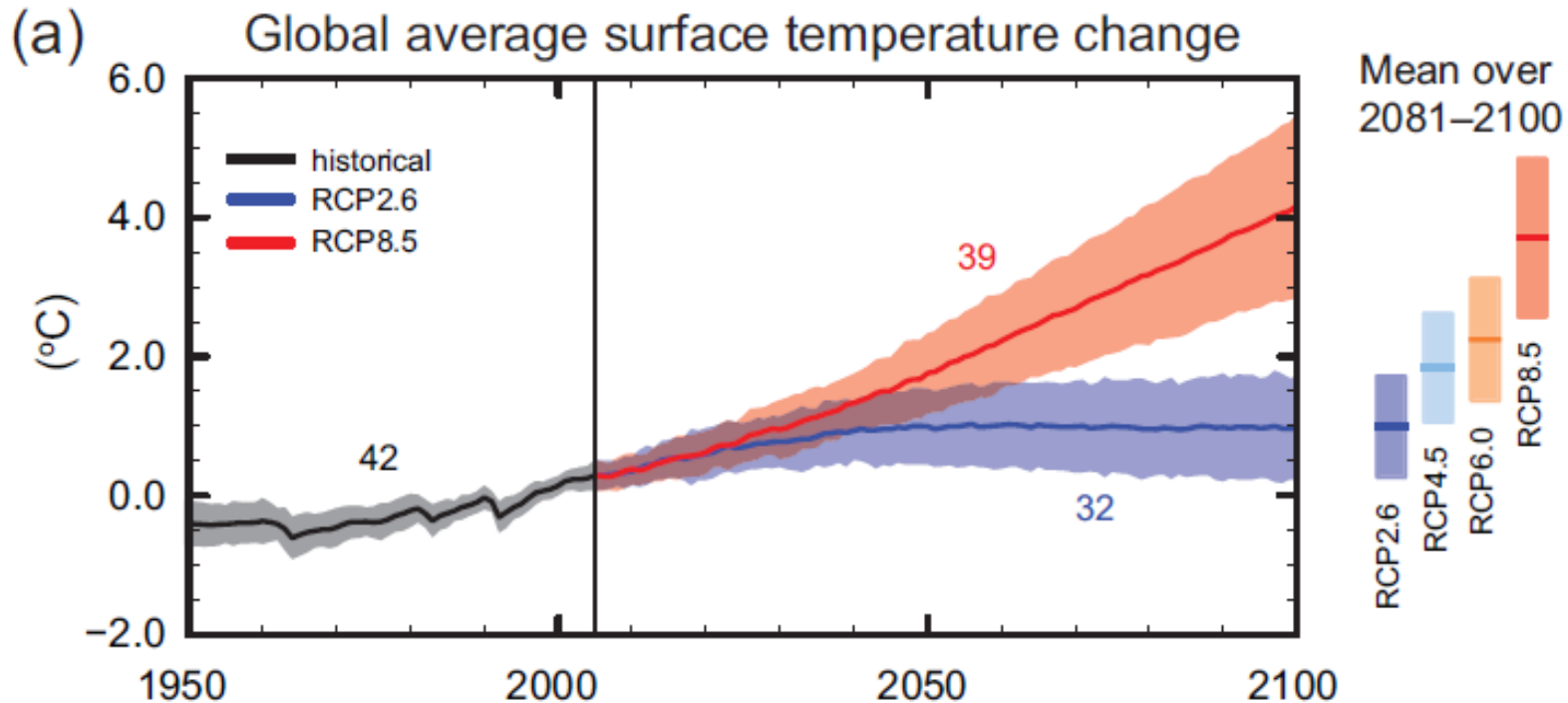


Temperature 21,000 years ago



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IPCC 2013



RCP (representative concentration pathway)

RCP 2.6 = if drastic intervention cuts emissions now

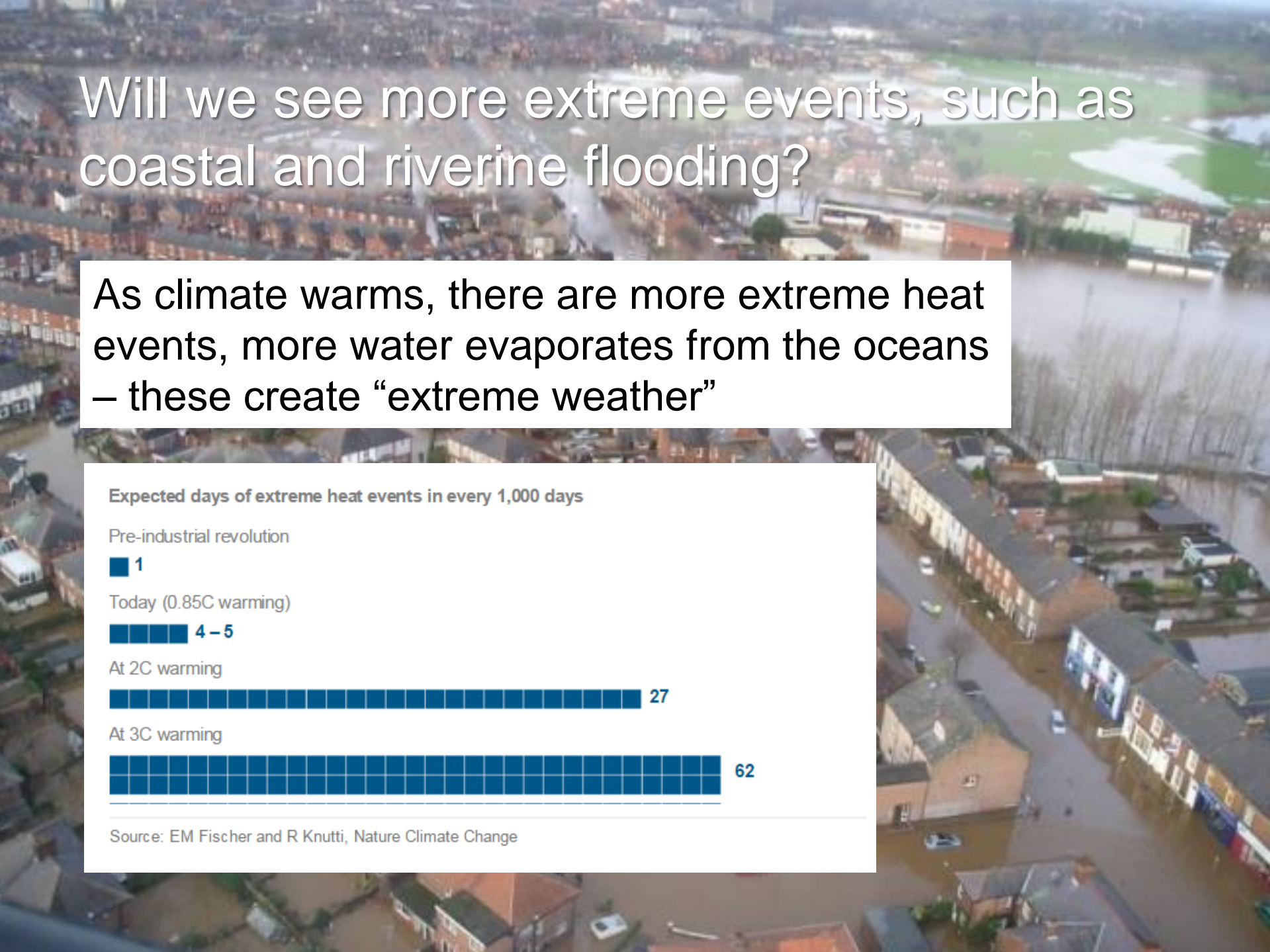
RCP 8.5 = unabated increase in emissions



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Will we see more extreme events, such as coastal and riverine flooding?

As climate warms, there are more extreme heat events, more water evaporates from the oceans – these create “extreme weather”



Expected days of extreme heat events in every 1,000 days

Scenario	Expected days of extreme heat events in every 1,000 days
Pre-industrial revolution	1
Today (0.85C warming)	4–5
At 2C warming	27
At 3C warming	62

Source: EM Fischer and R Knutti, Nature Climate Change

As climate warms, there are more extreme heat events, more water evaporates from the oceans – these create “extreme weather”



Pre-industrial revolution



Today (0.85C warming)



At 2C warming



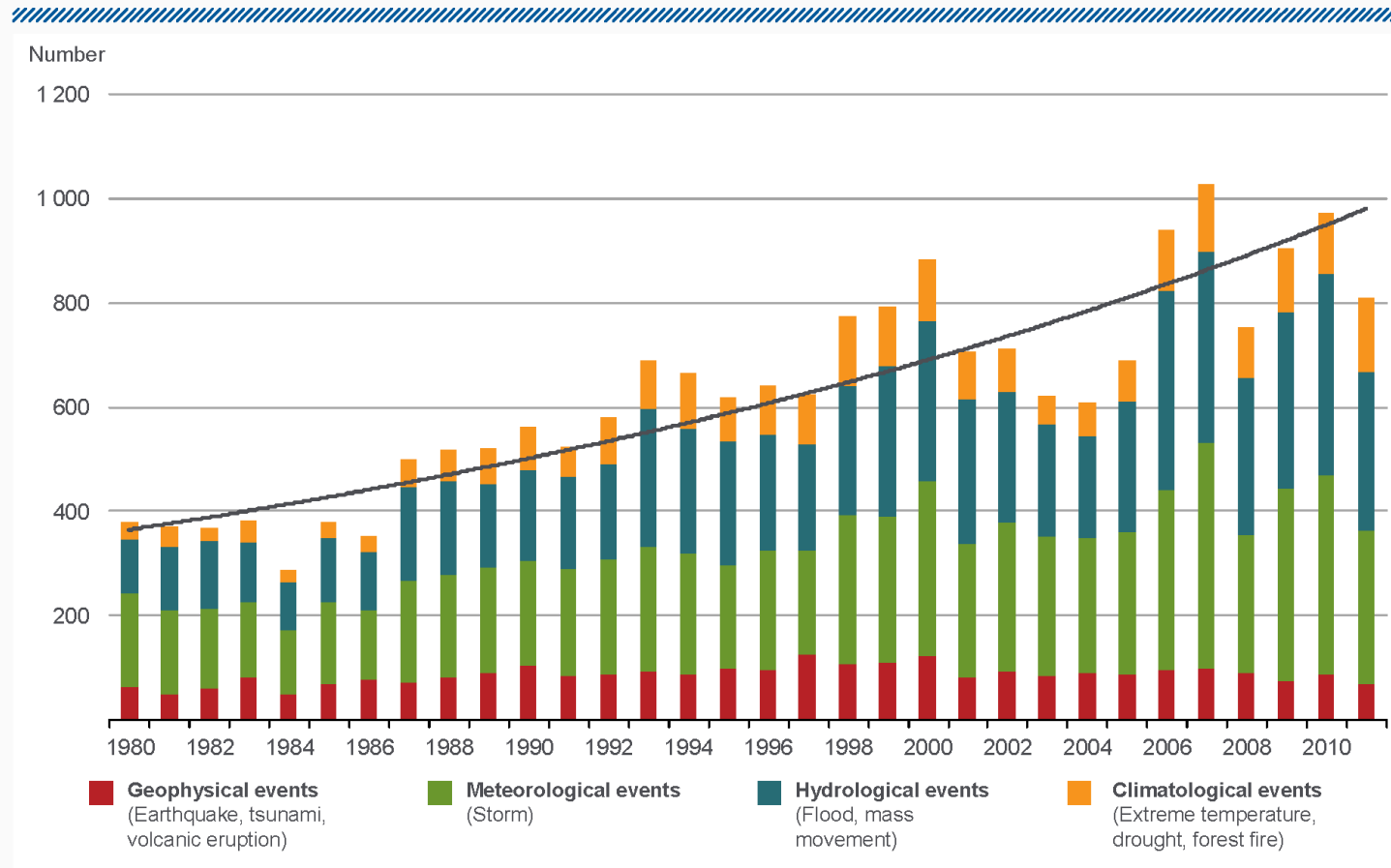
At 3C warming



Source: EM Fischer and R Knutti, Nature Climate Change

Natural catastrophes worldwide 1980 – 2011

Number of events with trend

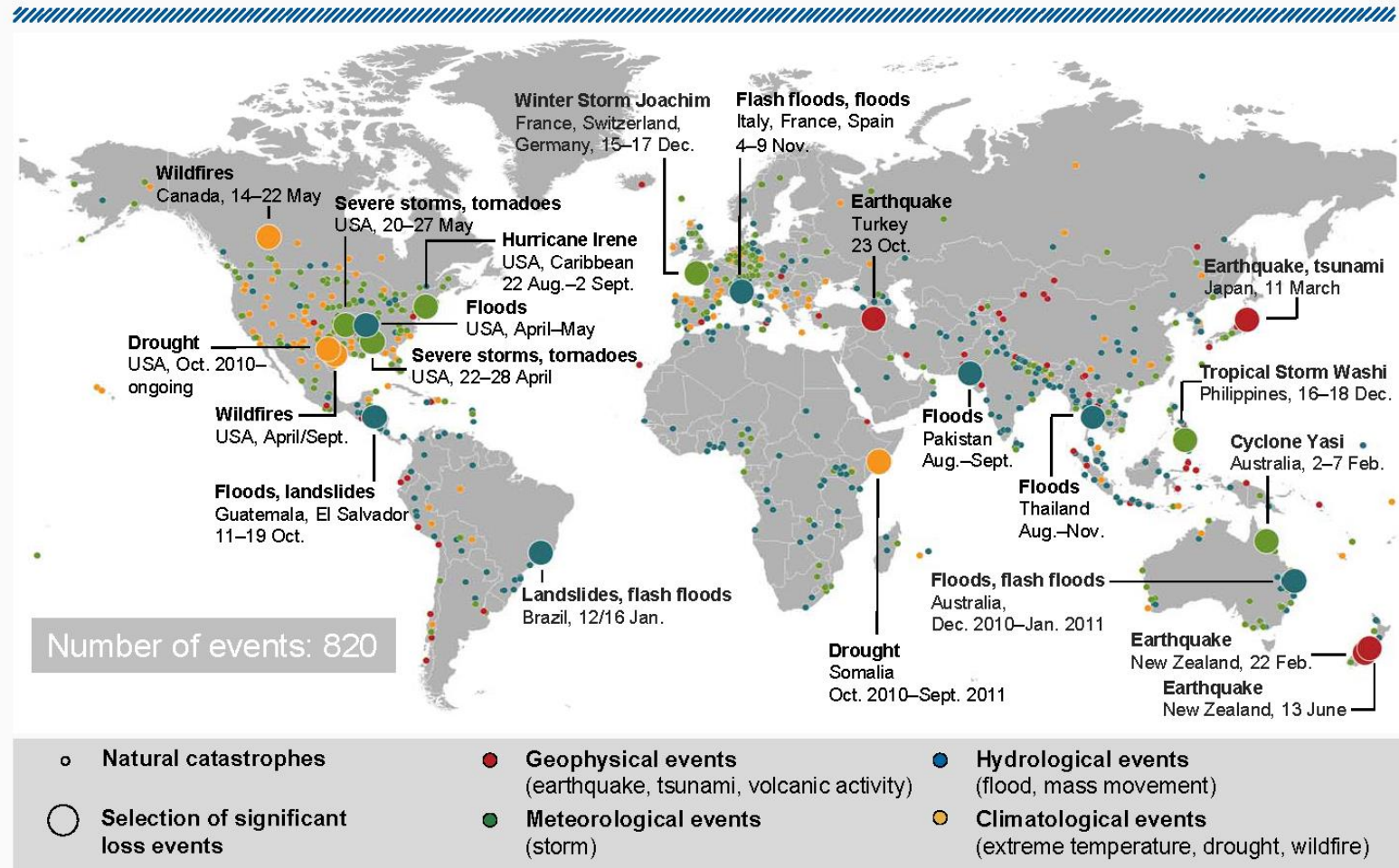


© 2012 Münchener Rückversicherungs-Gesellschaft, Geo Risks Research, NatCatSERVICE – As at January 2012

To be a catastrophe, they need to affect human beings


Natural Catastrophes 2011

World map



Significant natural catastrophes 1980 - 2012

10 costliest floods worldwide ordered by insured losses

Period	Event	Affected Area	Overall losses	Insured losses	Fatalities
			US\$ m, original values		
1.8-15.11.2011	Floods	Thailand: Phichit, Nakhon Sawan, Phra Nakhon Si Ayuttaya, Pathumthani, Nonthaburi, Bangkok	43,000	16,000	813
12-20.8.2002	Floods	Germany, Austria, Czech Republic, Hungary, Moldova, Switzerland, Slovakia	16,500	3,400	39
25-30.6.2007	Floods	United Kingdom: England, Yorkshire, Hull, Humberside; Sheffield; Worcestershire	4,000	3,000	4
20-23.7.2007	Floods	United Kingdom: England, Worcestershire, Oxfordshire, Gloucestershire; Wales	4,000	3,000	1
10-14.1.2011	Floods	Australia: Queensland, Brisbane, Ipswich, Toowoomba, Grantham, Gladstone	2,800	1,875	22
20-28.8.2005	Floods	Austria, France, Germany, Hungary, Slovenia, Switzerland			
27.6-15.8.1993	Floods	USA: MS, MO, IA, IL, ND, IN, MN, WI, KS, NE, SD			
Oct - Nov 2000	Floods	United Kingdom: England, Kent, Tonbridge, Yalding, London; Wales, Ireland			
4-9.11.2011	Flash floods	France, Italy, Spain			
15.6.2010	Flash floods	France: Provence-Alpes-Cote d'Azur, Draguignan, Luc, Muy, Les Arcs, Toulon			



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🔥 Why are UK flood losses so high?

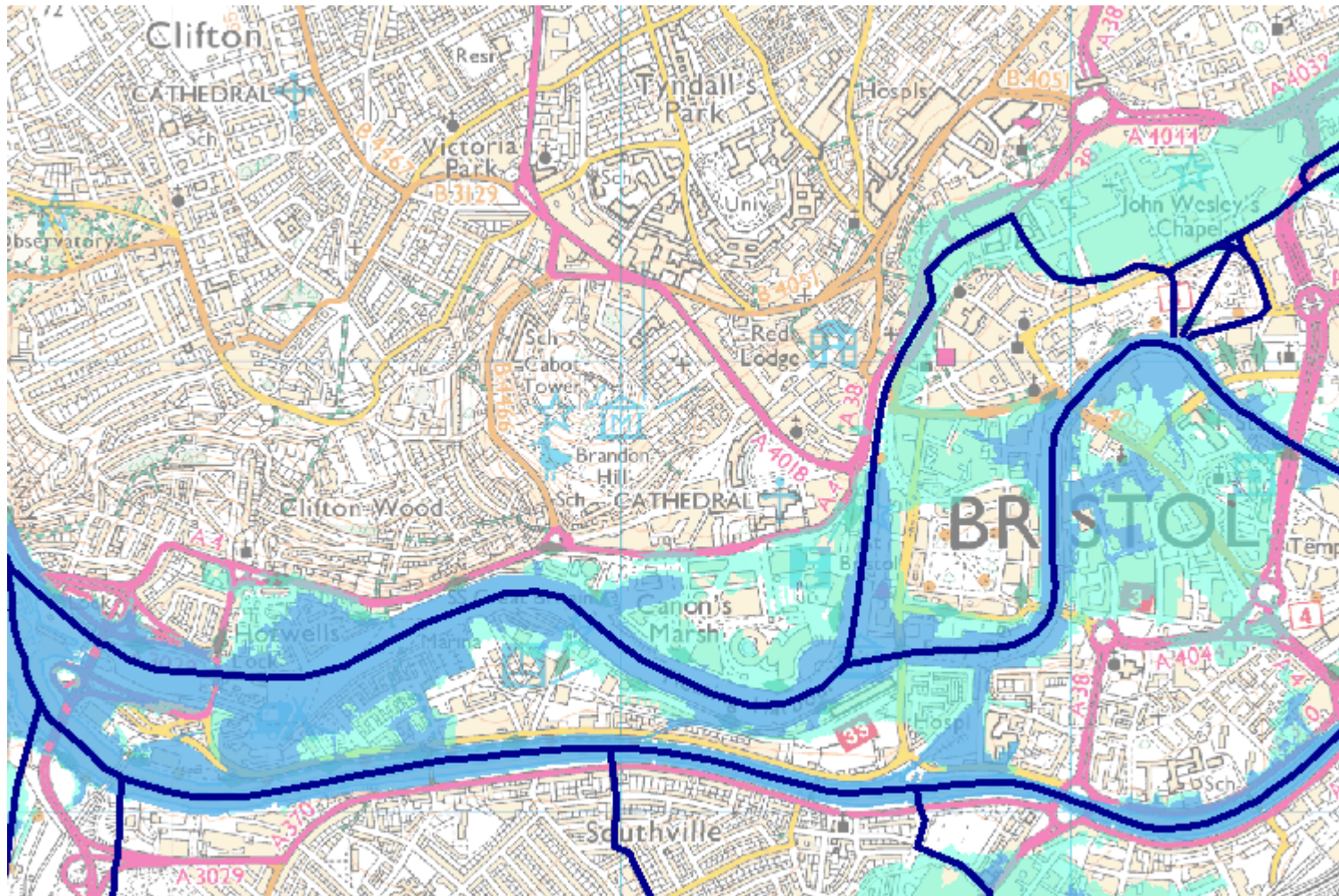
- High population density
- High asset values
- At the edge of an ocean basin
- In path of mid latitude storms
- Orographic effects
- An island, so many rivers are short and steep
- Good reporting



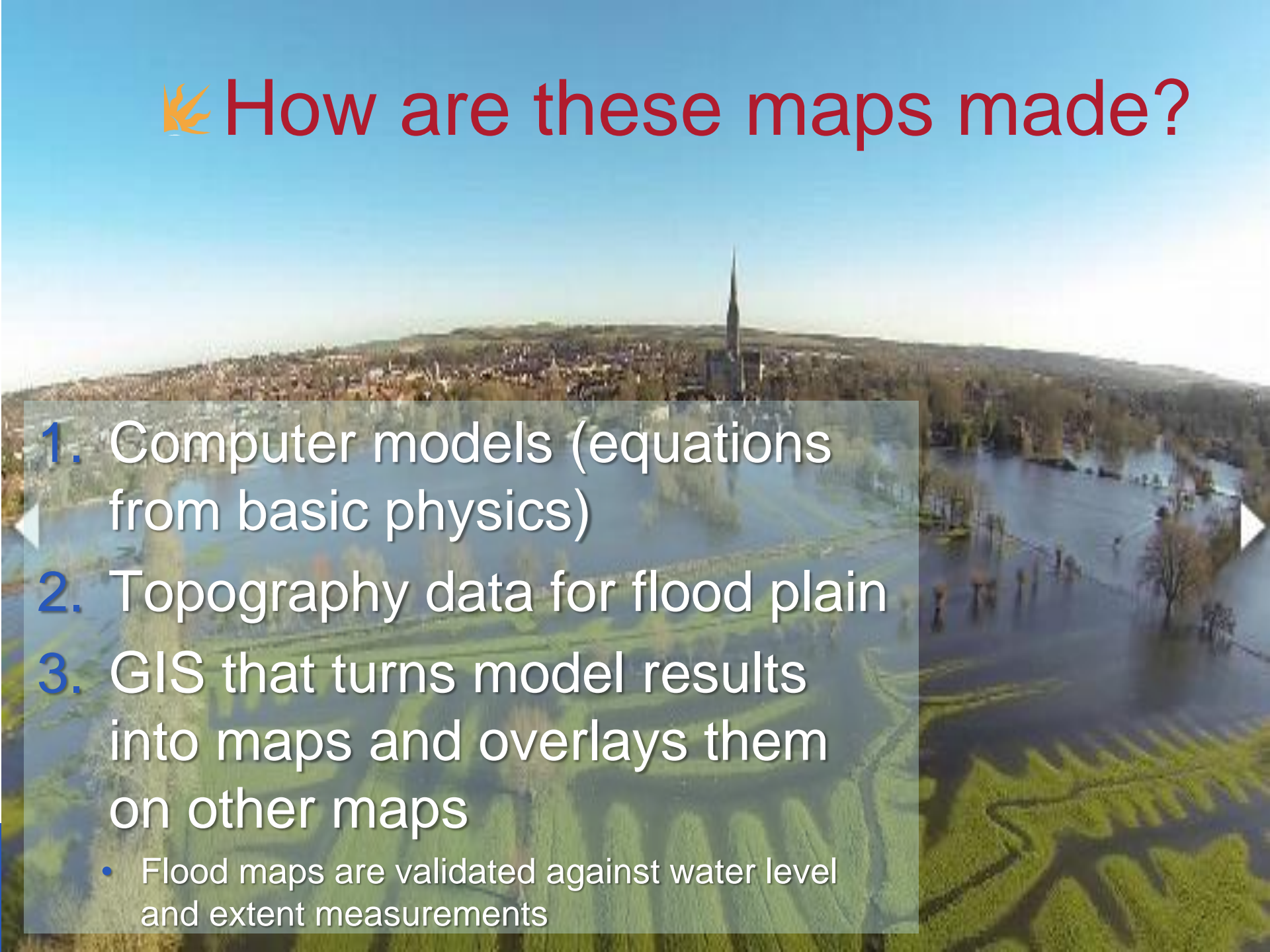
Summarised in the disaster risk equation

$$Risk = \frac{Hazard \times Vulnerability}{Capacity\ to\ cope}$$

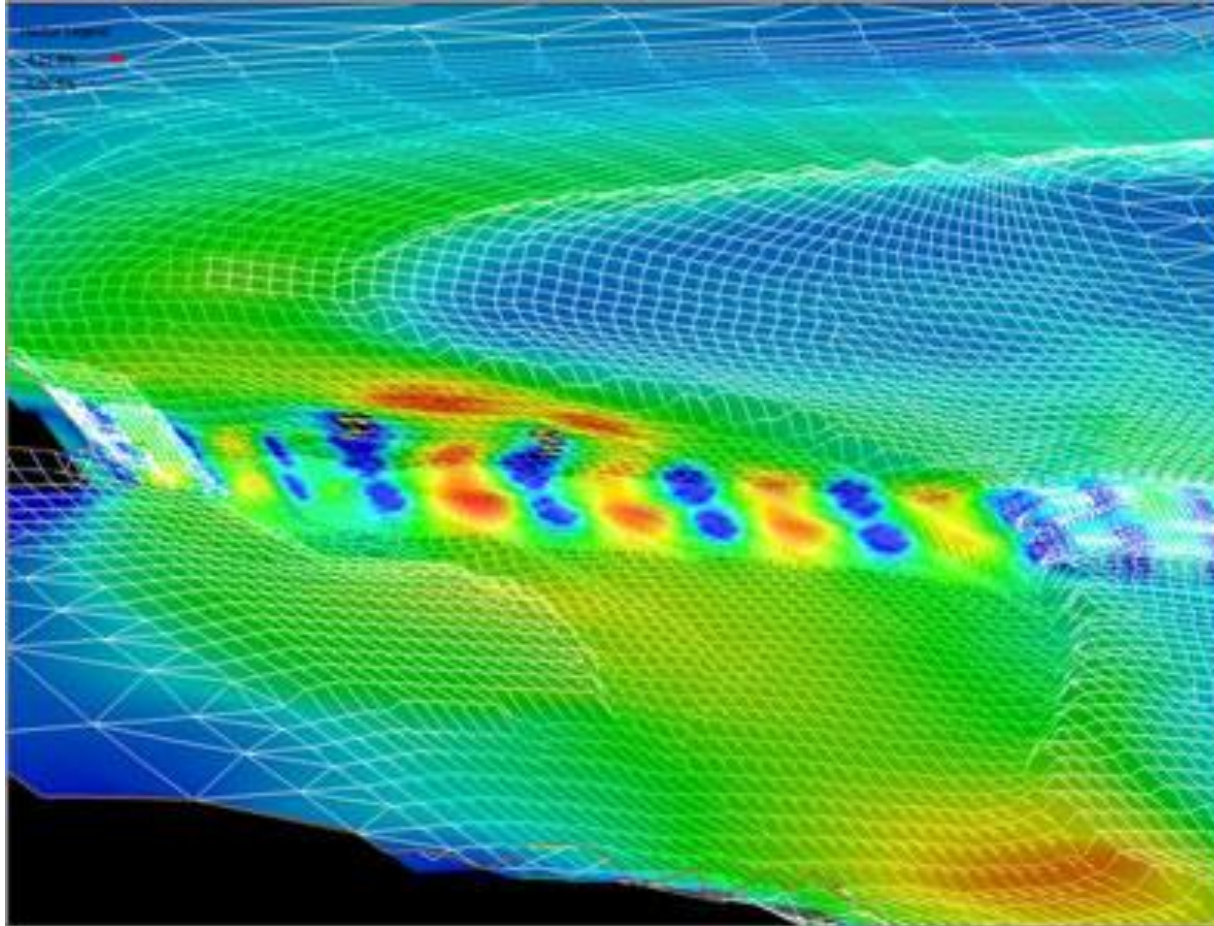
Flood hazard in Bristol



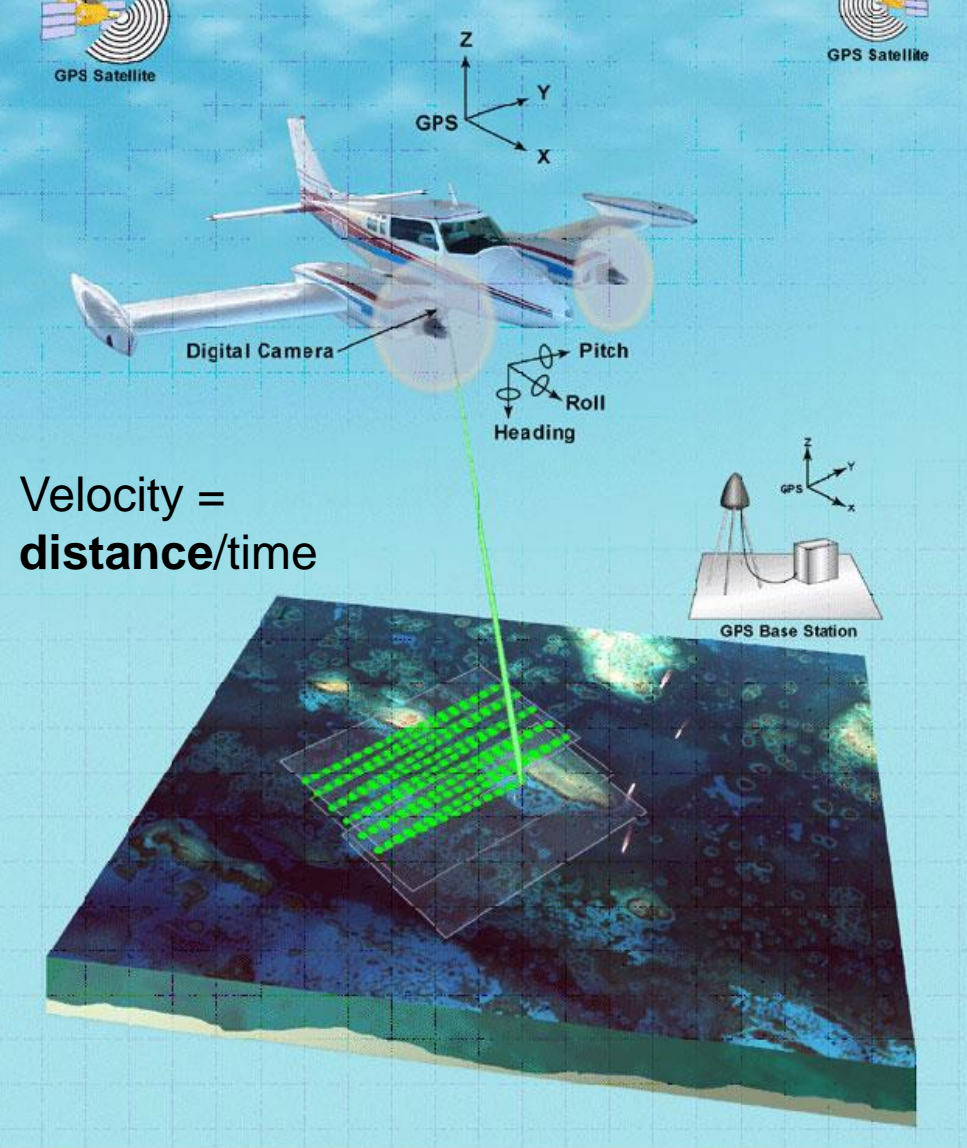
🔥 How are these maps made?

- 
- An aerial photograph of a city during a flood. A large, dark church spire is visible in the center background, rising above the city skyline. The foreground and middle ground are dominated by dark, reflective floodwater that has inundated the city's streets and surrounding areas. The water reflects the sky and the distant city. The city's layout, including roads and buildings, is partially visible through the water. The sky is a clear, pale blue.
1. Computer models (equations from basic physics)
 2. Topography data for flood plain
 3. GIS that turns model results into maps and overlays them on other maps
 - Flood maps are validated against water level and extent measurements

🔥 1. Flood models



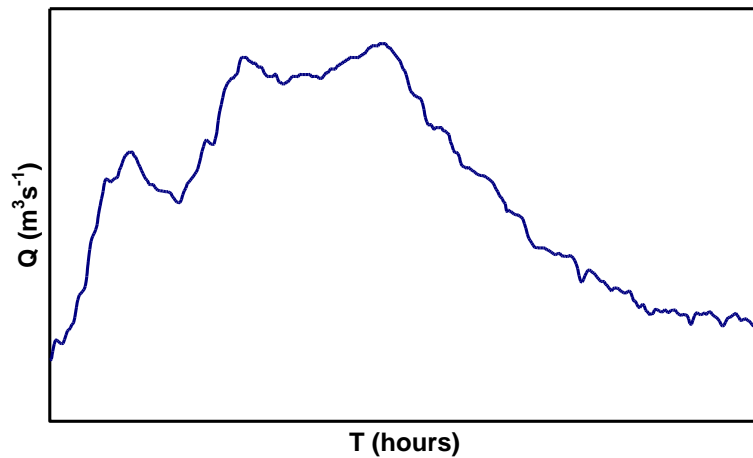
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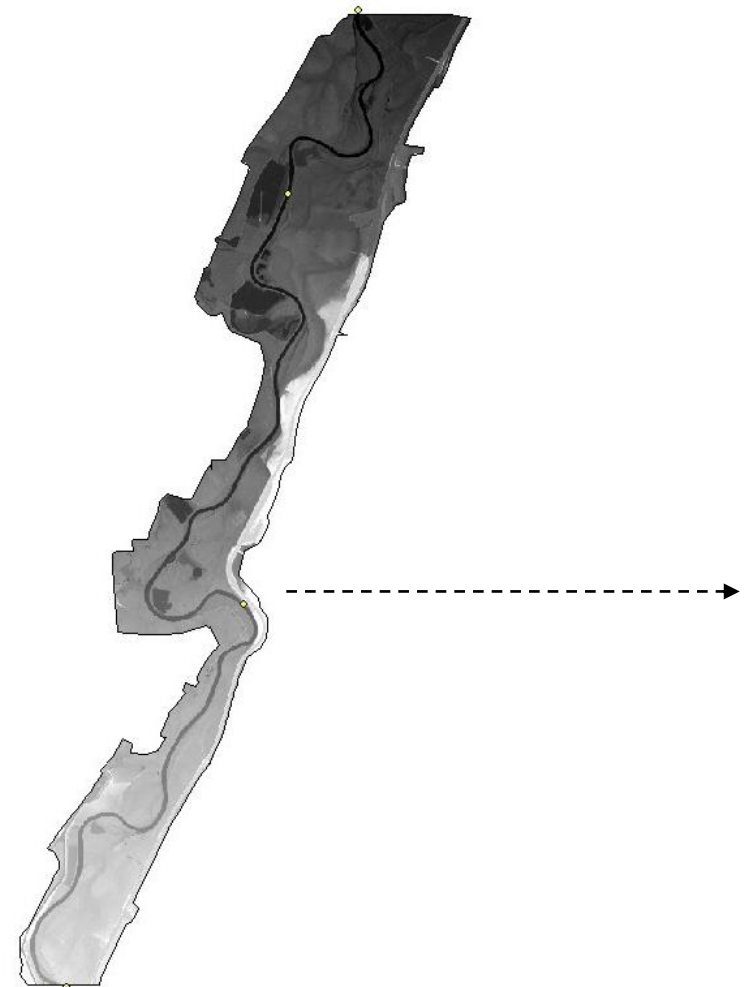
2. Topography data

- The flood model has to model **water flow over something!**
- Light Detection and Ranging (LiDAR) is a remote sensing system used to collect numerous types of data including atmospheric, topographic, and bathymetric
- Uses laser pulses to map topography



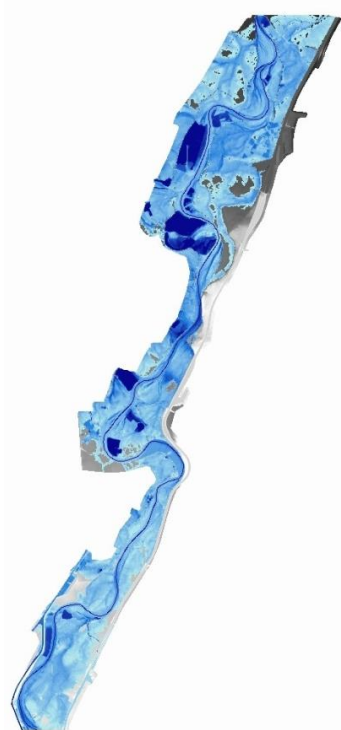


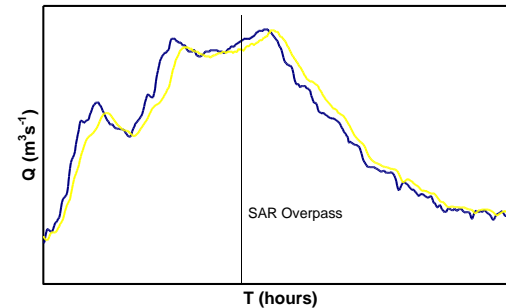
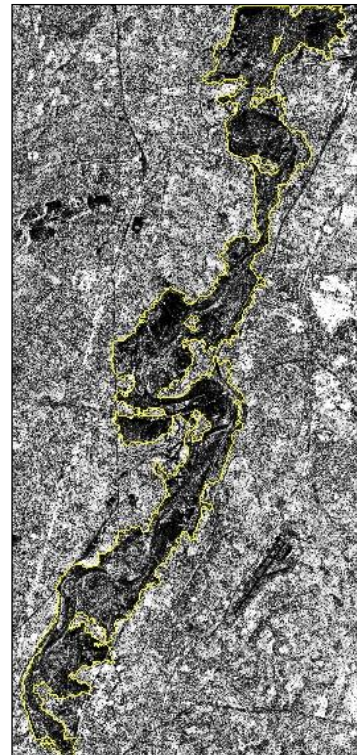
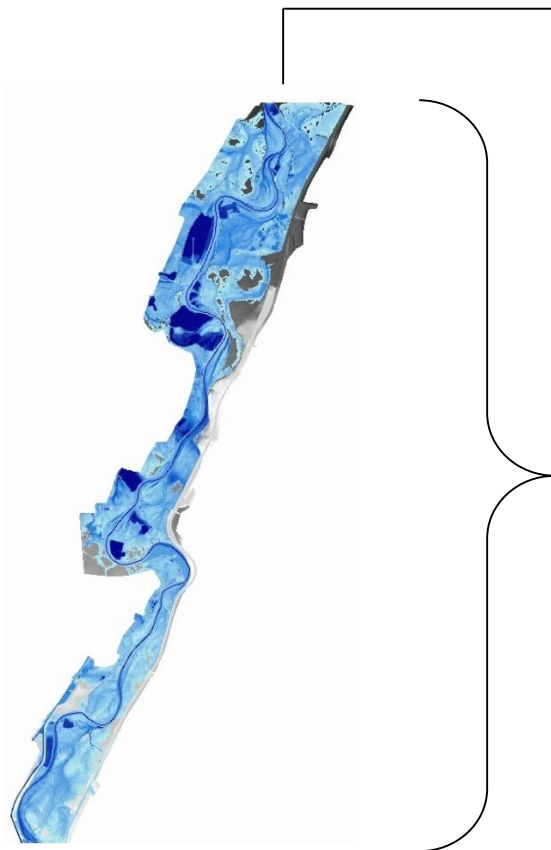
Inflow hydrograph (QT)
Source: Gauging station records



High resolution floodplain topography
Source: Digital photogrammetry/LiDAR

Model realisation

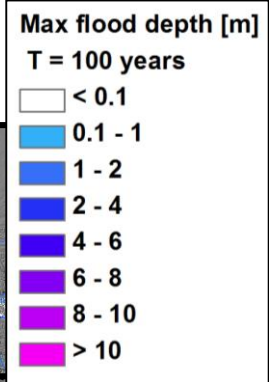




Outflow hydrograph

Inundation extent derived from satellite imaging radar

Source: SAR imagery processed using a statistical active contour model (Horritt, 1999)



Global flood hazard layers



So why is this Geography?

- Focusses upon a Physical process with Human impact
- Explores the spatial (extent of flooding) and temporal (hydrograph) aspects of the flood process
- With the goal of solving an environmental problem



Summary

- Geography at University is much more diverse than you might think
- It provides an ideal degree to give a broad, but high level skills training, generating highly employable graduates
- It is current, exciting, tackles real world problems
- It is the only degree that blends social science with science



Questions?

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Bristol student/alumni networks in China

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(account: University of Bristol)

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