GIFT Workshop Merida 2016

Natural Hazards – Introductory Remarks
Peligros Naturales - Introducción

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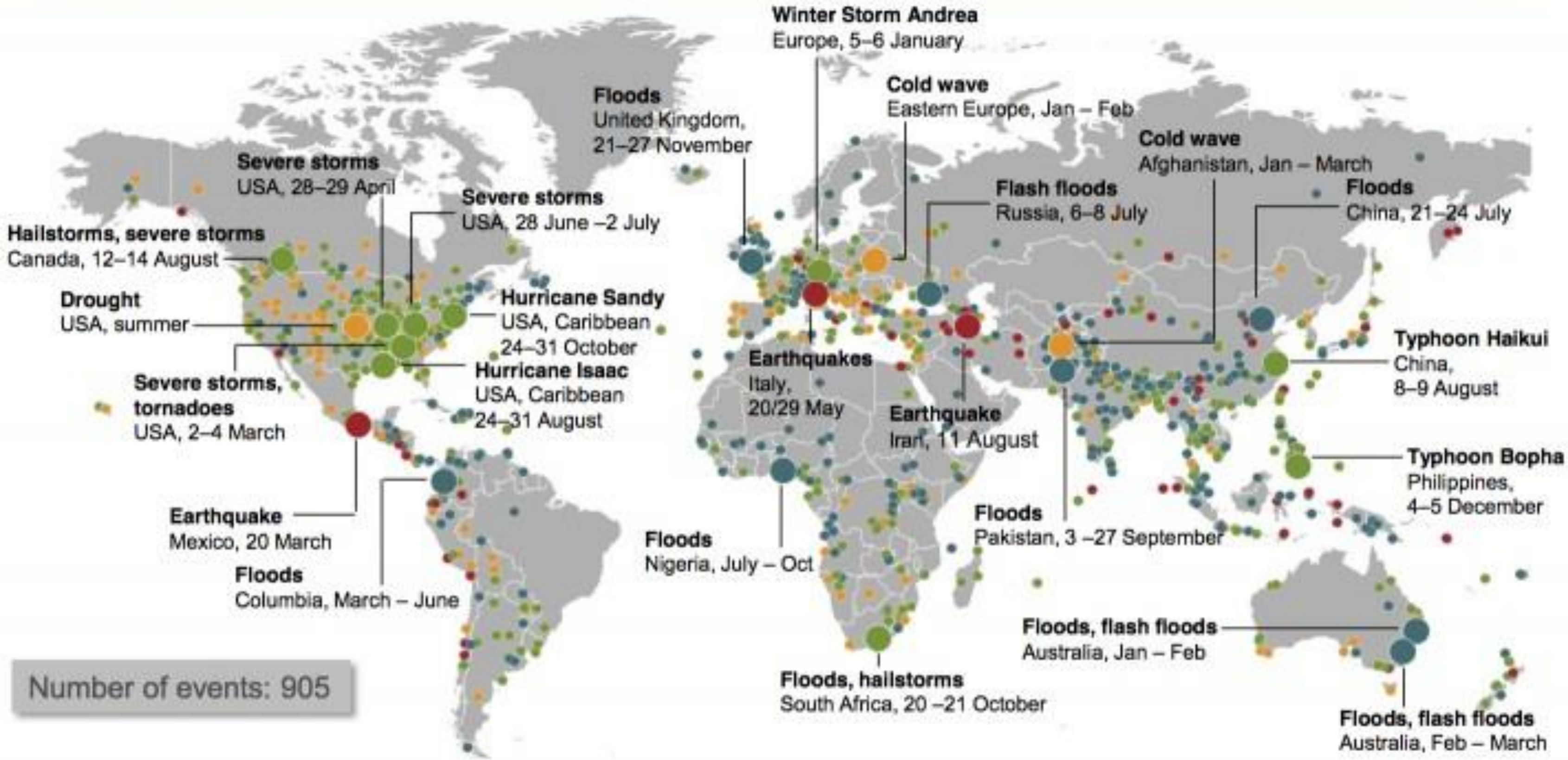
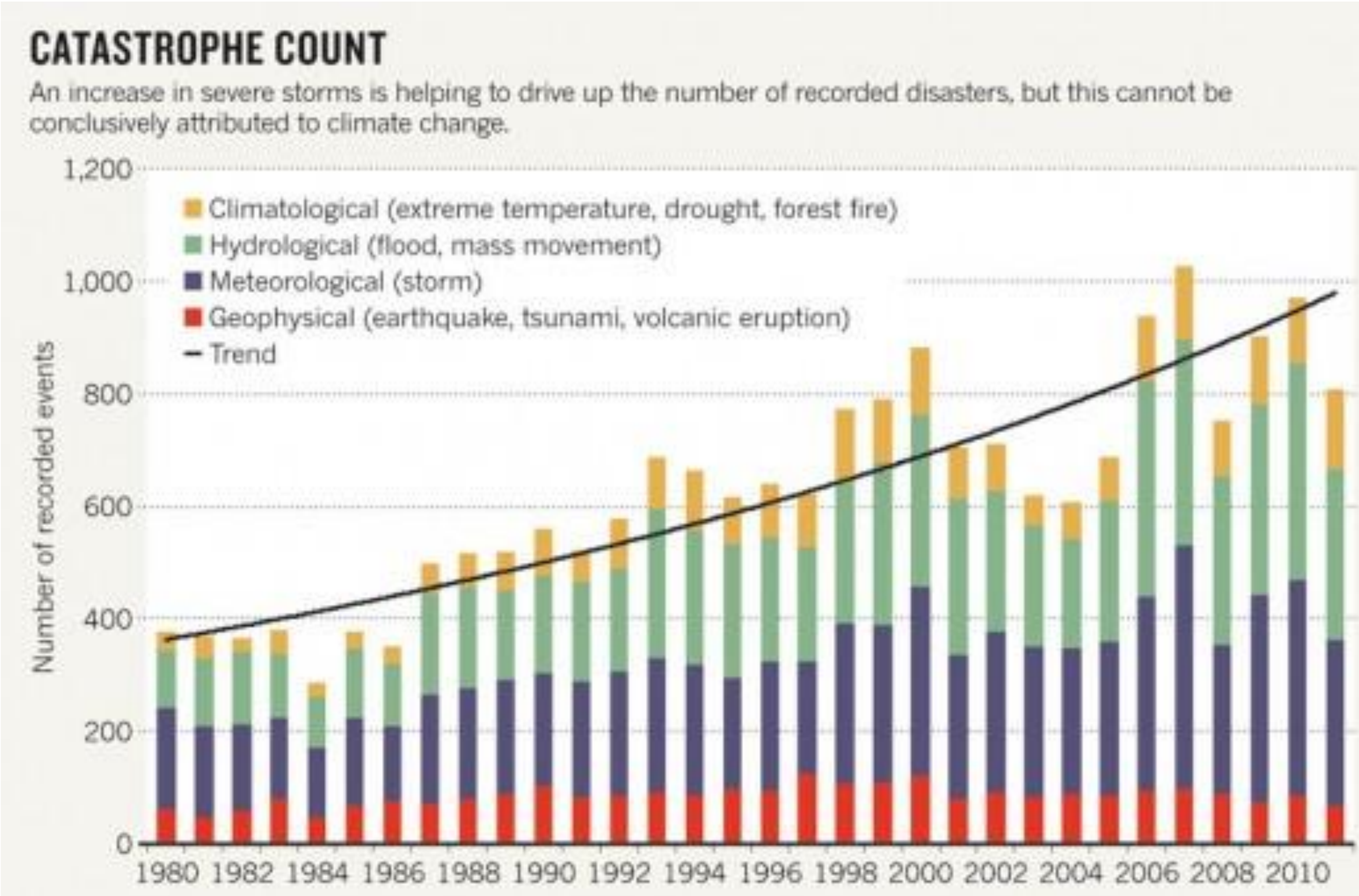
NatCatSERVICE

Natural Catastrophes 2012
World map

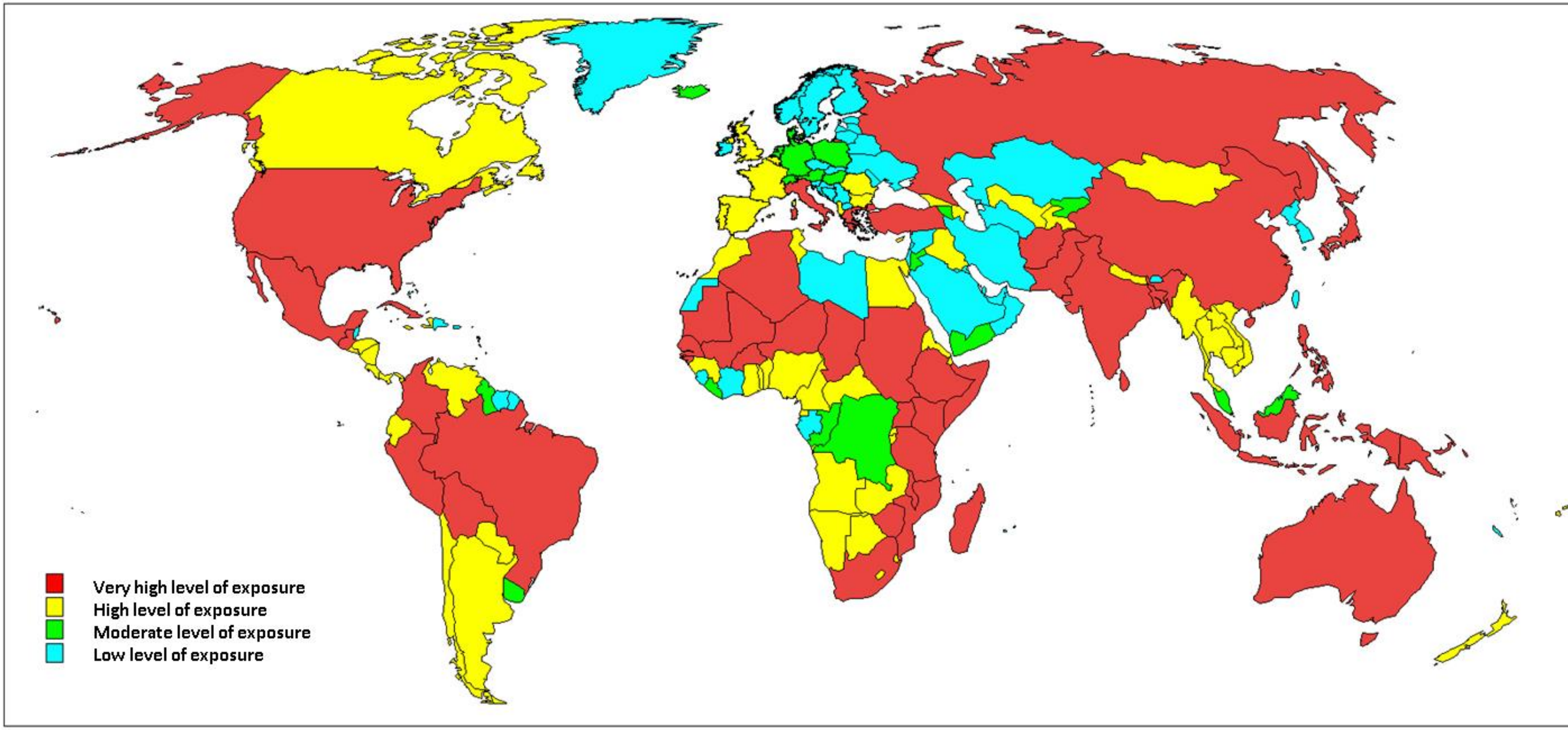
Munich RE

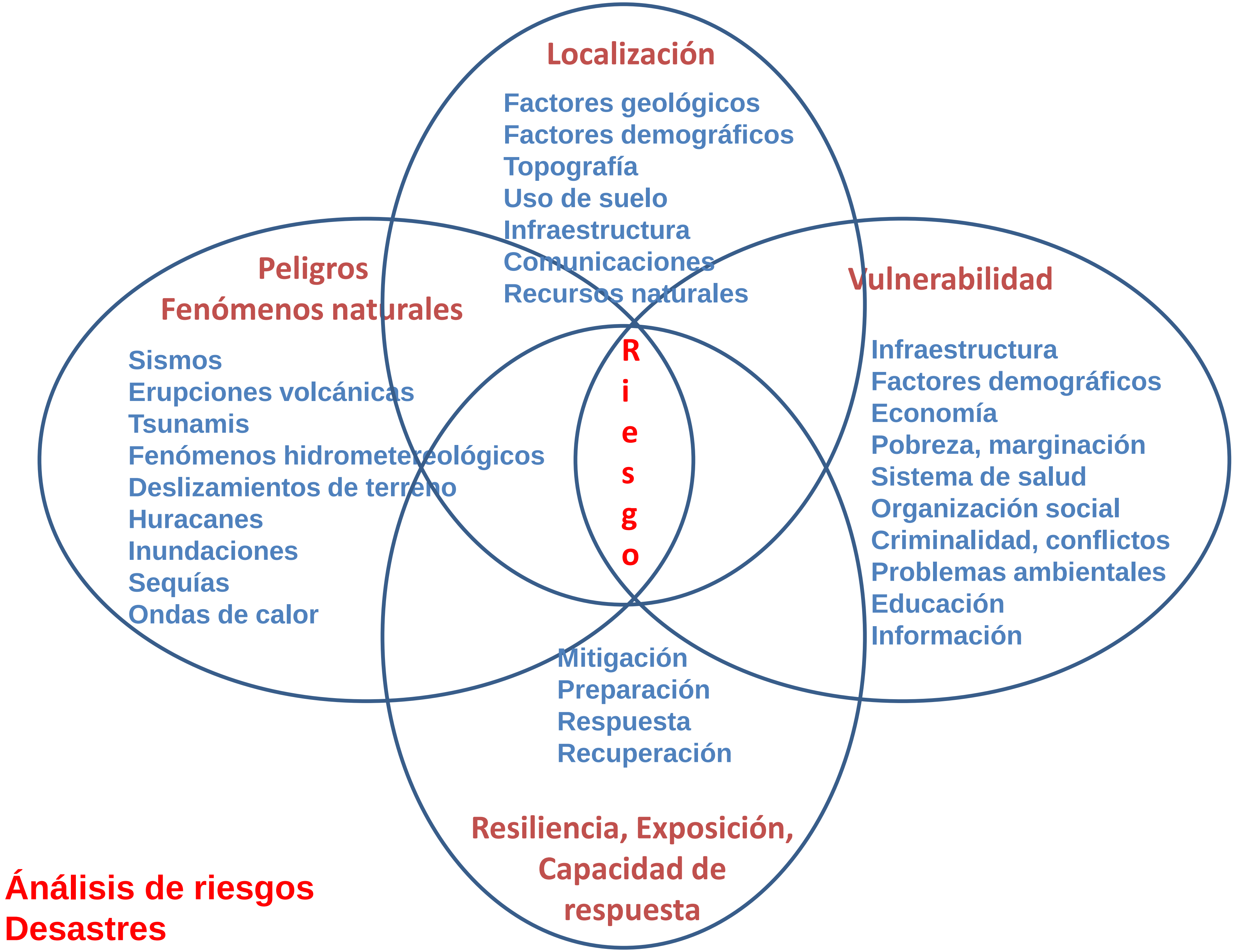


- Natural catastrophes
- Selection of significant Natural catastrophes
- Geophysical events (earthquake, tsunami, volcanic activity)
- Meteorological events (storm)
- Hydrological events (flood, mass movement)
- Climatological events (extreme temperature, drought, wildfire)


CATASTROPHE COUNT
An increase in severe storms is helping to drive up the number of recorded disasters, but this cannot be conclusively attributed to climate change.
Climatological (extreme temperature, drought, forest fire)
Hydrological (flood, mass movement)
Meteorological (storm)
Geophysical (earthquake, tsunami, volcanic eruption)
Trend
Number of recorded events
1,200
1,000
800
600
400
200
0
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010

Map estimating the levels of exposure of the different countries to natural hazards

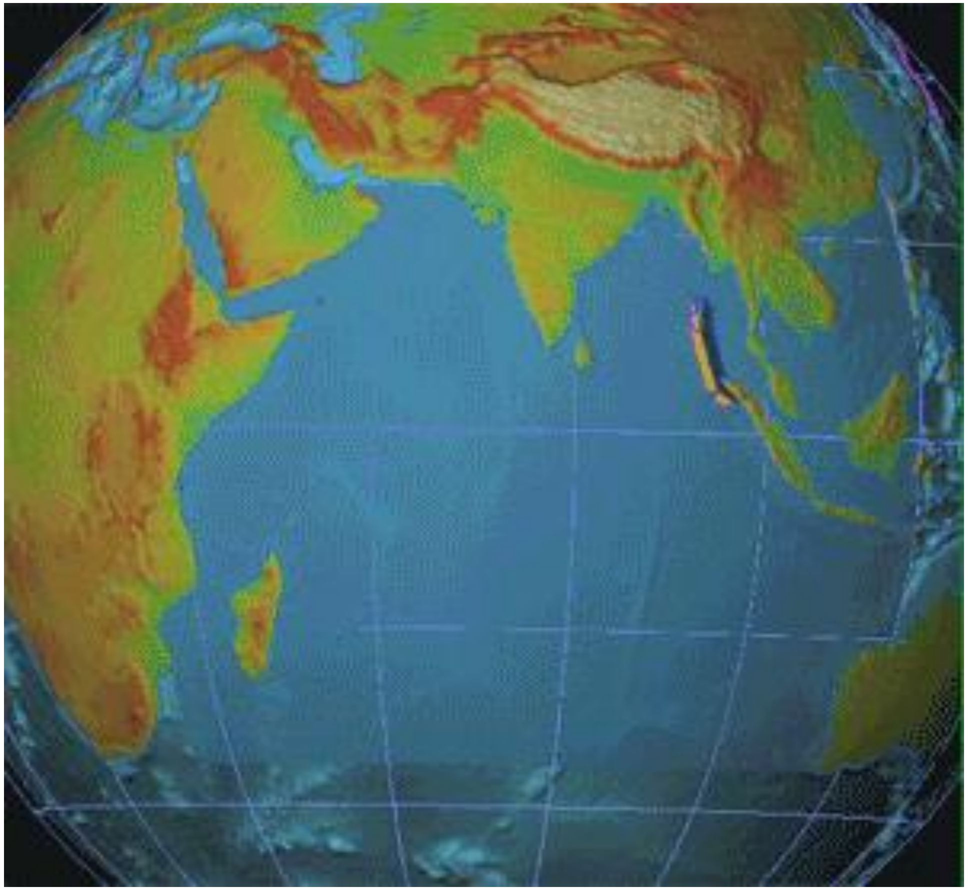


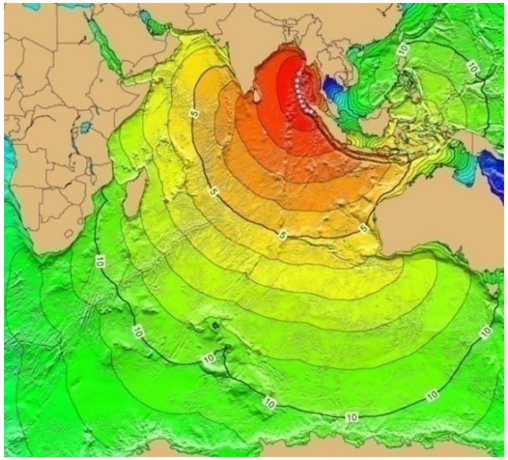

Localización
Factores geológicos
Factores demográficos
Topografía
Uso de suelo
Infraestructura
Comunicaciones
Recursos naturales
Peligros
Fenómenos naturales
Sismos
Erupciones volcánicas
Tsunamis
Fenómenos hidrometereológicos
Deslizamientos de terreno
Huracanes
Inundaciones
Sequías
Ondas de calor
Vulnerabilidad
Infraestructura
Factores demográficos
Economía
Pobreza, marginación
Sistema de salud
Organización social
Criminalidad, conflictos
Problemas ambientales
Educación
Información
Riesgo
Mitigación
Preparación
Respuesta
Recuperación
Resiliencia, Exposición, Capacidad de respuesta
Análisis de riesgos
Desastres

2011 sismo y tsunami en Honshu

Impactos post-desastre y capacidad de respuesta

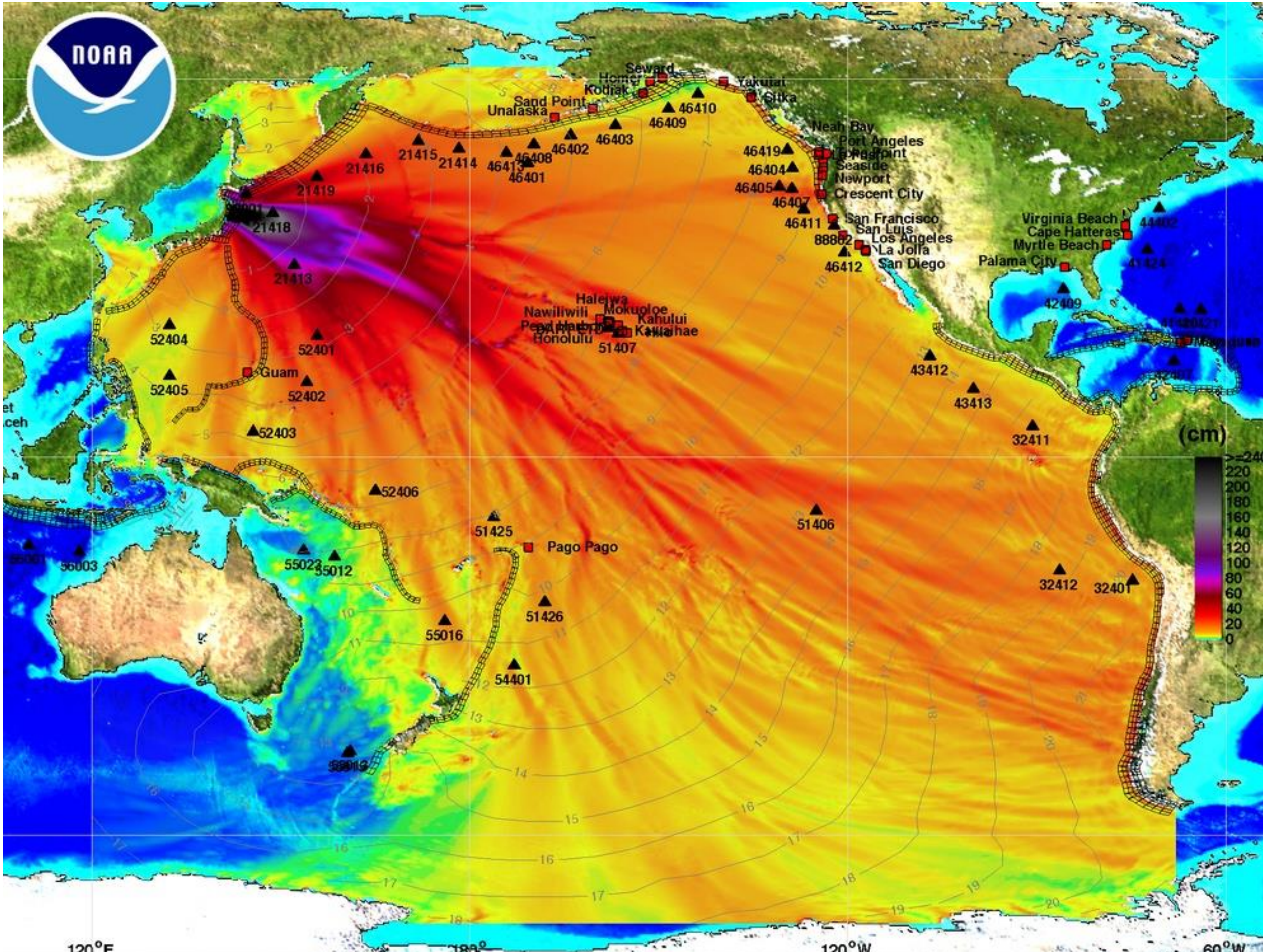
Indian Ocean Earthquake and Tsunami December 2004





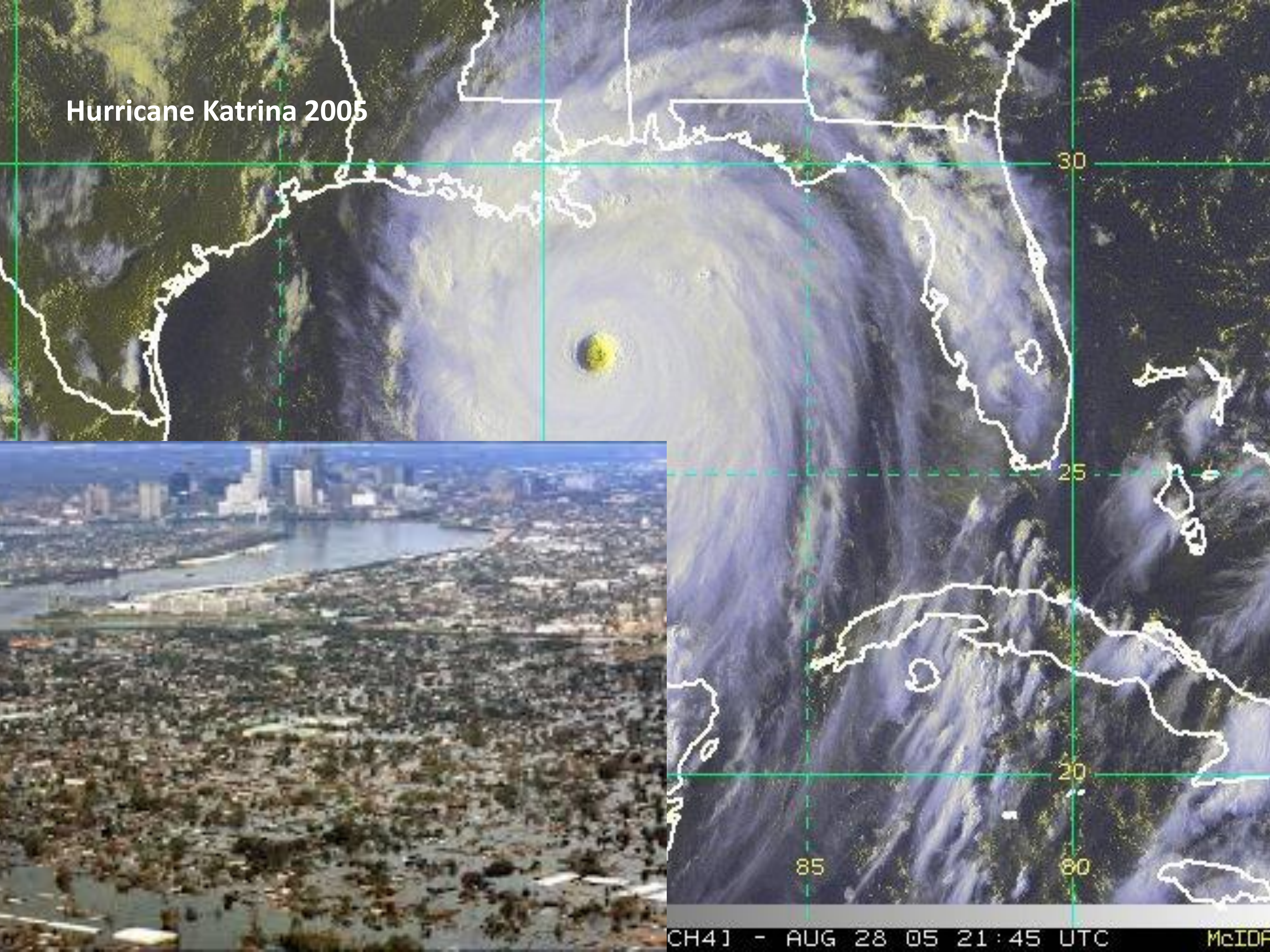
Sumatra earthquake
Mw 9.1-9.3

~230 000 human life lost


NOAA
Seward
Homer
Kodiak
Yakutat
Sitka
Sand Point
Unalaska
46410
46409
46403
46402
46408
46413
46401
21414
21415
21416
21419
21418
21413
Neah Bay
Port Angeles
Seaside
Newport
Crescent City
46419
46404
46405
46407
46411
San Francisco
San Luis
Los Angeles
La Jolla
San Diego
46412
Virginia Beach
Cape Hatteras
Myrtle Beach
Palama City
44402
41424
42409
Haleiwa
Mokuoloe
Nawiliwili
Kahului
Honolulu
Kawaihae
51407
52404
52401
Guam
52405
52402
52403
43412
43413
32411
(cm)
>=240
220
200
180
160
140
120
100
80
60
40
20
0
52406
51425
Pago Pago
51406
55023
55012
56003
55016
51426
54401
32412
32401
120°E
180°
120°W
60°W

Haiti earthquake

Hurricane Katrina 2005

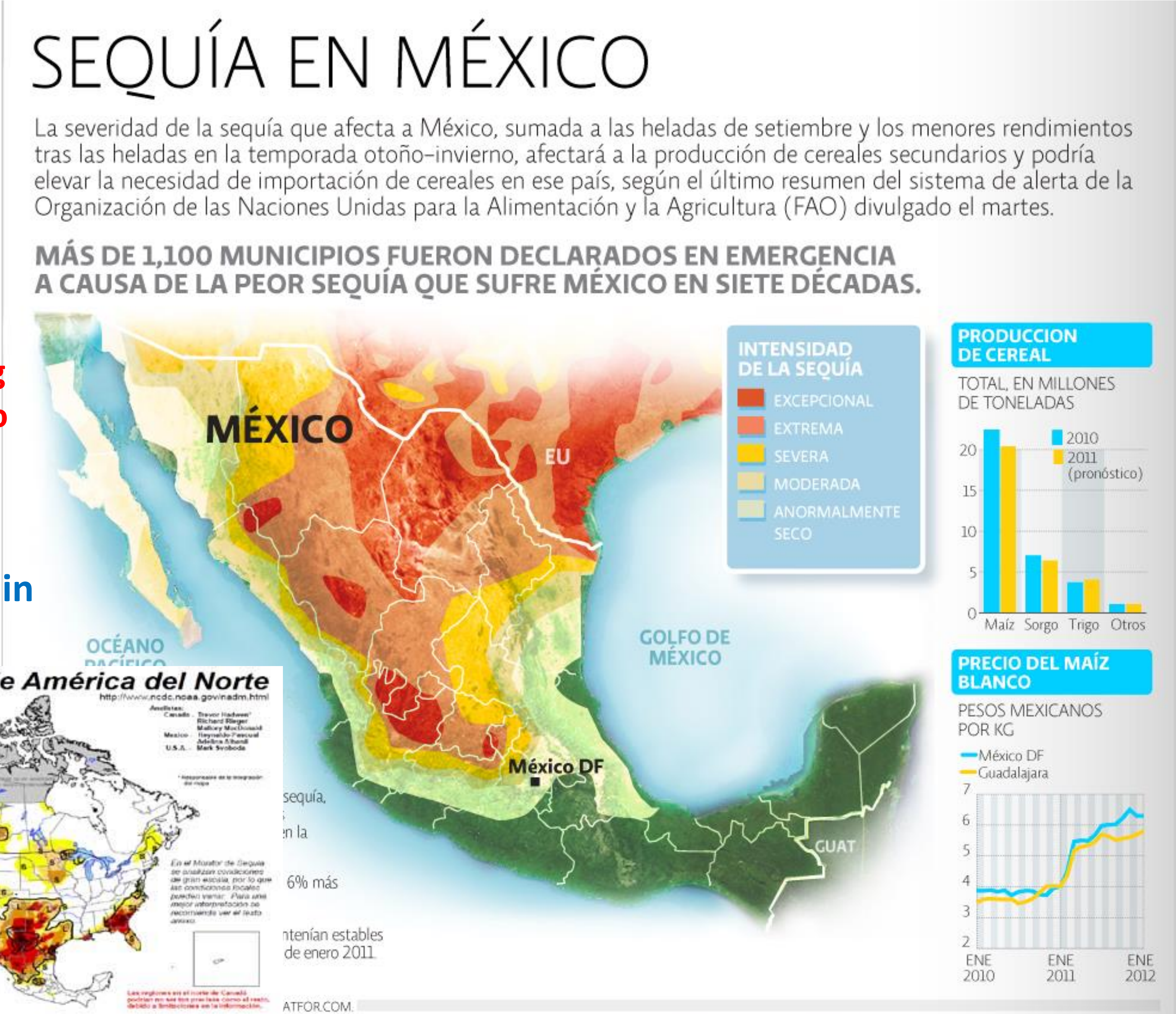


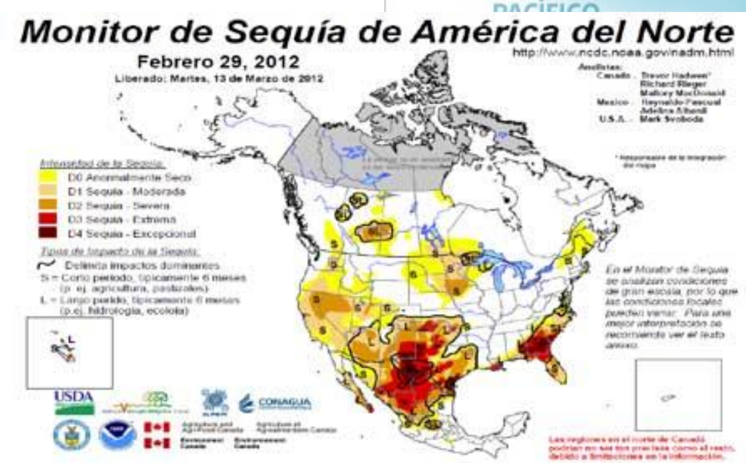
Flooding affects large areas in southeastern Mexico

Worst drought in seven decades. More than 1,100 counties in state of emergency

Severe drought affects 60 % of Mexico . Government agencies implement emergency relief actions, providing water and food to worst affected areas

Severe drought in North America





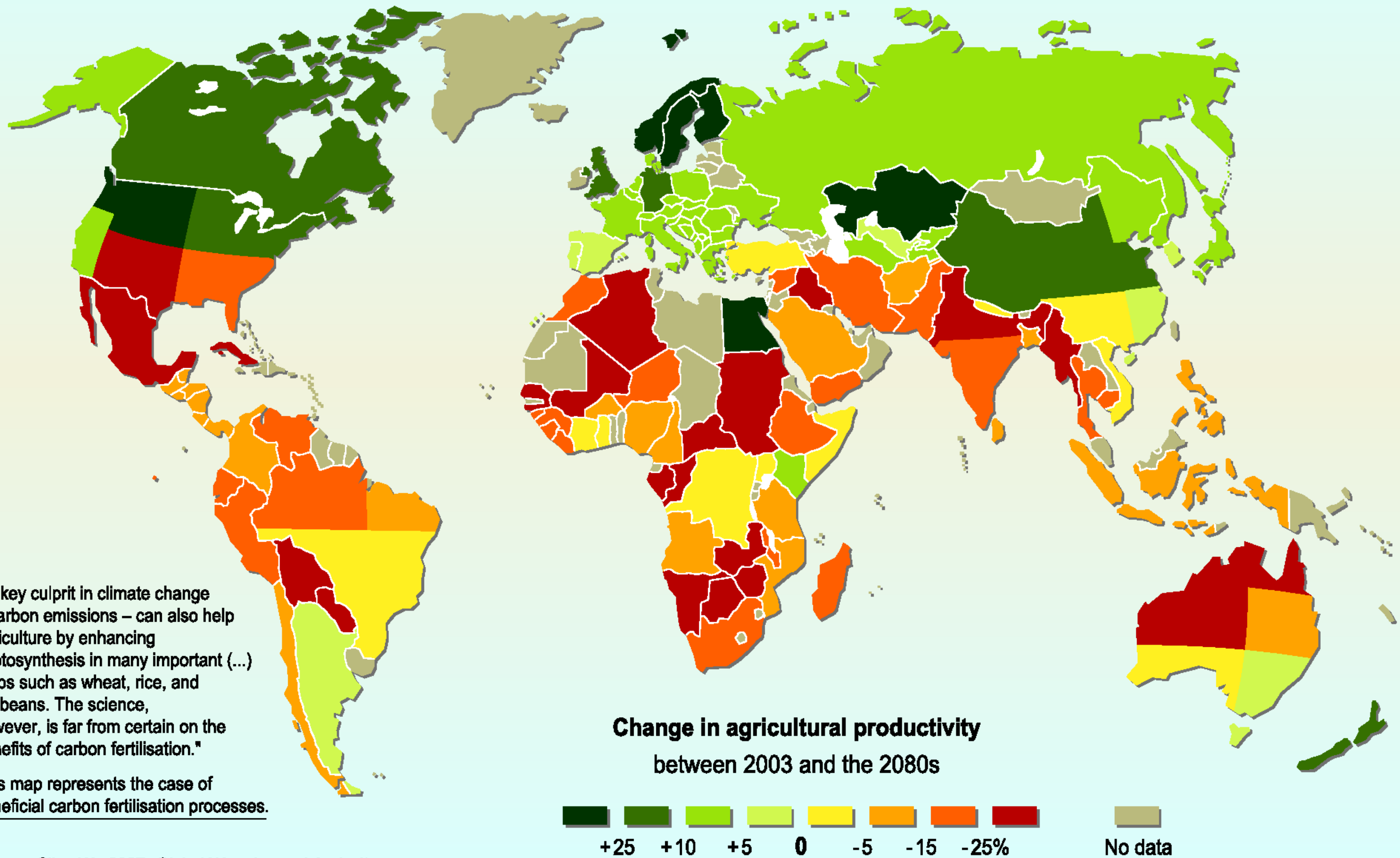
La sequía abrasa México

El año más seco en siete décadas afecta a la mitad de los municipios y machaca la cosecha de maíz y frijoles. La situación reaviva el debate sobre el problema del hambre en el país y sobre la idoneidad del actual modelo de producción de alimentos. Se calcula que hay al menos dos millones de personas afectadas

The worst drought in 70 years has severely affected the country

Crop yields, including 80% of beans and 50 % of corn and wheat are lost

Projected impact of climate change on agricultural yields



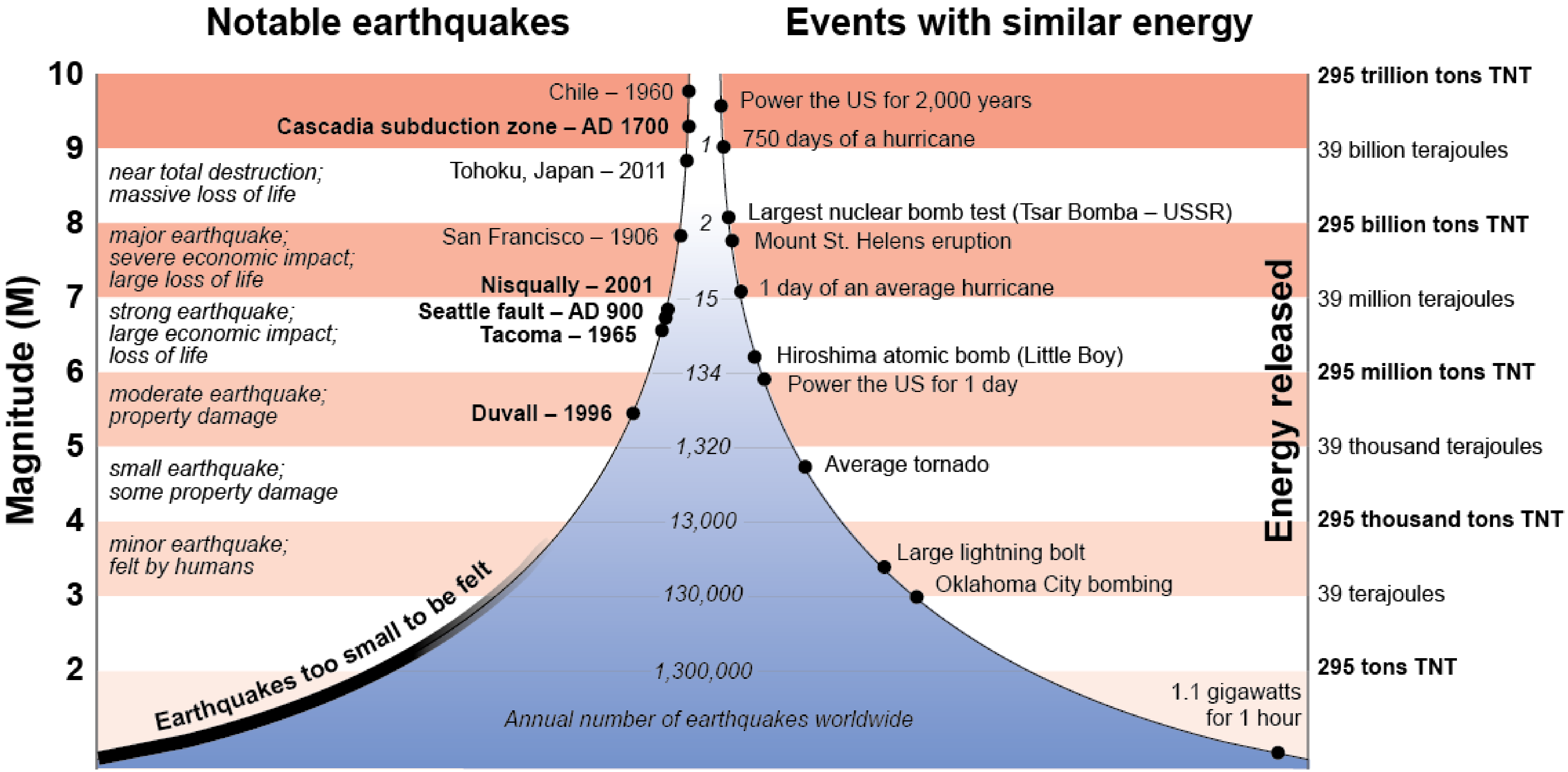
" A key culprit in climate change – carbon emissions – can also help agriculture by enhancing photosynthesis in many important (...) crops such as wheat, rice, and soybeans. The science, however, is far from certain on the benefits of carbon fertilisation."

This map represents the case of beneficial carbon fertilisation processes.

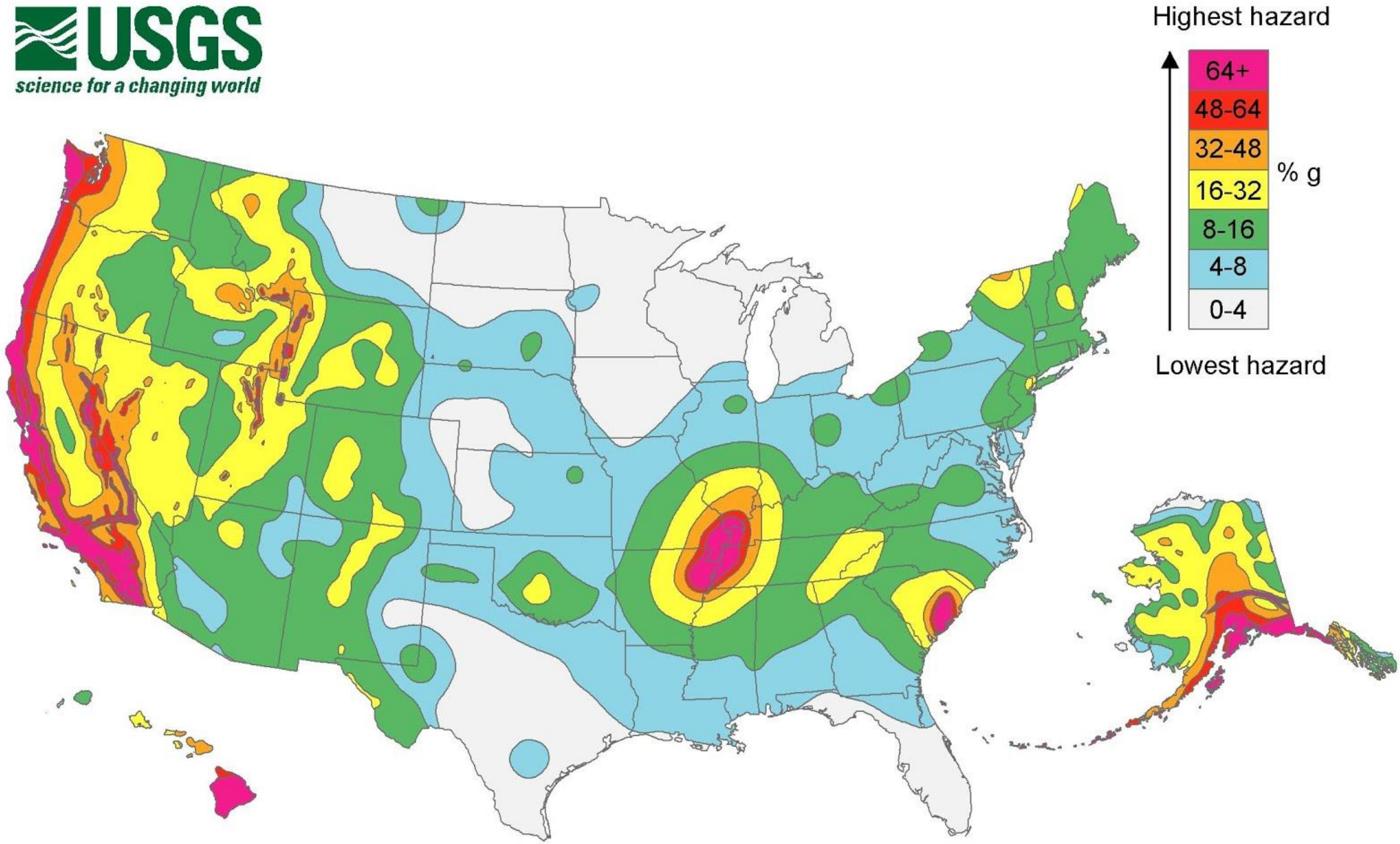
Source: Cline W., 2007, *Global Warming and Agriculture*.

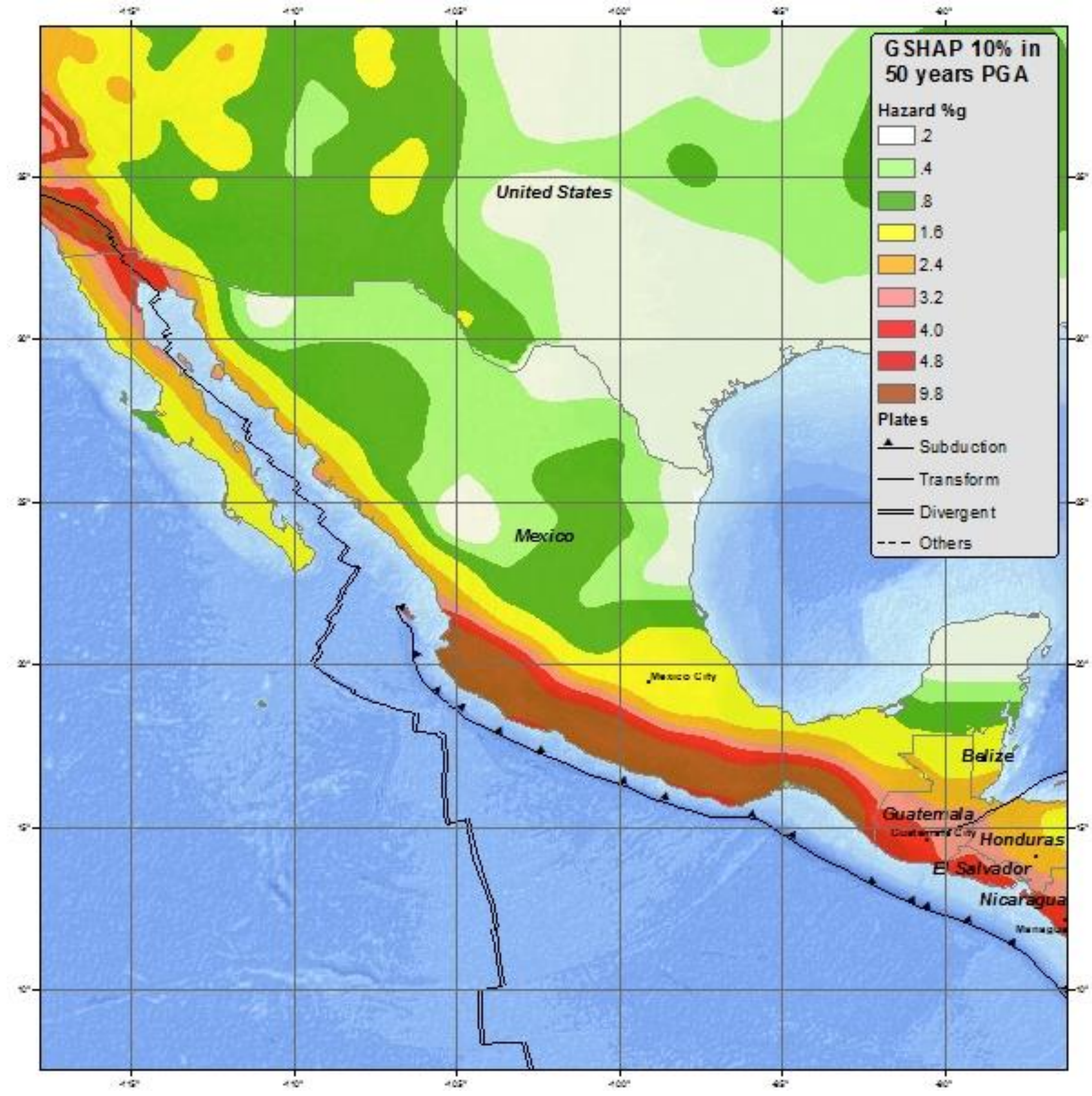

Fuels
Land
Weather
Hunger
Population Growth
Agriculture
Fertilizers
Food Insecurity
Forecasting
Rice
Research and Development
Sustainable Development
Maize
Food Aid
Distribution
Export Restrictions
Tef
Food Security
Equity
Commodity Price
Drought
Agribusiness
Aquaculture
Pesticides
Food Reserves
Small Producers
Financial Speculation
Climate
Financial Meltdown
Forests
Soybean
Environmental Degradation
Agroecosystems
925M Hungry People
Water
Governance
GMOs

Earthquake energy and frequency



Earthquake data and frequency from USGS at http://earthquake.usgs.gov/earthquakes/eqarchives/year/eqstats.php
Energy released and events from http://alabamaquake.com/energy.html and http://en.wikipedia.org/wiki/Orders_of_magnitude_(energy)

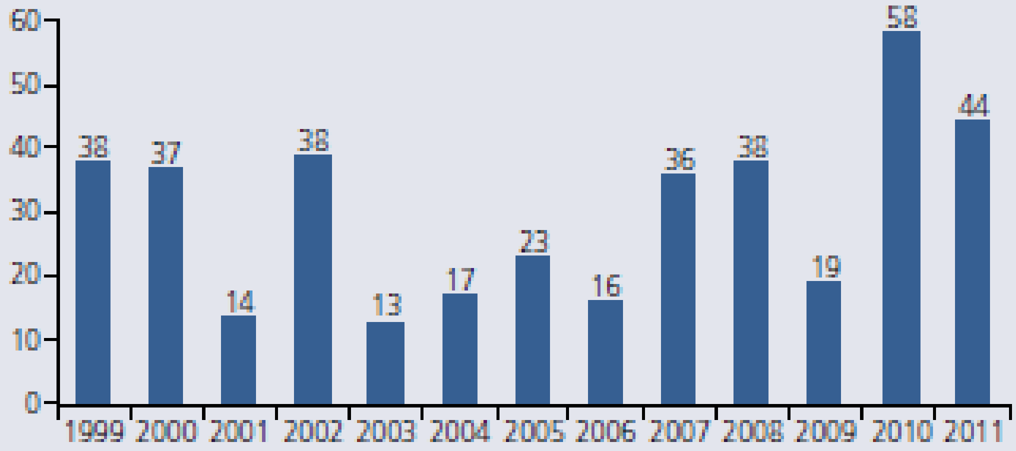

Highest hazard
64+
48-64
32-48
16-32
8-16
4-8
0-4
% g
Lowest hazard


GSHAP 10% in 50 years PGA
Hazard %g
.2
.4
.8
1.6
2.4
3.2
4.0
4.8
9.8
Plates
Subduction
Transform
Divergent
Others
United States
Mexico
Mexico City
Belize
Guatemala
Honduras
El Salvador
Nicaragua

Box 3.1. Frequency of declarations of natural disasters in Mexico

Between 1999 and 2011, Mexico experienced an average of 30 disaster declarations every year. 2003 was the year with least declarations (13), while 2010 counted the most with 58 declarations of natural disasters.[11]

Declarations of Natural Disasters in Mexico by Year, 1999-2011



Source: FONDEN (2011).

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[11] It should be noted that the number of disasters declaration in any given year is not necessarily indicative of the scale of disaster impact since the latter depends on the location, magnitude, number of municipalities declared, and geographical scale of each event.

Figure 4.2. Post-disaster reconstruction costs paid by the federal government and state governments (in constant 2011 US dollars)

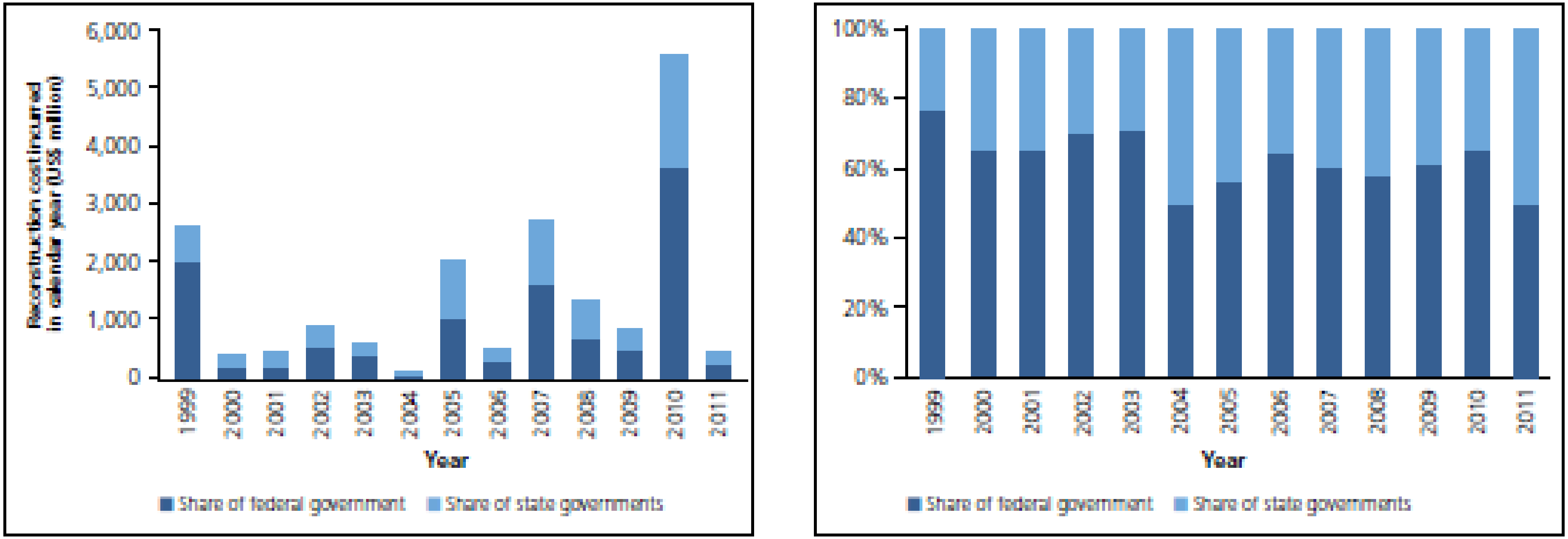
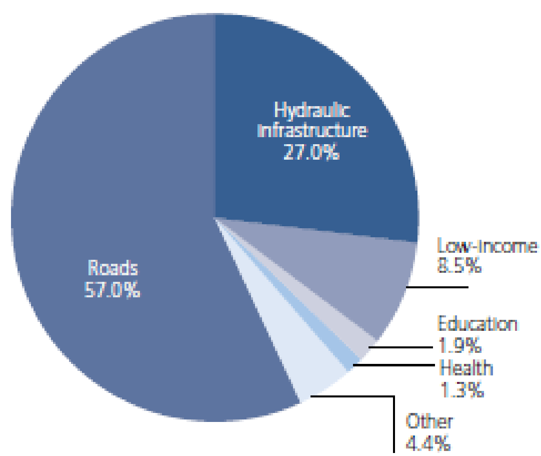
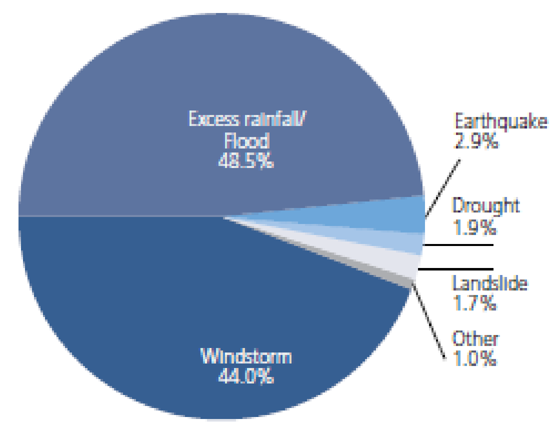


Figure 4.4. Post-disaster reconstruction costs covered by FONDEN, by type of assets, 2000-2011



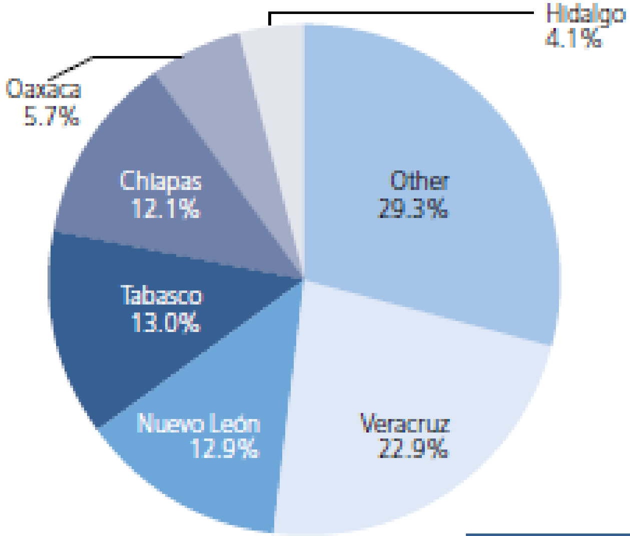
Source: Authors, from FONDEN (2011).

Figure 4.5. Post-disaster reconstruction costs covered by FONDEN, by type of peril, 2000-2011



Source: Authors, from FONDEN (2011).

Figure 4.6. Post-disaster reconstruction costs covered by FONDEN, by state, 2000-2011

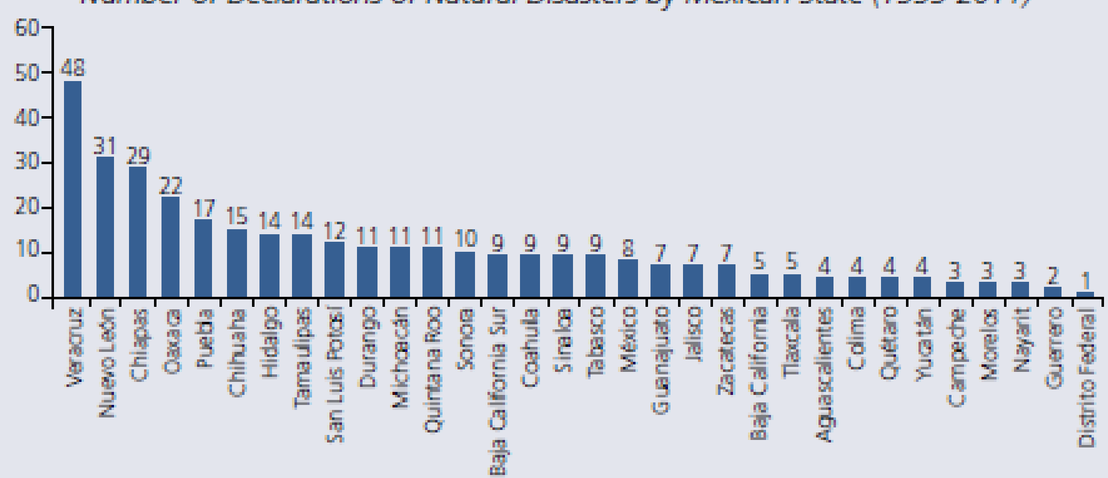


Source: Authors, from FONDEN (2011).

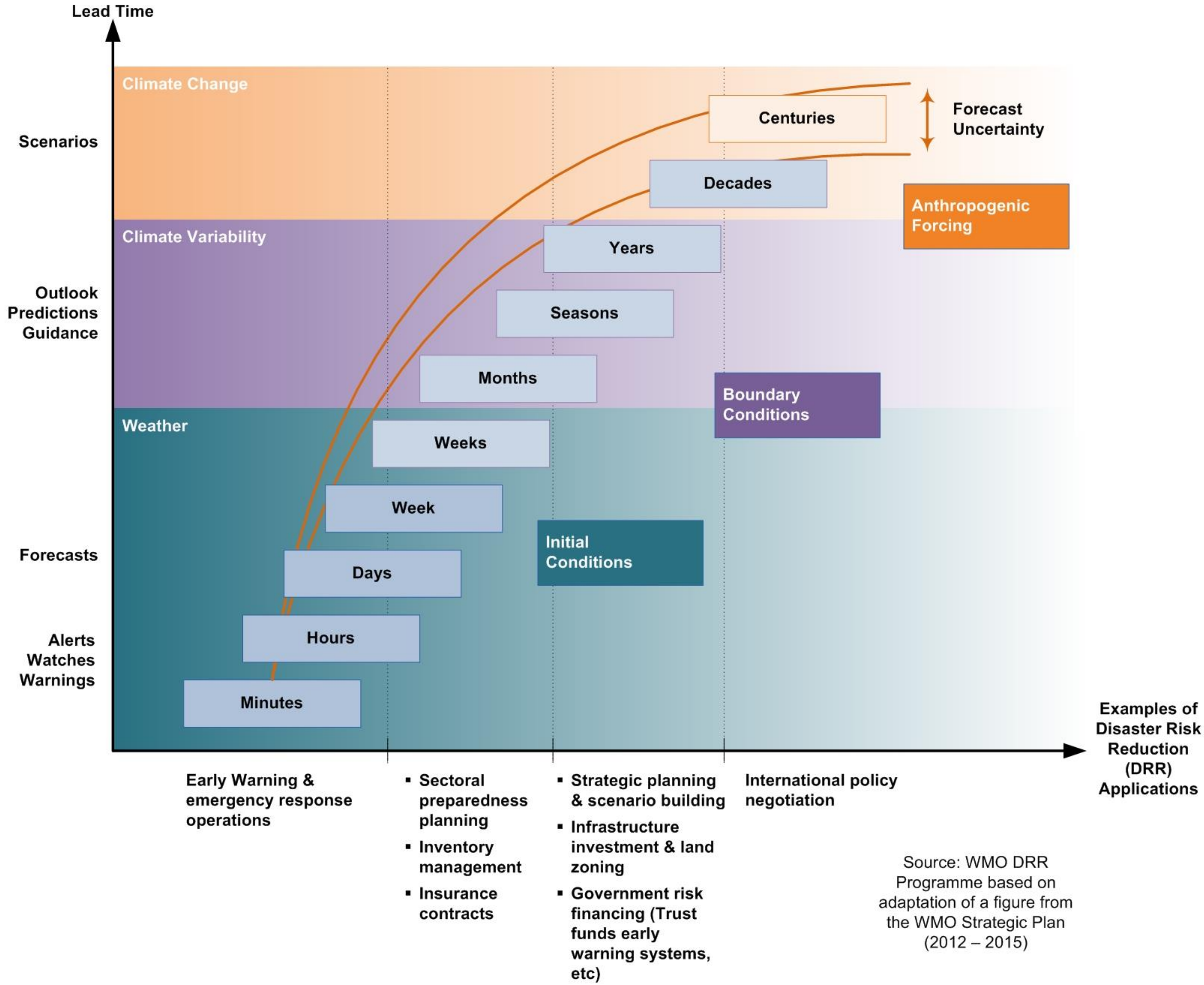
Box 3.1. Frequency of declarations of natural disasters in Mexico (cont.)

The number of disaster declarations also varied considerably across states during this period. Veracruz experienced the most declarations by far, with 48, followed by Nuevo León and Chiapas, with 31 and 29, respectively.

Number of Declarations of Natural Disasters by Mexican State (1999-2011)



Source: FONDEN (2011).



Source: WMO DRR Programme based on adaptation of a figure from the WMO Strategic Plan (2012 – 2015)


Inundaciones
Zonas Sismicas
Sismicidad
Tsunamis
Ciclones Tropicales
Volcanes
Inest. Laderas
Incendios
Heladas
Sequia
Químicos I
Químicos II

Thanks!!!

¡Muchas gracias!

Merci!