

WMO Drought Activities

Petteri Taalas
Secretary-General



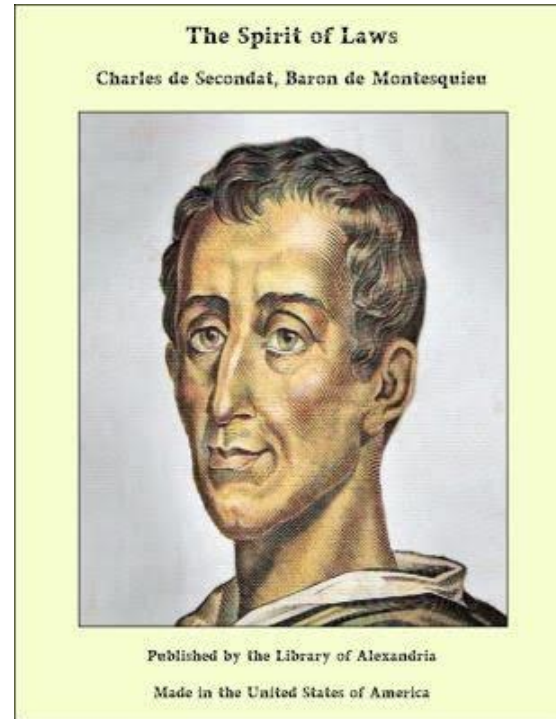
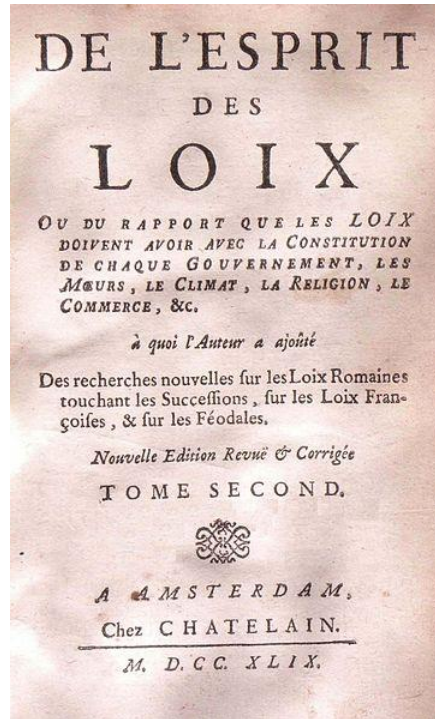
WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

**International Seminar on Drought
and Agriculture**
FAO, Rome, 19 June 2017

“Climate is the primary world power”

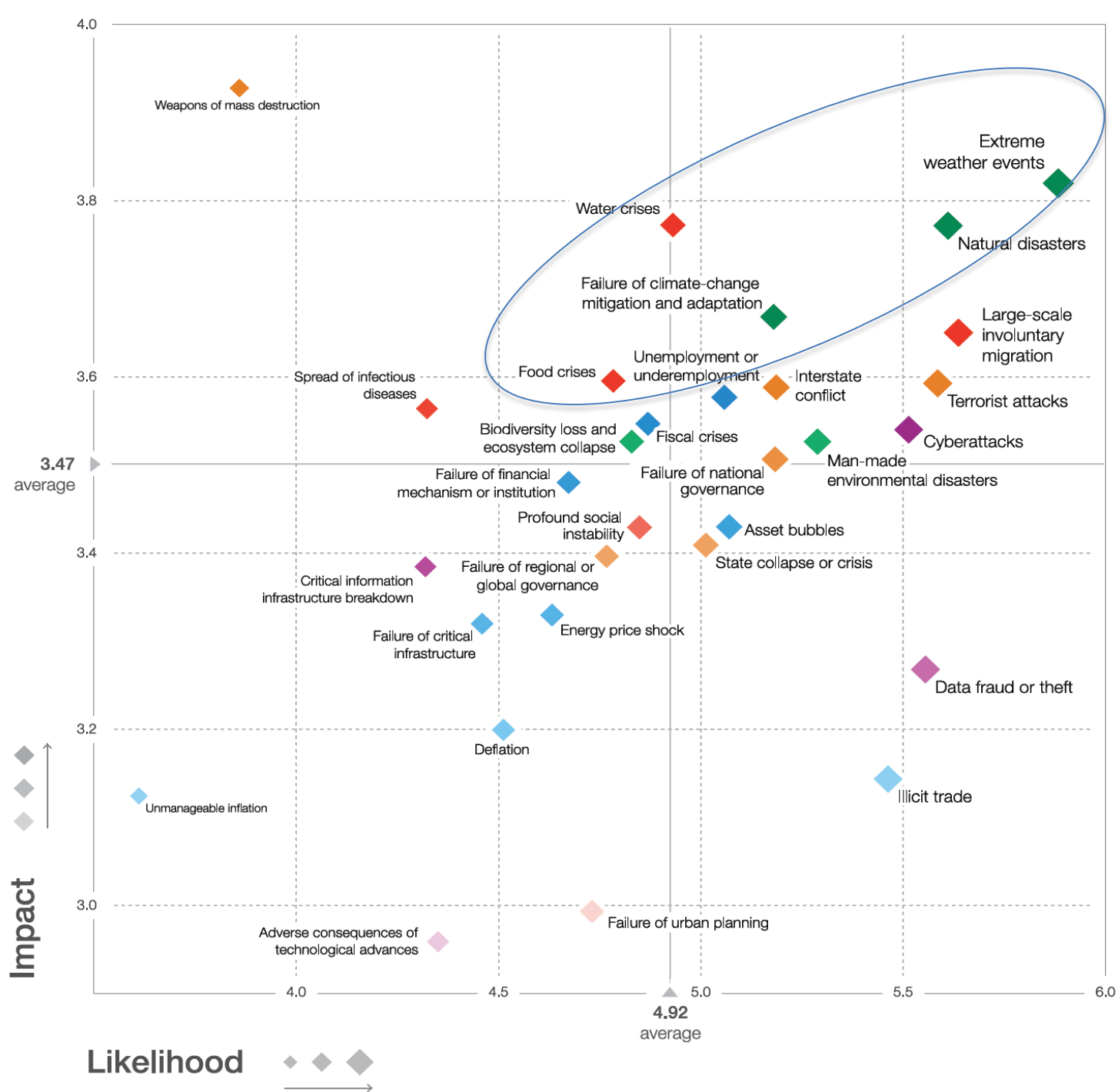
Philosopher Baron de Montesquieu (1689-1755)



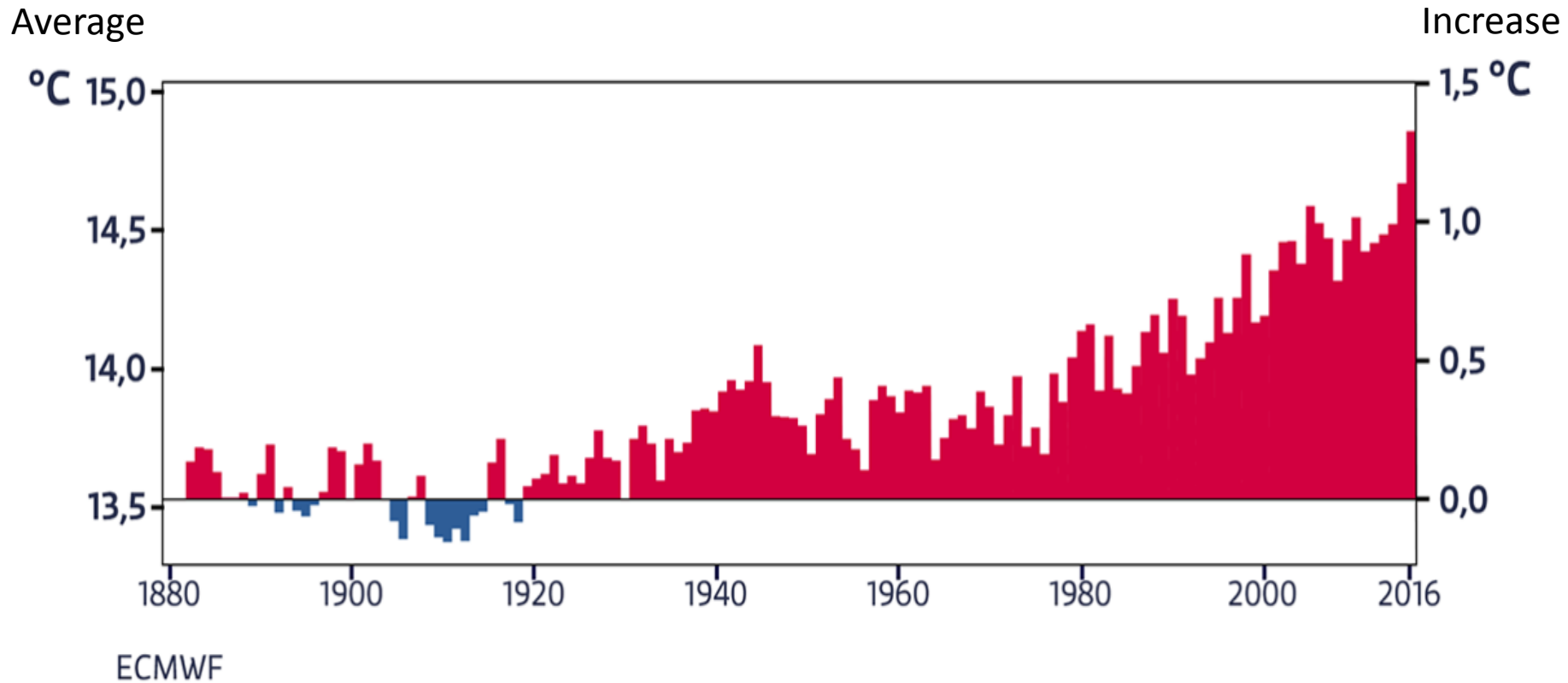
De l'Esprit des Loix, 1748 (partie III, livre XIX, chapitre XIV, paragraphe VI): "L'empire du climat est le premier de tous les empires".

Global risks landscape 2017

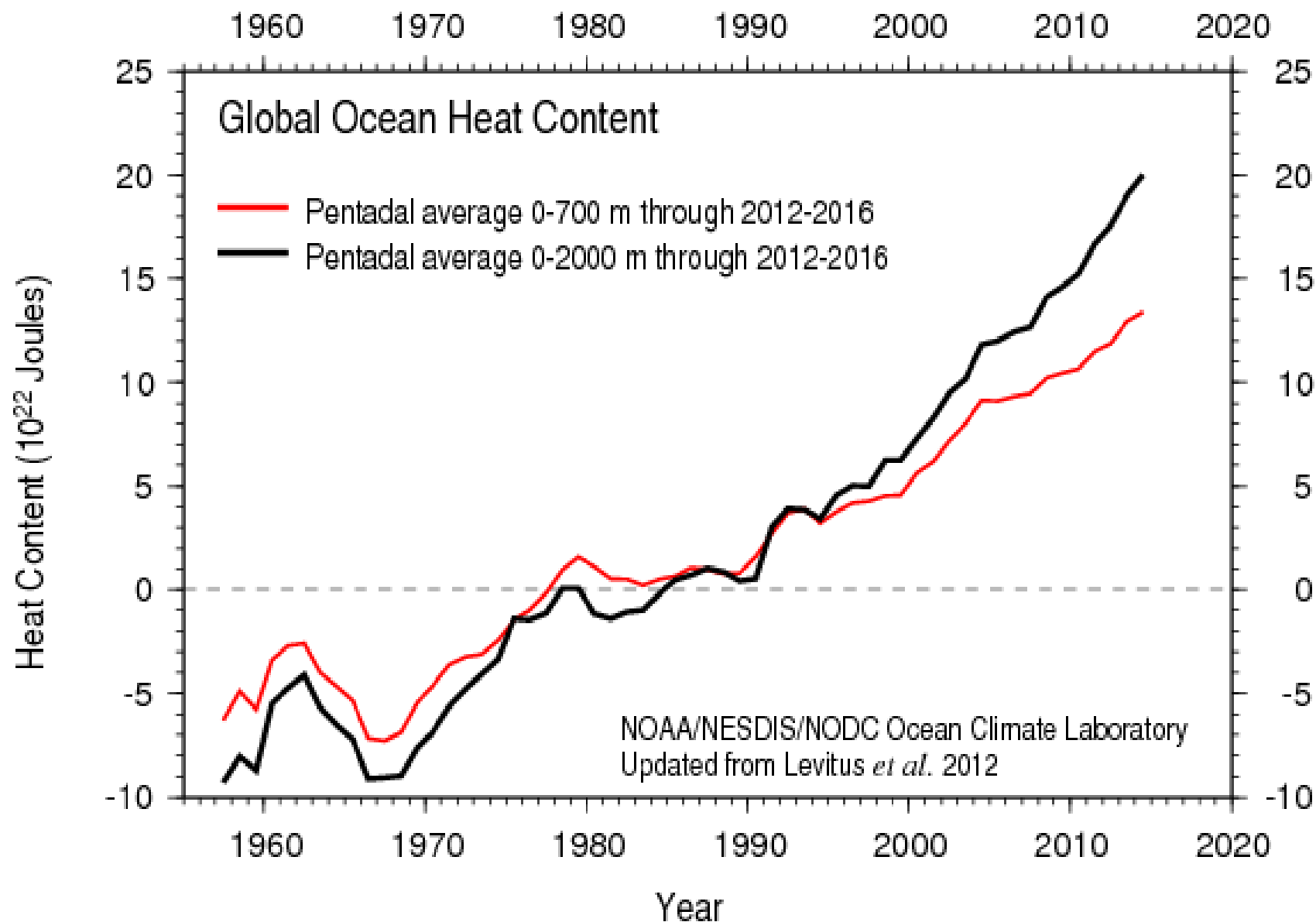
World Economic Forum



Global temperature 1880-2016



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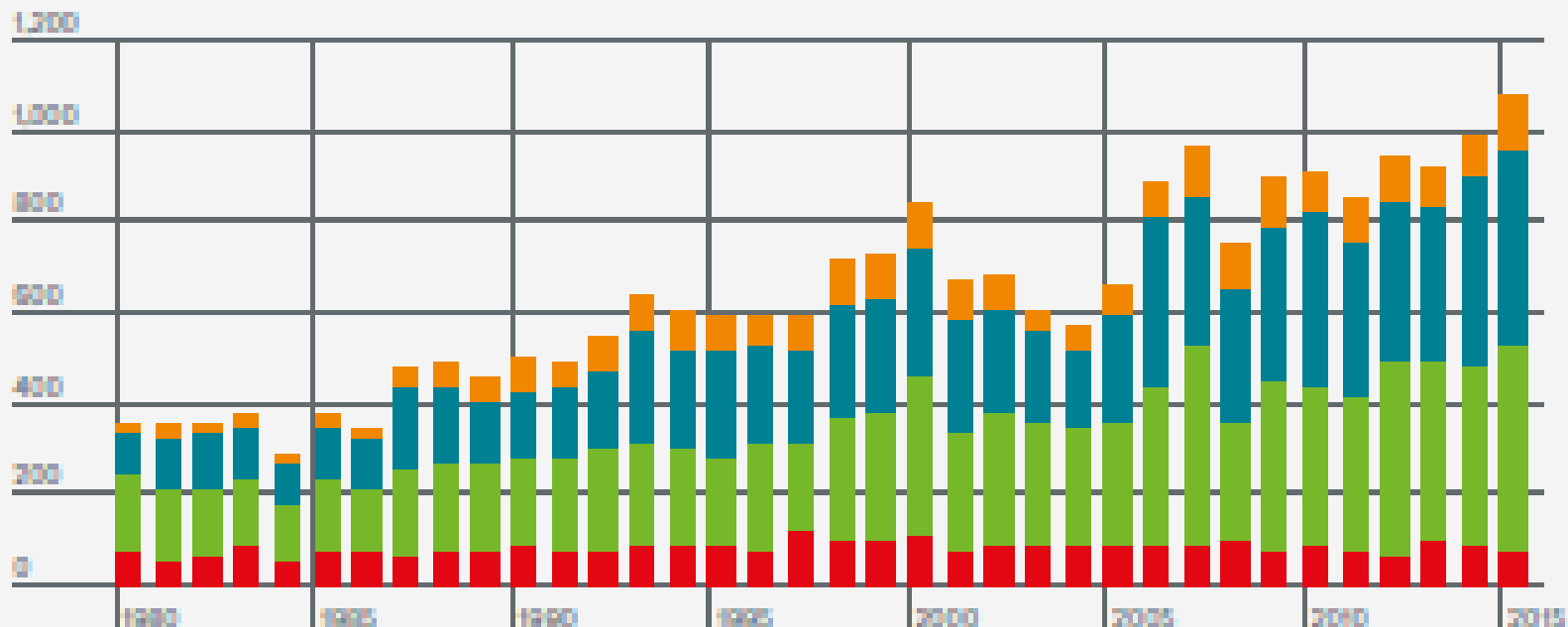
Arctic sea ice volume 1979-2016: -74 %



Source: <http://psc.apl.washington.edu/wordpress/research/projects/arctic-sea-ice-volume-anomaly/>
Created by: Andy Lee Robinson <http://youtube.com/ahaveland> Oct 2016

Growing number of weather related disasters

Number of loss events 1980-2015



Geophysical events:
Earthquakes, tsunamis, volcanic activity

Meteorological events:
Tropical storm, extratropical storm, convective storm, local storm

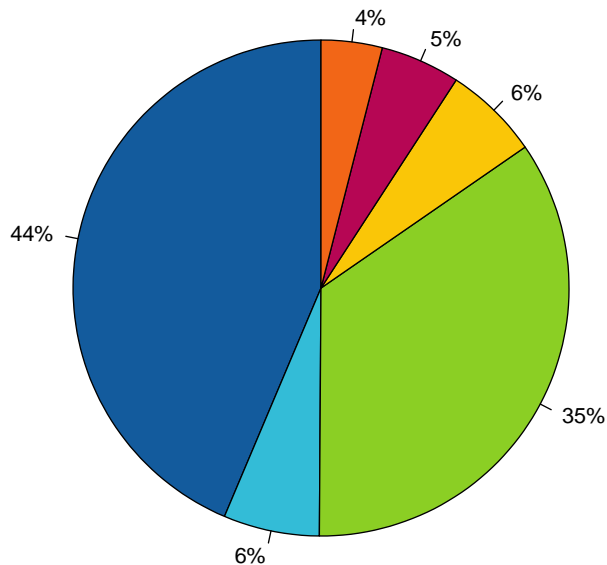
Hydrological events:
Flood, mass movement

Climatological events:
Extreme temperatures, drought, wildfires

Global Disaster Statistics (1970-2012)

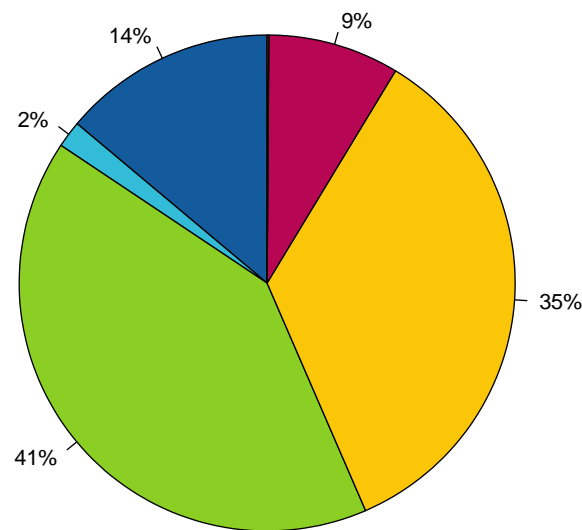
(a) number of reported disasters

Total = 8 835 disasters (1970–2012)



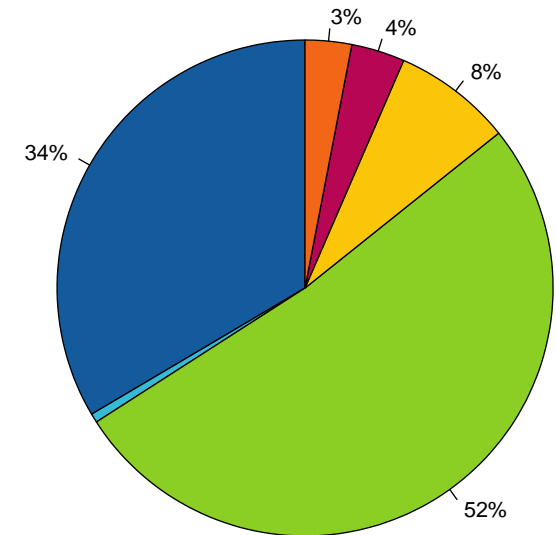
(b) reported deaths

Total = 1 944 653 deaths (1970–2012)



(c) reported economic losses

Total = US\$ 2 390.7 billion (1970–2012)



(a)



Droughts



Extreme Temperature



Wildfires



Floods



Mass Movement Wet



Storms

(b)

(c)

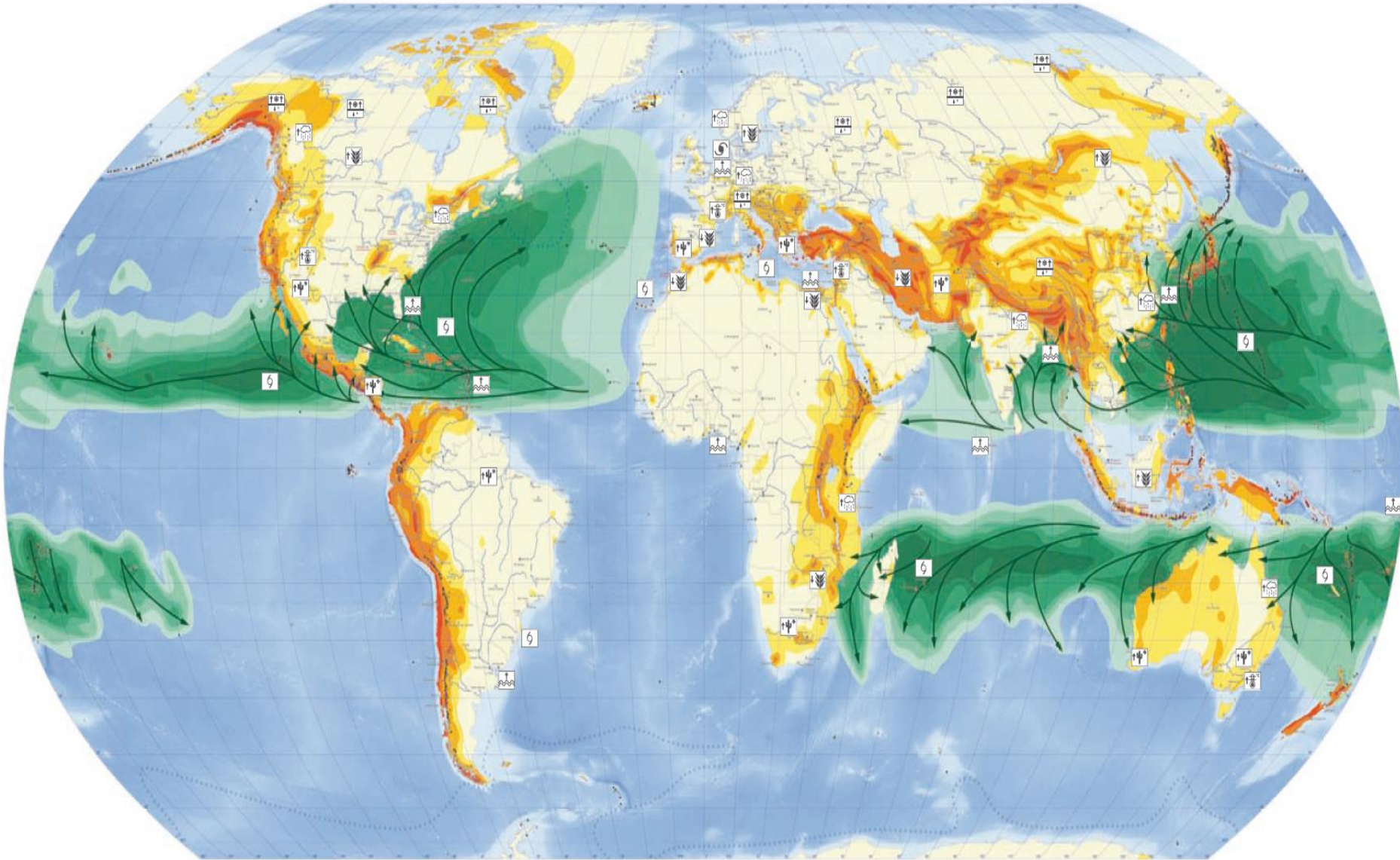
(in US\$ billion, adjusted to 2012)



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WMO/CRED Analysis using EM-DAT data

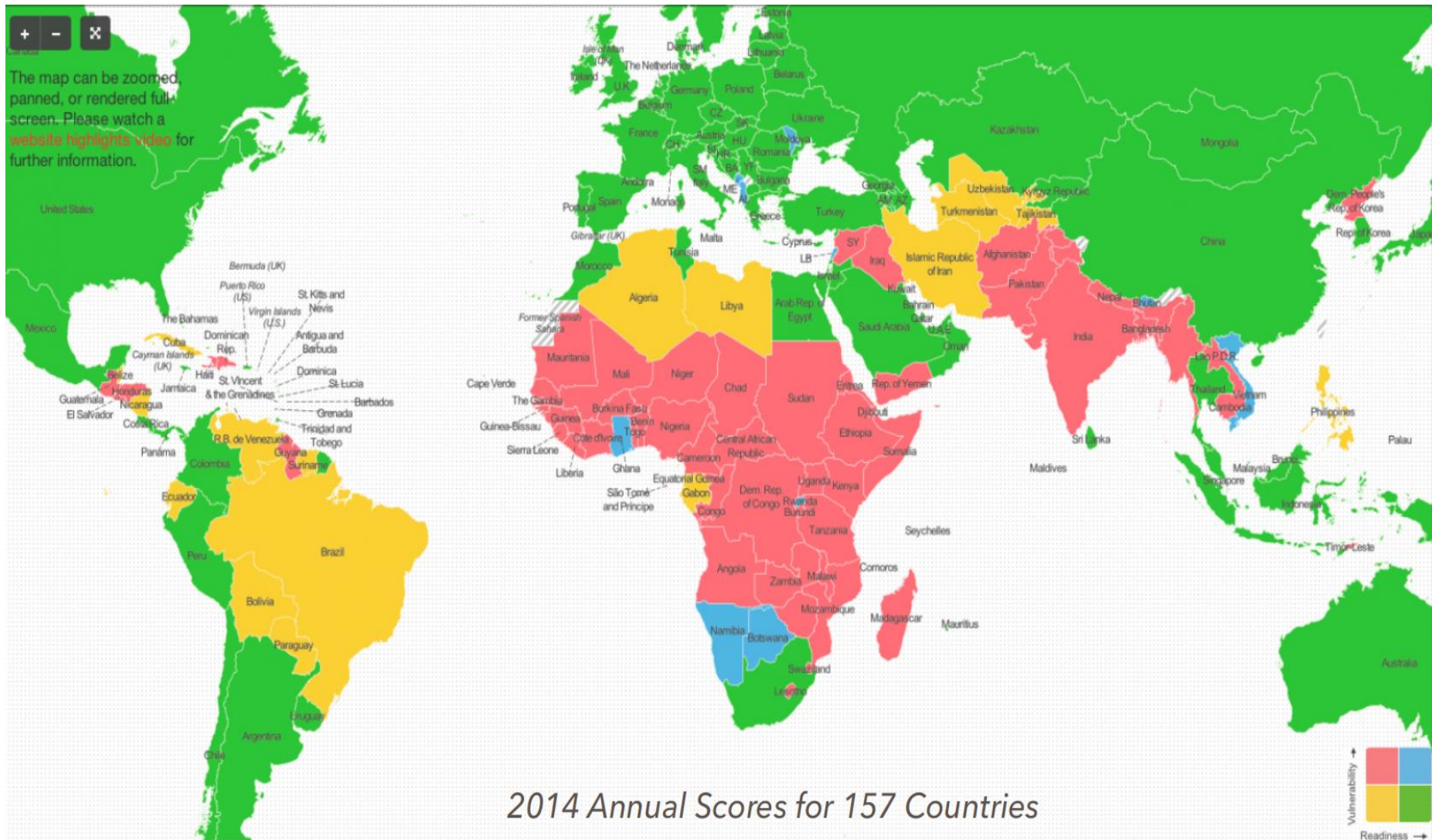
World map of natural hazards



WMO OMM

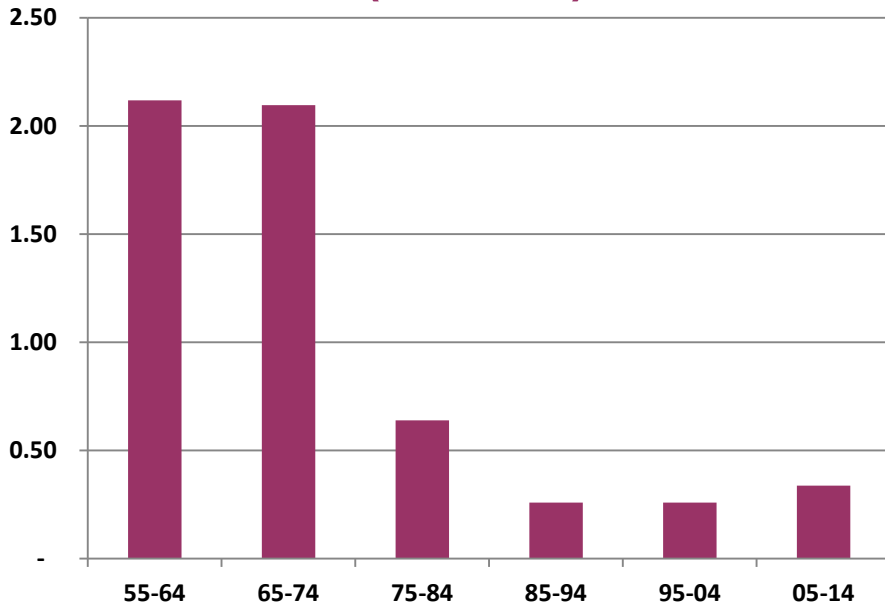
Source: Munich Re 2011

Global adaptation index

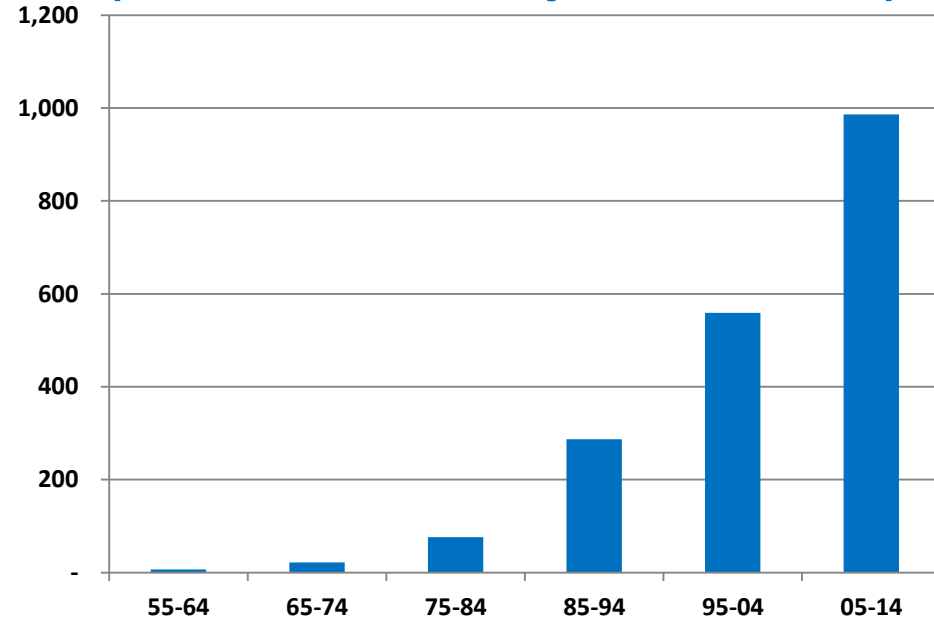


Impacts of hydrometeorological and climatological hazards (1955–2014)

Human losses by decade
(millions)



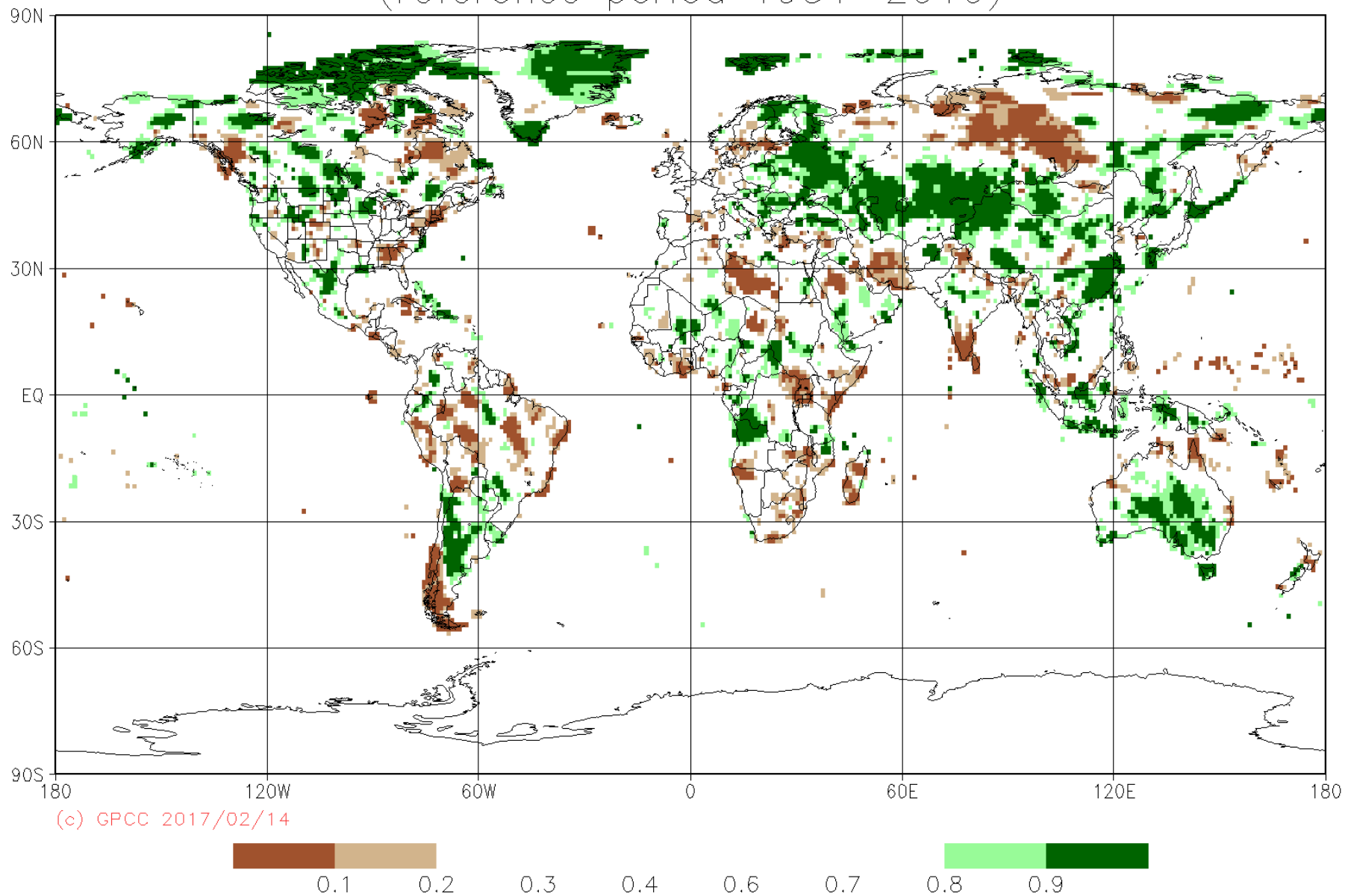
Economic losses by decade
(billions of US\$ adjusted to 2013)



Reduction of the number of victims thanks to greater effectiveness of early warning systems and prevention measures

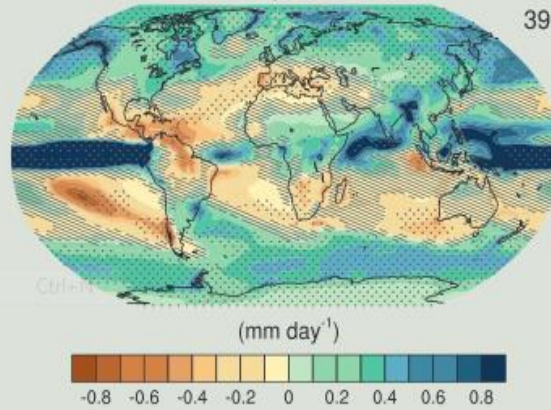
Precipitation anomalies 2016

GPCC Precipitation Percentile
January 2016 – December 2016
(reference period 1951–2010)

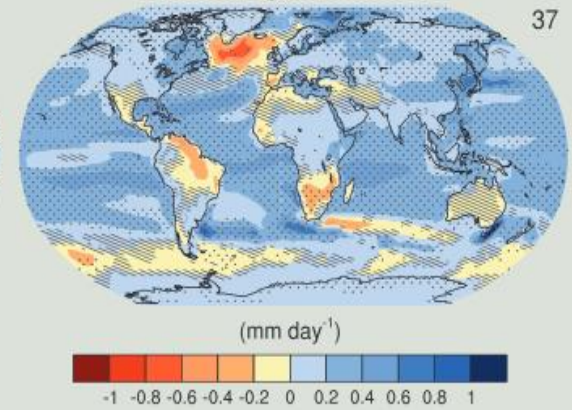


Annual mean hydrological cycle change (RCP8.5: 2081-2100)

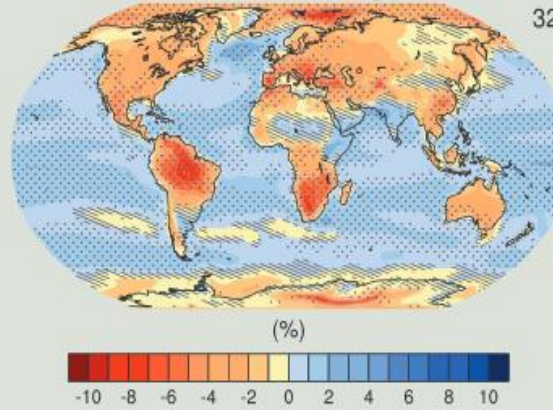
Precipitation



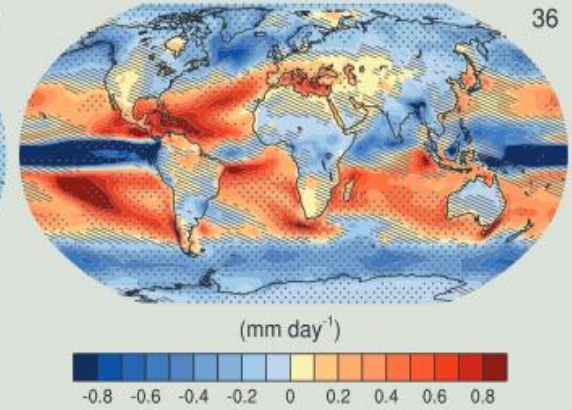
Evaporation



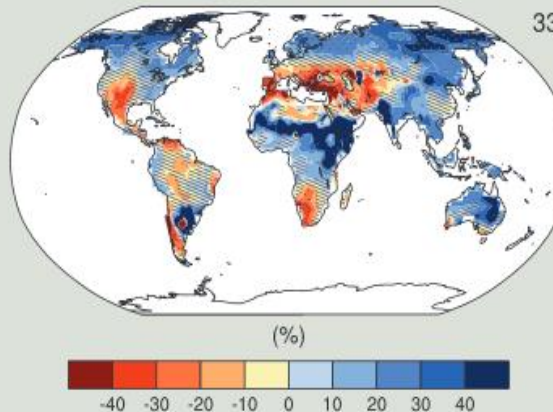
Relative humidity



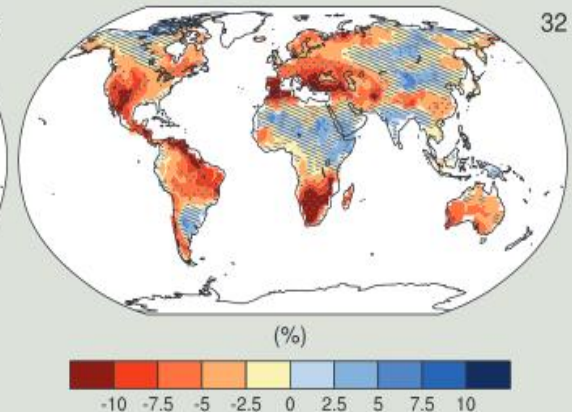
E-P



Runoff



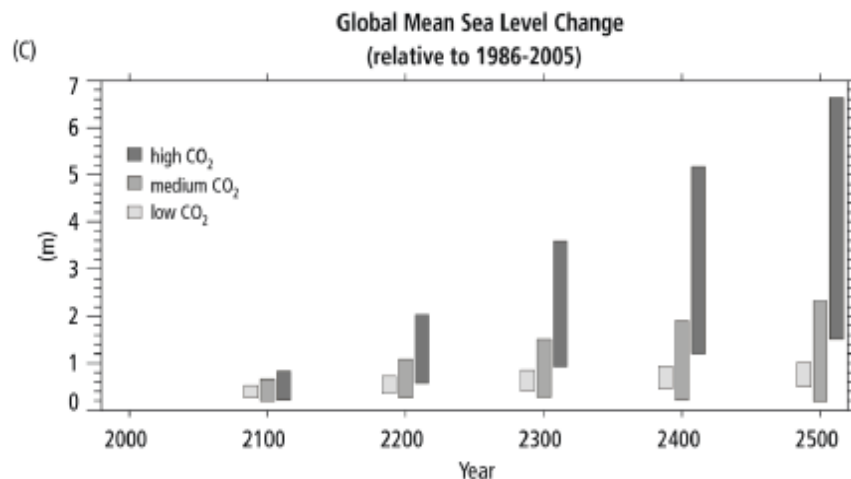
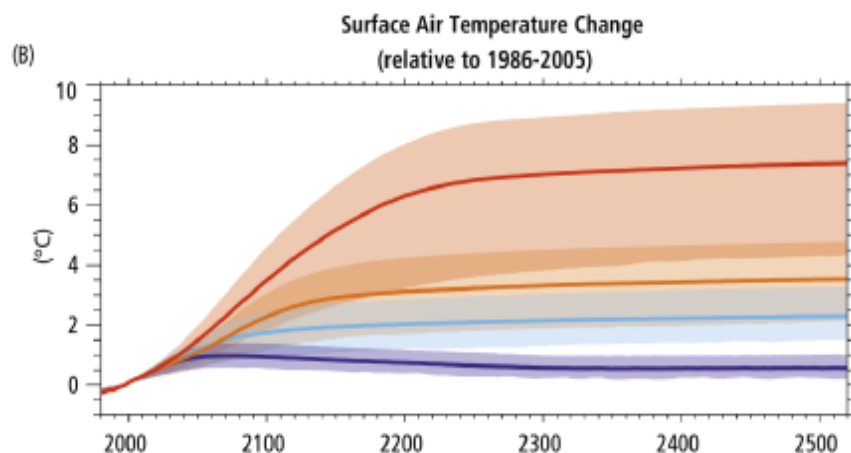
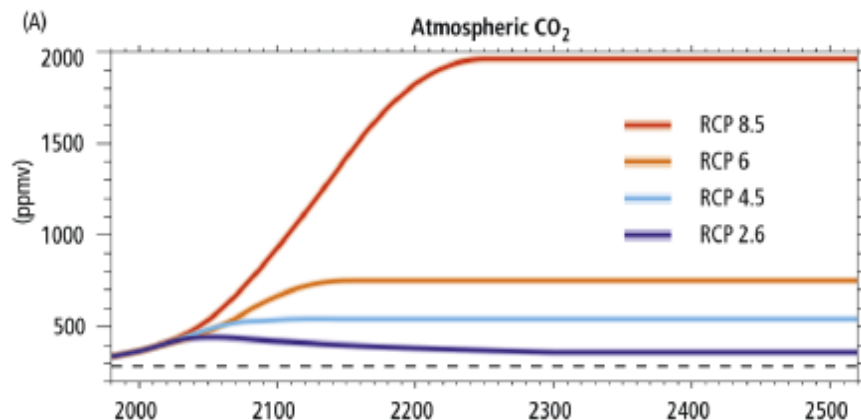
Soil moisture



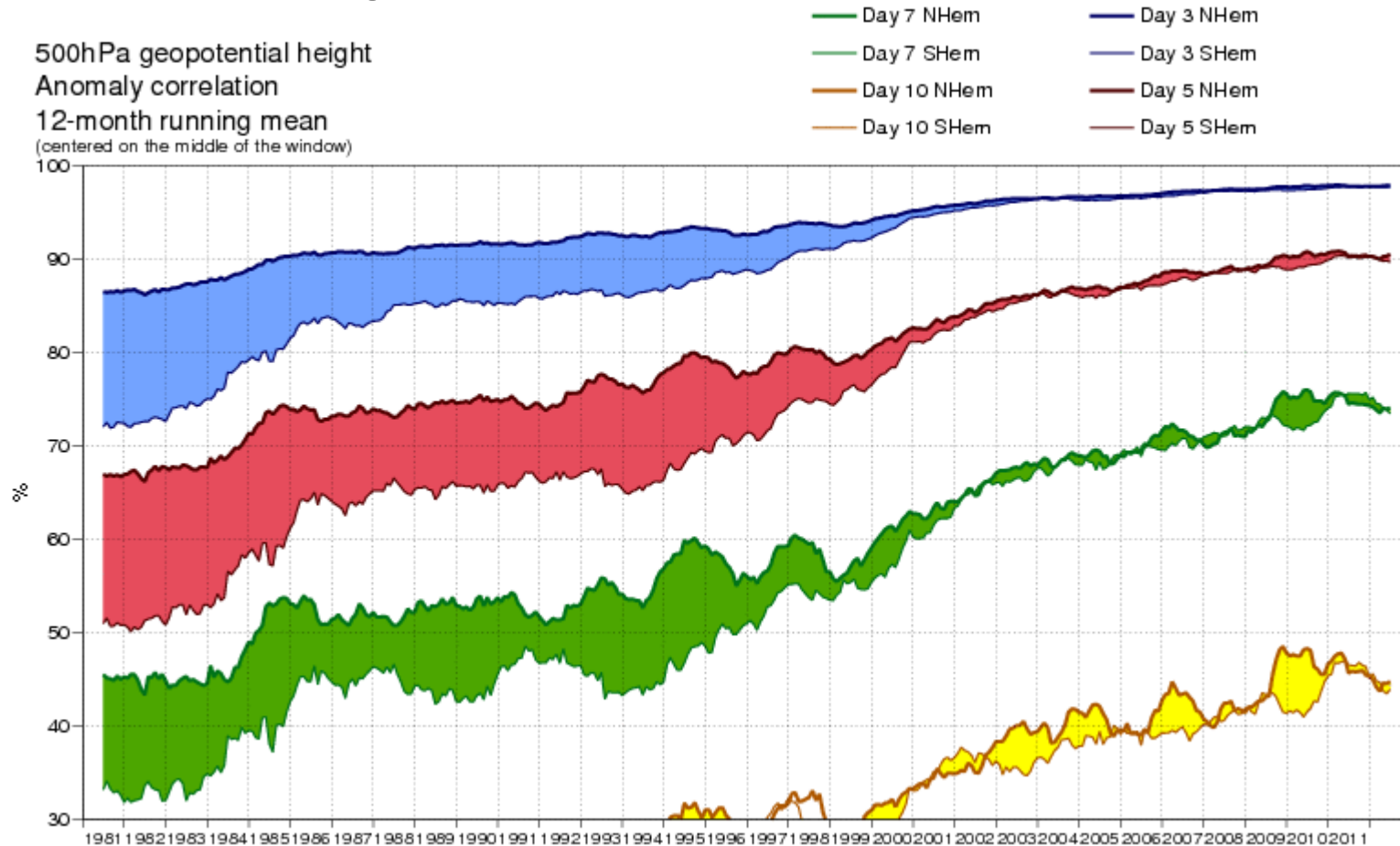
NO EMISSION CUTS

NOW => 2081-2100

2000-2500? Various emission pathways:



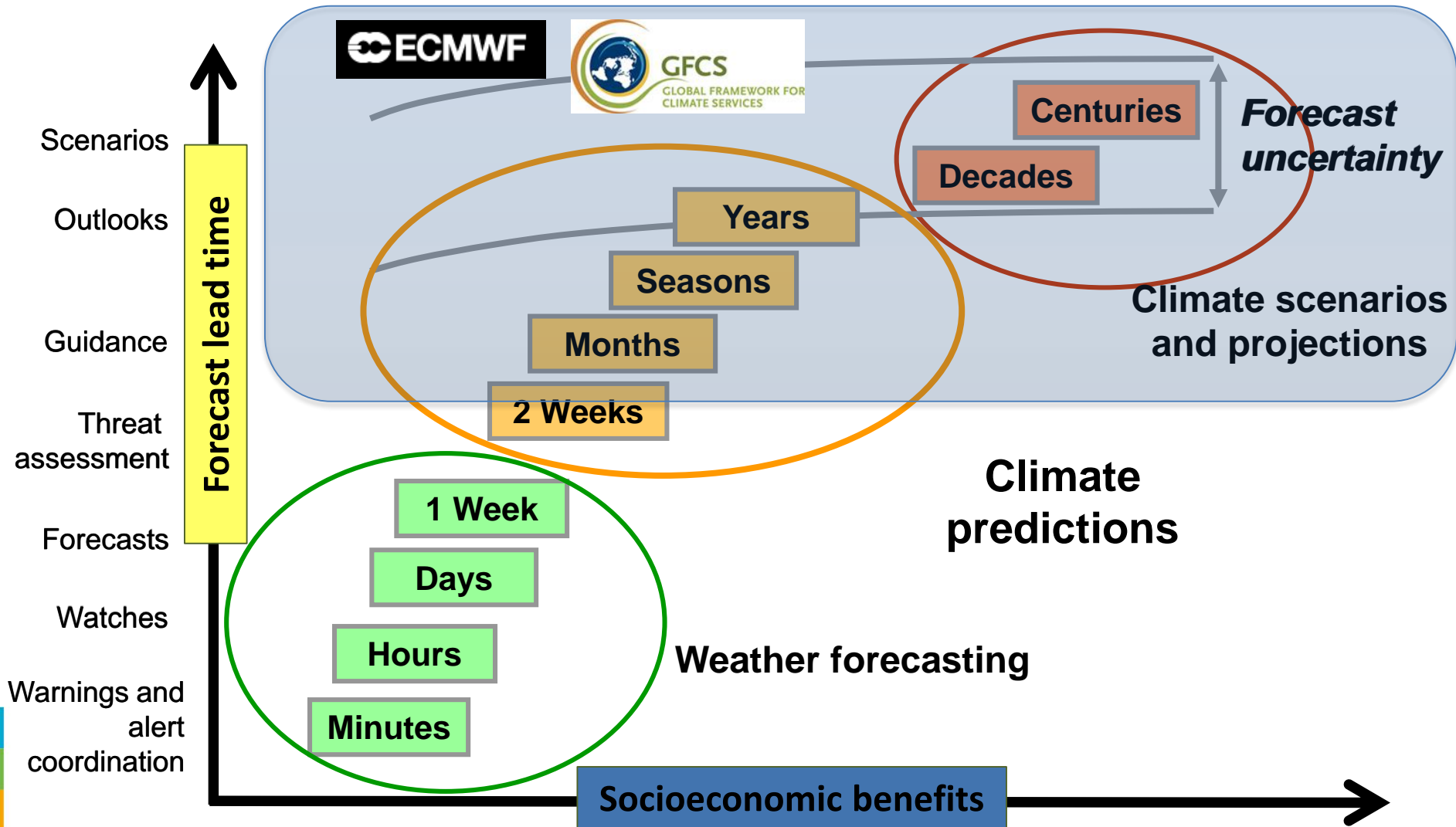
Improved weather forecasts



Improvements in anomaly correlation of 500 hPa height forecasts of the European Centre for Medium-Range Weather Forecasts (ECMWF) for the northern and southern hemispheres linked to the increase in satellite observations and skill of numerical models

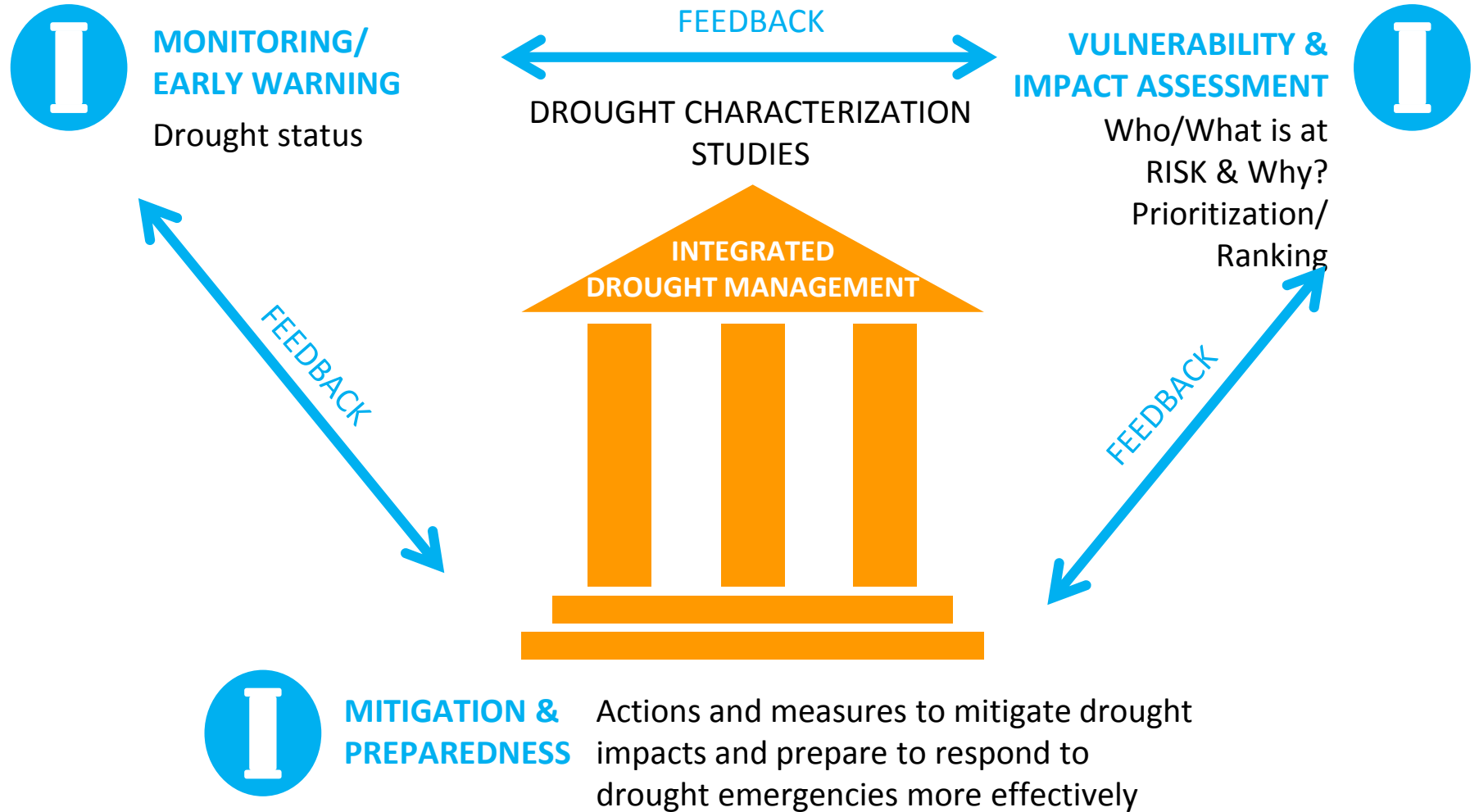


Weather to climate: seamless framework for GFCS



Adapted from NOAA
2011

3 Pillars of Integrated Drought Management





SUSTAINABLE DEVELOPMENT GOALS/WMO



**Weather
resilience**



**Climate change &
services**



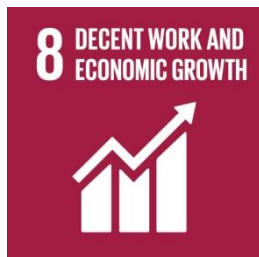
**Gender-sensitive
services**



**Water resource
management**



**Solar, wind &
hydro use**



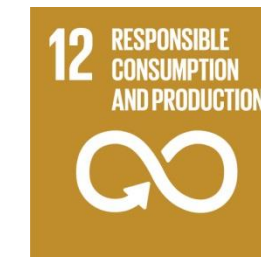
**Climate
resilience**



**Big data,
innovations**



**Air quality, heat
waves, flooding**



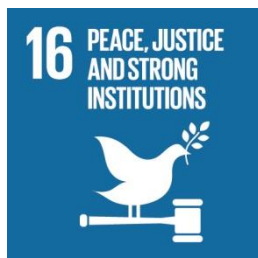
**DRR, Adaptation,
carbon & climate
monitoring**



**Sea level rise,
climate<->oceans**



**Climate change
<->ecosystems**



**Climate driven
conflicts**



**Resources for
climate adaptation
& DRR**

UN level challenges and opportunities

- Challenge: work in silos, overlapping and competing activities
- Too little action at country level, meetings & speeches instead



WMO, partnerships

- FAO: weather & climate services for local farmers, El Nino
- WHO: climate-air quality-health
- UNDP & World Bank: sustainability/climate resilience of investments

Integrated Drought Management Programme (IDMP)

- Established in 2013 at HMNDP
- Main co-sponsors WMO and Global Water Partnership along with over 30 other organizations including FAO & UNCCD
- Supports stakeholders at all levels by providing policy and management guidance and by sharing scientific information, knowledge and best practices for Integrated Drought Management.
- Contributes to global coordination of drought-related efforts of existing organizations & agencies

Drought Projects

- FAO, UNCCD, WMO, CBD and UN Water - 6 Regional National Drought Management Policy Workshops (2013-2015)
 - Eastern Europe, Latin America, Asia-Pacific, North Africa and Western Asia East and Southern Africa, West Africa
- IDMP Regional Projects
 - Central and Eastern Europe (since 2013)
 - Horn of Africa (since 2014)
 - West Africa (since 2015)
 - South Asia Drought Monitoring System (since 2014) – with IWMI
 - Central America (since 2013).
 - South America (since 2015) - Developing South American Drought Monitoring System
 - Pacific Islands (since 2016)

Drought Publications

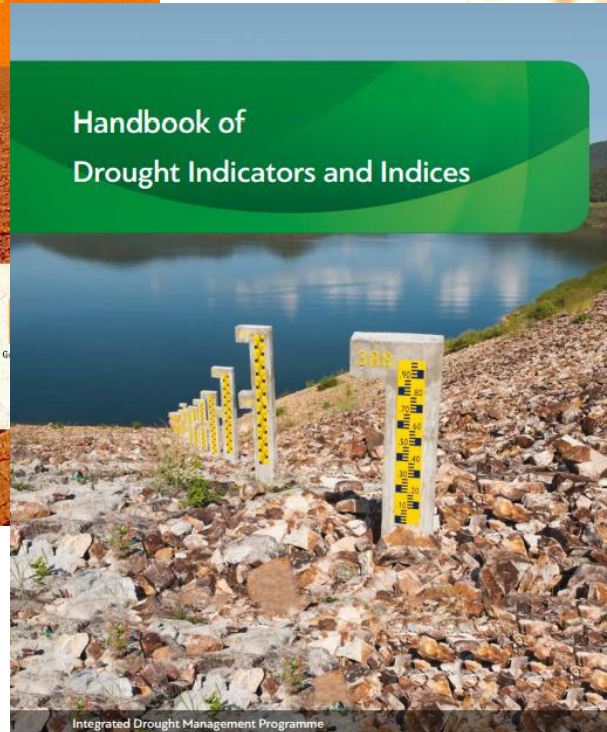
AGRICULTURAL DROUGHT INDICES PROCEEDINGS OF AN EXPERT MEETING

2-4 JUNE 2010, MURCIA, SPAIN



National Drought Management Policy Guidelines A Template for Action

Handbook of Drought Indicators and Indices



Drought monitoring and early warning: concepts, progress and future challenges



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WMO-No. 1173



Global Water
Partnership
Towards a water secure world

WEATHER CLIMATE WATER

Weather and climate information for
sustainable agricultural development



WMO - No. 1001



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Thank you