Alterações climáticas. Impacto social

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The **Sustainable Development Goals** (**SDGs**), officially known as Transforming our world: the 2030 Agenda for Sustainable Development, are an intergovernmental set of aspiration Goals with 169 targets.

Table 1-1
Projected distance from reaching selected targets by 2030 (at current trends)

GOAL	Within 5%	5 – 10%	< 10%	NEGATIVE LONG TERM TREND
Goal 1		1.1. Eradicating extreme poverty	1.3. Social protection for all	
Goal 2		2.1. Ending hunger (undernourishment)	2.2. Ending malnutrition (stunting) 2.5. Maintaining genetic diversity 2.a. Investment in agriculture*	2.2. Ending malnutrition (overweight)
Goal 3	3.2. Under-5 mortality 3.2. Neonatal mortality		3.1. Maternal mortality 3.4. Premature deaths from non-communicable diseases	
Goal 4	4.1 Enrolment in primary education	4.6 Literacy among youth and adults	4.2. Early childhood development 4.1 Enrolment in secondary education 4.3 Enrolment in tertiary education	
Goal 5			5.5. Women political participation	
Goal 6		6.2. Access to safe sanitation (open defecation practices)	6.1. Access to safely managed drinking water 6.2. Access to safely managed sanitation services	
Goal 7		7.1. Access to electricity	7.2. Share of renewable energy* 7.3. Energy intensity	
Goal 8			8.7. Use of child labour	
Goal 9		9.5. Enhancing scientific research (R&D expenditure)	9.5. Enhancing scientific research (number of researchers)	
Goal 10			10.c. Remittance costs	Inequality in income*
Goal 11			11.1. Urban population living in slums*	
Goal 12				12.2. Absolute material footprint, and DMC*
Goal 13				Global GHG emissions relative to Paris targets*
Goal 14				14.1. Continued deterioration of coastal waters* 14.4. Overfishing*
Goal 15				15.5. Biodiversity loss* 15.7. Wildlife poaching and trafficking*
Goal 16			16.9 Universal birth registration **	

The Sustainable Development Goals Report 2019

END HUNGER

Good Health and Well-being

Quality Education

REDUCED INEQUALITIES

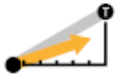
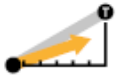
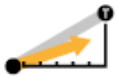
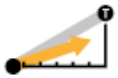
CONSUMPTION PRODUCTION

CLIMATE ACTION

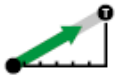
LIFE BELOW WATER

LIFE ON LAND

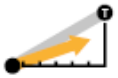
Human development indicators

Related Sustainable Development Goals	Target	Projection
	2.1 End hunger	
	3.2 End preventable deaths of children under 5	
	6.1 Achieve universal access to safe drinking water 6.2 Universal access to adequate sanitation	
	7.1 Achieve universal access to modern energy services	

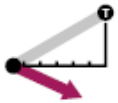
Legend



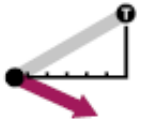
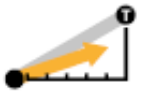
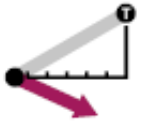
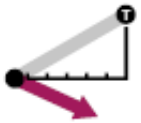
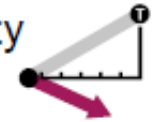
On track to achieve target (under bbusiness-as-usual scenarios target is projected to be achieved)



Progress towards target, but at an insufficient rate (unless effort is increased, target is projected not to be achieved)



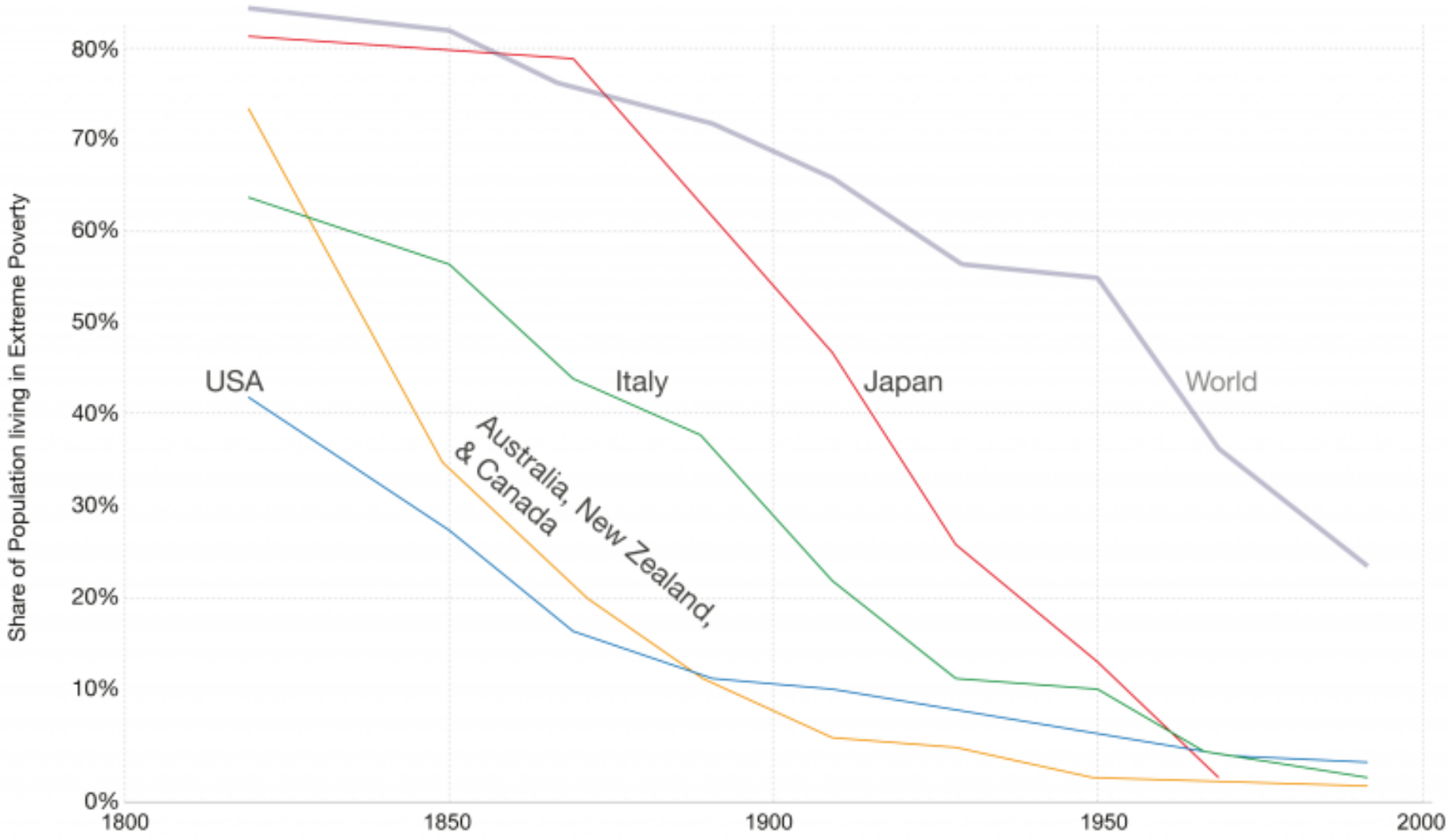
Moving away from target (the trend is projected to be worse, rather than better)

Environmental indicators		
Related Sustainable Development Goals	Target	Projection
	6.3 Improve water quality 6.4 Reduce water scarcity	
	11.6 Improve air quality in cities	
	13 Limit global warming	
	14.1 Reduce marine nutrient pollution 14.3 Minimize ocean acidification 14.4 Sustainably manage ocean resources	
	15.2 Achieve land degradation neutrality 15.5 Halt biodiversity loss	

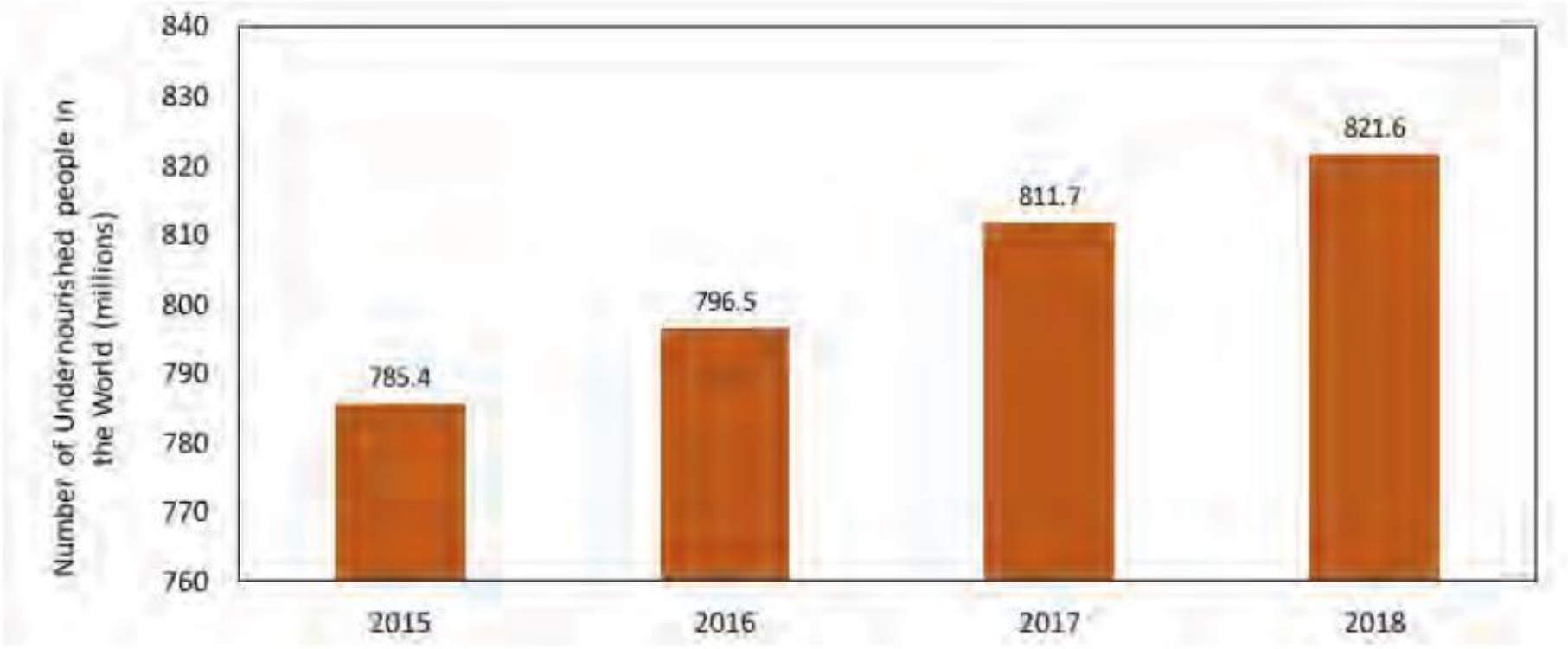
The reduction of extreme poverty in countries that are rich today, 1820–2000

The absolute poverty is defined as living with less than $1.25/day. This is measured by adjusting for price changes over time and for price differences between countries (purchasing power parity (PPP) adjustment).

Our World in Data

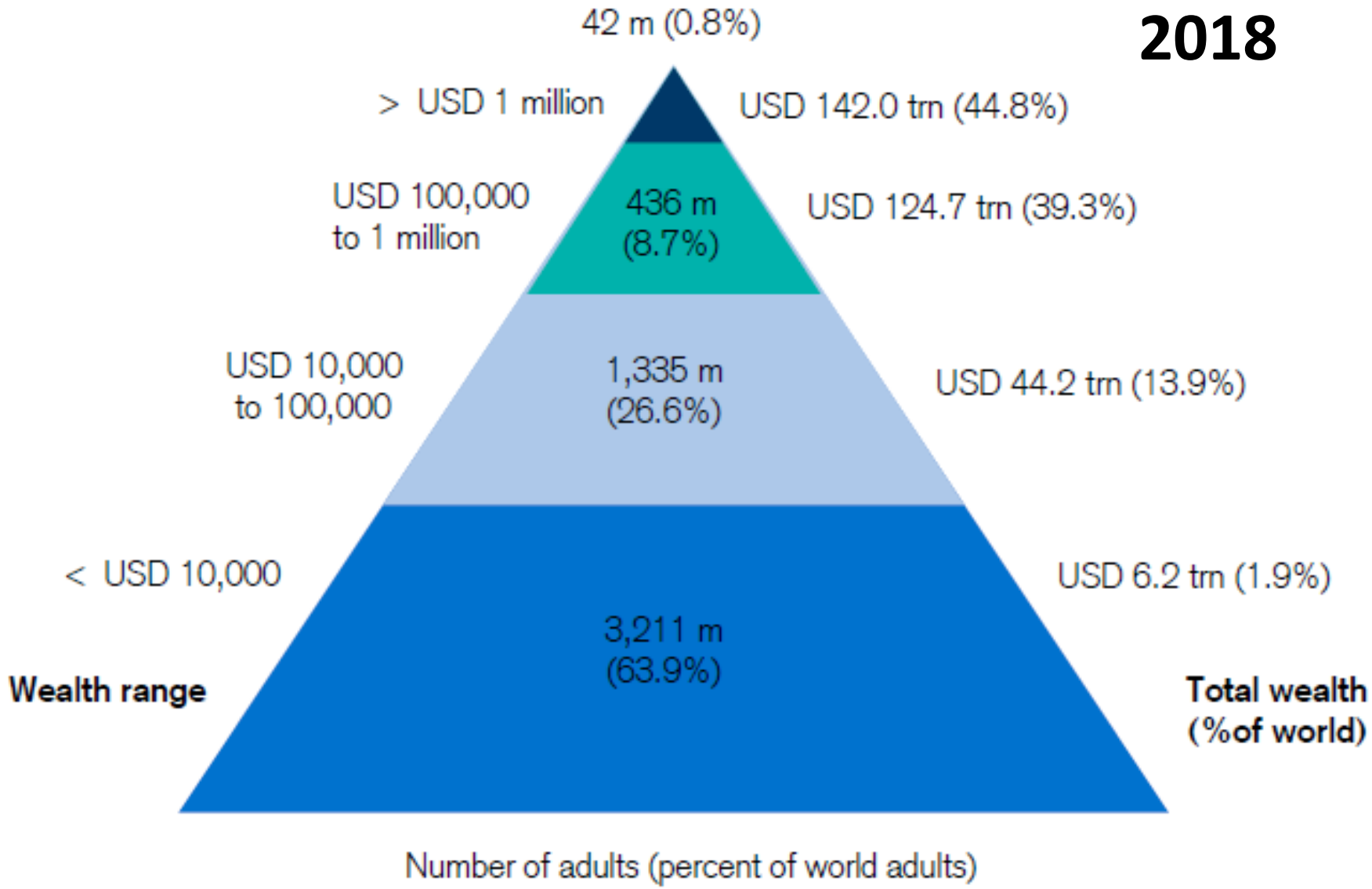


Data source: Based on data from Ravallion (2014) – "Poverty in the Rich World When It Was Not Nearly So Rich" – via World Bank.
The interactive data visualization is available at OurWorldinData.org. There you find the raw data and more visualizations on this topic.

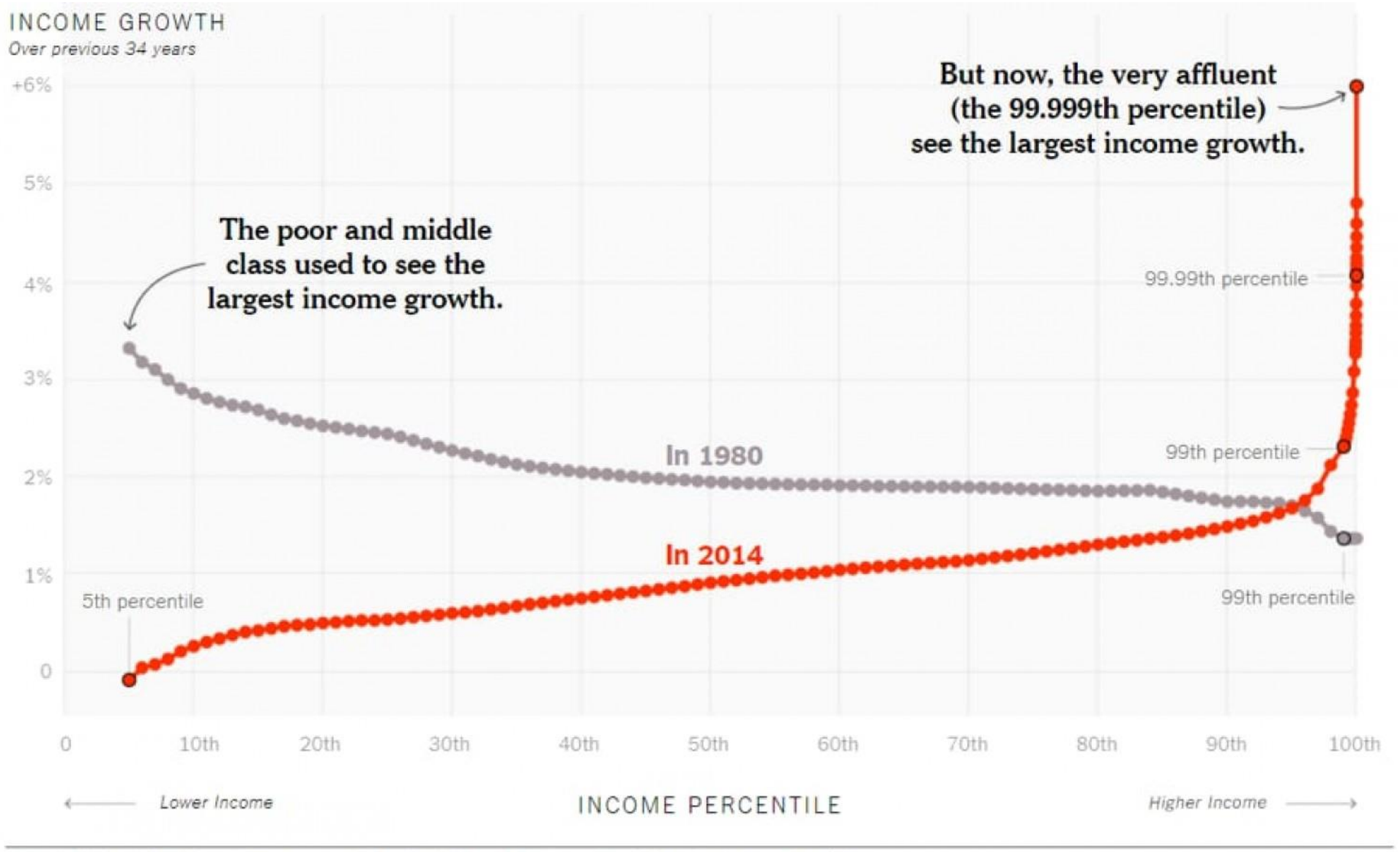


Number of undernourished people in the world, 2015–2018 (FAO, IFAD, UNICEF and WHO, 2019).

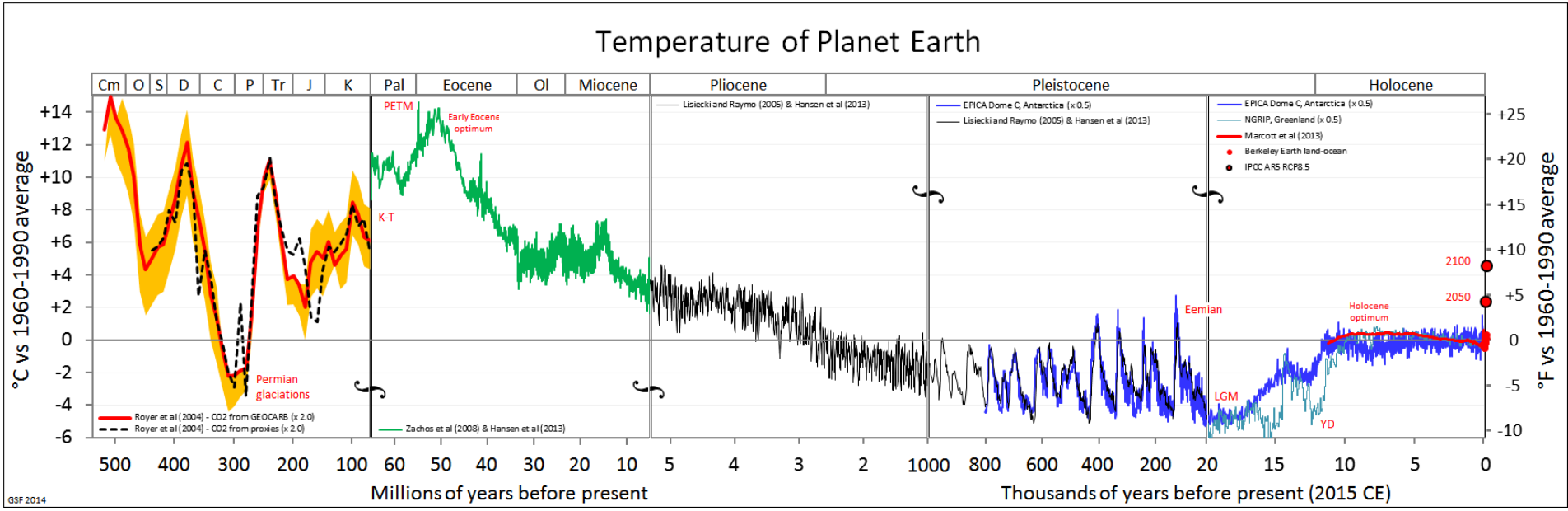
2018



Source: James Davies, Rodrigo Lluberas and Anthony Shorrocks, Credit Suisse Global Wealth Databook 2018



Note: Inflation-adjusted annual average growth using income after taxes, transfers and non-cash benefits.

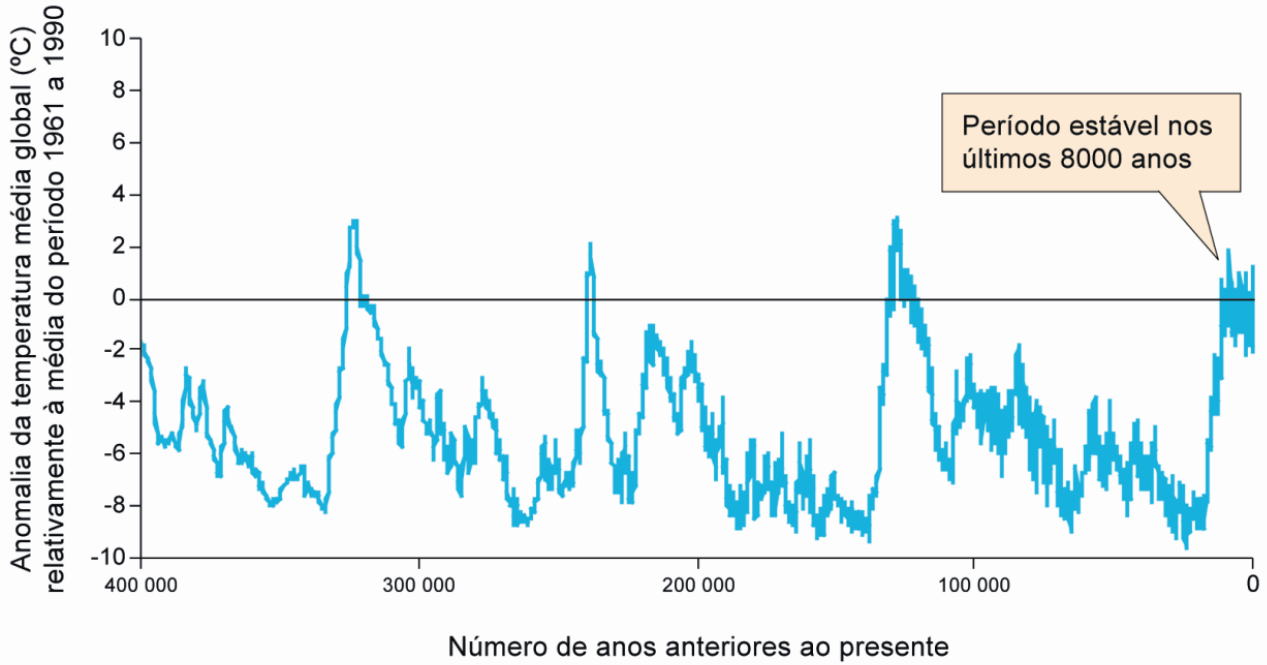


References

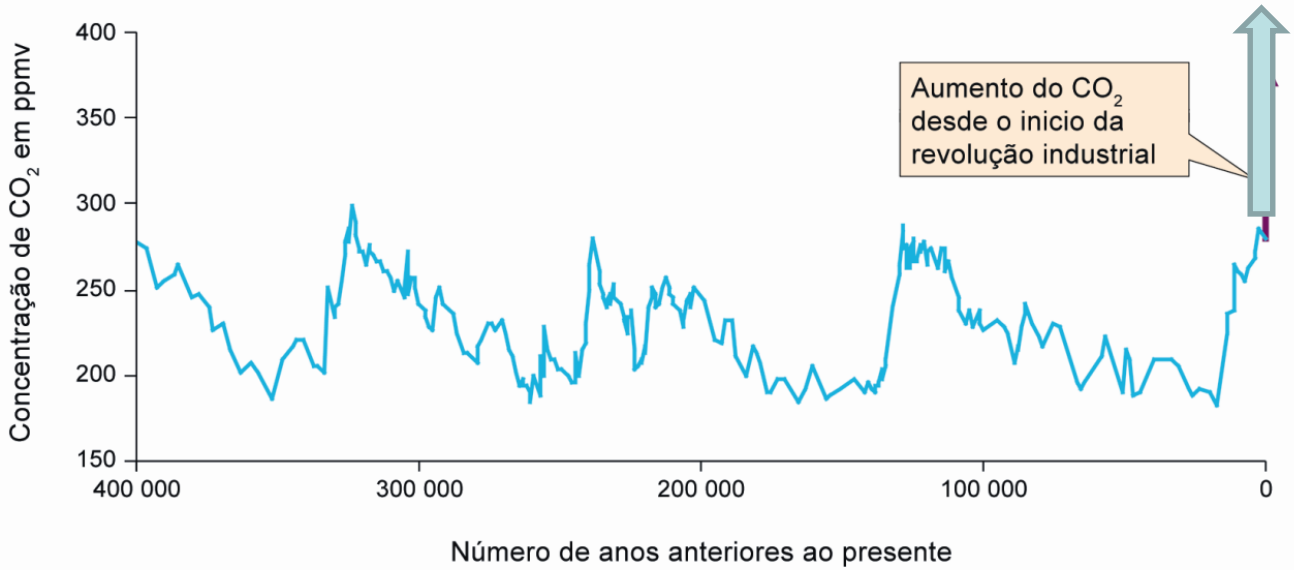
Hansen, J., Mki. Sato, G. Russell, and P. Kharecha, 2013: Climate sensitivity, sea level, and atmospheric carbon dioxide. Phil. Trans. R. Soc. A, 371, 20120294

Lisiecki, L. E., & Raymo, M. E. (2005). A Pliocene-Pleistocene stack of 57 globally distributed benthic δ18O records. Paleoceanography, 20(1)

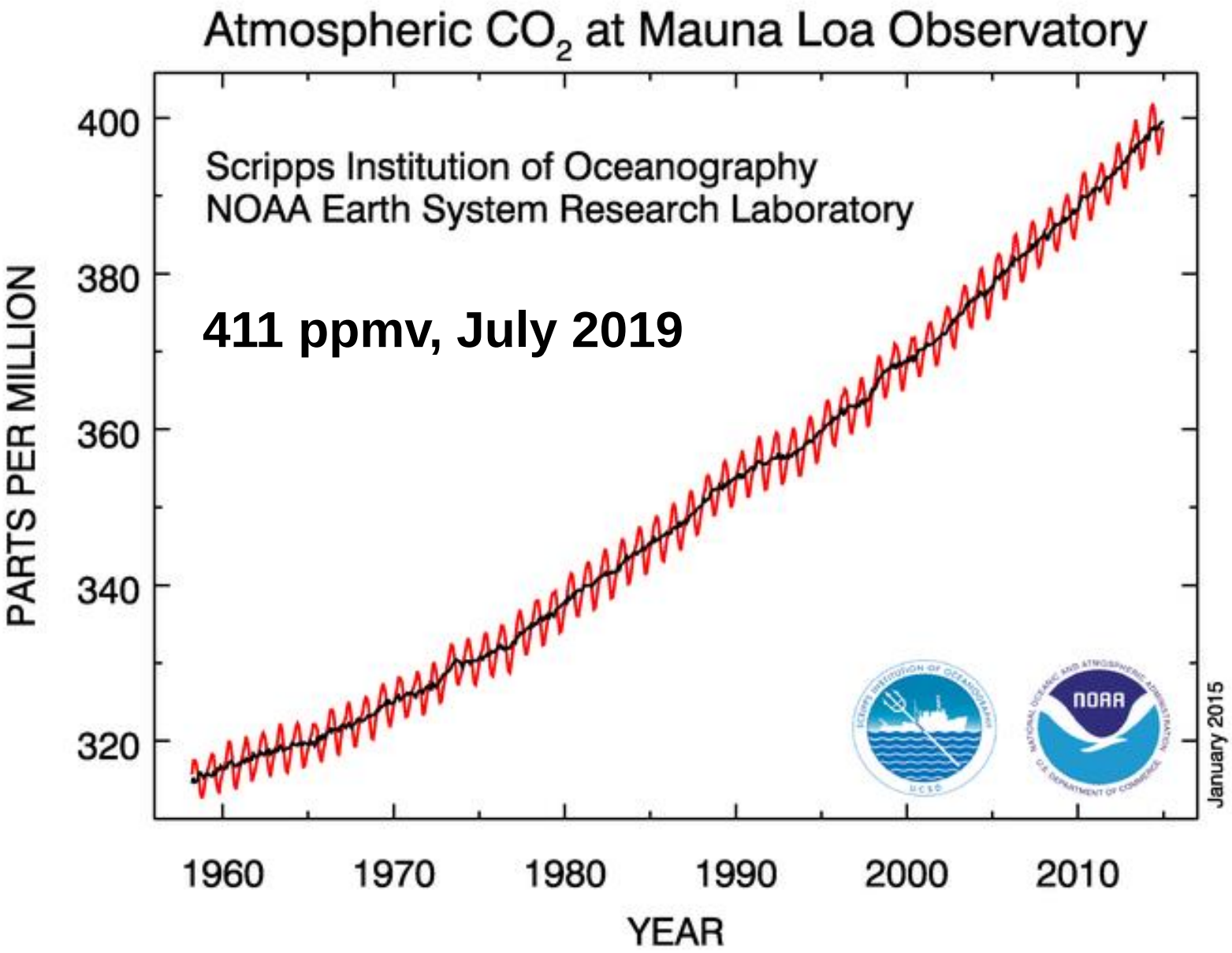
Jouzel, J., Masson-Delmotte, V., Cattani, O., Dreyfus, G., Falourd, S., Hoffmann, G., ... & Wolff, E. W. (2007). EPICA Dome C ice core 800kyr deuterium data and temperature estimates. IGBP PAGES/World Data Center for Paleoclimatology data contribution series, 91, 2007.

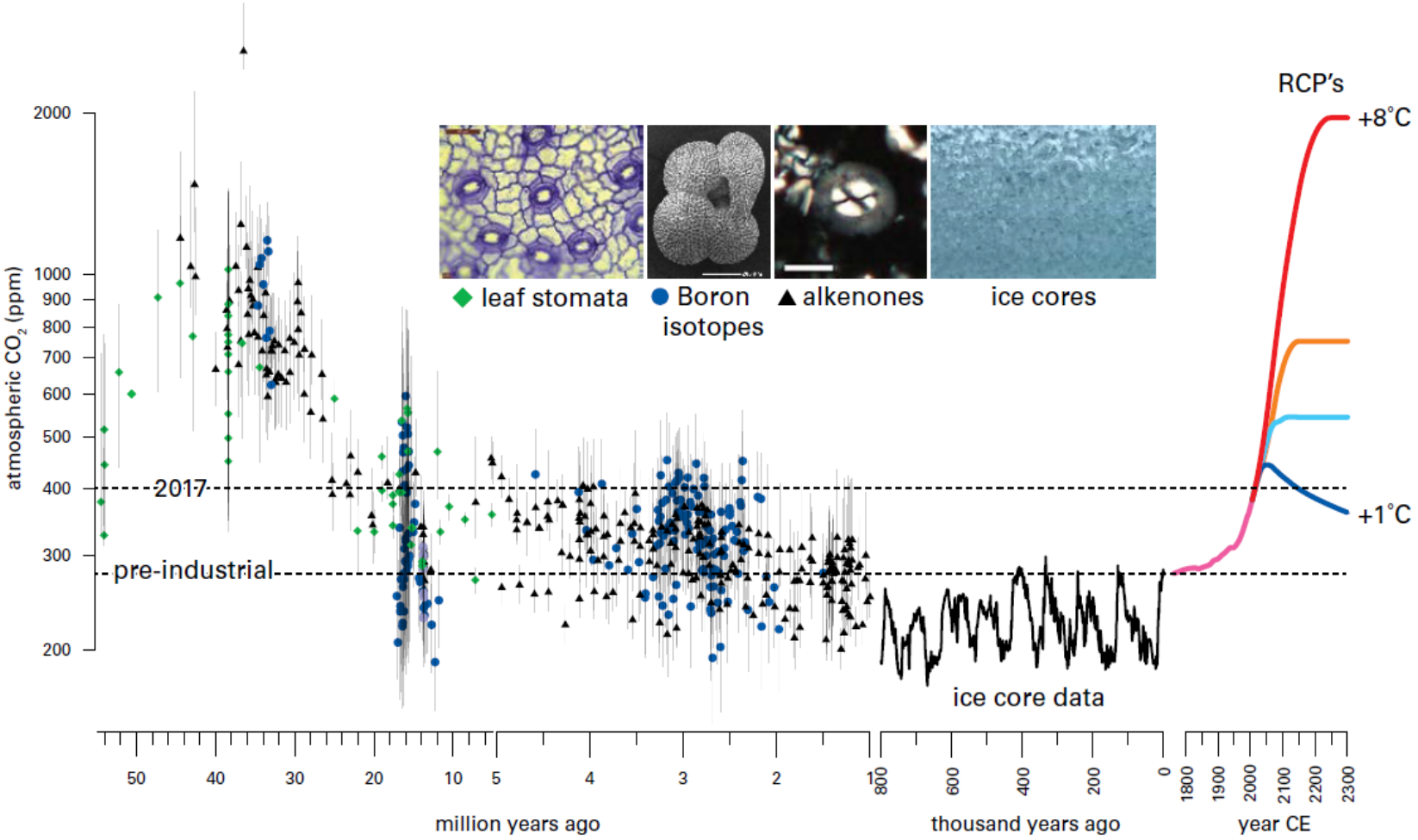


Source, Petit et al., 1999



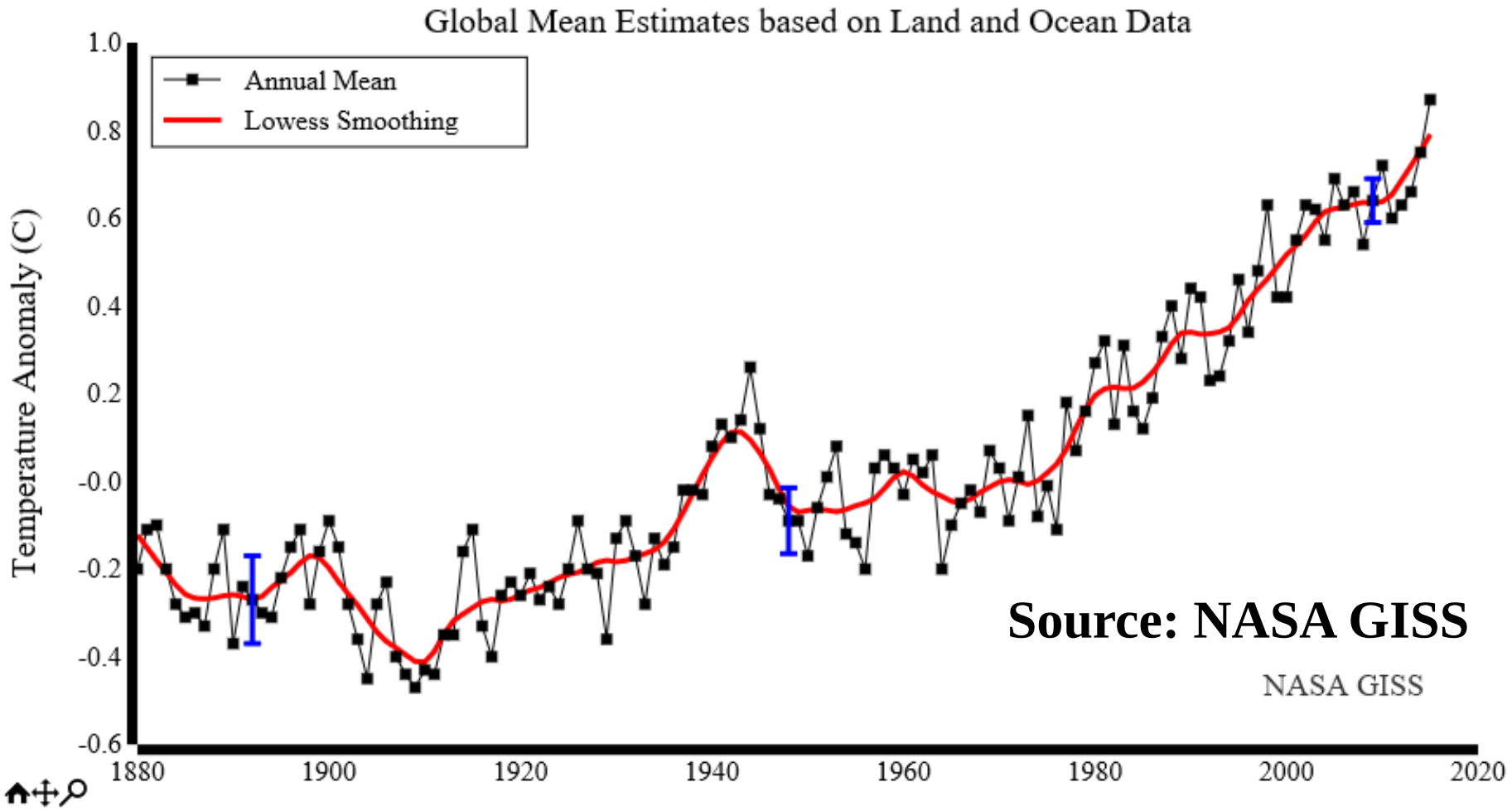
Increase of 46% in the atmospheric concentration of carbon dioxide since the XVII century

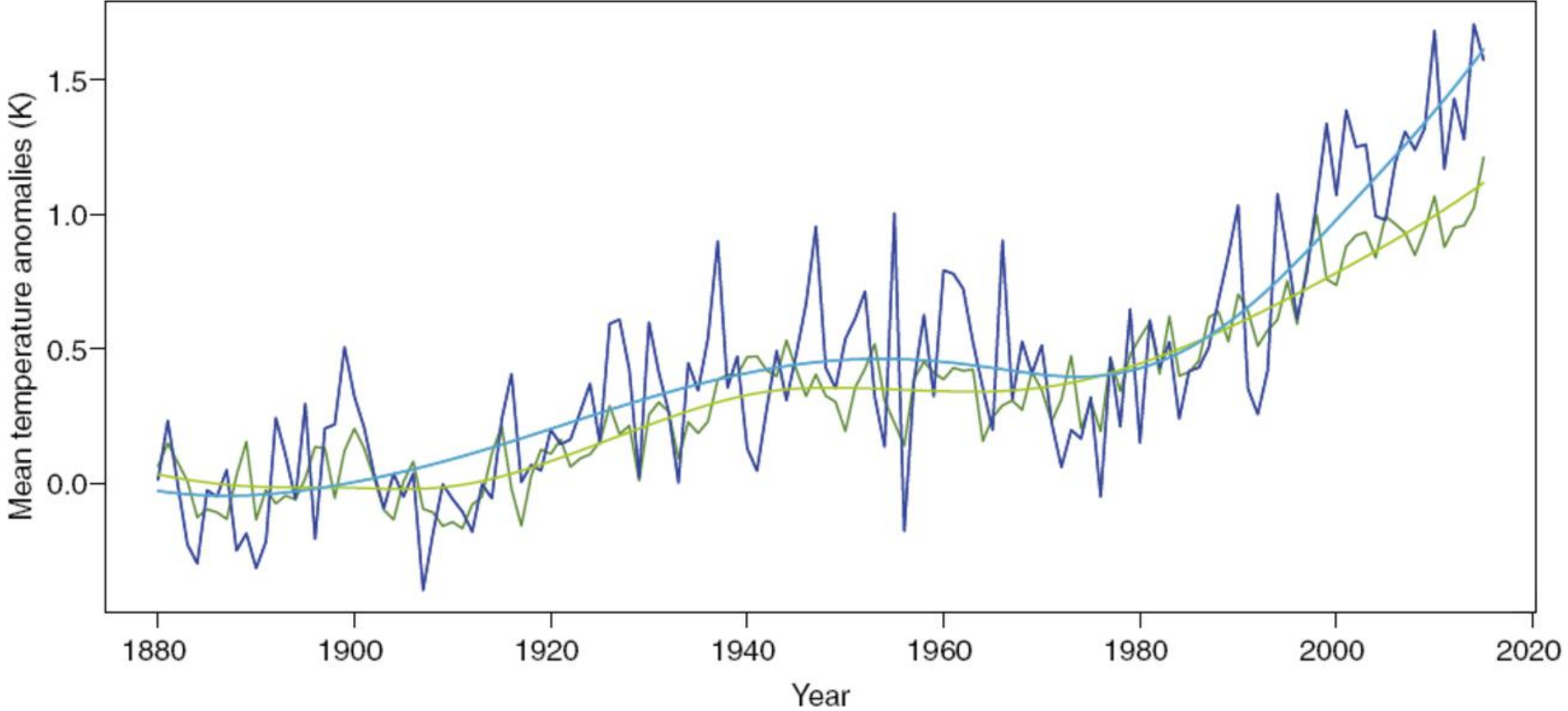




Reconstructions of atmospheric CO_2 over the past 55 million years are generated from proxy data that include boron isotopes (blue circles), alkenones (black triangles) and leaf stomata (green diamonds). Direct measurements from the past 800 000 years are acquired from Antarctic ice cores and modern instruments (pink). Future estimates include representative concentration pathways (RCPs) 8.5 (red), 6 (orange), 4.5 (light blue) and 2.6 (blue). References for all data shown in this plot are listed in the extended version online (http://www.wmo.int/pages/prog/arep/gaw/ghg/ghg-bulletin13.html). CE = Common Era.

Global averaged temperature since 1880



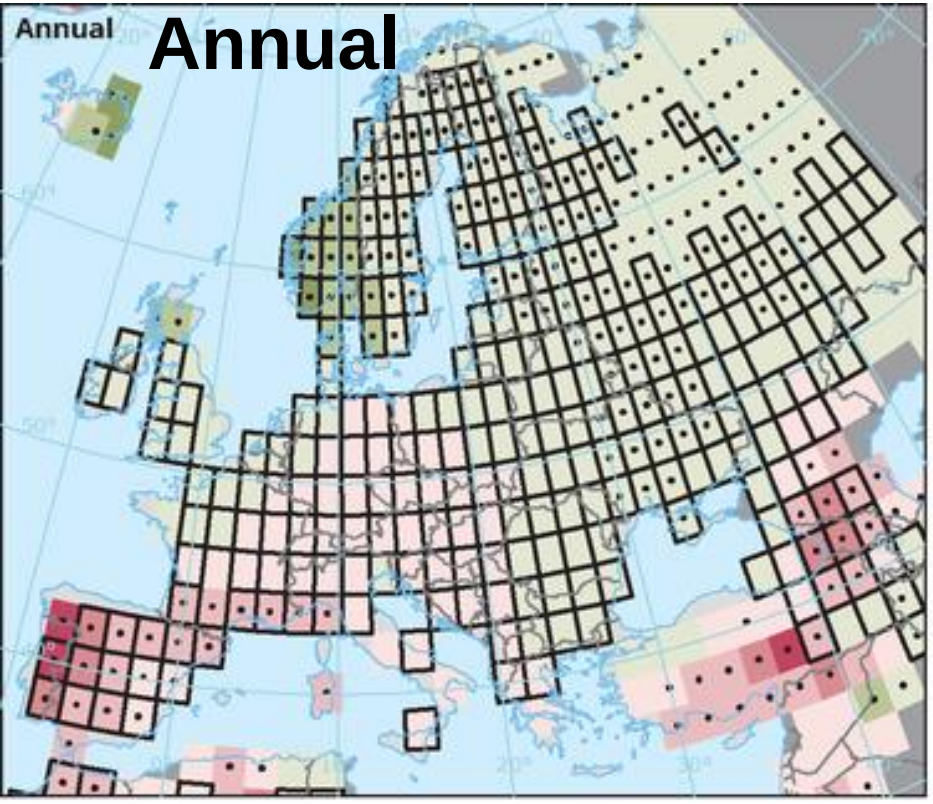


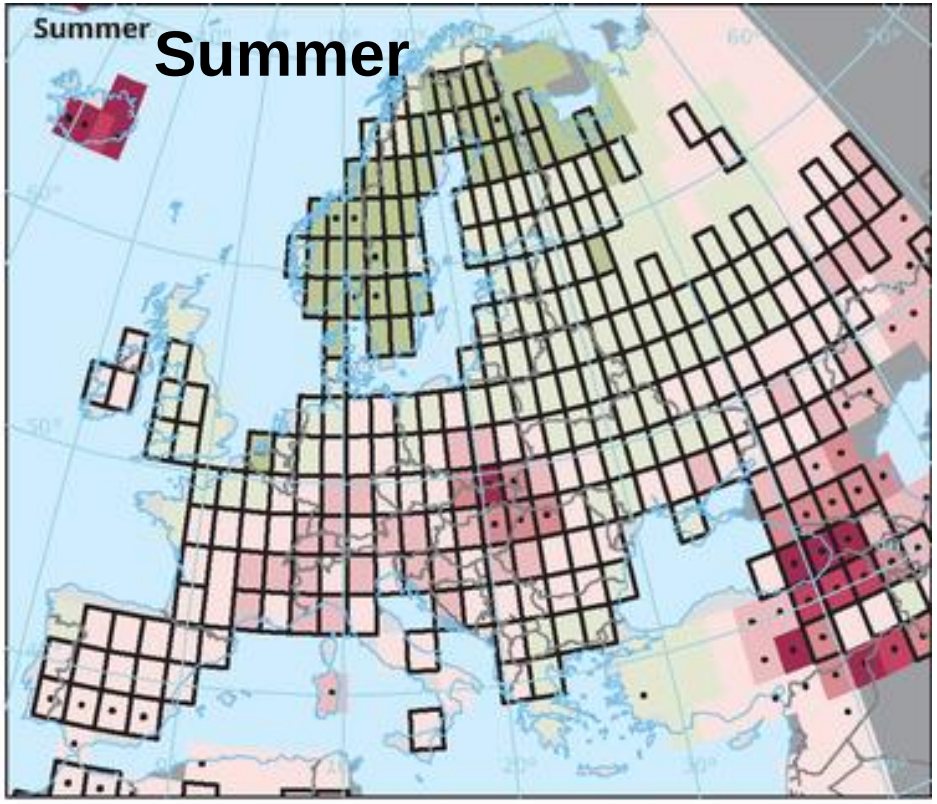
Historic warming of the atmosphere globally (green) and in the Mediterranean Basin (blue).

©Data from http://berkeleyearth.org/

Average temperatures in the Mediterranean region have already risen by 1.4°C since the pre-industrial era, 0.4°C more than the global average. During the past two decades, sea level has risen by 6 cm and sea water acidity has significantly increased.

Change in annual precipitation in the period of 1960 to 2015
Source, European Environmental Agency, 2016





Trends in annual (left) and summer (right) precipitation across Europe between 1960 and 2015

Annual precipitation (mm/decade)

−80 −60 −40 −20 0 20 40 60 80

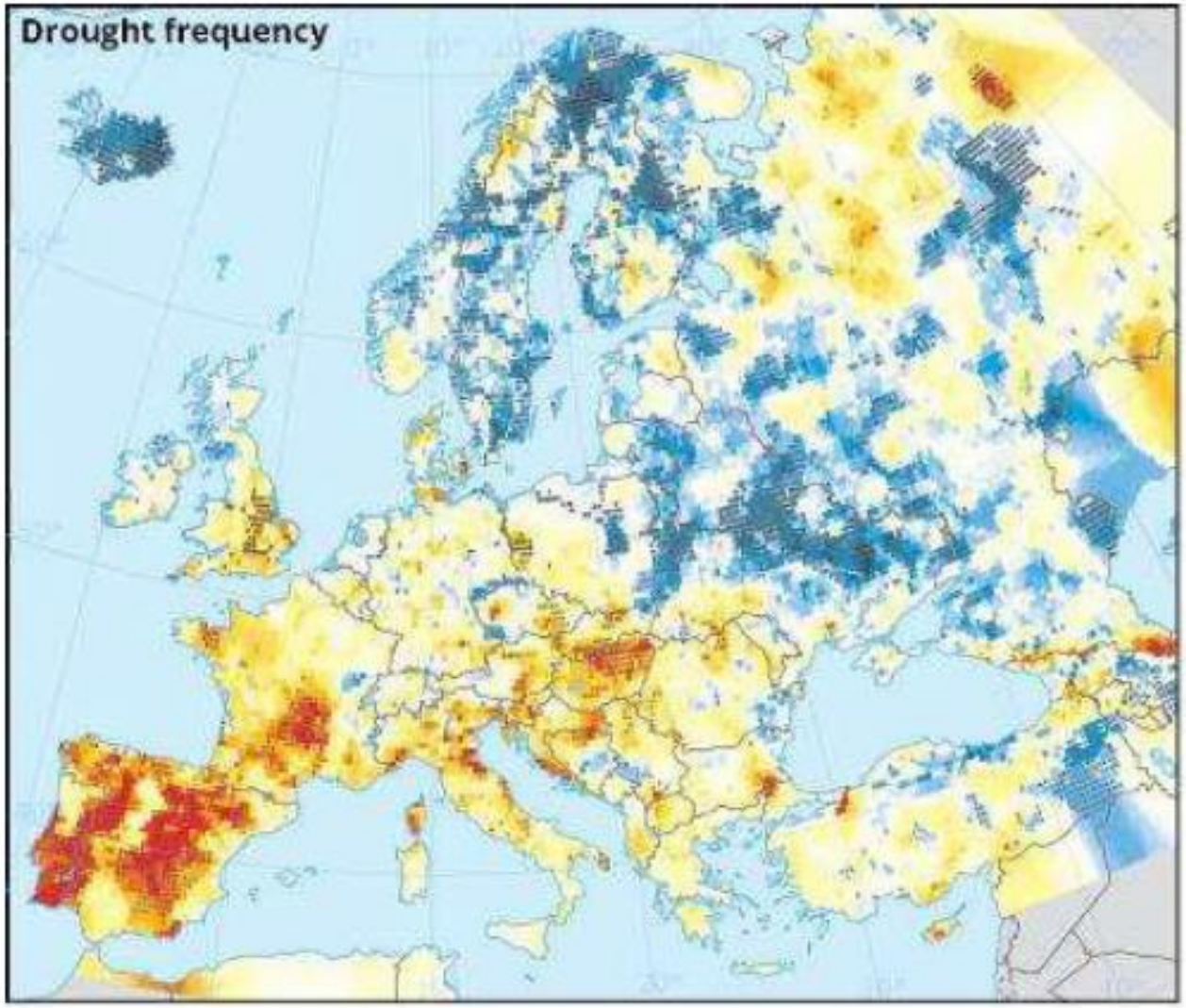
0 500 1 000 1 500 km

Summer precipitation (mm/decade)

−20 −15 −10 −5 0 5 10 15 20

No data

Outside coverage



Drought frequency
(events/decade)

+ 0.7

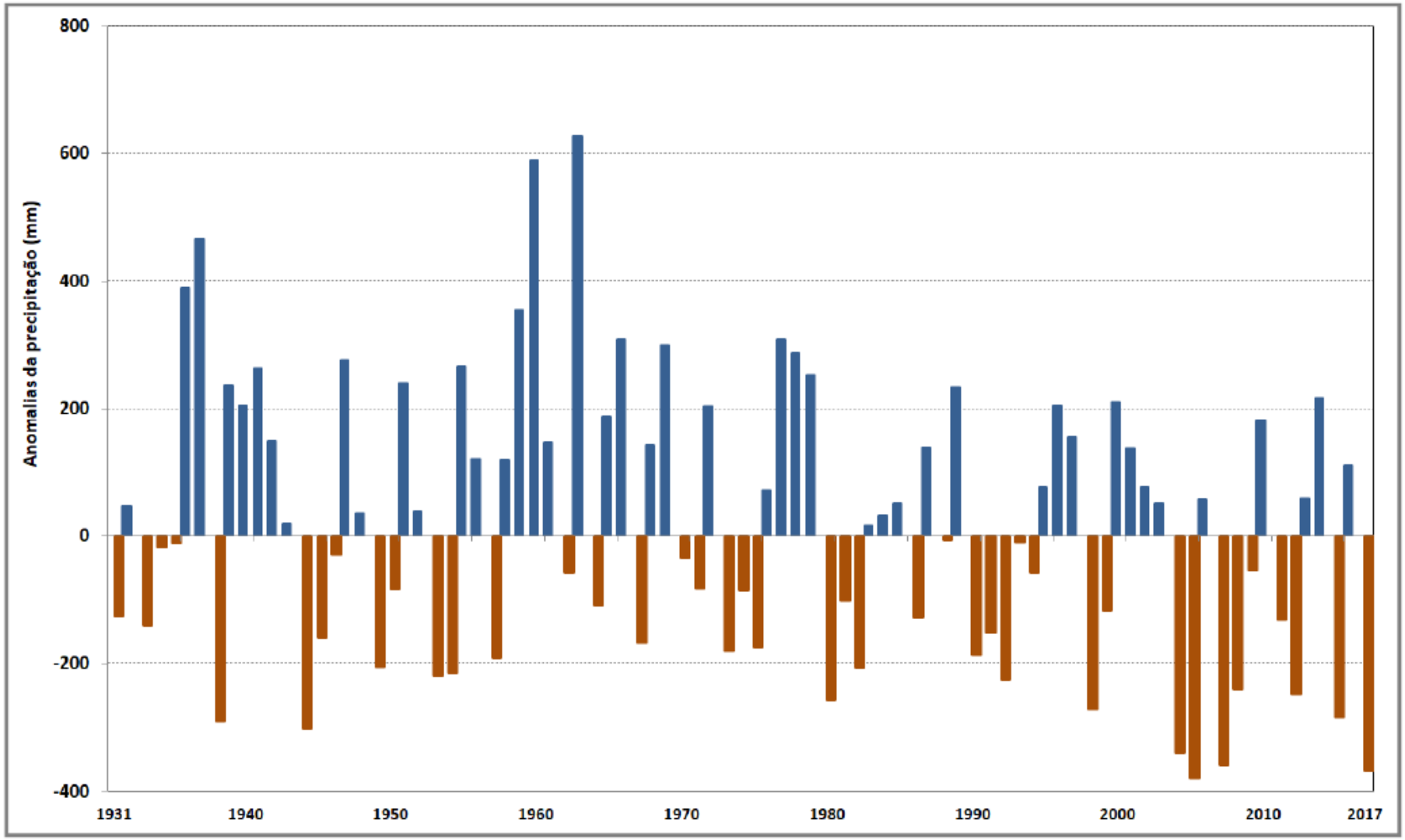
0

– 0.7

1950 - 2012

Fonte:
JRC (2016)

Anomalias da precipitação anual (desde 1931), em relação à normal 1971-2000, em Portugal continental



Nota: ano de 2017, 1 de janeiro a 27 de dezembro

Precipitación media para la Península Ibérica e Islas Baleares (1971-2000) /
Média da precipitação total na Península Ibérica e Ilhas Baleares (1971-2000) /
Average total precipitation in the Iberian Peninsula and the Balearic Islands (1971-2000)

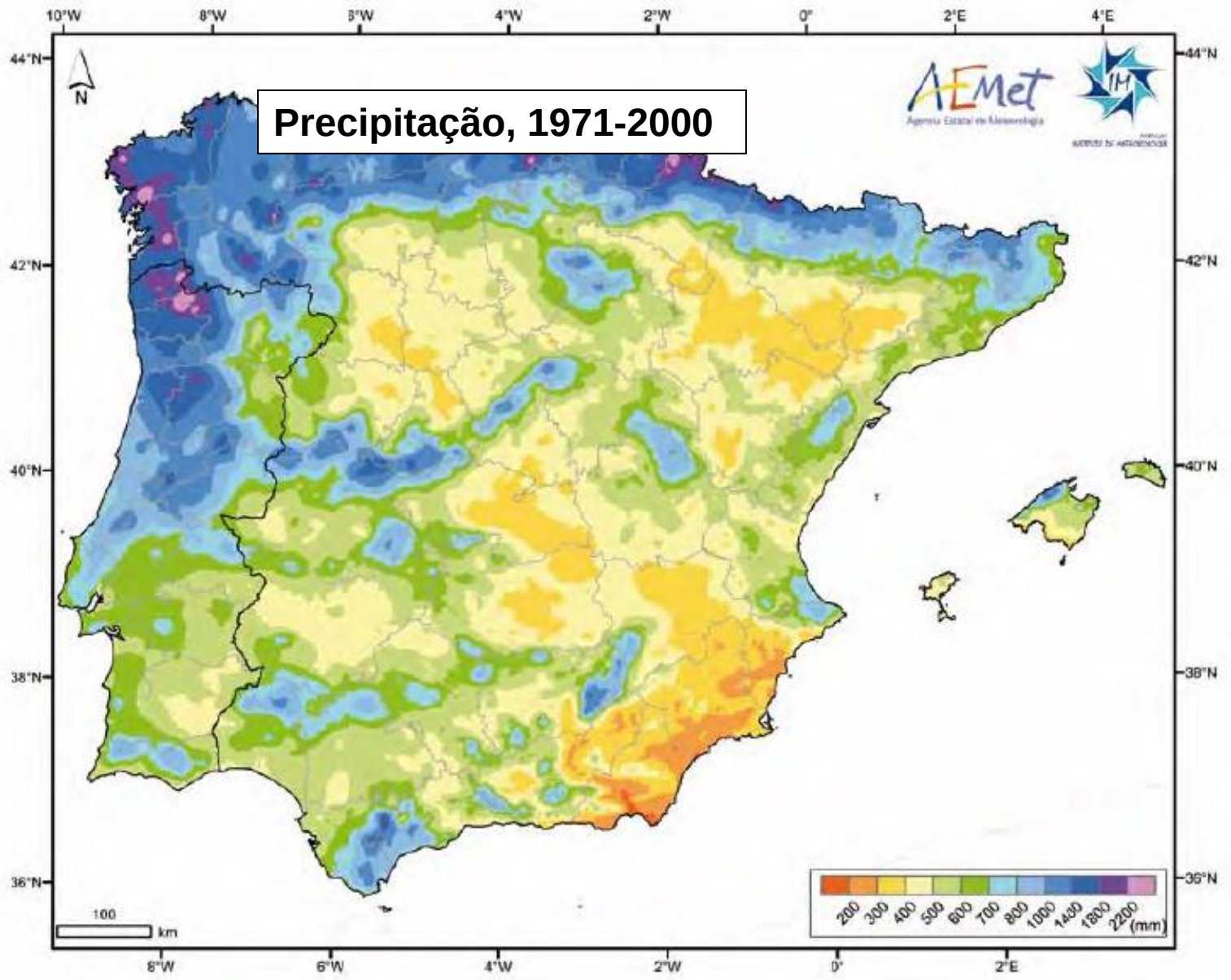
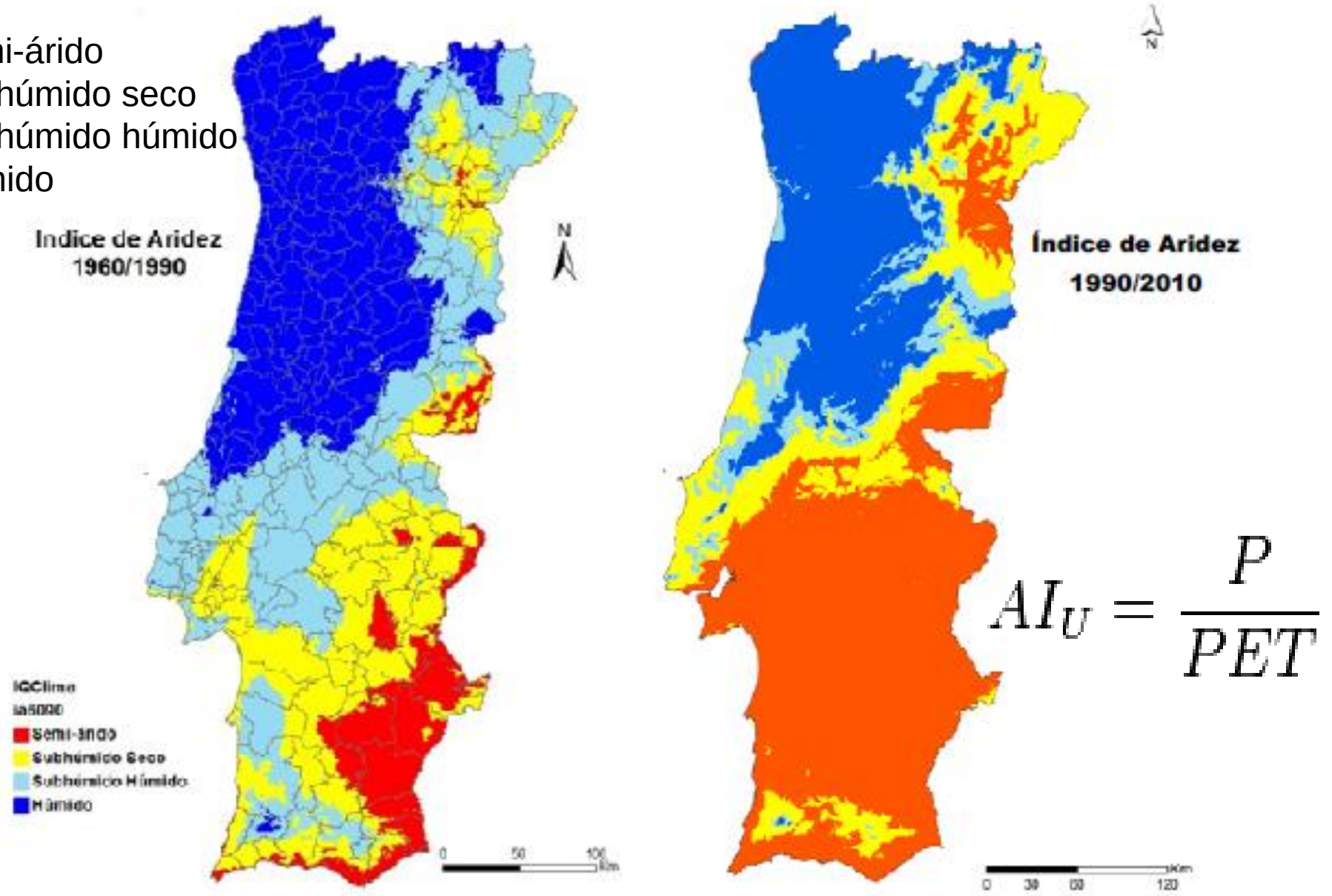


Fig. 69. Precipitación media anual.
Média da precipitação total anual.

Evolução do Índice de Aridez em Portugal continental nos últimos 50 anos

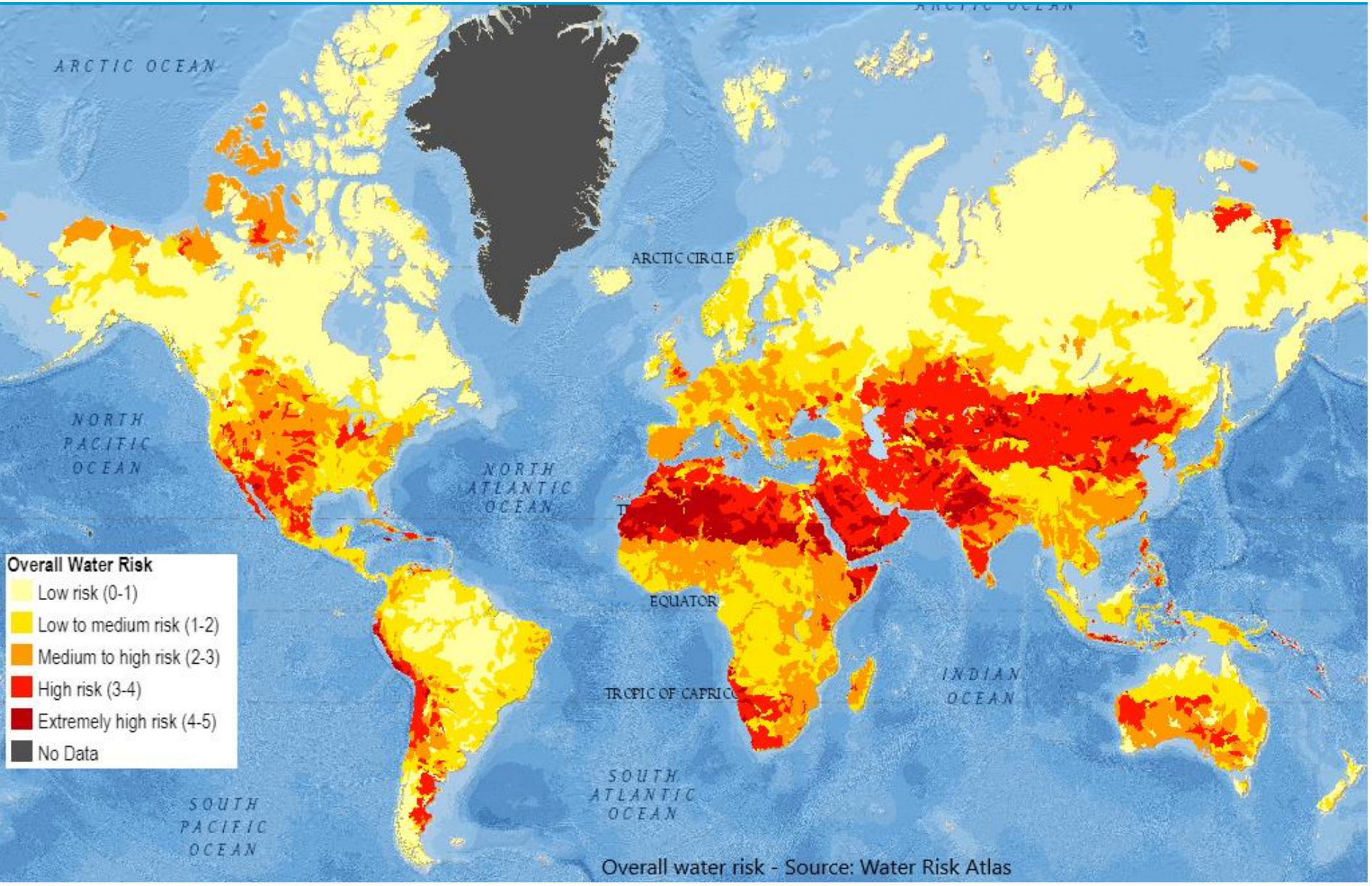
Semi-árido
Subhúmido seco
Subhúmido húmido
Húmido



$$AI_U = \frac{P}{PET}$$

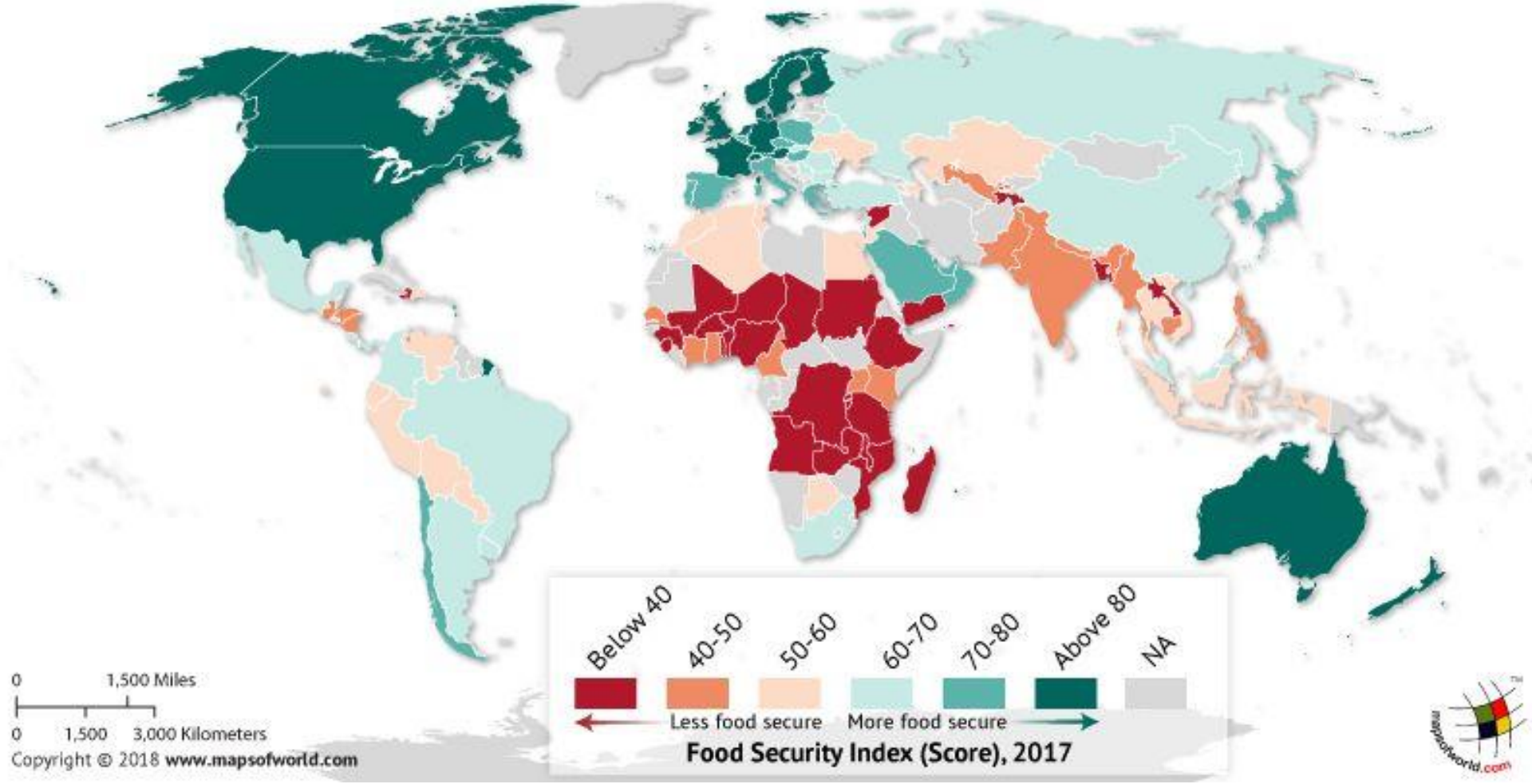
Fonte: CNCCD 2004; Del Barrio *et al*, 2010; Sanjuan *et al*, 2011

England could run short of water within 25 years **Damian Carrington** *Guardian*18 Mar



Overall water risk - Source: Water Risk Atlas

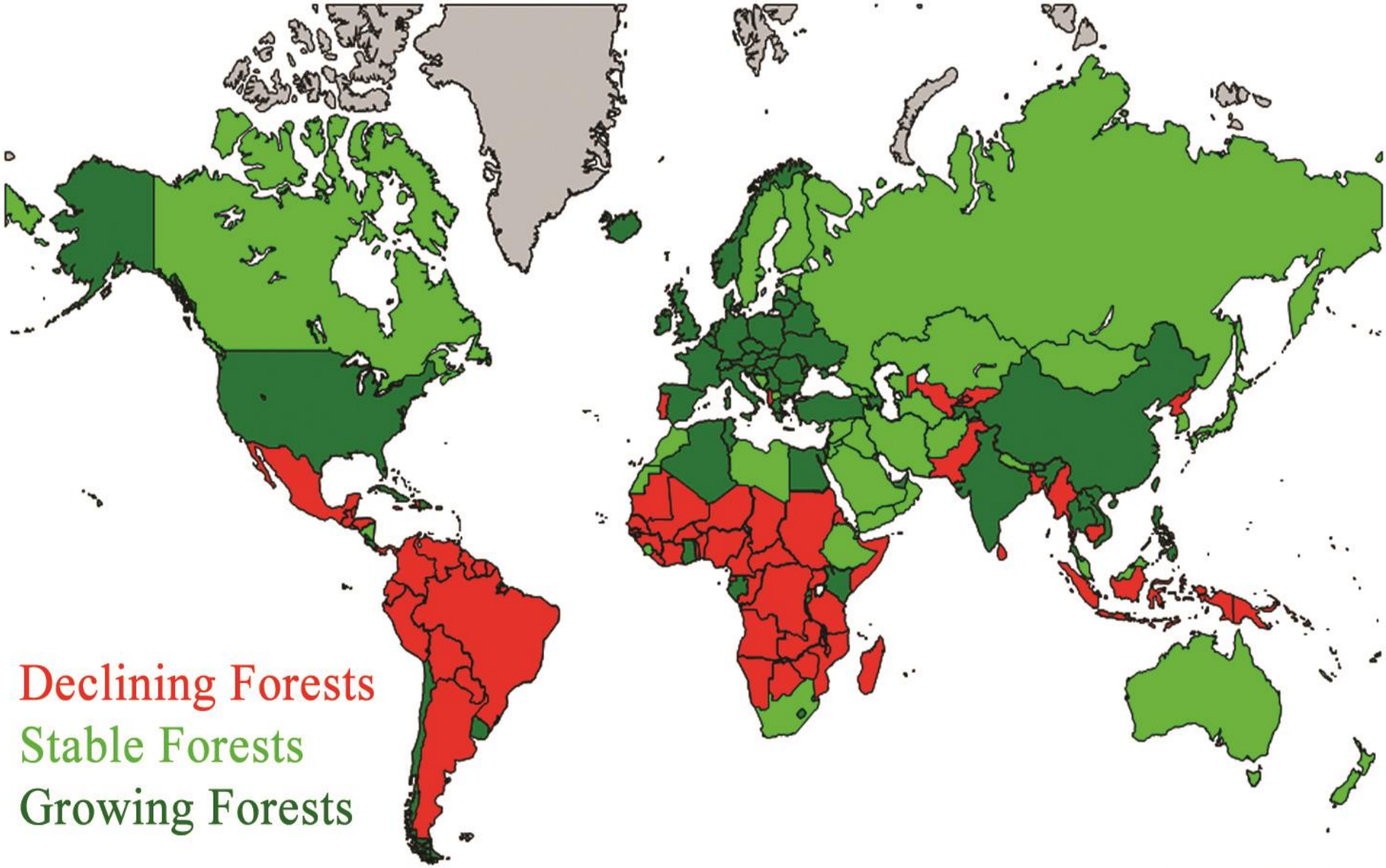
Global Food Security Index-2017



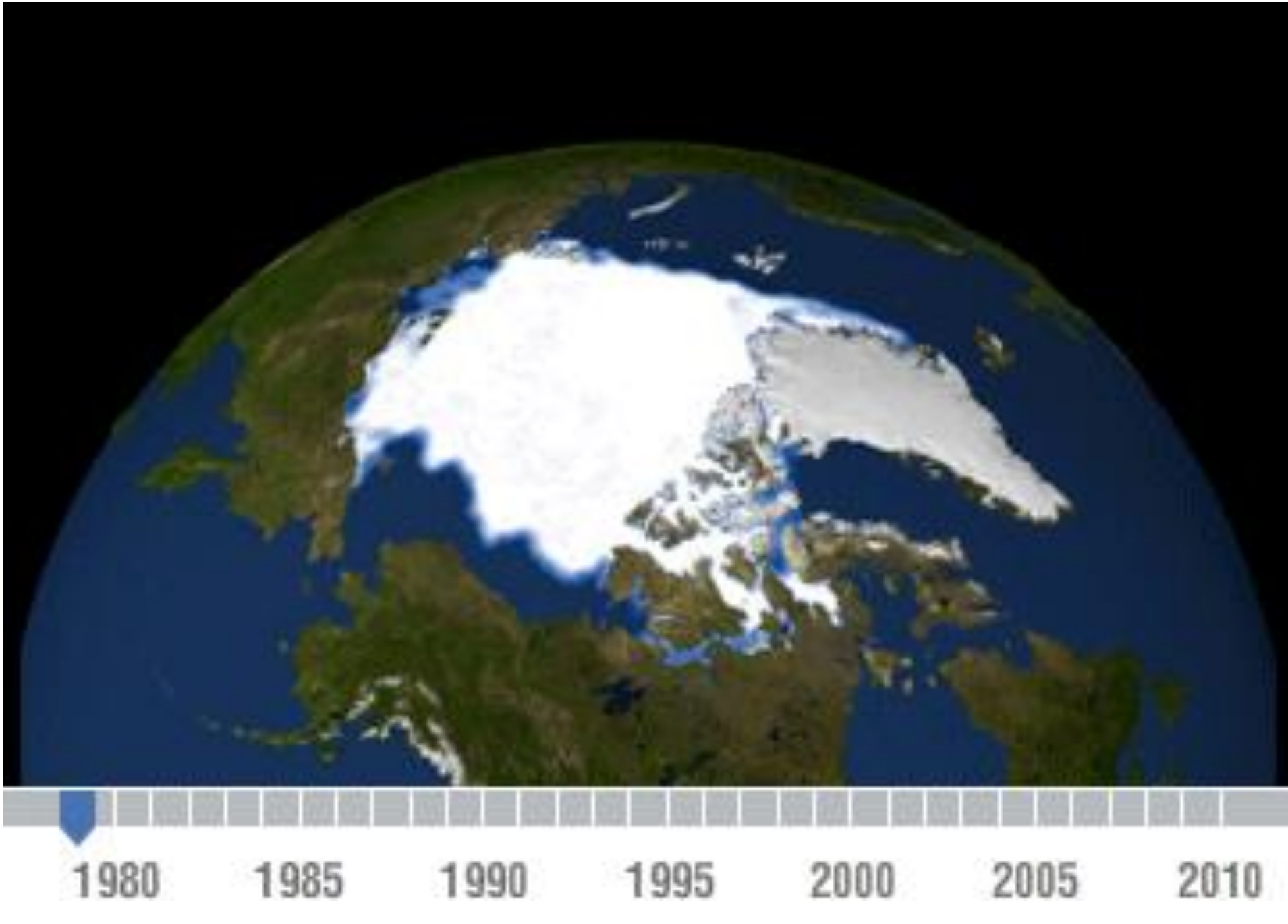
- Drastic increase in the meteorological risk of forest fires;
- Increase in the duration of the annual period of high risk;
- The increasingly short return period of fires may prevent the sustainability of the present forests.
- Portugal: 71 victims in the forests fires of 2017

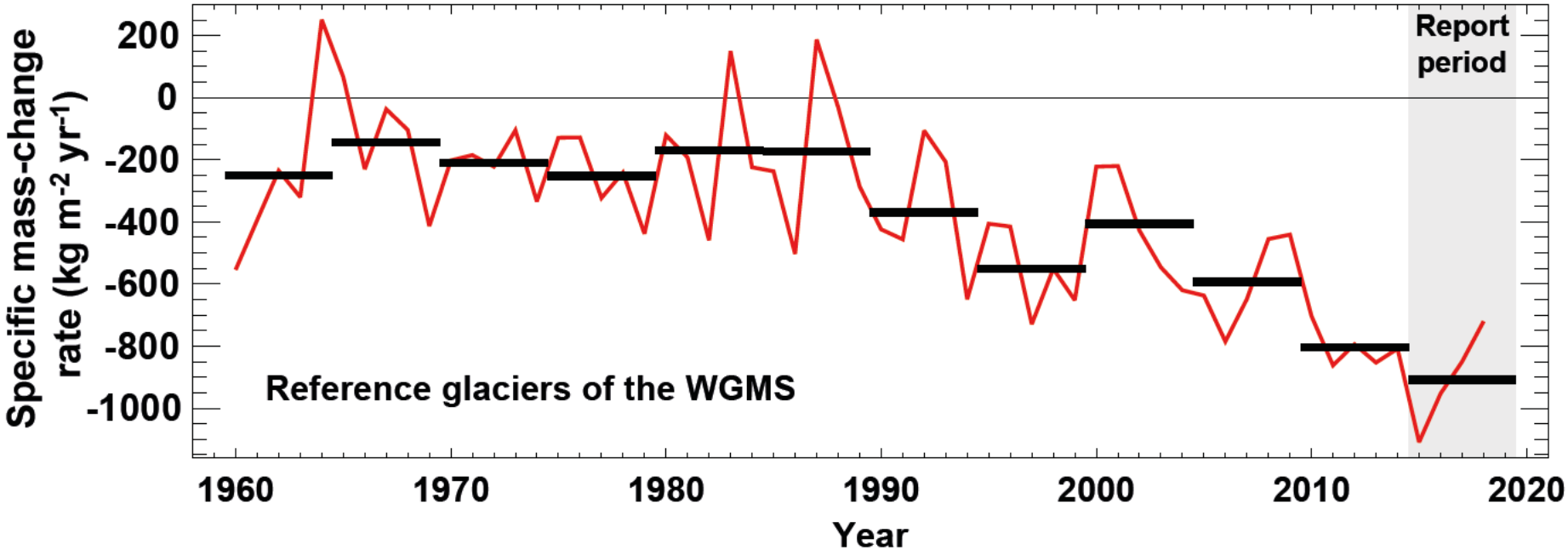
Fires destroyed an area of the Coffey Park neighborhood in Santa Rosa, Calif. *Before: Google Earth; After: California Highway Patrol, via Reuters*
Hundreds of firefighters were trying to contain blazes across Northern California's wine country on Monday in what officials said was one of the most destructive fire emergencies in the state's history. OCT. 10, 2017, New York Times **California: 103 victims in 2018**

World Forest Status 2013



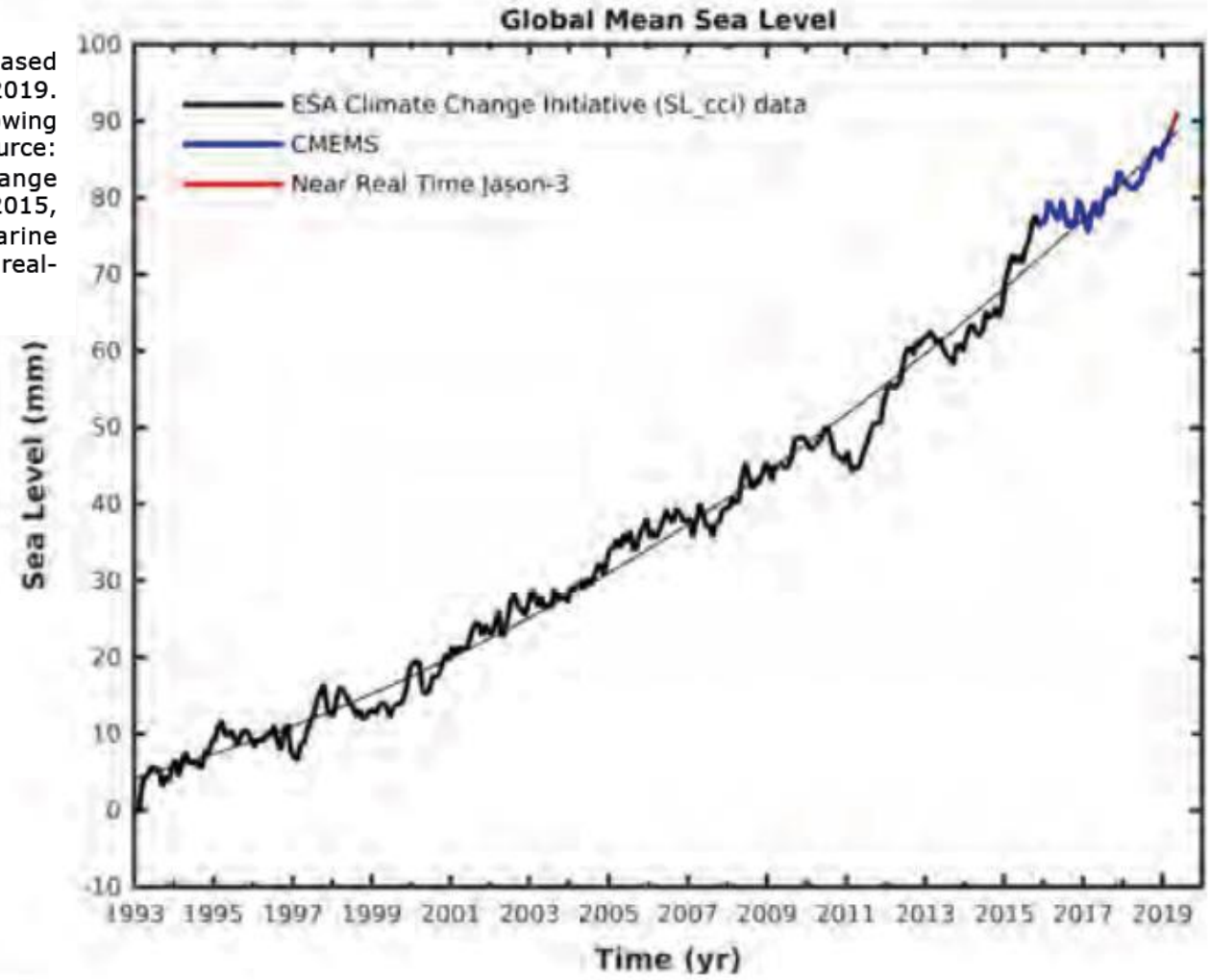
UN FAO (2016)

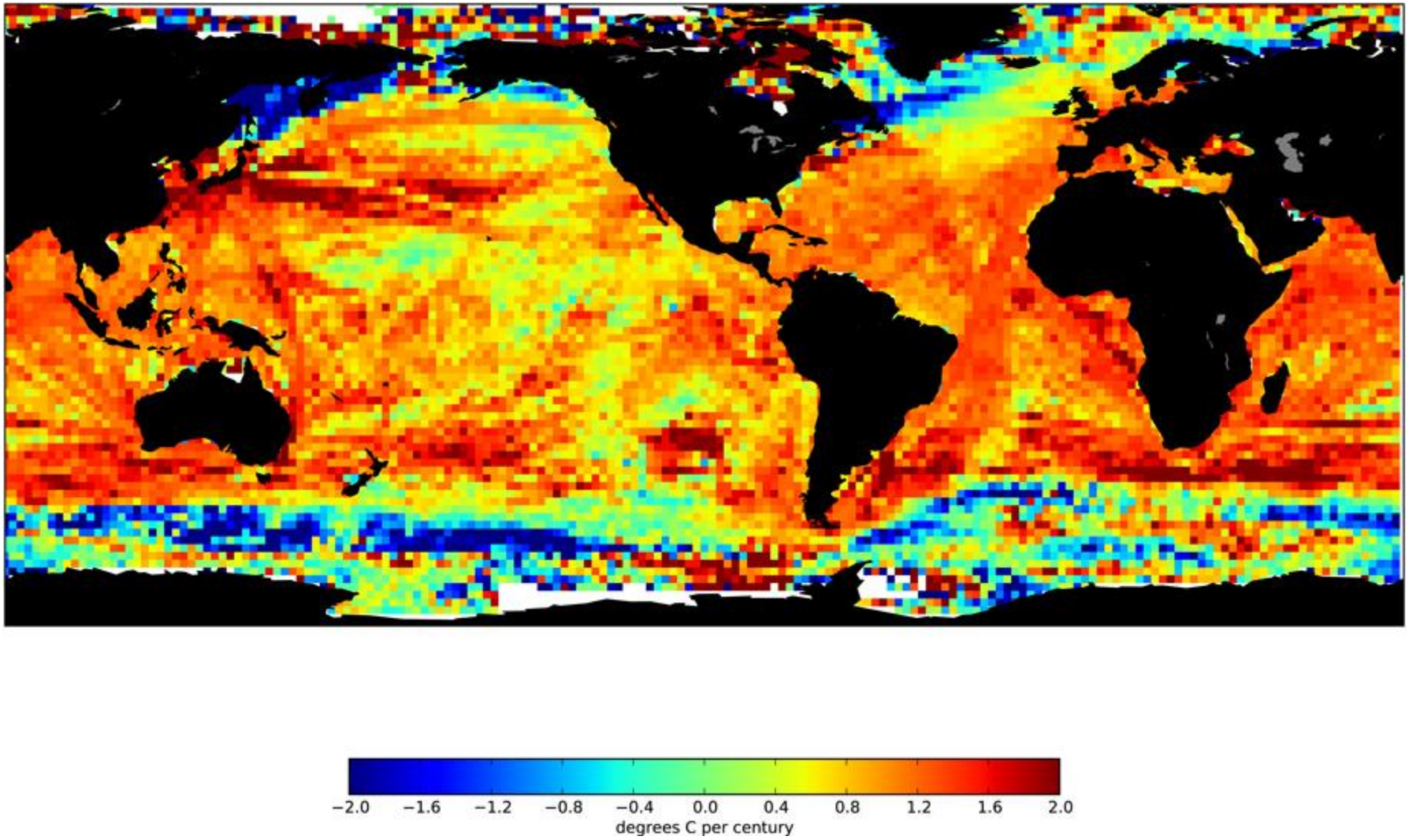

1980
1985
1990
1995
2000
2005
2010



Time series of average of observed annual specific mass-change rate of all WGMS reference glaciers, including five-year averages (data source: Glacier Monitoring Service (WGMS))

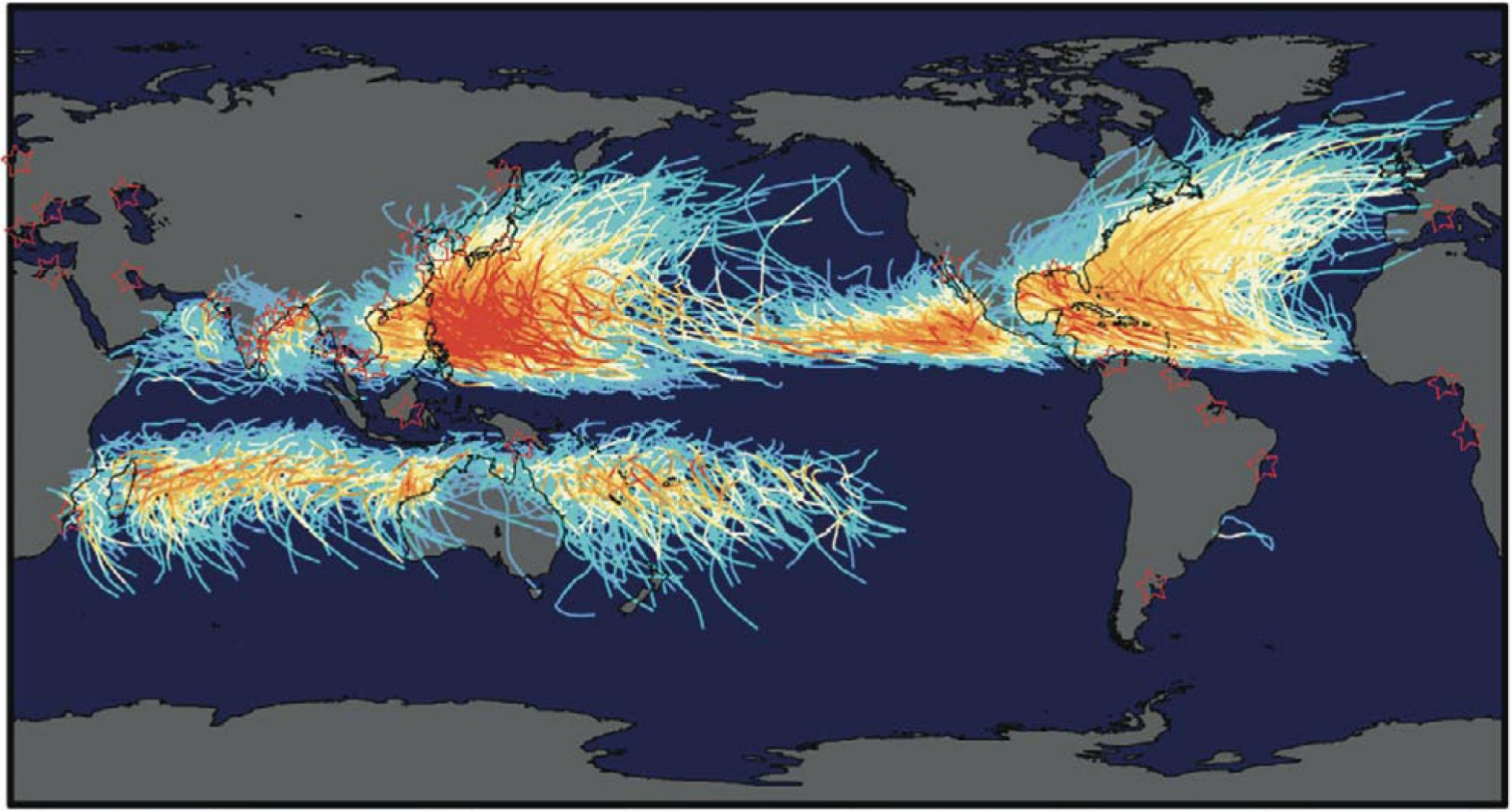
Figure opposite: Time series of altimetry-based global mean sea level from January 1993–May 2019. The thin black line is a quadratic function showing the mean sea-level rise acceleration. Data source: European Space Agency (ESA) Climate Change Initiative (CCI) sea-level data until December 2015, extended by data from the Copernicus Marine Service (CMEMS) as of January 2016 and near real-time Jason-3 as of April 2019





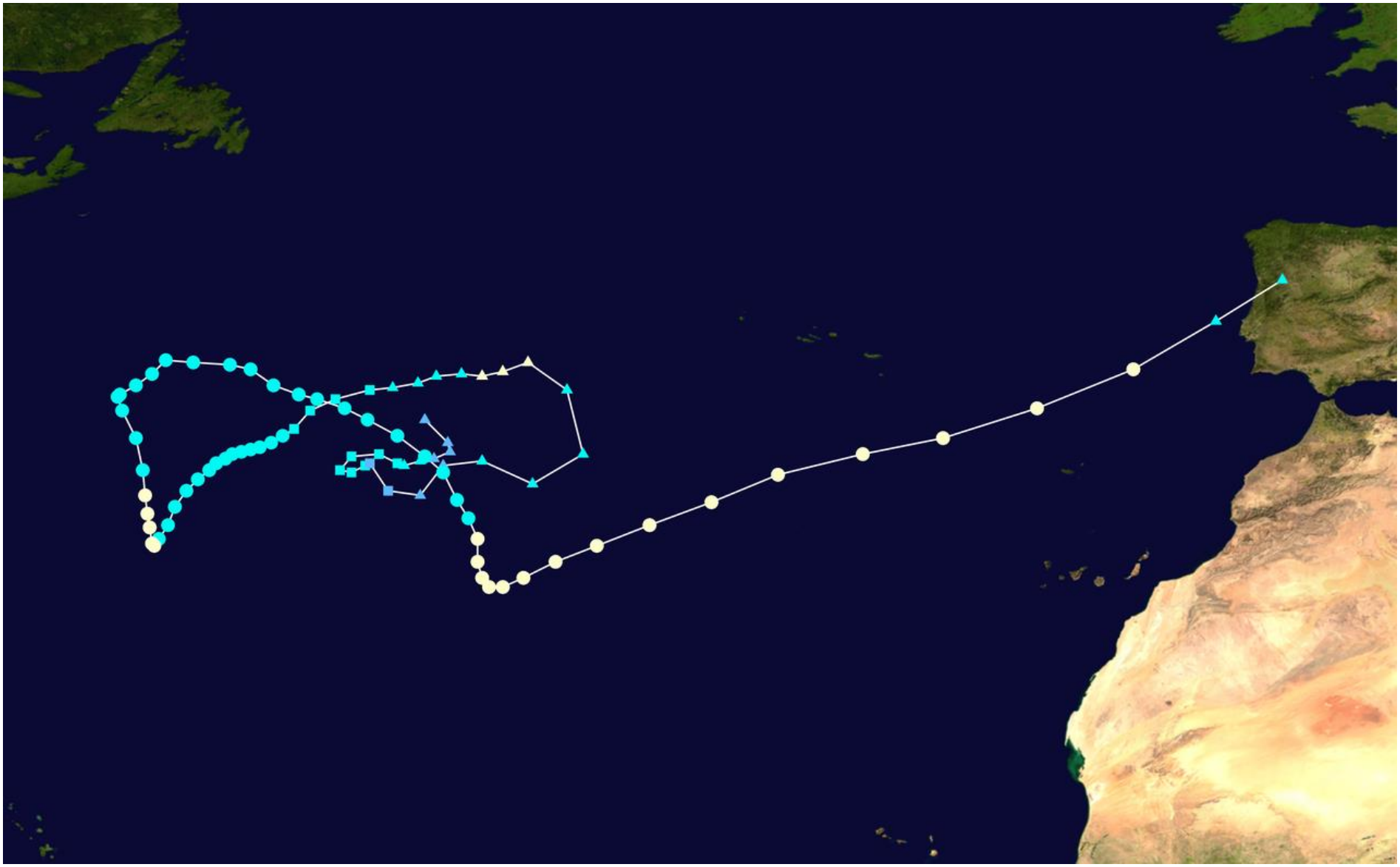
Changes in Sea-Surface Temperature Since 1900

Tracks and Intensity of All Tropical Storms



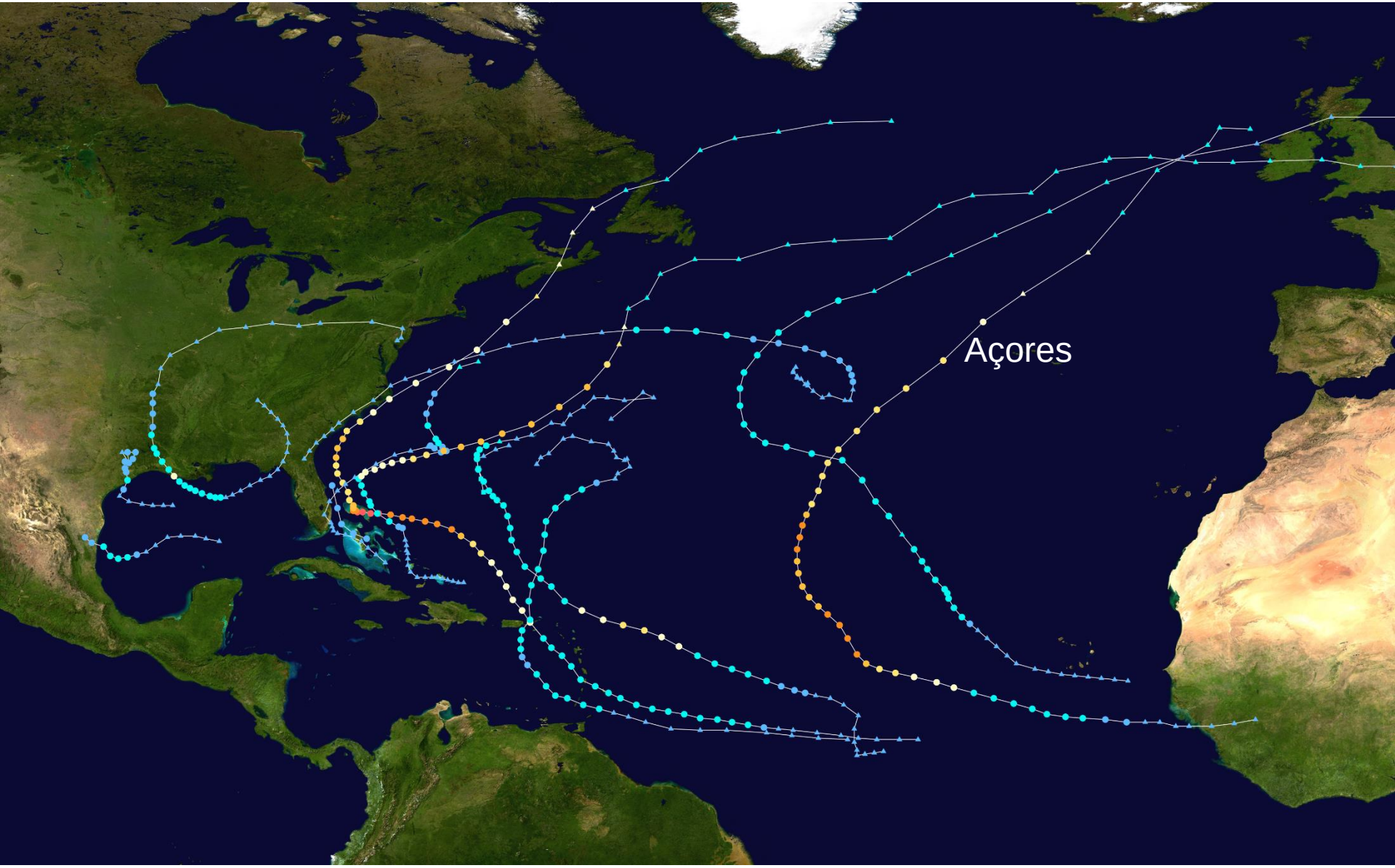
TD | TS | 1 | 2 | 3 | 4 | 5

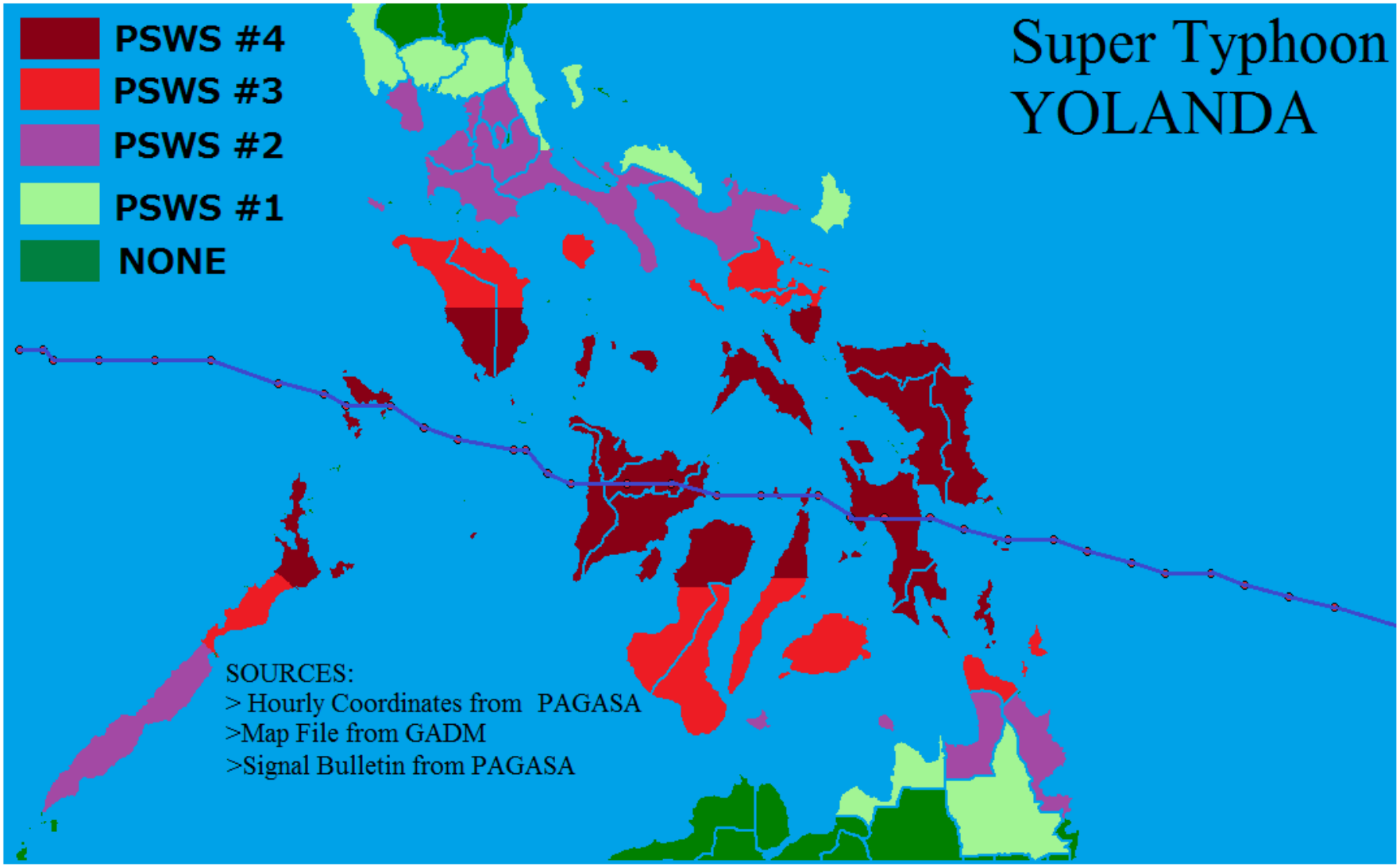
Saffir-Simpson Hurricane Intensity Scale



Ciclone tropical Leslie (Categoria 1). Chegada a Porugal em 13 de outubro de 2018

**Pinhal de Leiria,
near São Pedro de Moel after the post-tropical cyclone Leslie made landfall
photograph of 23-10-2018**

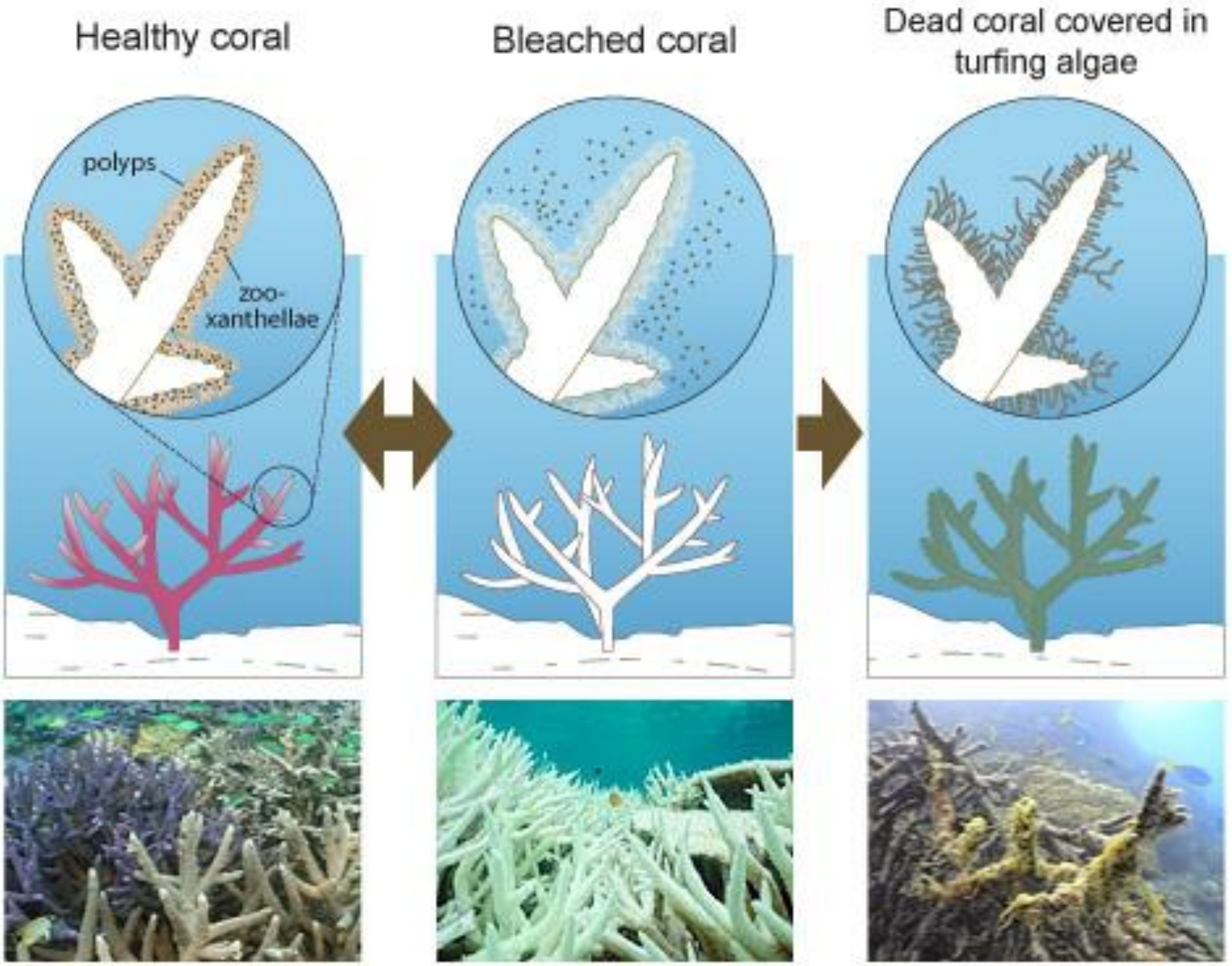

Açores



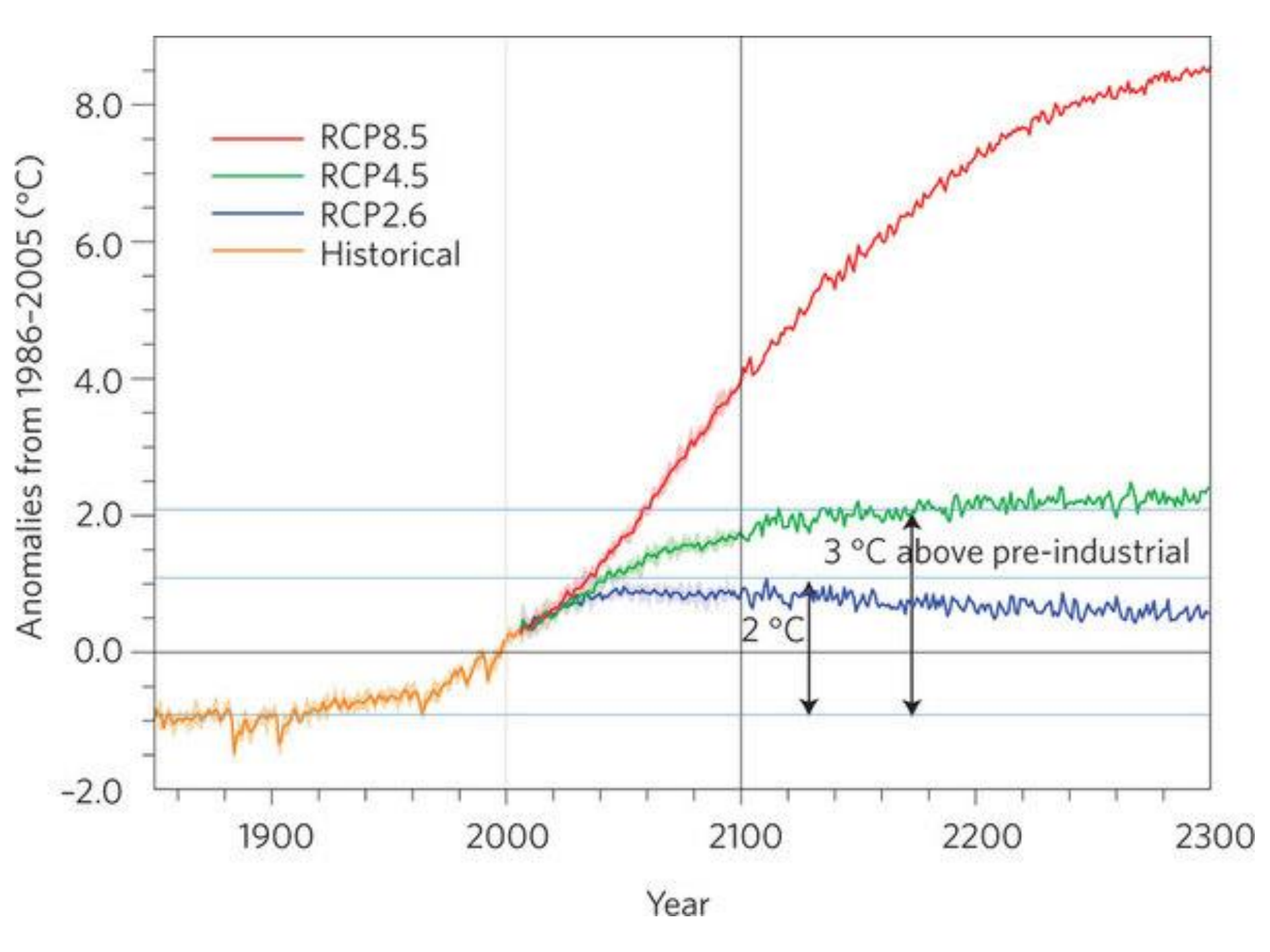
3-11 November 2013

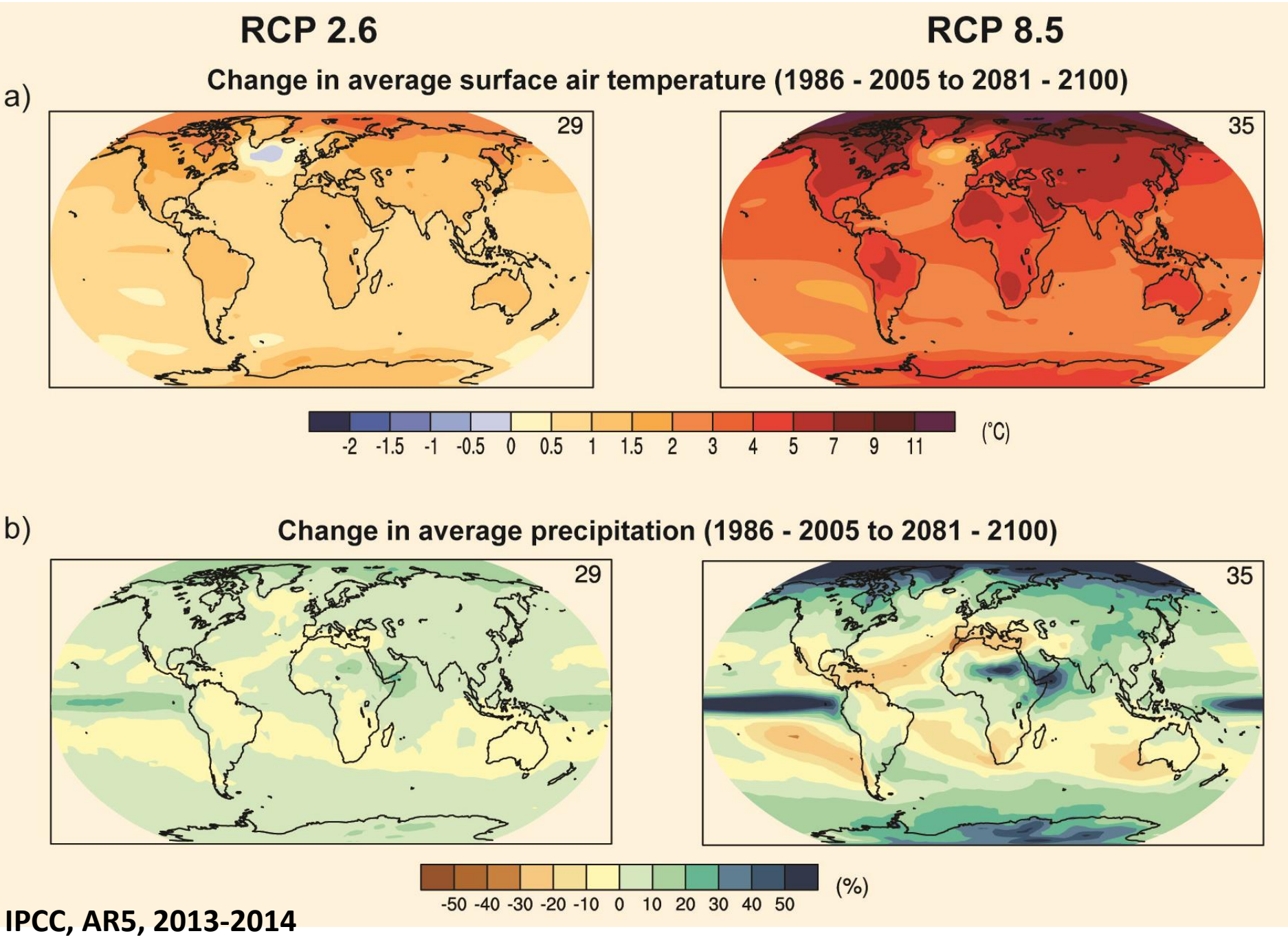

S.O.S.

Tropical cyclone Idai, Moçambique, 2019


Healthy coral
Bleached coral
Dead coral covered in turfing algae
polyps
zoo-
xanthellae

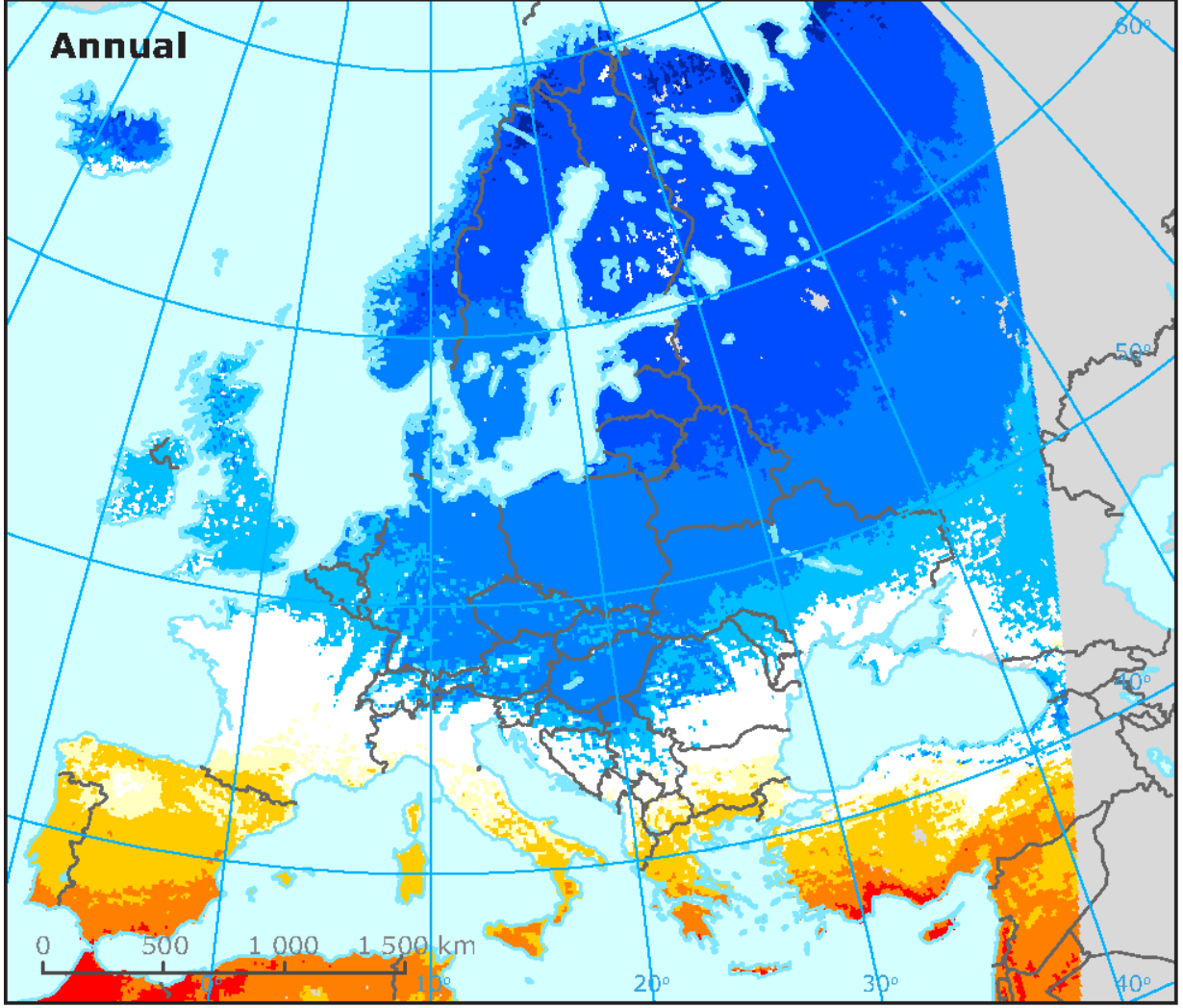
Reunion Island, Indian Ocean, Jean Pascal, www.reefbase.org

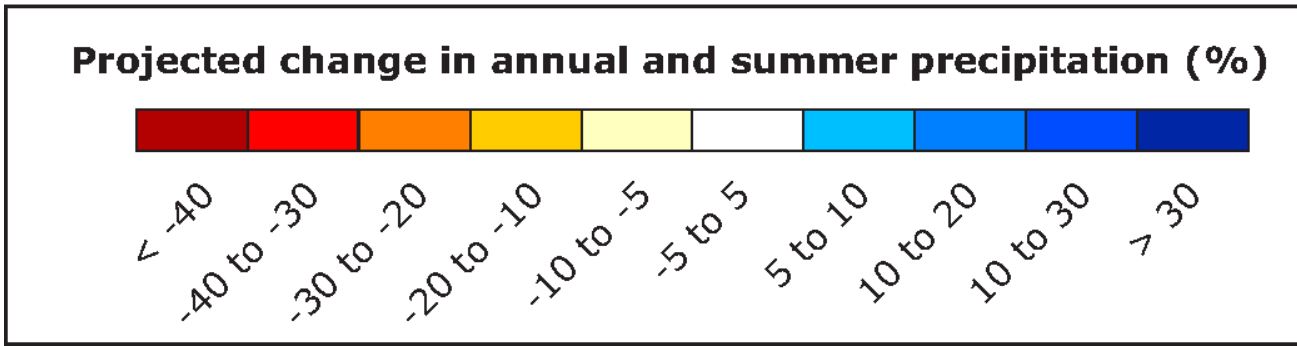

RCP8.5
RCP4.5
RCP2.6
Historical
3 °C above pre-industrial
2 °C
Anomalies from 1986–2005 (°C)
8.0
6.0
4.0
2.0
0.0
-2.0
1900
2000
2100
2200
2300
Year



IPCC, AR5, 2013-2014

Projected changes in annual precipitation (%) in the period 2071-2100 compared to the baseline period 1971-2000 for the forcing scenario RCP 8.5. Model simulations are based on the multi-model ensemble average of RCM simulations from the EURO-CORDEX initiative.

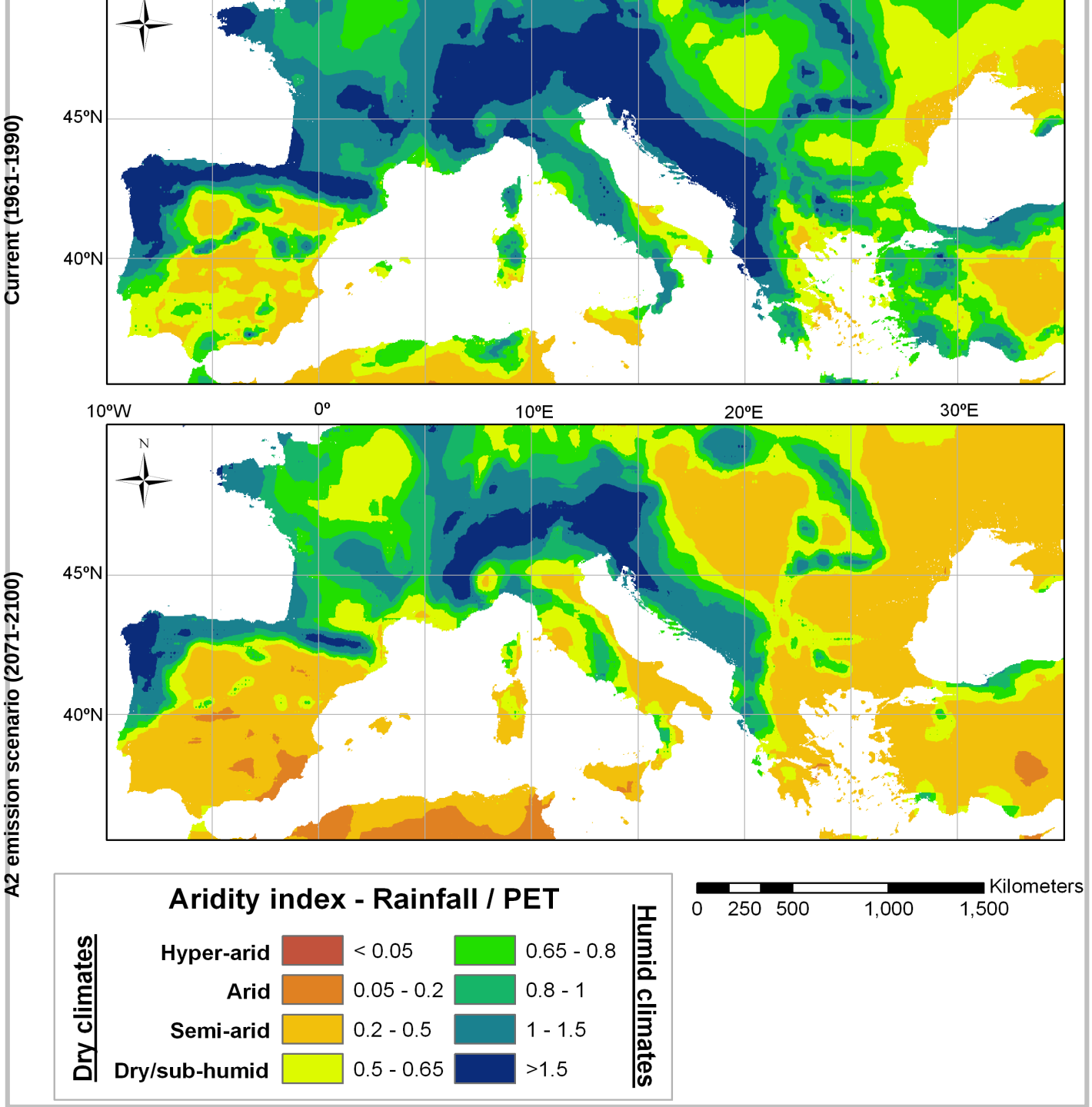


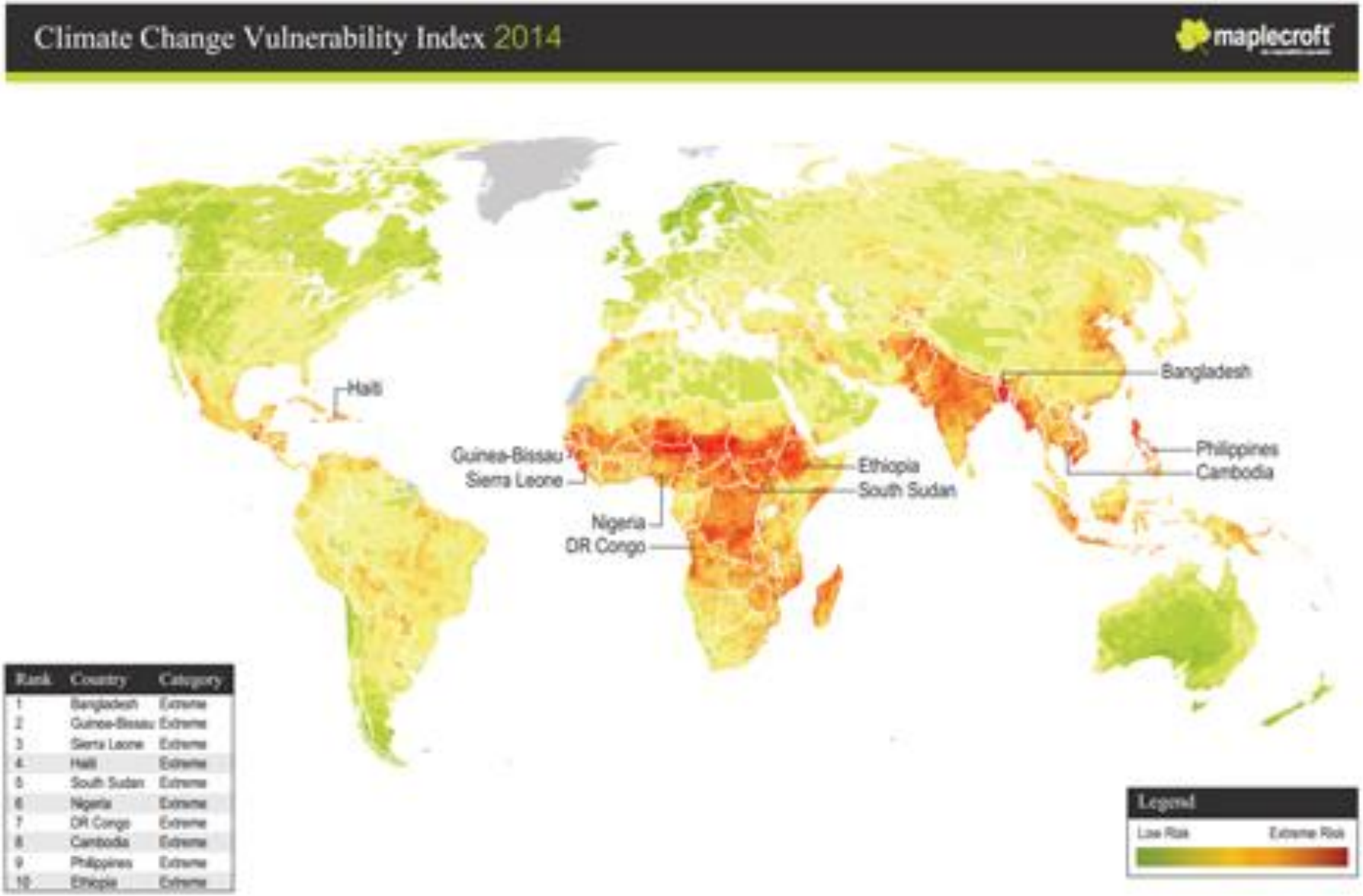


Source:EEA

1961-1990

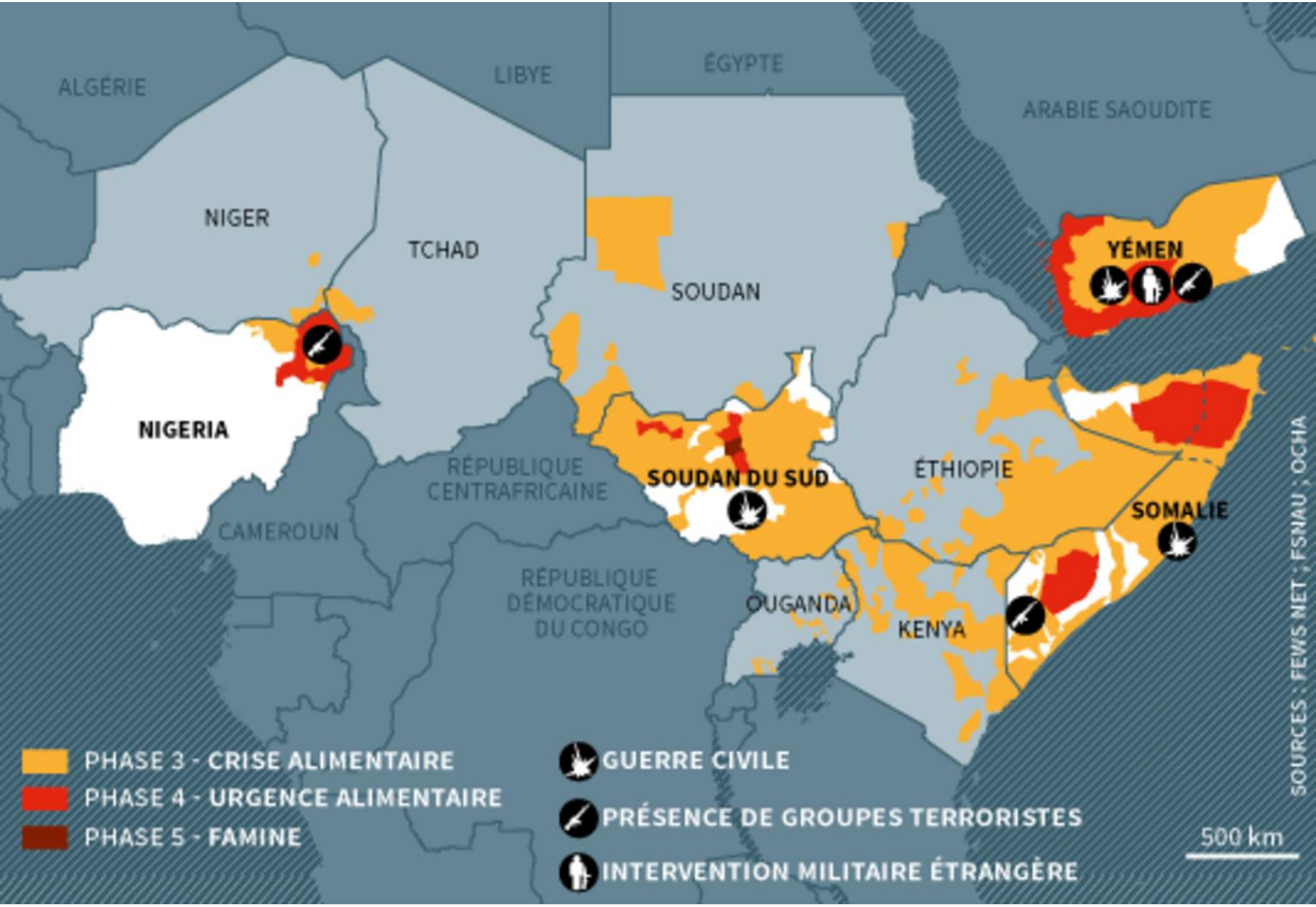
2071-2100





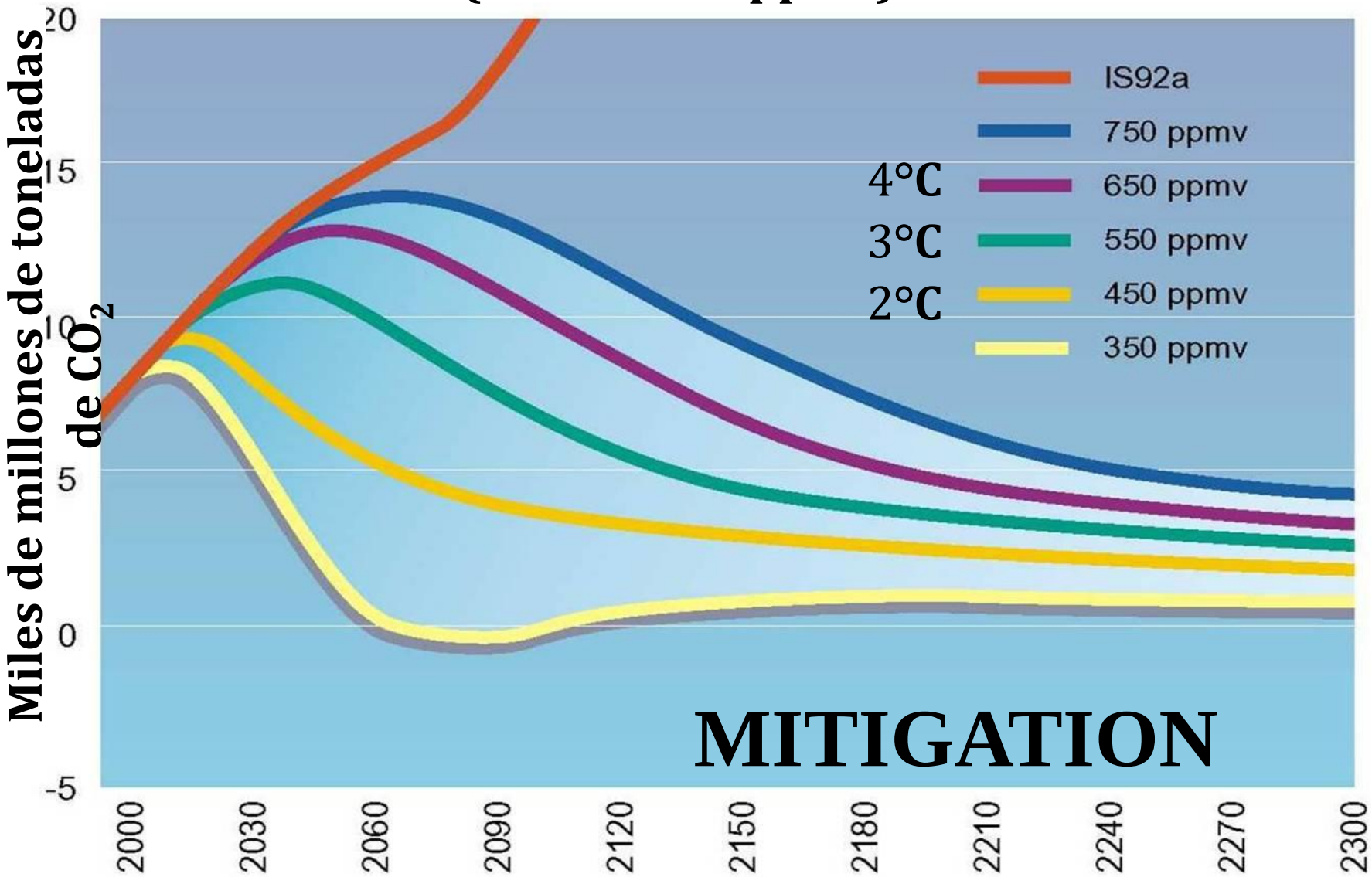
Rank	Country	Category
1	Bangladesh	Extreme
2	Guinea-Bissau	Extreme
3	Sierra Leone	Extreme
4	Haiti	Extreme
5	South Sudan	Extreme
6	Nigeria	Extreme
7	DR Congo	Extreme
8	Cambodia	Extreme
9	Philippines	Extreme
10	Ethiopia	Extreme

Índice de vulnerabilidade às alterações climáticas

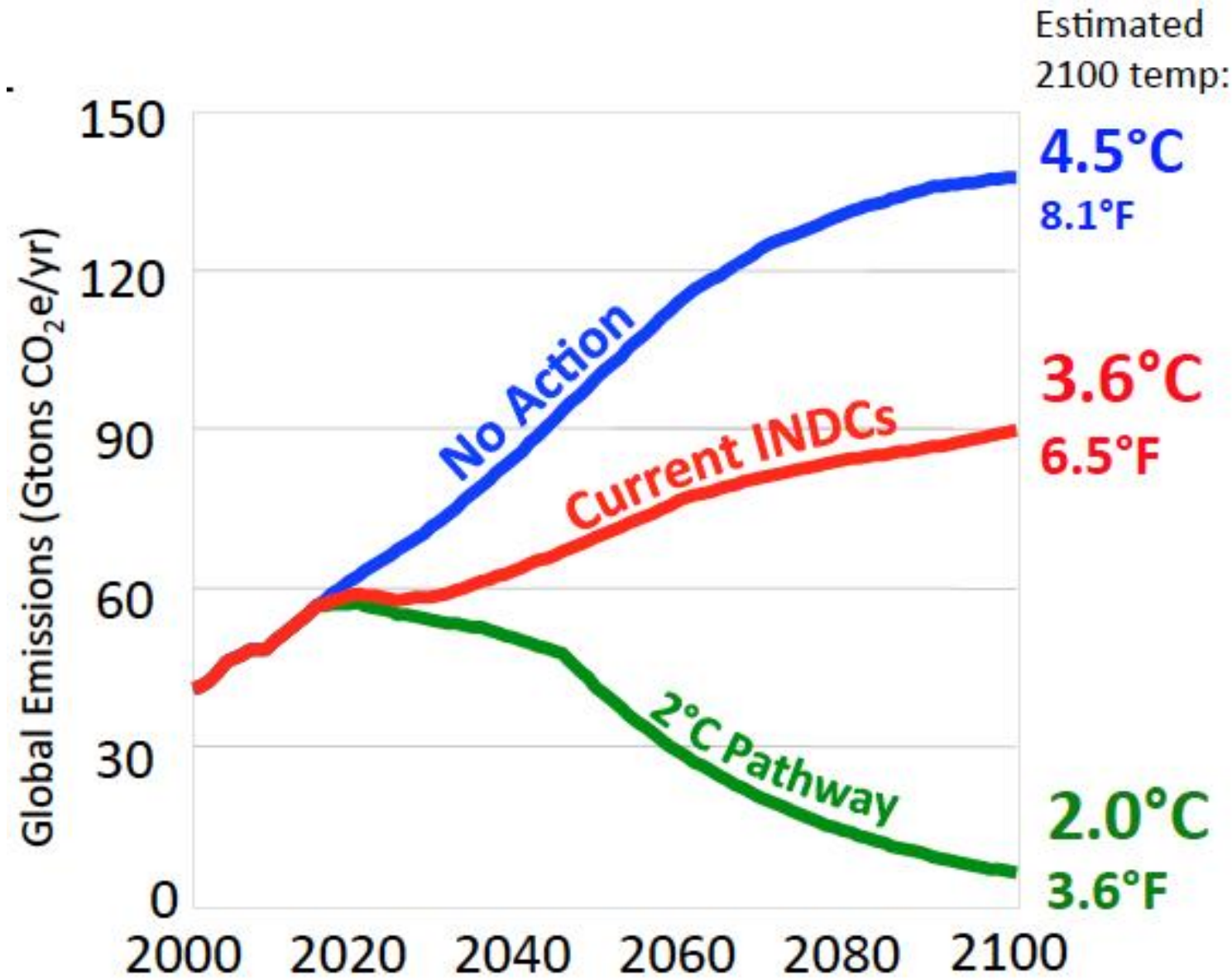

ALGÉRIE
LIBYE
ÉGYPTE
ARABIE SAOUDITE
NIGER
TCHAD
SOUDAN
YÉMEN
NIGERIA
RÉPUBLIQUE CENTRAFRICAINE
SOUDAN DU SUD
ÉTHIOPIE
SOMALIE
CAMEROUN
RÉPUBLIQUE DÉMOCRATIQUE DU CONGO
OUGANDA
KENYA
PHASE 3 - CRISE ALIMENTAIRE
PHASE 4 - URGENCE ALIMENTAIRE
PHASE 5 - FAMINE
GUERRE CIVILE
PRÉSENCE DE GROUPES TERRORISTES
INTERVENTION MILITAIRE ÉTRANGÈRE
500 km
SOURCES : FEWS NET ; FSNAU ; OCHA

Global Emission trajectories CO_2e

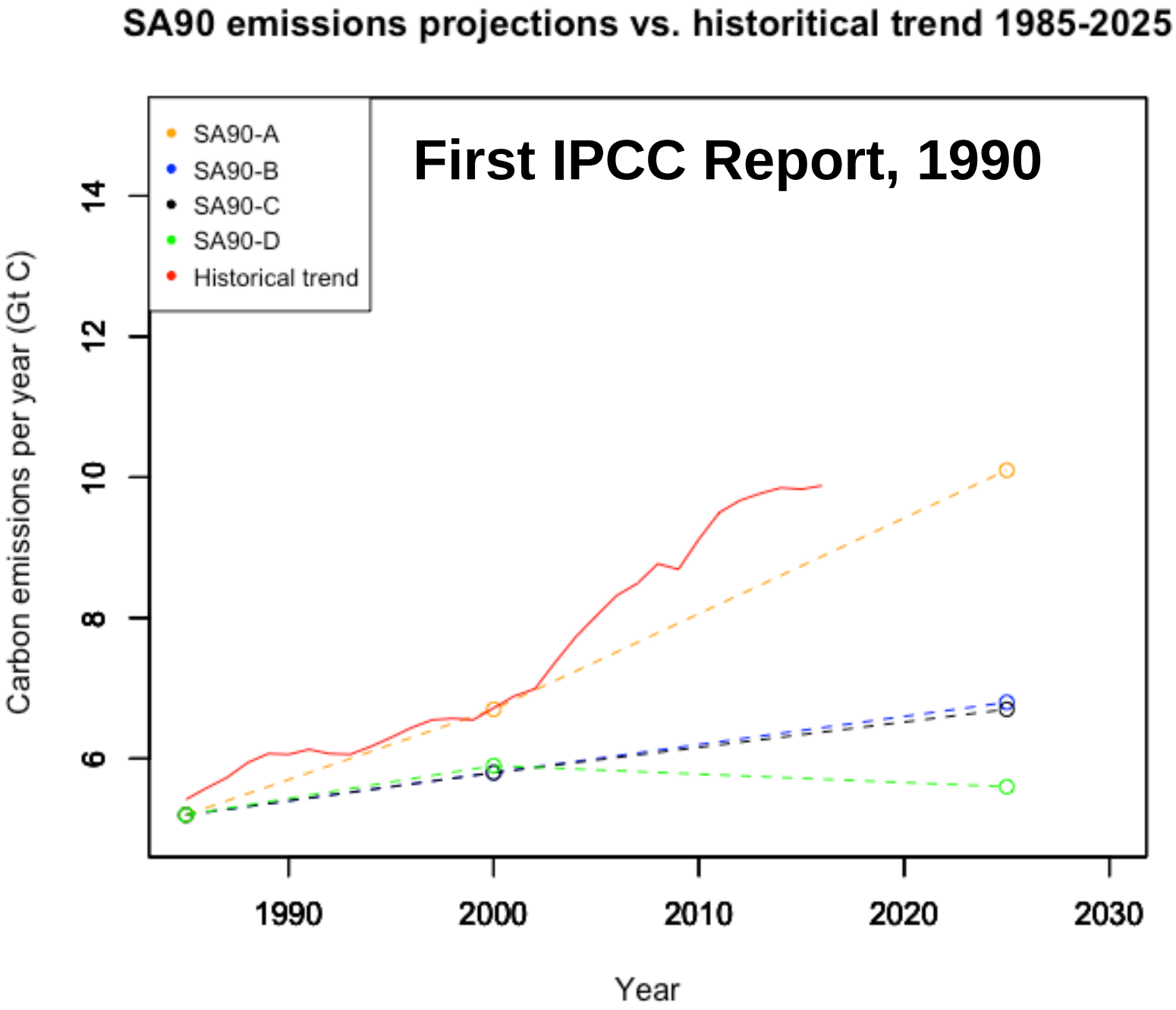
(2005 = 380 ppmv)

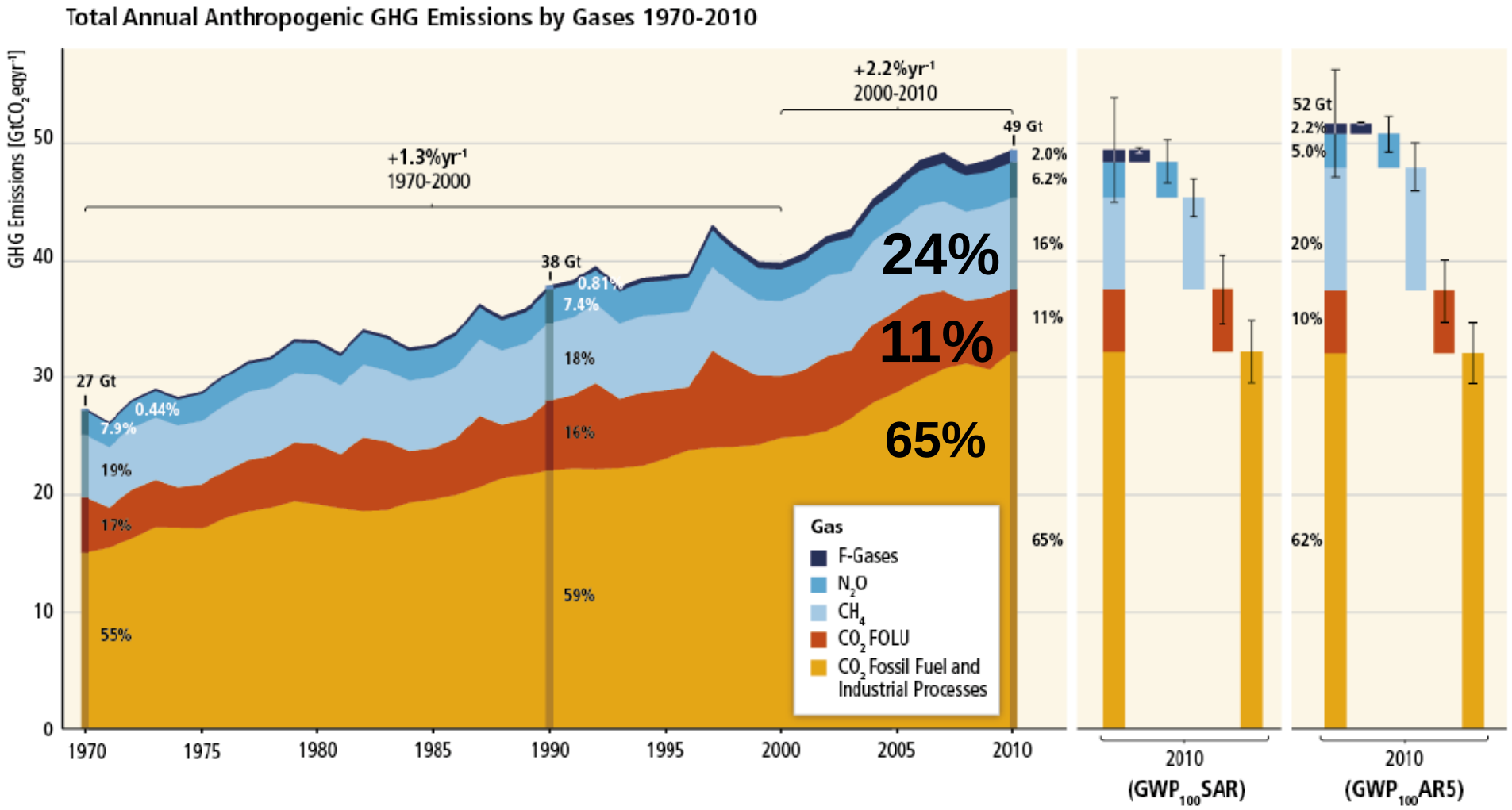


Fuente: Stern Review; World Resources Institute

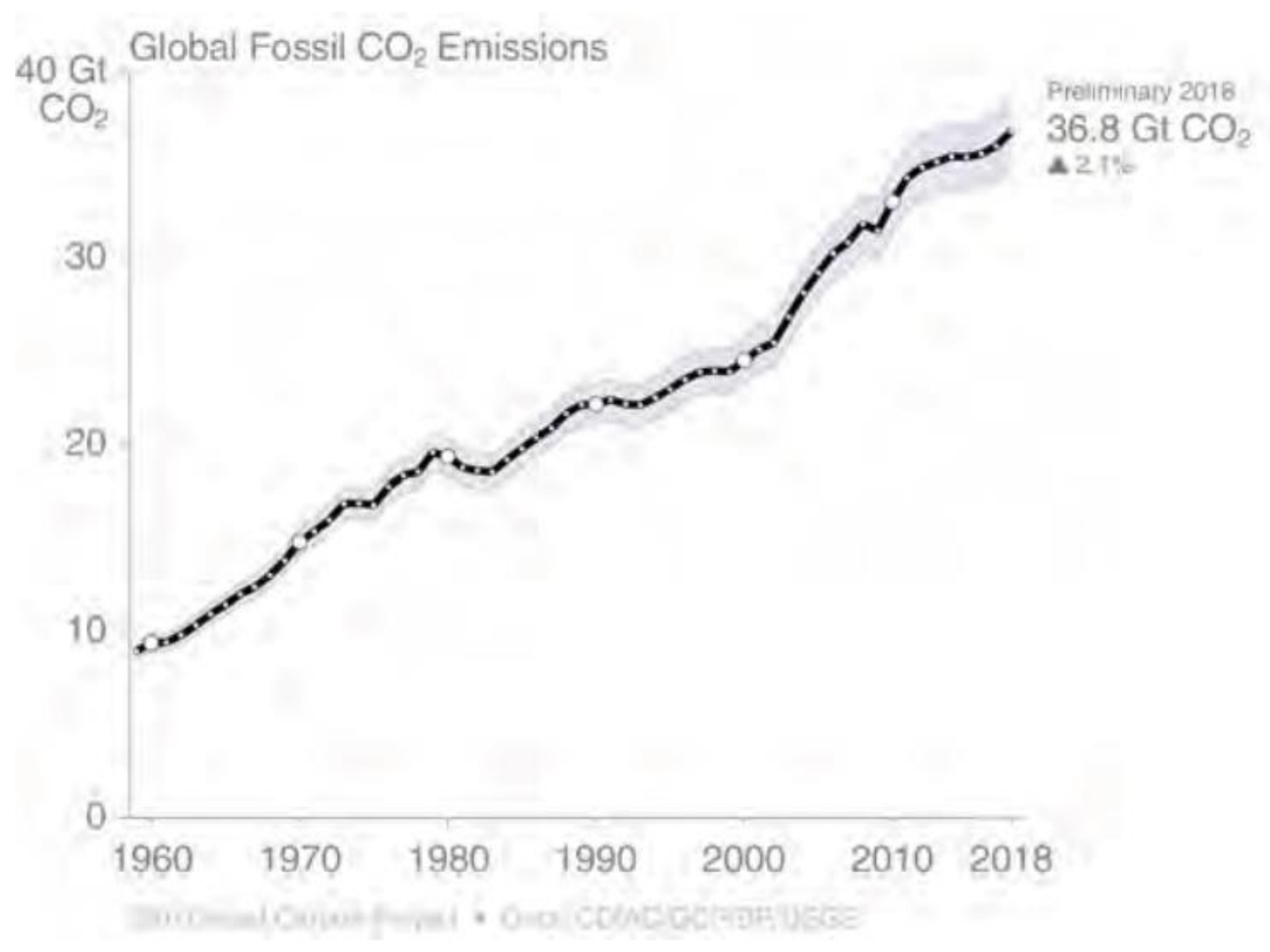


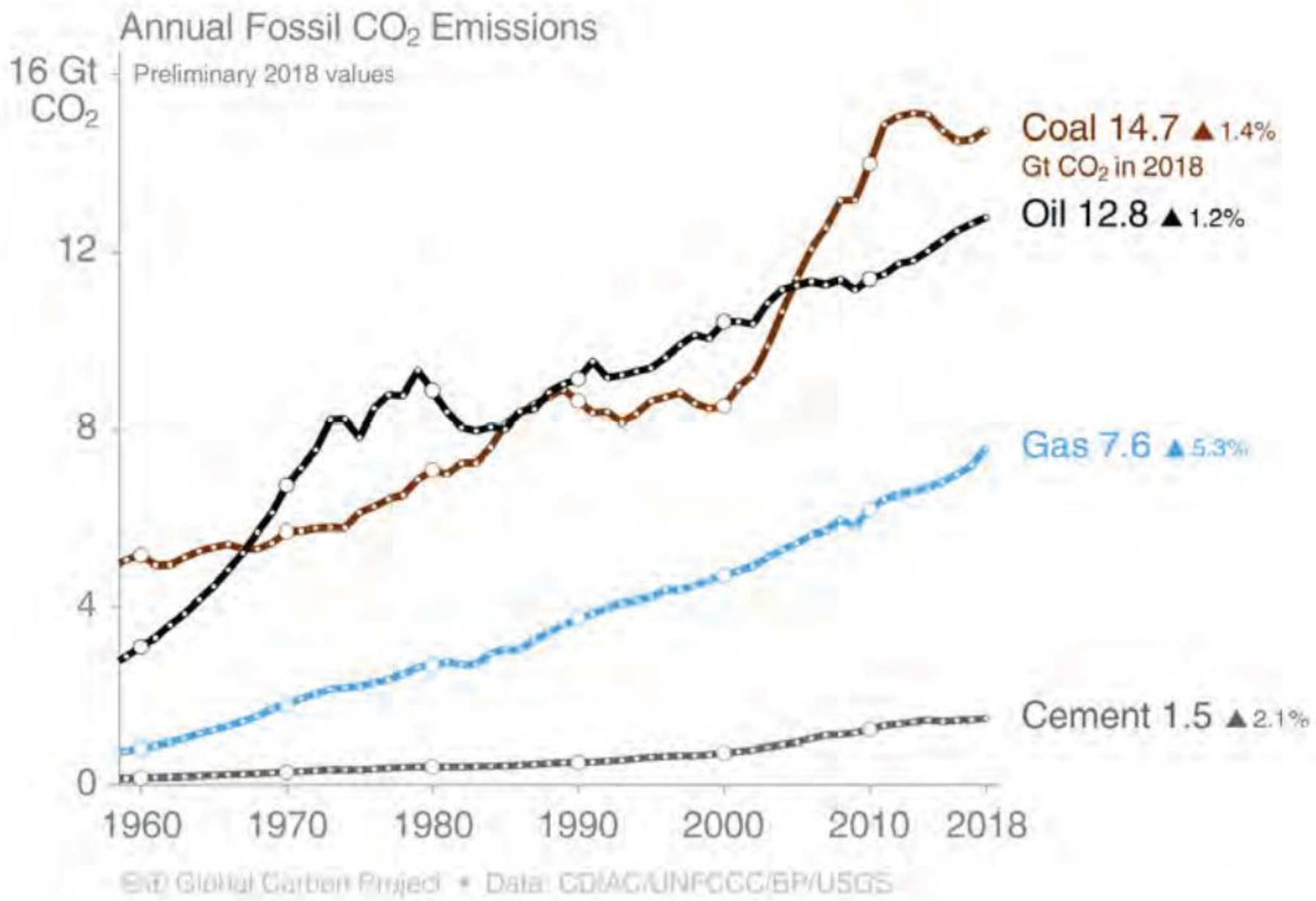
Impact of national climate pledges (aka INDCs) on world's greenhouse gas emissions measured in CO2 equivalents (CO2e).

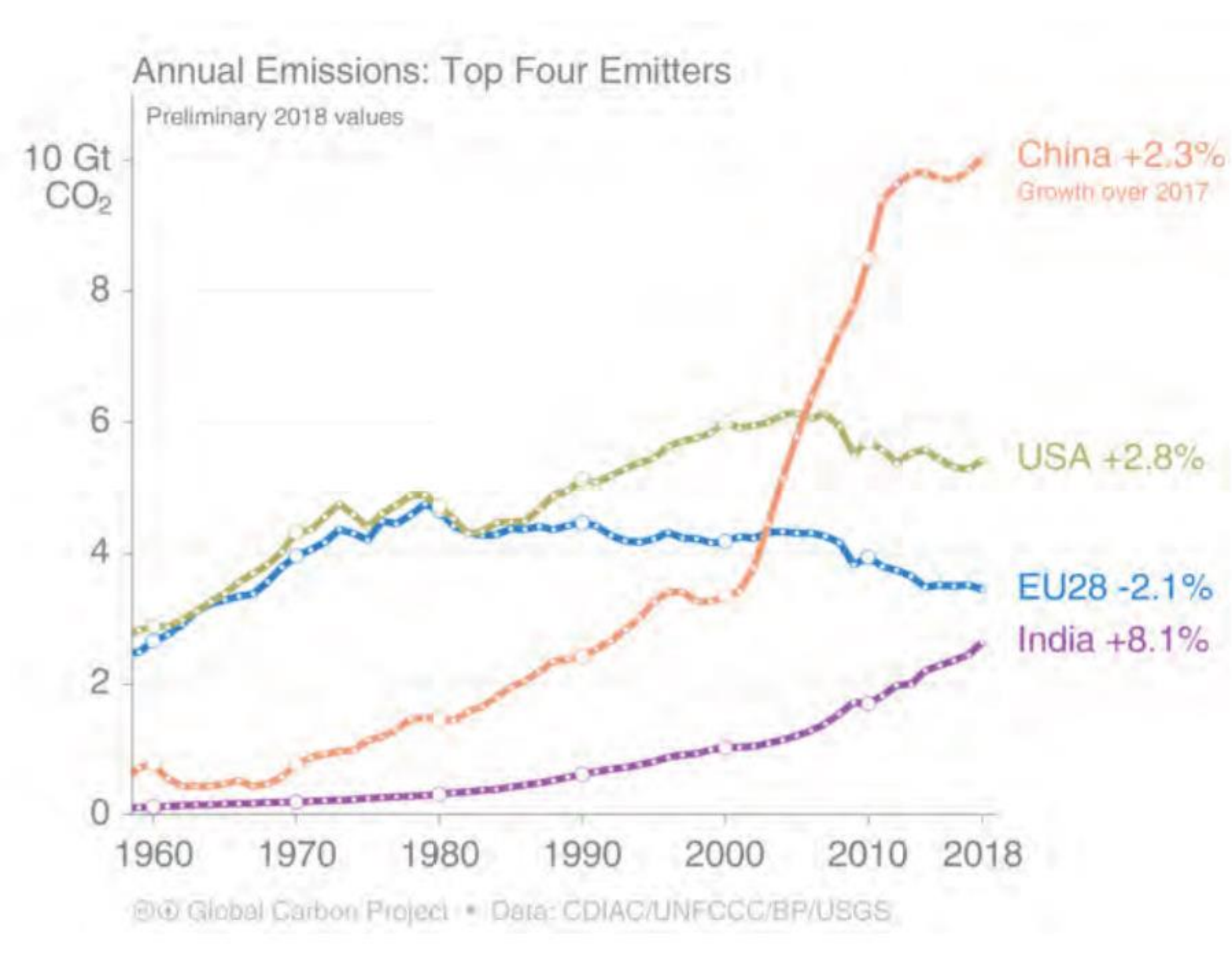

SA90 emissions projections vs. historitical trend 1985-2025
First IPCC Report, 1990
SA90-A
SA90-B
SA90-C
SA90-D
Historical trend
Carbon emissions per year (Gt C)
6
8
10
12
14
1990
2000
2010
2020
2030
Year

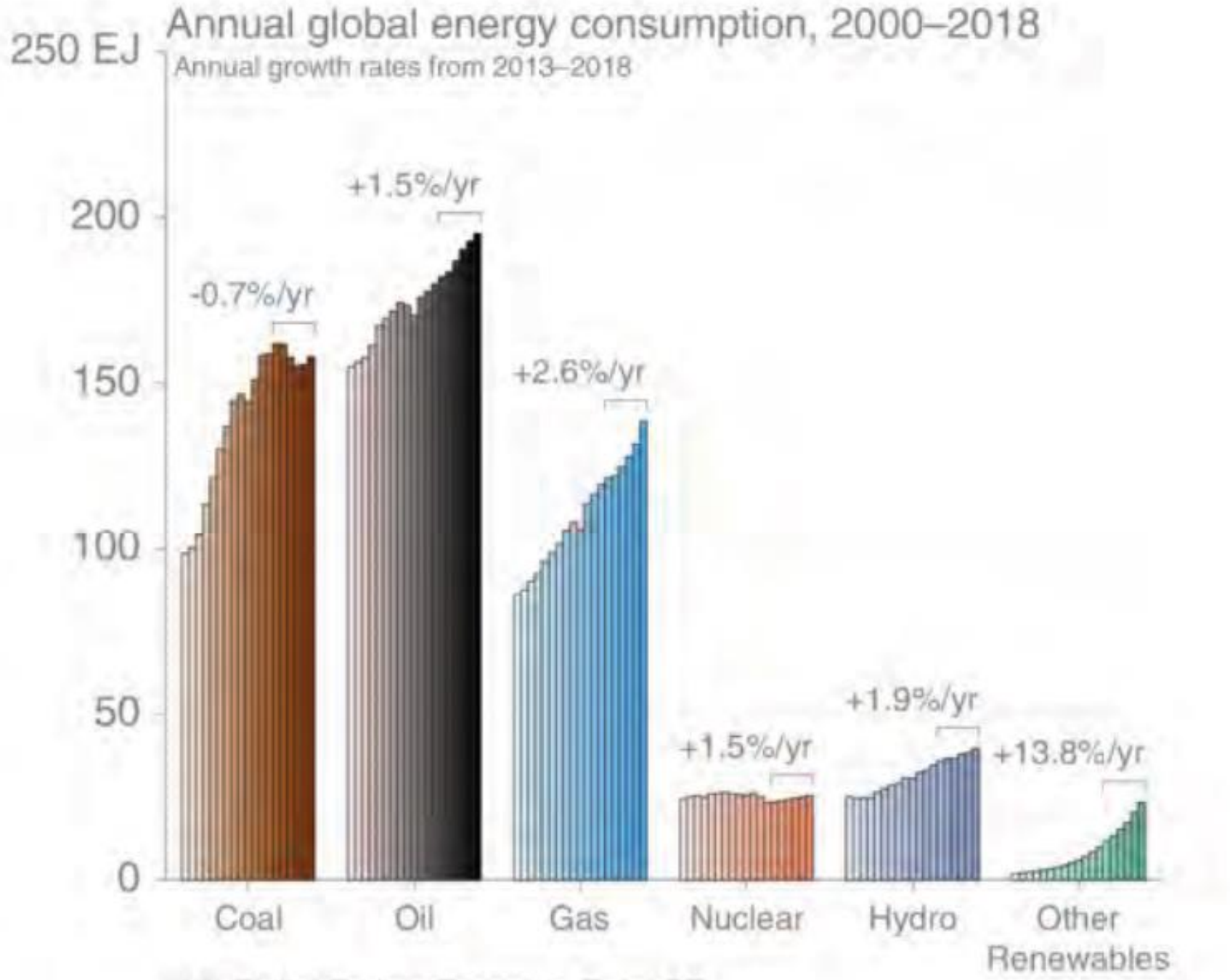


IPCC, AR5, 2014, Synthesis Report

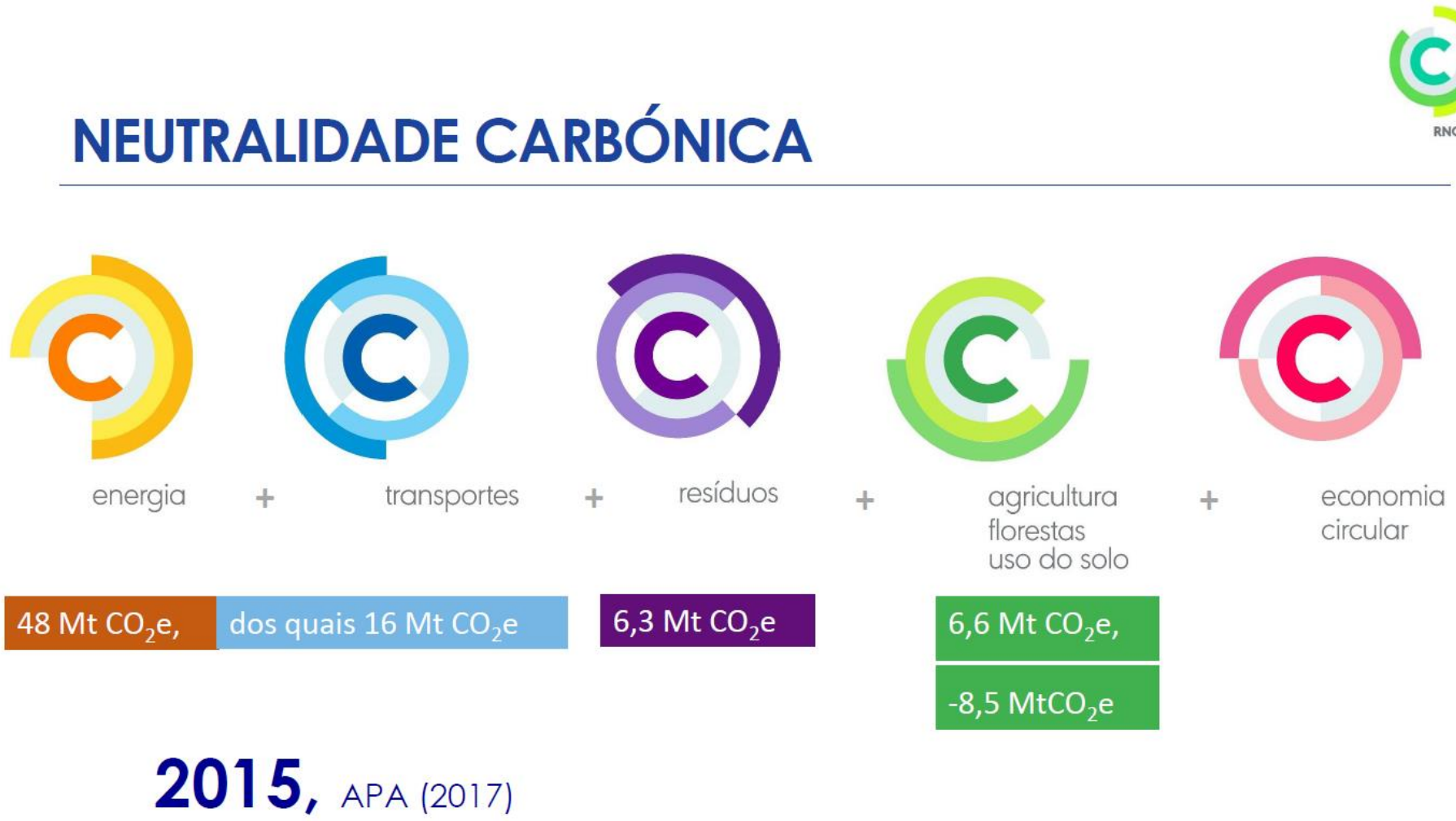

Global Fossil CO_2 Emissions
40 Gt CO_2
30
20
10
0
1960
1970
1980
1990
2000
2010
2018
Preliminary 2016
36.8 Gt CO_2
▲2.1%


Annual Fossil CO_2 Emissions
Preliminary 2018 values
16 Gt CO_2
12
8
4
0
1960
1970
1980
1990
2000
2010
2018
Coal 14.7 ▲1.4%
Gt CO_2 in 2018
Oil 12.8 ▲1.2%
Gas 7.6 ▲5.3%
Cement 1.5 ▲2.1%
Global Carbon Project • Data: CDIAC/UNFCCC/BP/USGS


Annual Emissions: Top Four Emitters
Preliminary 2018 values
10 Gt
CO_2
8
6
4
2
0
1960
1970
1980
1990
2000
2010
2018
China +2.3%
Growth over 2017
USA +2.8%
EU28 -2.1%
India +8.1%
Global Carbon Project • Data: CDIAC/UNFCCC/BP/USGS


Annual global energy consumption, 2000–2018
Annual growth rates from 2013–2018
250 EJ
200
150
100
50
0
-0.7%/yr
+1.5%/yr
+2.6%/yr
+1.5%/yr
+1.9%/yr
+13.8%/yr
Coal
Oil
Gas
Nuclear
Hydro
Other Renewables
Global Carbon Project • Data: BP

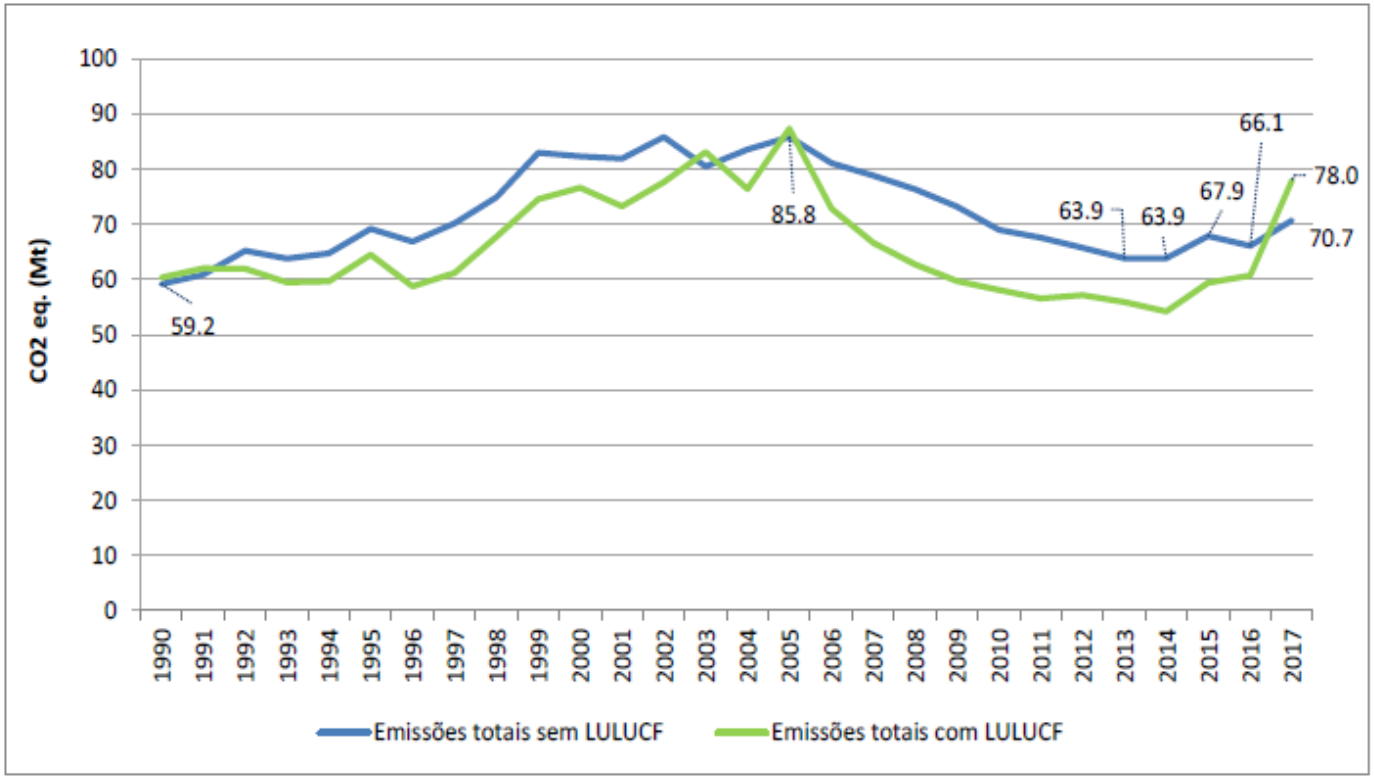
Neutralidade carbónica de Portugal em 2050
Objetivo estabelecido em 2016 pelo governo



Passar de cerca de 70 MtCO2e para cerca de 10MtCO2e em 2050

Emissões de gases com efeito de estufa em Portugal desde 1990 até 2017

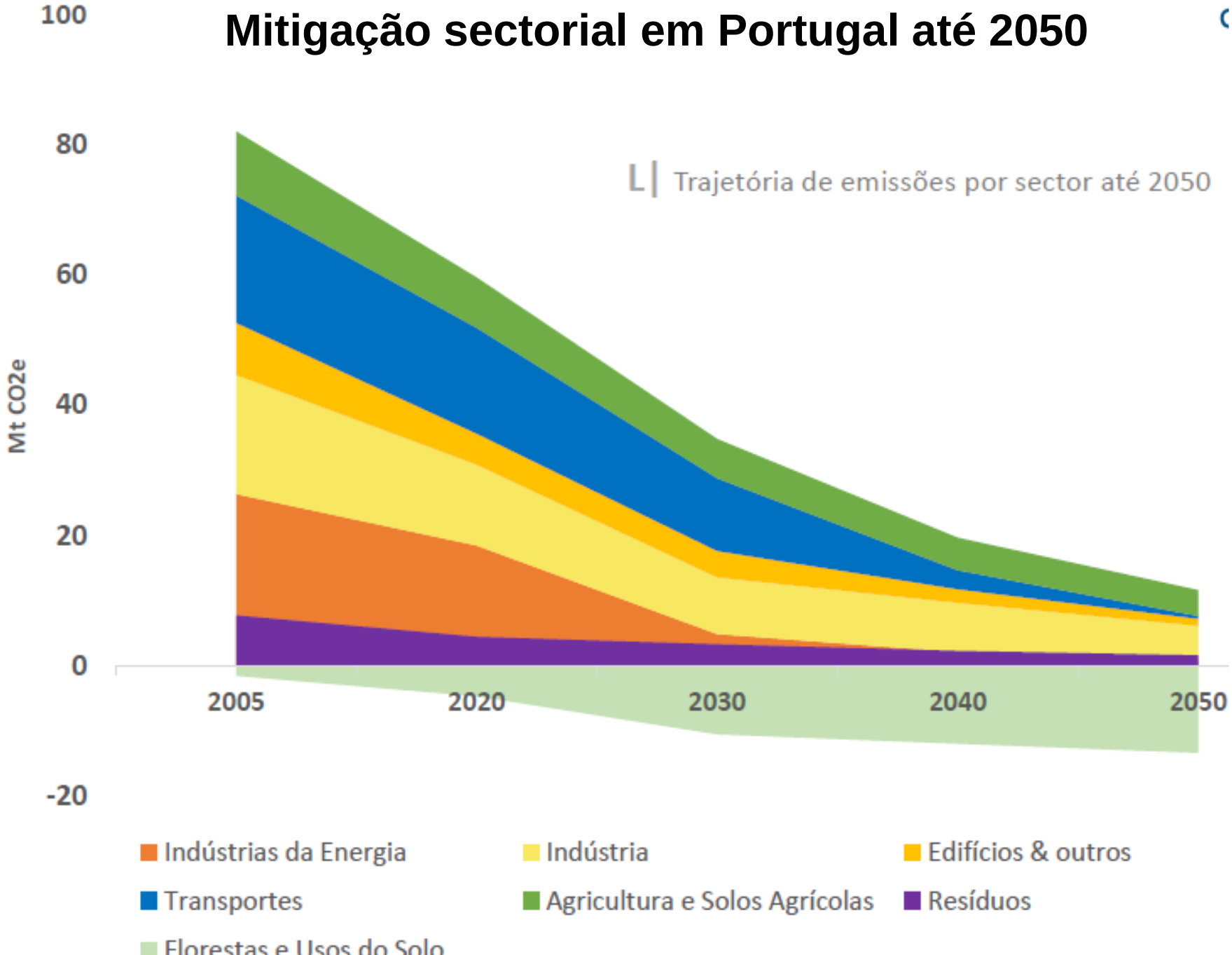
Fonte: APA

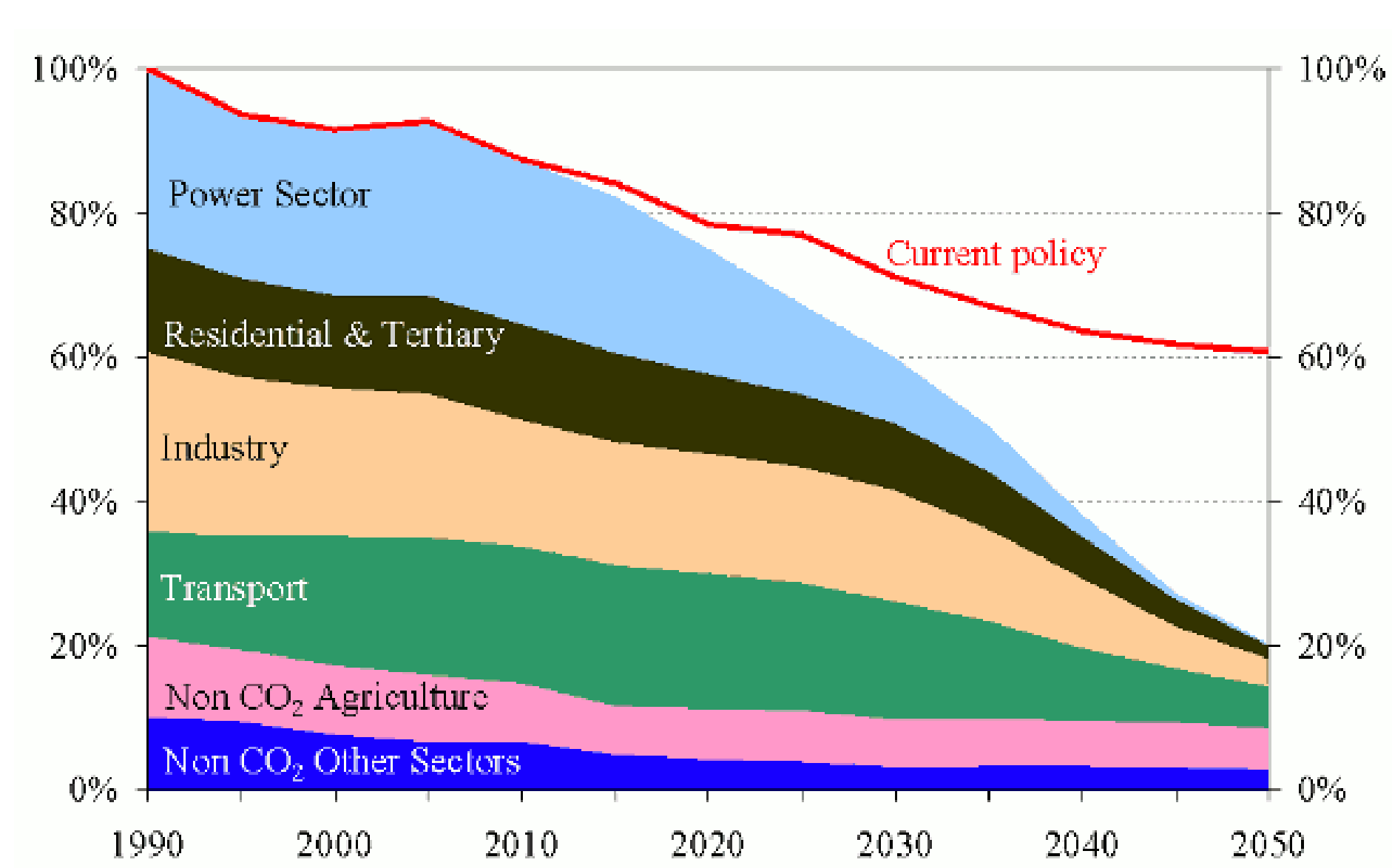


Fatores de evolução:

- Aumento de emissões até 2005, motivado por crescimento económico
- A partir de 2005 introdução de renováveis e gás natural, melhorias na eficiência e a partir de 2010 crise económica
- De 2013 em diante voltam a crescer emissões, onde as secas foram um dos fatores causadores (menos hídrica, mais carvão para produzir eletricidade)

Mitigação sectorial em Portugal até 2050





Energy Transition Roadmap EU, 2050, UE

Obrigado pela vossa atenção