COVID – 19 e ALTERAÇÔES CLIMÀTICAS

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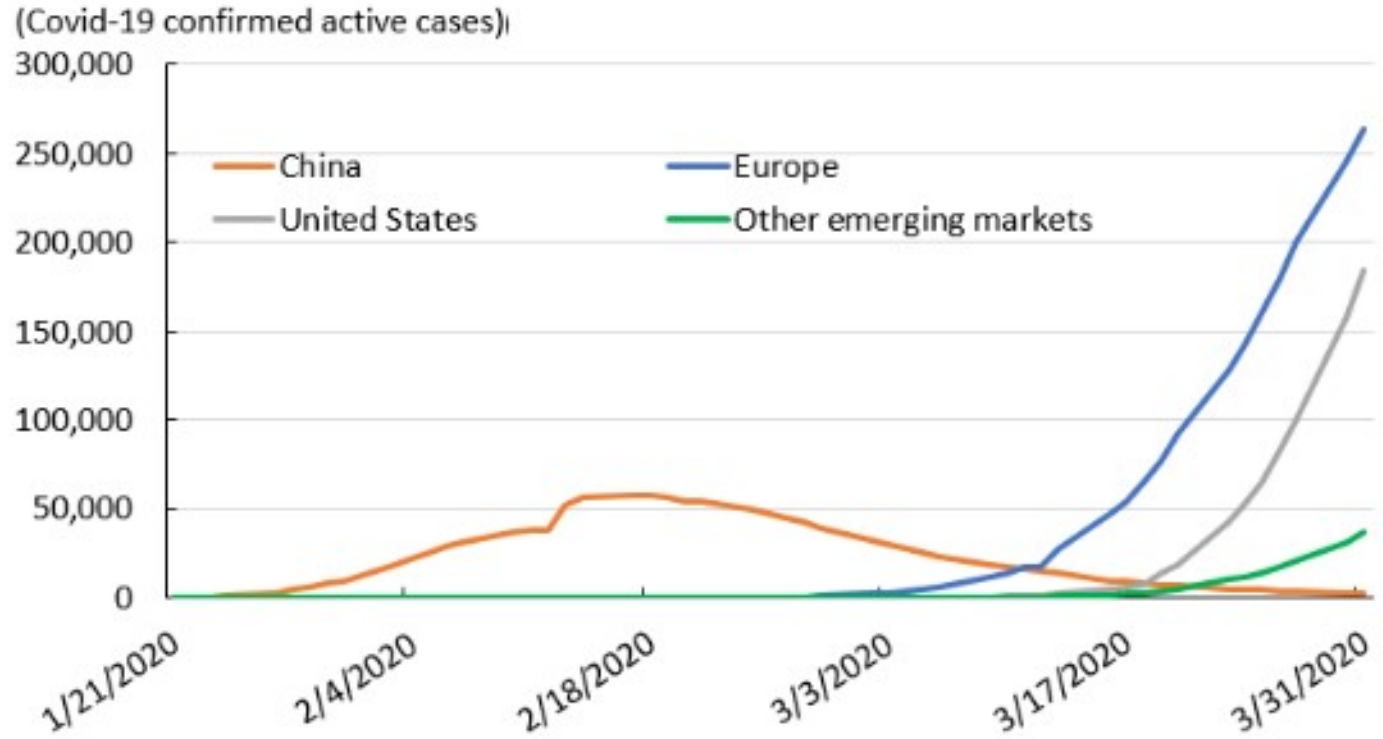
AMAL

Faro, 15 de abril 2020

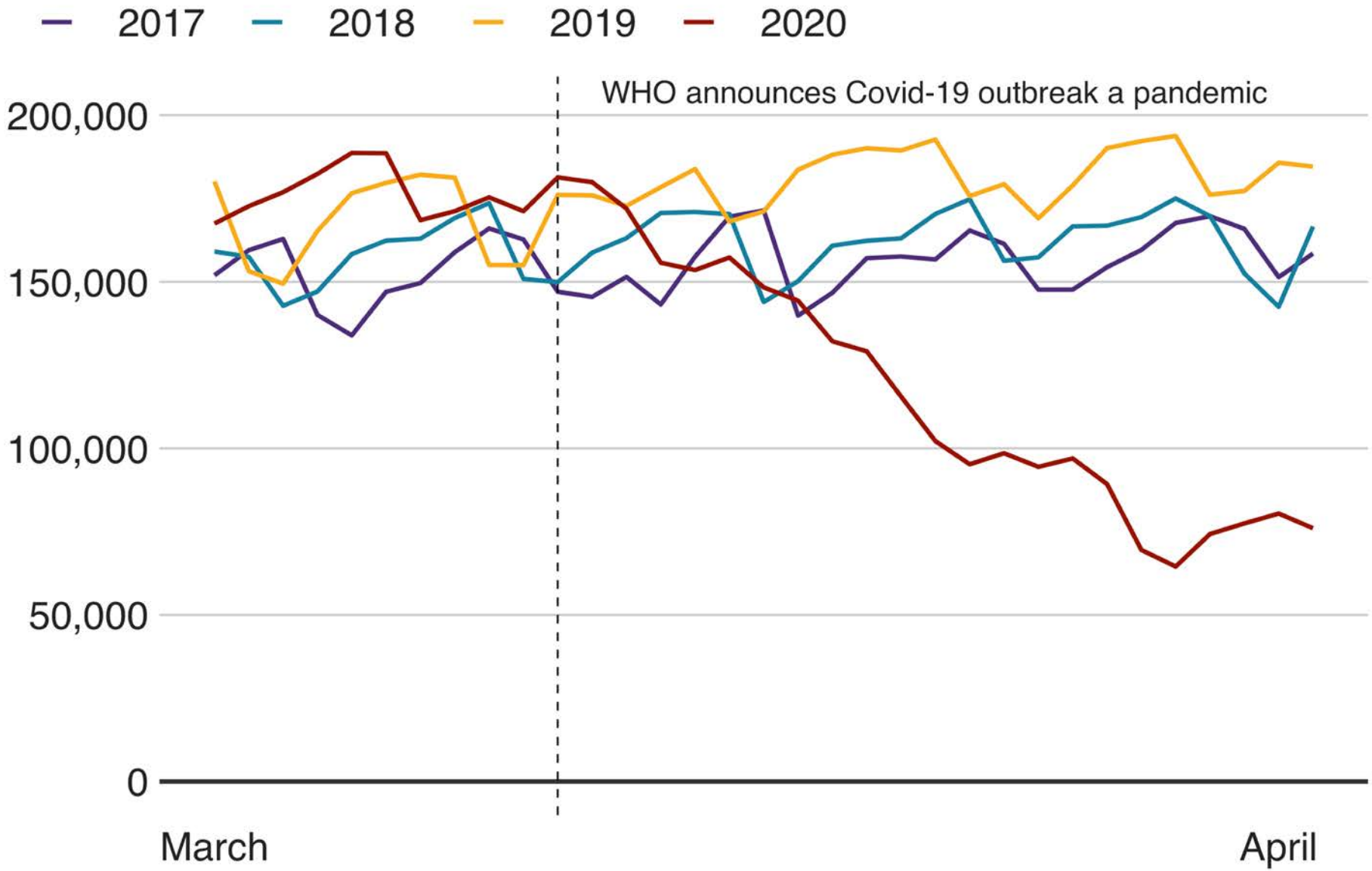


Sources: Haver Analytics and Johns Hopkins University.

Note: Europe includes France, Germany, Italy, Spain, and the United Kingdom. "Other emerging markets" includes Brazil, Chile, Ecuador, Indonesia, India, Malaysia, Mexico, Philippines, Pakistan, Russia, South Africa, Thailand, and Turkey.

Far fewer flights

Number of total daily flights



Source: Flightradar24, 03 April 2020

BBC

Oil price rallies

Brent crude, US dollars per barrel

Source: Bloomberg, 02 April 2020, 09:30 GMT

BBC

FITCH expects world economic activity to decline by 1.9% in 2020 with US, eurozone and UK GDP down by 3.3%, 4.2% and 3.9%, respectively. China's recovery from the disruption in 1Q20 will be sharply curtailed by the global recession and its annual growth will be below 2%.

Baseline forecast does not see GDP reverting to its pre-virus levels until late 2021 in the US and Europe

2nd April 2020

Estimativa do FMI (13-4-2020) se a pandemia tiver o pico no 2ºtrim, e se dissipar no 2º semestre (cenário de referência):

Portugal: PIB:

2019 +2,2%;

2020 -8%;

2021 +5% (recuperação parcial)

desemprego:

2019 6,5%,

2020 13,9% (duplica),

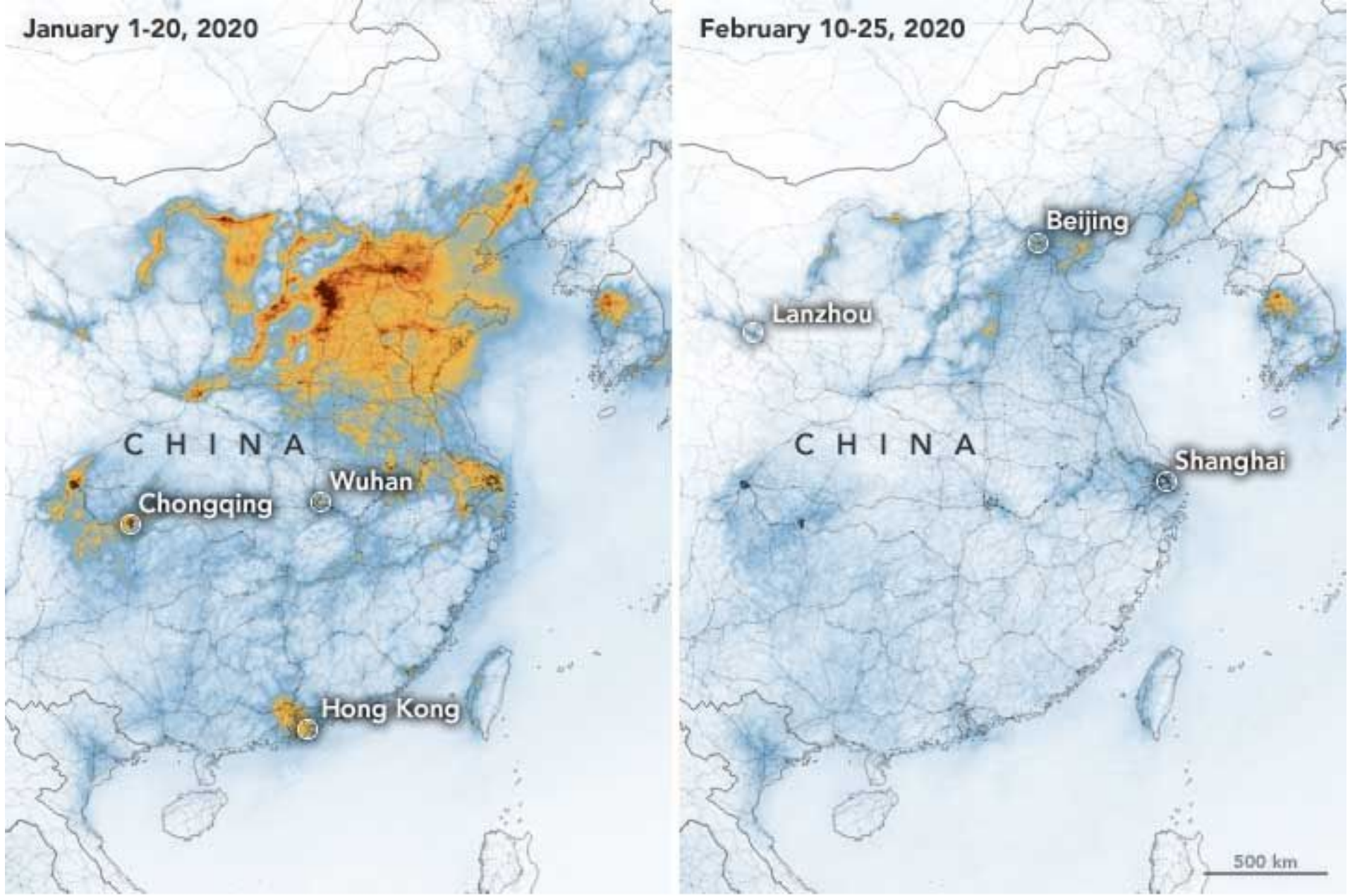
2021 8,7% (recuperação parcial)

Latest World Economic Outlook Growth Projections

The COVID-19 pandemic will severely impact growth across all regions.

(real GDP, annual percent change)	2019	PROJECTIONS 2020	2021
World Output	**2.9**	**-3.0**	**5.8**
Advanced Economies	**1.7**	**-6.1**	**4.5**
United States	2.3	-5.9	4.7
Euro Area	1.2	-7.5	4.7
Germany	0.6	-7.0	5.2
France	1.3	-7.2	4.5
Italy	0.3	-9.1	4.8
Spain	2.0	-8.0	4.3
Japan	0.7	-5.2	3.0
United Kingdom	1.4	-6.5	4.0
Canada	1.6	-6.2	4.2
Other Advanced Economies	1.7	-4.6	4.5
Emerging Markets and Developing Economies	**3.7**	**-1.0**	**6.6**
Emerging and Developing Asia	5.5	1.0	8.5
China	6.1	1.2	9.2
India	4.2	1.9	7.4
ASEAN-5	4.8	-0.6	7.8
Emerging and Developing Europe	2.1	-5.2	4.2
Russia	1.3	-5.5	3.5
Latin America and the Caribbean	0.1	-5.2	3.4
Brazil	1.1	-5.3	2.9
Mexico	-0.1	-6.6	3.0
Middle East and Central Asia	1.2	-2.8	4.0
Saudi Arabia	0.3	-2.3	2.9
Sub-Saharan Africa	3.1	-1.6	4.1
Nigeria	2.2	-3.4	2.4
South Africa	0.2	-5.8	4.0
Low-Income Developing Countries	5.1	0.4	5.6

Source: IMF, *World Economic Outlook*, April 2020


January 1-20, 2020
February 10-25, 2020
CHINA
Wuhan
Chongqing
Hong Kong
Beijing
Lanzhou
CHINA
Shanghai
500 km
Mean Tropospheric NO2 Density (µmol/m2)
0
125
250
375
≥500

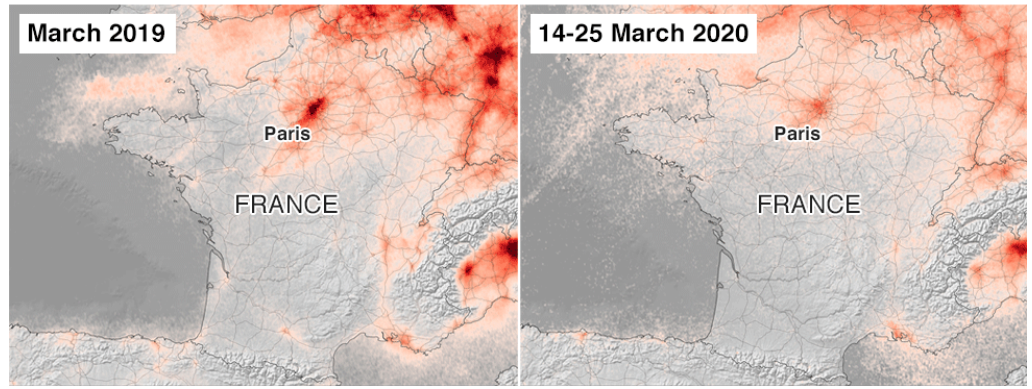
Satellite images show pollution clear amid lockdown

Nitrogen dioxide levels in the lower atmosphere

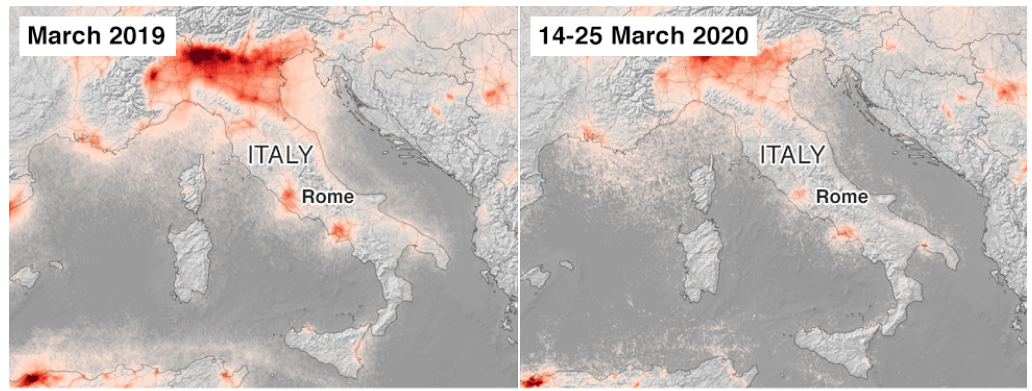
Density of Nitrogen dioxide

Low — High

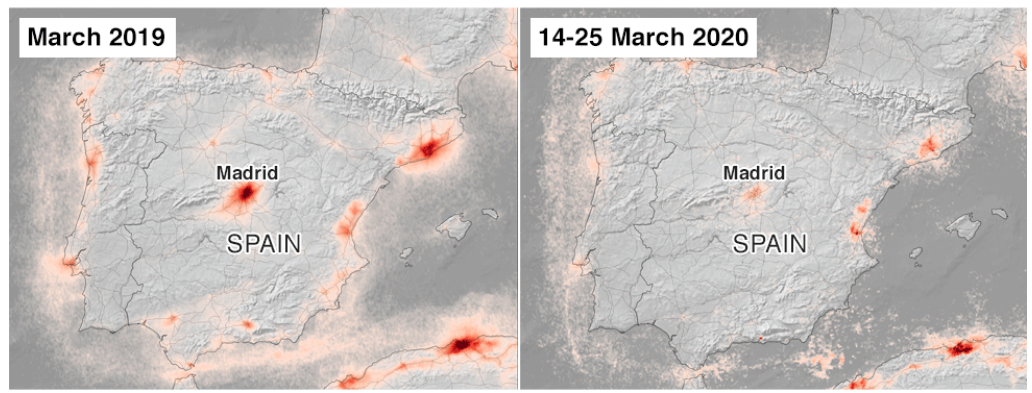
France



Italy



Spain



Source: ESA/Copernicus, 27 March 2020

BBC

Pre-crisis global GDP estimates suggested CO2 emissions would rise 1% or 470MtCO2.

The pandemic could cause emissions cuts this year in the region of 1,600m tonnes of CO2 (MtCO2). Although this number is necessarily uncertain, countries and sectors not yet included in the analysis can be expected to add to the total.

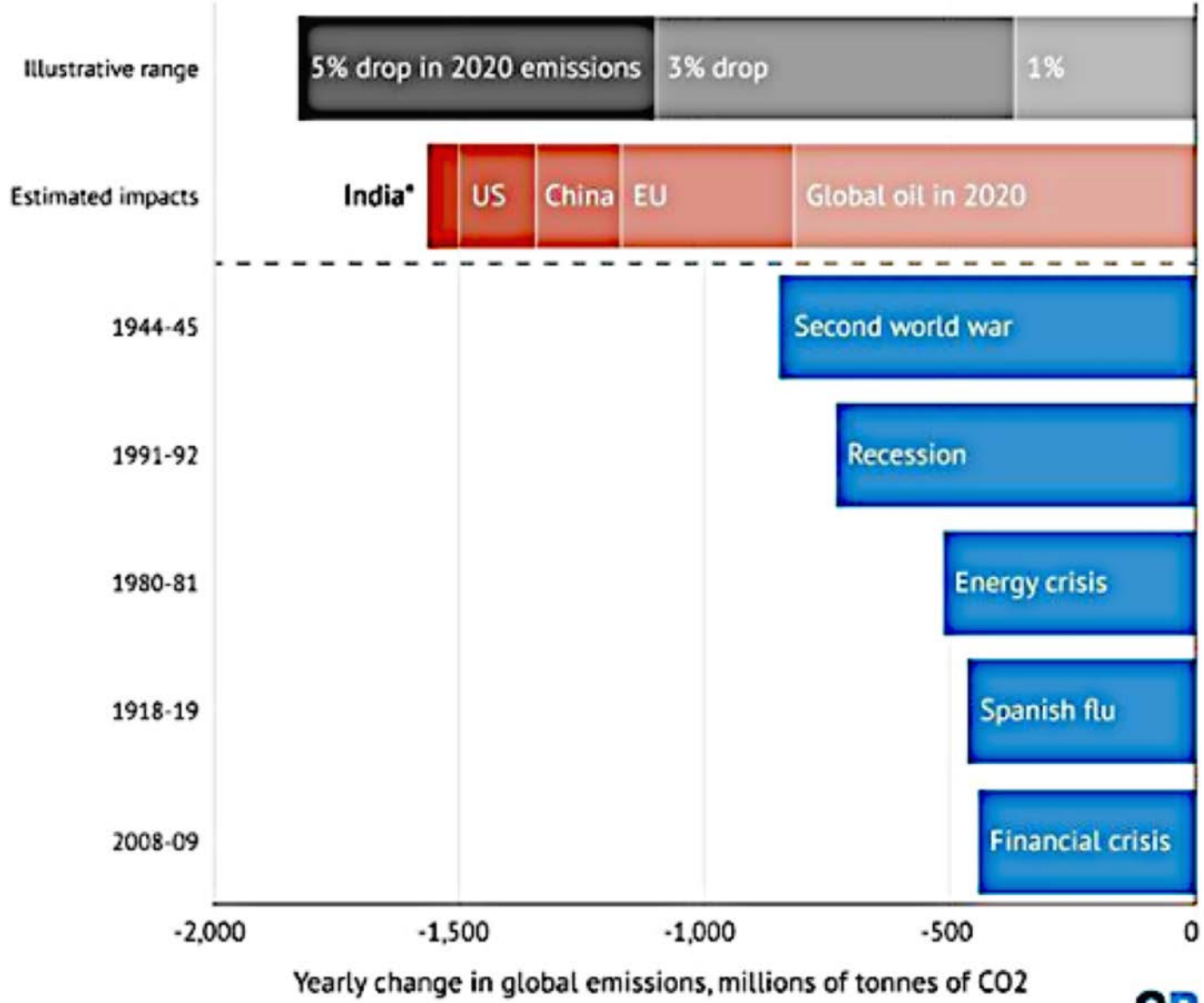
Nevertheless, this tentative estimate is equivalent to more than 4% of the global total in 2019. As a result, the coronavirus crisis could trigger the largest ever annual fall in CO2 emissions in 2020, more than during any previous economic crisis or period of war.

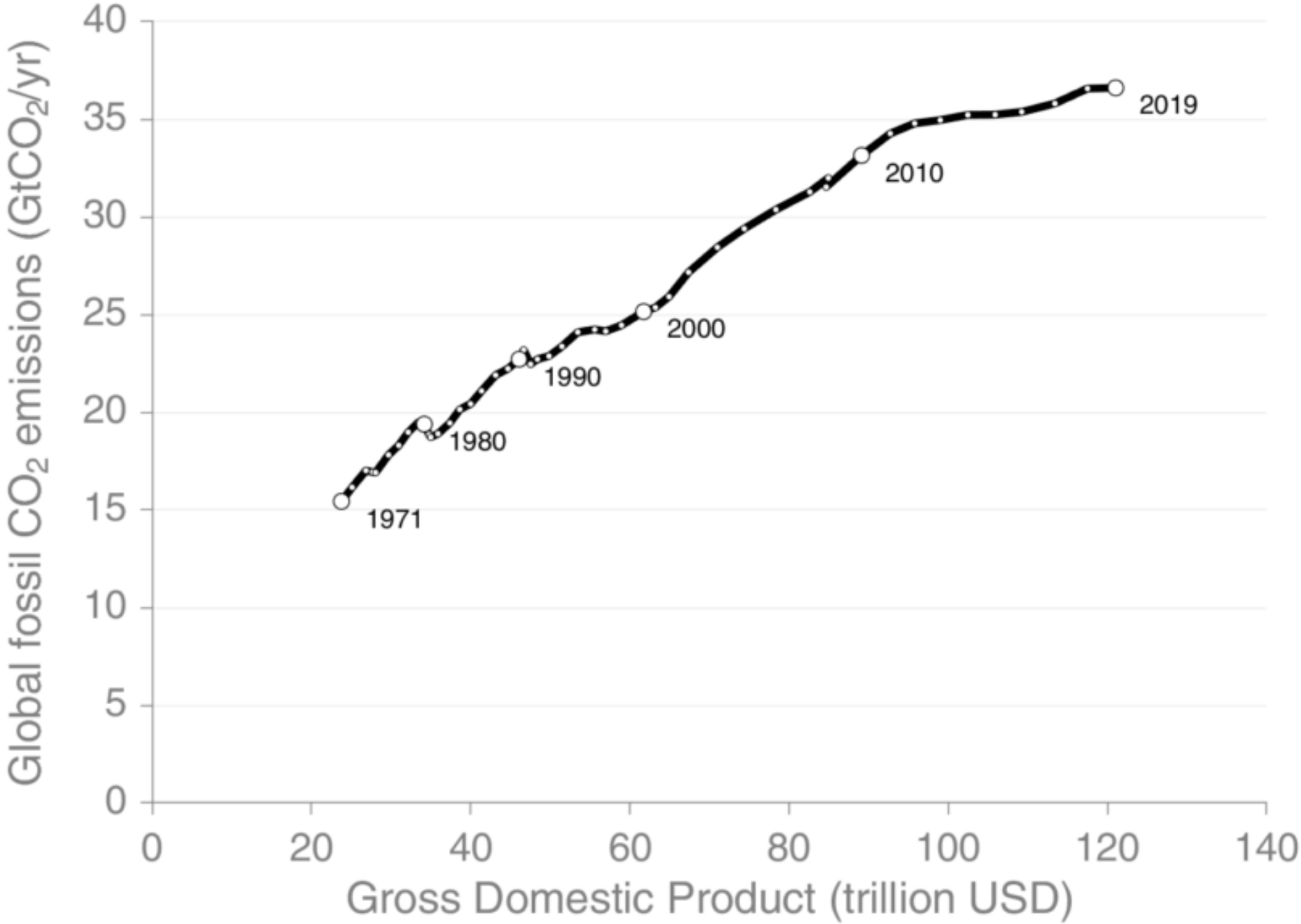
Even this would not come close to bringing the 1.5C global temperature limit within reach. Global emissions would need to fall by more than 6% every year this decade – more than 2,200MtCO2 annually – in order to limit warming to less than 1.5C above pre-industrial temperatures.

To put it another way, atmospheric carbon levels are expected to increase again this year, even if CO2 emissions cuts are greater still. Rising CO2 concentrations – and related global warming – will only stabilise once annual emissions reach net-zero.

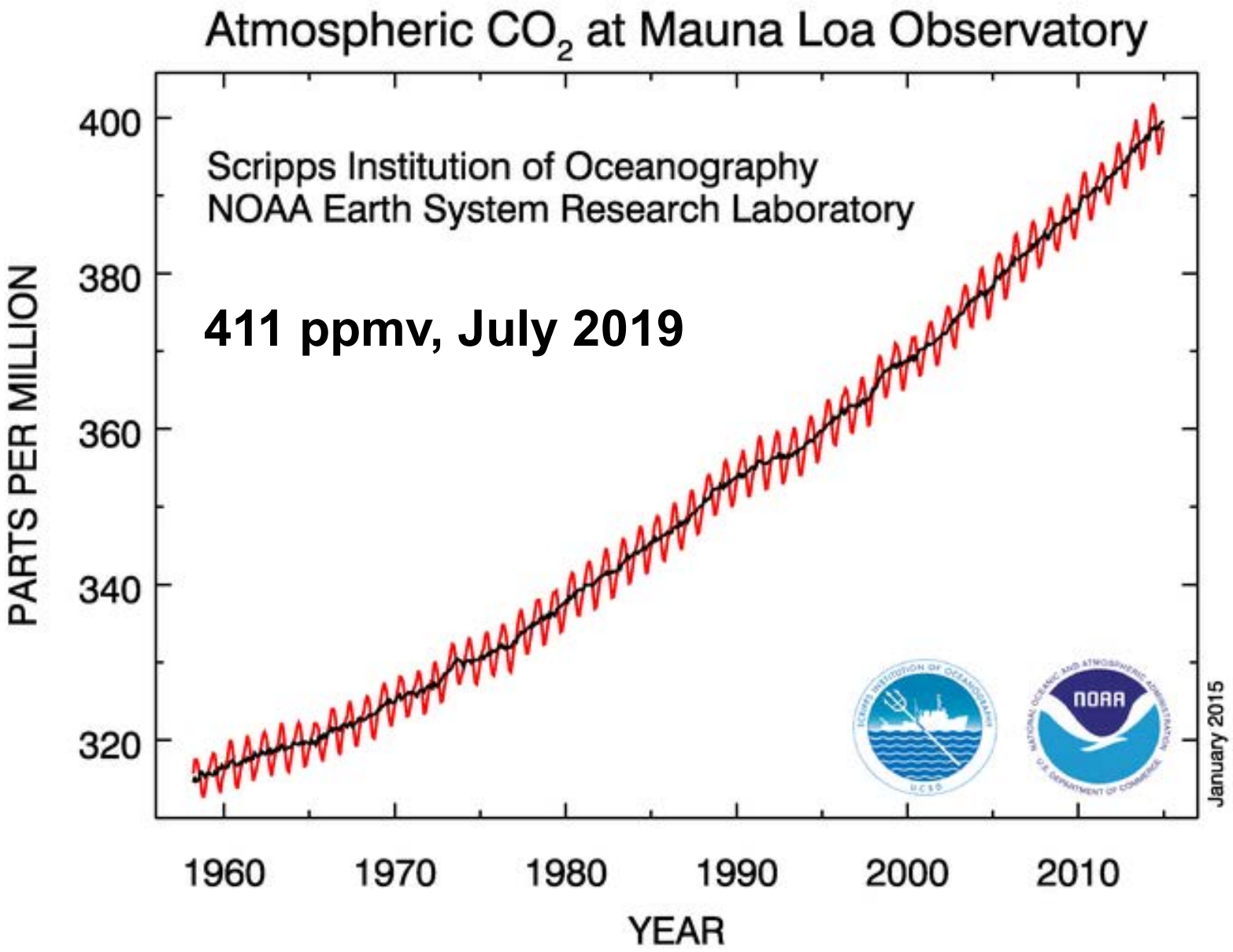
Coronavirus could trigger the largest ever annual fall in CO2 emissions

Pre-crisis GDP estimates suggested CO2 would rise by more than 1% in 2020 (470MtCO2)



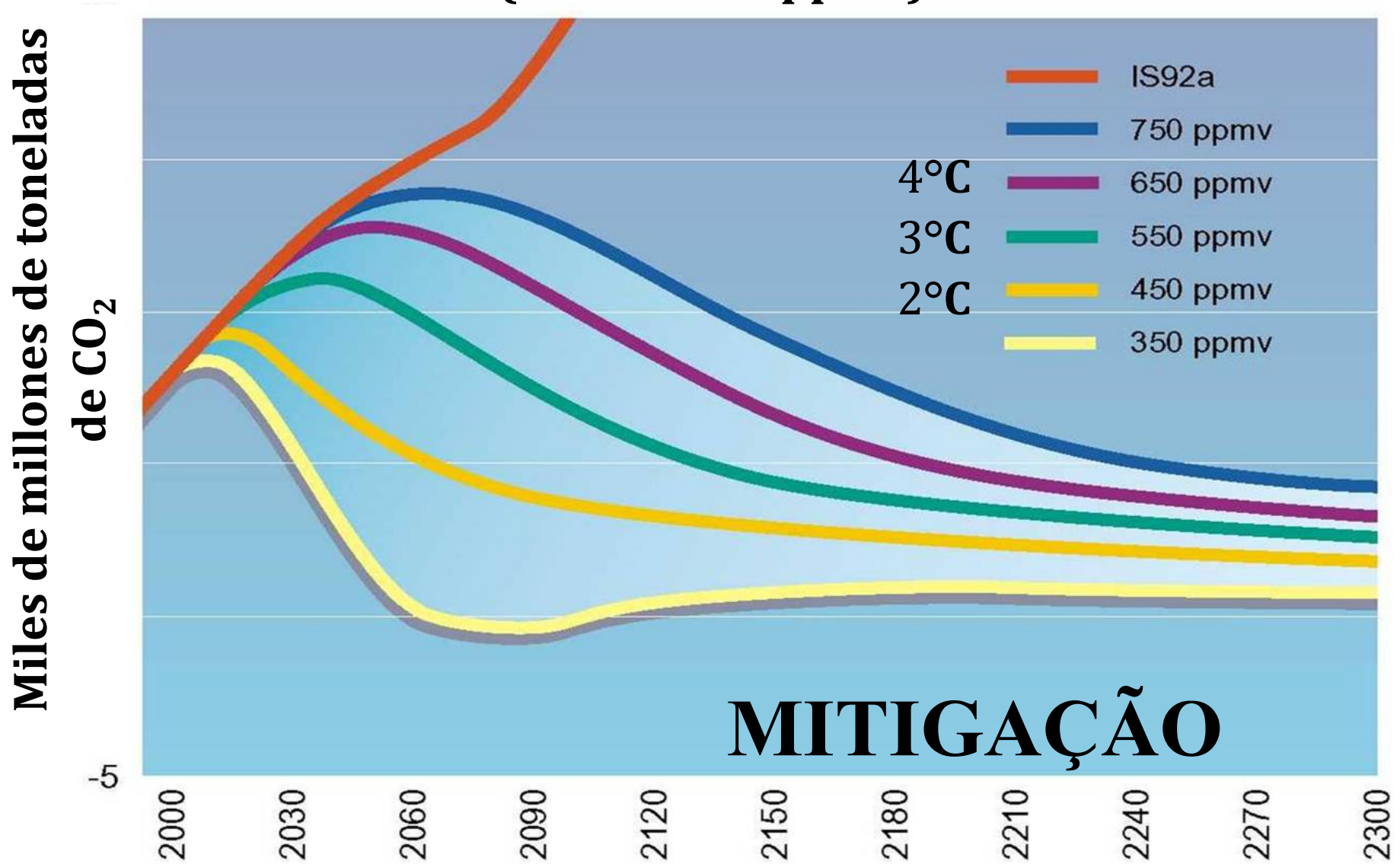

Global fossil CO_2 emissions ($GtCO_2$/yr)
0
5
10
15
20
25
30
35
40
0
20
40
60
80
100
120
140
Gross Domestic Product (trillion USD)
1971
1980
1990
2000
2010
2019

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



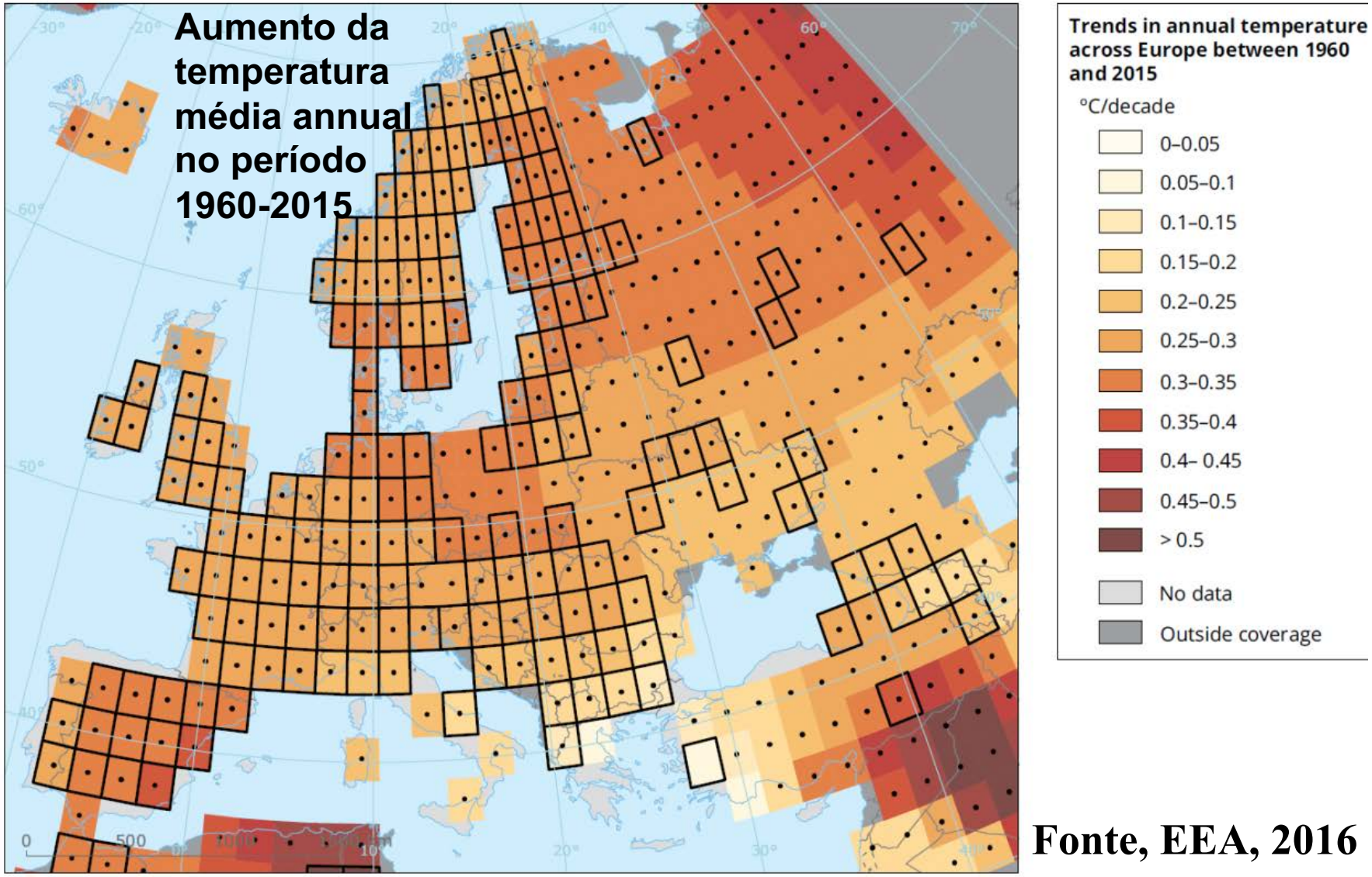
Trajectórias das emissões de CO_2e

(2005 = 380 ppmv)



Fuente: Stern Review; World Resources Institute

Map 3.3 Trends in annual temperature across Europe between 1960 and 2015



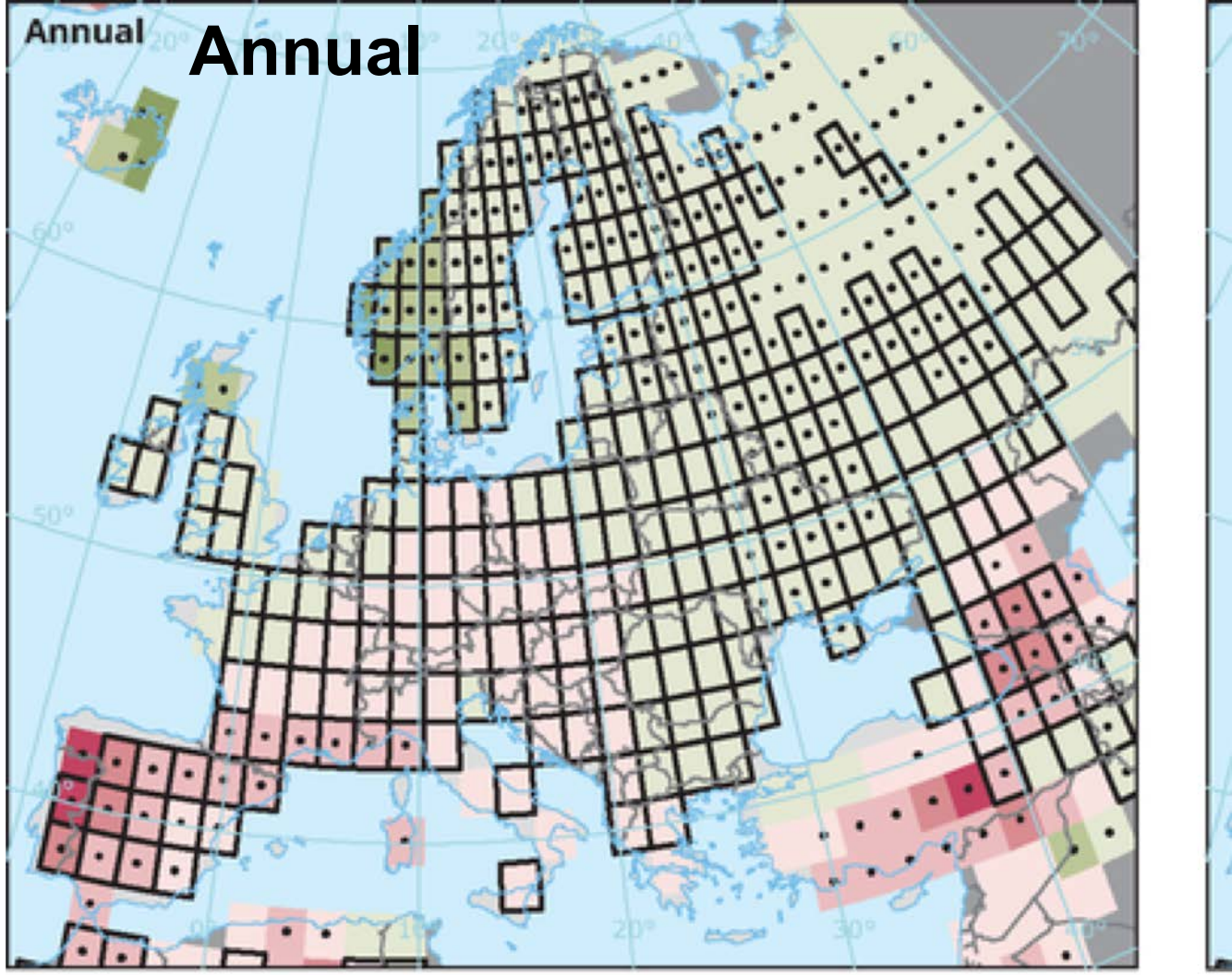
Fonte, EEA, 2016

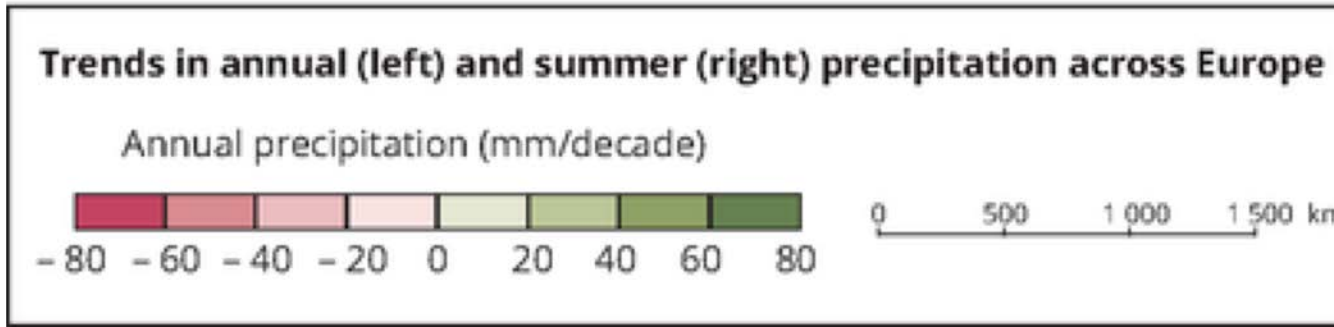
Note: Grid boxes outlined with solid black lines contain at least three stations and so are likely to be more representative of the grid box than those that are not outlined. Significance (at the 5 % level) of the long-term trend is shown by a black dot (which is the case for almost all grid boxes in this map).

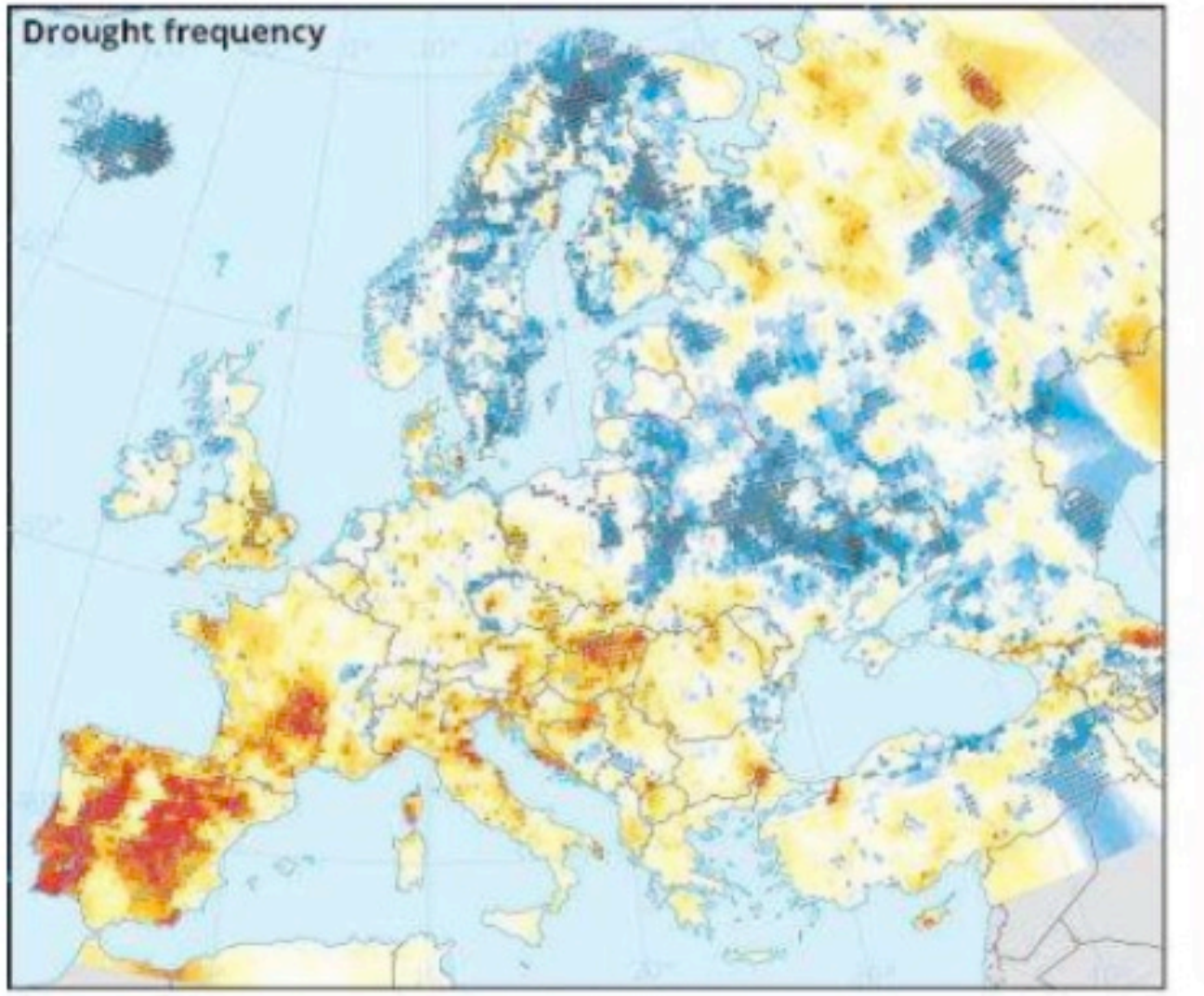
Source: EEA and UK Met Office, based on the E-OBS dataset (updated from Haylock et al., 2008).

Change in annual precipitation in the period of 1960 to 2015. In Portugal a decrease of about 30mm per decade, 150mm in 50 years

Source: EEA, European Environmental Agency, 2016







Drought frequency
(events/decade)

+ 0.7

0

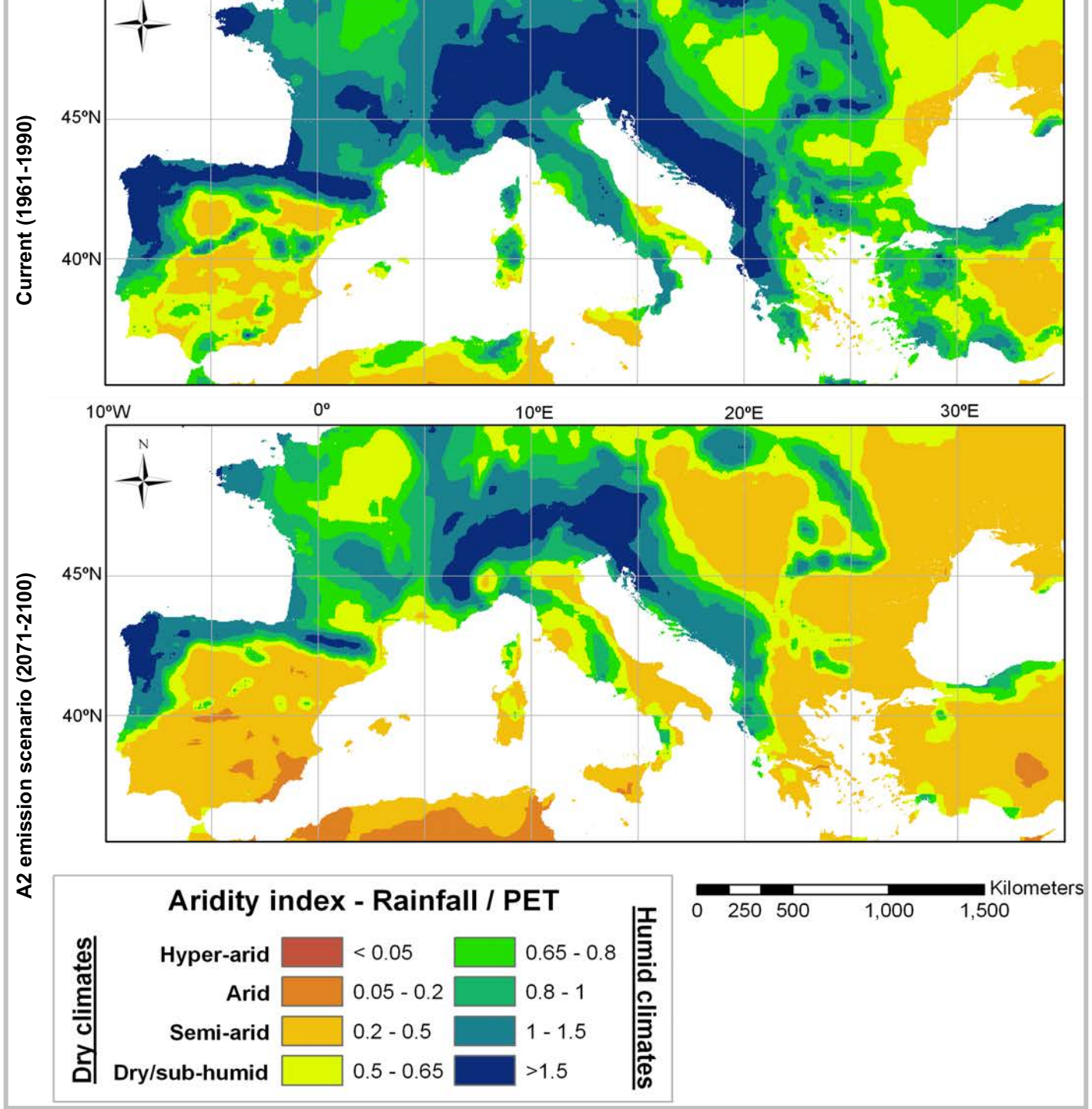
– 0.7

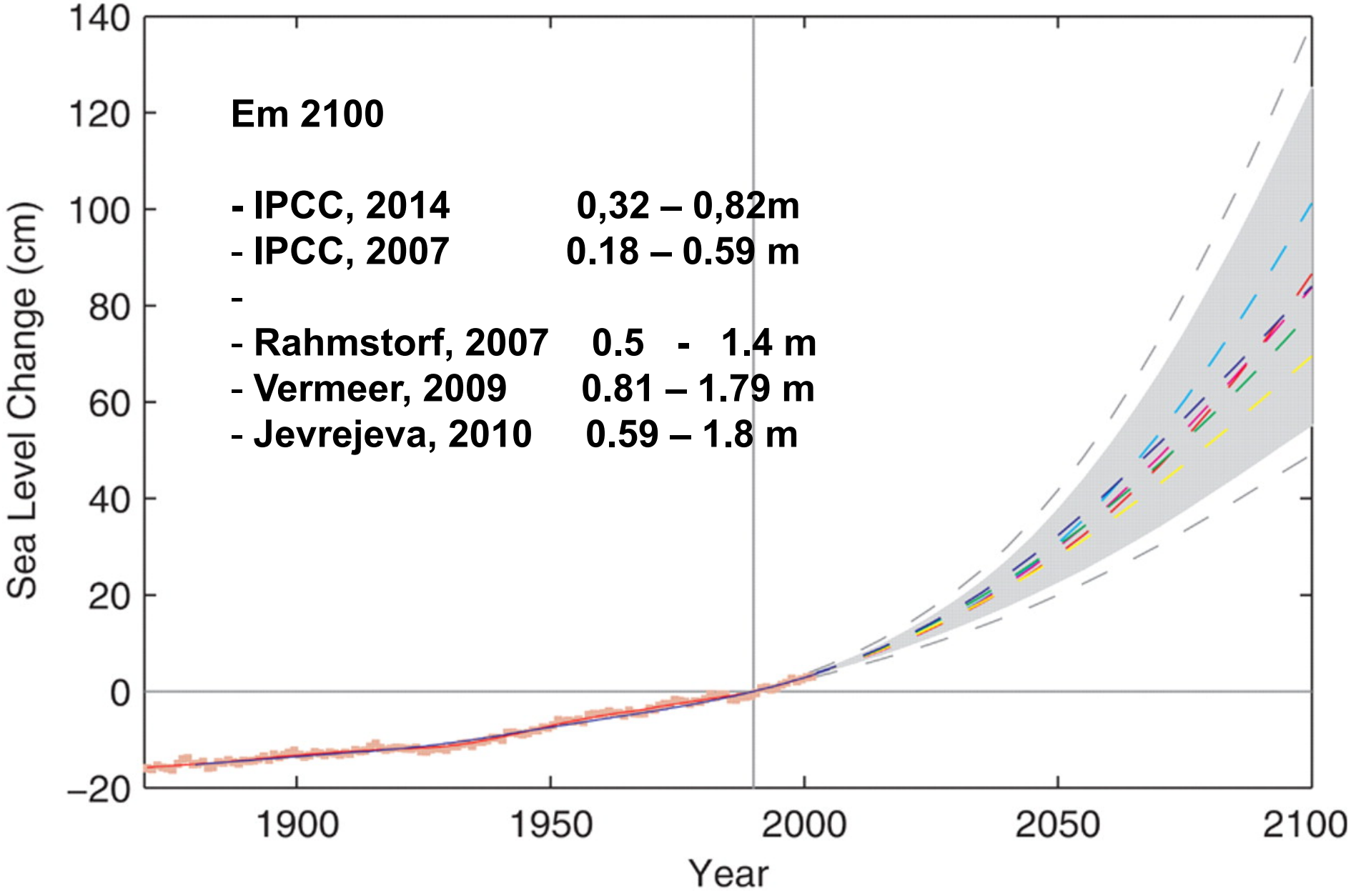
1950 - 2012

Fonte:
JRC (2016)

1961-1990

2071-2100





Rahmstorf, 2007

Definições do IPCC

Adaptação

A adaptação é um processo de ajustamento ao clima actual e futuro e aos seus efeitos. Nos sistemas humanos a adaptação procura moderar os impactos gravosos e explorar as oportunidades benéficas. Nos sistemas naturais a intervenção humana pode facilitar o ajustamento ao clima futuro.

Vulnerabilidade

É o grau com que um sistema é susceptível a, ou incapaz de lidar com os efeitos adversos das *mudanças climáticas*, incluindo a *variabilidade climática* e os extremos. A vulnerabilidade é uma função do carácter, magnitude, e taxa de mudança e variação do clima à qual um sistema é exposto, a sua *sensibilidade* e a sua capacidade de adaptação

ADAPTAÇÃO

1 - Para a adaptação ao clima futuro é necessário começar por ter cenários climáticos do clima futuro

2 – Com os cenários climáticos futuros podemos avaliar os impactos nos deferentes setores socioeconómicos e sistemas biogeofísicos:

- **Recursos hídricos**
- **Agricultura**
- **Florestas**
- **Biodiversidade**
- **Zonas costeiras**
- **Saúde**
- **Turismo**
- **Zonas urbanas, etc**

3 – Conhecendo os impactos e a capacidade de adaptação podemos avaliar as vulnerabilidades.

4 – Com o conhecimento dos impactos e das vulnerabilidades podemos identificar medidas de adaptação e desenhar uma estratégia de adaptação