

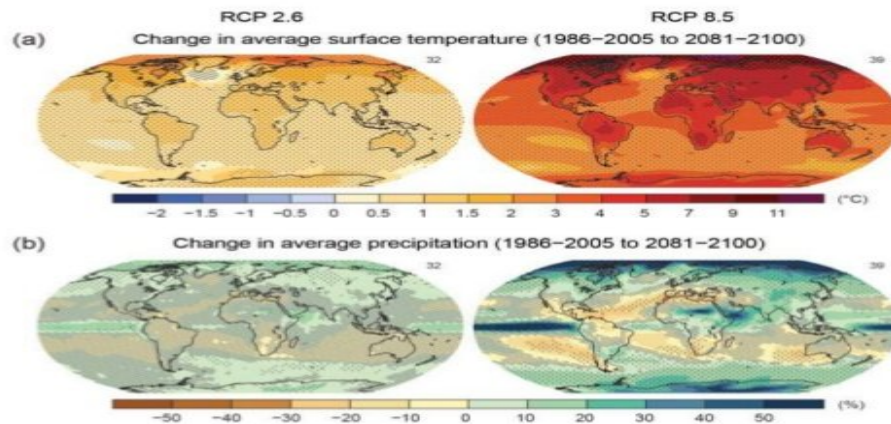
Clima, biodiversità, inquinamento: trappole globali da evitare

Luca Mercalli – Società Meteorologica Italiana - www.nimbus.it

Figure SPM.8a,b

Maps of CMIP5 multi-model mean results

All Figures © IPCC 2013



IPCC AR5 Working Group I
Climate Change 2013: The Physical Science Basis

ipcc
INTERGOVERNMENTAL PANEL ON climate change
wmo unep



ANTÓNIO GUTERRES

United Nations Secretary-General



“

Today's IPCC Working Group 1 Report is a **code red** for humanity.”

9 AUGUST 2021



EMBARGOED - Do not publish, quote or distribute before 10 a.m. Central European Summer Time (08:00 ICT/GMT-4 a.m. EDT) on Monday 9 August 2021.

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INTERGOVERNMENTAL PANEL ON climate change

Climate Change 2021

The Physical Science Basis

Summary for Policymakers



This Summary for Policymakers was formally approved at the 14th Session of Working Group I of the IPCC and accepted by the 56th Session of the IPCC, Virtual meeting, 6 August 2021. SUBJECT TO CORRECTION

WGI

Working Group I contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change



Sixth Assessment Report
SYNTHESIS REPORT

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INTERGOVERNMENTAL PANEL ON climate change



Today's IPCC report is a **how-to guide to defuse the climate time-bomb**

#IPCC

#ClimateReport

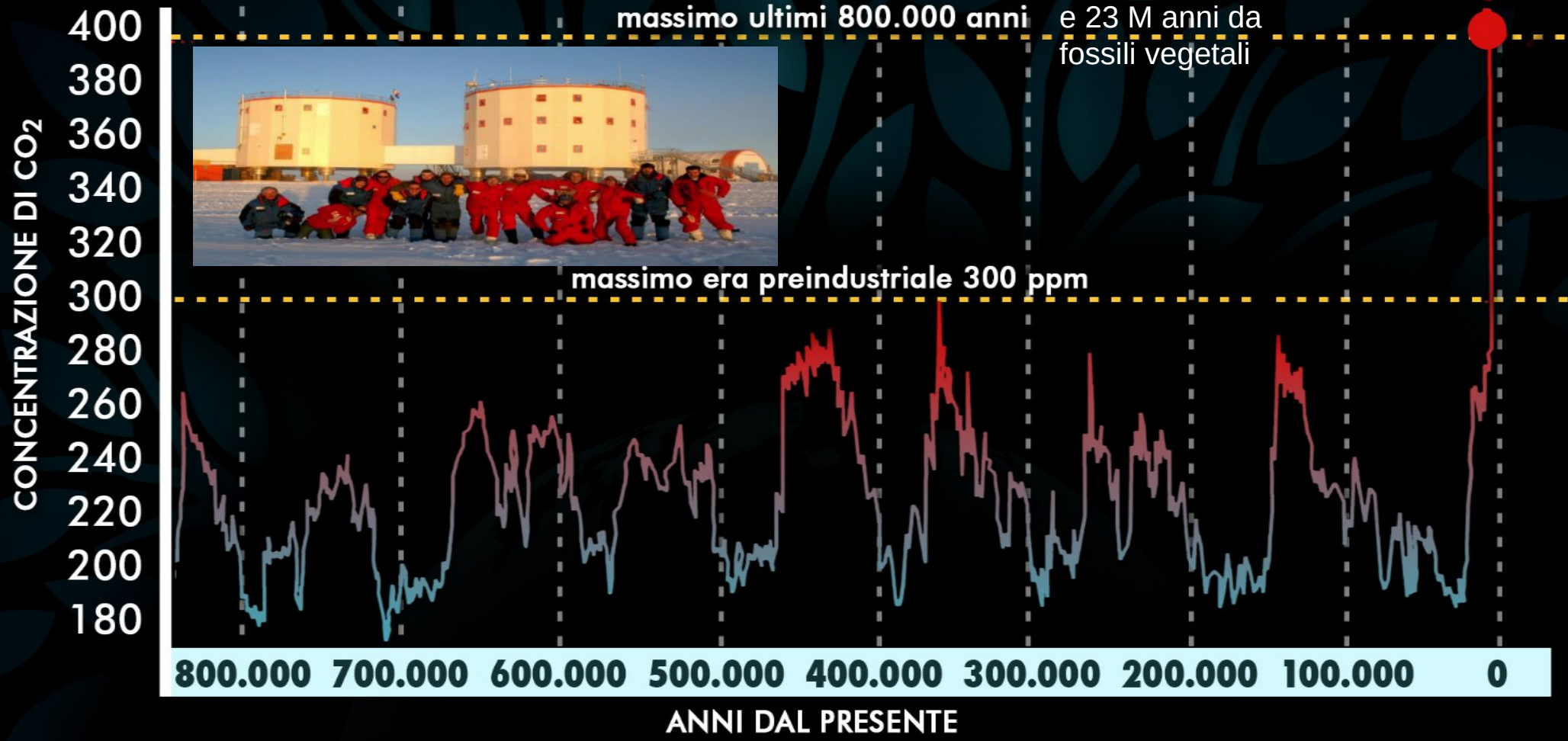
U.S. Mission Photo by Eric Bridiers



A 23 m.y. record of low atmospheric CO₂ - Ying Cui; Brian A. Schubert;
A. Hope Jahren *Geology* (2020) <https://doi.org/10.1130/G47681.1>

fonte: progetto EPICA 423 ppm

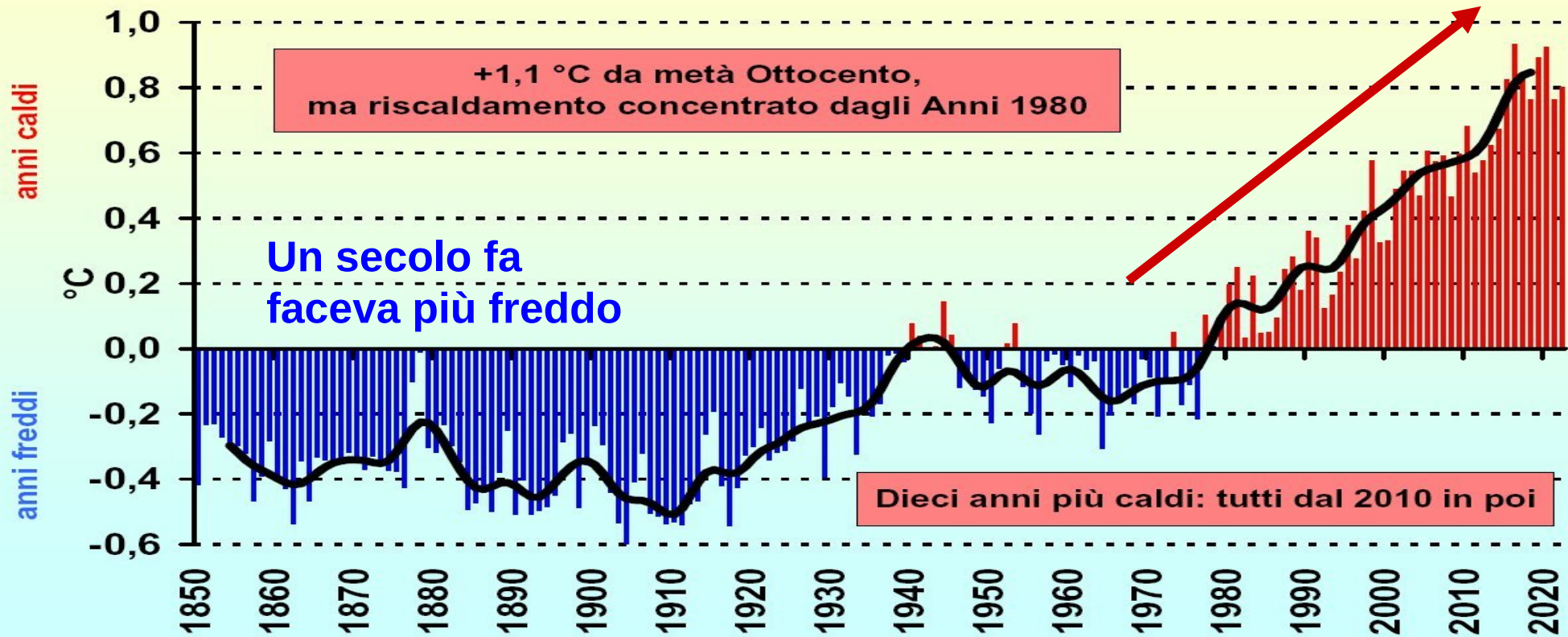
LIVELLO CO₂ NEL TEMPO



Temperatura in aumento su tutto il pianeta: **+1,1°C** nell'ultimo secolo

Anomalie termiche globali 1850-2022
(rispetto a media trentennio 1961-90)
serie MetOffice - Hadley Center

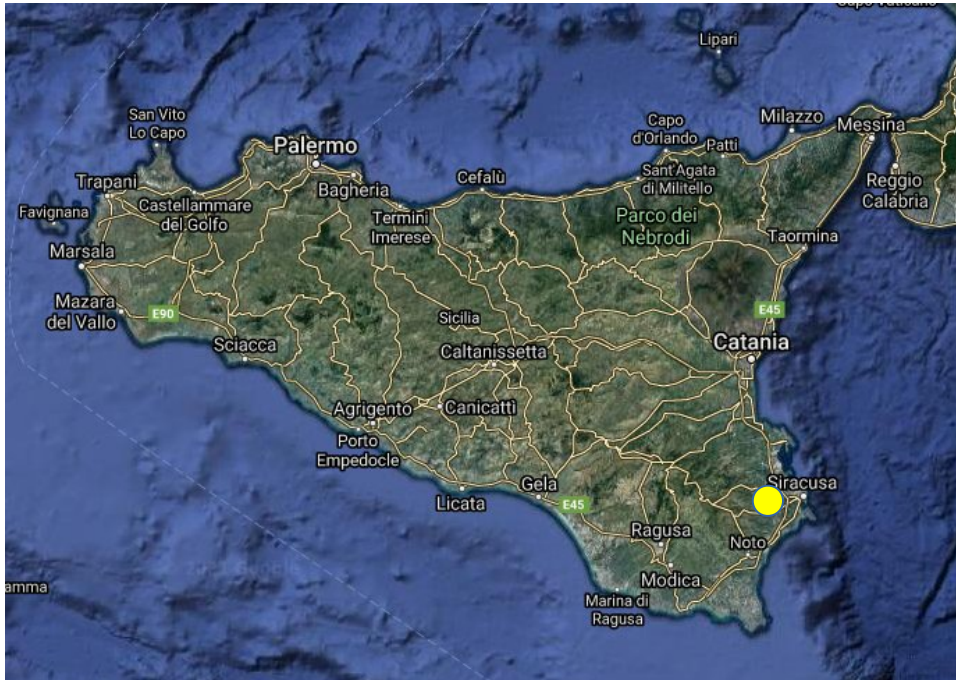
Riscaldamento globale



11 agosto 2021

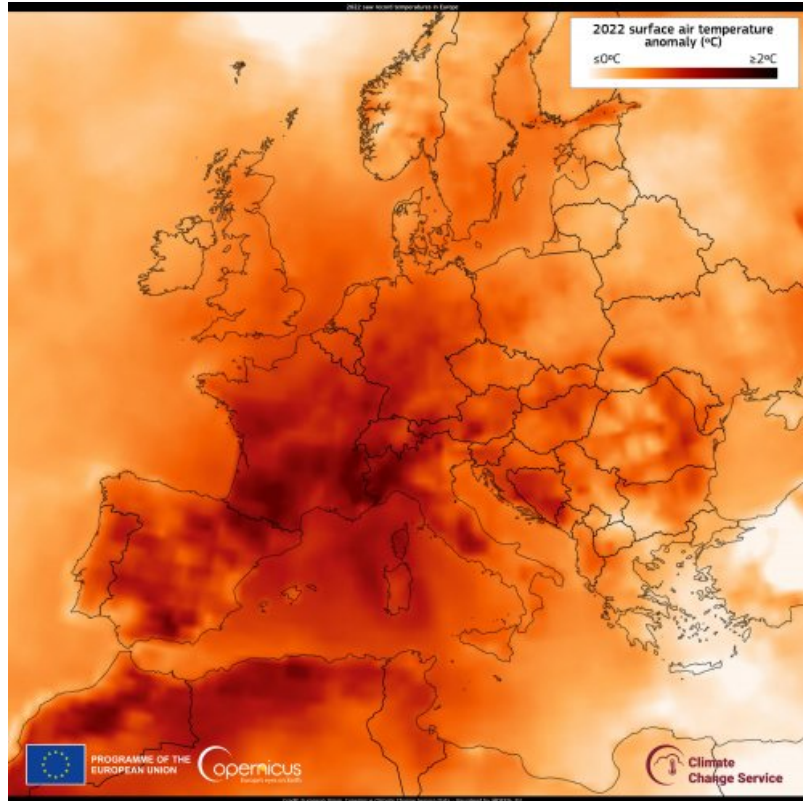
48,8 °C a Floridia, Siracusa

Temperatura massima record in Italia e in Europa in circa 200 anni di osservazioni



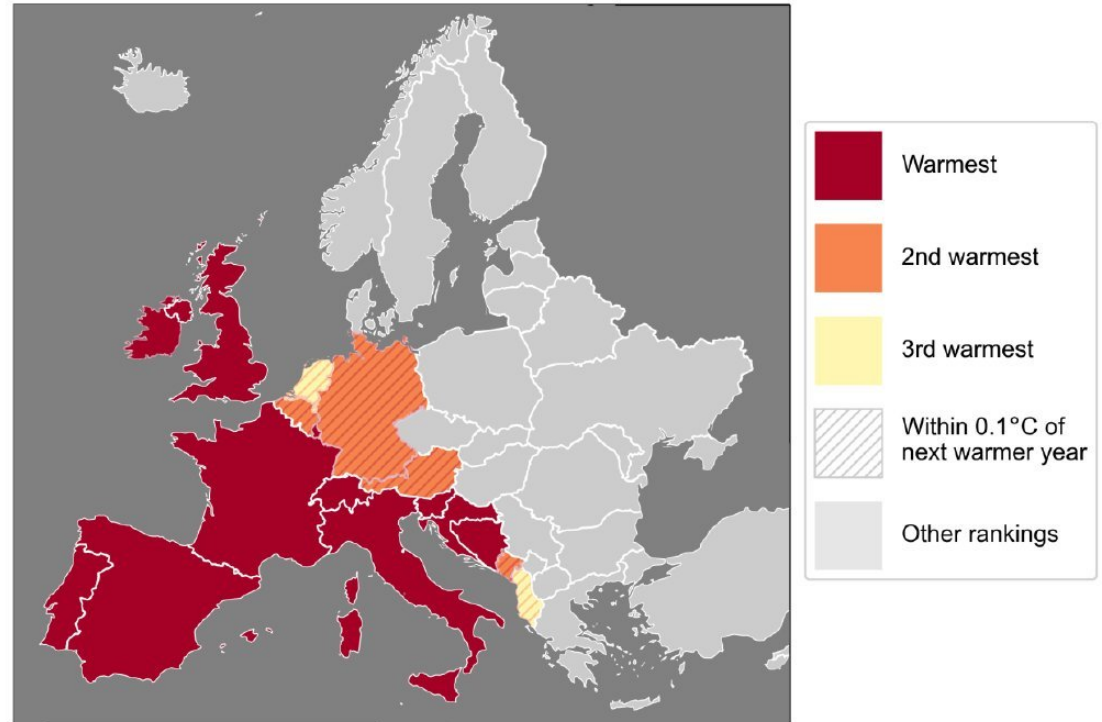
Stazione meteo rete SIAS

2022: l'anno più caldo in Europa W



Ranking of 2022 annual mean temperature by country

Rankings based on ERA5 data for 1950-2022 • Credit: C3S/ECMWF



Stornoway

Met Office

40°C

has been provisionally recorded for the first time ever in the UK.

27

Aberdeen

29

Glasgow

19 luglio 2022

32

Newcastle

26

Belfast

38

Hull

36

Manchester

38

Norwich

37

Birmingham

40

London

33

Cardiff

27

Southampton

Plymouth

State of the Climate in Europe 2022



WEATHER CLIMATE WATER



WORLD METEOROLOGICAL ORGANIZATION

WMO-No. 1320

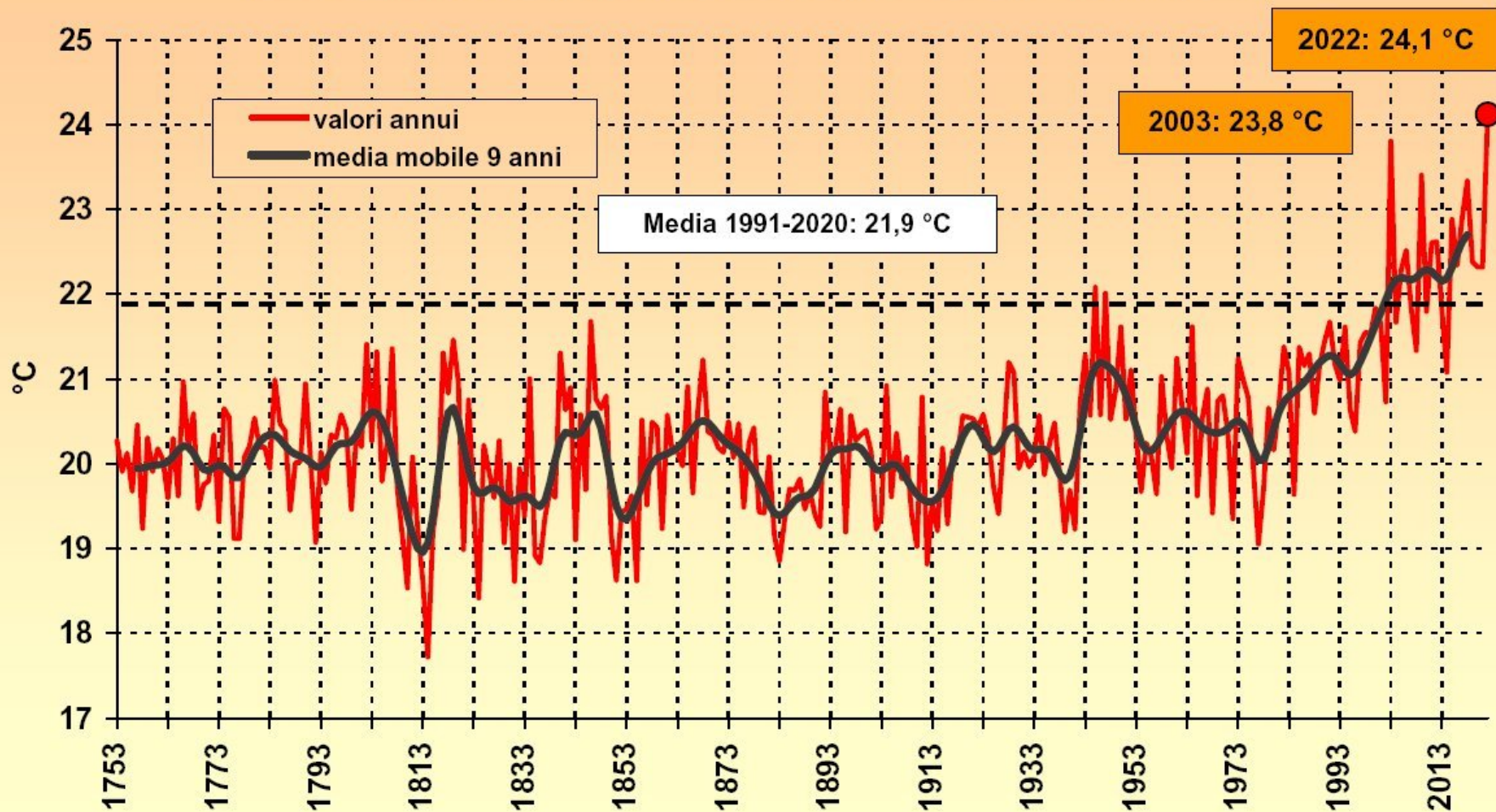


PROGRAMME OF THE EUROPEAN UNION



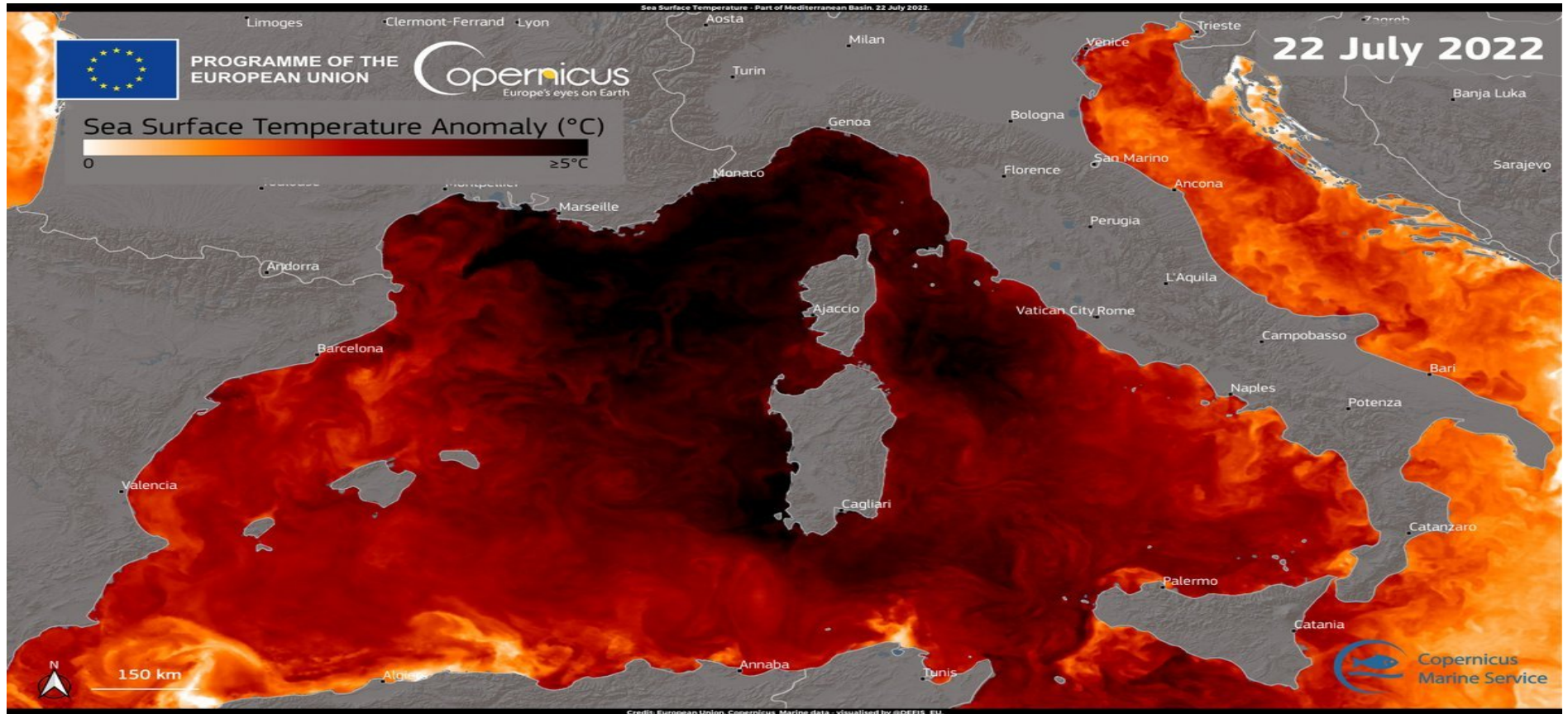
Torino centro - Temperature medie maggio-settembre (°C), 1753 - 2022

(dati attuali ARPA Piemonte; elaborazione dati storici: SMI - www.nimbus.it)



2022, straordinaria ondata di calore “marina” nel Mediterraneo, fino a 5 °C sopra media!

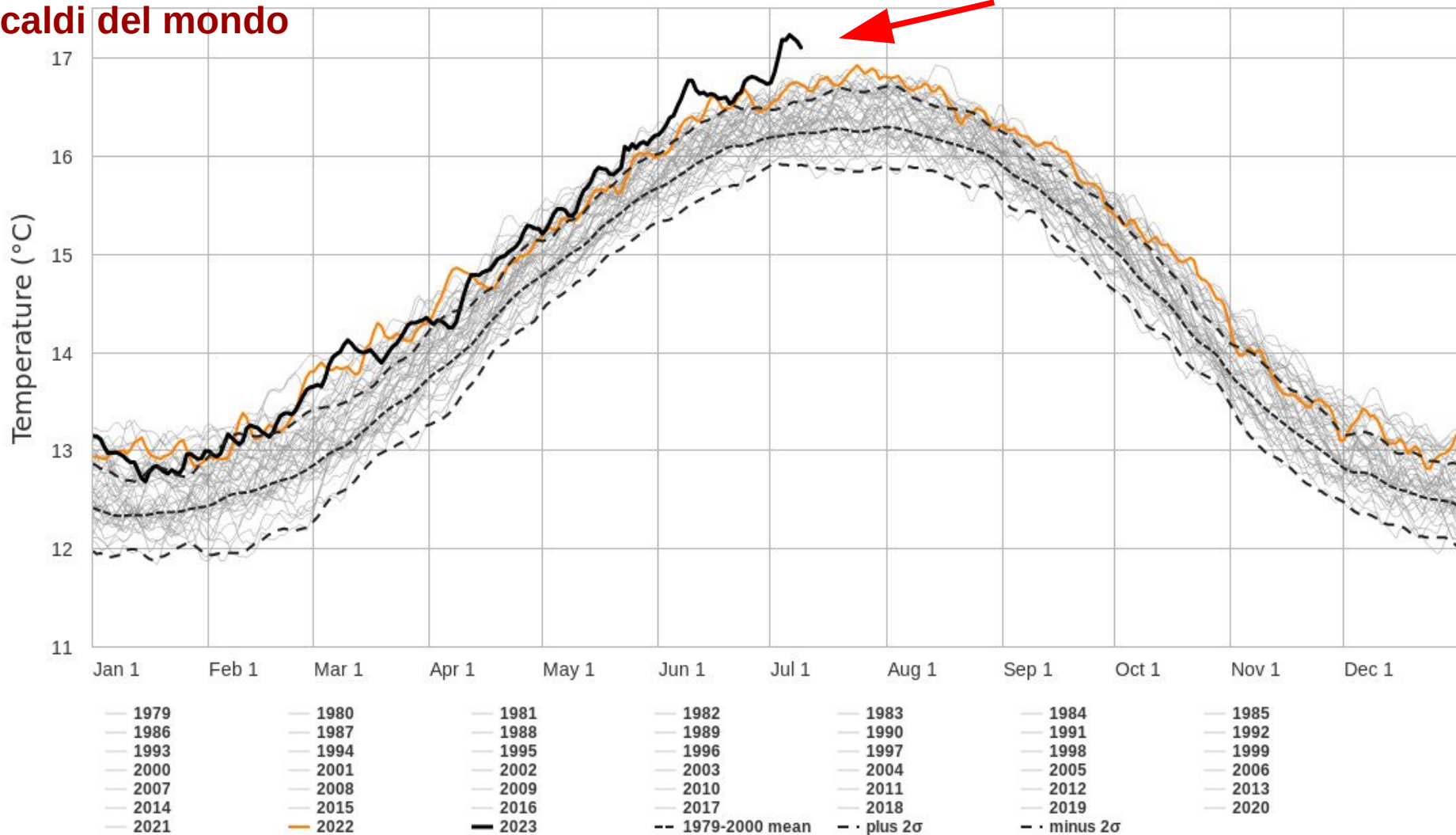
Credit: European Union, Copernicus Sentinel-3 imagery



Luglio 2023: i giorni più caldi del mondo

2m Temperature World (90°S-90°N, 0-360°E)

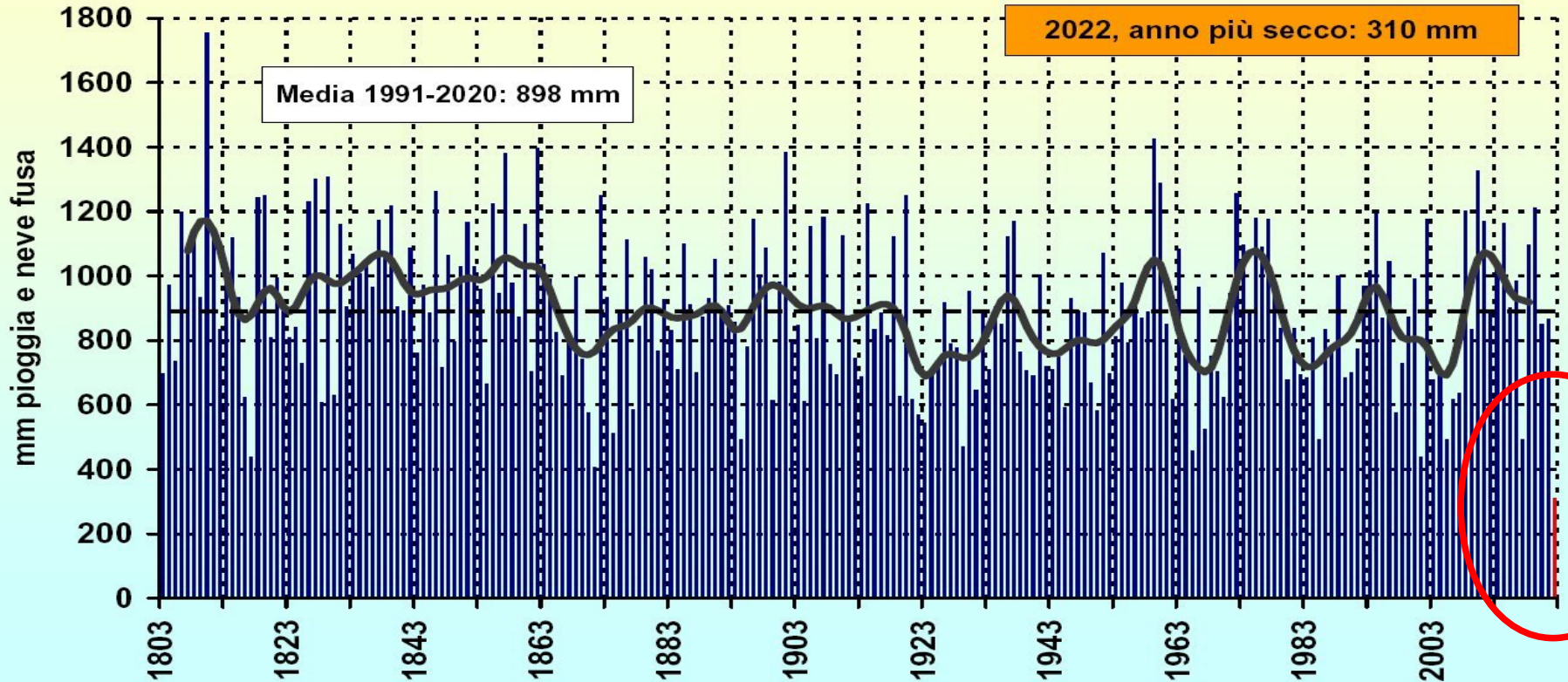
NCEP CFSV2/CFSR | ClimateReanalyzer.org, Climate Change Institute, University of Maine



2022: anno più asciutto in oltre due secoli a Torino



Torino centro - Precipitazioni totali annue (mm) dal 1803 al 2022
(dati attuali: Arpa Piemonte; analisi storica: SMI / Nimbus)

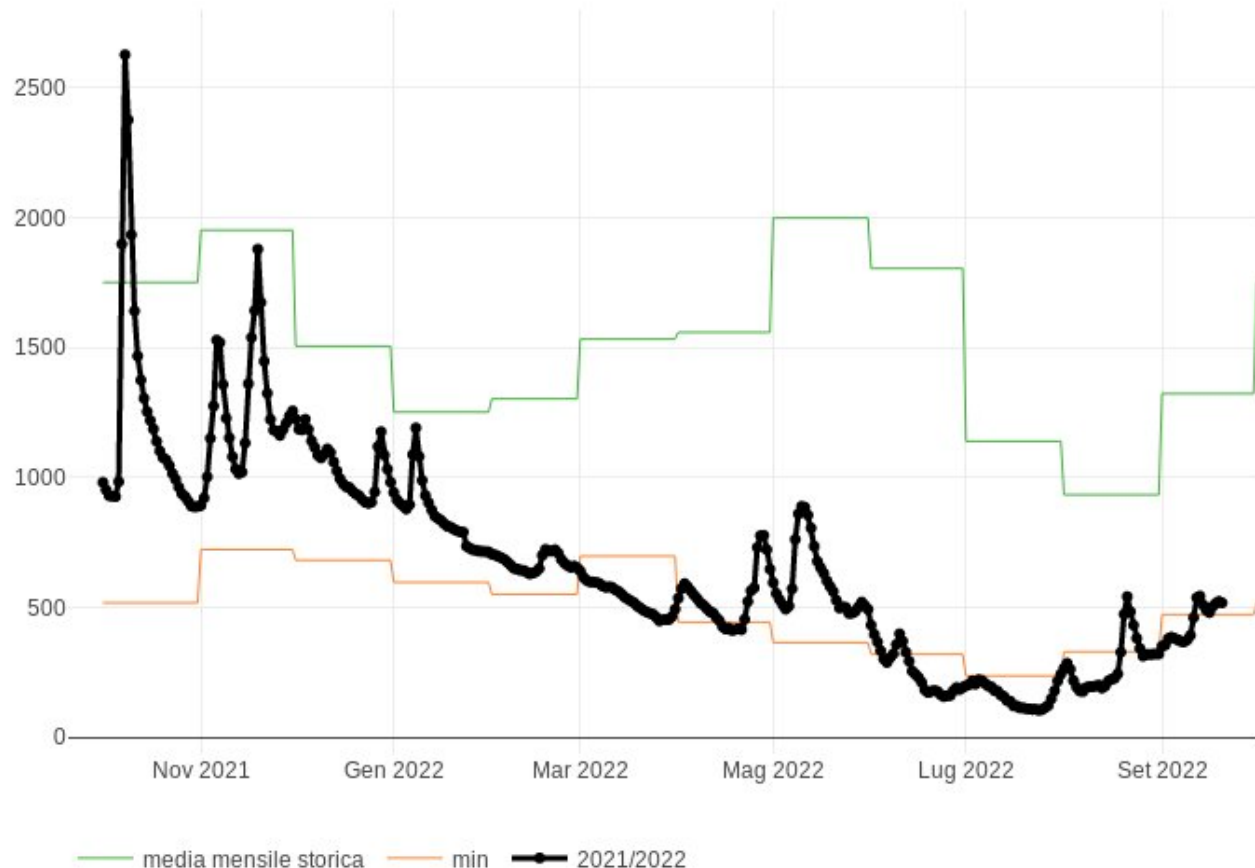


2022: portata media del Po ai minimi storici, 22 luglio = 108 m³/s

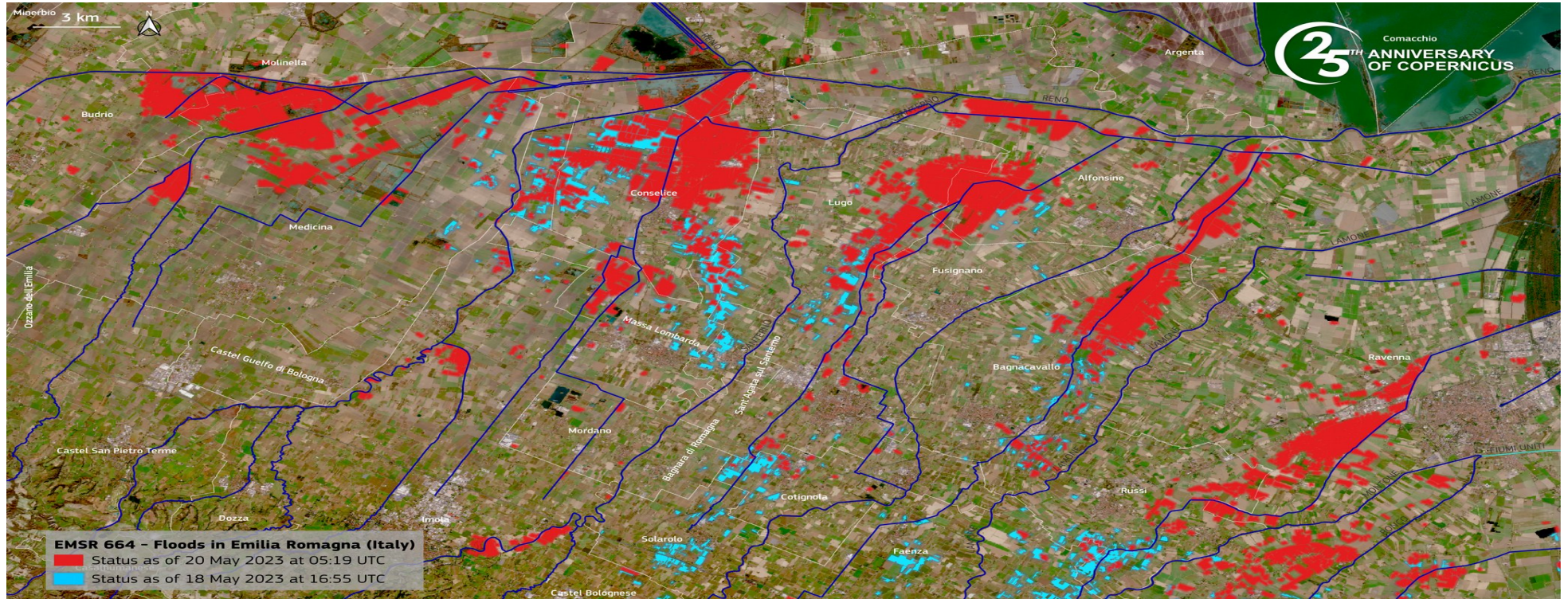


T. Orco in magra primaverile straordinaria nel Torinese (9 aprile 2022)

Portata del fiume Po a Pontelagoscuro



Maggio 2023, improvvisa fine della siccità al Nord Italia, gravi alluvioni in Romagna. Due eventi ravvicinati da 150-250 mm (simili solo al caso del maggio 1939), effetti aggravati dall'interferenza con le crescenti infrastrutture umane.



PROGRAMME OF THE
EUROPEAN UNION



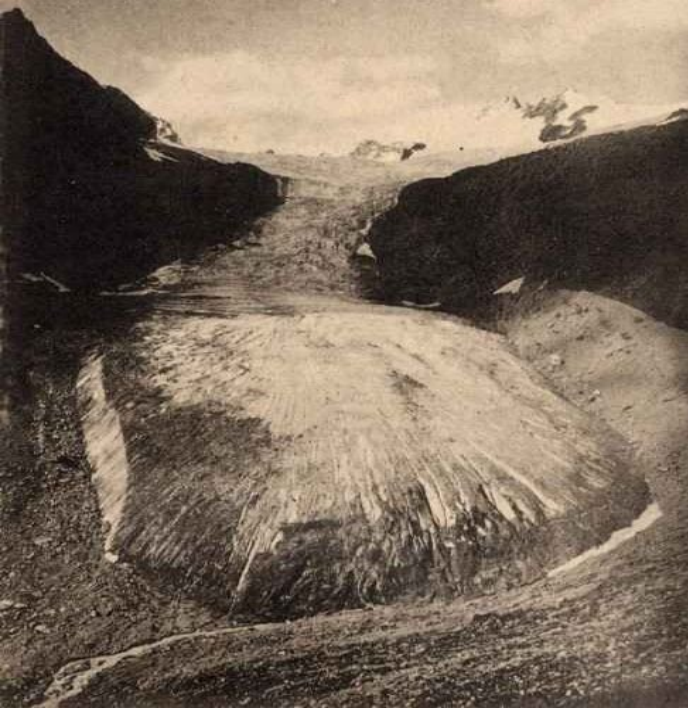
Emergency
Management

**Alluvioni Germania-
Belgio luglio 2021:
243 vittime;
Marche 15 Settembre
2022, 13 vittime;
Ischia, 26 novembre
2022, 12 vittime**



A satellite image of the Mediterranean region, showing the Iberian Peninsula, France, Greece, Turkey, and parts of North Africa. The image is overlaid with a semi-transparent map of the same region. Several large, white plumes of smoke are visible, rising from the coastlines and drifting out over the sea. The smoke plumes are most prominent along the coast of France and Greece, and another large plume is visible over the eastern coast of Turkey. The sea is a deep blue, and the land is a mix of green and brown, indicating vegetation and dry areas respectively. The text is located in the bottom left corner of the image.

**Estate 2021 e 2022: incendi in California, Grecia, Turchia,
Algeria, Siberia, Francia...**



1897
(f. Druetti)



2005
(f. L. Mercalli)



2015
(f. S. Jobard)

Ghiacciaio Pré de Bar (Monte Bianco):

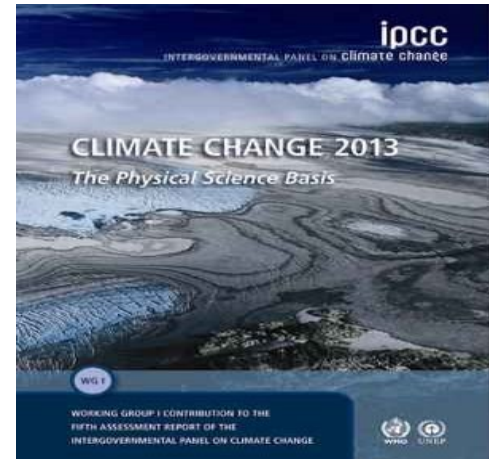
ritiro della fronte di oltre 800 m dal 1897 al 2015

I ghiacciai alpini si sono ridotti di oltre il 60% in un secolo

3 luglio 2022: ghiacciaio Marmolada, collasso glaciale causato da massiccio e anomalo afflusso di acqua di fusione all'interno del ghiacciaio, 11 vittime

Foto CNSAS



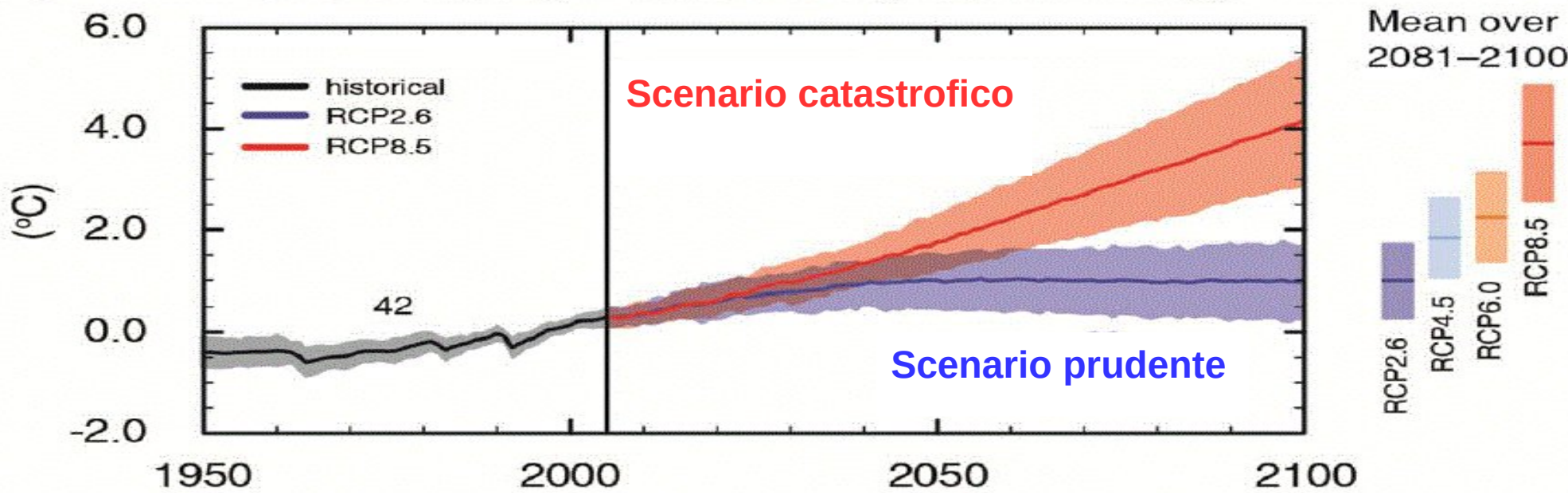


Scenari 5° rapporto IPCC (AR5 2013):

+2°C al 2100 se si applica **Accordo Parigi 2015** (linea azzurra), o fino a **+5°C** in più con business-as-usual (linea rossa)

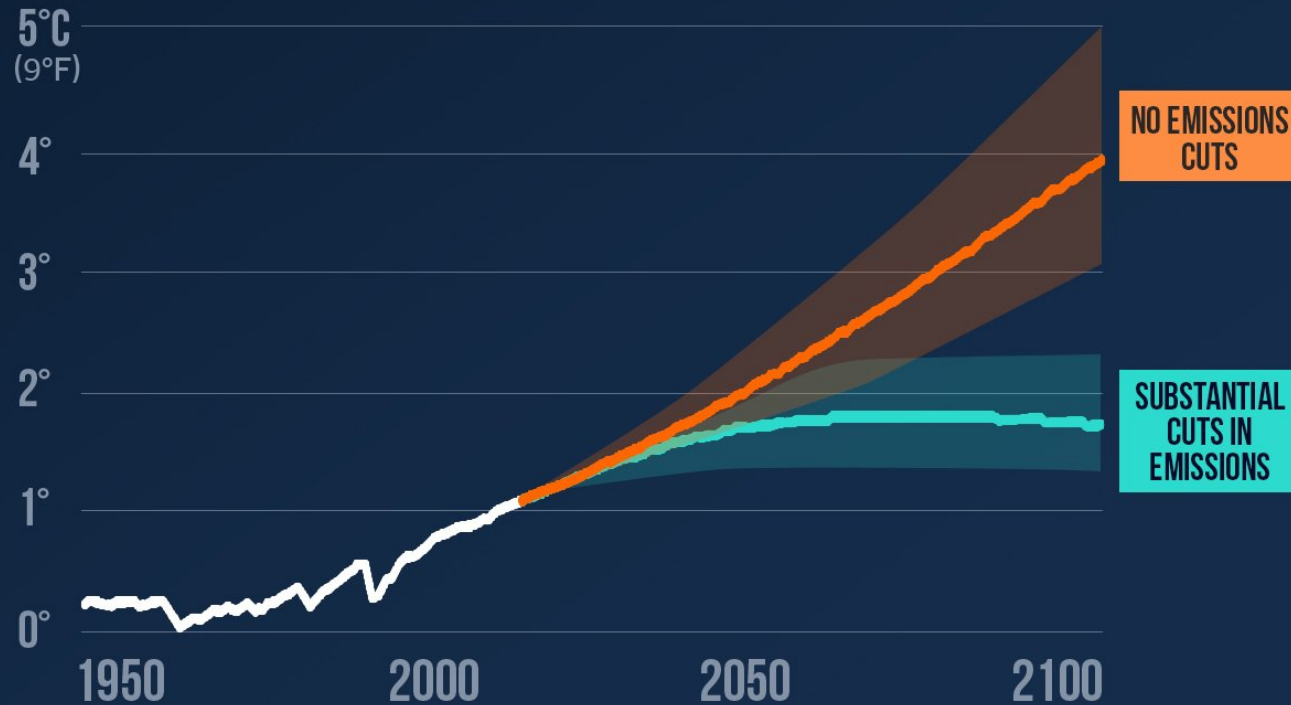
(a)

Global average surface temperature change



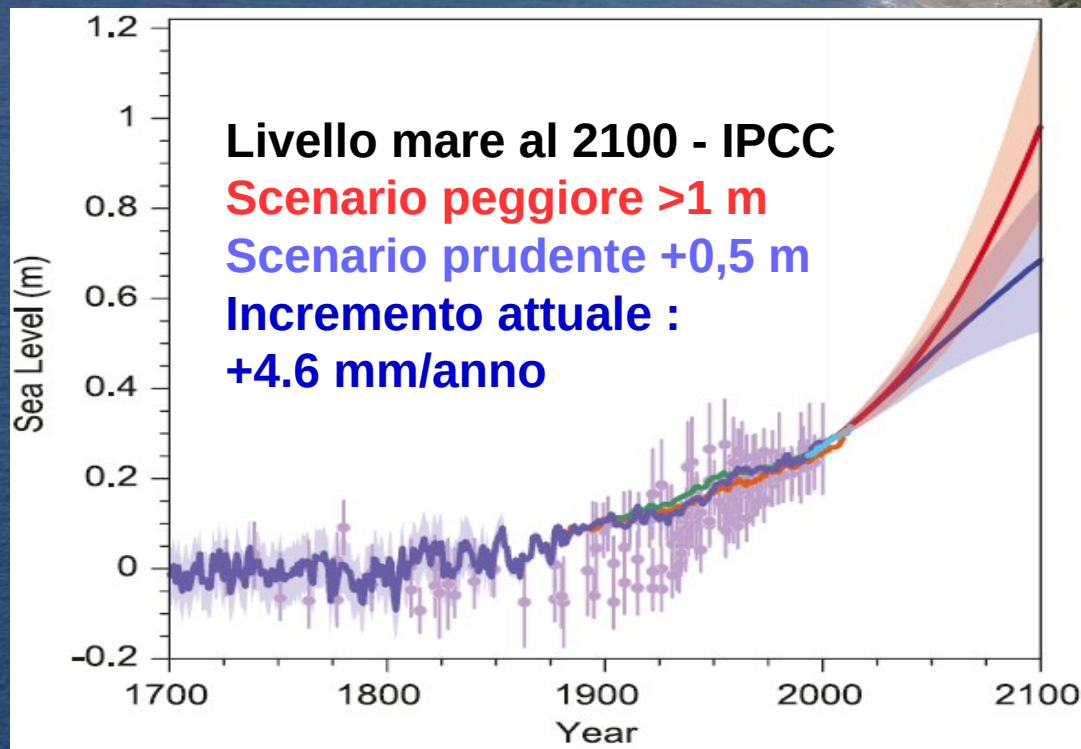
FUTURE TEMPERATURES

WARMING DEPENDS ON CHOICES TODAY



Global surface temperature (°C) anomaly relative to 1850-1900
High warming scenario: SSP3-7, Low warming scenario from SSP1-2.6.
Source: IPCC AR6 WG1

Le zone costiere risentiranno dell'aumento del livello marino, e dovranno essere adeguatamente protette (es: Venezia, delta del Po)



Cambiamento clima e perdita biodiversità

ipcc

INTERGOVERNMENTAL PANEL ON climate change

Climate Change and Land

An IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems

Summary for Policymakers



WG I WG II WG III





**L'inquinamento
di aria, acqua e
suolo minaccia
la nostra salute
e quella delle
generazioni
future**

**POP Persistent
Organic
Pollutants +
Heavy Metals
Toxicity**

Top 10 Global Risks by Severity

Over the next 10 years



■ Economic ■ Environmental ■ Geopolitical ■ Societal ■ Technological

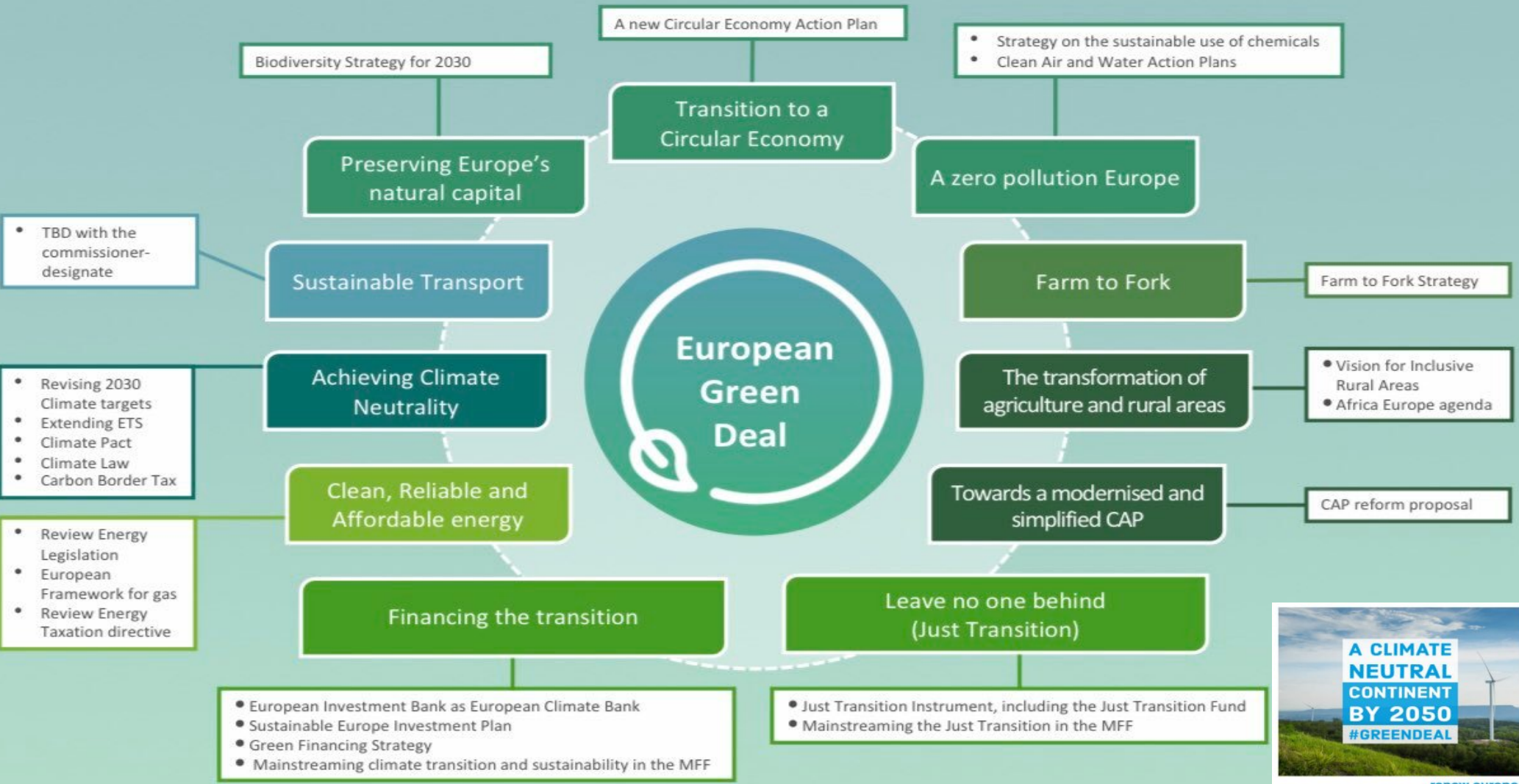
Source: World Economic Forum Global Risks Report 2022



I primi tre rischi globali più importanti secondo il World Economic Forum 2022 sono :

- cambiamenti climatici
- eventi meteorologici estremi
- perdita di biodiversità.

Possiamo ancora agire per evitare di peggiorarli, **ma dobbiamo farlo subito! Non c'è più tempo...**



A high-angle photograph of a residential roof covered in solar panels. The foreground shows a section of the roof with traditional red terracotta tiles. The rest of the roof is densely packed with dark blue photovoltaic solar panels. In the background, there are several houses with similar tiled roofs, some with satellite dishes. Beyond the houses, a range of mountains is visible under a clear blue sky. Some of the mountain peaks are covered in snow, suggesting a high-altitude or winter setting. The overall scene is bright and clear, indicating good conditions for solar energy production.

Più energie rinnovabili ed efficienza energetica edifici. Da risolvere il problema dello stoccaggio stagionale dell'energia!

Favorire mobilità elettrica a condizione che sia alimentata da elettricità rinnovabile e che sia obbligatorio il riciclo delle batterie



Meno viaggi aerei, meno trasporti in genere, più telelavoro



**Allevamento: vale 15% delle emissioni globali (metano)
Ridurre la quota di carne rossa nella dieta e sostenere
agricoltura biologica e a filiera corta locale**

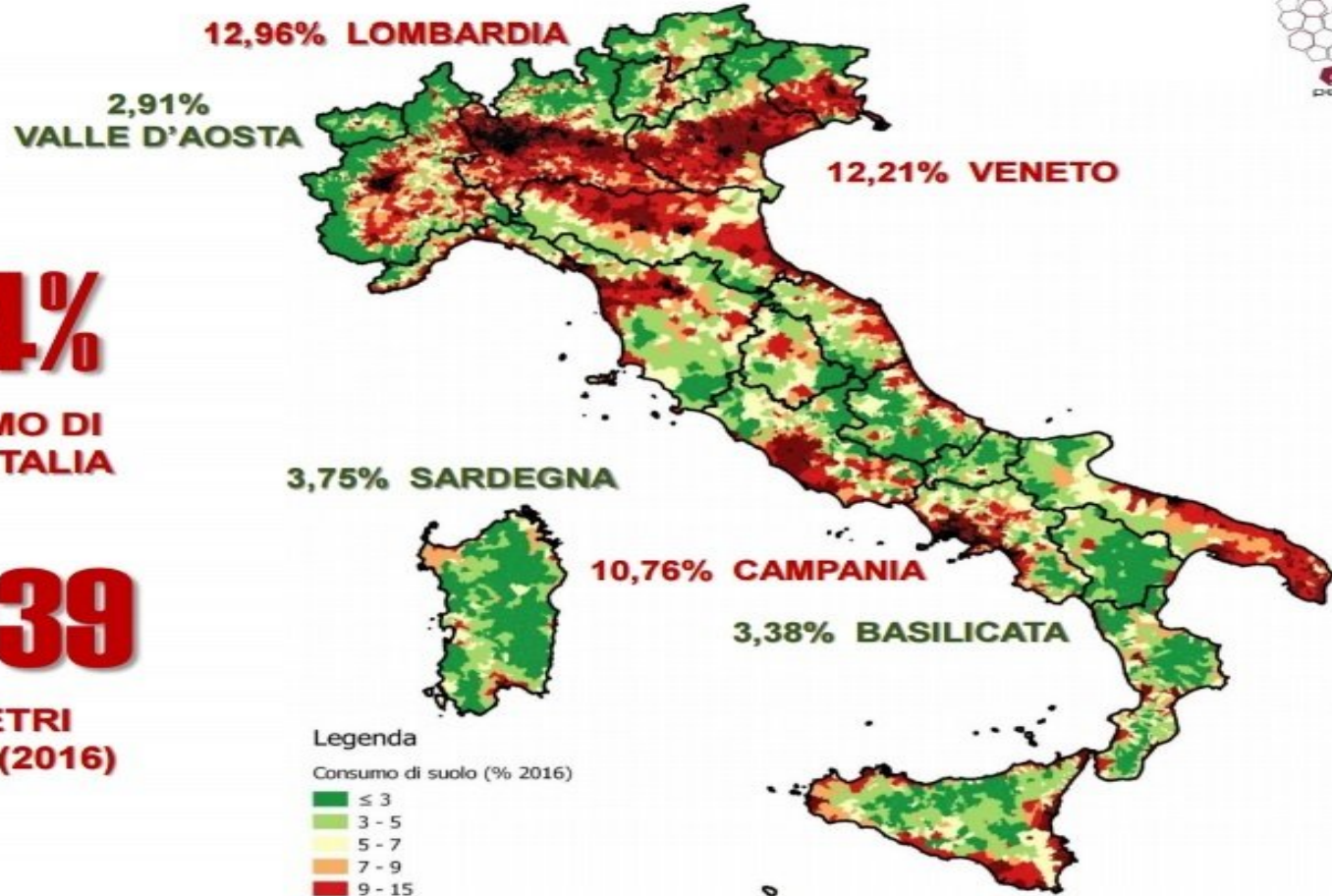


Fermare la cementificazione, il suolo non è infinito!



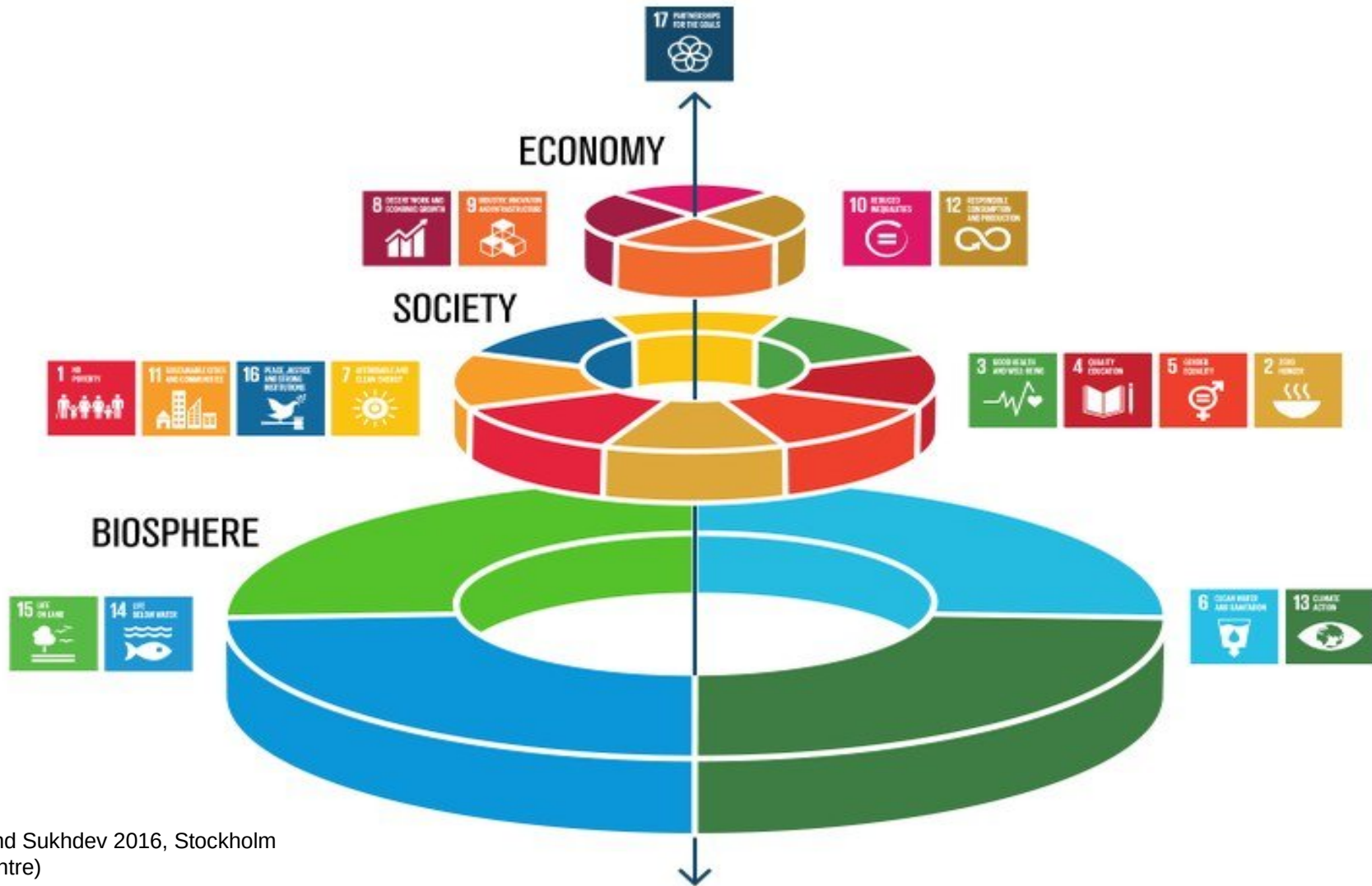
7,64%
IL CONSUMO DI
SUOLO IN ITALIA

23.039
CHILOMETRI
QUADRATI (2016)



Al lavoro! Gli obiettivi UN dell'Agenda 2030





(Rockström and Sukhdev 2016, Stockholm Resilience Centre)



NOW
THIS

“

We have a choice. Collective action or collective suicide. It is in our hands.

UN SECRETARY-GENERAL ANTÓNIO GUTERRES
JULY 18, 2022

“ The Guardian • Pacific Press / LightRocket via Getty Images