



The European House
Ambrosetti



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Conferenza stampa #ValoreAcqua

Giovedì 9 febbraio 2023

Community Valore Acqua per l'Italia

Scenari, strategie e *policy* per la filiera dell'acqua in Italia e l'ottimizzazione del suo sviluppo

Presentazione di Luca Mercalli

Presidente, Società Meteorologica Italiana e giornalista scientifico

Il clima che verrà e l'acqua

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





ANTÓNIO GUTERRES

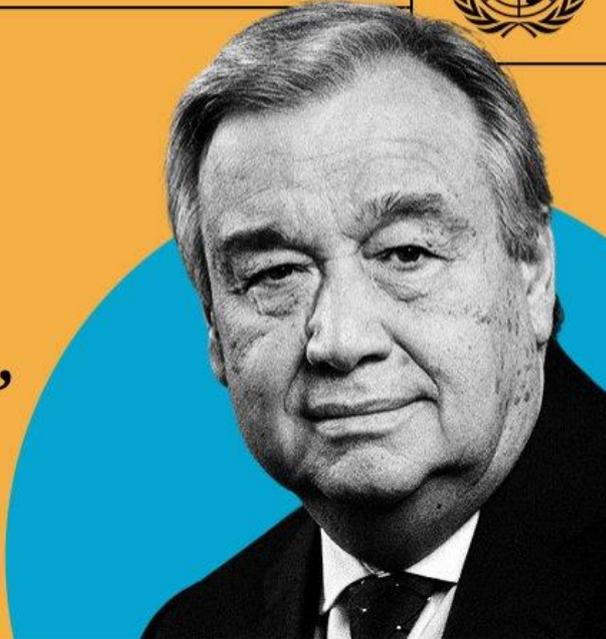
United Nations Secretary-General



“

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

9 AUGUST 2021



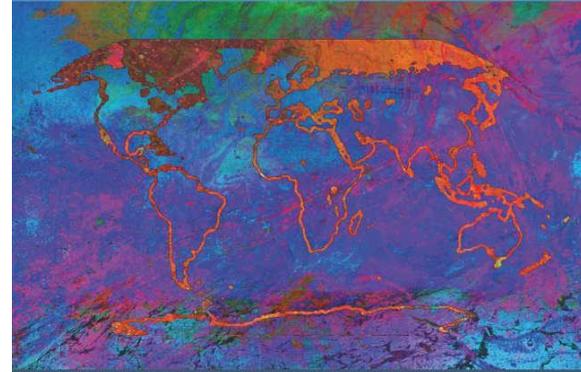
EMBARGOED - Do not publish, quote or distribute before 10 a.m. Central European Summer Time (08:00 UTC/GMT; 4 a.m. EDT) on Monday 9 August 2021

ipcc

INTERGOVERNMENTAL PANEL ON climate change

Climate Change 2021 The Physical Science Basis

Summary for Policymakers



The 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, 8 August 2021. SUBJECT TO CORRECTIONS

WGI

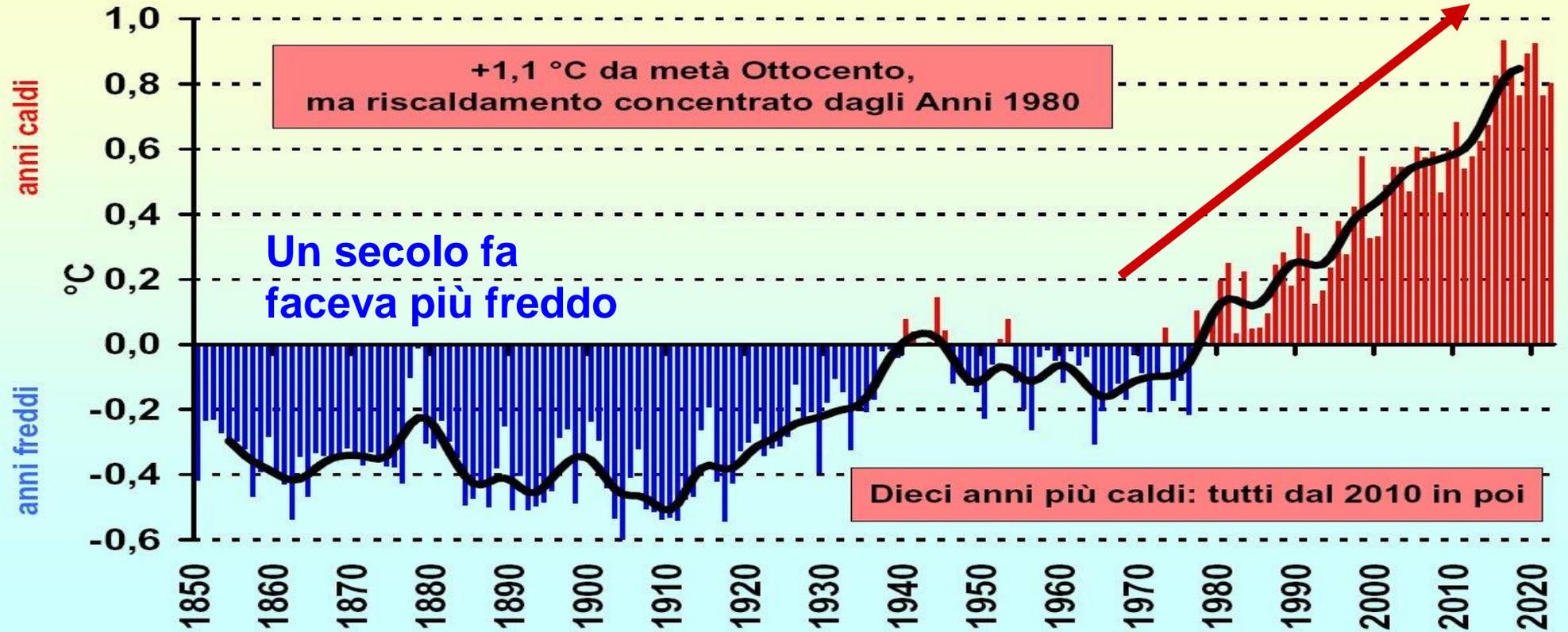
Working Group I contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change



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

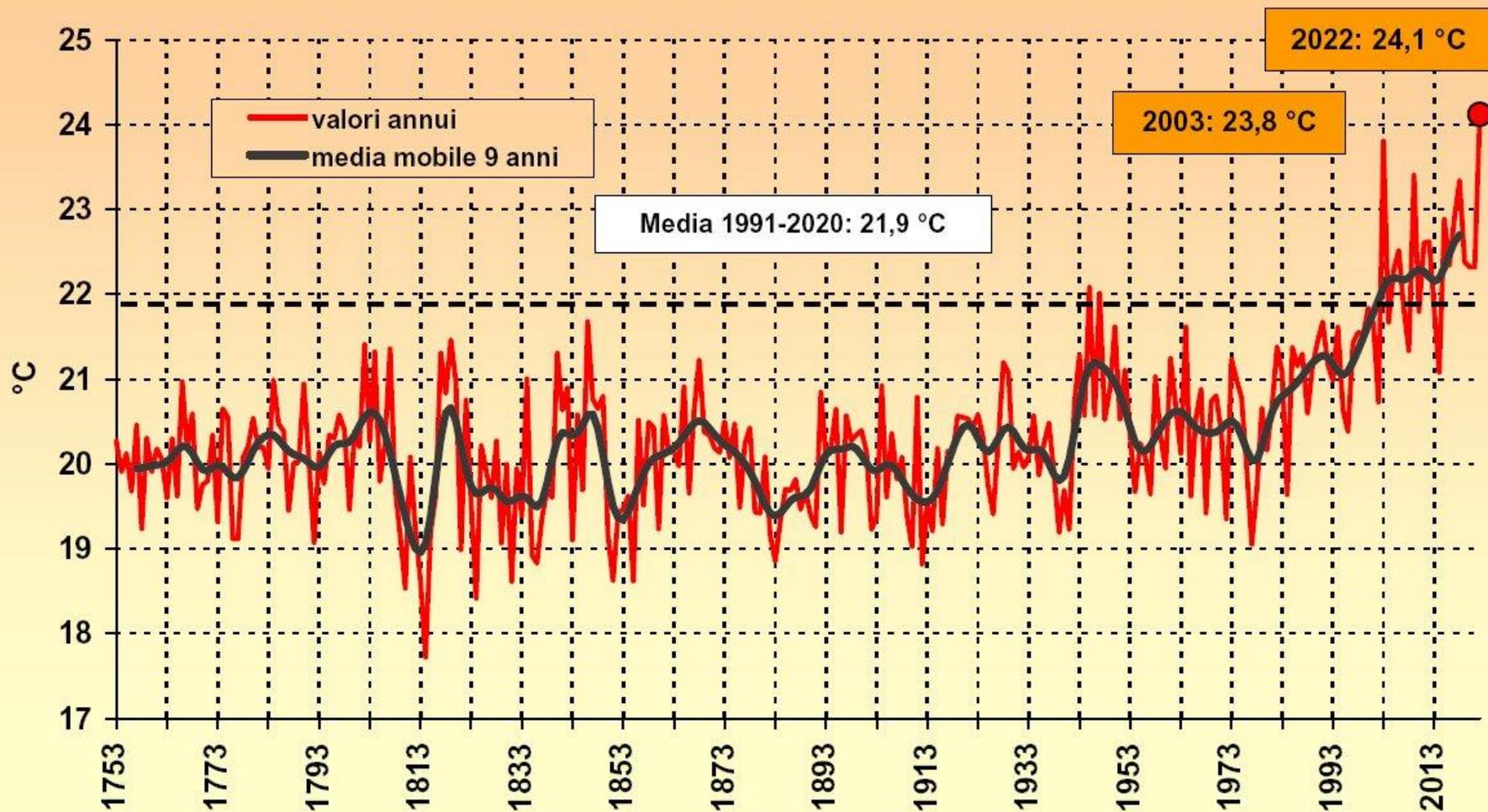
Anomalie termiche globali 1850-2022
(rispetto a media trentennio 1961-90)
serie MetOffice - Hadley Center

Riscaldamento globale

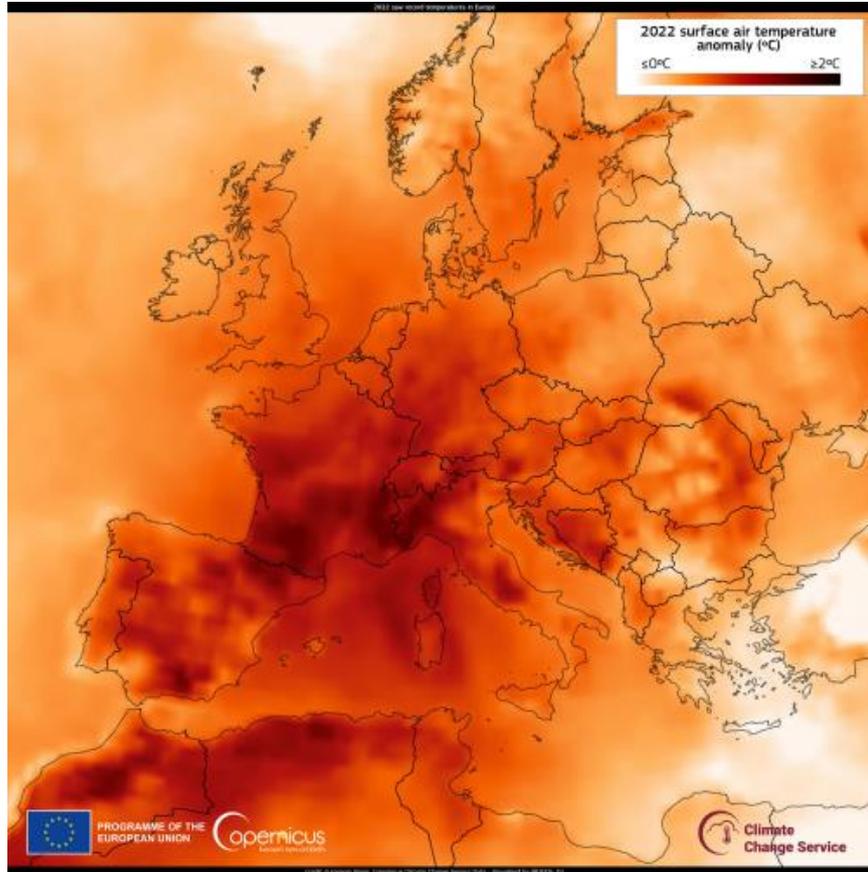


Torino centro - Temperature medie maggio-settembre (°C), 1753 - 2022

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

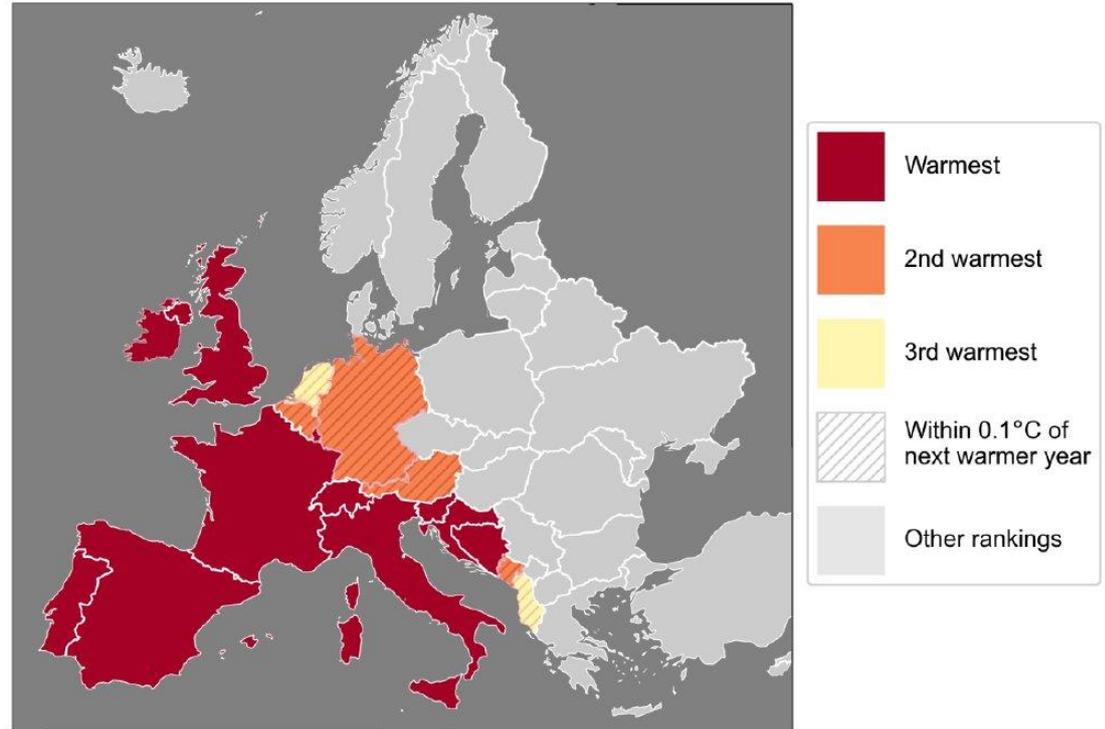


2022: l'anno più caldo in Europa W

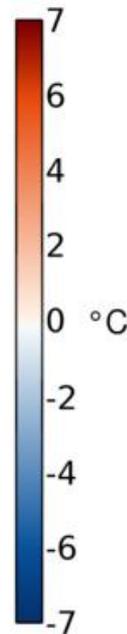
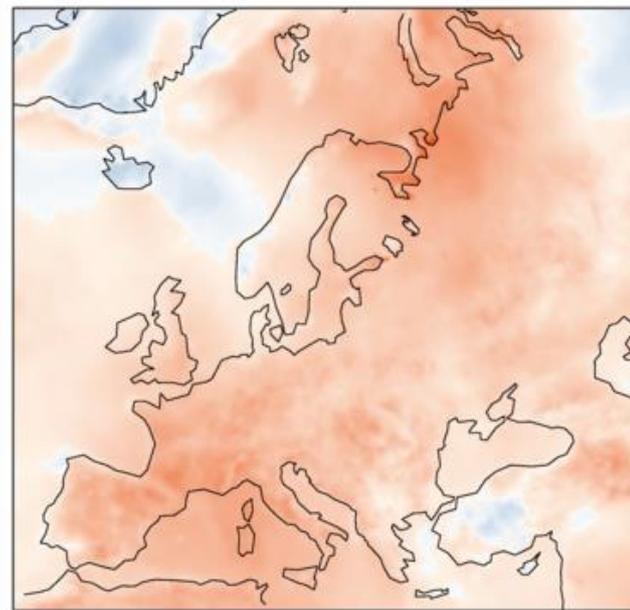
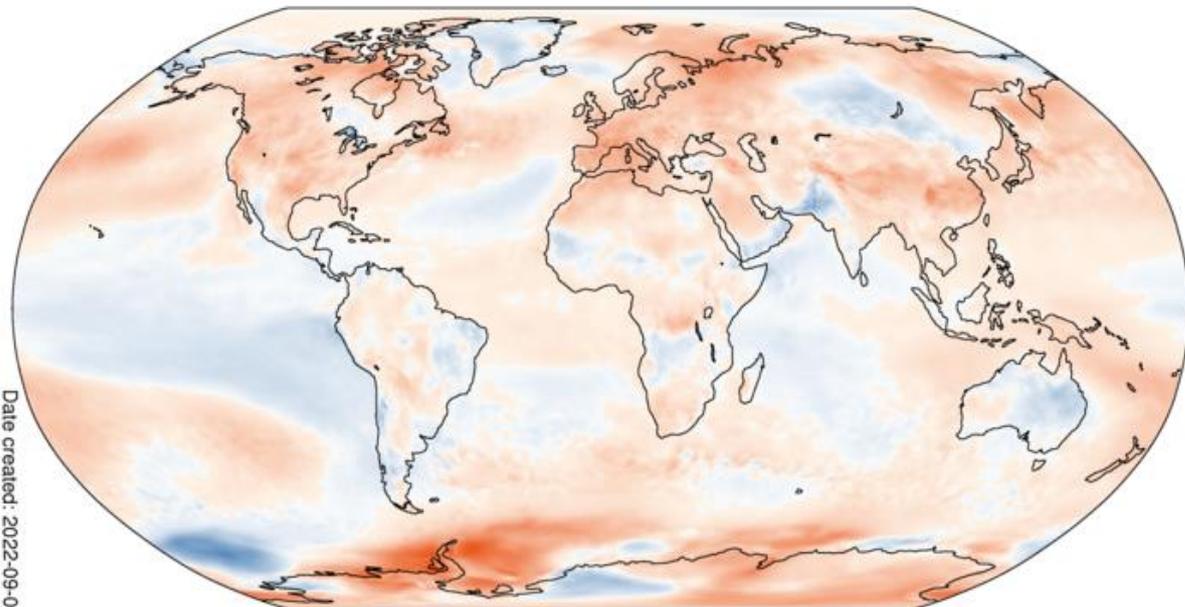


Ranking of 2022 annual mean temperature by country

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



Surface air temperature anomaly for June to August 2022



(Data: ERA5. Reference period: 1991-2020. Credit: C3S/ECMWF)



PROGRAMME OF
THE EUROPEAN UNION



**Estate 2022, la più calda di sempre in Europa
(fonte: EU-Copernicus)**



1897
(f. Druetti)



2005
(f. L. Mercalli)



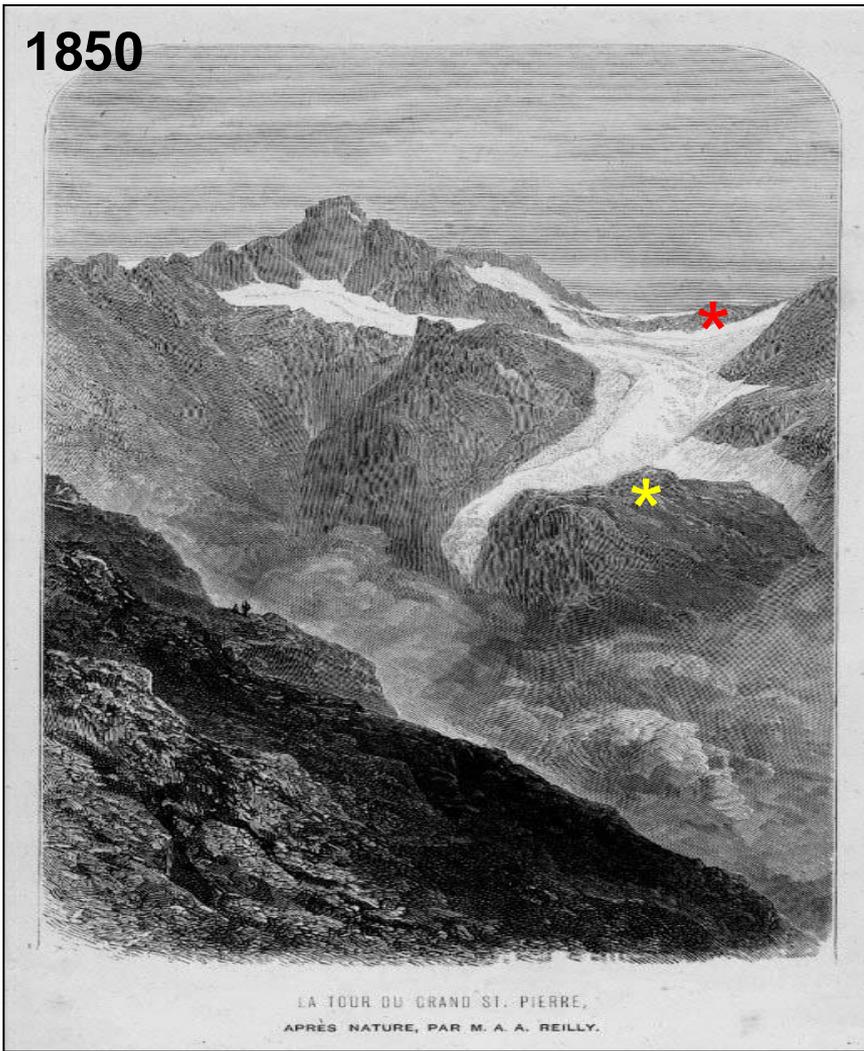
2015
(f. S. Jobard)

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 50% in un secolo

1850



2017



Ghiacciai piccoli estinti: Gh. di Teleccio (Gran Paradiso)

~ 1960

Archivio Pessina,
Domodossola



19.09.2018

f. L. Mercalli



Ghiacciaio
Meridionale del
Sabbione (Ossola)
dalla diga.

Regresso frontale
circa 1200 m

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





Torino, siccità
al Parco Piemonte
28 luglio 2022

Siccità
2017
e
2022

2022 a Torino: l'anno più caldo e più secco in oltre due secoli di misure

(dati temperatura dal 1753, precipitazioni dal 1803)

16,0 °C
temperatura media
+1,6 °C

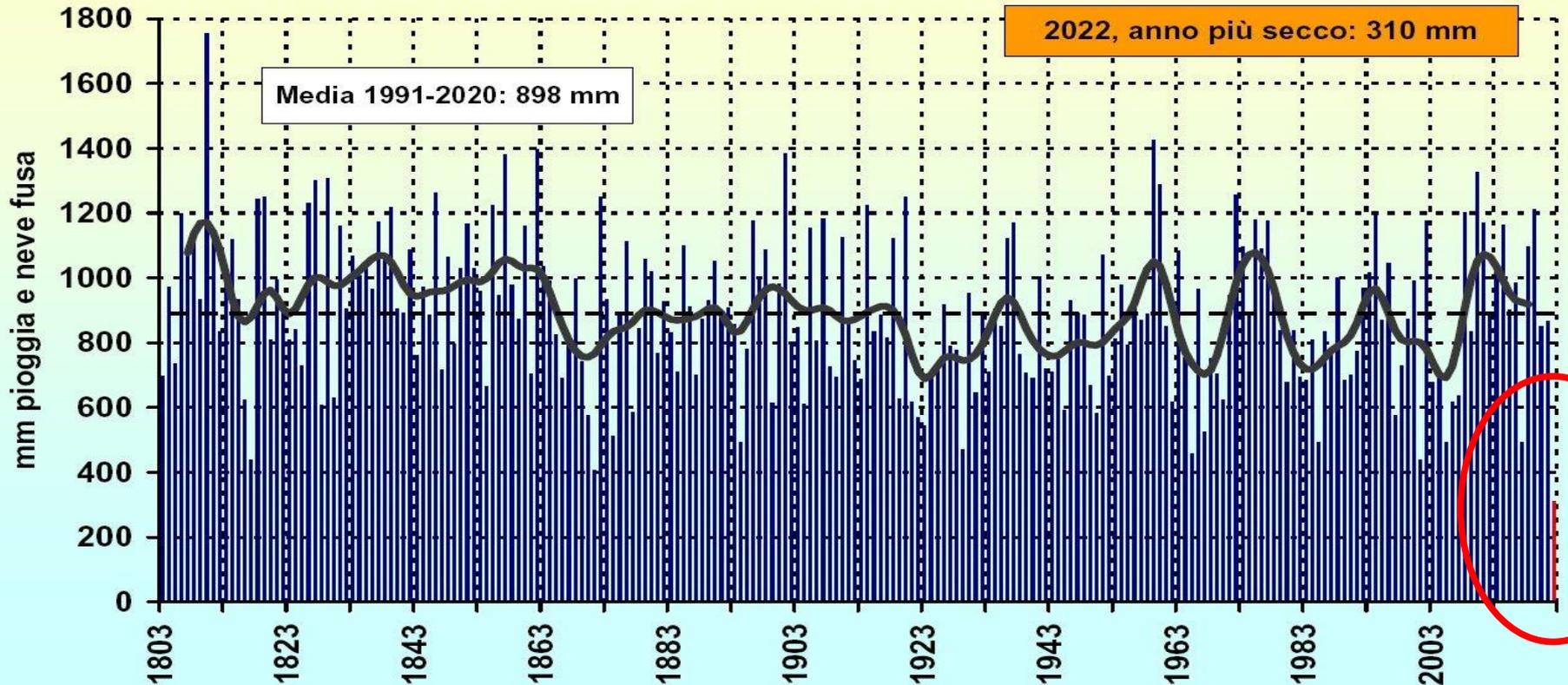
310 mm
precipitazioni totali
-66%

rispetto alla norma 1991-2020

2022: anno più asciutto in oltre due secoli a Torino

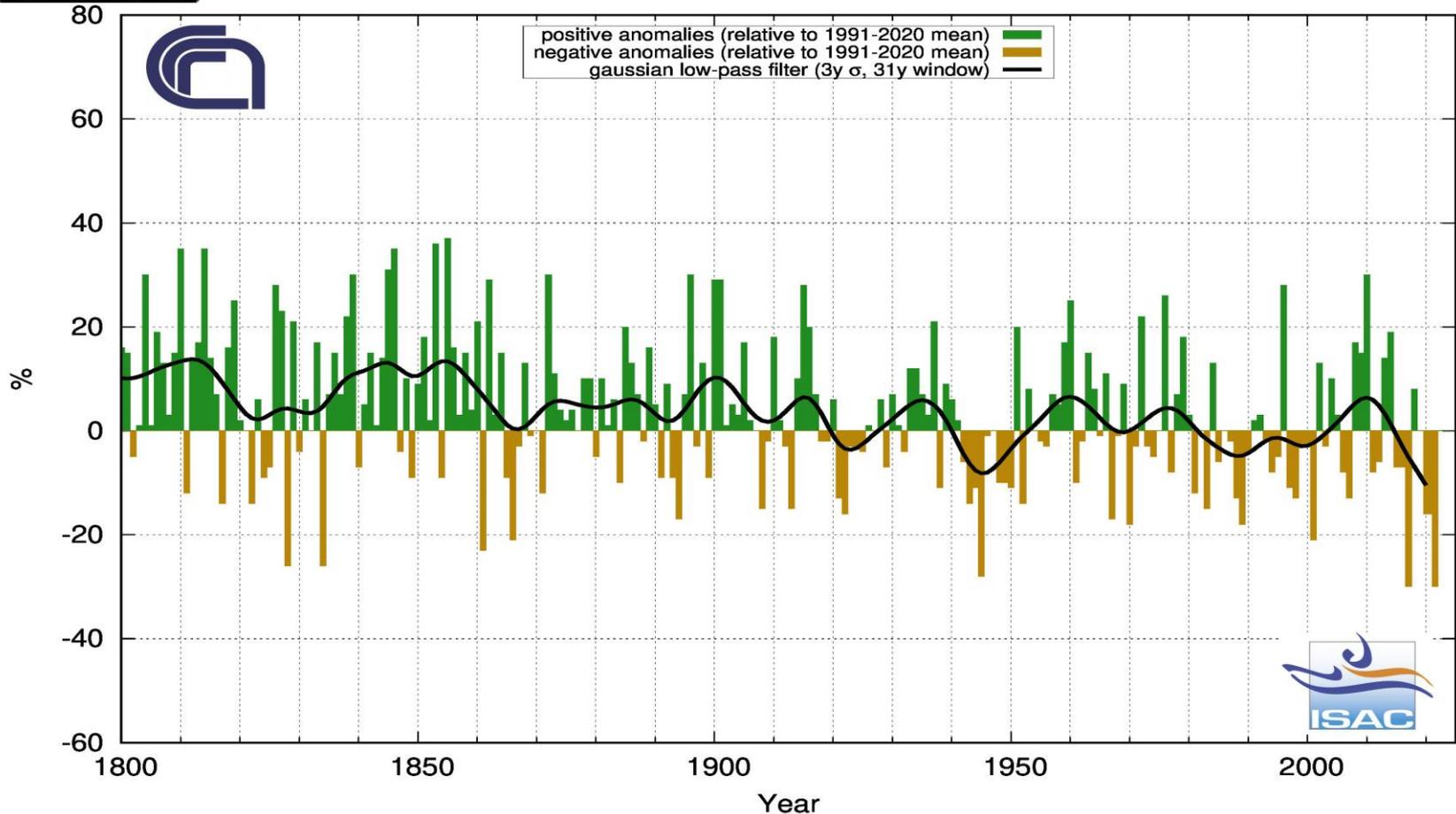


Torino centro - Precipitazioni totali annue (mm) dal 1803 al 2022
(dati attuali: Arpa Piemonte; analisi storica: SMI / Nimbus)





ANNUAL PRECIPITATION



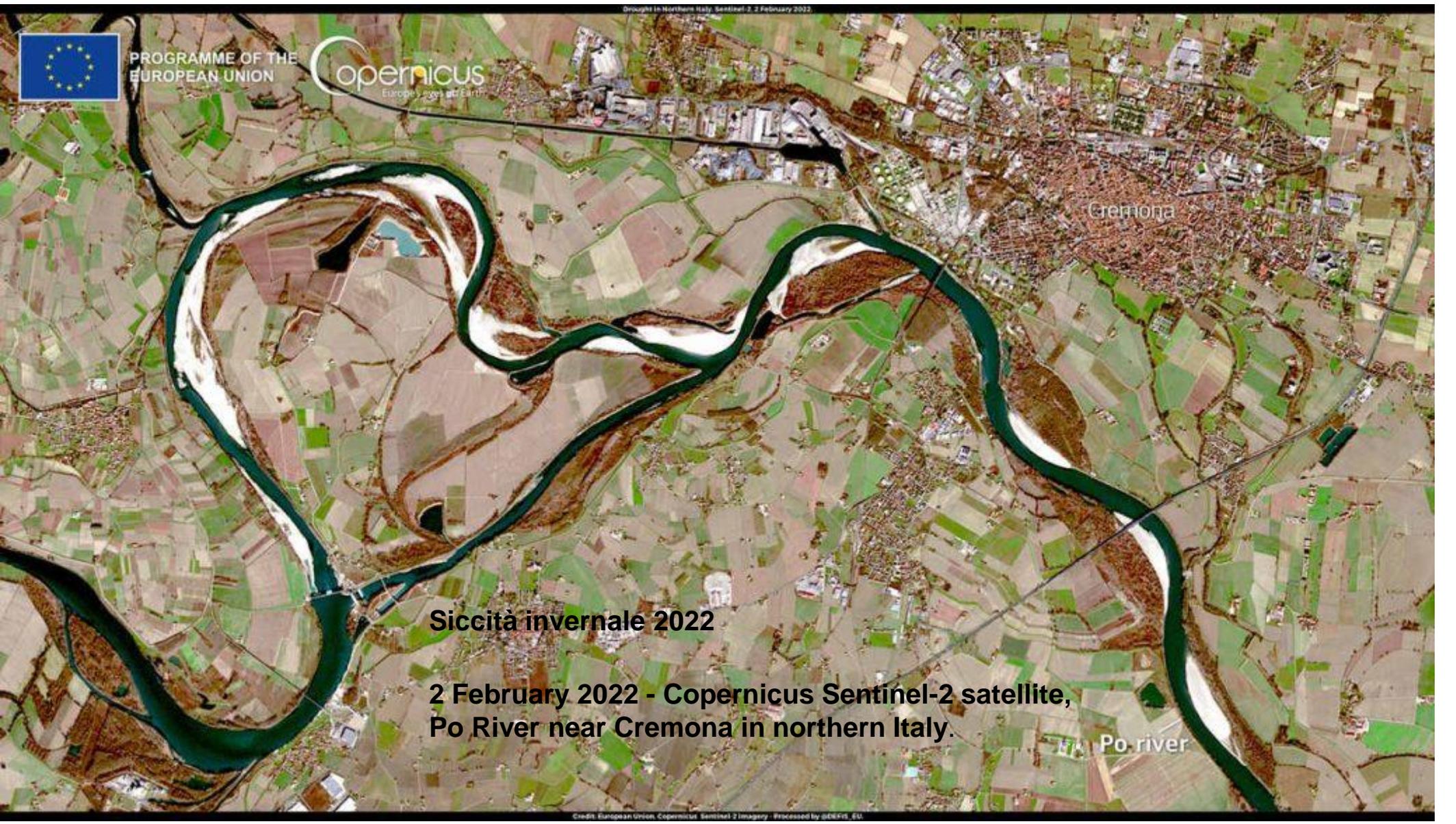
Precipitazioni annue in Italia (1800-2022): tendenze per ora poco evidenti, lieve calo rispetto all'Ottocento ma estremi secchi più frequenti



PROGRAMME OF THE
EUROPEAN UNION



Droughts in Northern Italy, Sentinel-2, 2 February 2022



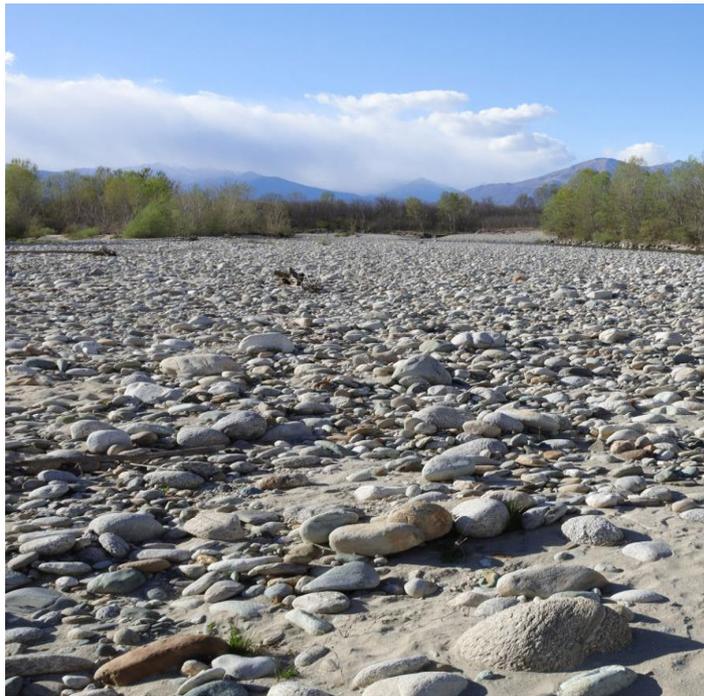
Cremona

Siccità invernale 2022

**2 February 2022 - Copernicus Sentinel-2 satellite,
Po River near Cremona in northern Italy.**

Po river

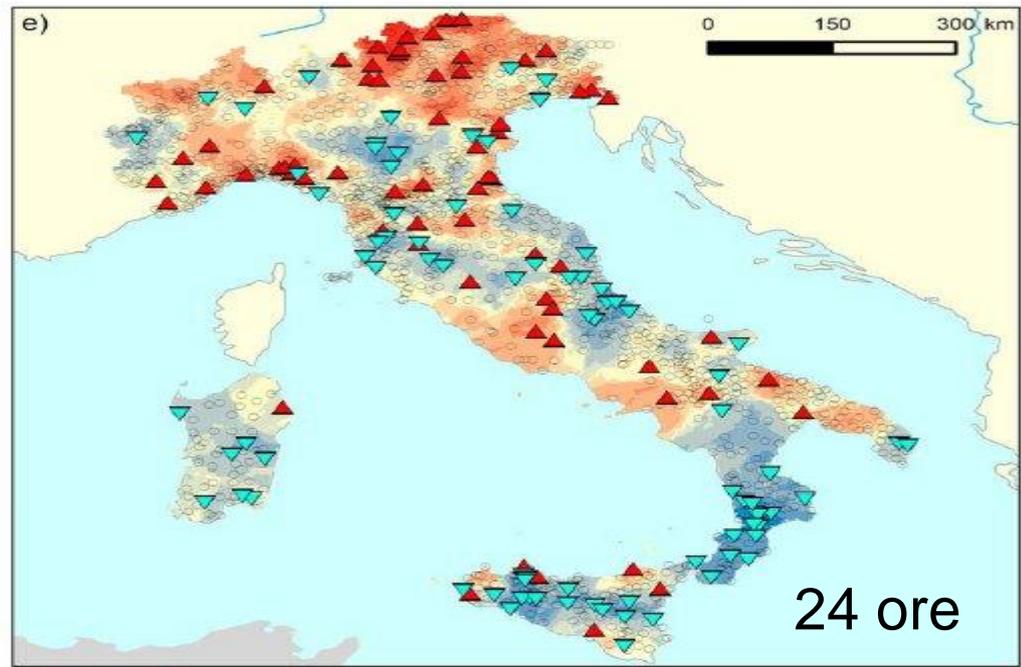
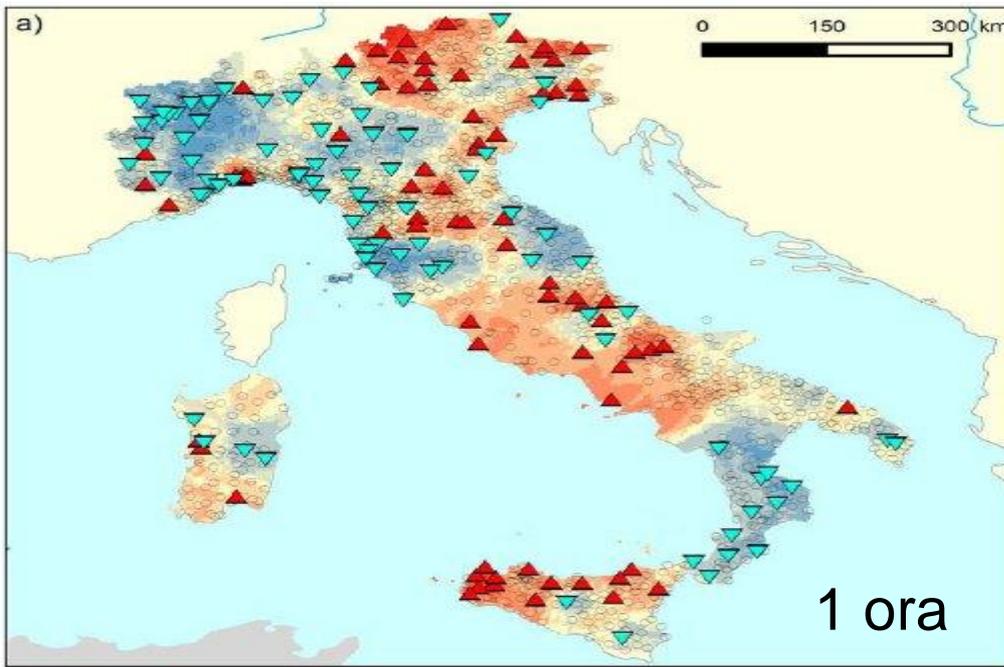
2022: portata media del Po ai minimi storici, 22 luglio = 108 m³/s



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

Portata del fiume Po a Pontelagoscuro





Decreasing significant trend ▼ Increasing significant trend ▲ Not significant trend (5%) ○

Tratto da: Libertino et al., 2019 - *Evidence for Increasing Rainfall Extremes Remains Elusive at Large Spatial Scales: The Case of Italy*. *Geophysical Research Letters*, 46.

Intensità degli episodi piovosi (1915-2015):

**tendenze a lungo termine ancora variegata a livello nazionale,
ma probabili primi effetti del riscaldamento globale
sulla severità e frequenza degli eventi (più energia e vapore dal mare caldo).**



Limone Piemonte, impianto di risalita sepolto da una colata detritica (fonte: localteam.it).

2-3 ottobre 2020, alluvione disastrosa sulle Alpi Marittime (tempesta Alex): nubifragi eccezionali in risalita dal mare troppo caldo

Nord-Est, Emilia e regioni tirreniche, 4-6 dicembre 2020



*Rotta dell'argine destro
del F. Panaro
a Castelfranco Emilia
(f. W. Morandi)*

Precipitazione massima
786 mm a Barcis (Dolomiti
friulane), quattro volte
la media mensile.
Ma piene fluviali più
appariscenti nel Modenese per
200-300 mm di pioggia caduti in
Appennino e fusione nivale.

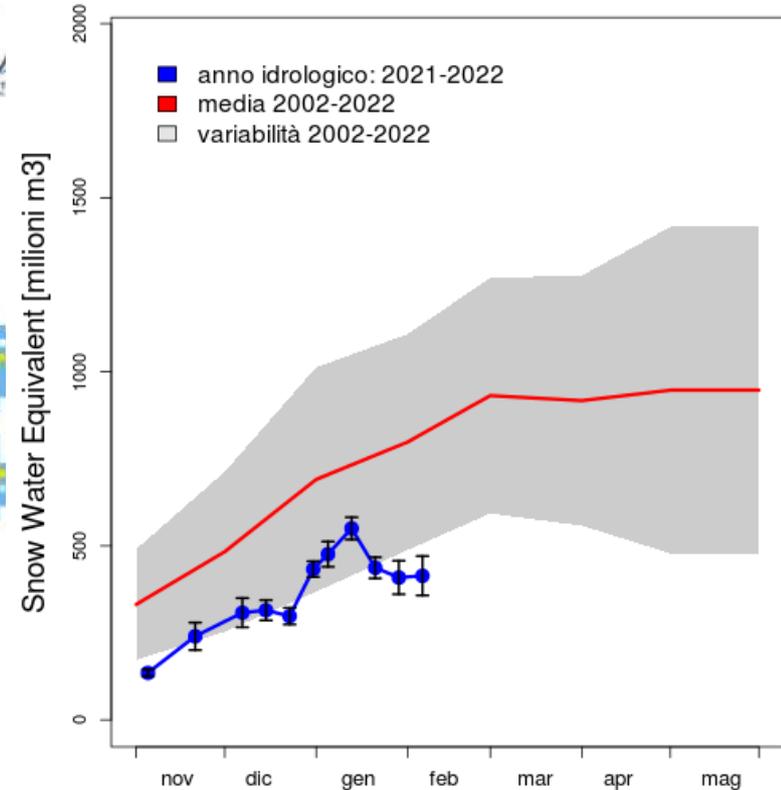
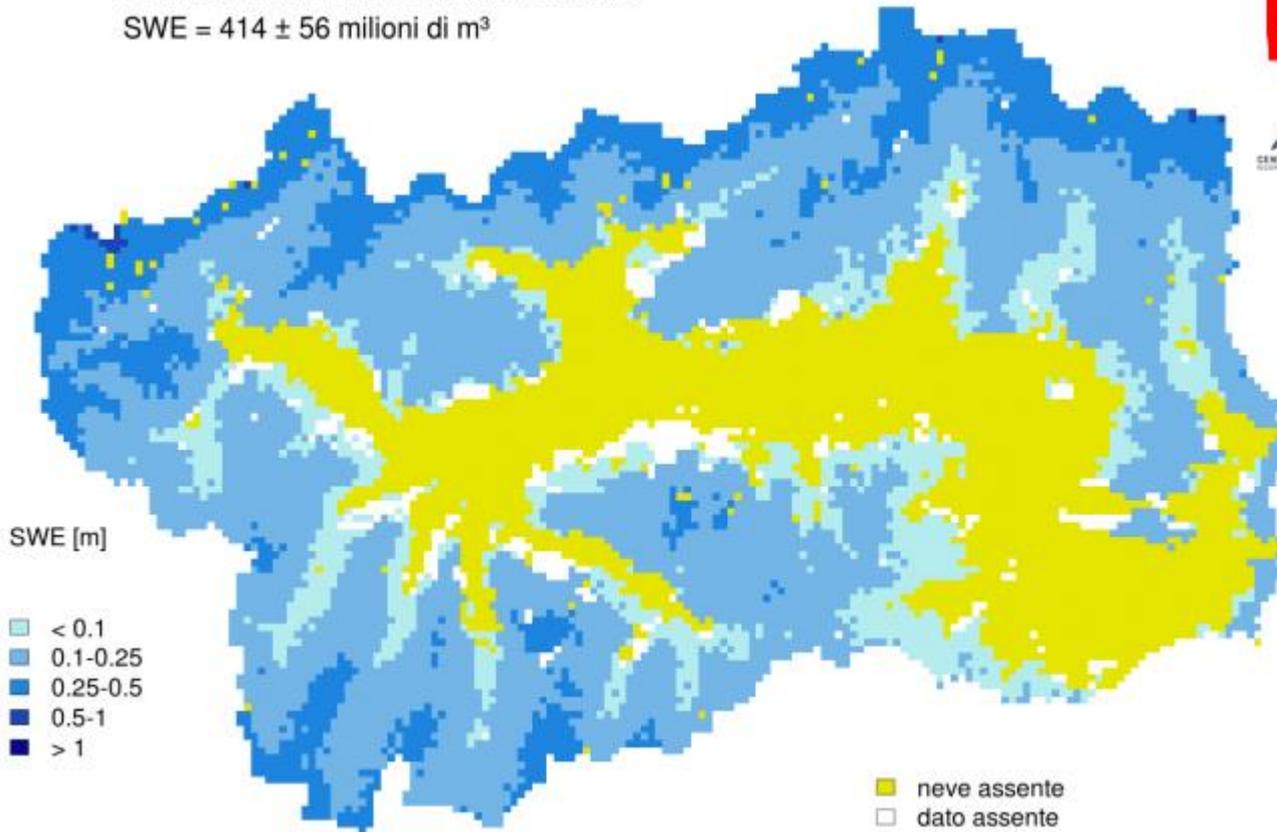
**Alluvioni Germania-
Belgio luglio 2021:
243 vittime;
Marche 15 Settembre
2022, 13 vittime;
Ischia, 26 novembre
2022, 12 vittime**

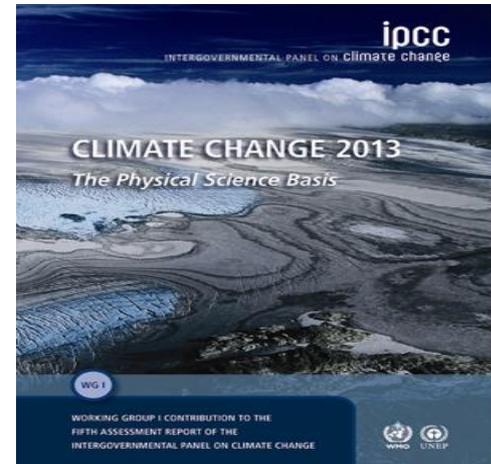


Deficit accumulato nevoso sulle Alpi inverno 2021-22

PERIODO: dal 2022-02-02 al 2022-02-09

SWE = 414 ± 56 milioni di m^3



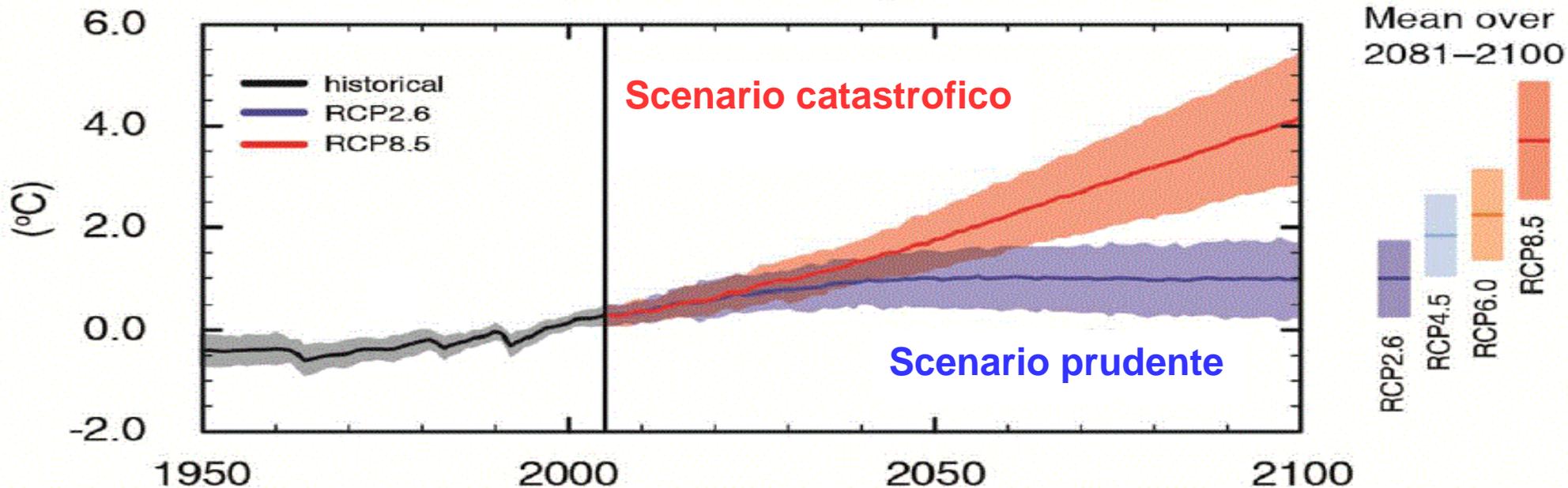


Scenari 5° rapporto IPCC (AR5 2013):

+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)

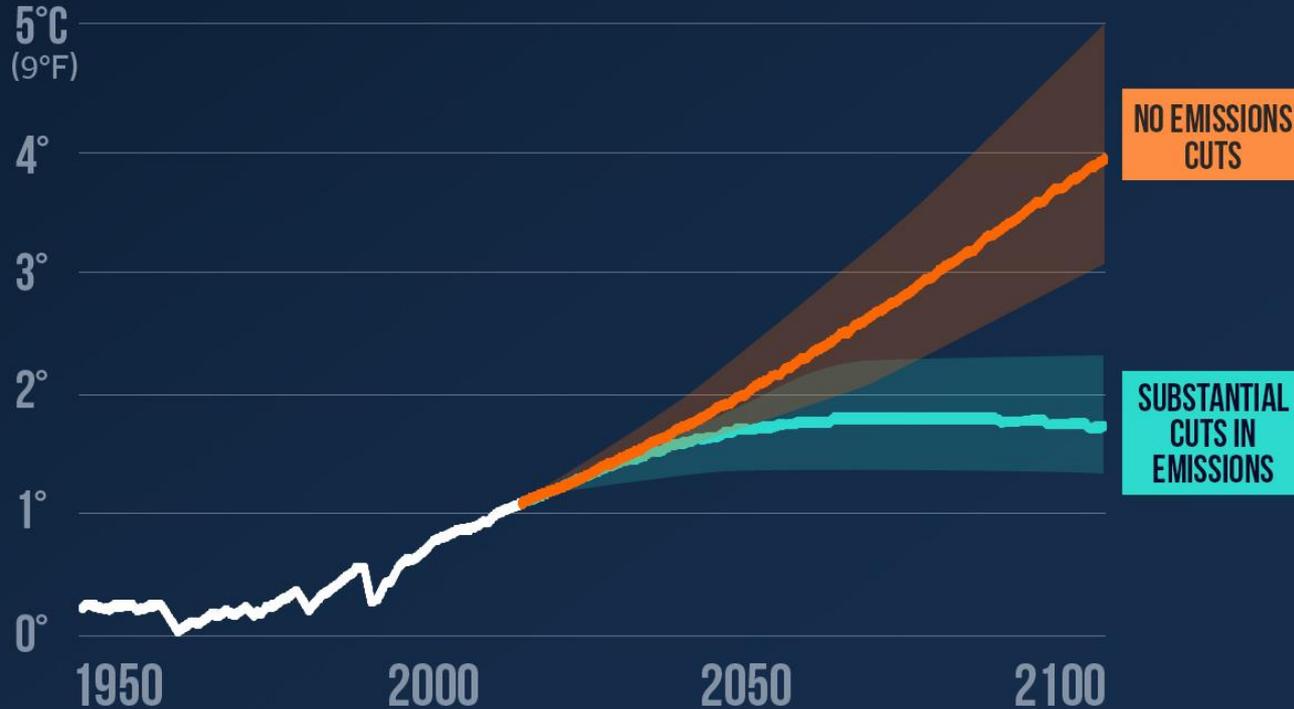
(a)

Global average surface temperature change



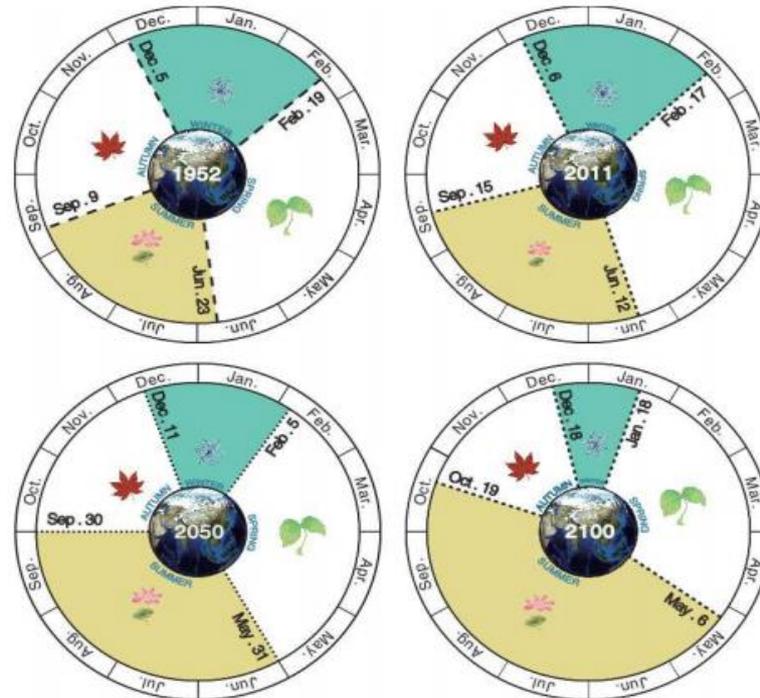
FUTURE TEMPERATURES

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

4, Figures S7-8), indicating that even if seasons are to continue at the current rate observed, a longer summer and shorter winter will become the new normal in the twenty-first century.



Inverni sempre più brevi, estati sempre più lunghe (fino a 6 mesi nel 2100)

Figure 5. Onsets and lengths of the four seasons in 1952, 2011, 2050 and 2100. The top row is from HadGHCND, and the bottom row is from RCP8.5.

Changing Lengths of the Four Seasons by Global Warming

[Jiamin Wang](#) [Yuping Guan](#) [Lixin Wu](#) [Xiaodan Guan](#) [Wenju Cai](#) [Jianping Huang](#) [Wenjie Dong](#) [Banglin Zhang](#) First published: 19 February 2021

<https://doi.org/10.1029/2020GL091753> Geophysical Research Letters

Over the period of 1952-2011, the length of summer increased from 78 to 95 days and that of spring, autumn and winter decreased from 124 to 115, 87 to 82 and 76 to 73 days, respectively. In addition, summer is projected to last nearly half a year, but winter less than two months by 2100.

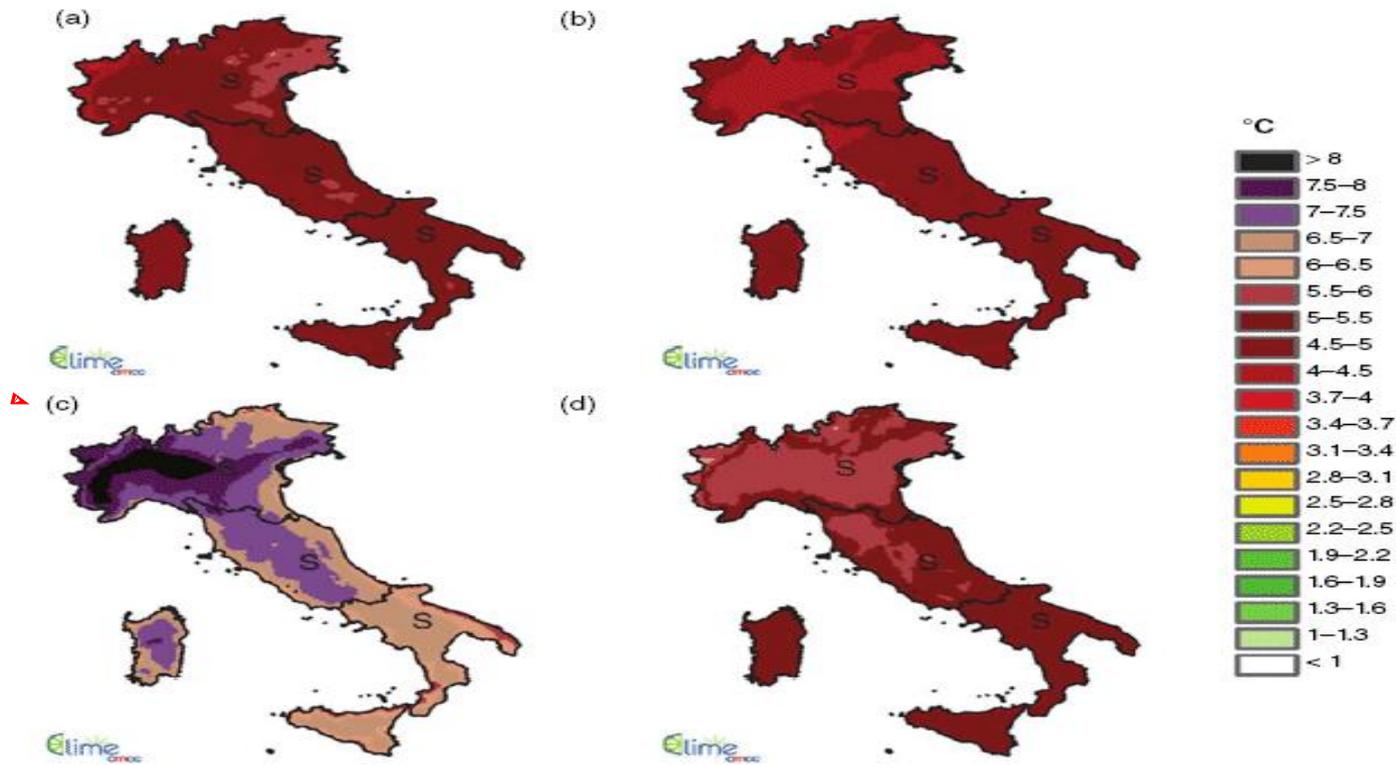


Figure 9. Temperature climate projections, RCP8.5: seasonal differences (°C), between the average value over 2071–2100 and 1971–2000 for (a) DJF, (b) MAM, (c) JJA and (d) SON (S, significant; NS, not significant).

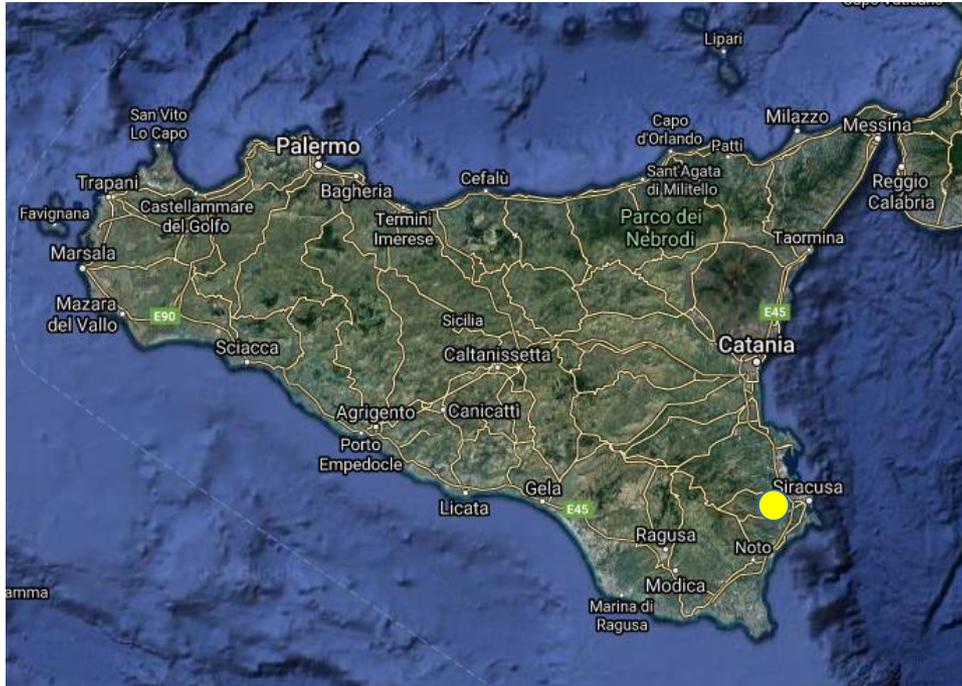
E se non facessimo nulla? NW Italiano + 8 ° C in estate nel 2100! Torino come Karachi...

Bucchignani et al. (2015) *High-resolution climate simulations with COSMO-CLM over Italy*, Int. J. Climatol.

11 agosto 2021

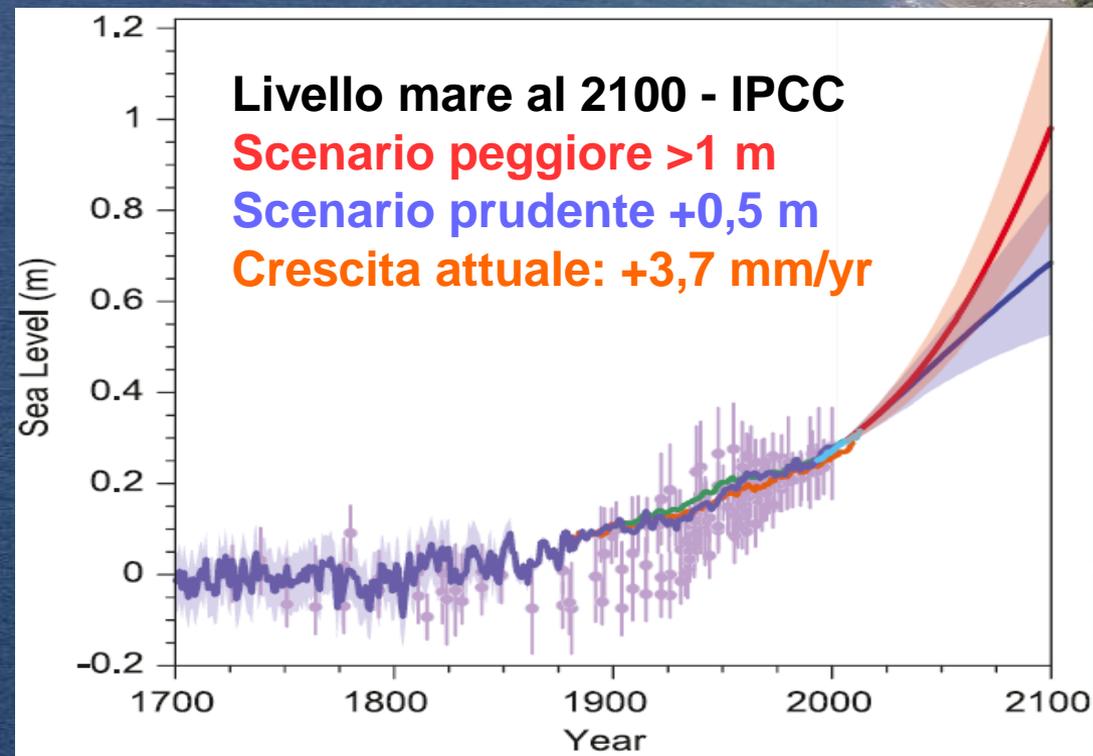
48,8 °C a Floridia, Siracusa

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



Stazione meteo rete SIAS

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





About Climate Change Adaptation in Europe

The European Climate Adaptation Platform (Climate-ADAPT) aims to support Europe in adapting to [climate change](#). It is an initiative of the European Commission and helps users to access and share information on:

- Expected climate change in Europe
- Current and future [vulnerability](#) of regions and sectors
- National and transnational adaptation strategies
- [Adaptation](#) case studies and potential adaptation options
- Tools that support adaptation planning

[→ Read more](#)

SEARCH THE CLIMATE ADAPTATION DATABASE

Search Term(s):

Sectors:

Country:

[SEARCH](#)

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Adaptation support tool

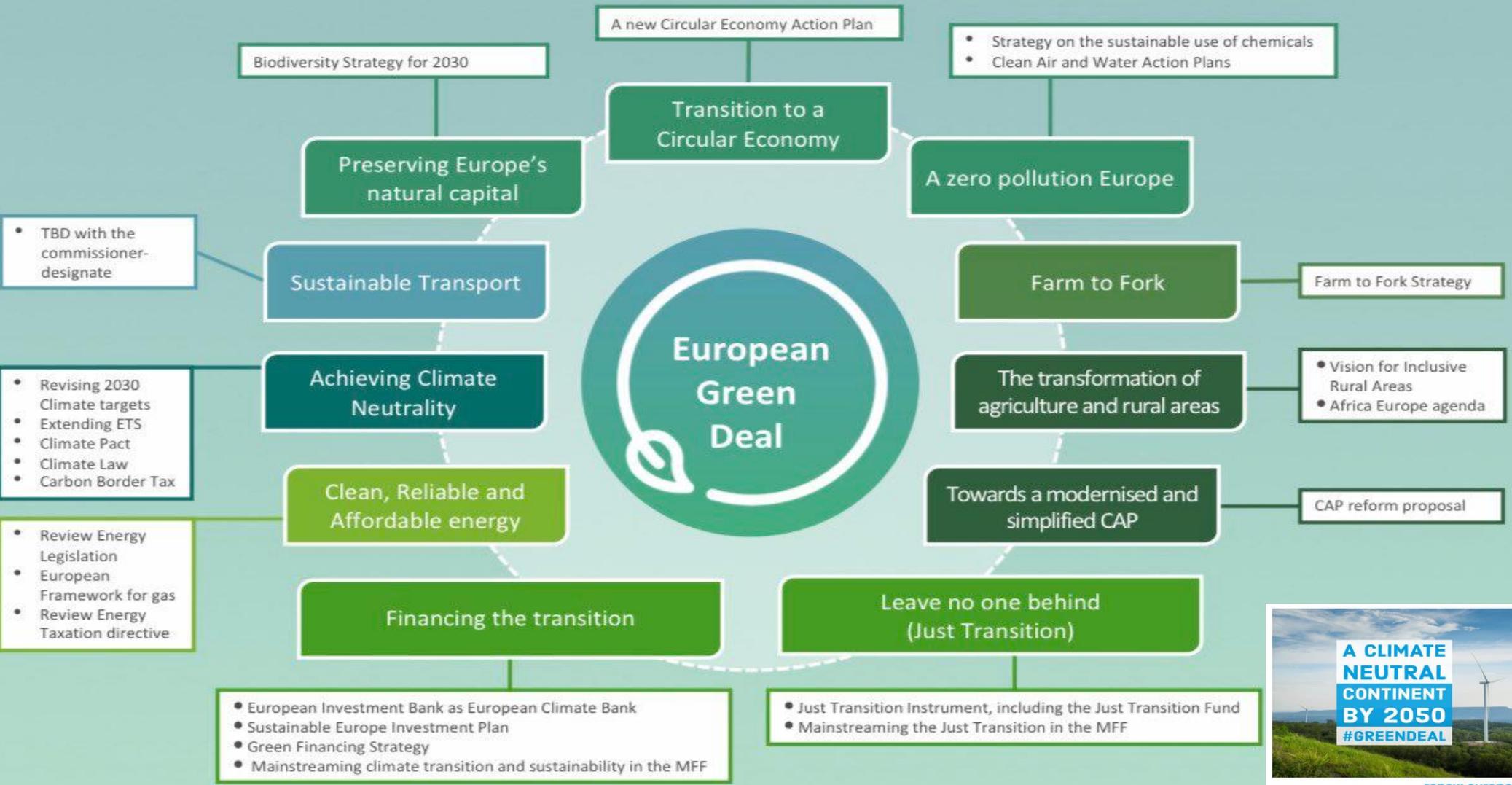
New to adaptation?
Use the Adaptation Support Tool

What are European countries doing?

Find case studies on adaptation in Europe

Share your information

European Green Deal



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!

Top 10 Risks

“Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period”

2 years



10 years



Risk categories

■ Economic ■ Environmental ■ Geopolitical ■ Societal ■ Technological

Al lavoro! Gli obiettivi UN dell'Agenda 2030

