



CONSORZIO
LaMMA



LEGAMBIENTE

CESVOT



SESSIONE 1: ACQUA E AGRICOLTURA, CONTESTO E DATI

Crisi climatica, bilancio idrico, fabbisogni

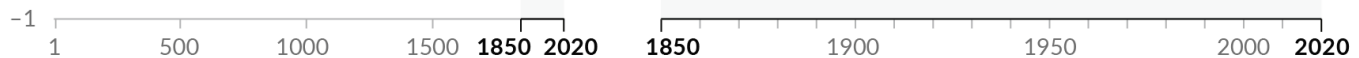
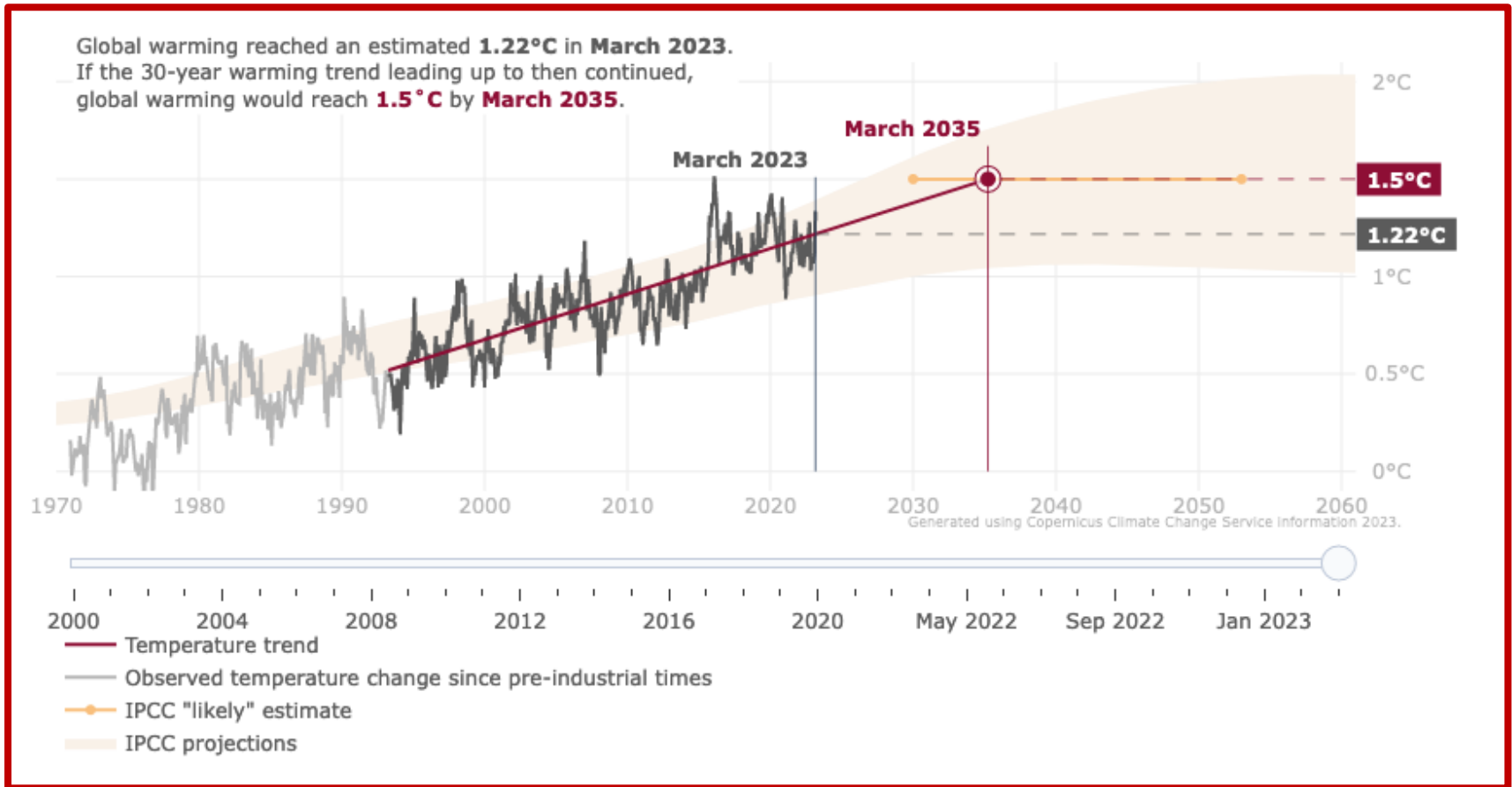
Bernardo Gozzini

Amministratore Unico del Consorzio LaMMA

28 aprile 2023



Temperatura media globale + 1,1° C rispetto a 1850/1900 terre emerse +1,59° oceani +0,88°



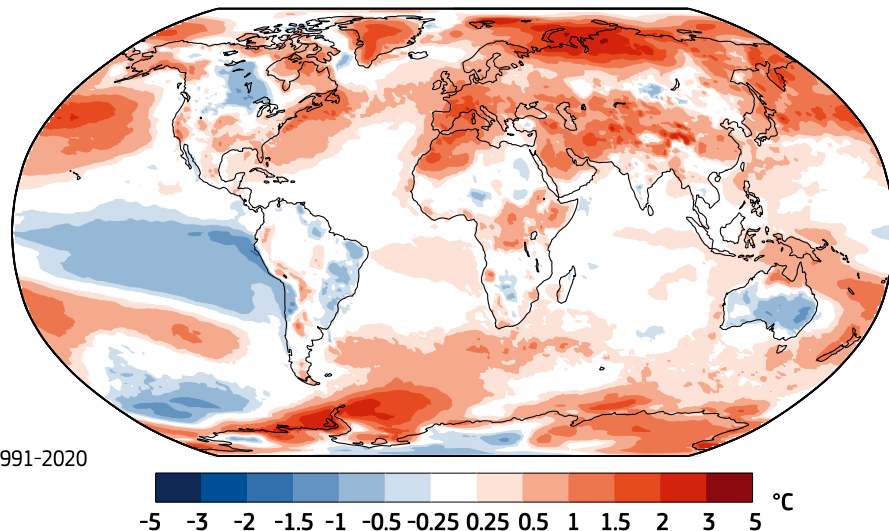
EUROPEAN STATE OF THE CLIMATE SUMMARY 2022

Source:

<https://climate.copernicus.eu/esotc/2022>

Data source: ERA5
Reference period: 1991-2020
Credit: C3S/ECWMF

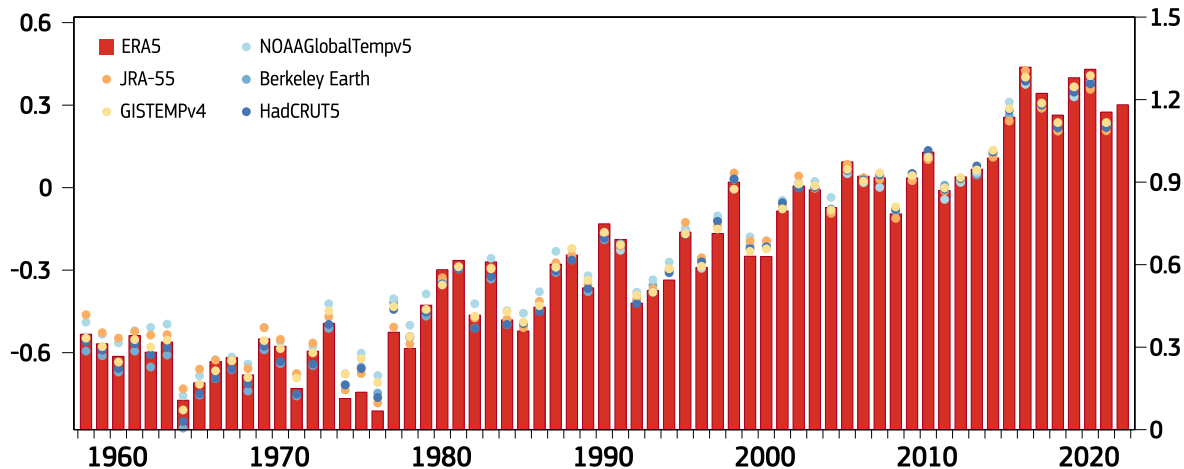
2022 Surface air temperature anomaly



Annual global-average surface temperature (°C)

Relative to 1991-2020

Increase above 1850-1900 reference level

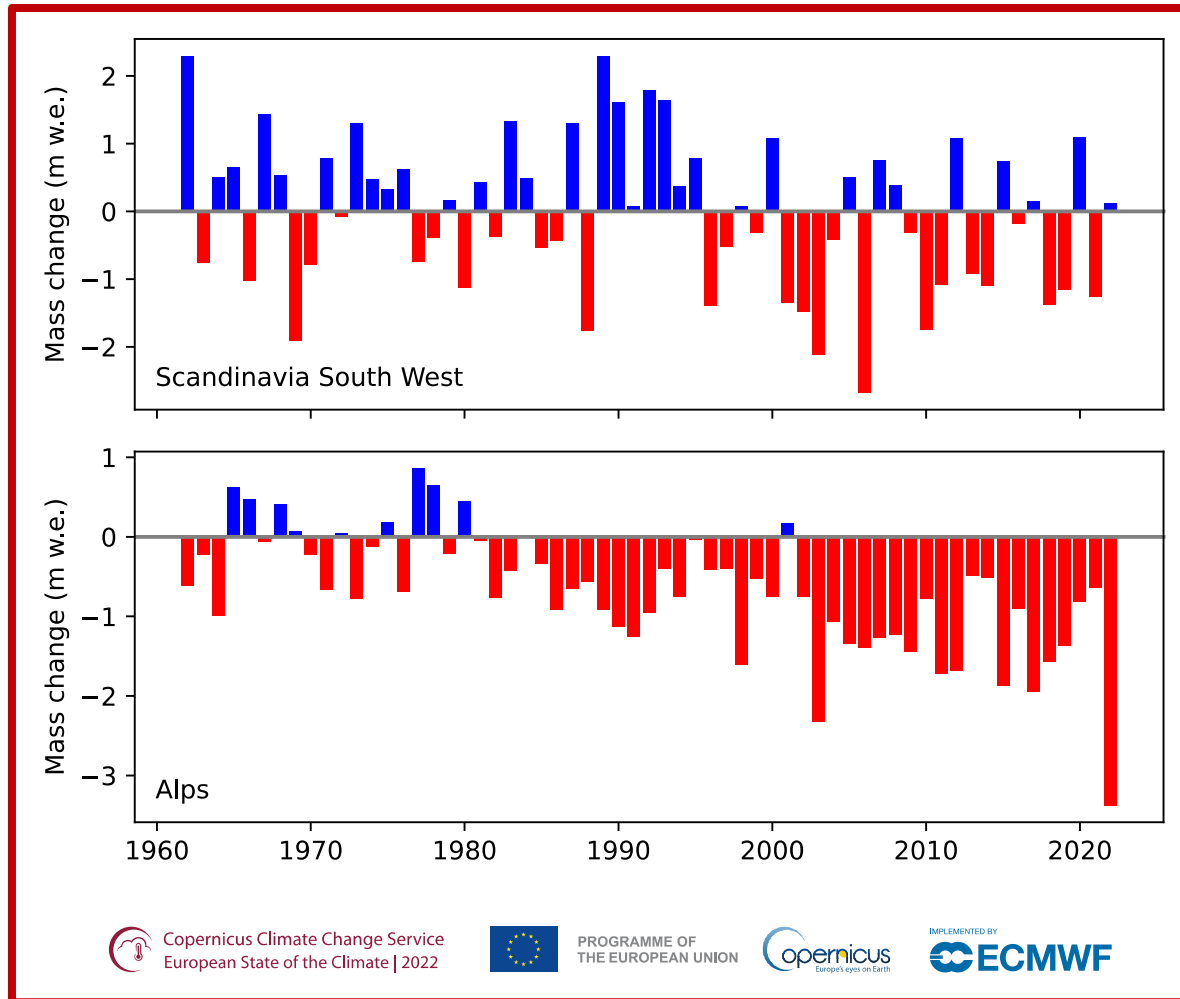


IMPLEMENTED BY
ECMWF

Gli ultimi 8 anni i più caldi



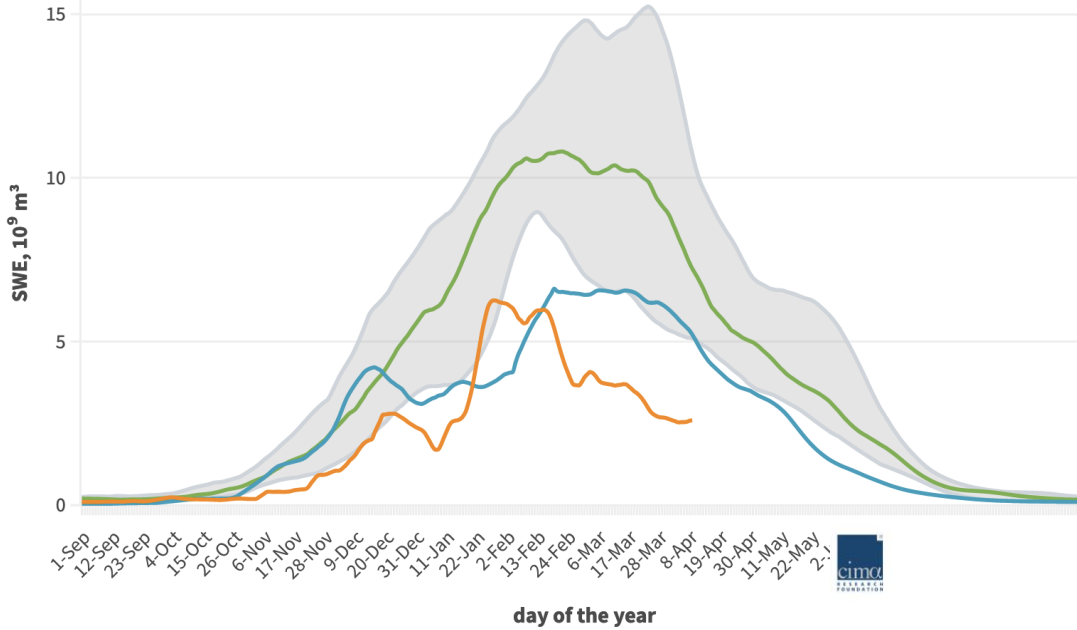
CRIOSFERA: GHIACCIAI



Annual glacier ice mass changes in 'metre water equivalent (m w.e.)' from 1962 to 2022 for glaciers with long-term records.

Total snow water volume ITALY | deficit -64%

2011-2021 Q1 2011-2021 Q3 2011-2021 Q2 2022 2023

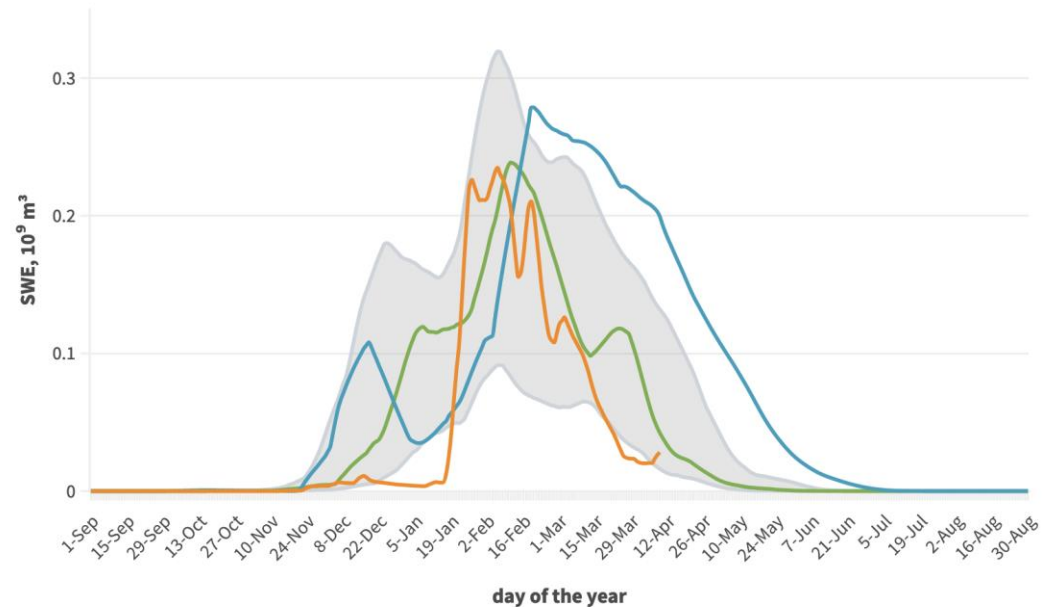


SITUAZIONE NEVE marzo

Italia – 64%

Total snow water volume TEVERE | deficit -34%

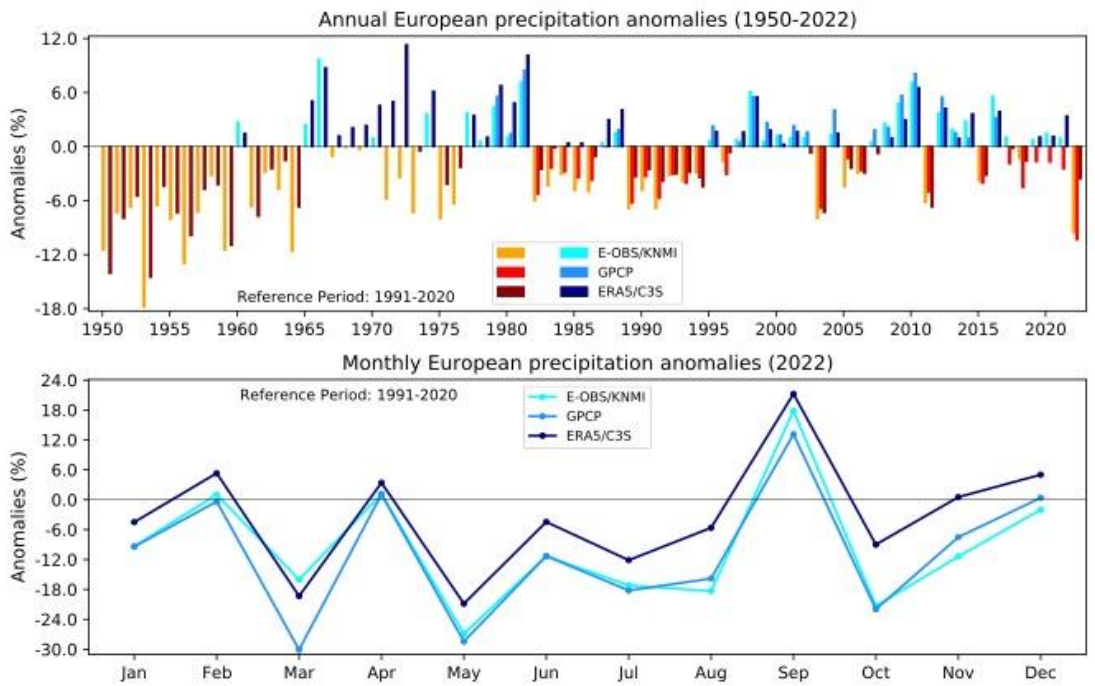
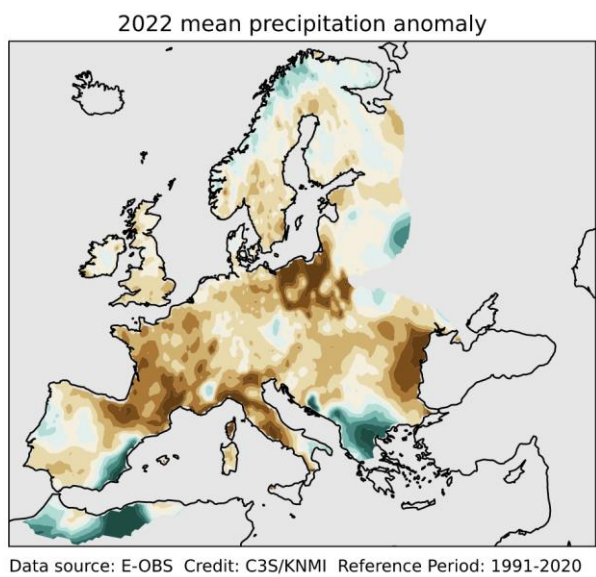
2011-2021 Q1 2011-2021 Q3 2011-2021 Q2 2022 2023



Bacino del
Tevere – 34%

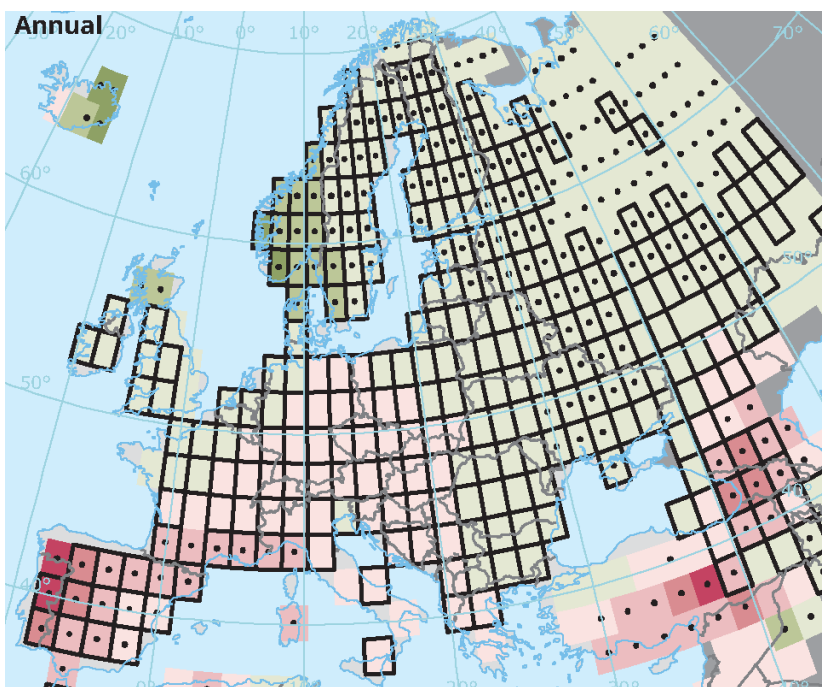
EUROPEAN STATE OF THE CLIMATE SUMMARY 2022

Annual precipitation in 2022 was below the average (1991–2020) from -4% to -10% in the three datasets
 2 longest time series – E-OBS and ERA5 – show trends with regional differences, northern Europe becoming wetter and southern Europe becoming drier

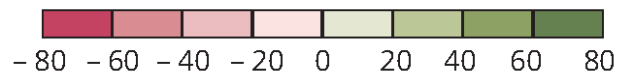


CAMBIAMENTI CLIMATICI

PRECIPITAZIONE EUROPA



Annual precipitation (mm/decade)



S
C
E
N
A
R
I

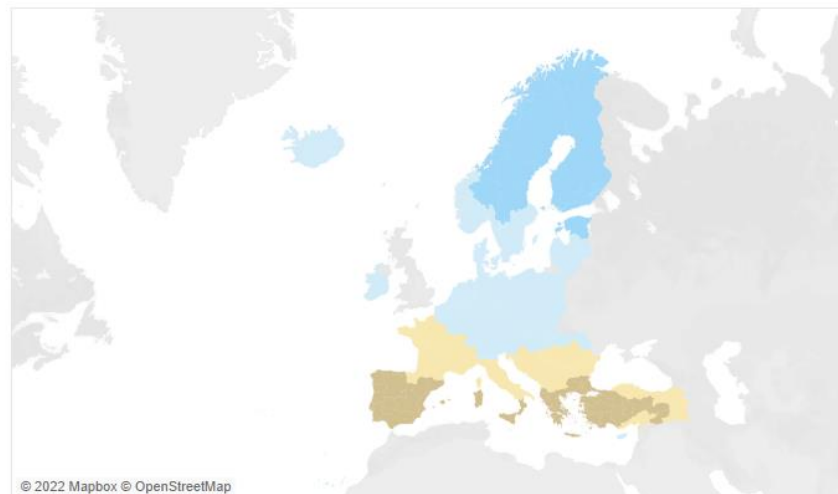
F
U
T
U
R
I

Projected change in precipitation sum

Time Period
2041-2070

Season
Annual

Scenario
RCP8.5



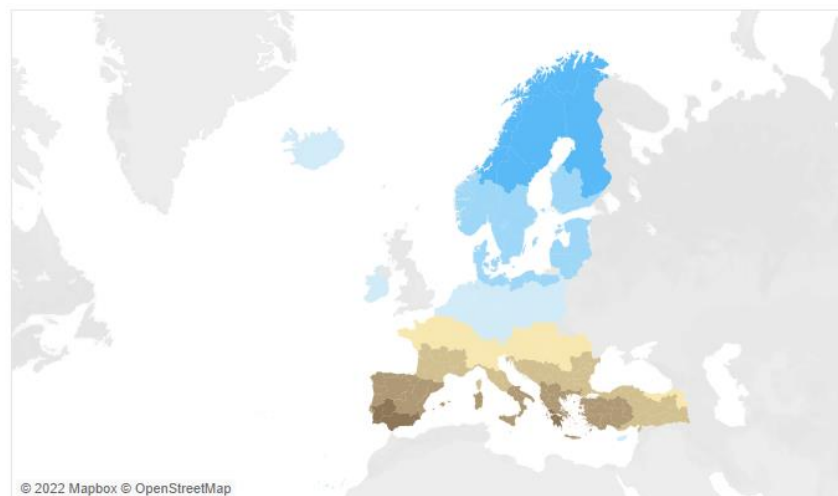
% change

Projected change in precipitation sum

Time Period
2071-2099

Season
Annual

Scenario
RCP8.5



% change

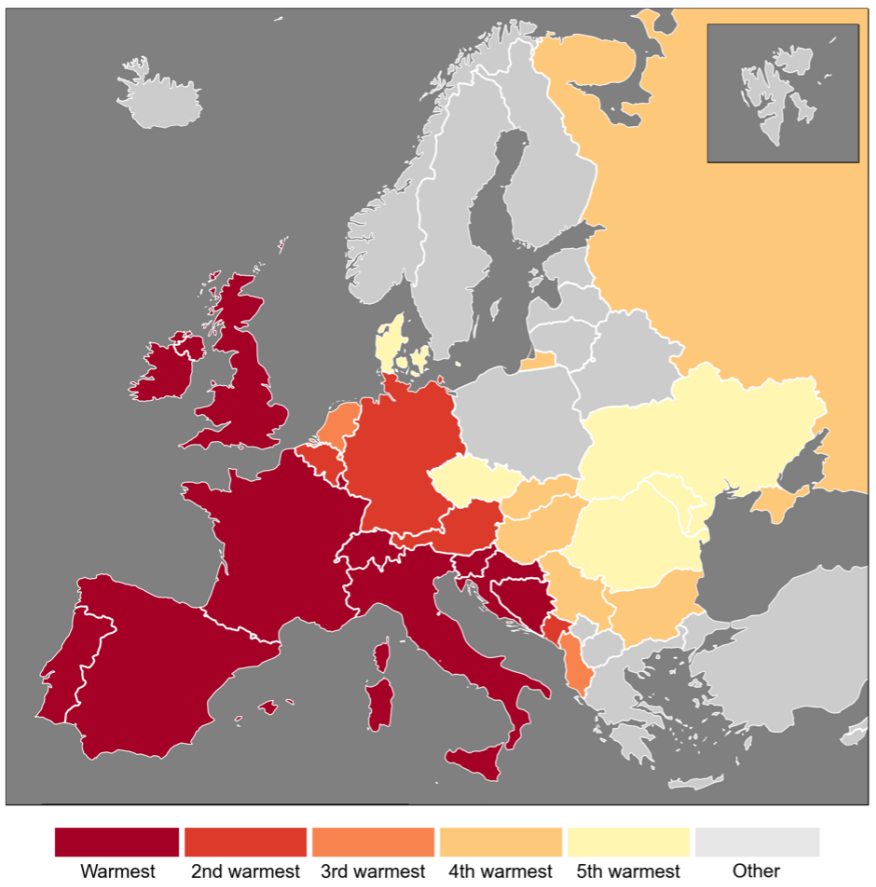


Fonti: <https://www.eea.europa.eu/data-and-maps/indicators/european-precipitation-2/assessment>

<https://www.eea.europa.eu/publications/europes-changing-climate-hazards-1/wet-and-dry-1/wet-and-dry-mean-precipitation>

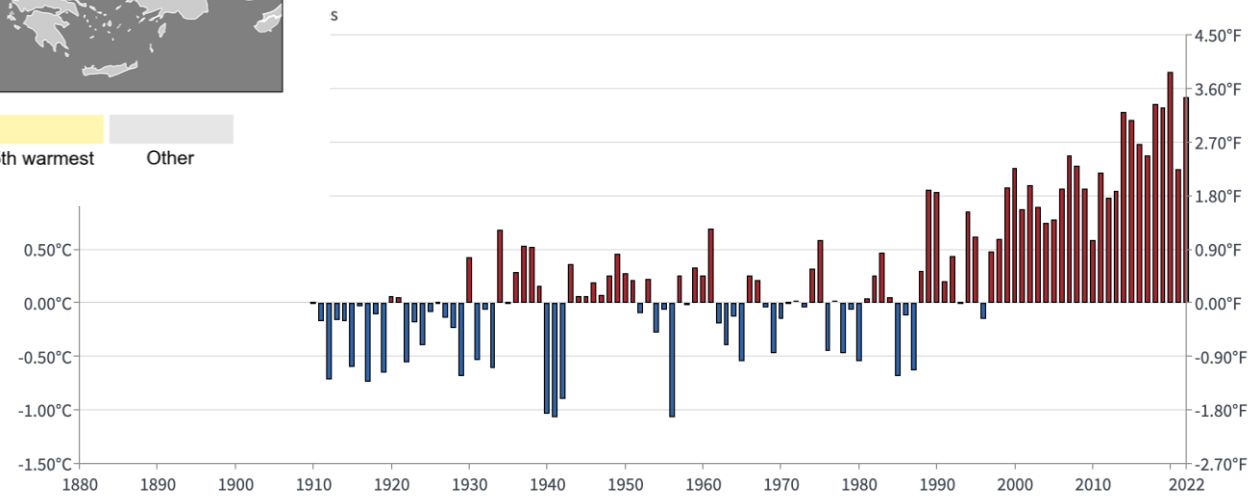
Ranking of 2022 temperature anomaly by country

Data: ERA5 1950-2022 • Reference period: 1991-2020 • Credit: C3S/ECMWF

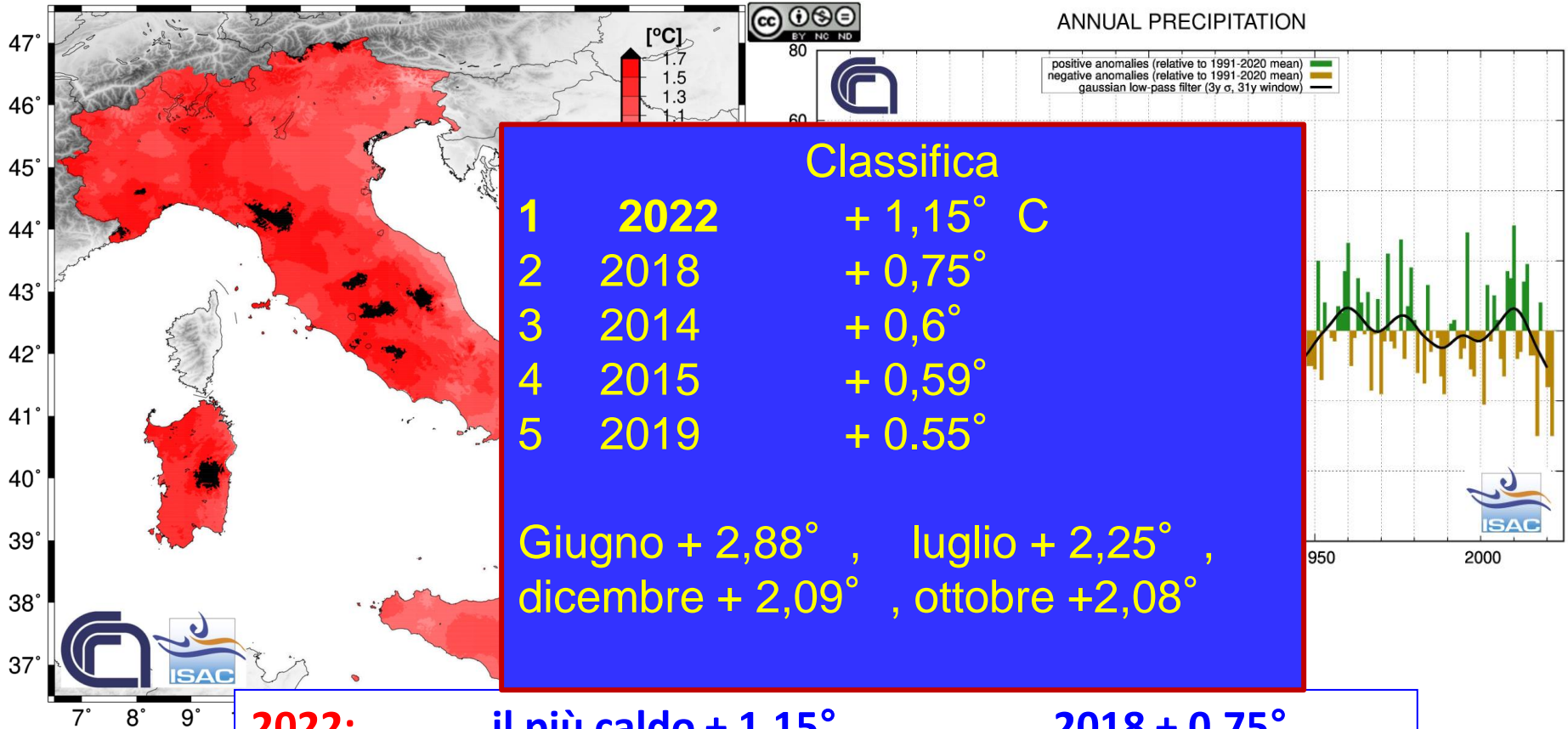


Europa Temperature 2022

The second
warmest after
2020



ITALIA 2022

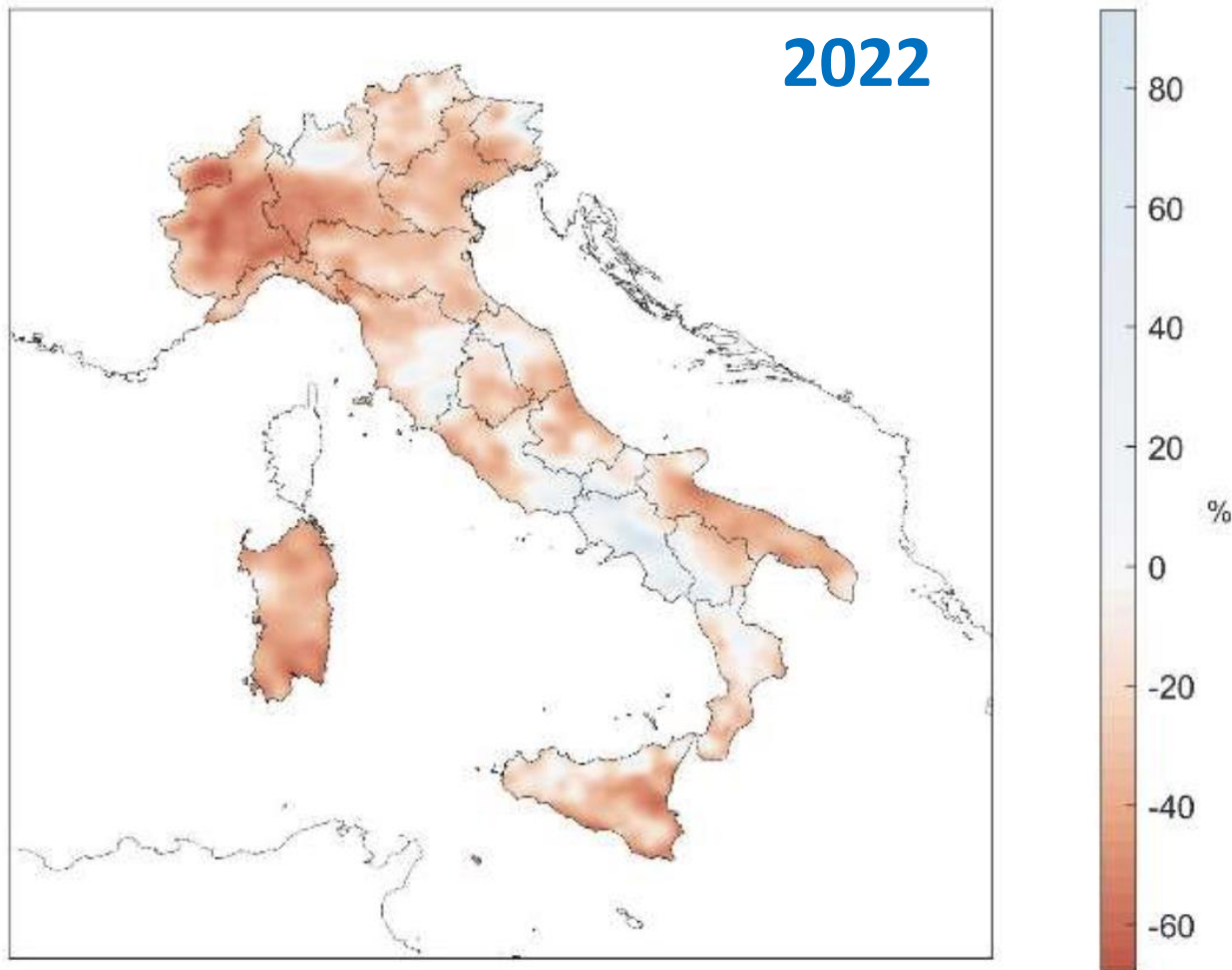


Classifica		
1	2022	+ 1,15° C
2	2018	+ 0,75°
3	2014	+ 0,6°
4	2015	+ 0,59°
5	2019	+ 0,55°

Giugno + 2,88° , luglio + 2,25° ,
dicembre + 2,09° , ottobre +2,08°

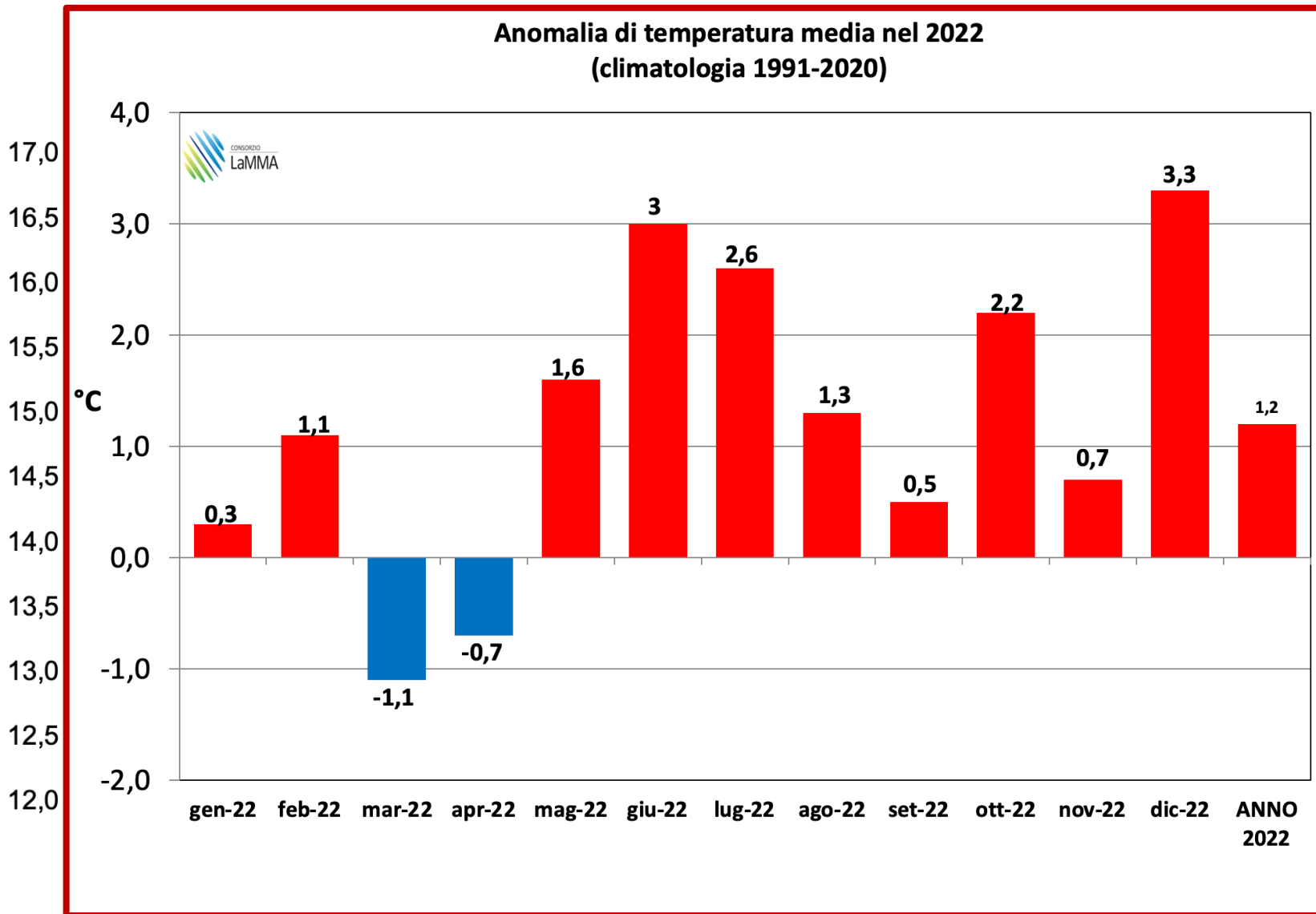
2022:	il più caldo + 1,15°	2018 + 0,75°
MASSIME:	il più caldo + 1,39°	
MINIME:	secondo + caldo + 0,70°	2018 + 0,84*

Clima calcolato sul periodo 1991-2020



Anomalia precipitazioni cumulate 2022
– 21%, il + secco dal 1961

Temperatura media annuale 1955-2022



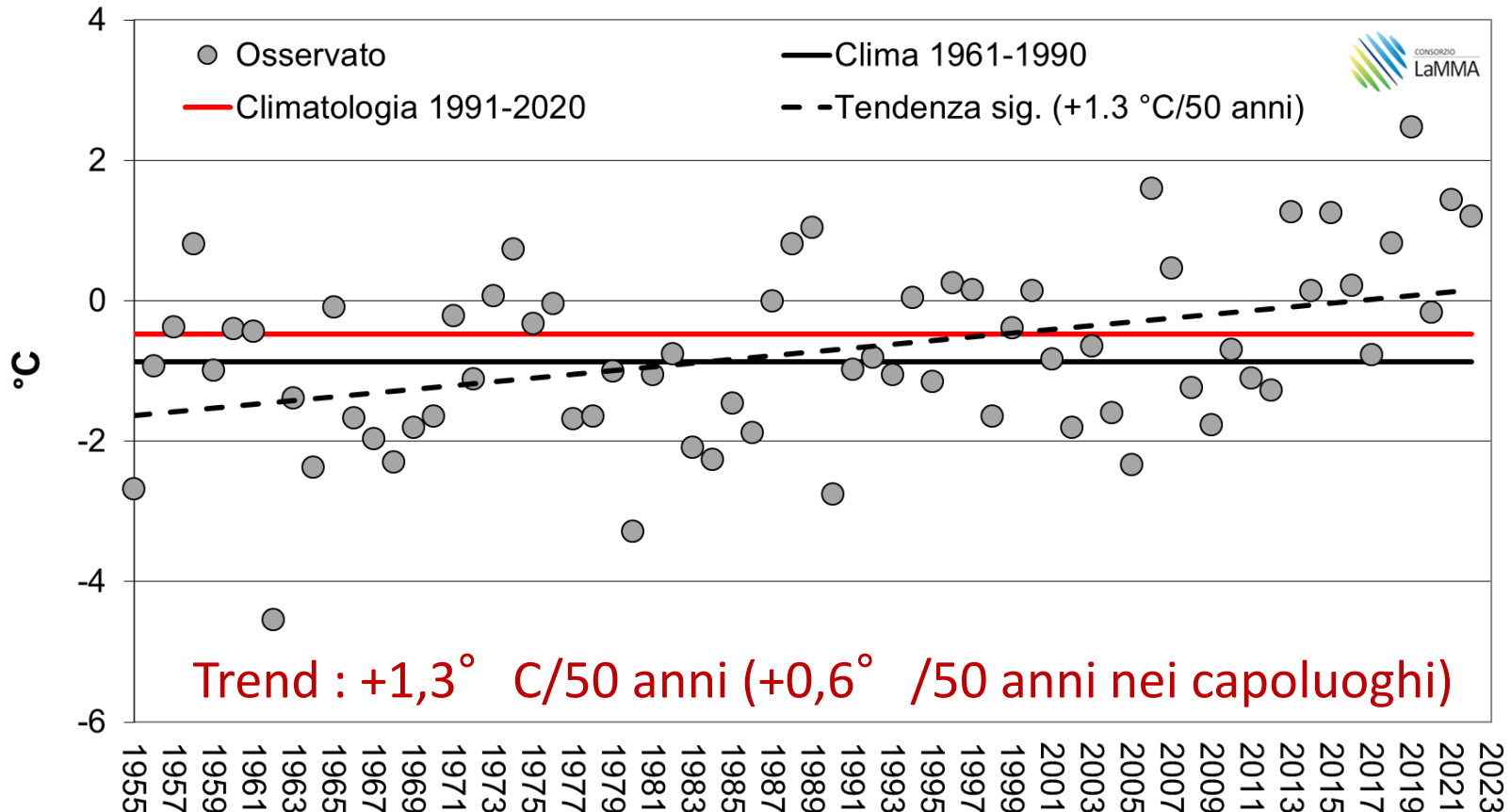
Trend (50 anni): Media $+1,2^{\circ}$, Massime $+1,5^{\circ}$, Minime $+0,9^{\circ}$



INVERNO Temperatura media 1955-2021

Abetone (1388 m)

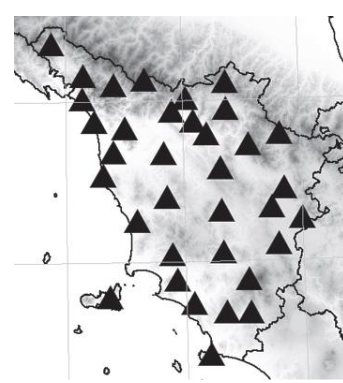
Temperatura media inverno Abetone



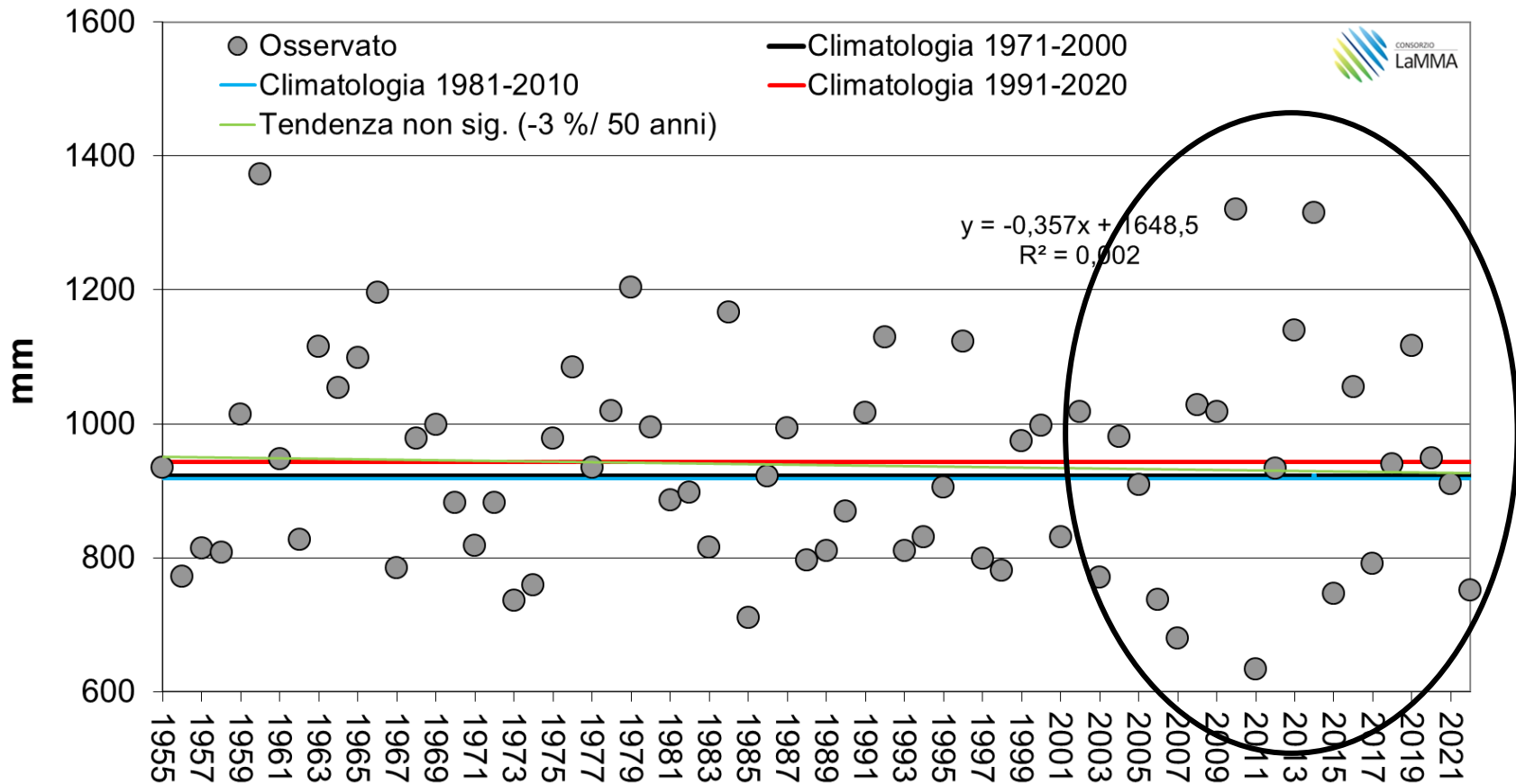
- neve, fioriture e maturazioni anticipate, gelate tardive, nuovi impianti, paesaggio

CAMBIAMENTI CLIMATICI

PIOGGIA CUMULATA ANNUALE



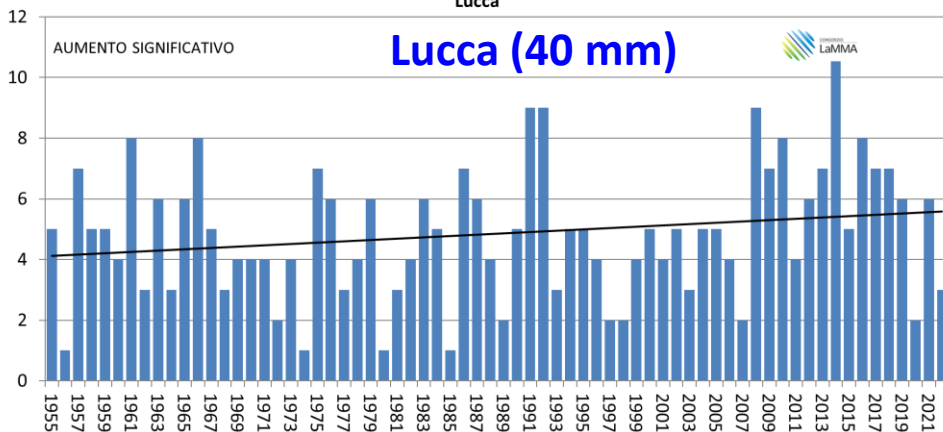
Pioggia annuale (media capoluoghi)



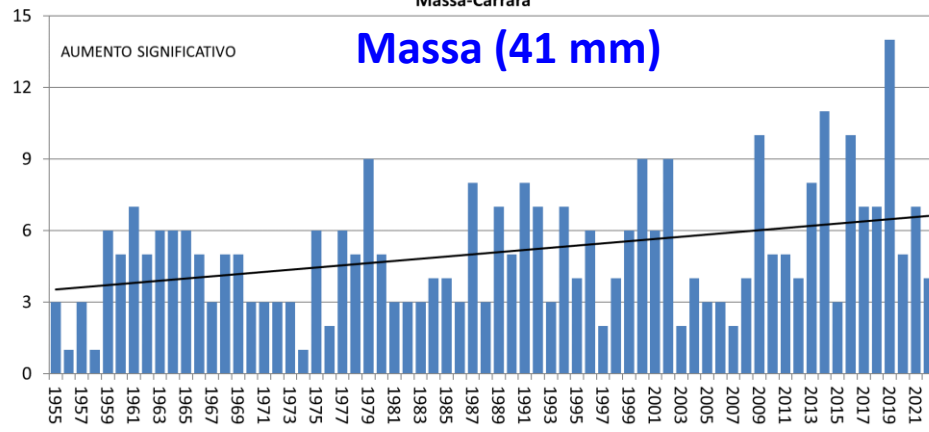


Numero di giorni con precipitazione maggiore del 95° percentile 1955-2022

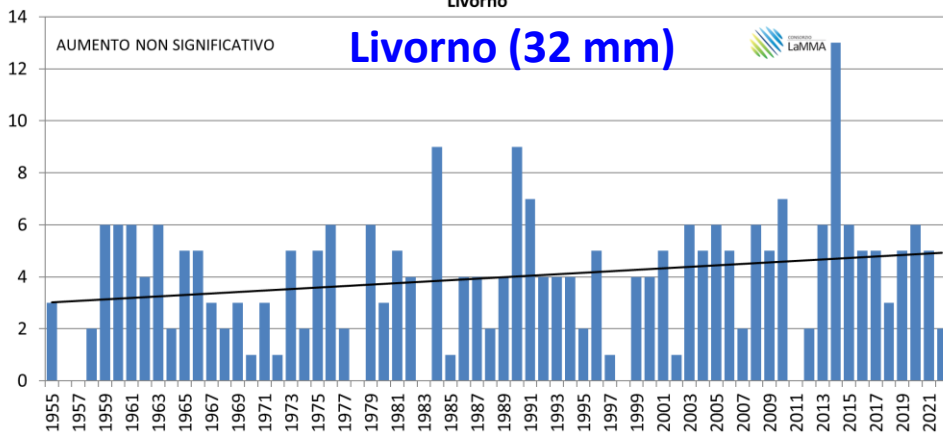
Giorni annui con pioggia giornaliera > 40 mm (95 percentile)
Lucca



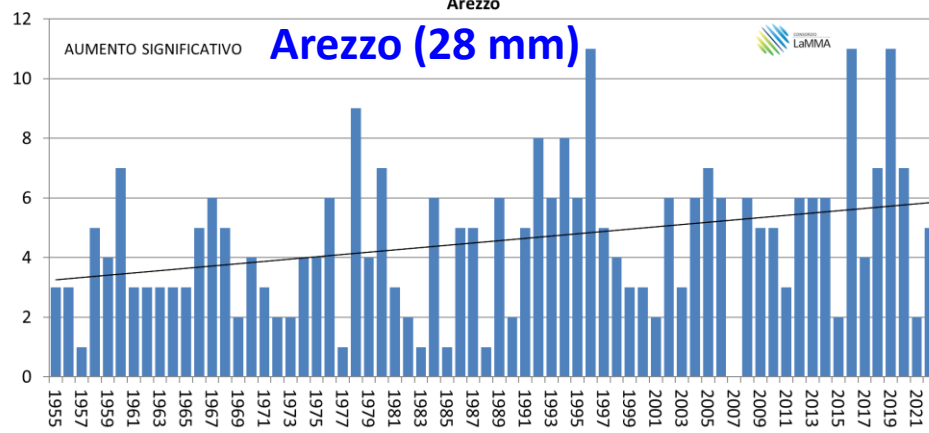
Giorni annui con pioggia giornaliera > 41 mm (95 percentile)
Massa-Carrara



Giorni annui con pioggia giornaliera > 32 mm (95 percentile)
Livorno



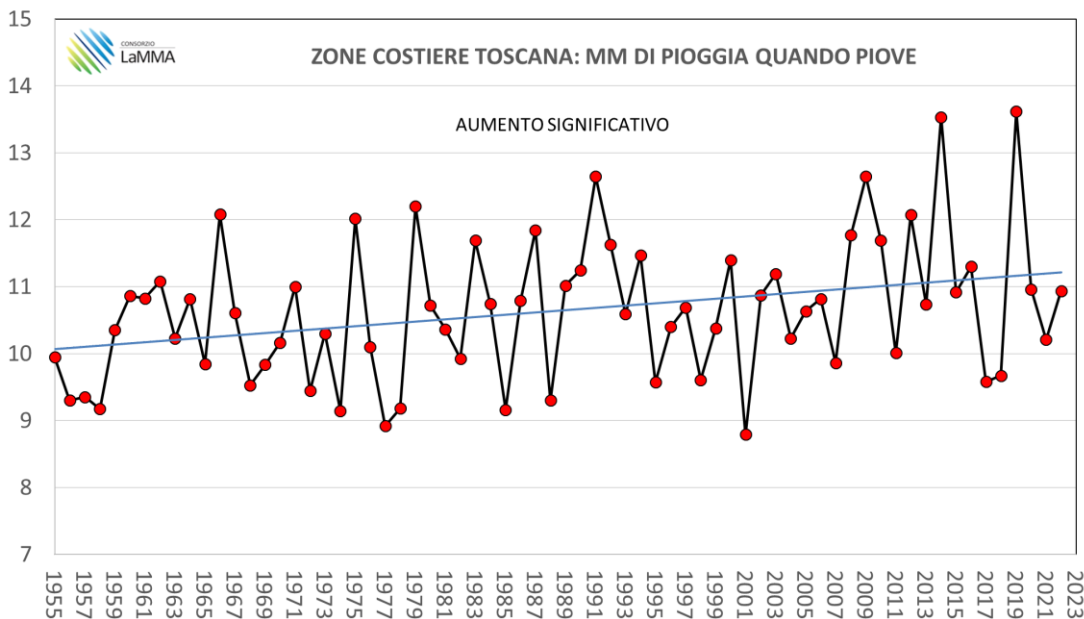
Giorni annui con pioggia giornaliera > 28 mm (95 percentile)
Arezzo



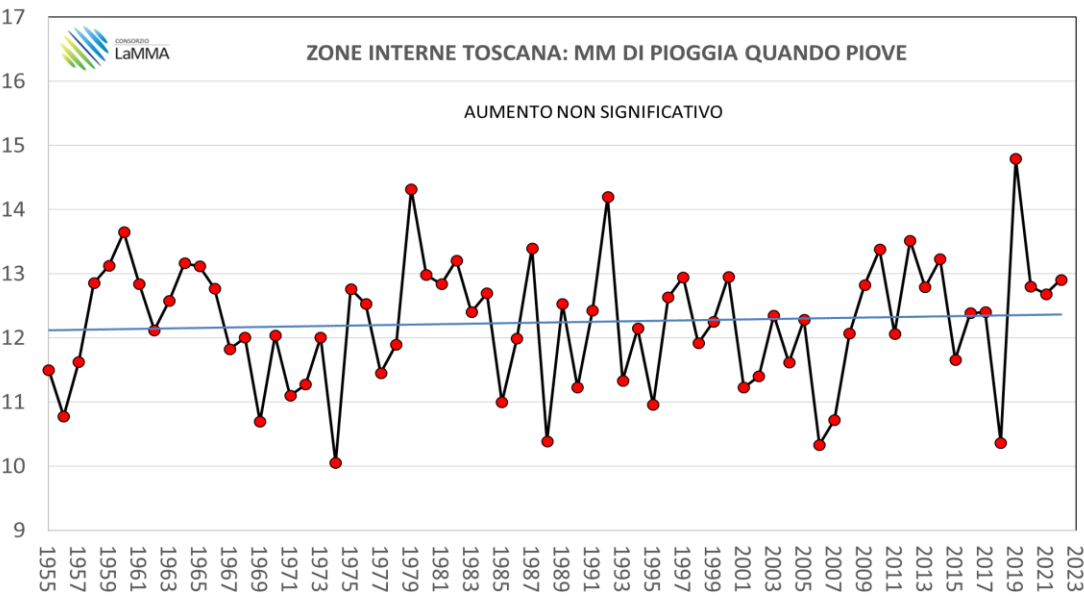
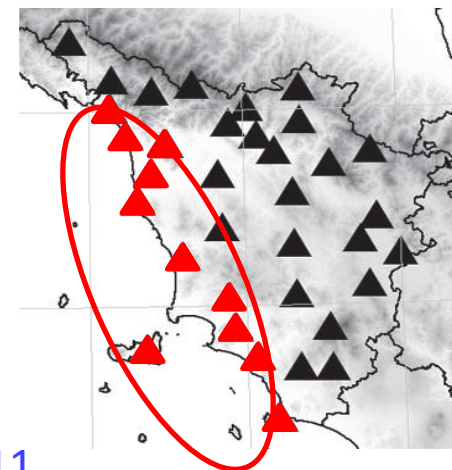
SEGNALI DI UNA MAGGIORE INTENSITÀ DELLE PIOGGE

Quanto piove quando piove!

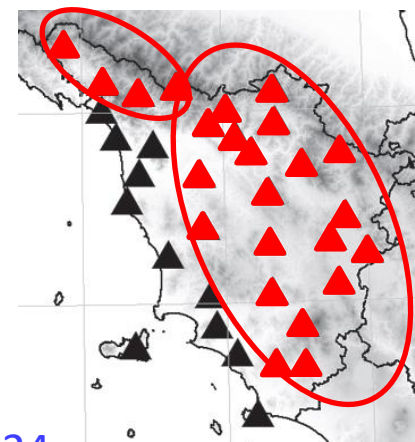
Quanto piove in media in un giorno piovoso (1955-2022)



Costa 11

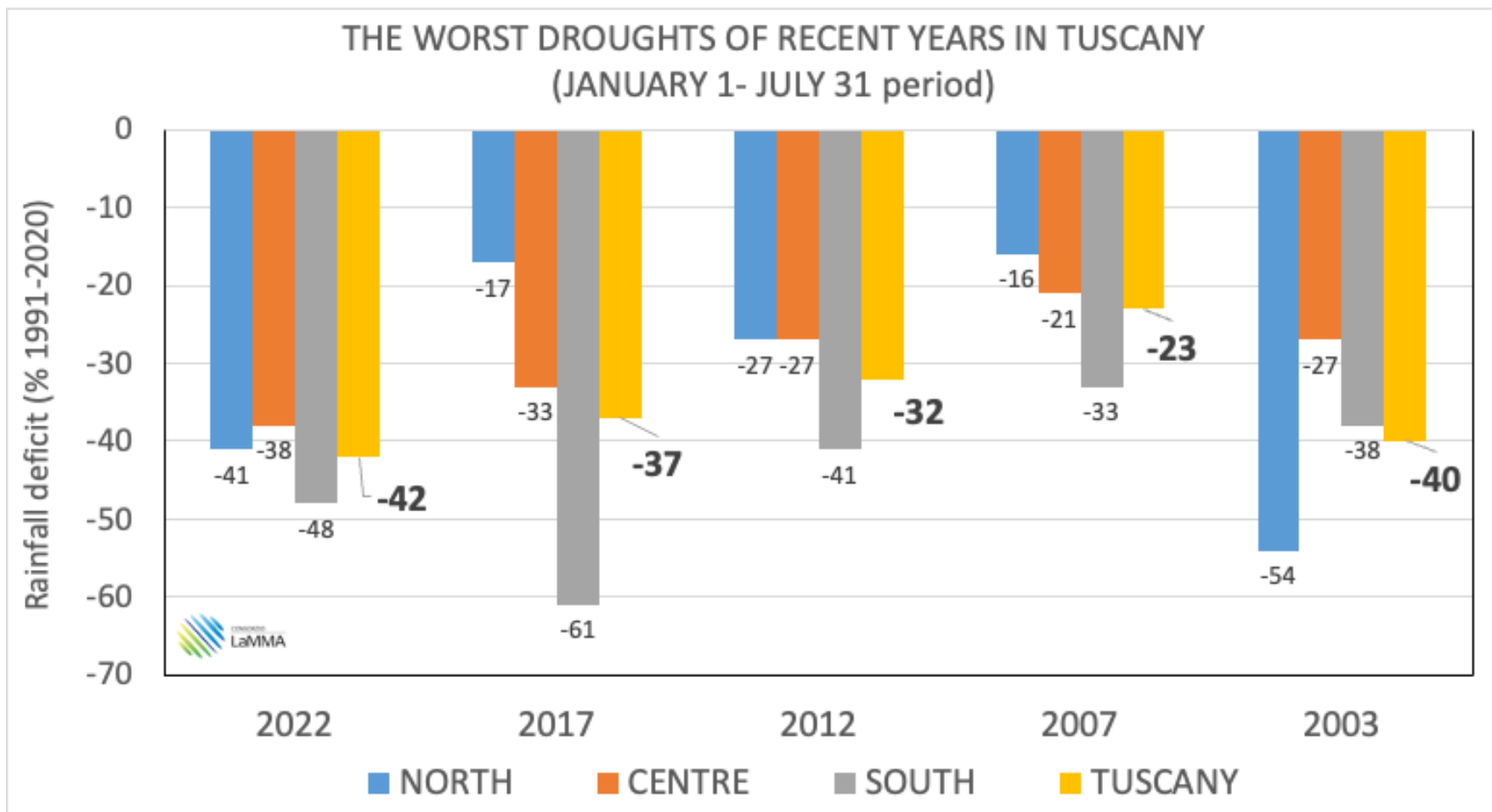


Interno 24



LE SICCITA' IN TOSCANA DAL 2000 AL 2022

Gennaio- Luglio

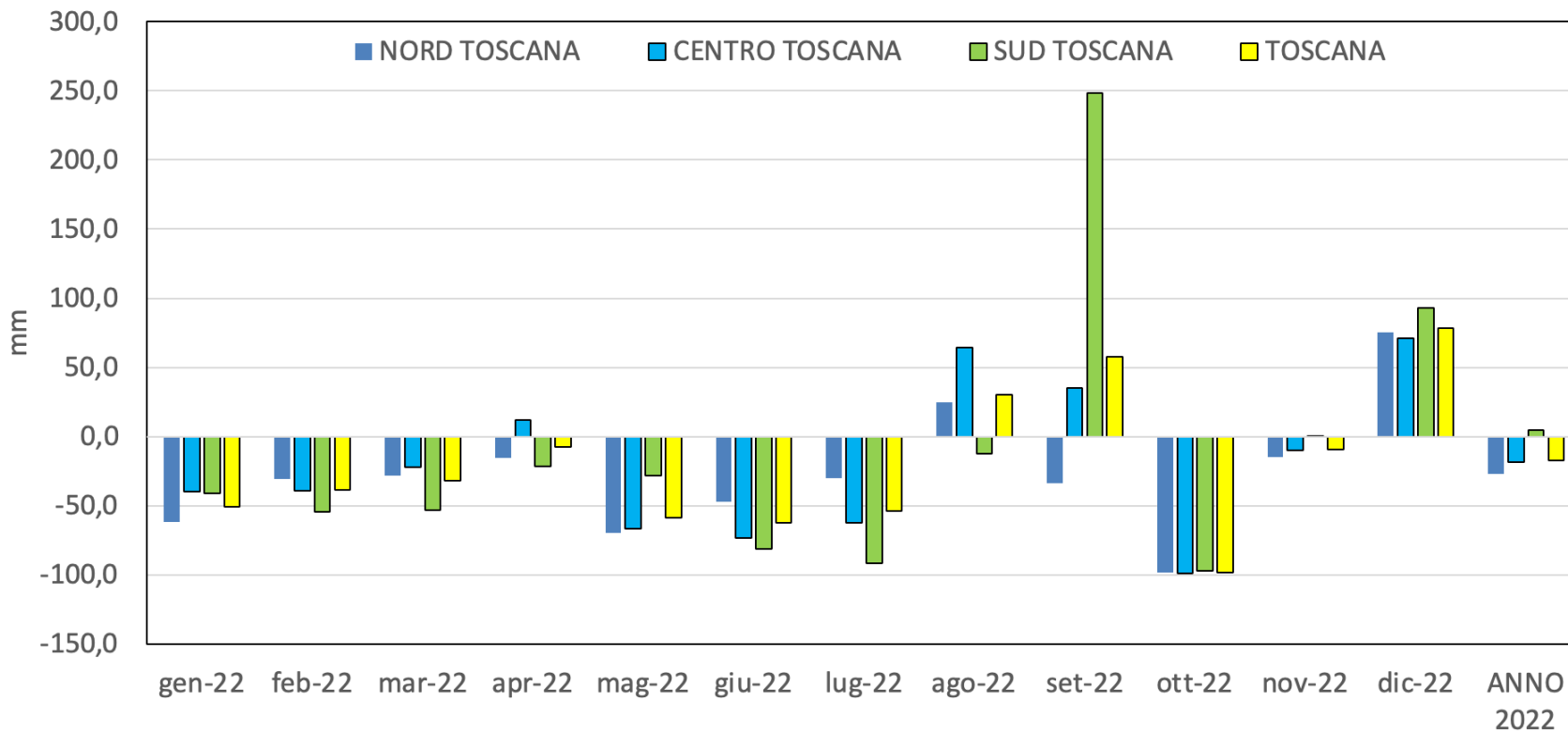


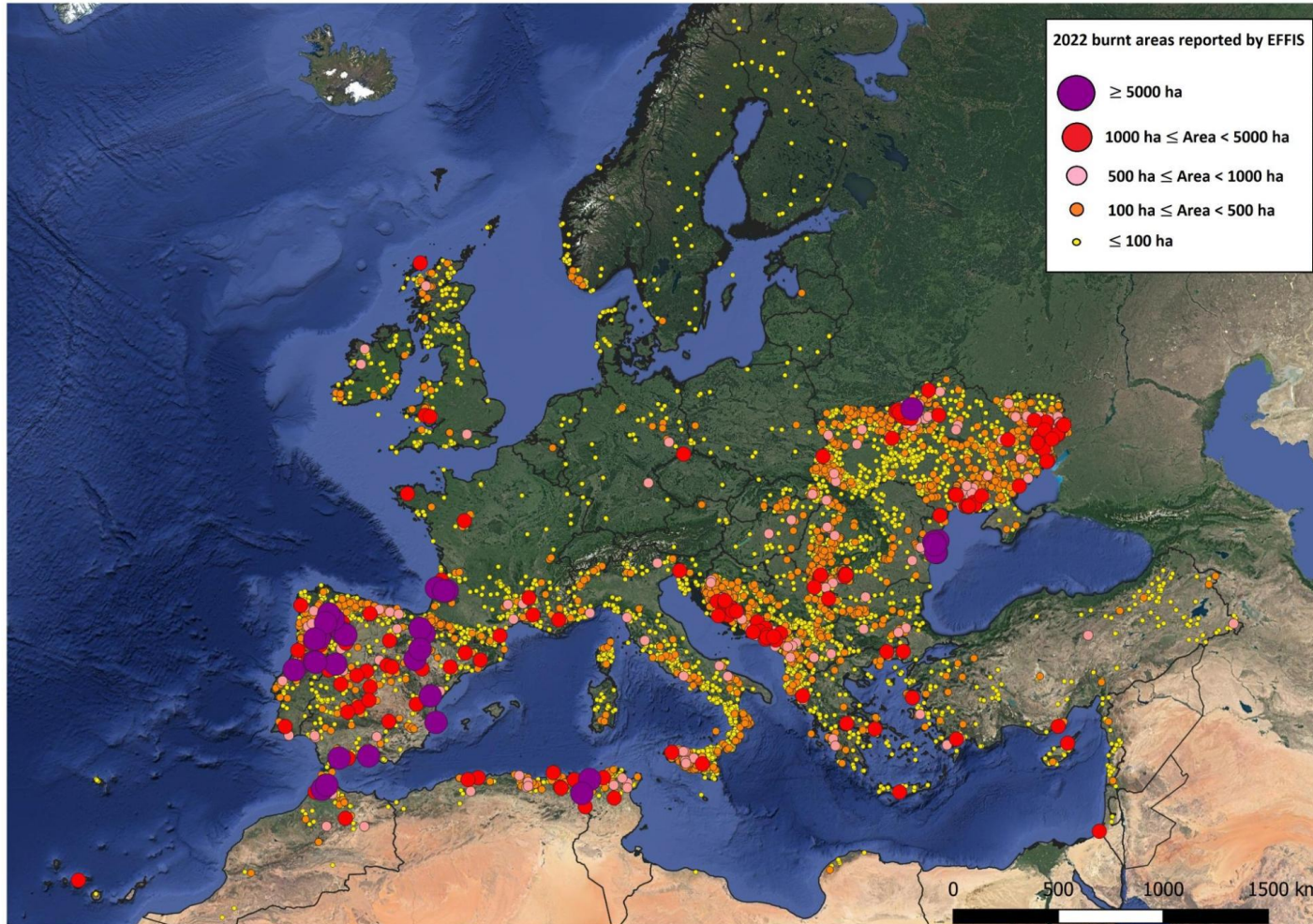


Anno 2022

Precipitazioni

ANOMALIA DI PIOGGIA IN MM NEL 2022: NORD, CENTRO, SUD, REGIONALE

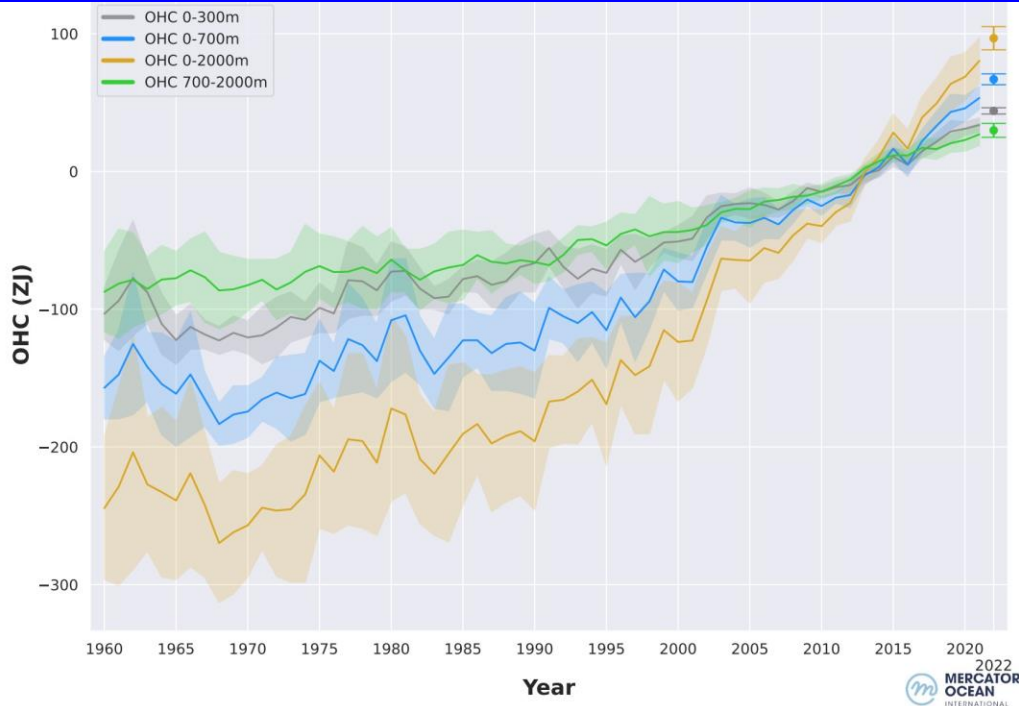




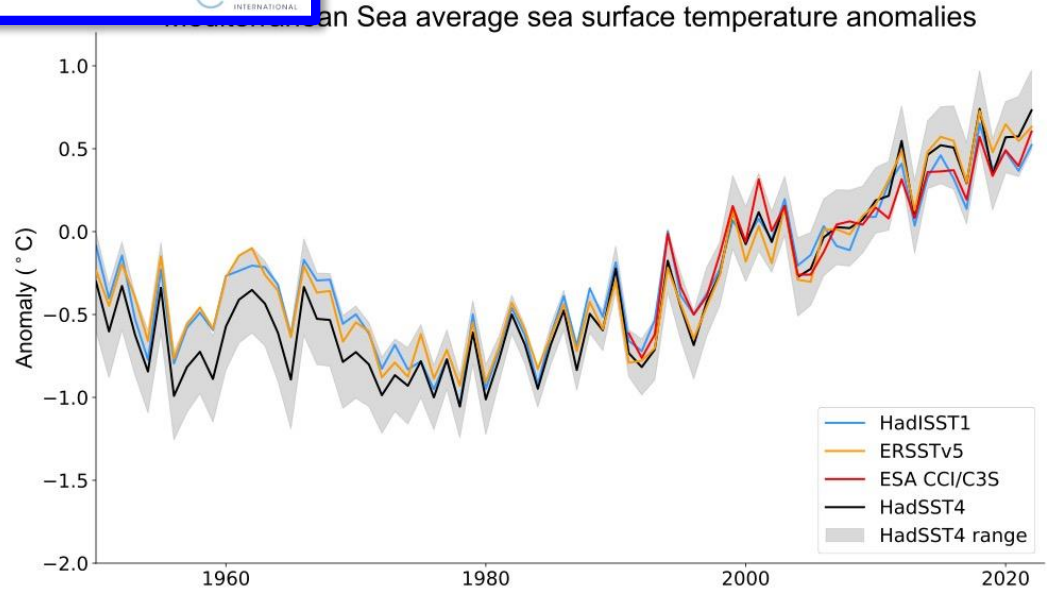
**Numeri
Toscana:
591 incendi
2247 ettari
3,5 ettari per
evento
(media 2015-
2021 era di 2,1)**

Temperatura Mare

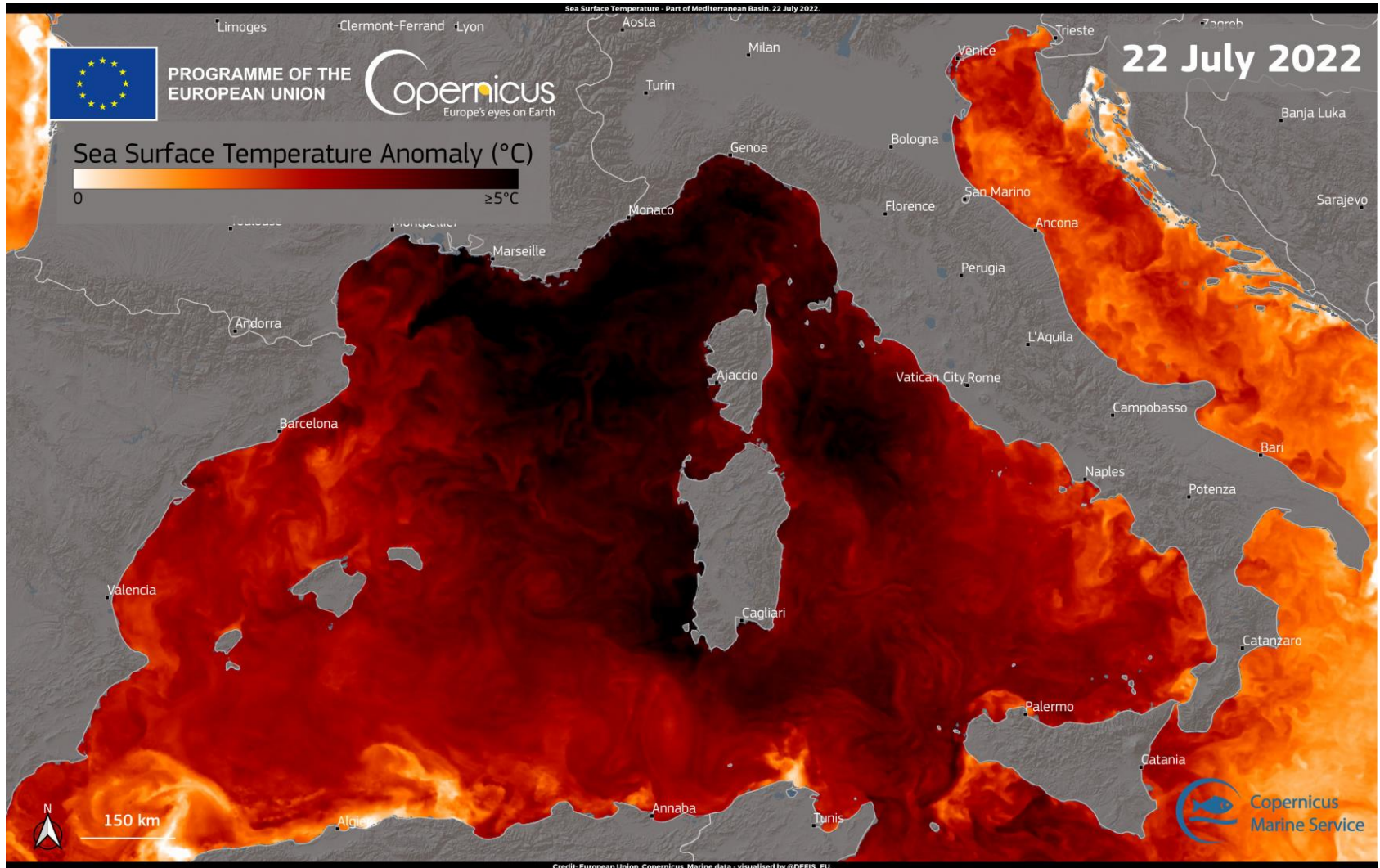
Oceano



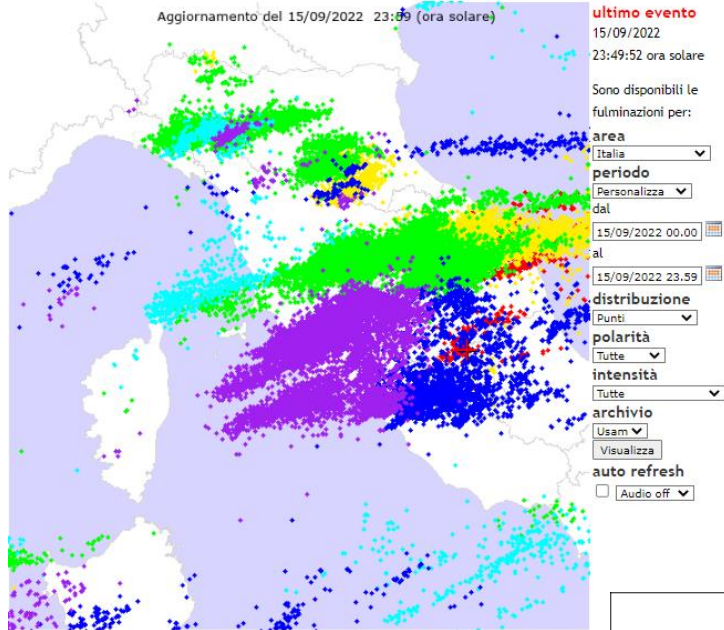
Mediterraneo



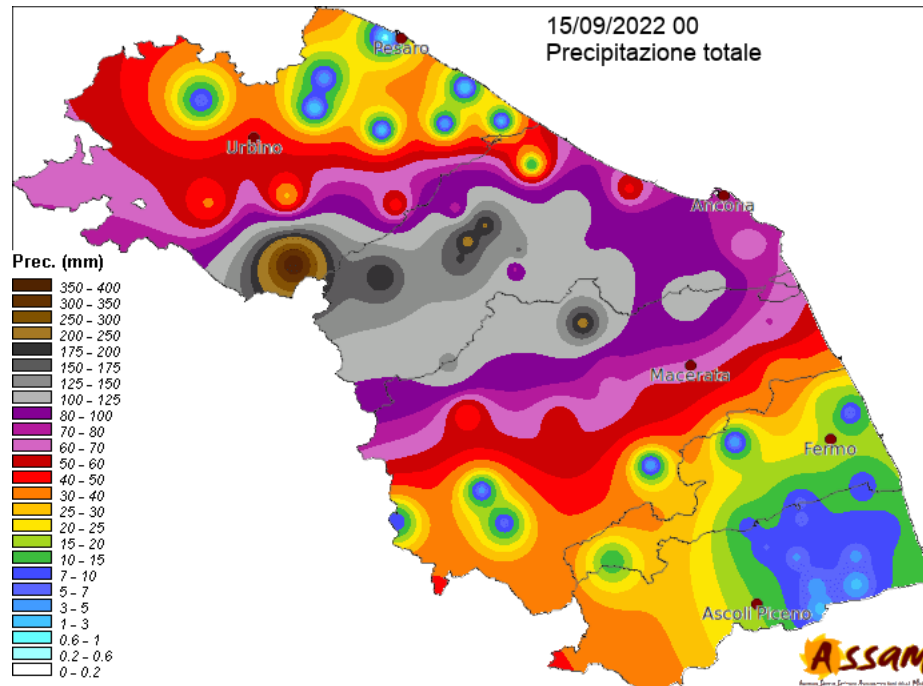
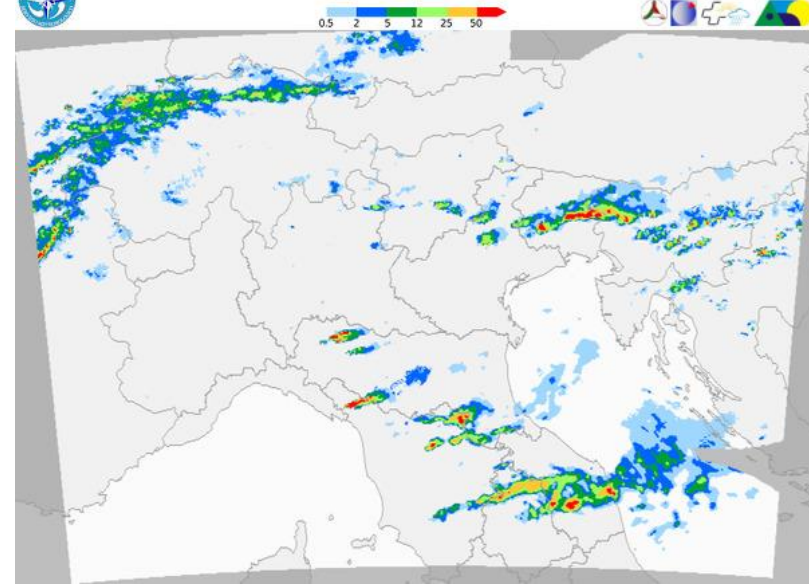
TEMPERATURA SUPERFICIALE DEL MARE



+ evaporazione, + energia, + umidità



Italia 15-09-2022 15:00 UTC - Radar SRI mm/h



GRAZIE PER L'ATTENZIONE



Groucho Marx:
«Perché devo
preoccuparmi dei
posterì, cosa hanno fatto
loro per me?»