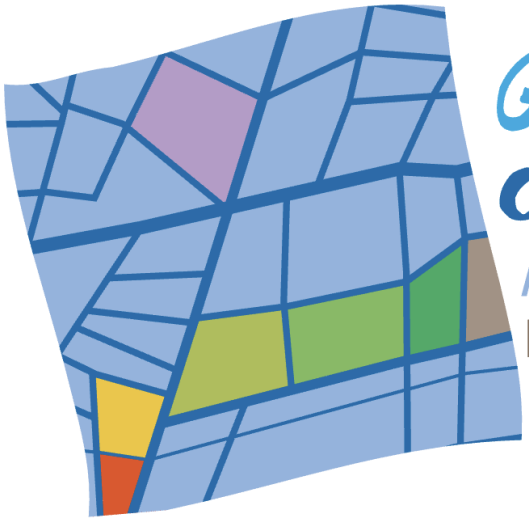
anci toscana

PLURES



Governare il cambiamento

ADATTAMENTO CLIMATICO
RIGENERAZIONE URBANA
E CITTÀ SPUGNA

Piove sempre sul bagnato?

Il cambiamento del regime nelle precipitazioni

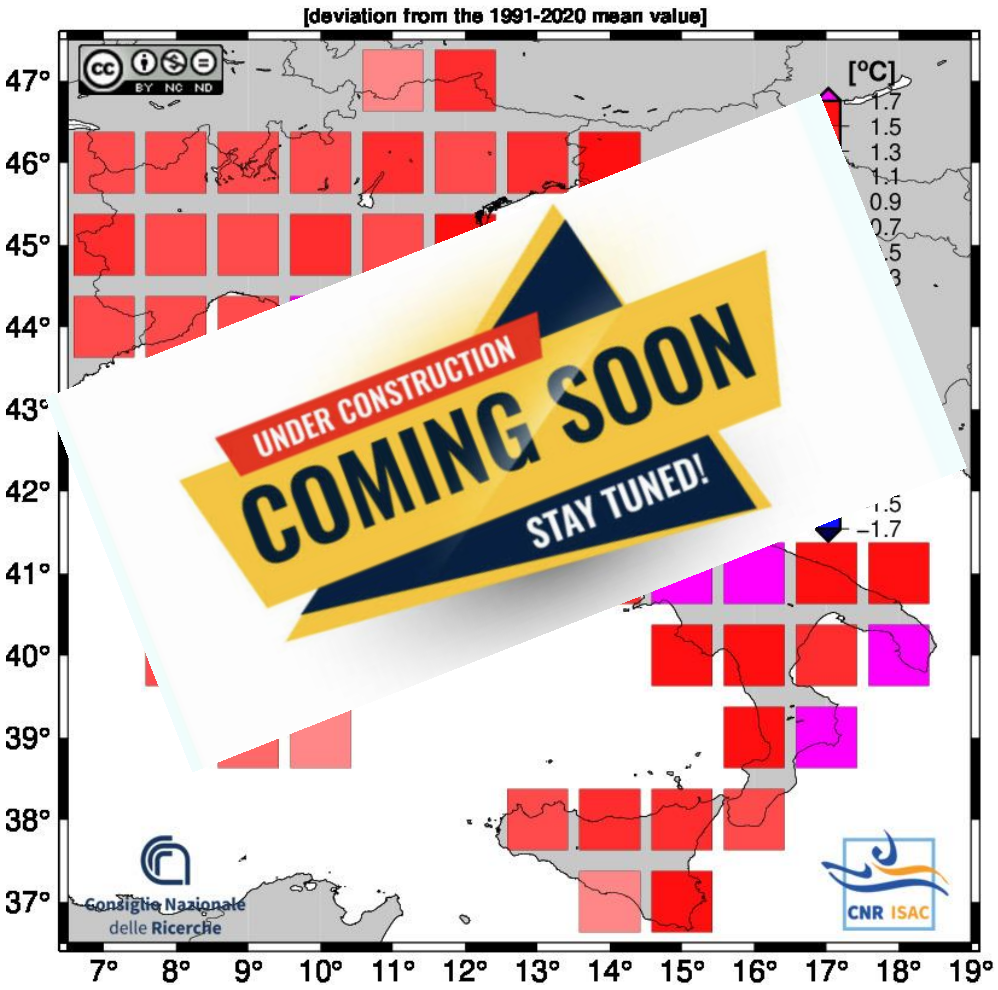
Venerdì 6 marzo 2026
IED - Firenze

Bernardo Gozzini

CONSORZIO LaMMA

CONSORZIO LaMMA

ITALIA 2025



Classifica

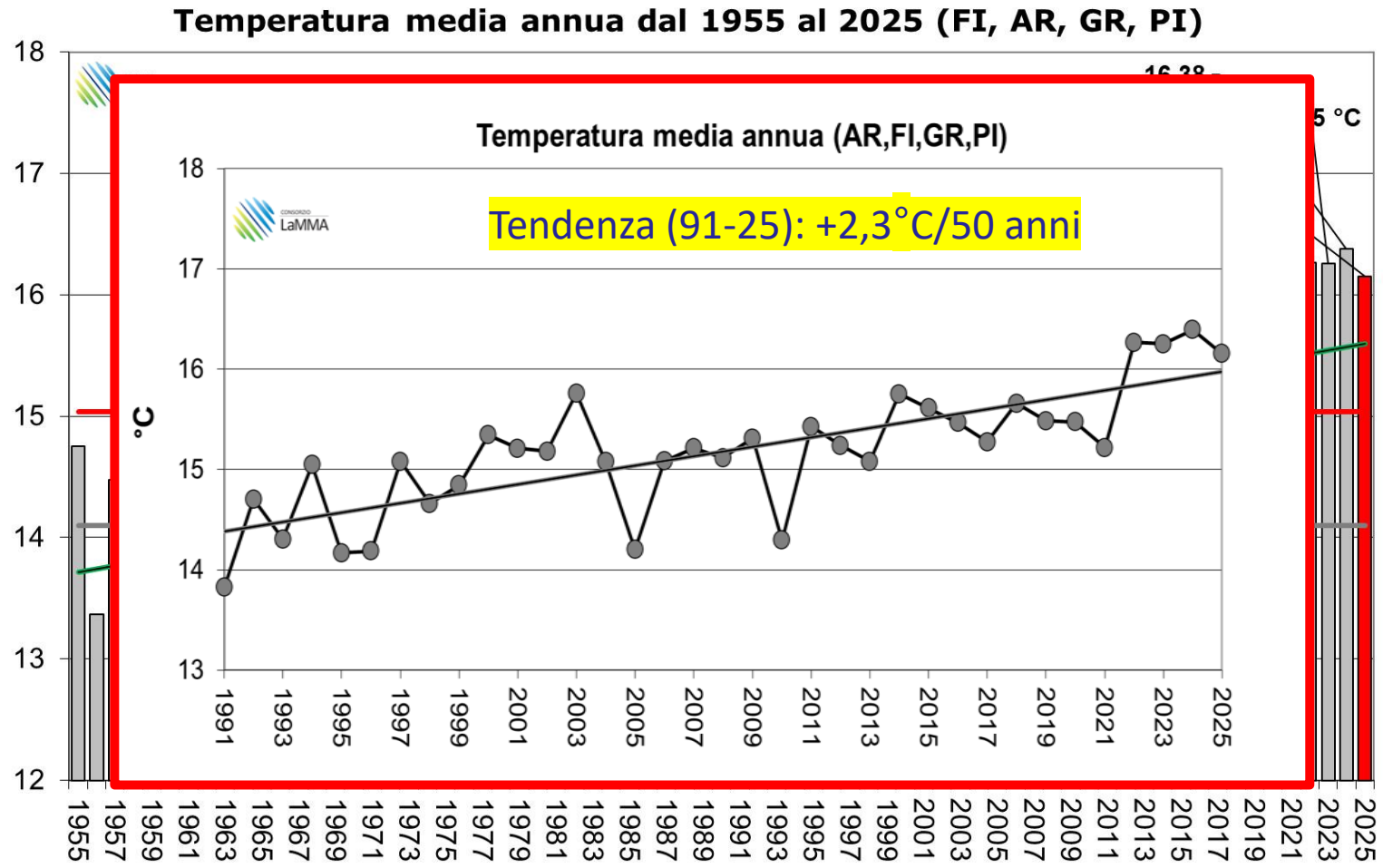
1. **2024** + 1,47
2. **2022** + 1,15°C
3. **2023** + 1,12°C
4. **2025** + **0,95°C**
5. 2018 + 0,75°
6. 2014 + 0,6°
7. 2015 + 0,59°
8. 2019 + 0.55°

2024: **il più caldo**
MAX: **il più caldo + 1,48°**
MIN: **il più caldo + 1,33°**

Clima calcolato sul periodo 1991-2020

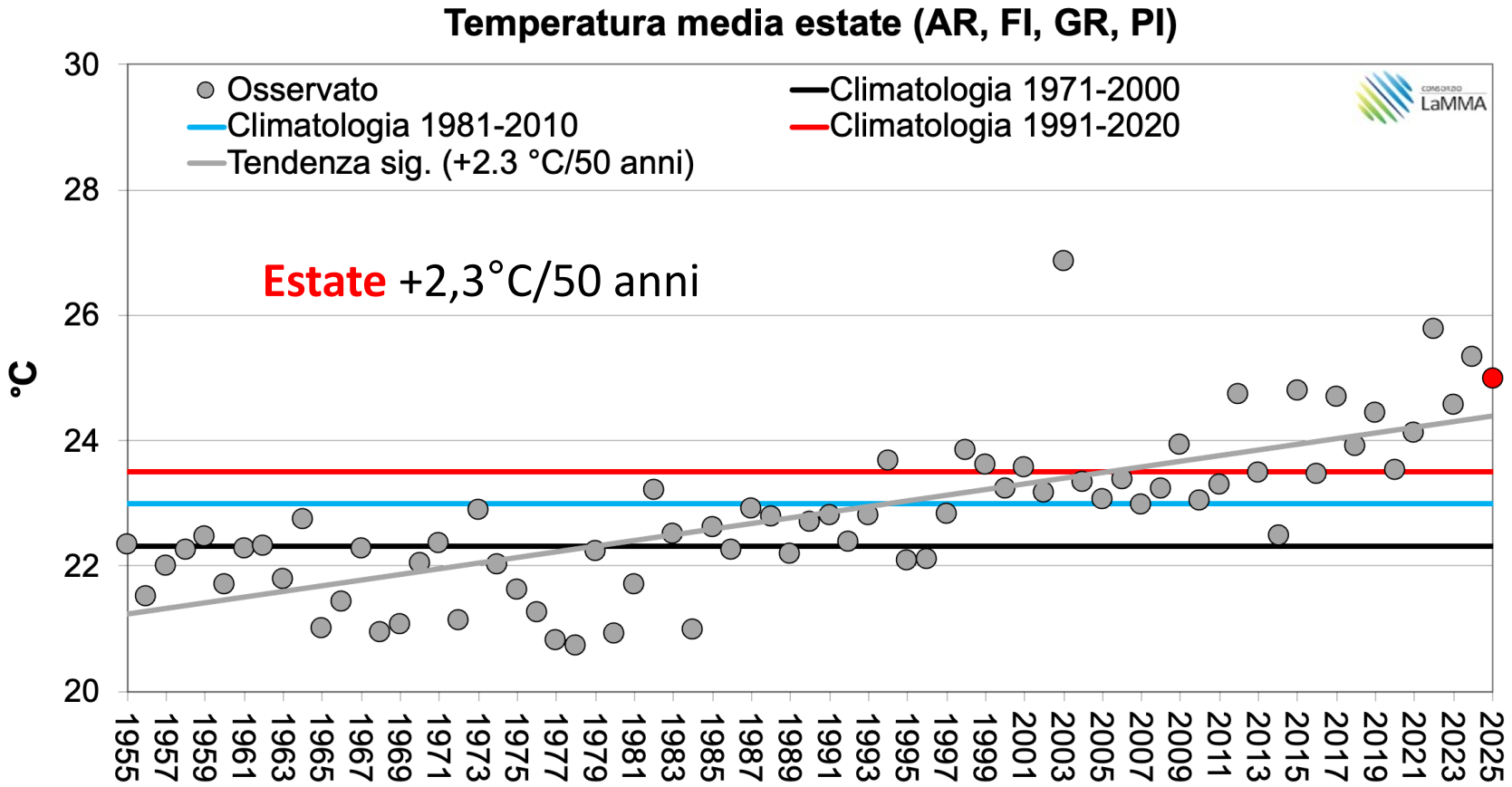
Temperature medie annue 1955-2024

Toscana (AR, FI, GR, PI)



Trend (50 anni): Medie +1,4°, Massime +1,6°, Minime +1,1°

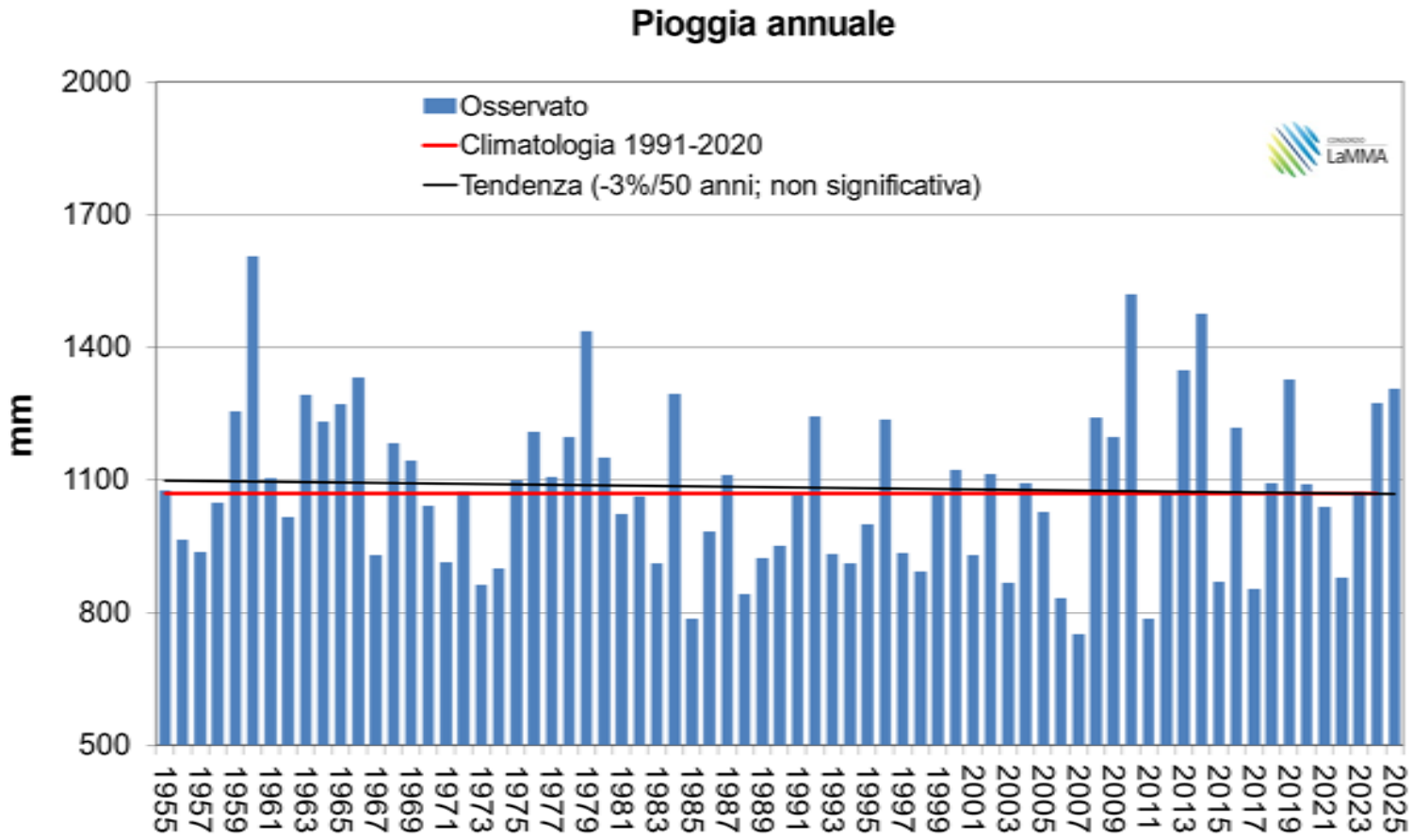
Temperature medie estate 1955-2025
Toscana (AR, FI, GR, PI)



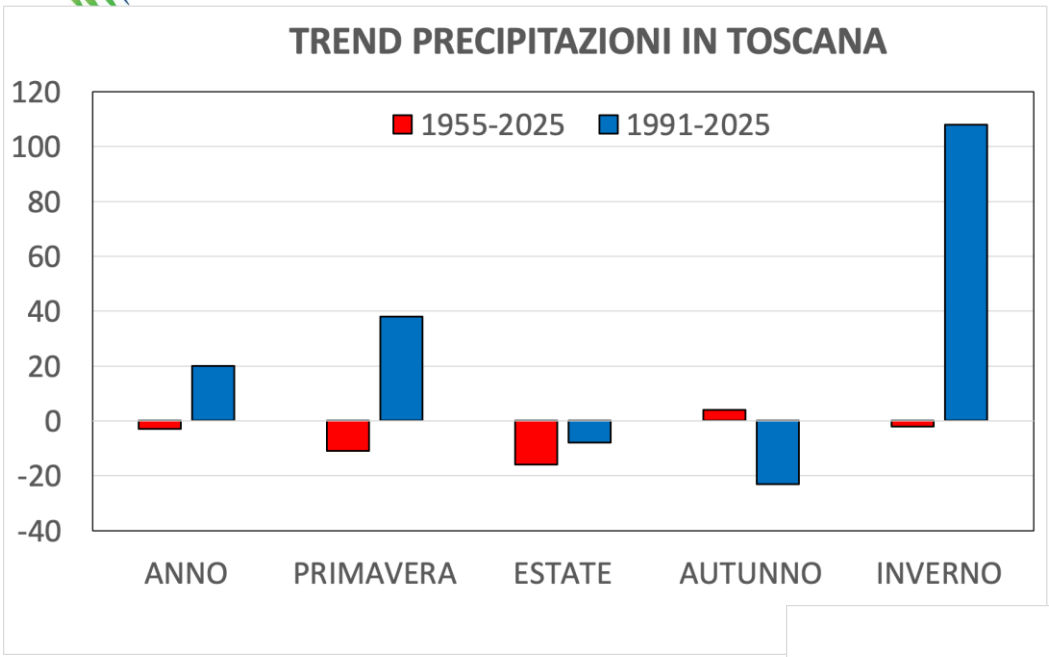
Primavera +1,2°C/50 anni, **Autunno** +1,2°C/50 anni, **Inverno** +0,8°C/50 anni

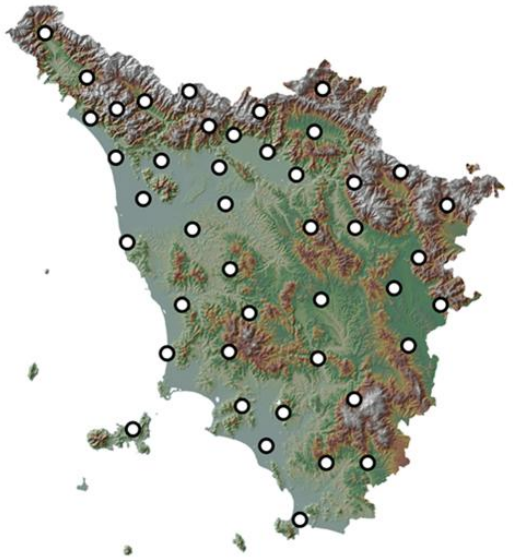
GOVERNARE IL CAMBIAMENTO

PIOGGIA CUMULATA ANNUALE



TREND PIOGGIA SU PERIODI DIVERSI



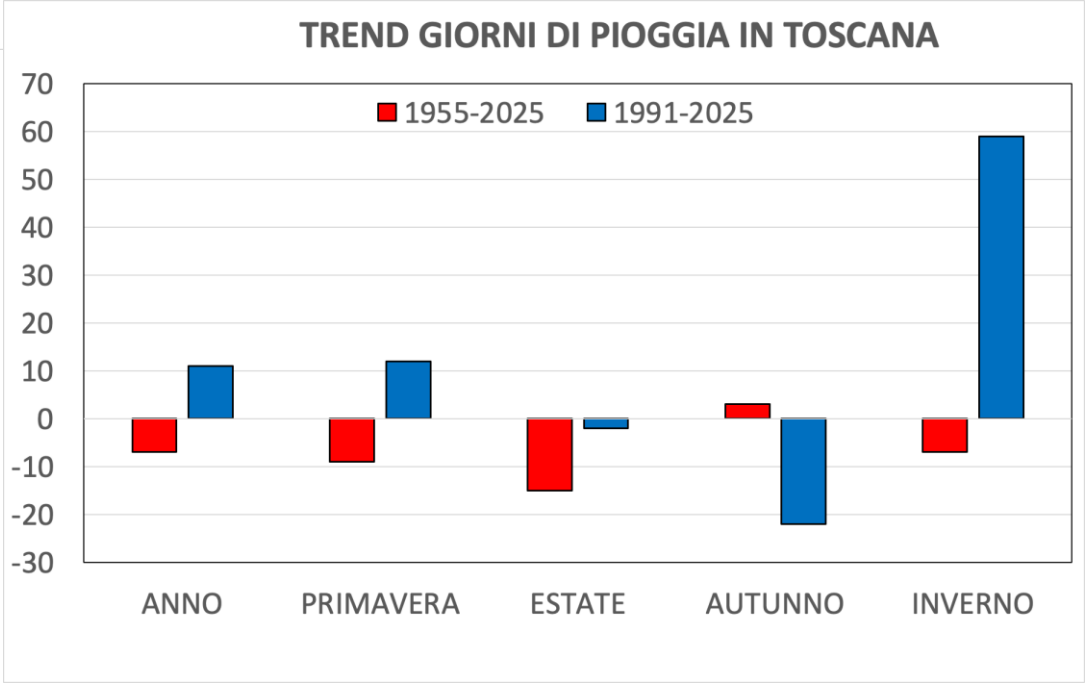


Trend precipitazioni (45 st.)

Trend su periodi diversi

BLU: 1955-2025

ROSSO: 1991-2025



Trend giorni di pioggia (45 st.)

Pioggia: Suddivisione Toscana in 8 aree

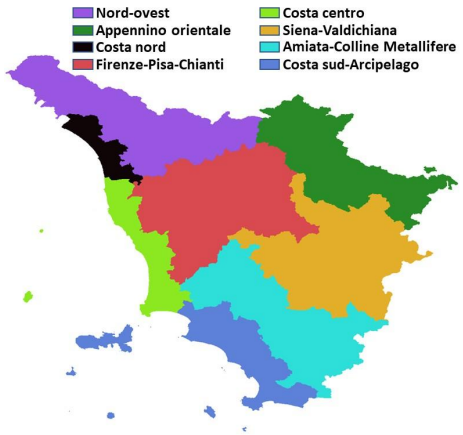
Trend in % ogni 50 anni

Pioggia media annuale e stagionale

Pioggia

Trend annuali e stagionali sulle 8 aree 1955-2025

	ANNO	PRIMAVERA	ESTATE	AUTUNNO	INVERNO
Nord-ovest	-2	-11	-19	6	0
Appennino orientale	1	-4	-17	9	0
Costa nord	2	-7	-15	13	2
Firenze-Pisa-Chianti	-7	-13	-25	4	-4
Costa centro	-1	-11	-18	7	7
Siena-Valdichiana	1	-1	-1	4	-4
Amiata-Colline Metallifere	-7	-13	-3	-3	-10
Costa sud-Arcipelago	2	-10	6	10	-5



Non ci sono trend significativi se non diminuzione in:

ESTATE: Nord-Ovest, Appen. Orient., Fi-Chianti

minore attività temporalesca?

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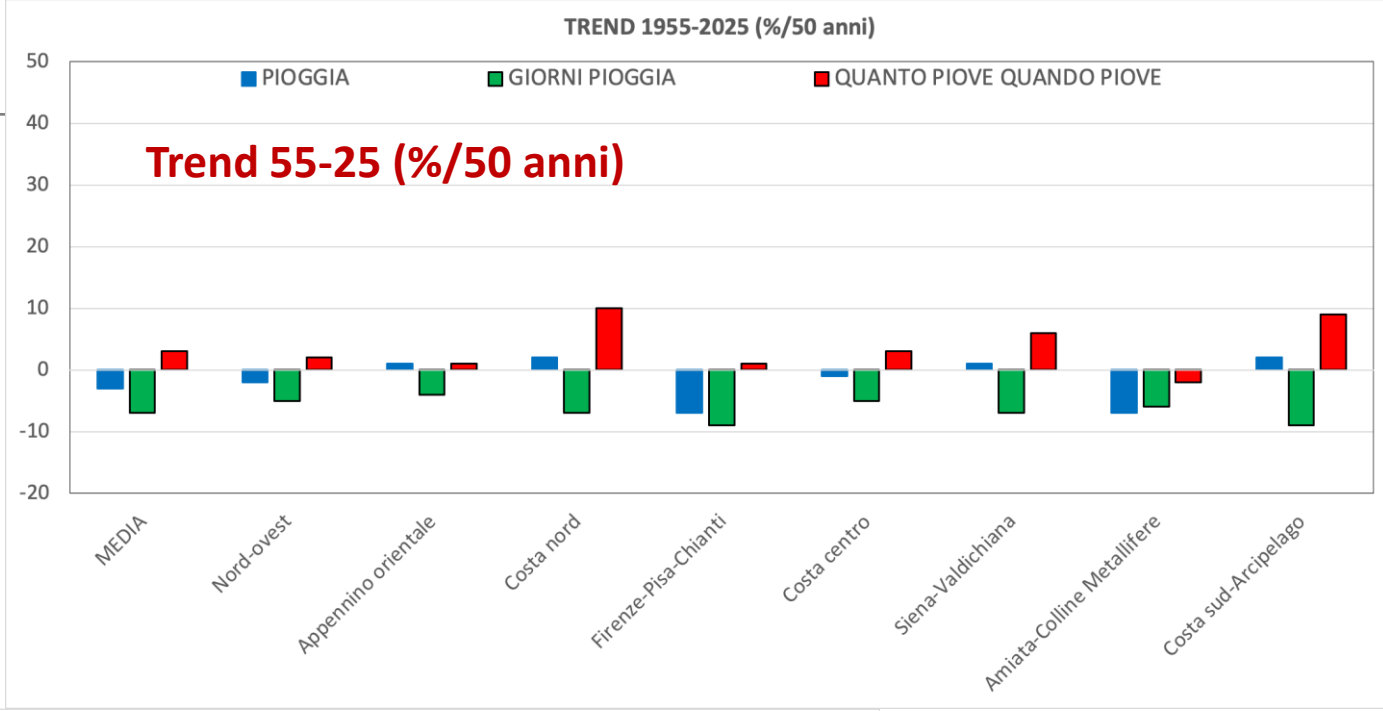
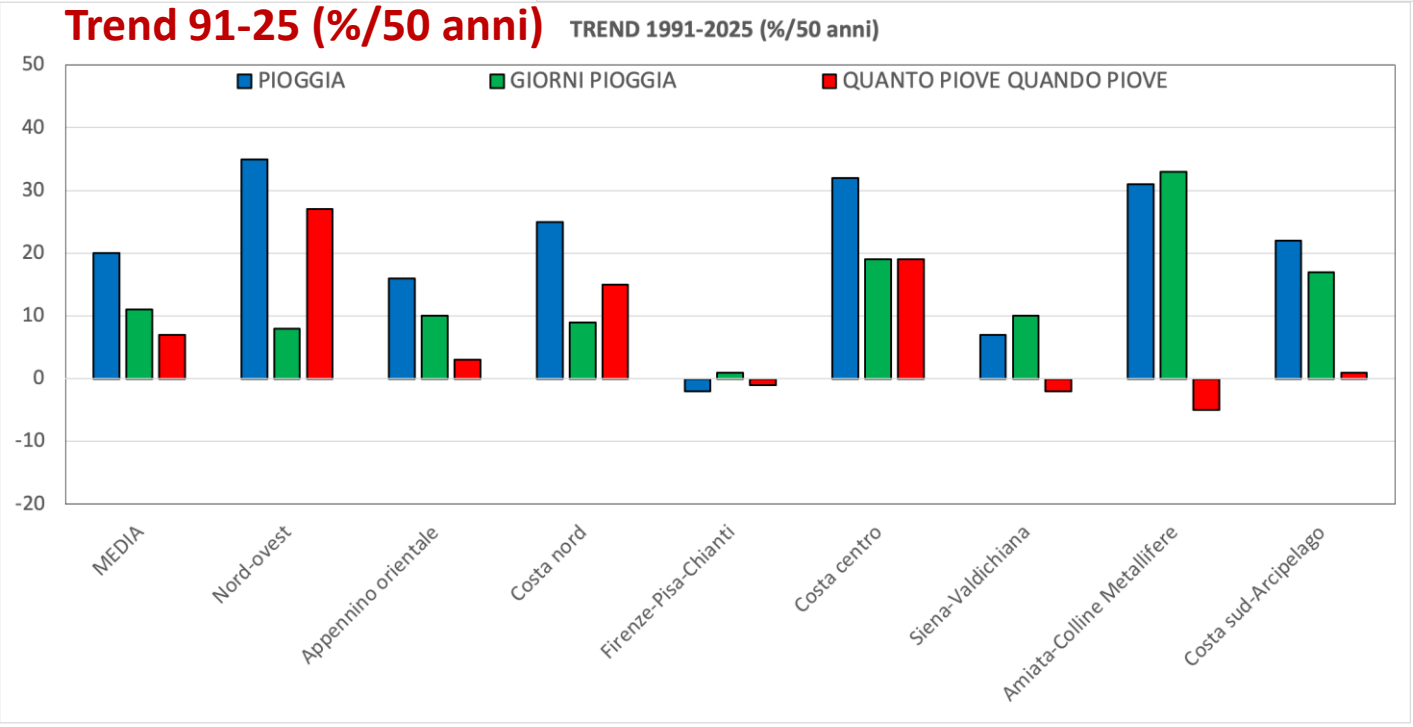
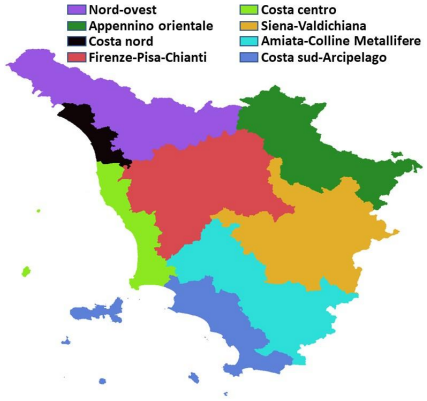
Trend in % ogni 50 anni

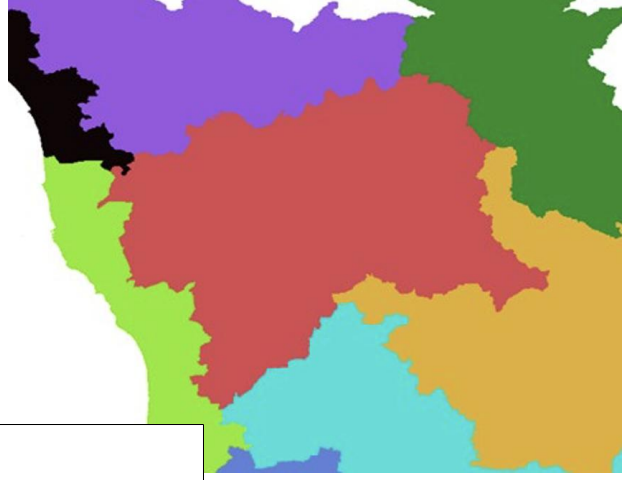
1. Pioggia media
2. Giorni di pioggia
3. Quanto piove quando piove



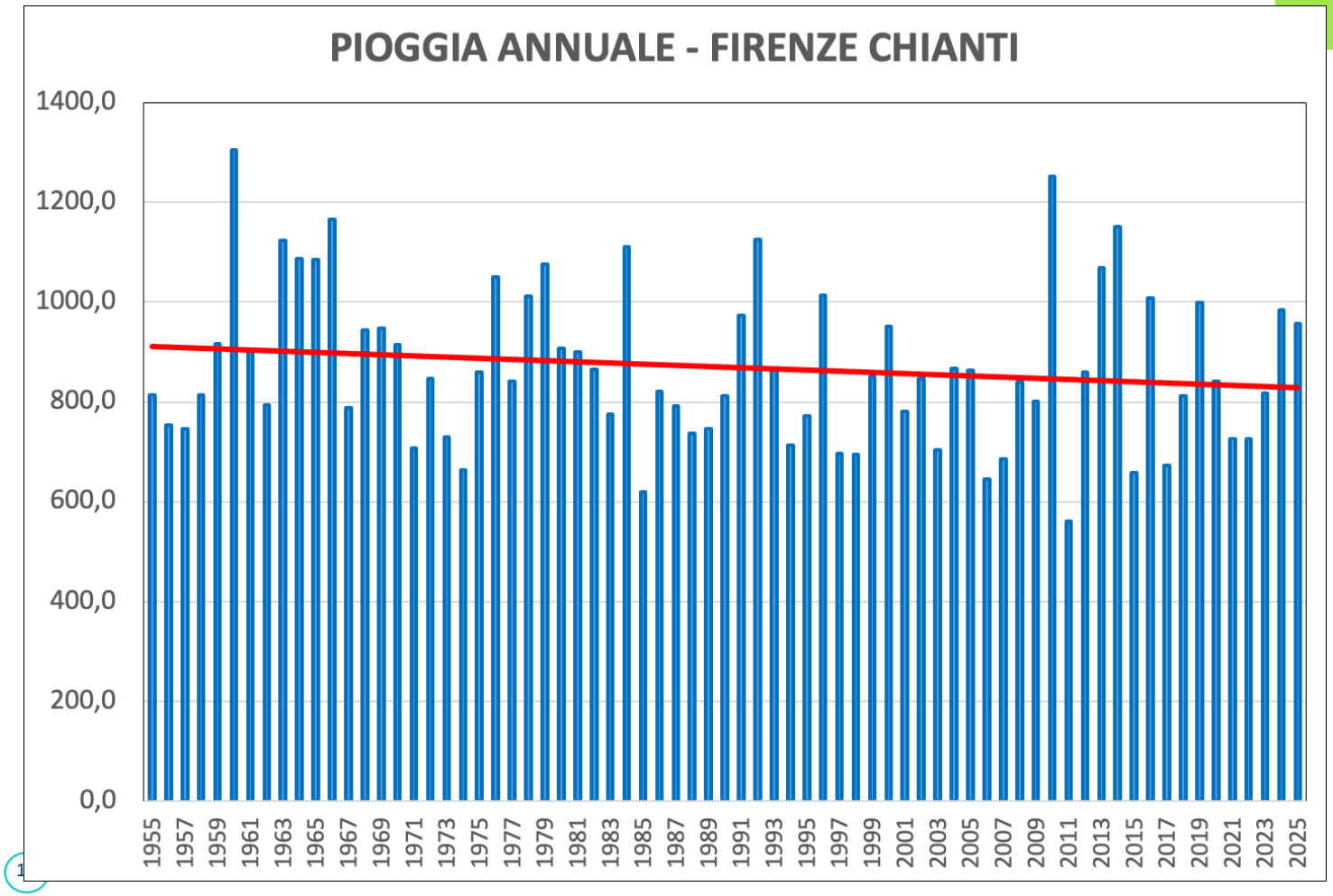




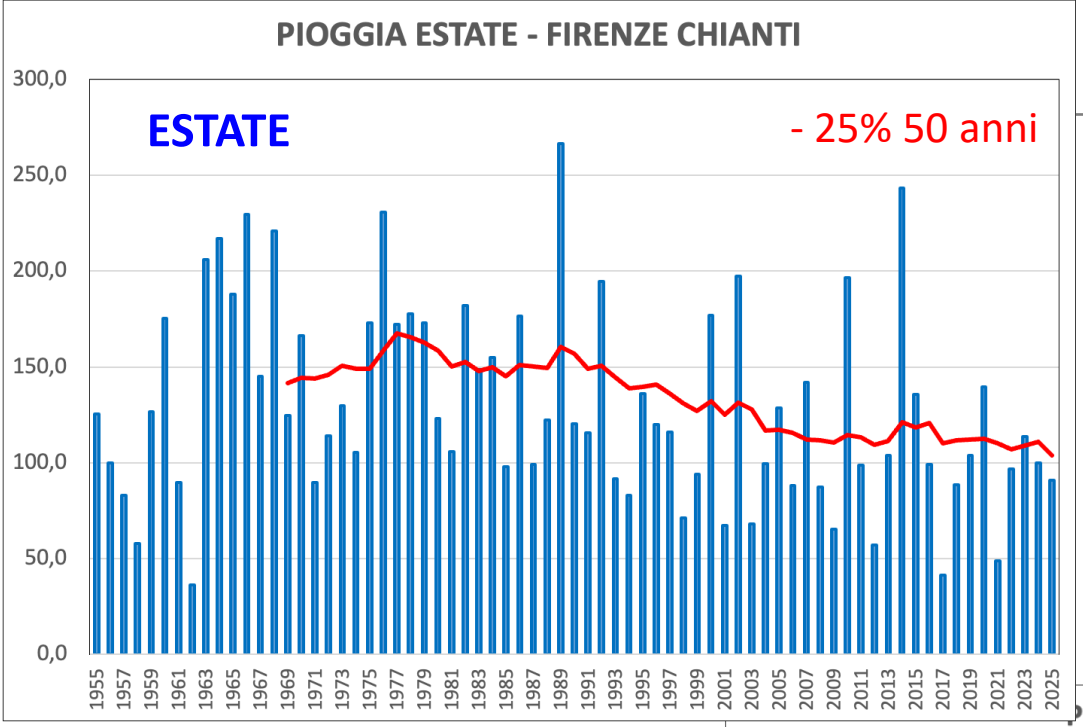
Pioggia annuale
FIRENZE-PISA-CHIANTI



- 7% 50 anni



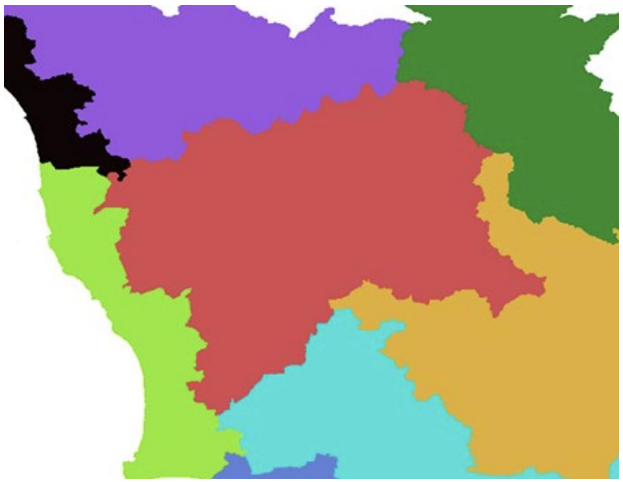
Firenze-Pisa-Chianti

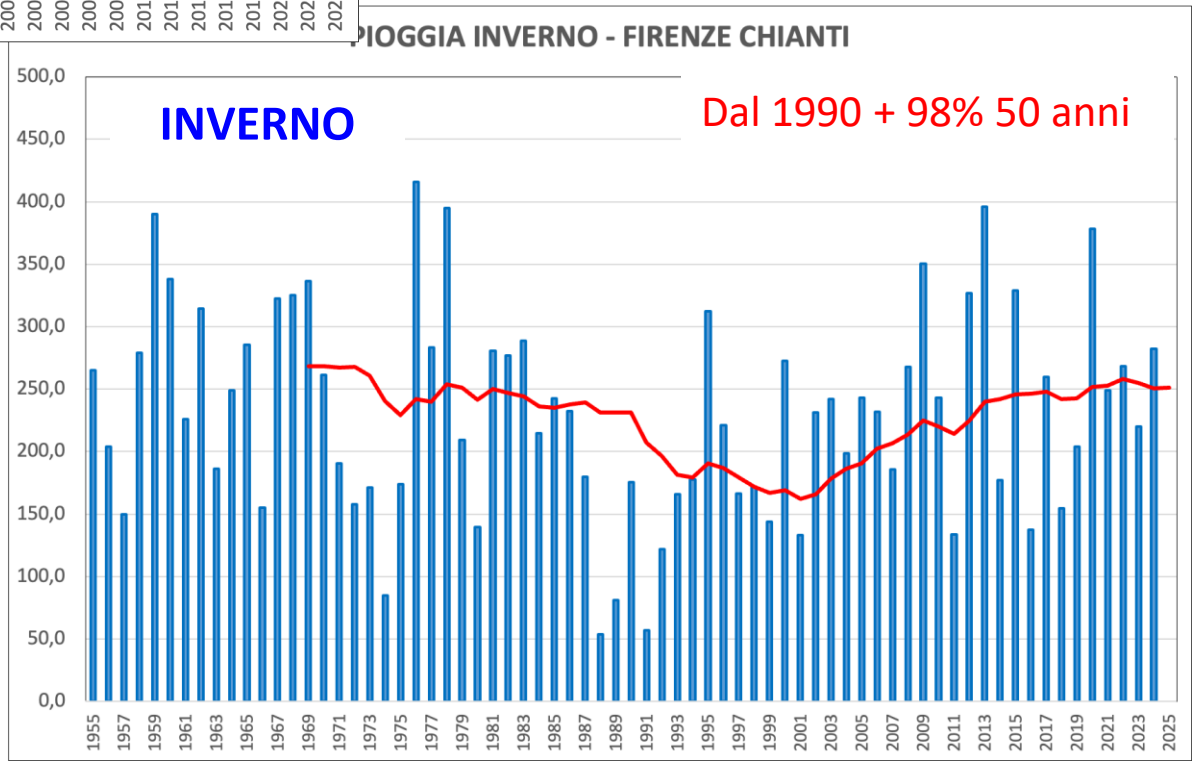


- Estate calo signif.
- Inverno calo fino agli anni 90 poi deciso aumento nella seconda parte (tutte le aree, dic. aut.)
- Autunno opposto (sett. estivo)

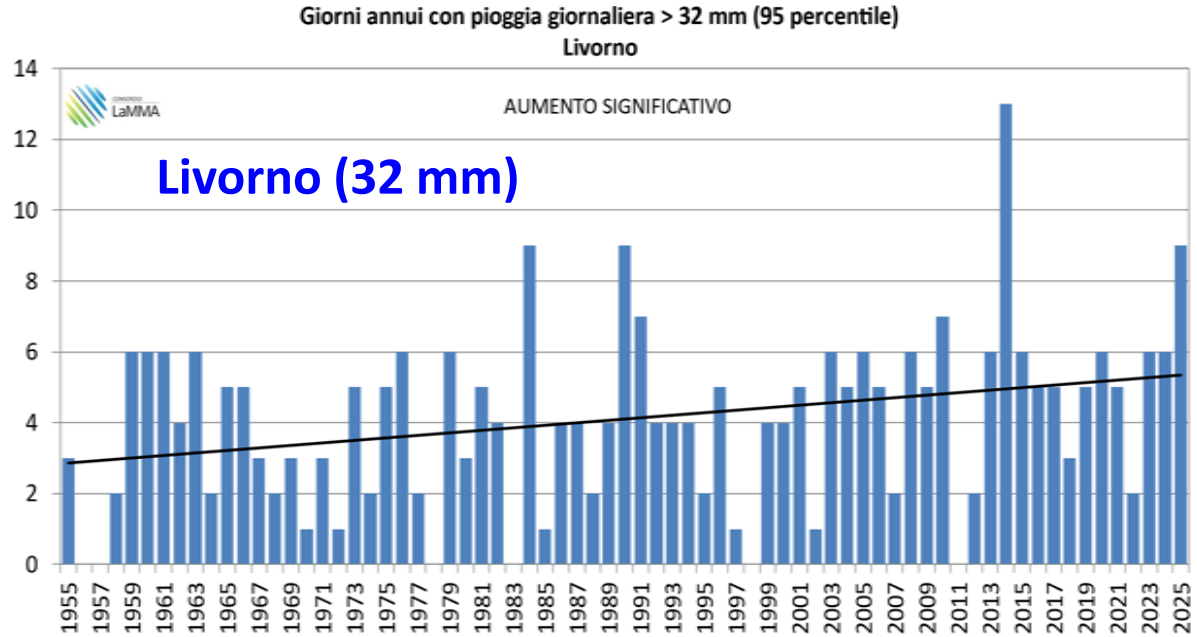
- 4% 50 anni

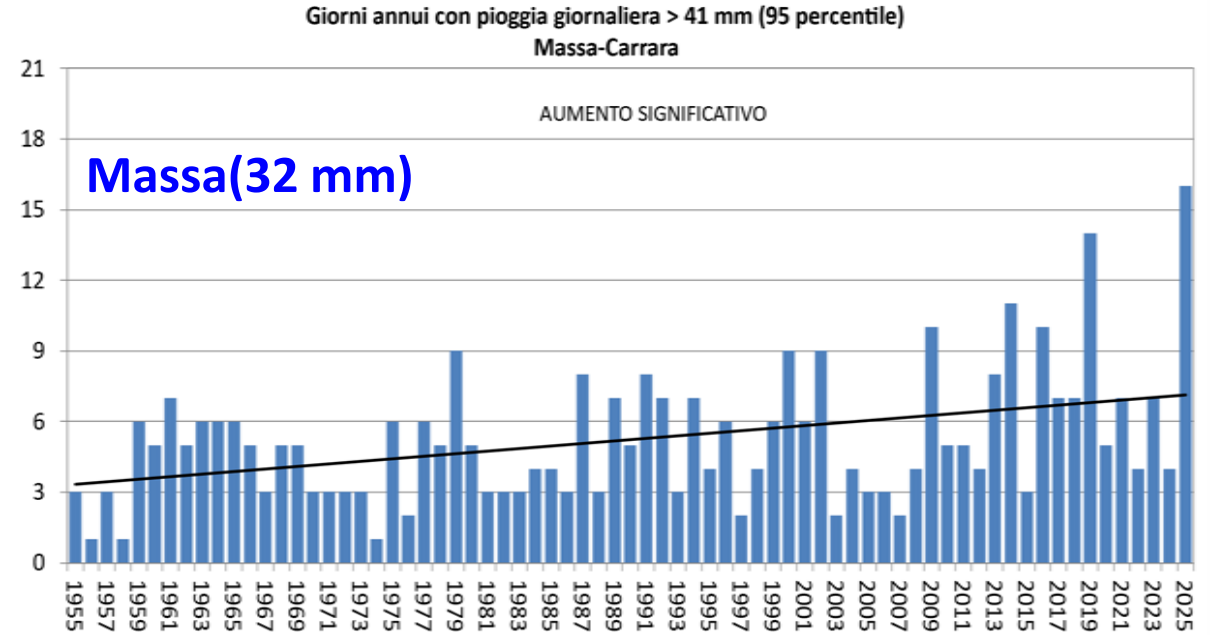
Media Mobile 15 anni





Numero di giorni con precipitazione maggiore del 95° percentile 1955-2025



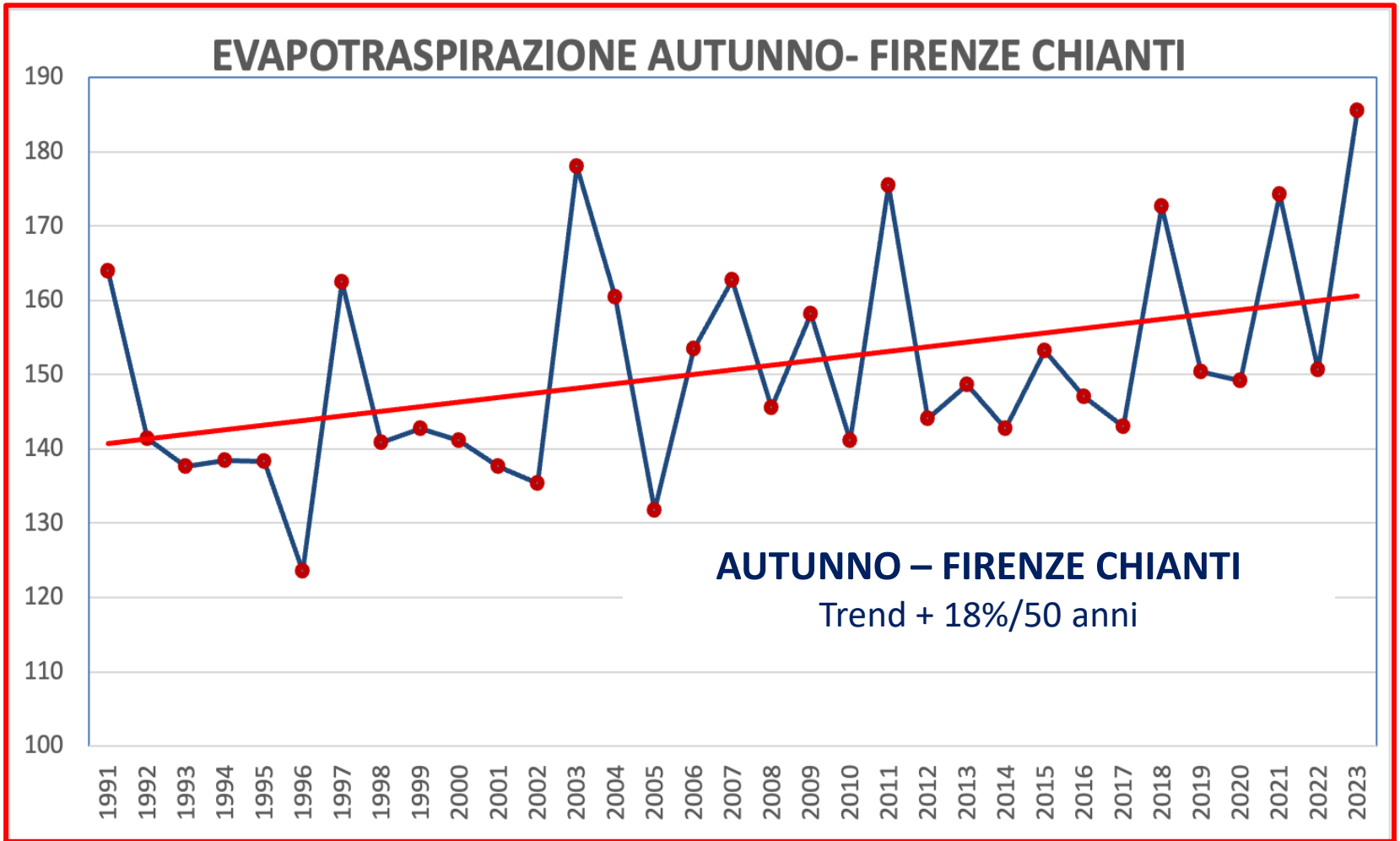


INTENSITA'

- **Aumento sign.:** Massa, Livorno, Arezzo, Pisa
- **Aumento non sign.:** Lucca, Siena, Prato
- **Diminuzione:** Pistoia
- **Stazionario:** Firenze, Grosseto

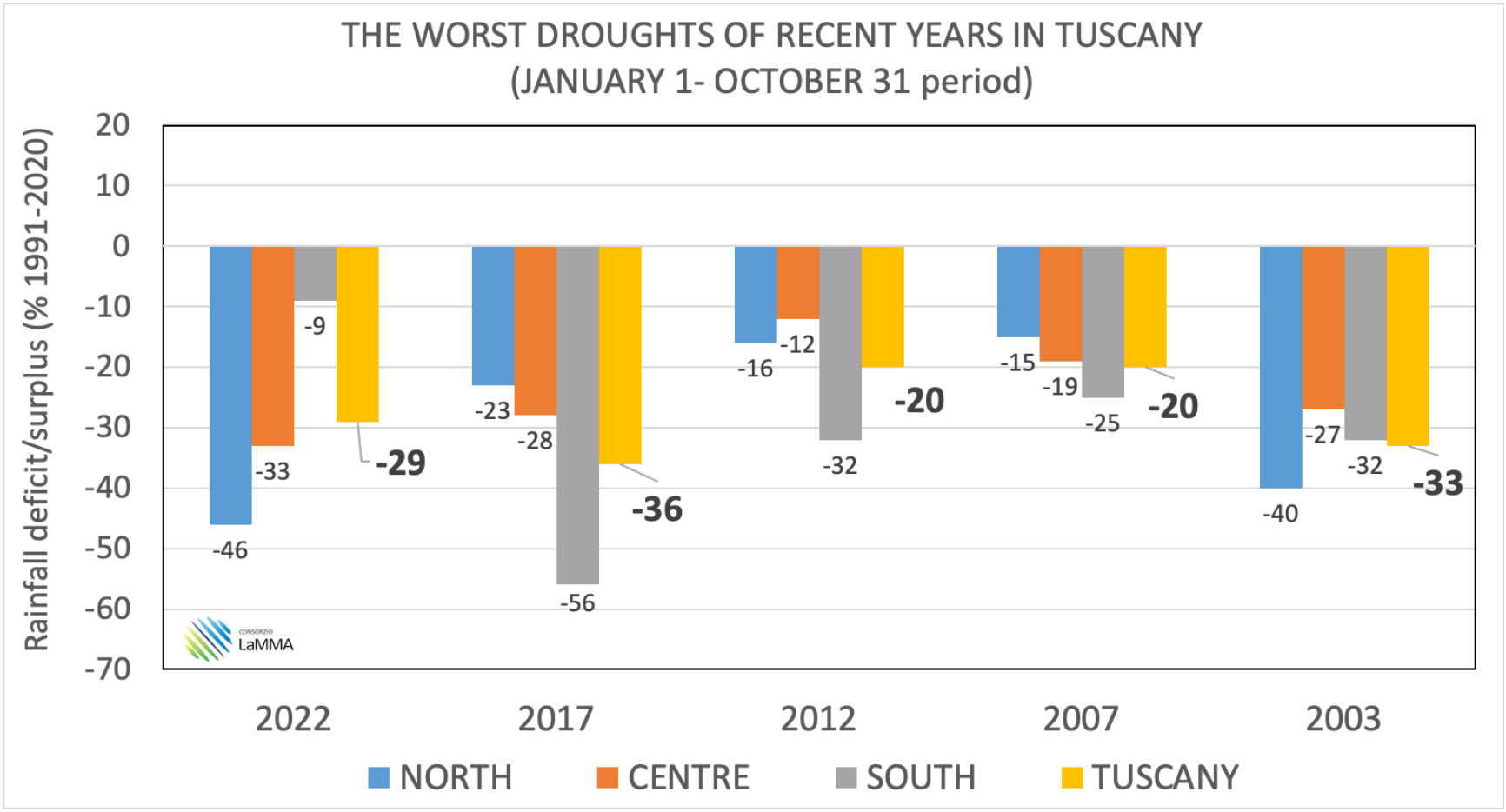
TREND DELL'EVAVOTRASPIRAZIONE POTENZIALE

Autunno – Firenze Chianti



Aumenti in tutte le aree >20% eccetto Chiana-Coll. Siena

Forti siccita' in Toscana
Gennaio-Ottobre (2000-2022)



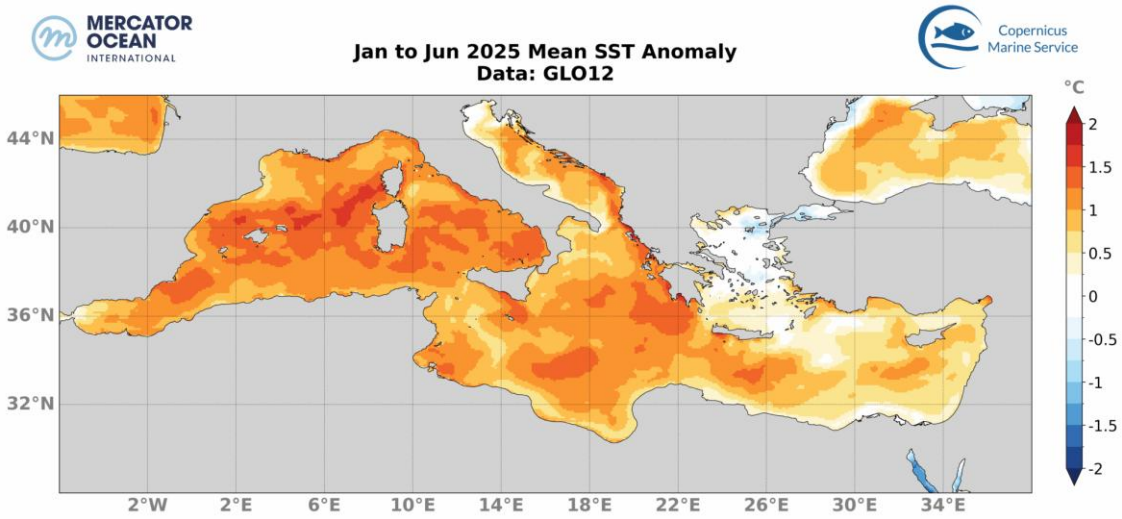
Mediterraneo: Temperatura superficiale

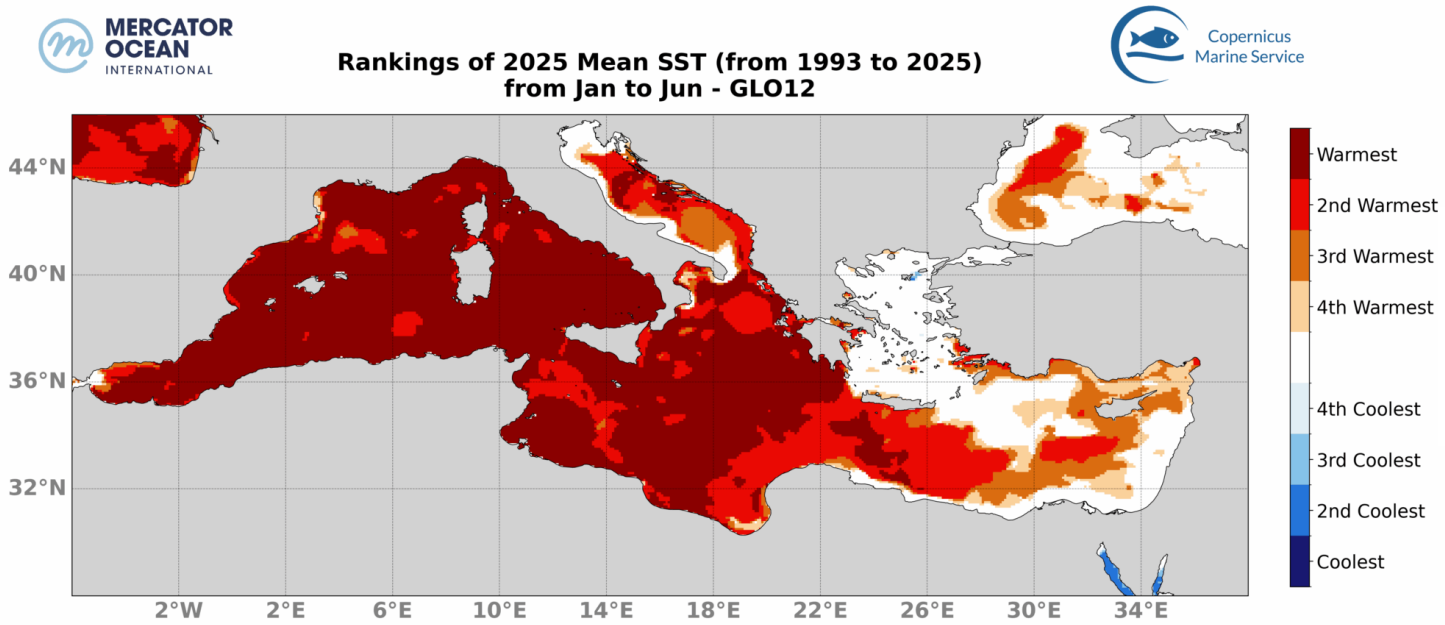
Gen-Giu 2025 il più caldo (18,5°C)

97% sup. sopra media e 54% il più caldo

Giugno 2025 il più caldo con 23,86°C

62% sup. Marine Heathwave

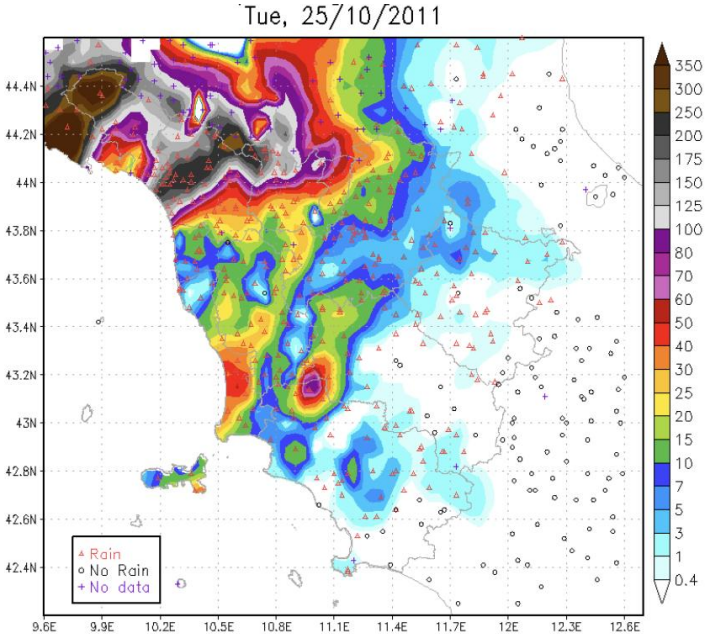




+ evaporazione,
+ energia,
+ umidità

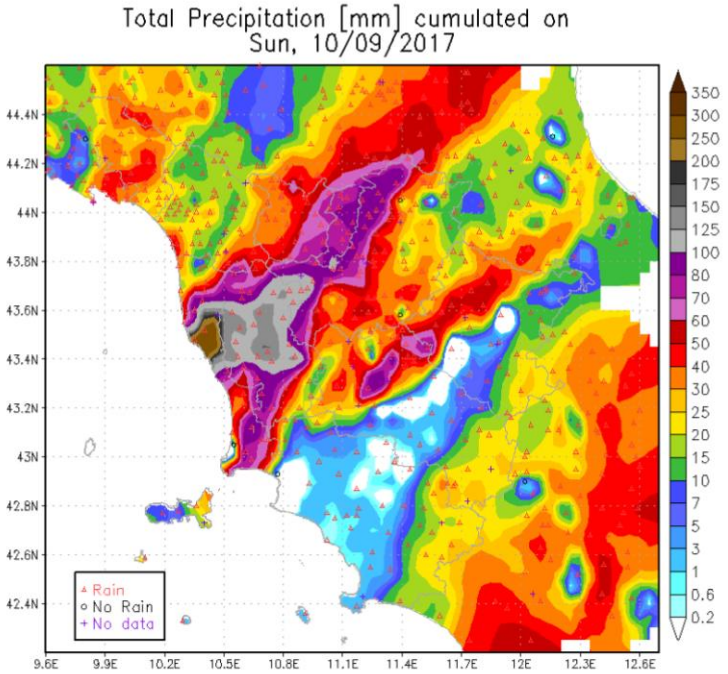
Alcuni eventi estremi

Lunigiana 25/10/2011

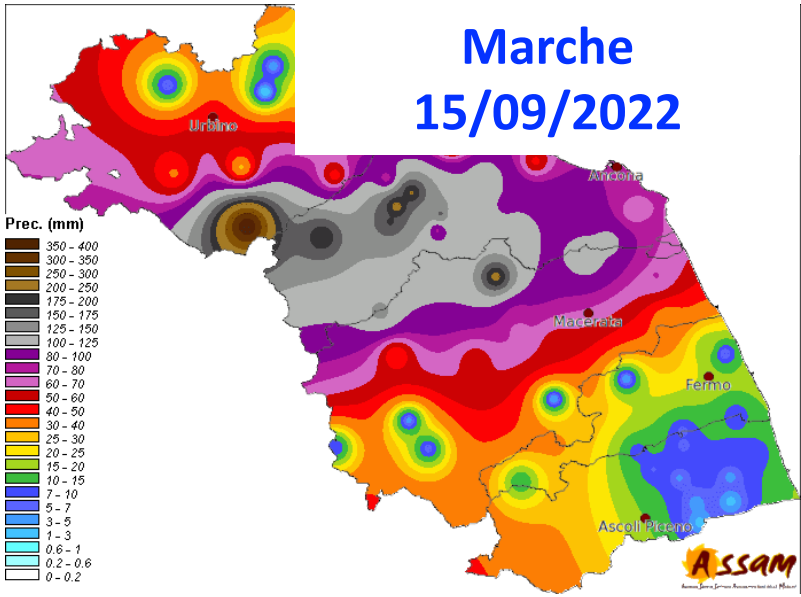


Firenze
01/08/2015

Livorno 9 - 10 Settembre 2017



Marche 15/09/2022



Alcuni eventi estremi

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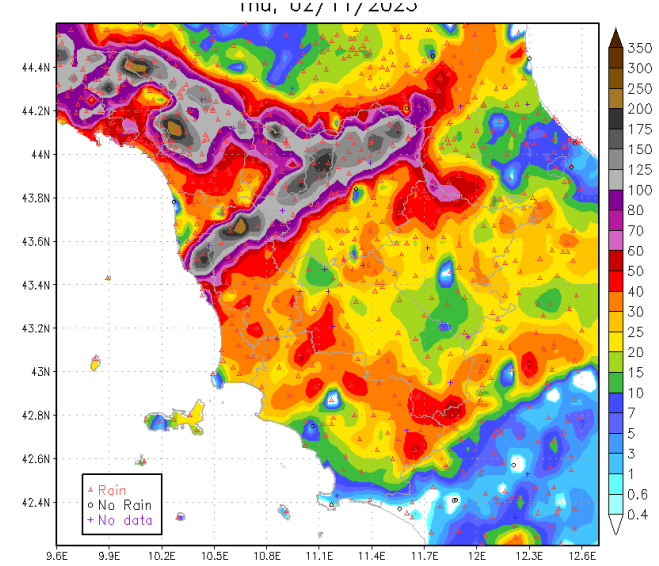
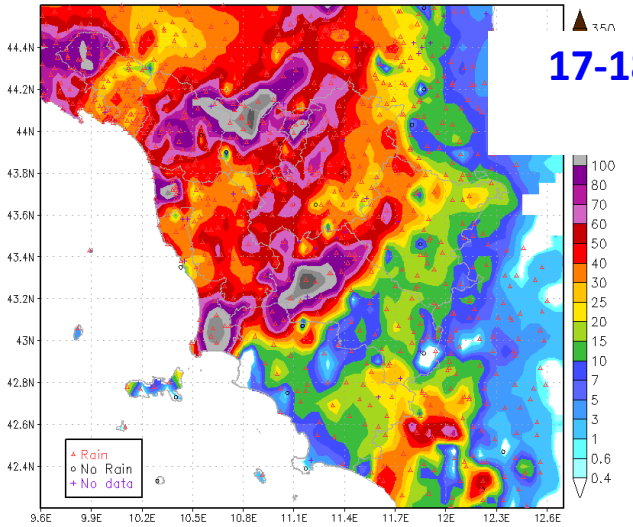
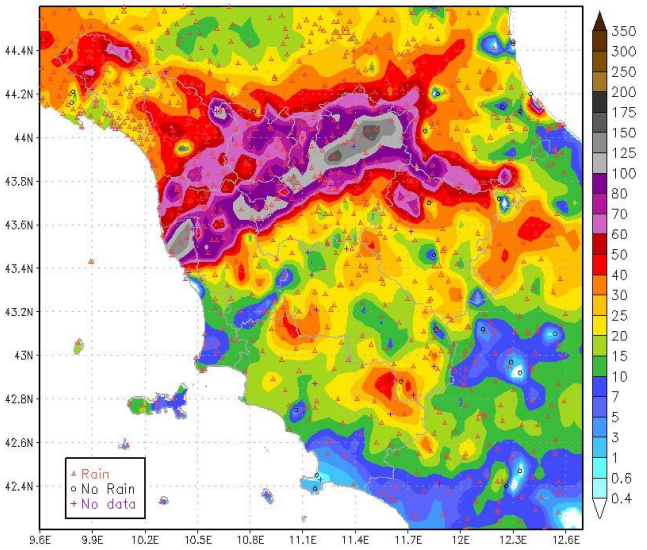
2 NOVEMBRE 2023



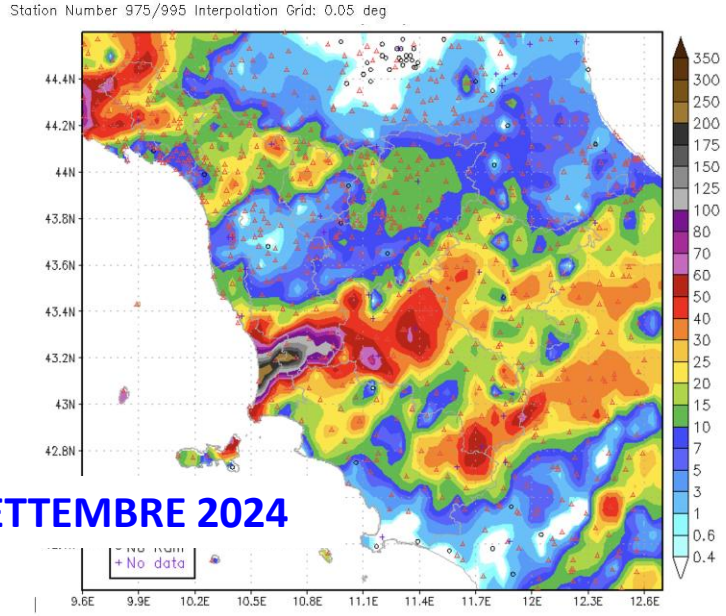
17-18 OTTOBRE 2024



14 MARZO 2025



23 SETTEMBRE 2024



CONCLUSIONI

- TEMPERATURE: aumento evidente
- PRECIPITAZIONI: aumento intensità delle piogge
- SICCITA': aumento giorni secchi, siccità persistenti ricorrenti
- INCENDI: stress idrico e termico combustibile idoneo
- EVENTI ESTREMI: flash flood, alluvioni, ondate di calore….

L'adattamento al cambiamento climatico è anche una questione culturale

Importante è comunicare in modo adeguato i rischi del territorio e di conseguenza le informazioni meteo e le eventuali allerte