



Energia e cambiamento climatico in Brianza

Normativa, politiche, strategie e buone pratiche

Venerdì 28 settembre 2007

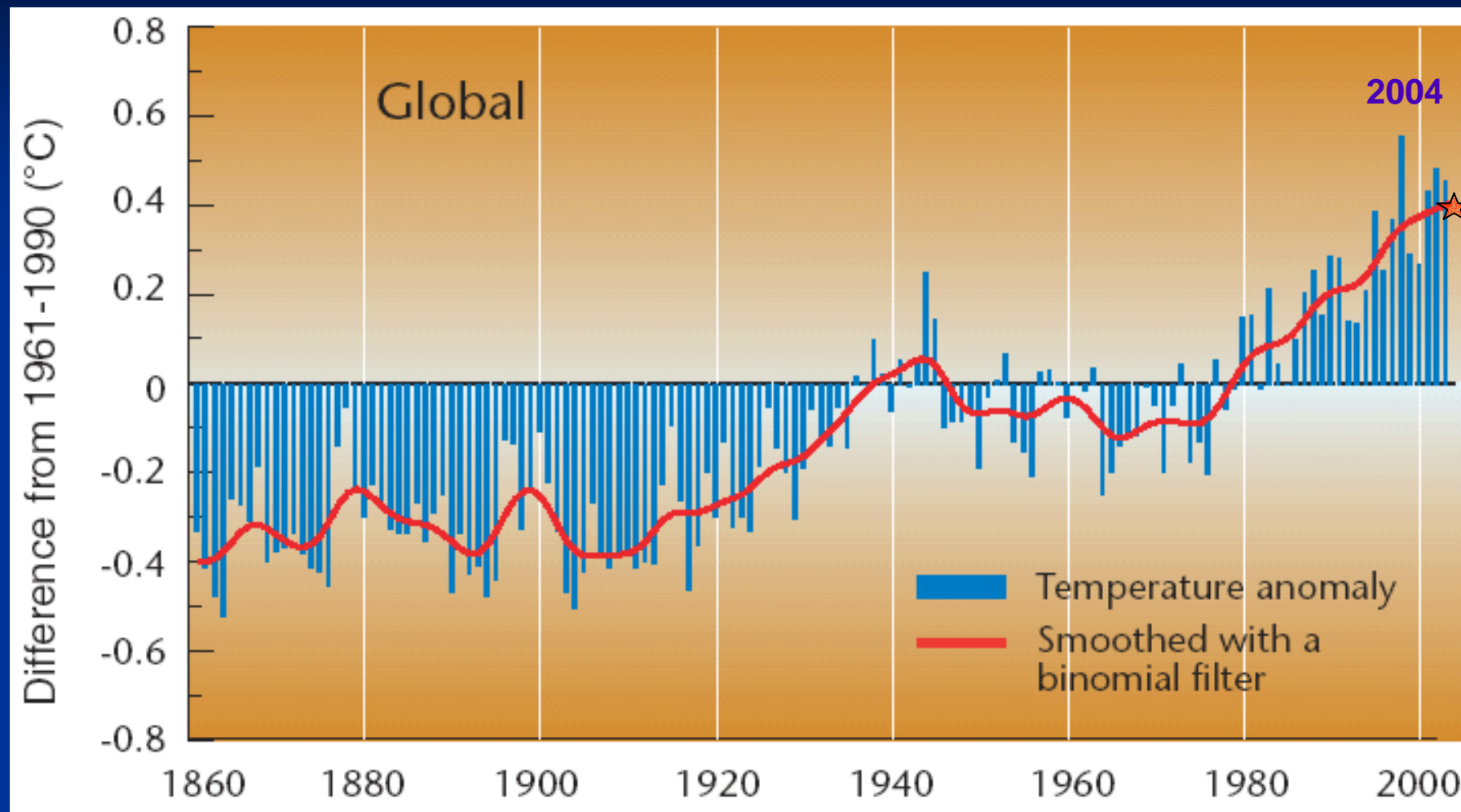
I CAMBIAMENTI CLIMATICI: LOCALE E GLOBALE A CONFRONTO

V. Maggi, M. Lacavalla, A. Rossetti

Di. Scienze Ambiente e Territorio - Università di Milano Bicocca



Variations in global average temperature from 1861 to 2003 relative to the 1961-1990 average



Il 2004 è stato il 4° anno più caldo dal 1861

I 10 ultimi anni (tranne uno) sono stati i più caldi dal 1861

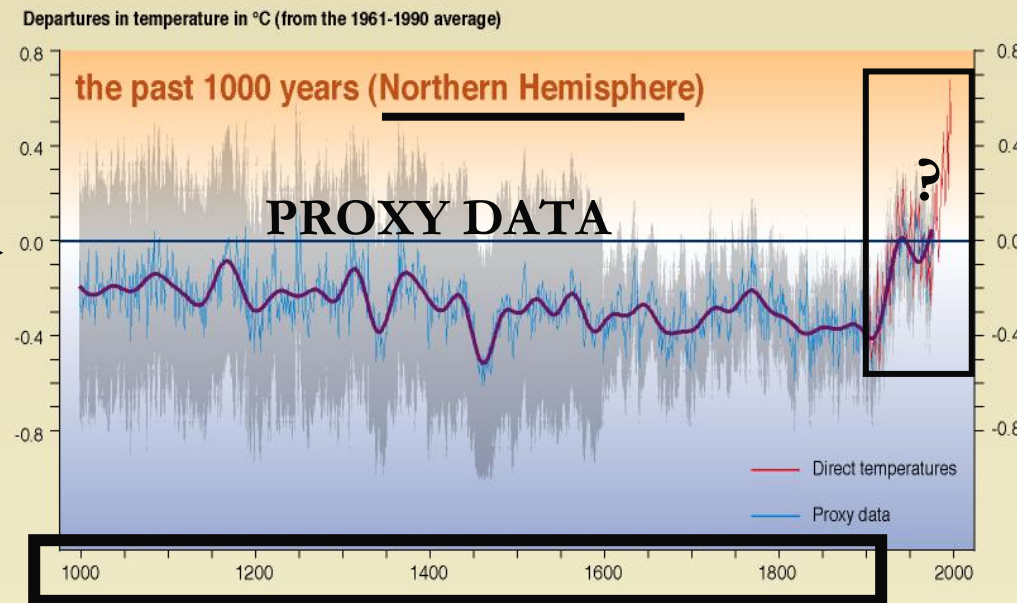
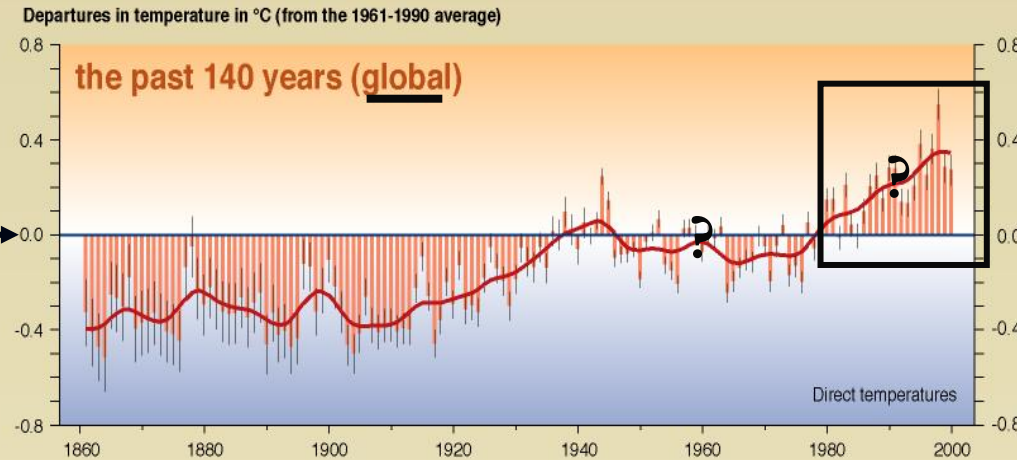
WMO, 2003, 2004



LE VARIAZIONI
CLIMATICHE
DEGLI 200 ANNI

LE VARIAZIONI
CLIMATICHE
DEGLI 1000 ANNI

Variations of the Earth's surface temperature for...



**Problema da
affrontare:**

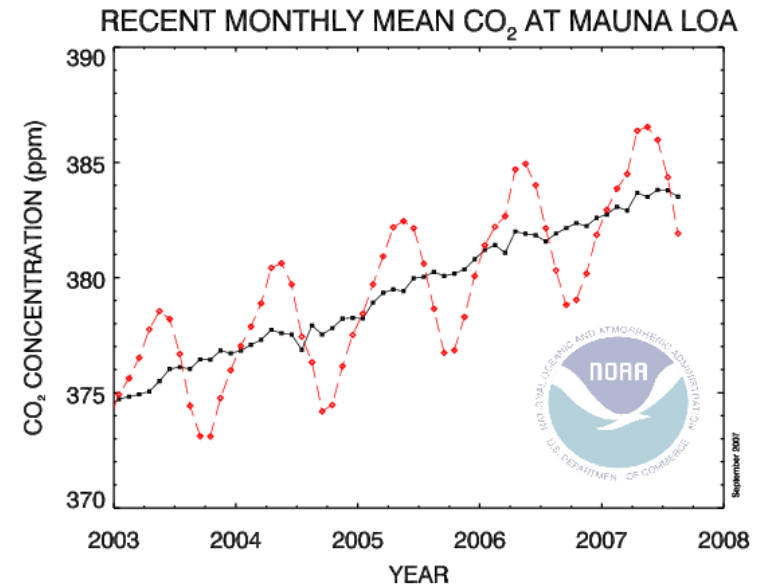
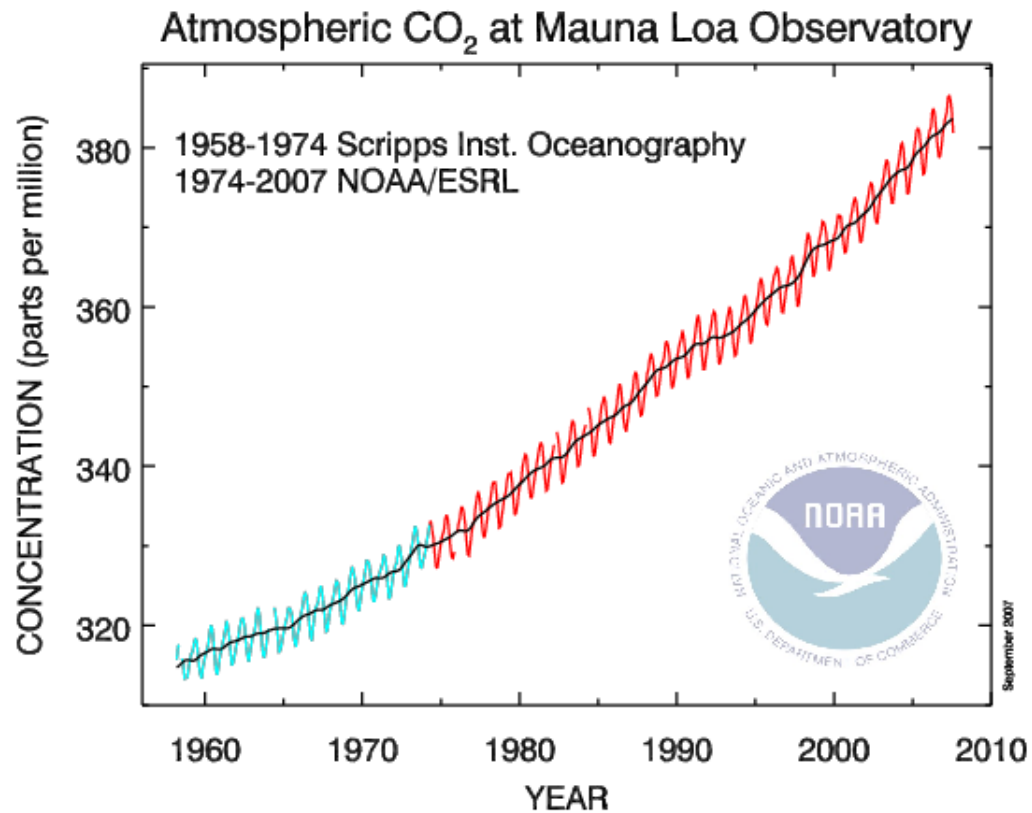
**Aumento
Temperatura
superficie
terrestre
ultimi 140
anni:**

**+ 0.6°C
(errore 0.2°C)**

SYR - FIGURE 2-3

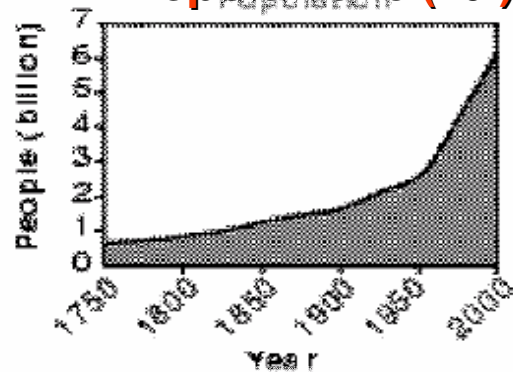


Variazione della CO₂ negli ultimi 50 anni

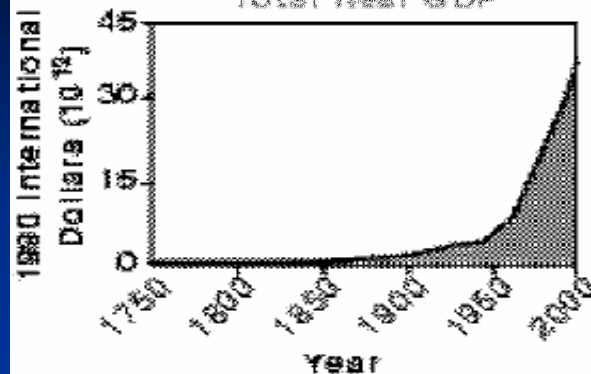


Sviluppo demografico, economico e cambiamenti ambientali (Crutzen & Steffen, 2003)

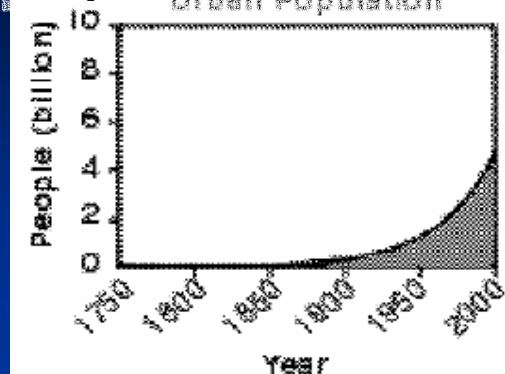
Popolazione (10^9)



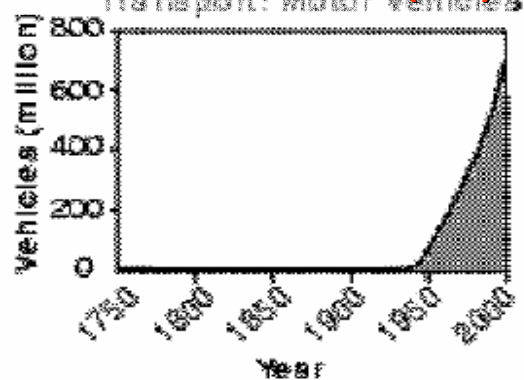
PIL totale (10^{12})



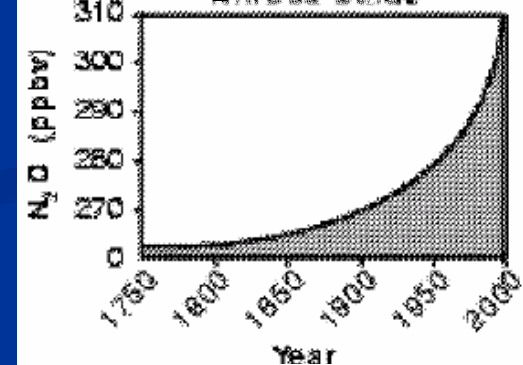
Popolazione urbana (10^9)



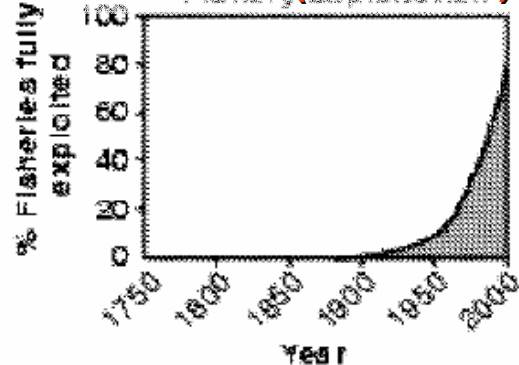
Veicoli a motore (10^6)



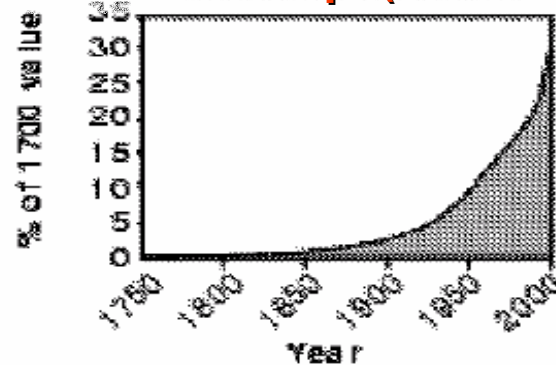
N_2O (ppb)



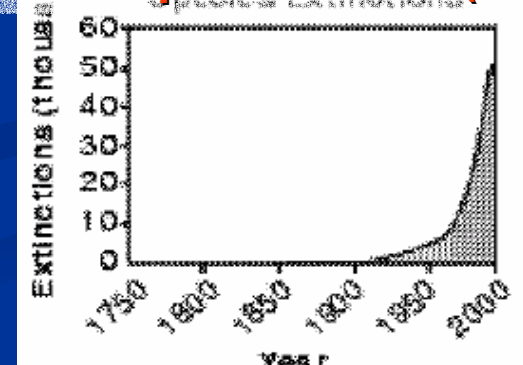
Pescato (% risorse)



Perdita foreste trop. (% dal 1700)

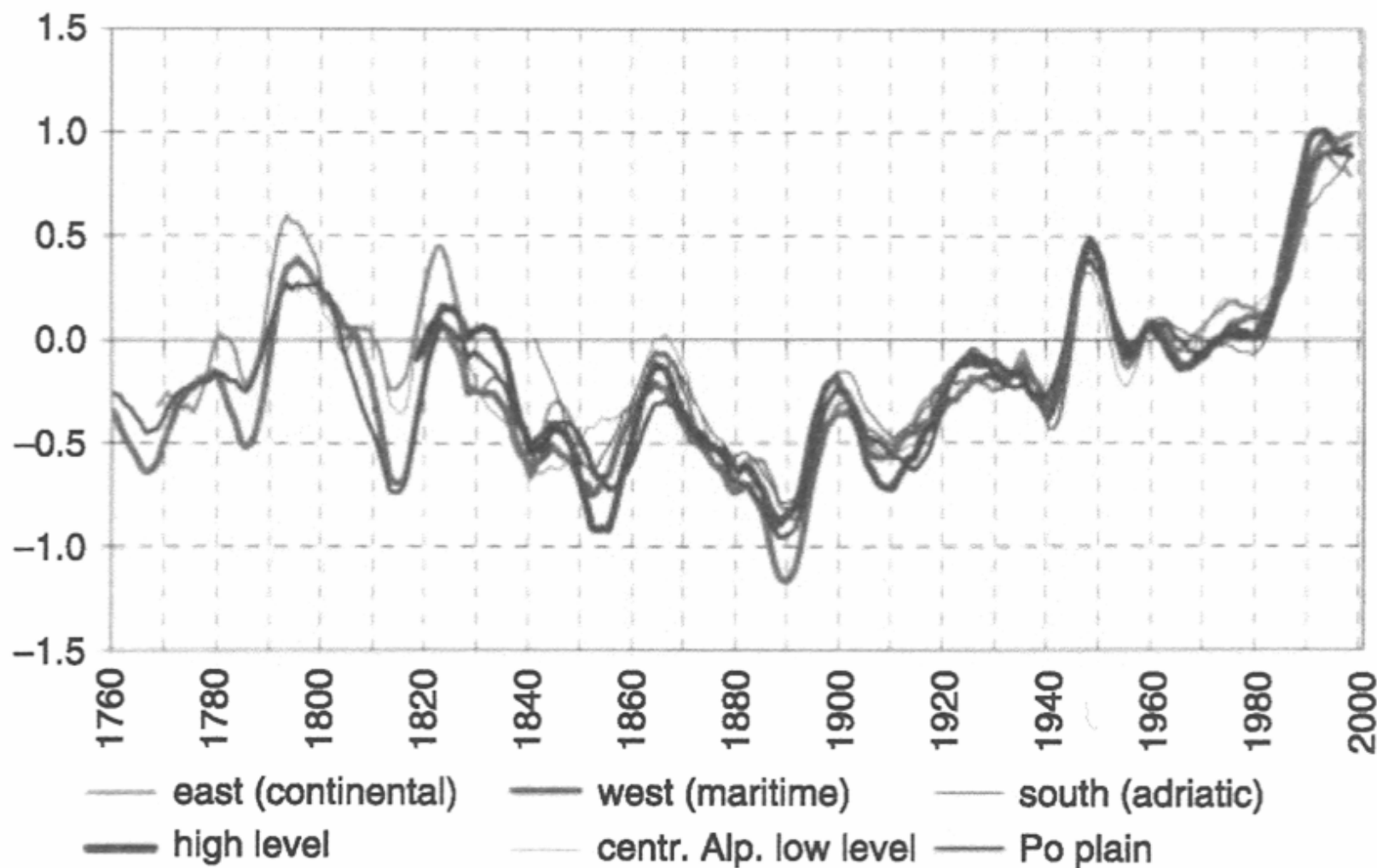


Specie estinte (10^3)





Deviazioni temperatura media annua nelle Alpi negli ultimi 240 anni

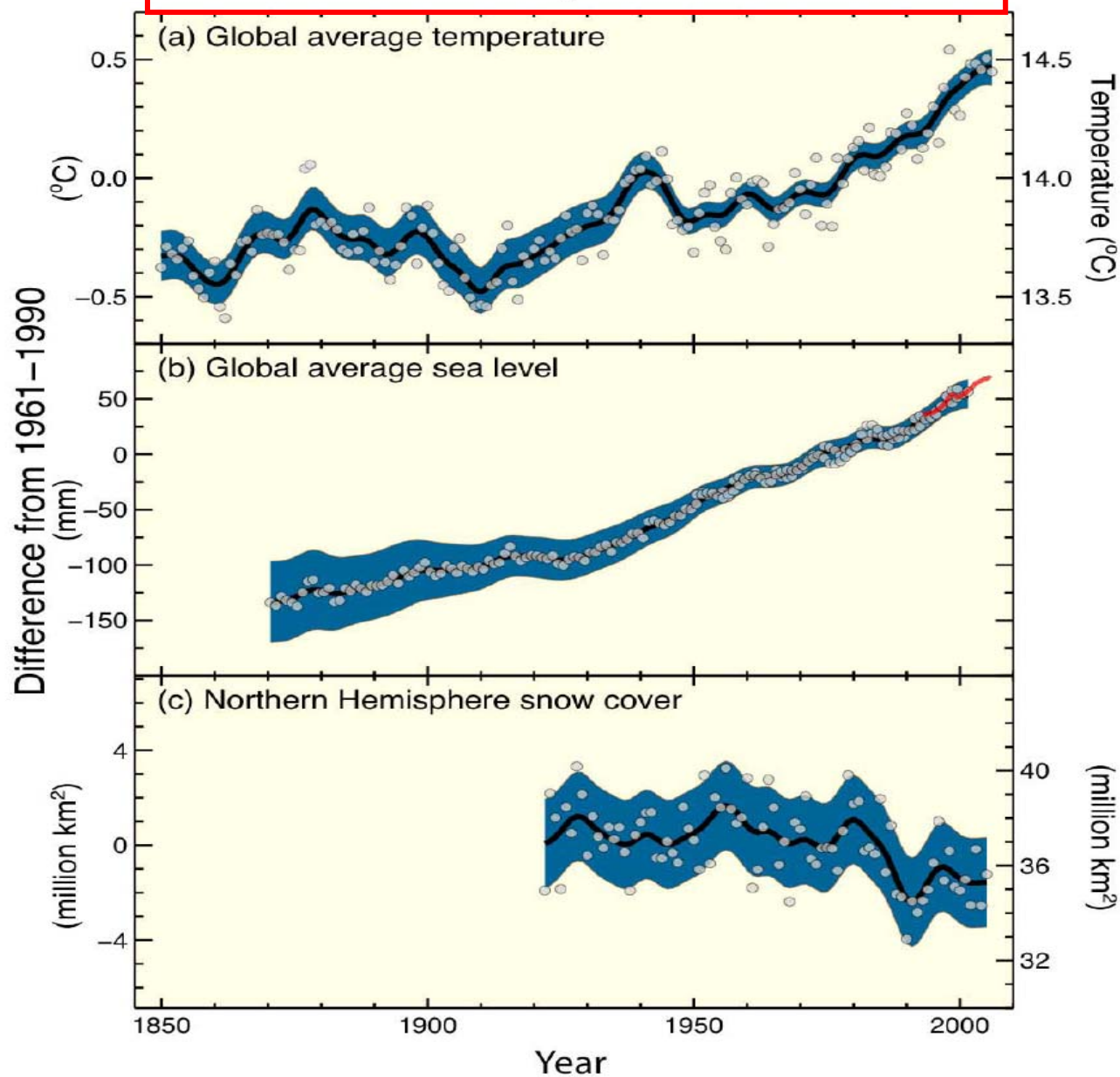


Boehm et al., 2001





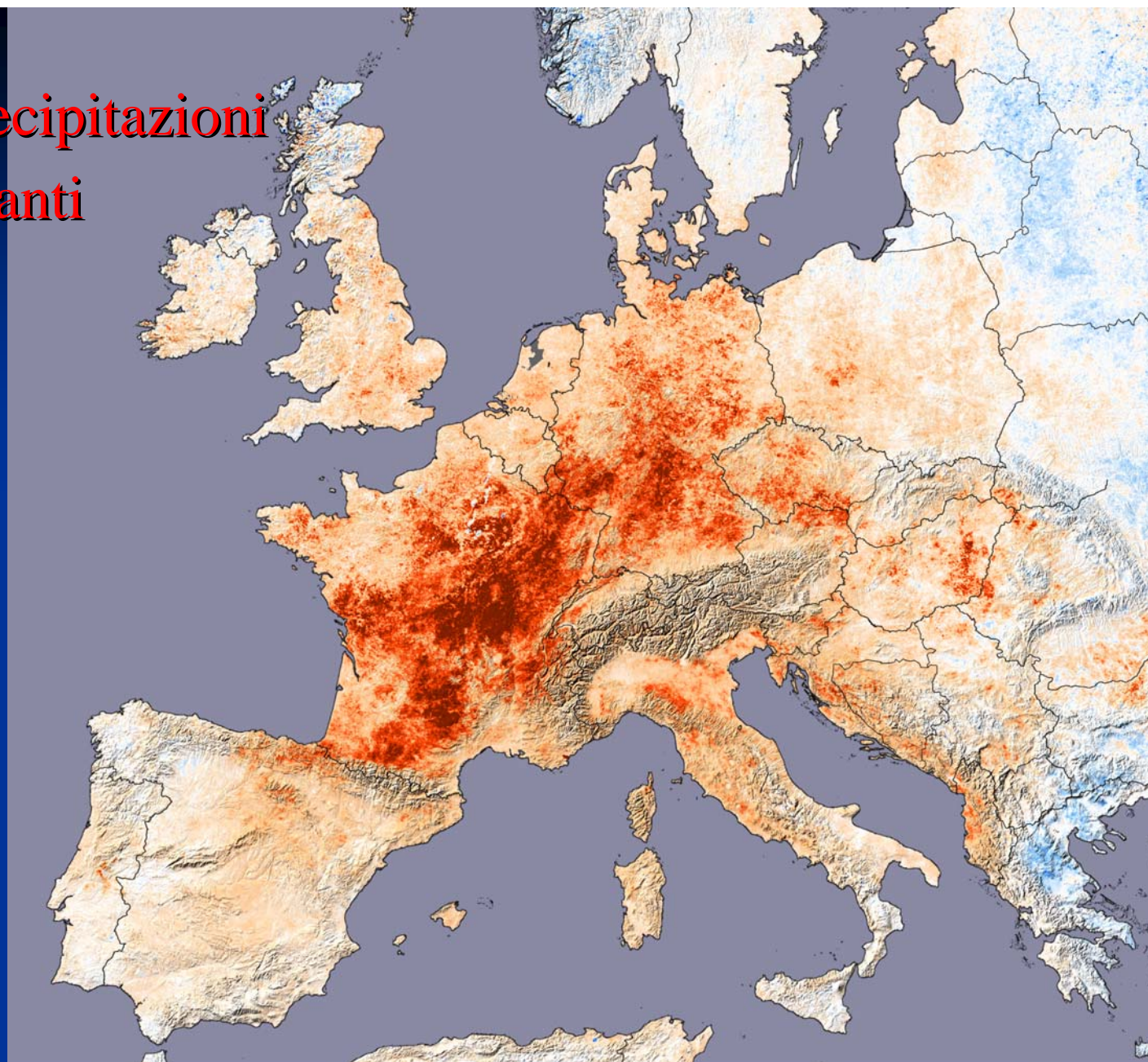
Changes in Temperature, Sea Level and Northern Hemisphere Snow Cover



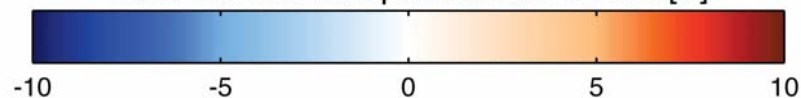


Anche le precipitazioni
sono importanti

2003



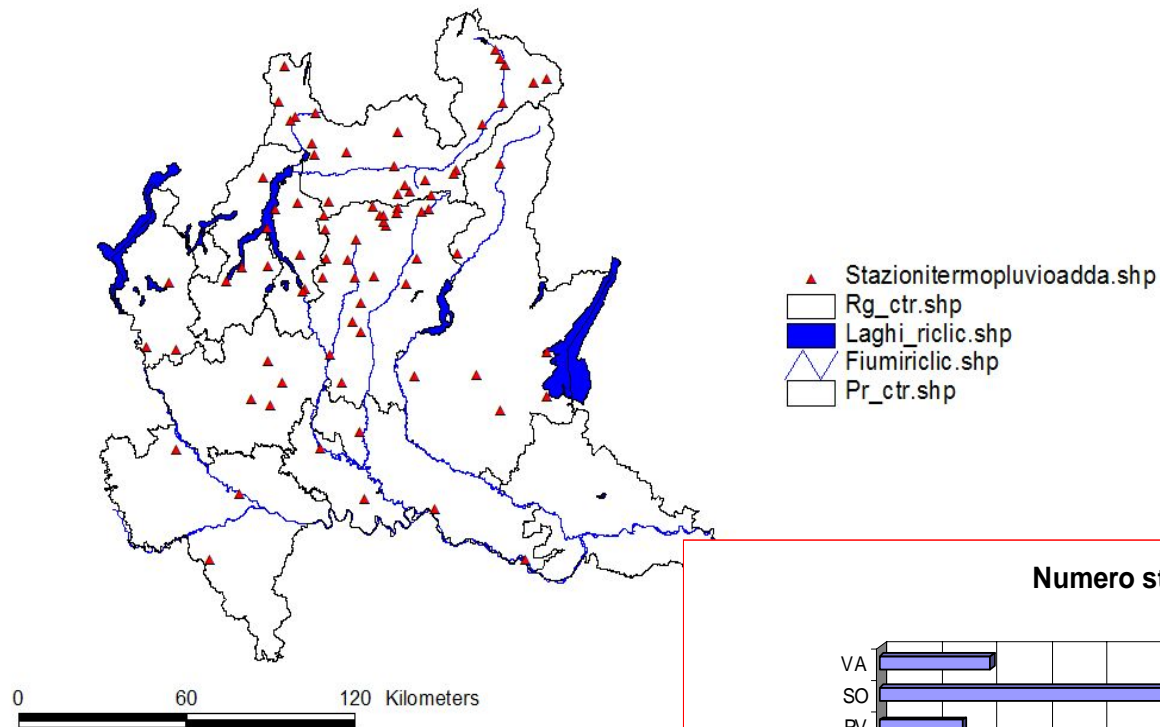
Land Surface Temperature difference [K]





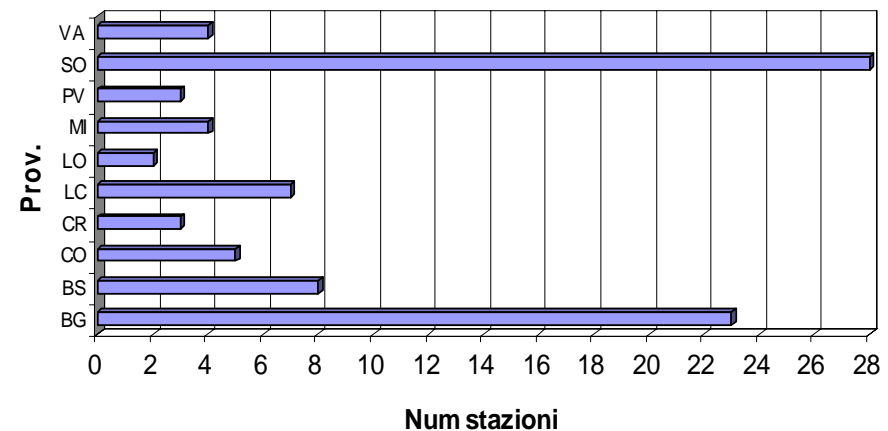
Stazioni meteorologiche per provincia

Stazioni meteorologiche



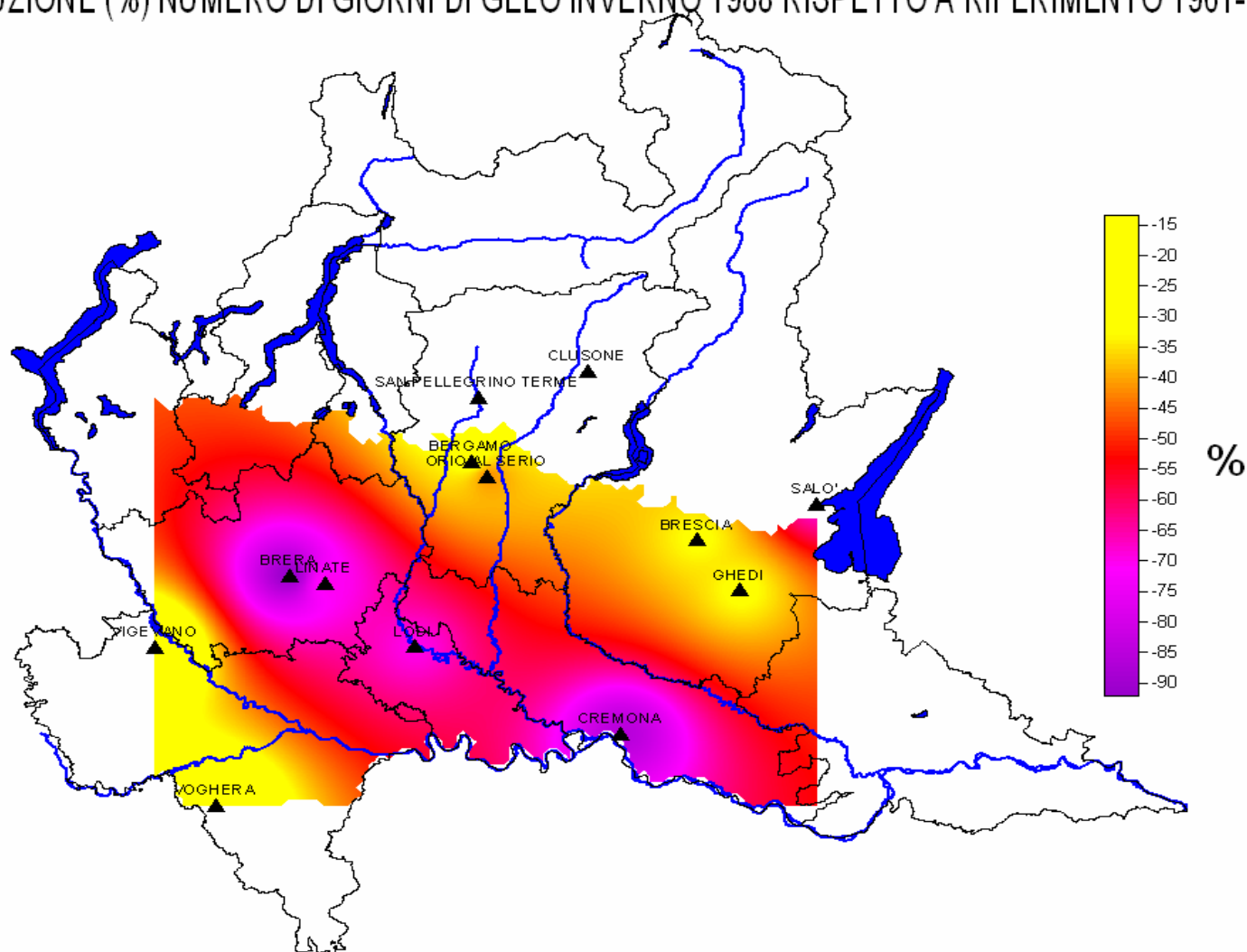
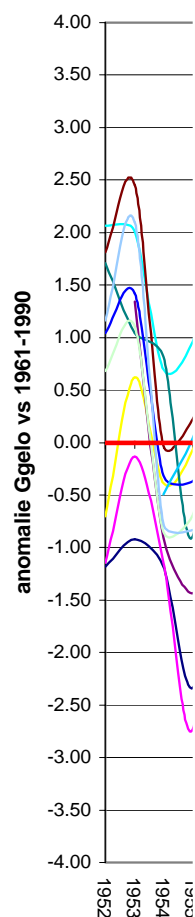
Provincia	Numero stazioni meteo
BG	23
BS	8
CO	5
CR	3
LC	7
LO	2
MI	4
PV	3
SO	28
VA	4

Numero stazioni per Provincia

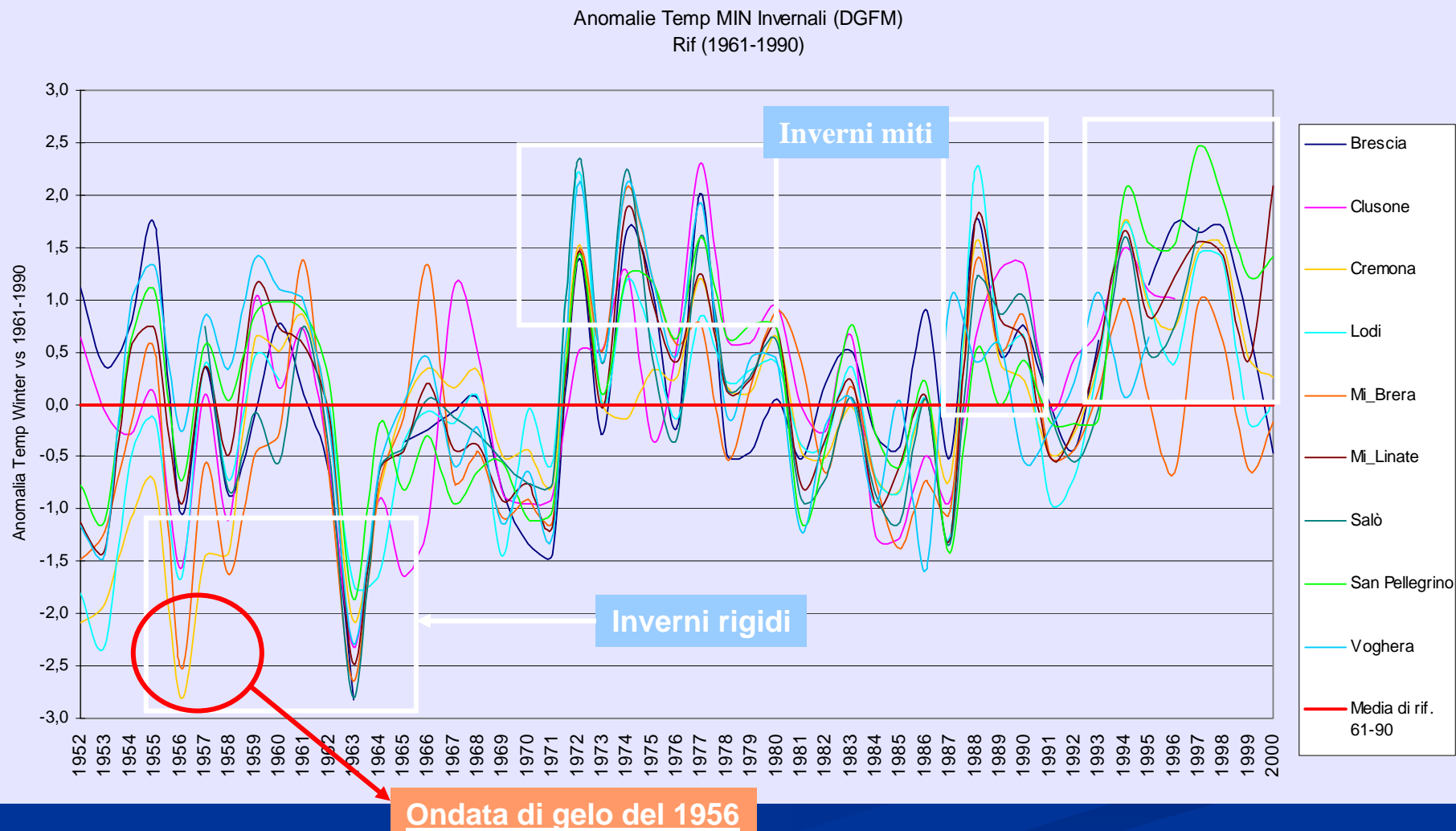


Anomalia Standardizzata del numero di giorni di gelo rispetto al riferimento 1961-1990

RIDUZIONE (%) NUMERO DI GIORNI DI GELO INVERNO 1988 RISPETTO A RIFERIMENTO 1961-1990



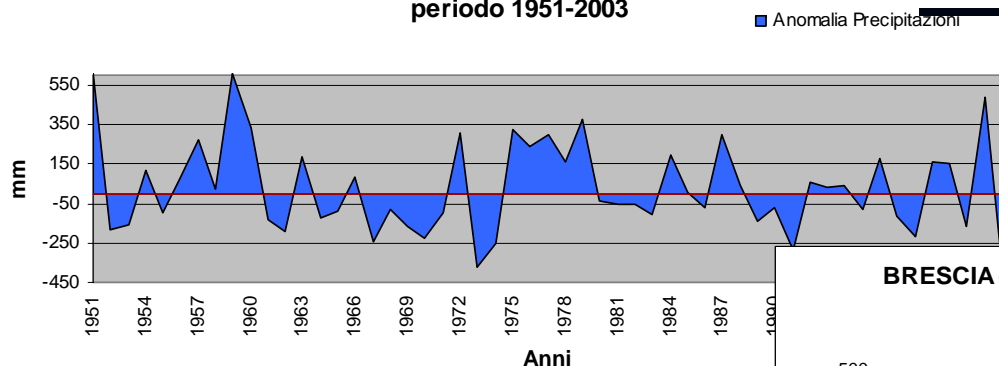
Anomalia Standardizzata delle T minime invernali rispetto al riferimento 1961-1990



Anomalia delle precipitazioni cumulate annue rispetto al riferimento 1961-1990

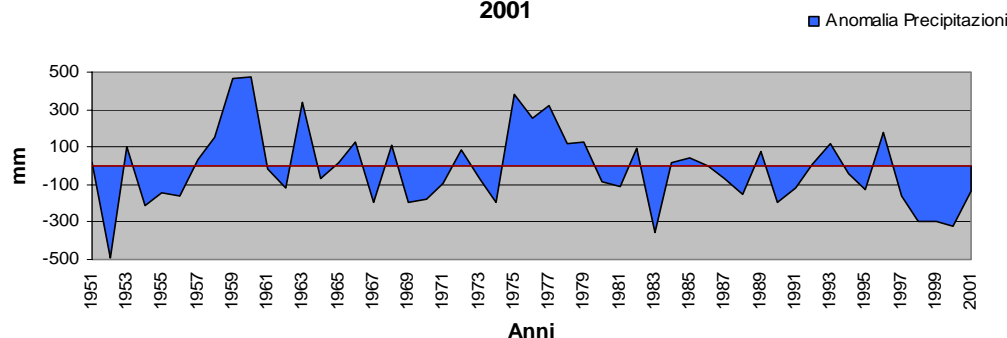
La notevole variabilità locale delle precipitazioni non ha permesso di individuare una riduzione significativa della quantità di pioggia caduta

MILANO BRERA differenza delle precipitazioni medie rispetto al periodo 1951-2003

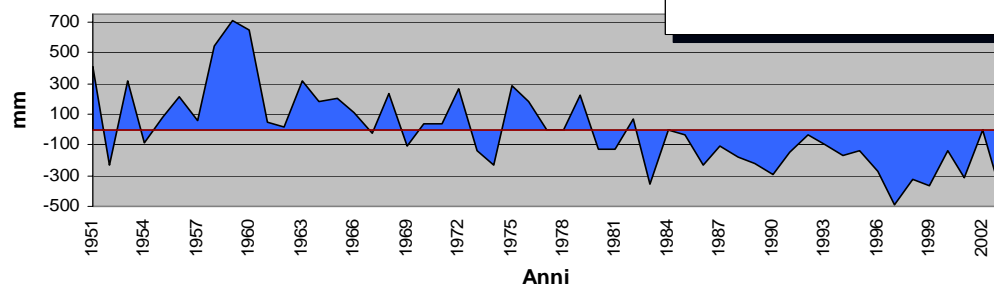


Variazioni nelle precipitazioni osservate in letteratura sono da ricercare in una modificazione del REGIME pluviometrico

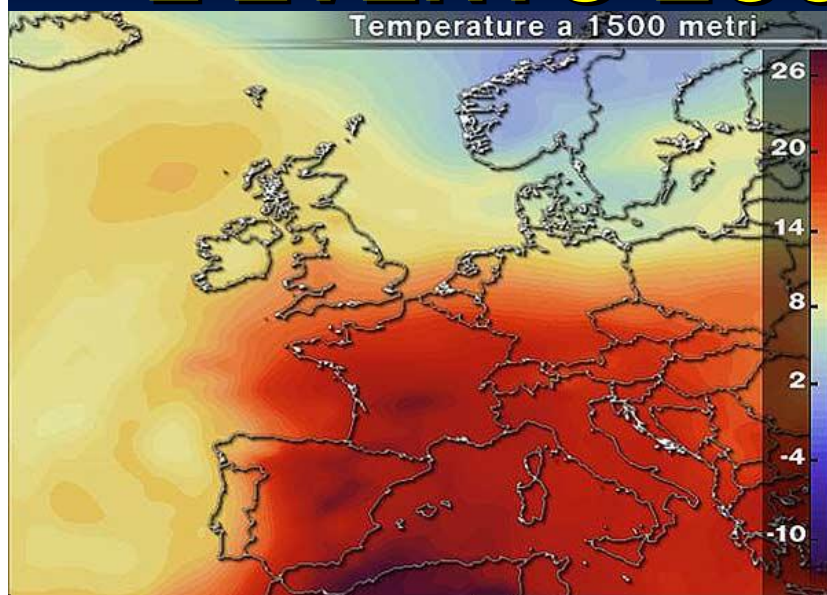
BRESCIA differenza delle precipitazioni medie rispetto al periodo 1951-2001



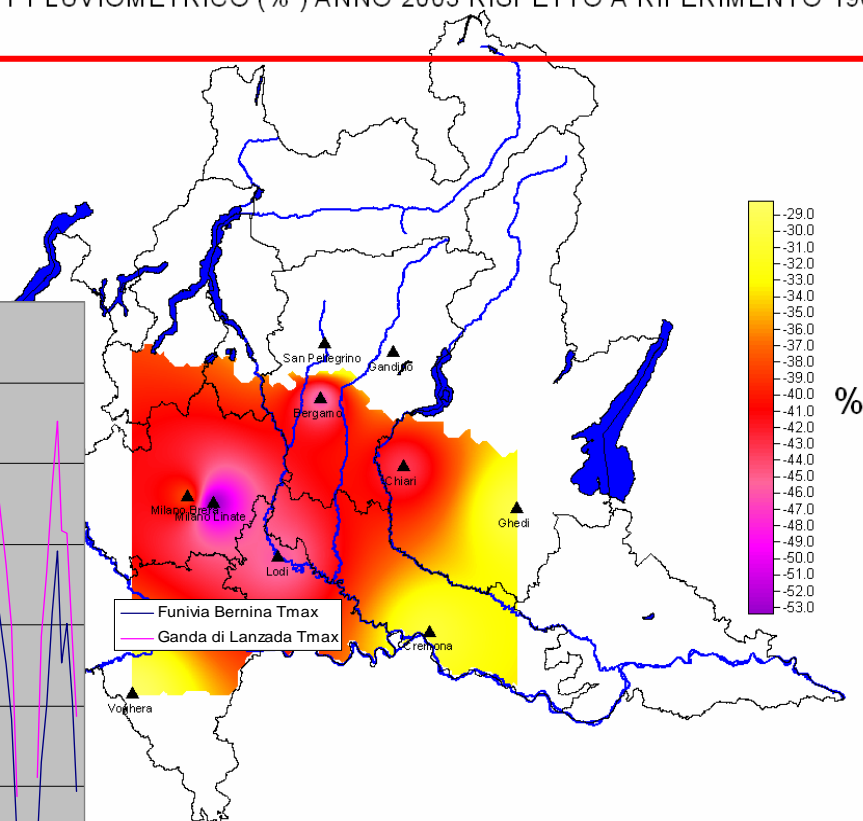
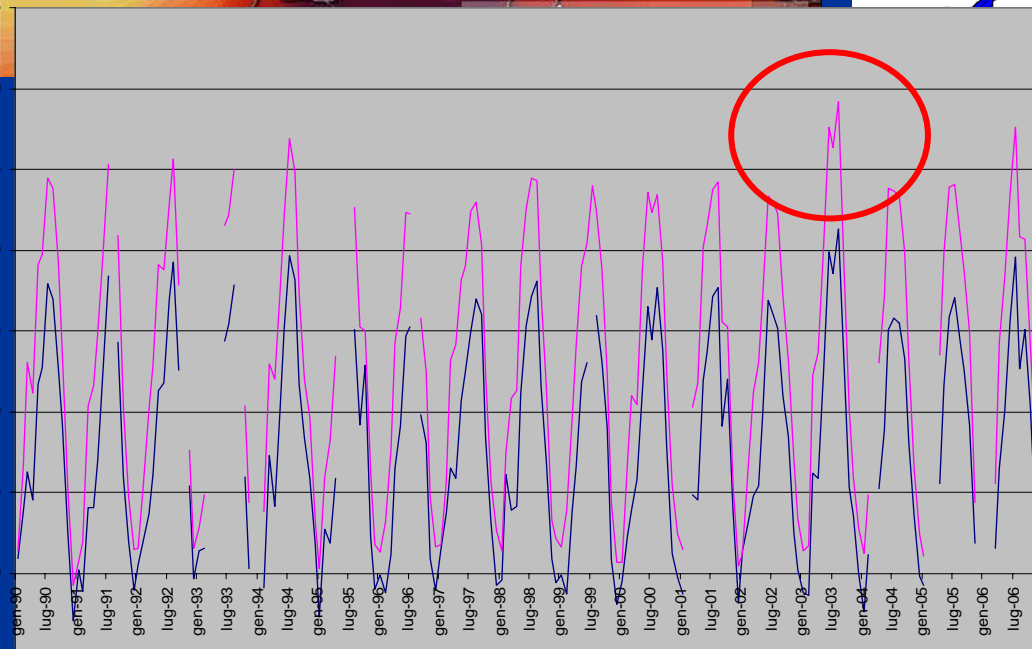
CHIARI differenza delle precipitazioni medie rispetto al periodo 1951-2003

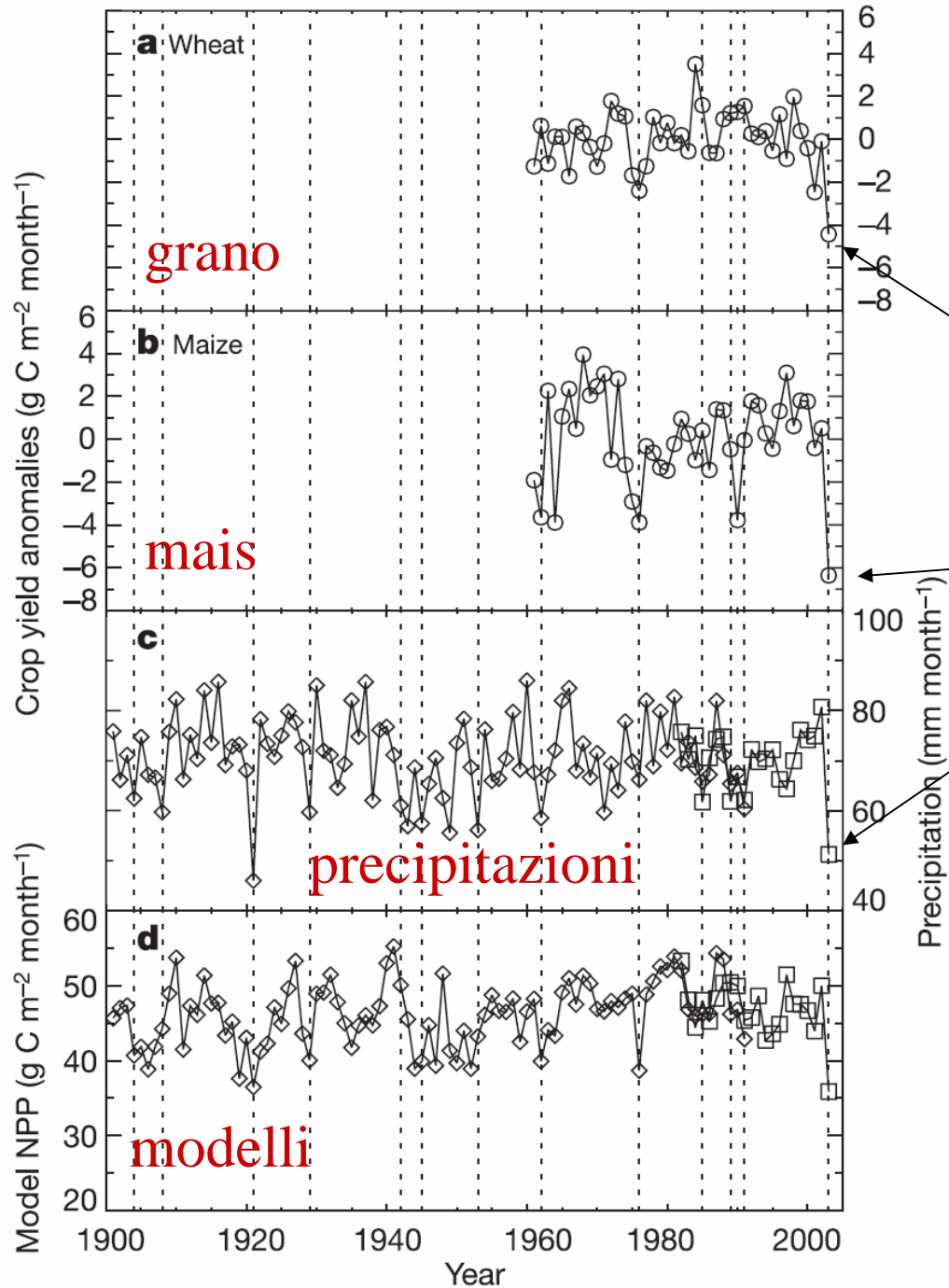


L'EVENTO ECCEZIONALE DEL 2003



DEFICIT PLUVIOMETRICO (%) ANNO 2003 RISPETTO A RIFERIMENTO 1961-1990

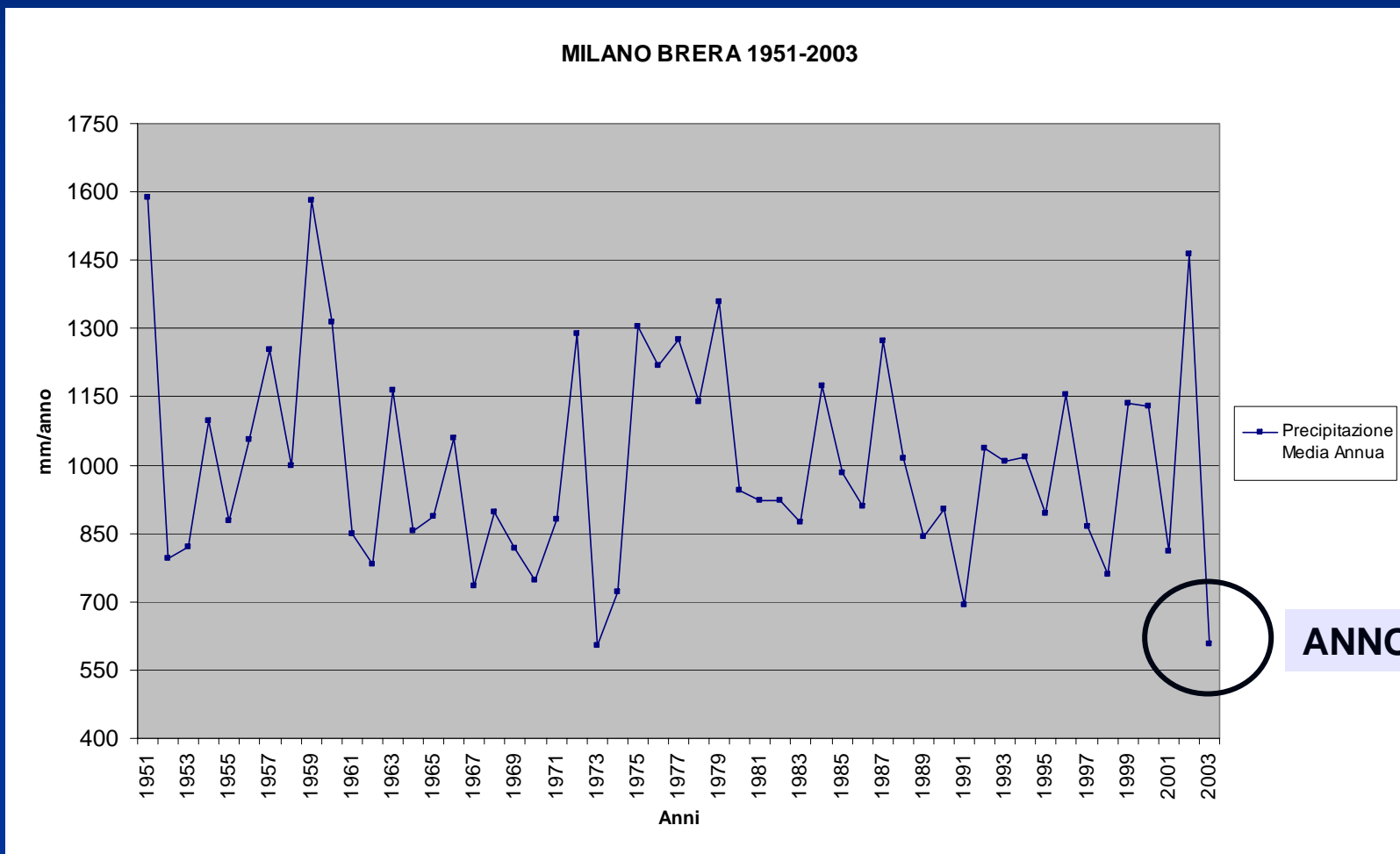




L'anno 2003 è stato il più critico degli ultimi 100 anni

Ciais, 2005

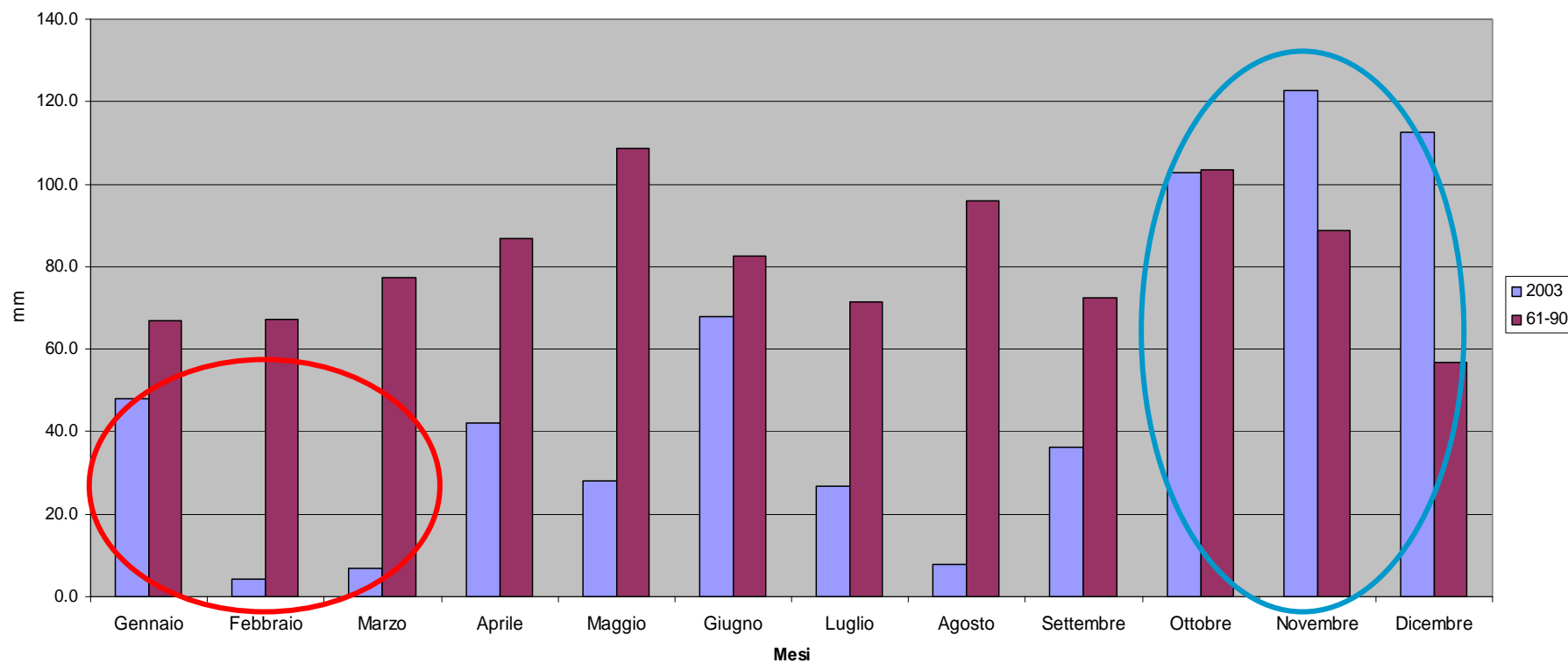
Trend precipitazioni annue Milano Brera



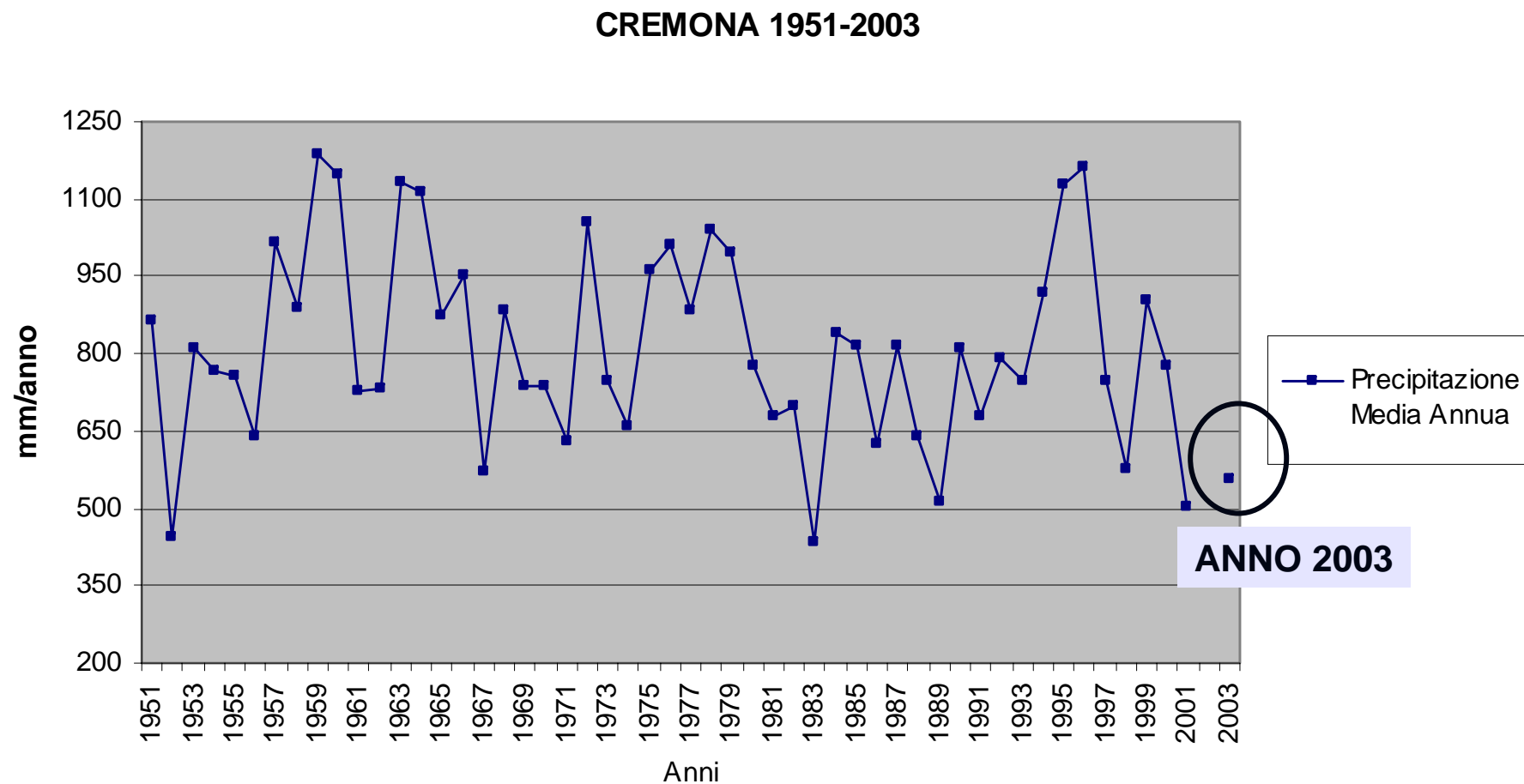
Precipitazione mensile 2003 vs 61-90

Milano Brera

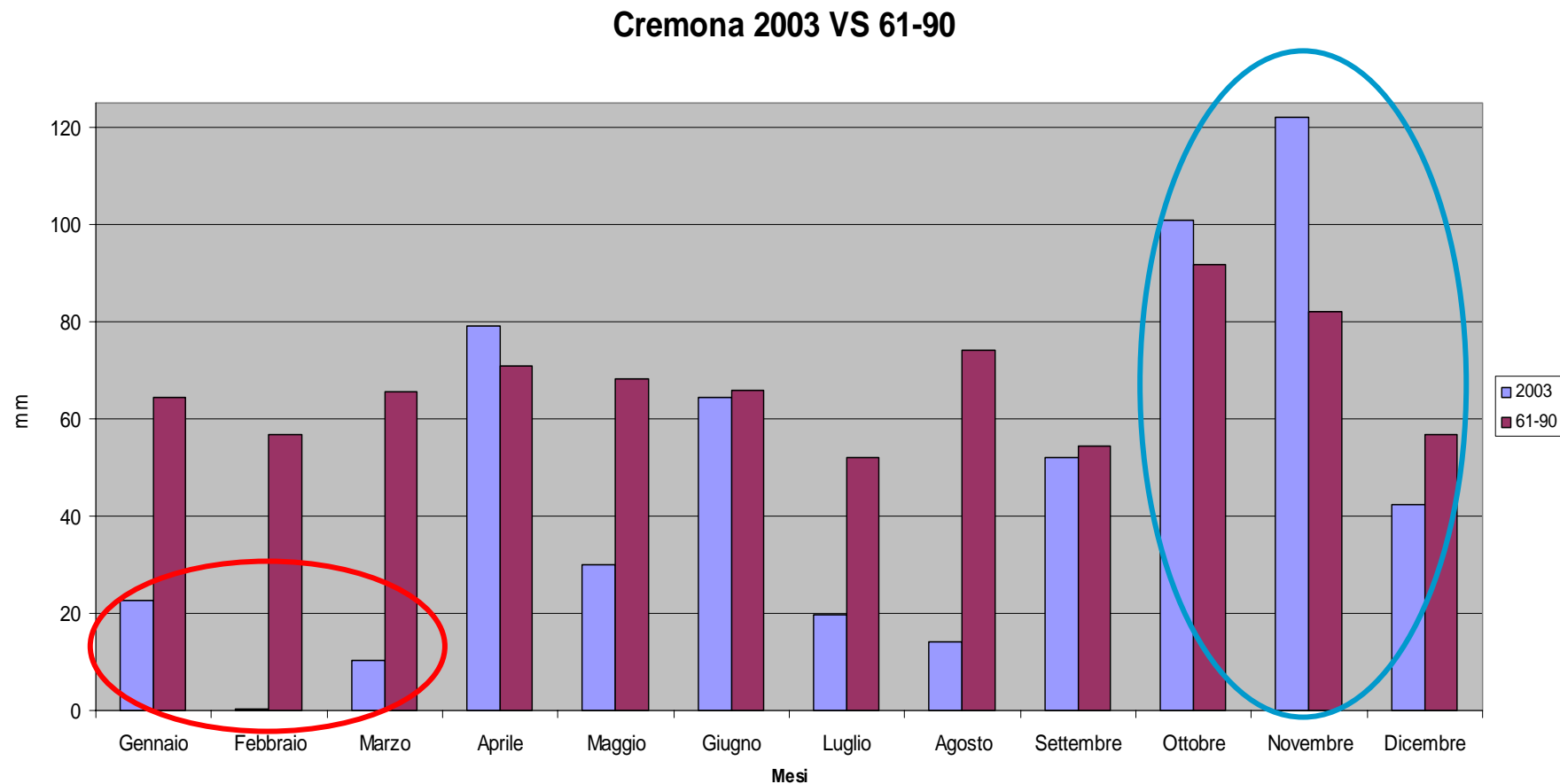
Milano Brera 2003 VS 61-90



Trend precipitazioni annue Cremona

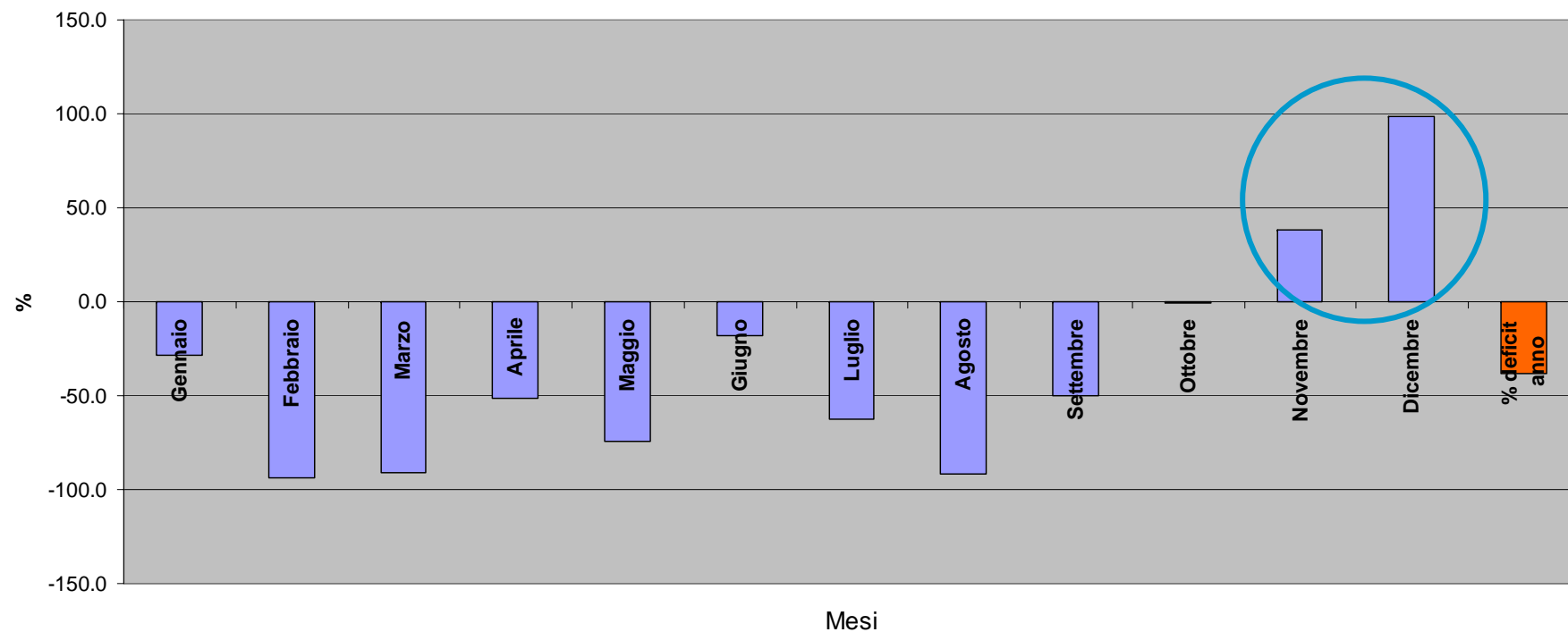


Precipitazione mensile 2003 vs 61-90 Cremona



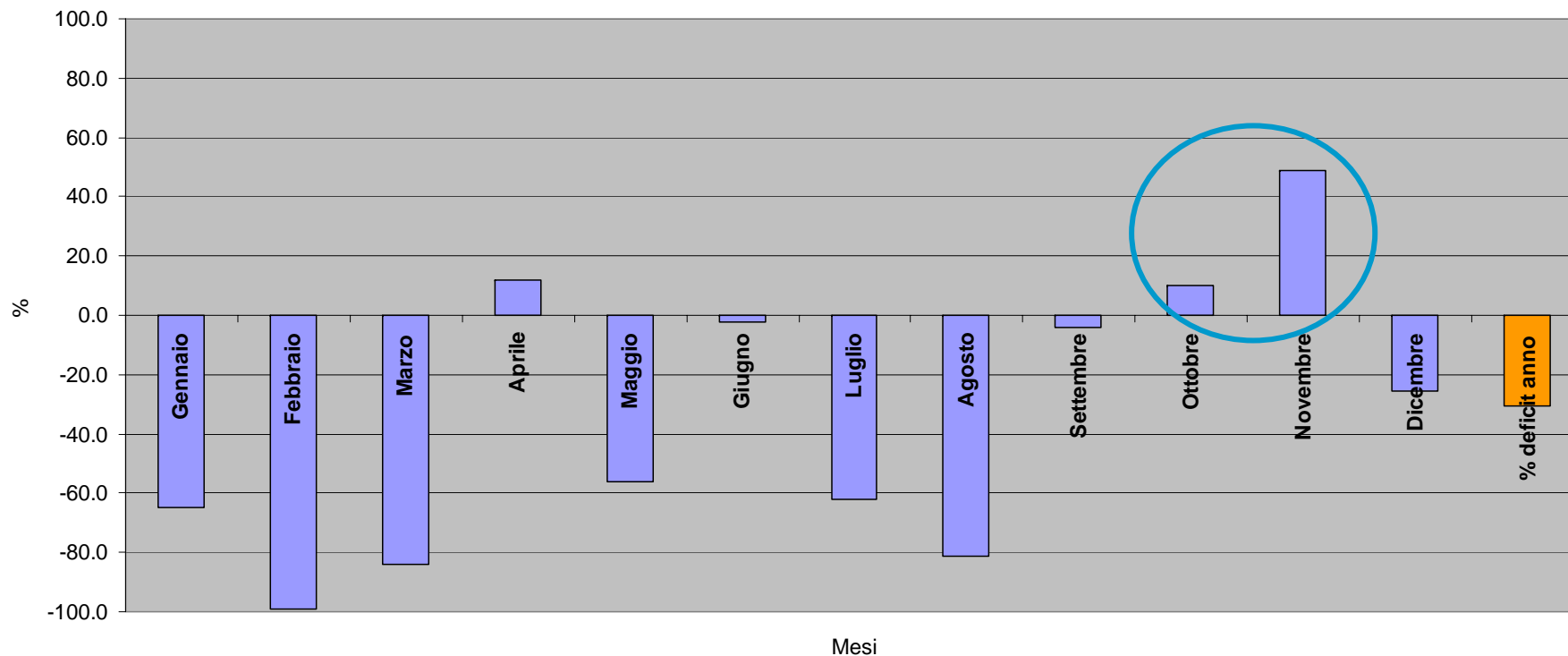
Deficit percentuale mensile delle precipitazioni Milano Brera

MilanoBrera_Deficit%2003



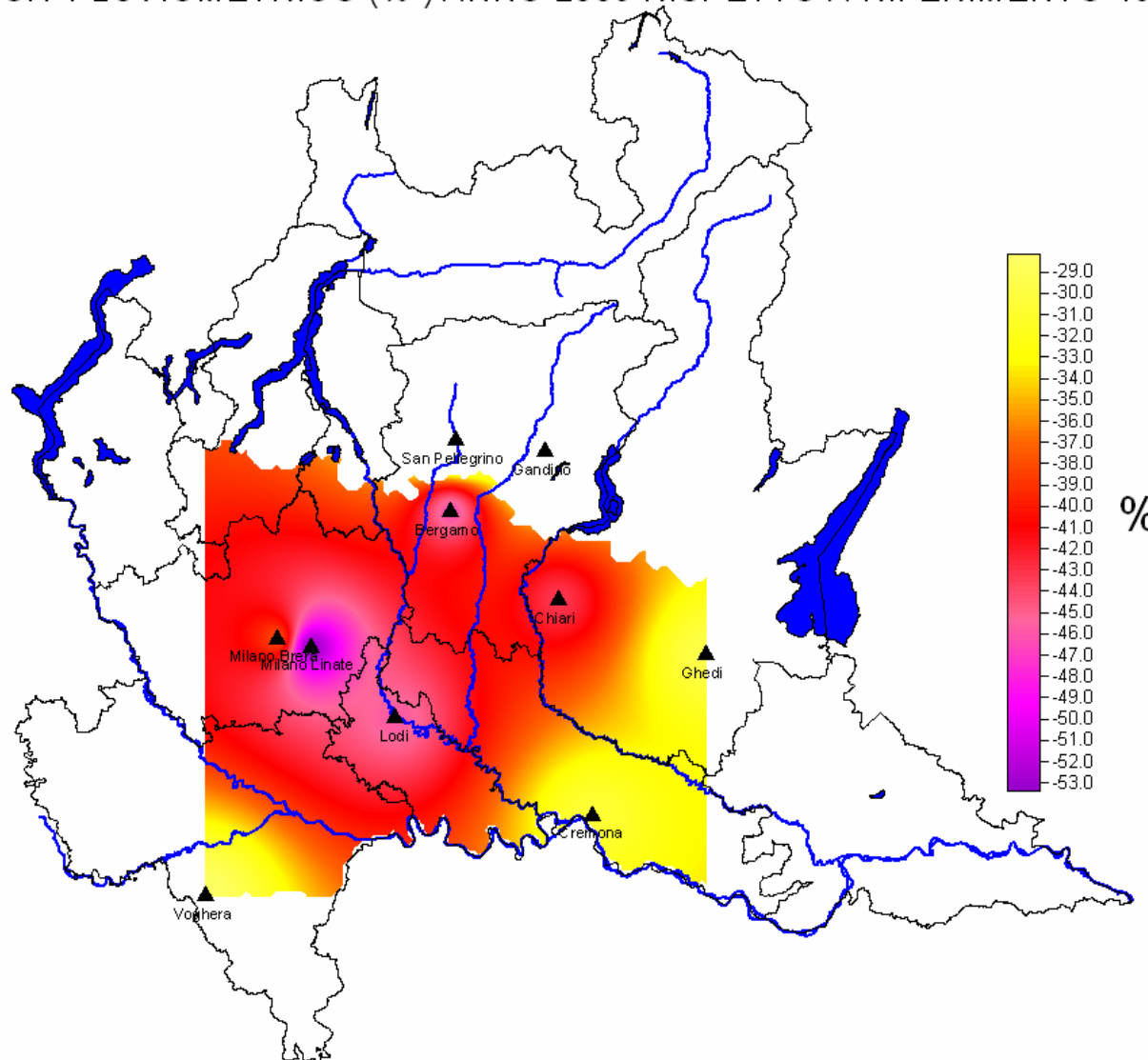
Deficit percentuale mensile delle precipitazioni Cremona

CREMONA_Deficit% 2003



Deficit pluviometrico 2003 vs 1961-1990

DEFICIT PLUVIOMETRICO (%) ANNO 2003 RISPETTO A RIFERIMENTO 1961-1990





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Venerdì 28 settembre 2007

Grazie per l'attenzione

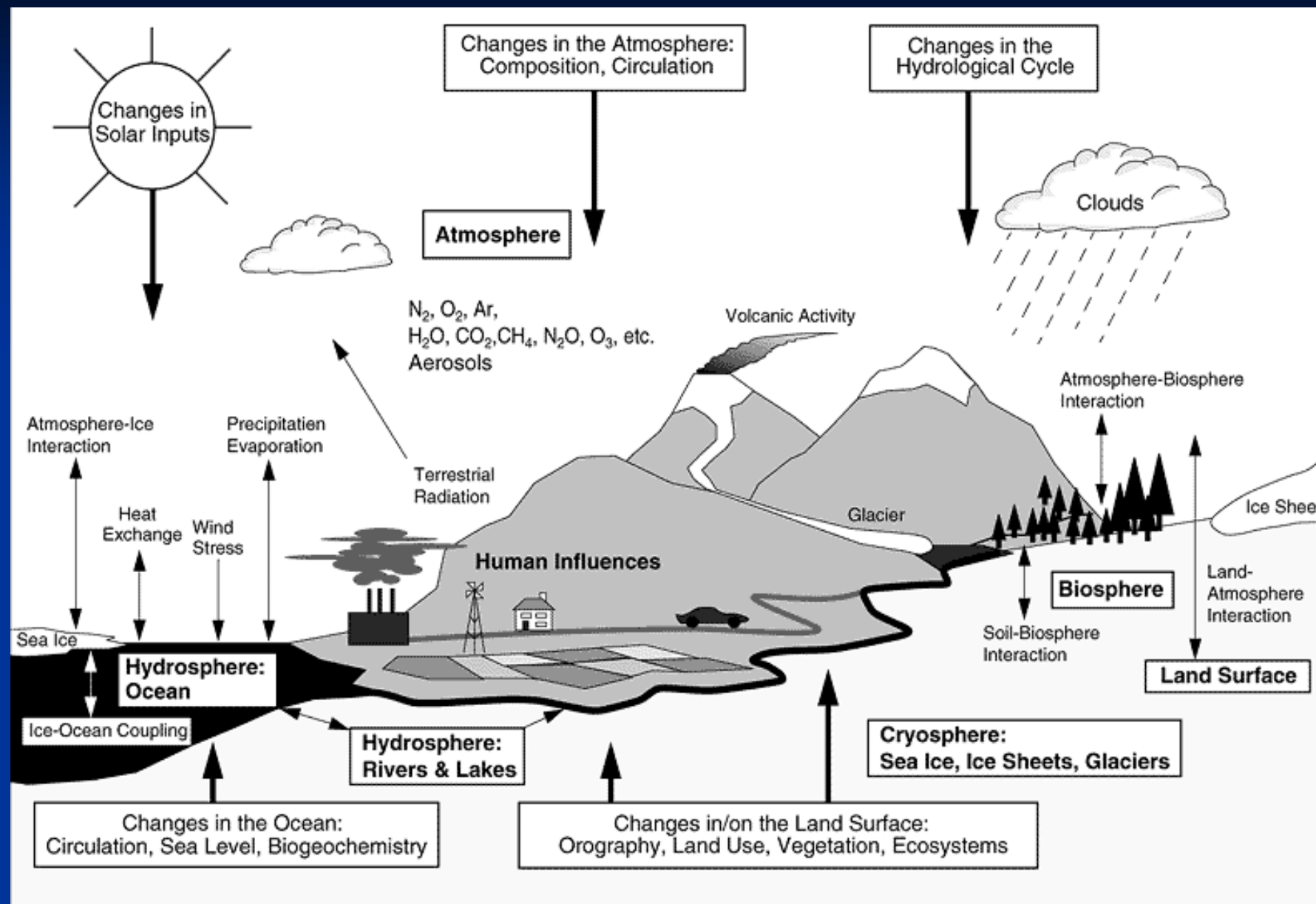
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Il sistema climatico





La macchina del clima

