

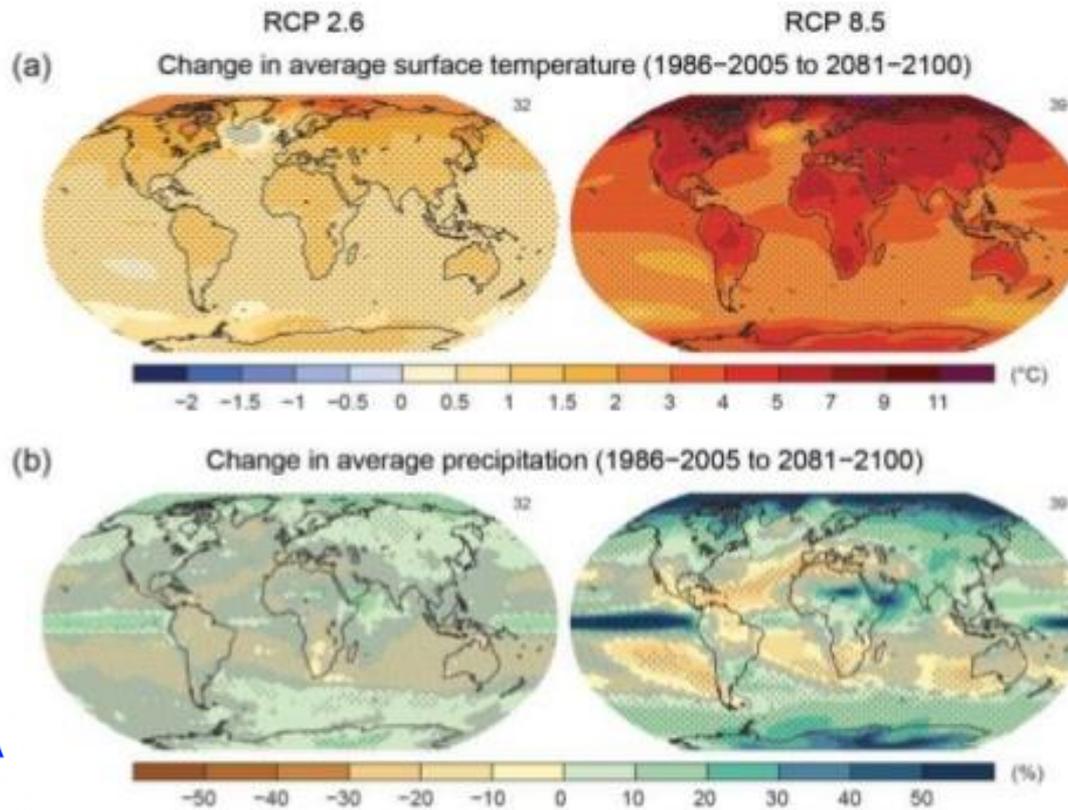
# Gli scenari climatici del futuro

Luca Mercalli – Società Meteorologica Italiana  
[www.nimbus.it](http://www.nimbus.it)

Figure SPM.8a,b

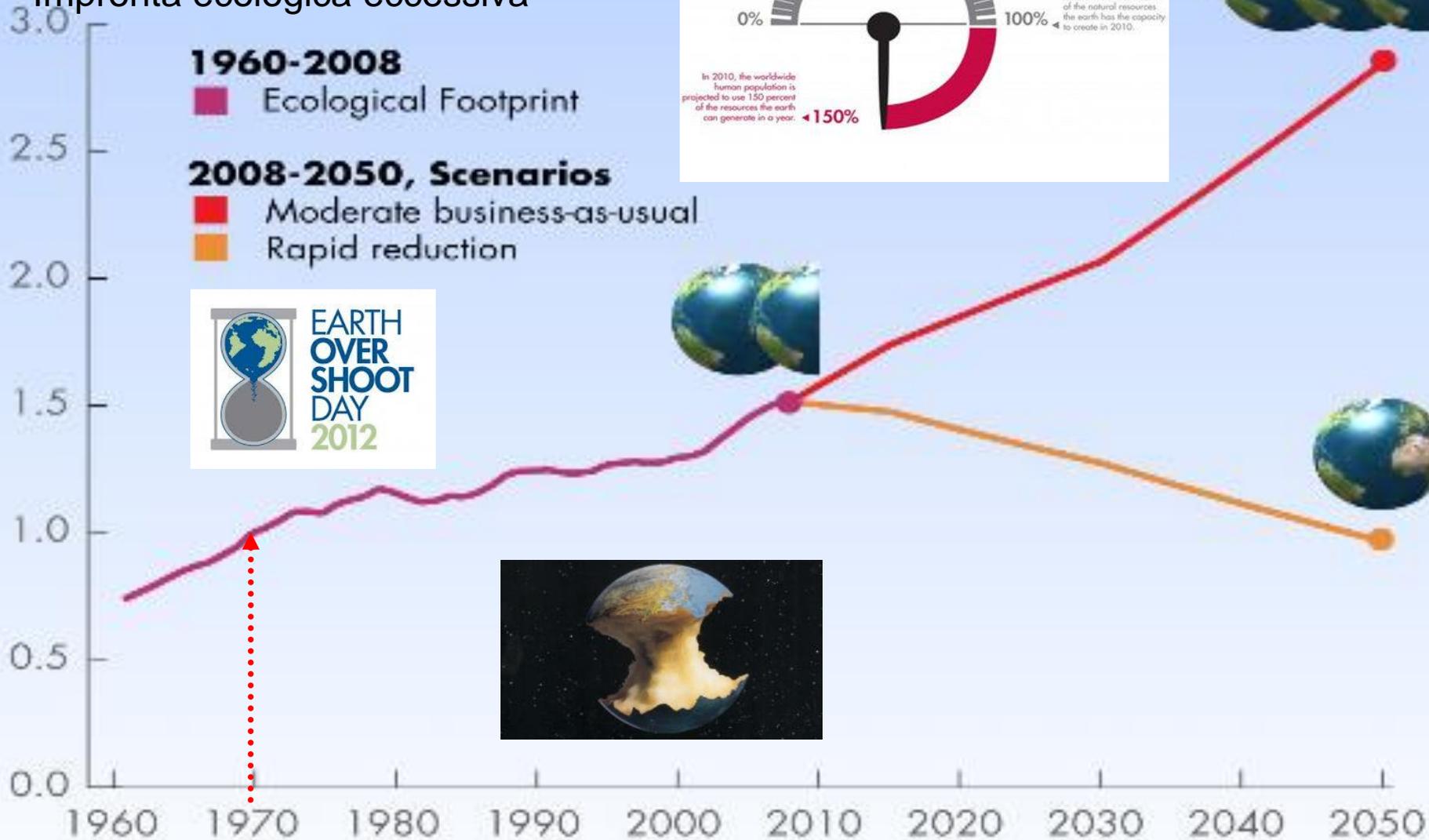
Maps of CMIP5 multi-model mean results

All Figures © IPCC 2013



# Sovrasfruttamento pianeta

## Impronta ecologica eccessiva



y-axis: number of planet earths, x-axis: years

<http://scientistswarning.forestry.oregonstate.edu/>

2017: il secondo allarme degli scienziati all'umanità,  
firmato da oltre 15.000 studiosi da 184 paesi



## **World Scientists' Warning to Humanity: A Second Notice**

WILLIAM J. RIPPLE, CHRISTOPHER WOLF, THOMAS M. NEWSOME, MAURO GALETTI, MOHAMMED ALAMGIR, EILEEN CRIST, MAHMOUD I. MAHMOUD, WILLIAM F. LAURANCE, and 15,364 scientist signatories from 184 countries

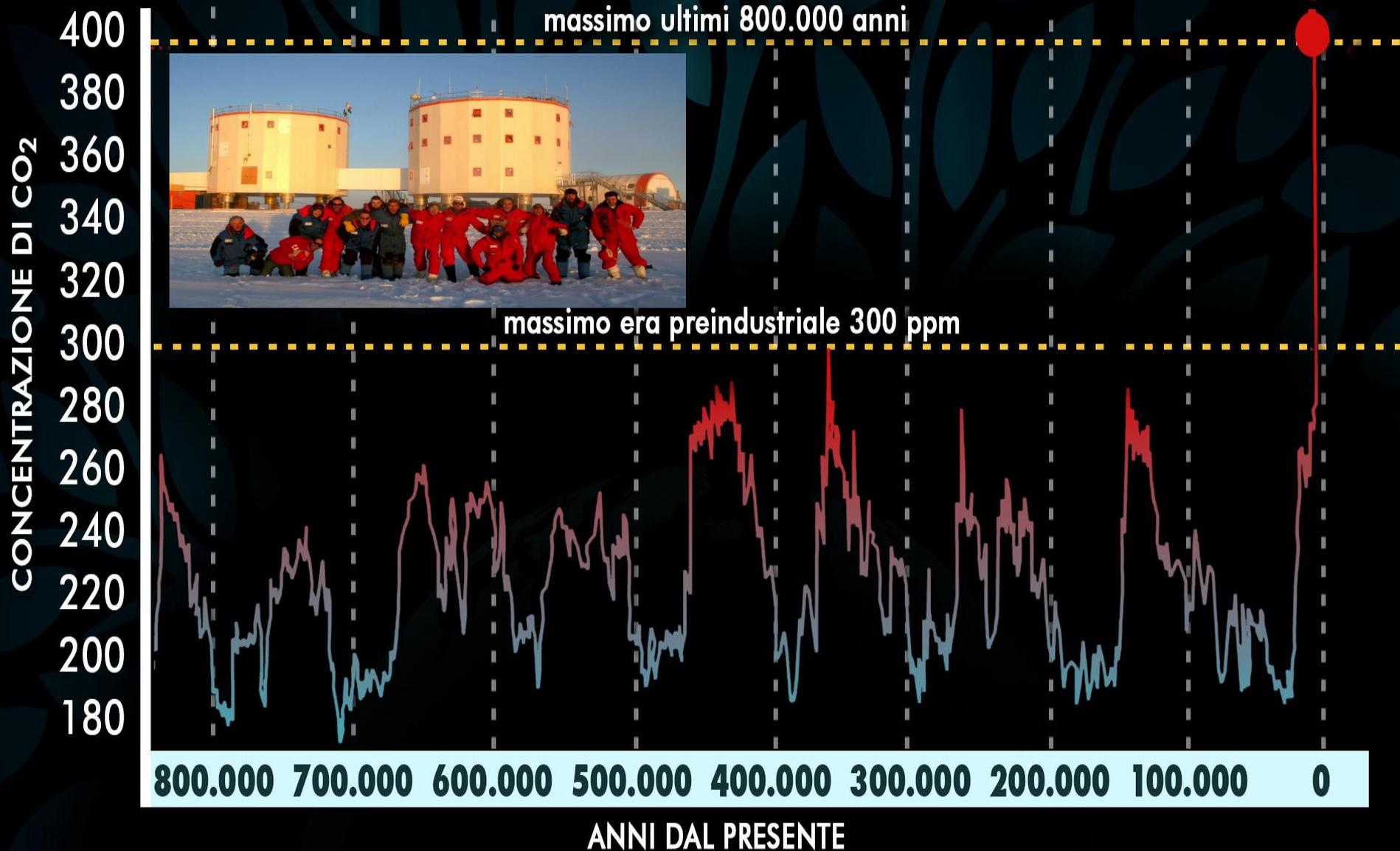
**T**wenty-five years ago, the Union of Concerned Scientists and more than 1700 independent scientists, including the majority of living Nobel laureates in the sciences, penned the 1992 "World Scientists' Warning to Humanity" (see supplemental file S1). These concerned professionals called on humankind to curtail environmental destruction and cautioned that "a great change in our stewardship of the Earth and the life on it is required, if vast human misery is to be avoided." In their manifesto, they showed that



CO<sub>2</sub> in atmosfera, mai così elevata in 800.000 anni

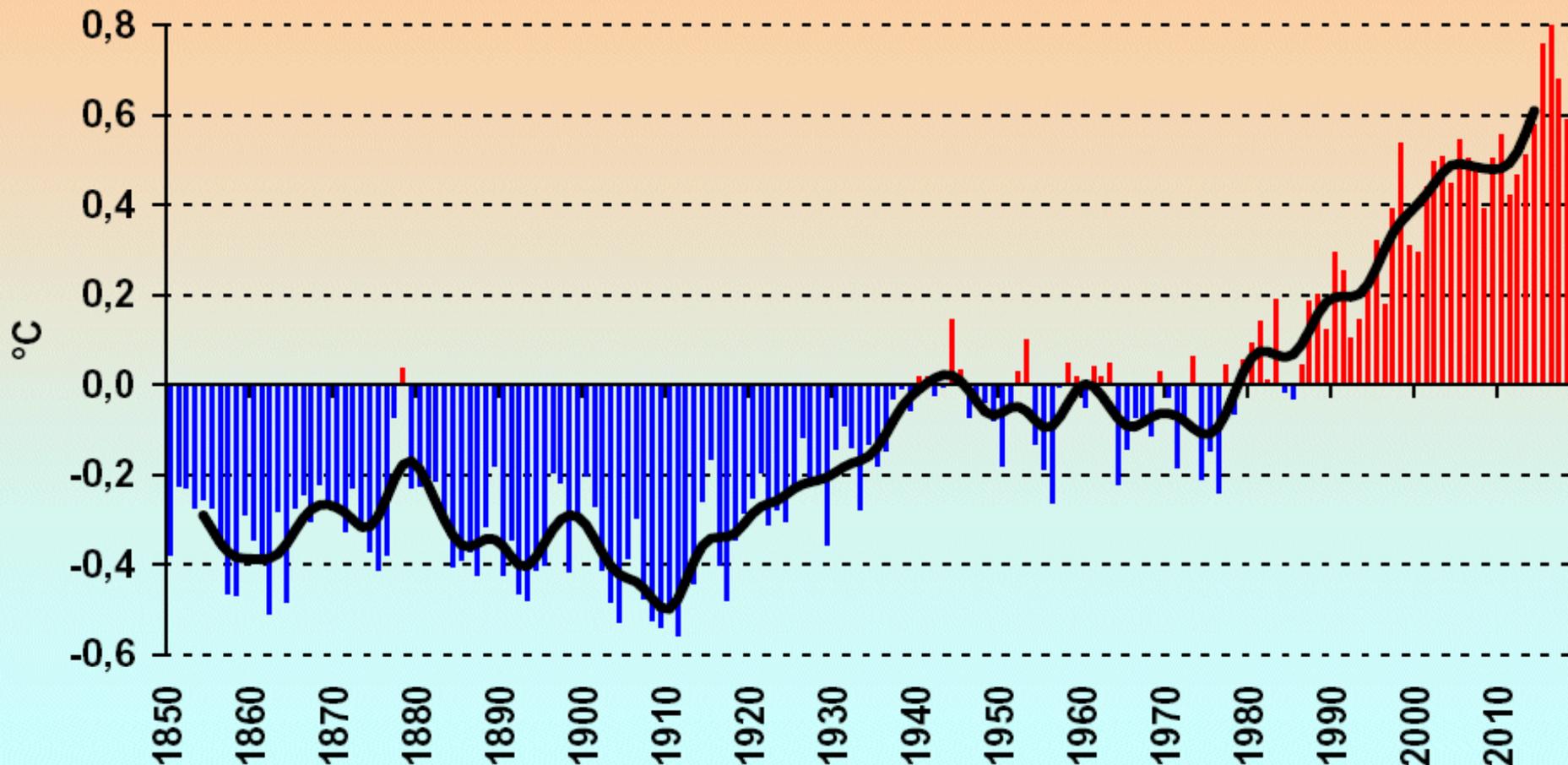
fonte: progetto EPICA

## LIVELLO CO<sub>2</sub> NEL TEMPO



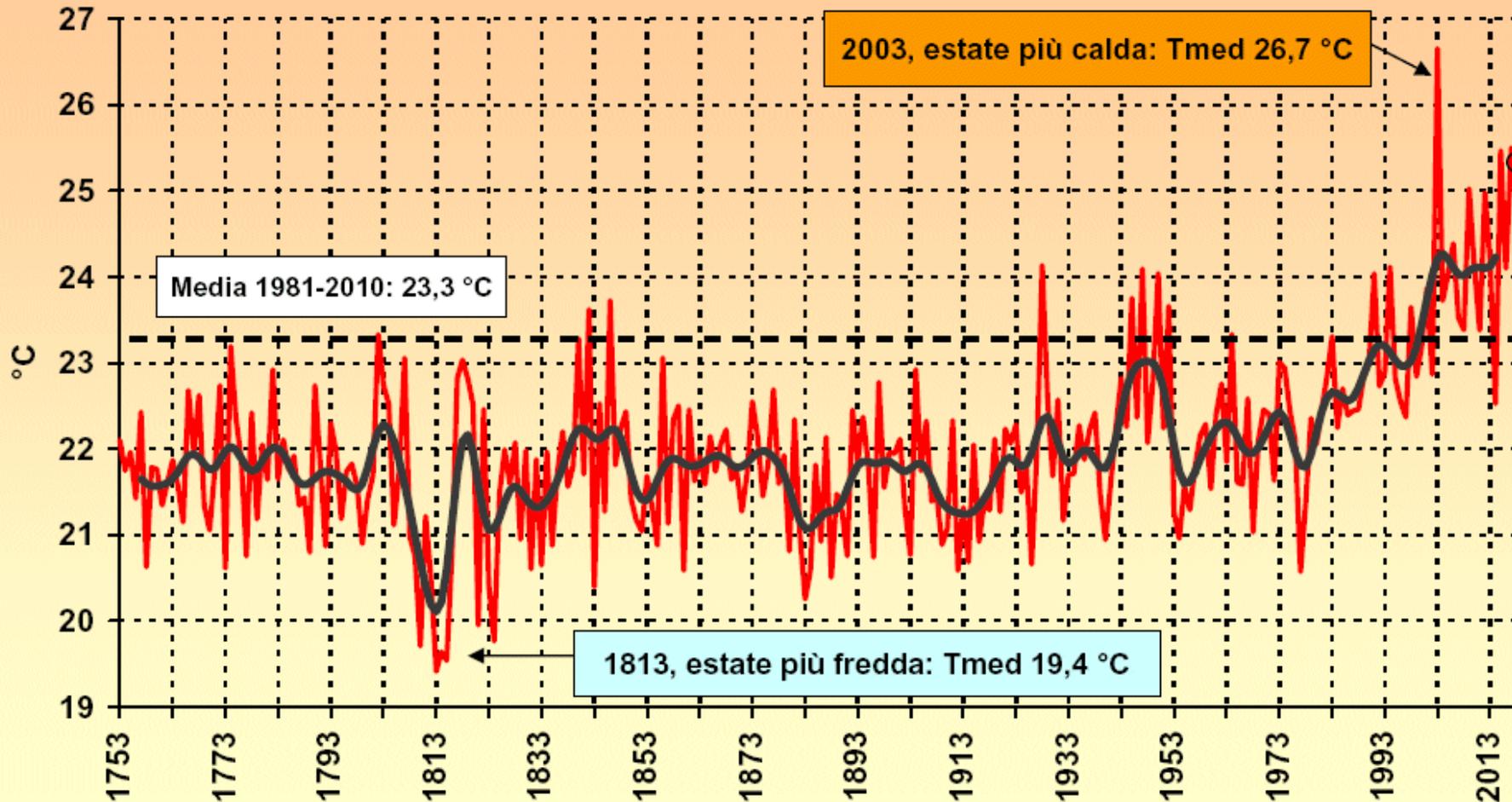
# Temperatura media globale: +1° C in più nell'ultimo secolo

Anomalie termiche globali 1850-2018  
(rispetto a media trentennio 1961-90)  
*serie MetOffice - Hadley Center*



## Torino - Temperature medie estive (°C) dal 1753 al 2018

(elaborazione dati: SMI - [www.nimbus.it](http://www.nimbus.it))



Nord Italia: 9 su 10 delle estati più calde sono successive al 2002. Nel 2003 in EU occidentale 70.000 vittime da caldo



**Diffusione Zanzara tigre in Italia  
a causa di estati calde, insetto vettore malattie tropicali**



**1897**  
(f. Druetti)



**2005**  
(f. L. Mercalli)

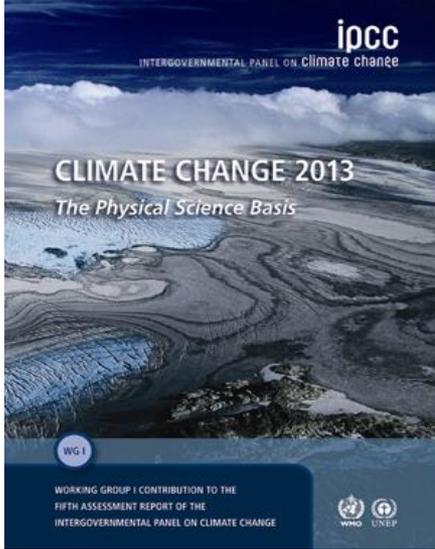


**2015**  
(f. S. Jobard)

## **Ghiacciaio Pré de Bar (Monte Bianco):**

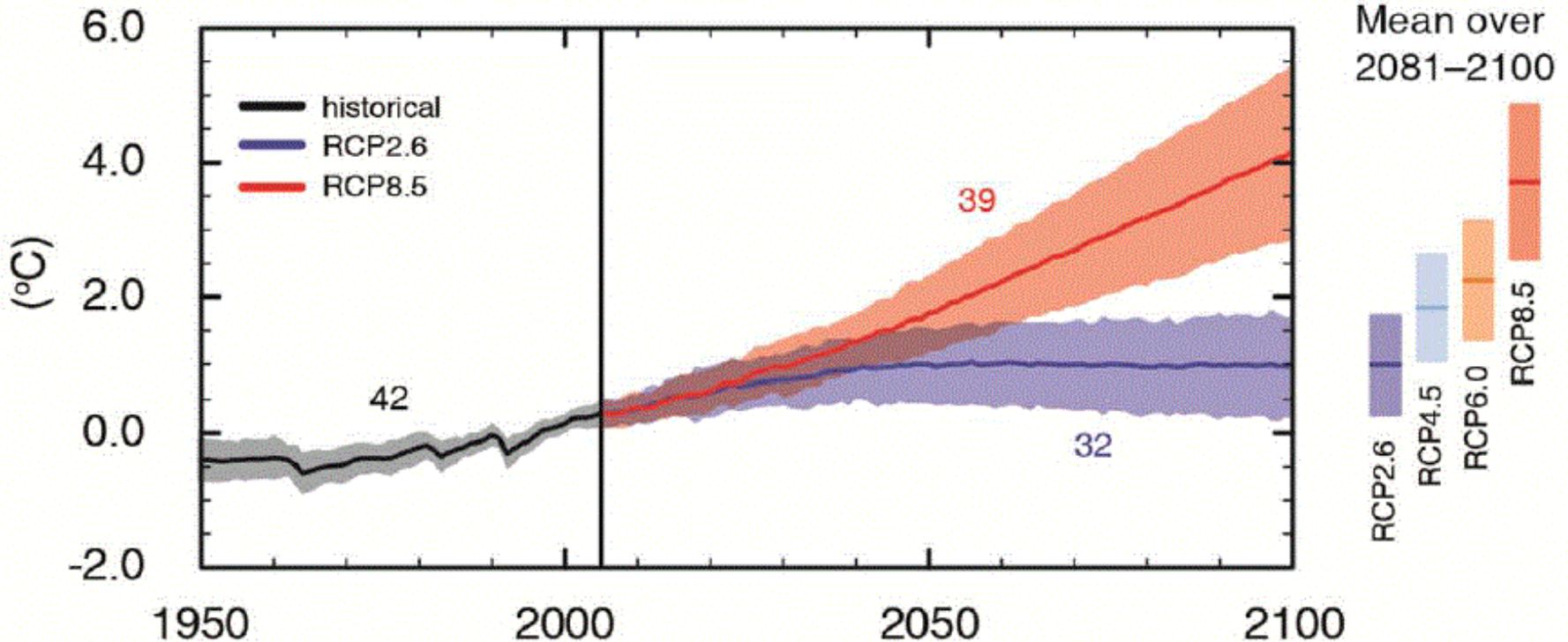
**ritiro della fronte di oltre 800 m dal 1897 al 2015**

**I ghiacciai alpini si sono ridotti di oltre il 50% in un secolo**



**Scenari clima futuro dal V rapporto IPCC (2013):**  
**+2° C** al 2100 se si applica Accordo Parigi (linea azzurra), oppure fino a **+5° C** in più con business-as-usual (linea rossa)

(a) Global average surface temperature change



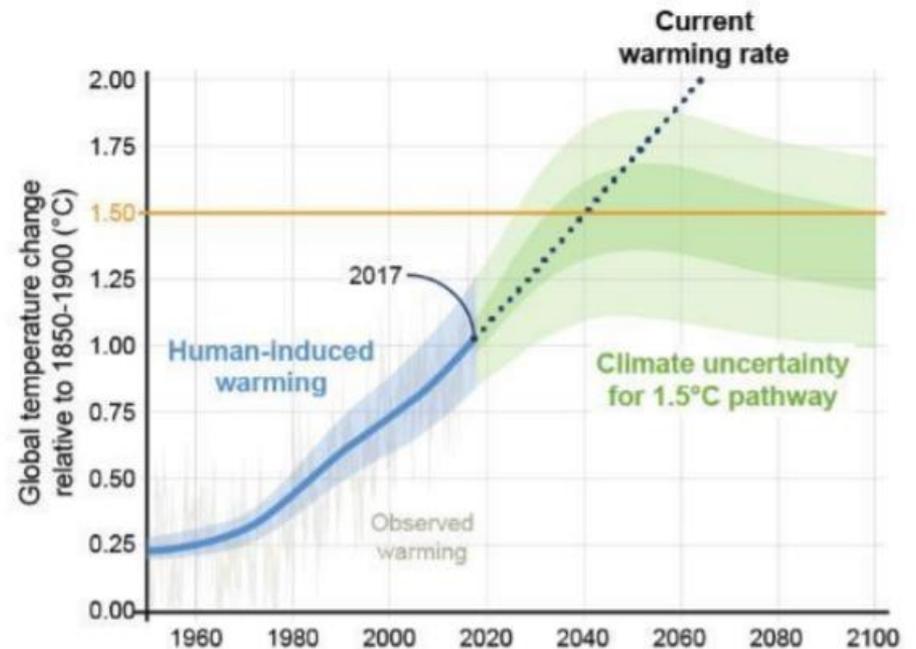
# Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.



## FAQ1.2: How close are we to 1.5°C?

Human-induced warming reached approximately 1°C above pre-industrial levels in 2017



FAQ1.2, Figure 1: Human-induced warming reached approximately 1°C above pre-industrial levels in 2017. At the present rate, global temperatures would reach 1.5°C around 2040.

# Mezzo grado fa la differenza...



Testi e illustrazioni ispirati da:  
IPCC Special Report on Global Warming of 1.5°C



ma richiede **“uno sforzo senza precedenti nella storia umana”**



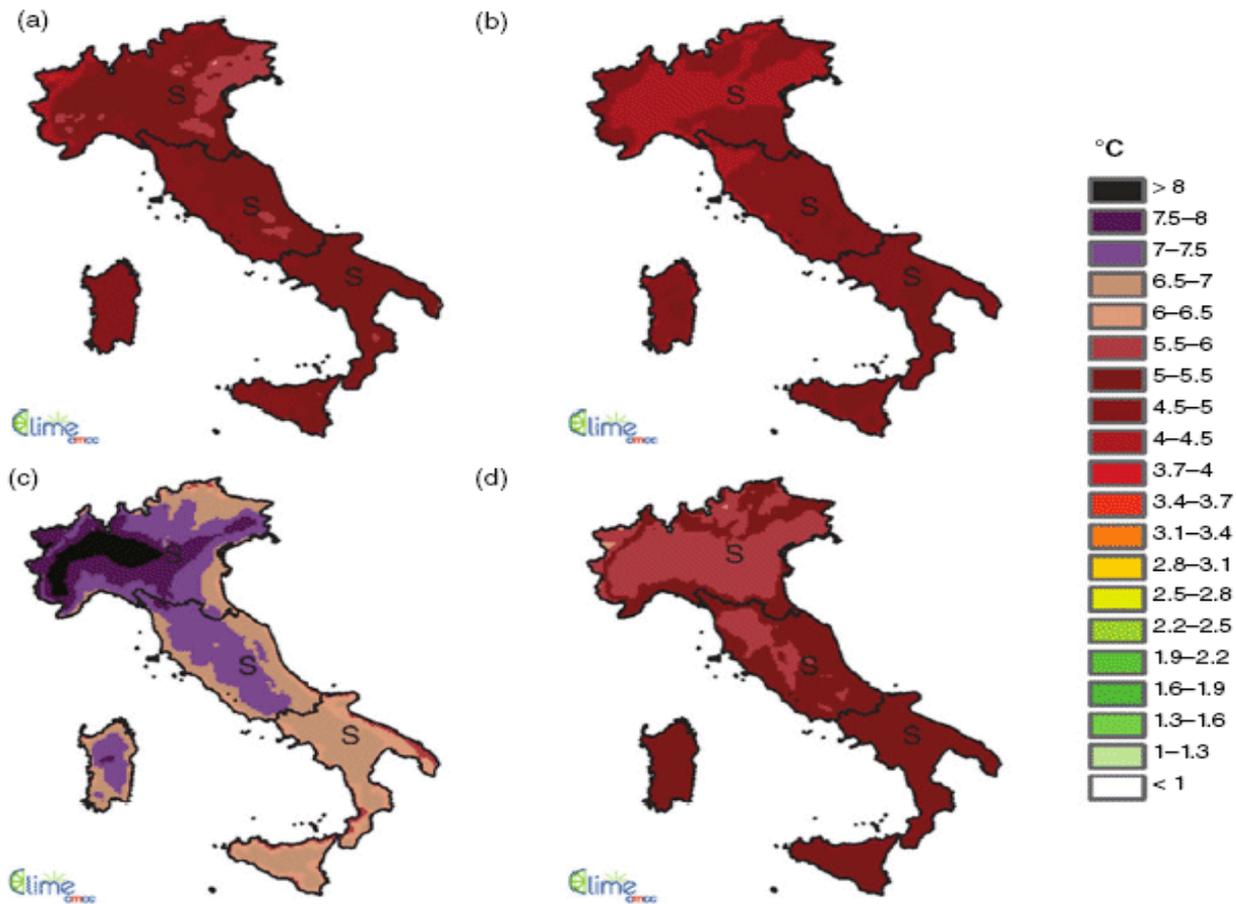


Figure 9. Temperature climate projections, RCP8.5: seasonal differences (°C), between the average value over 2071–2100 and 1971–2000 for (a) DJF, (b) MAM, (c) JJA and (d) SON (S, significant; NS, not significant).

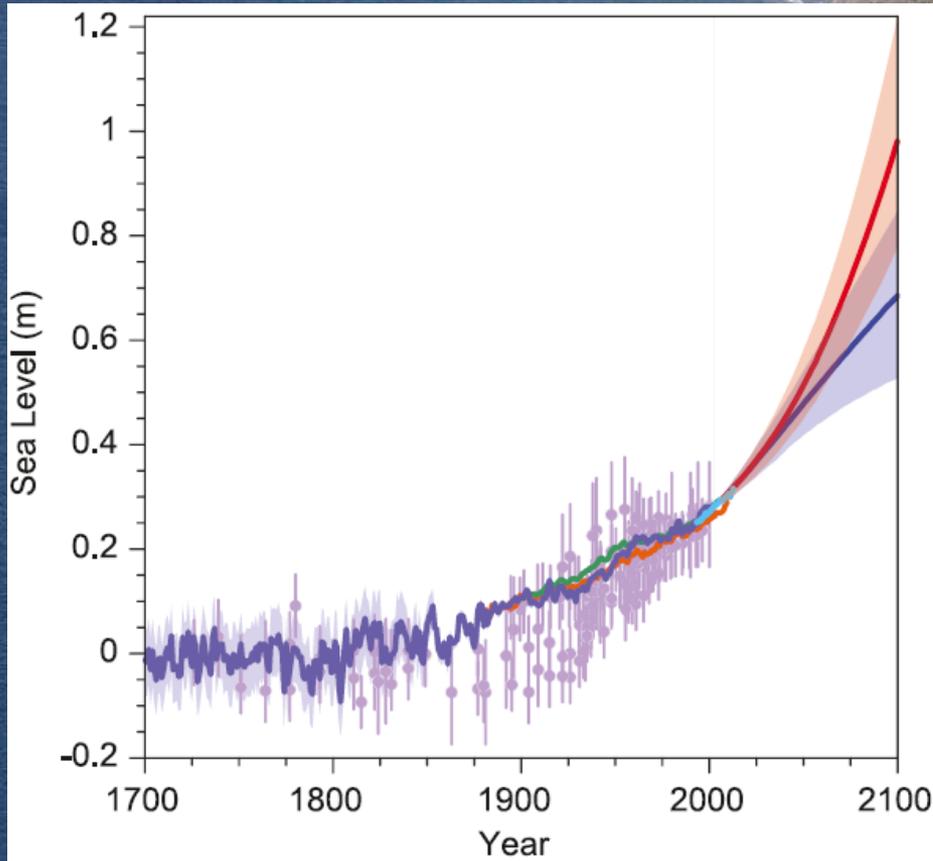
**E se non facessimo nulla? NW Italiano + 8 ° C in estate  
nel 2100! Torino come Karachi...**

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

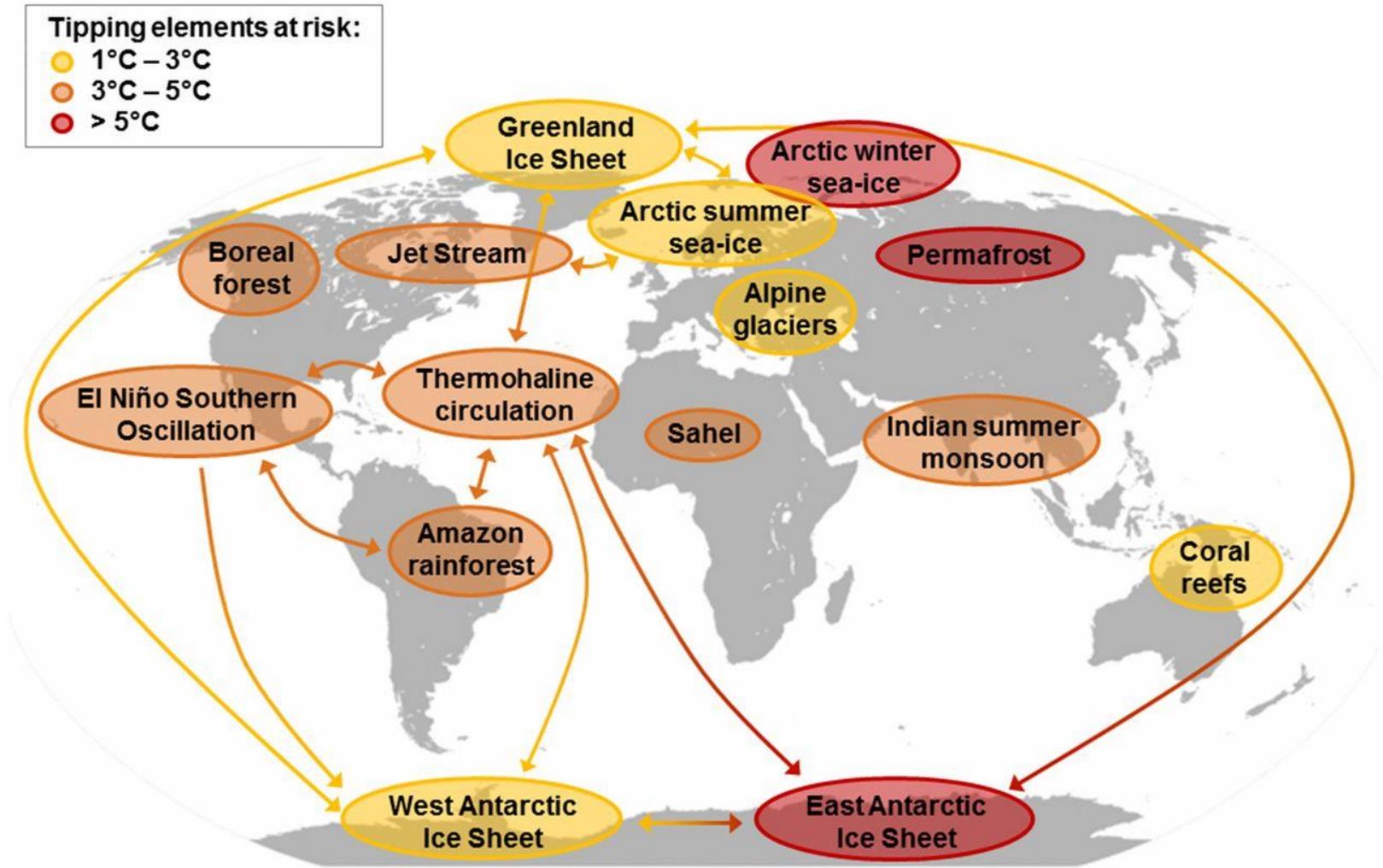


**Aumento livello marino:  
a rischio laguna veneta e delta del Po**

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



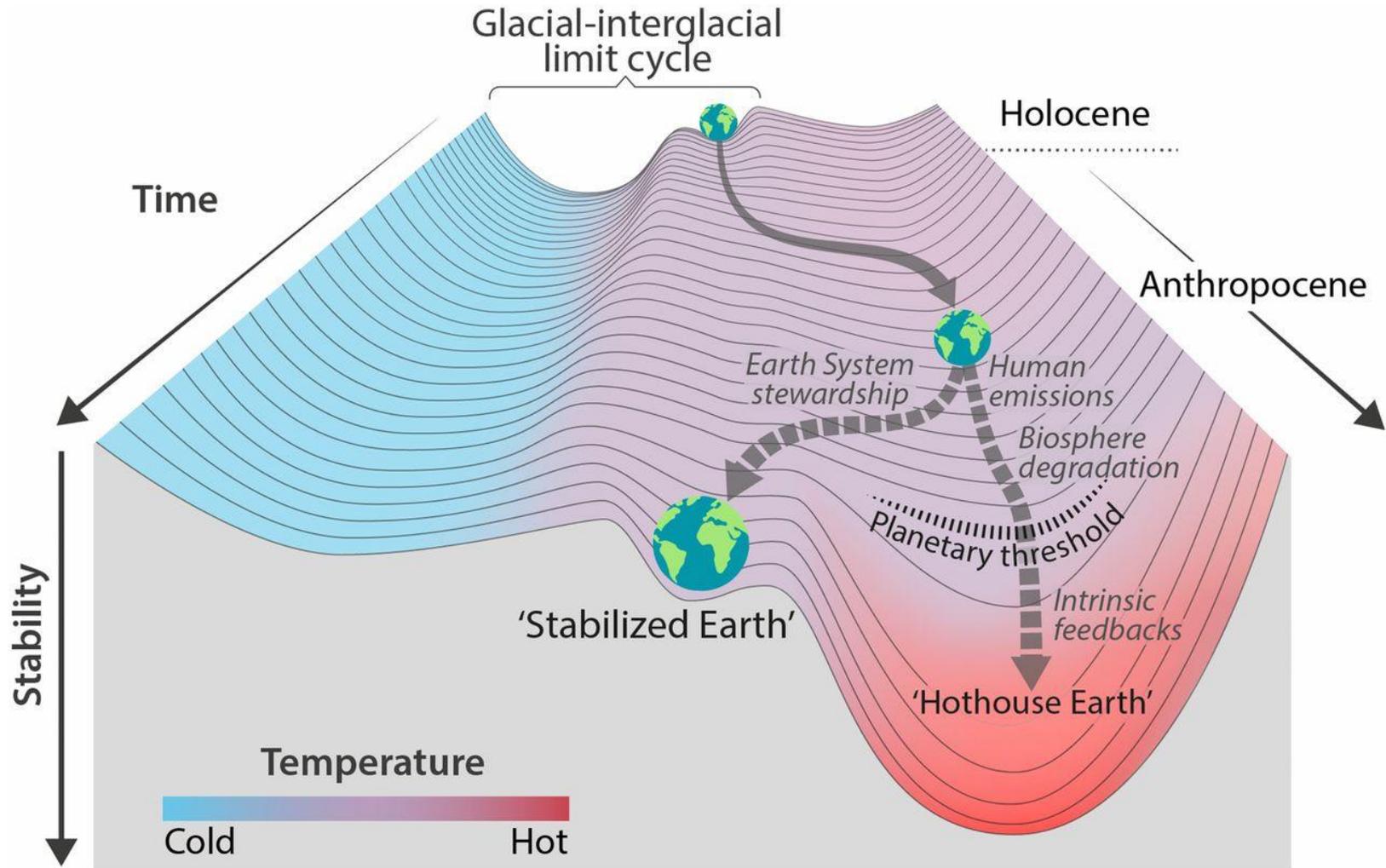
# climatici potrebbe accelerare i rischi



Will Steffen et al. PNAS doi:10.1073/pnas.1810141115

PNAS

us, out of the glacial–interglacial limit cycle to its present position in the hotter Anthropocene.

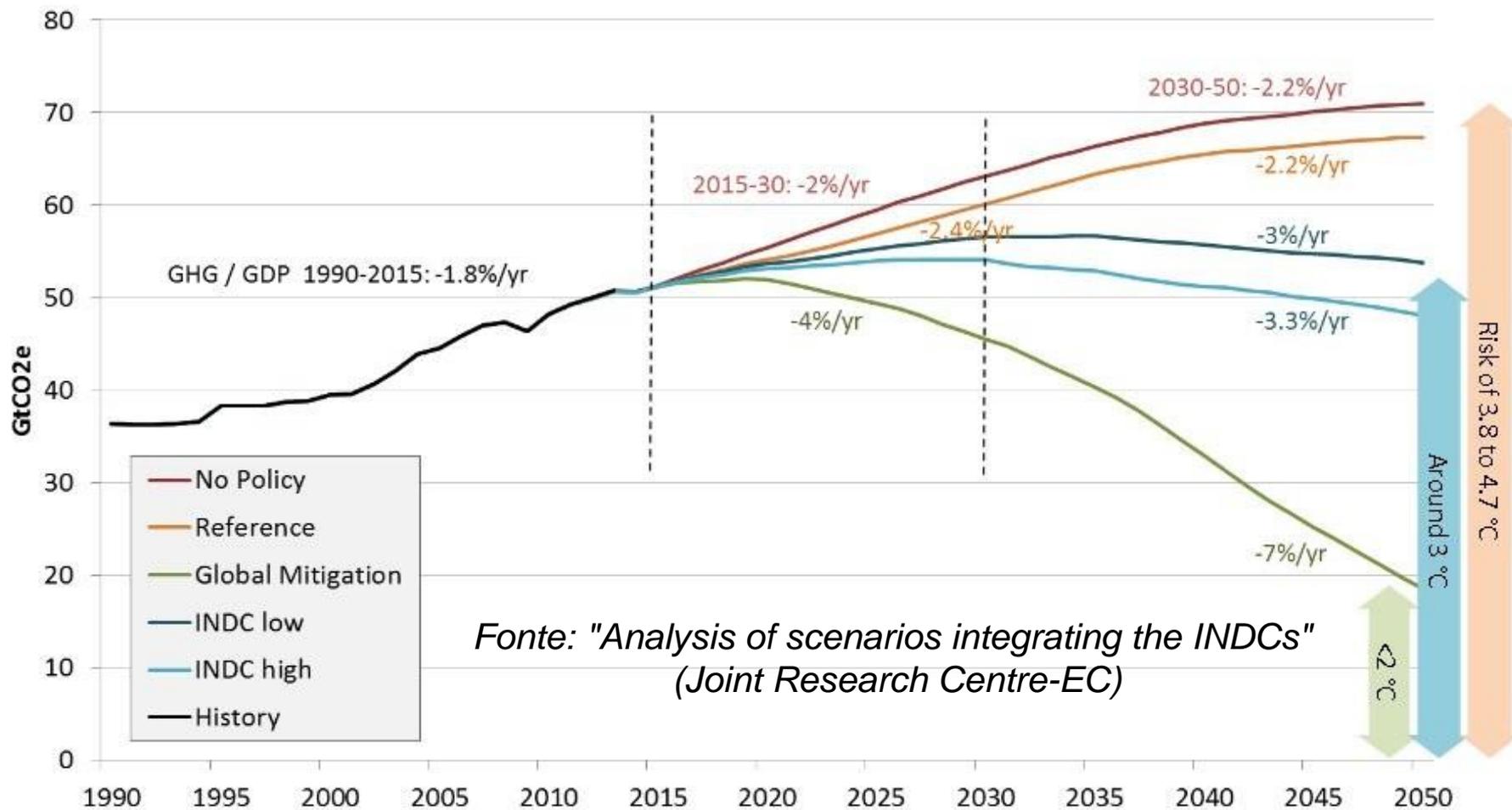


Will Steffen et al. PNAS doi:10.1073/pnas.1810141115

PNAS



# Promesse ambiziose di riduzione CO<sub>2</sub>, ma non bastano: se applicate, circa +3 ° C nel 2100 !

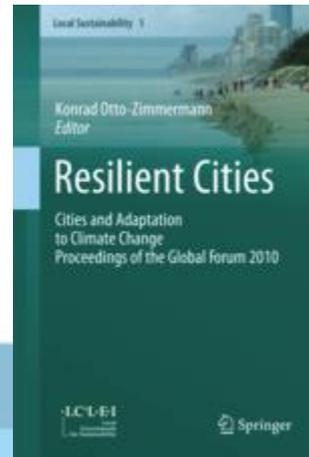


# ROTTERDAM RESILIENCE STRATEGY.

READY FOR THE  
21<sup>ST</sup> CENTURY

CONSULTATION  
DOCUMENT

# Città resilienti e sostenibili



## The Risks

As more people and assets become rapidly concentrated in cities and as infrastructure struggles to keep up with rapid growth, the risk from natural disasters and climate change is rising.

collapsed buildings

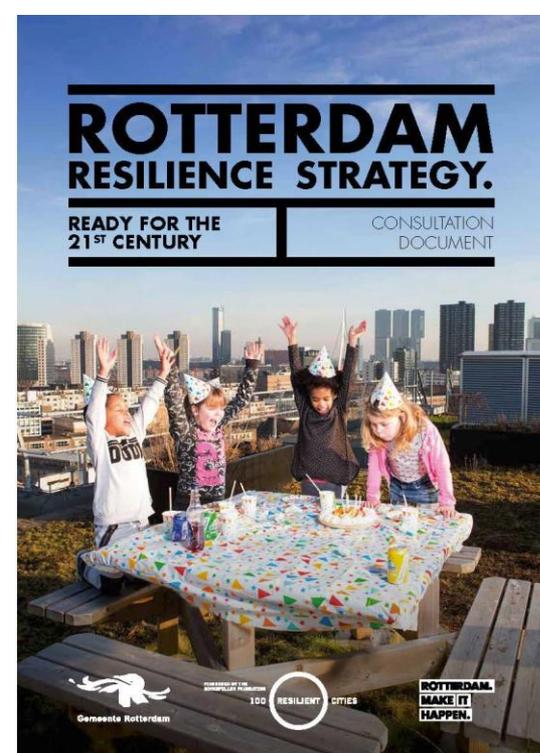
landslides

broken bridges

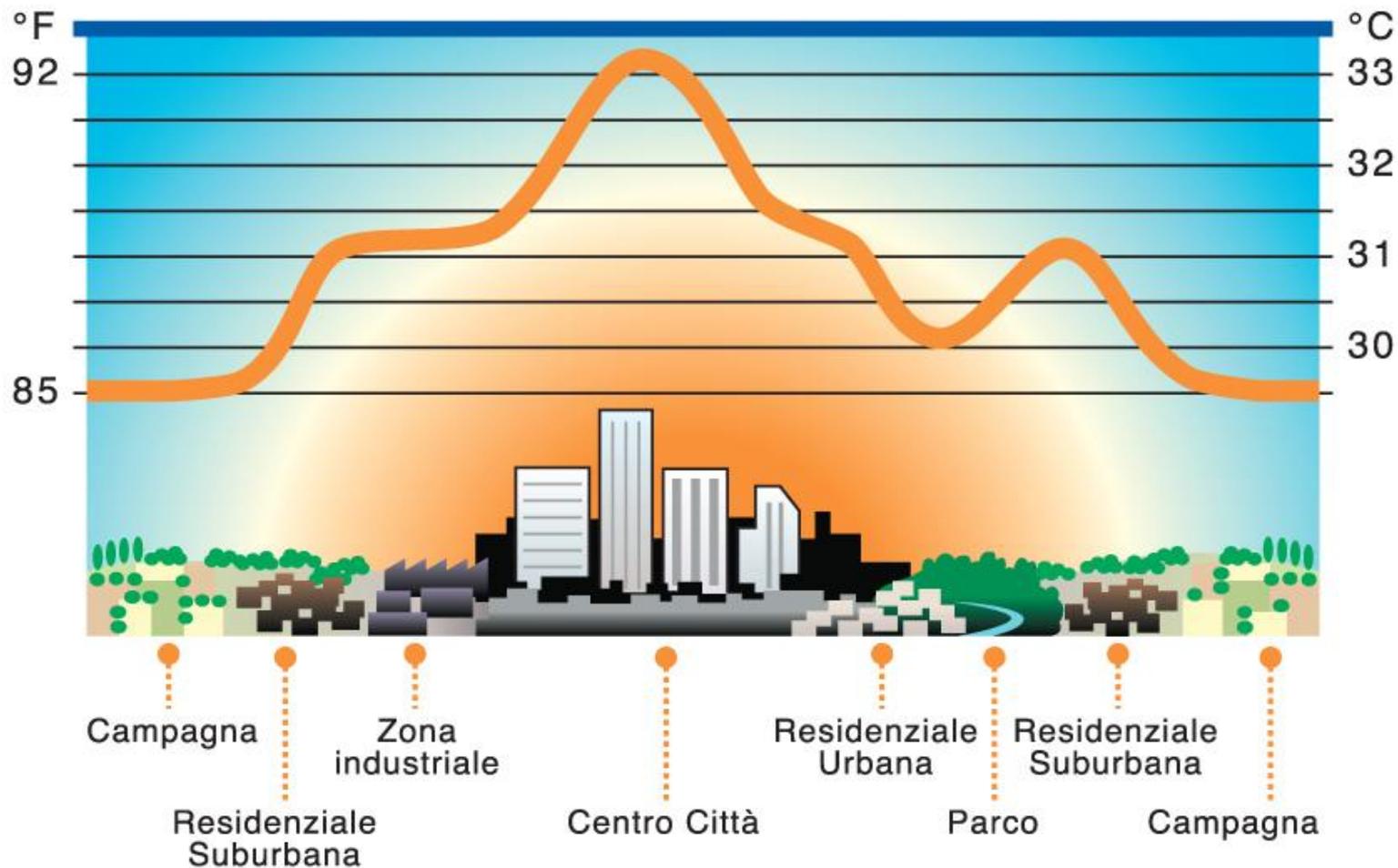
brownouts

fires

flooding



# Isola di calore urbana



**Adattamento = resilienza a eventi estremi, ondate di caldo e nubifragi/alluvioni**



**Mitigazione = riqualificazione per efficienza  
energetica e minori emissioni  
Più energie rinnovabili ed  
efficienza energetica abitazioni**

Biogas: contributo alla decarbonizzazione e stabilizzazione rete elettrica grazie a produzione programmabile, sottrazione e stoccaggio carbonio nei suoli



# Al lavoro! Gli obiettivi UN dell'Agenda 2030





# A RACE WE CAN WIN

“Climate change is the defining issue of our time – and we are at a defining moment.”



António Guterres,  
United Nations Secretary-General,  
10 September, 2018

**“Climate change is moving faster than we are.”**

**“If we do not change course by 2020, we risk missing the point where we can avoid runaway climate change, with disastrous consequences for people and all the natural systems that sustain us.”**



## A RACE WE CAN WIN

“ The transition to a cleaner, greener future needs to speed up. We stand at a truly "use it or lose it" moment. ”



António Guterres,  
United Nations Secretary-General,  
10 September, 2018

# SPLENDENDO GENERO



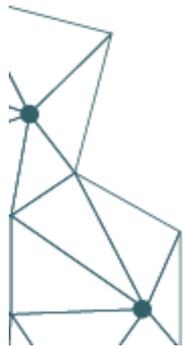
**Il tempo è il fattore critico di successo.  
Dobbiamo accelerare la transizione!**

LAT. 45:07:18 - LON. 07:24:30 - ALT. 500 M

## Ostrich Effect

We tend to ignore or avoid negative and risky information and situations. We 'bury our heads in the sand'.

This is particularly common when it comes to money. It's the last week of the month. Rather than carefully budgeting what's left, we choose not to look at our bank balance.



The only question is how to communicate the gravity of our situation to the non-scientific public. In the words of Kaisa Kosonen, an observer at the negotiations, “Scientists might want to write in capital letters, ‘ACT NOW, IDIOTS,’ but they need to say that with facts and numbers.”

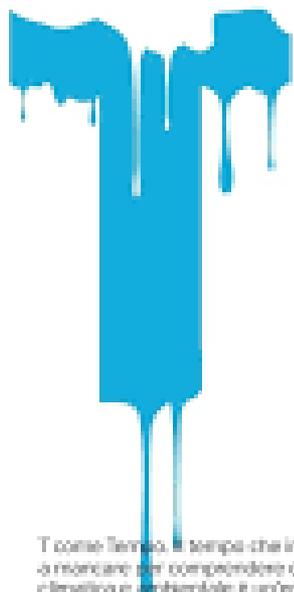
A large, white rectangular sign is positioned in the center of the frame, supported by several thin black metal legs. The sign features the text 'ACT NOW IDIOTS' in a large, bold, black, sans-serif font, arranged in three lines. The background is a desert landscape with several palm trees of varying heights and a large, multi-story orange building with arched windows and balconies in the distance. The sky is a clear, pale blue. The ground in the foreground is sandy and appears to be a paved or cleared area.

**ACT  
NOW  
IDIOTS**

# LUCA MERCALLI

## NON C'È PIÙ TEMPO

COME REAGIRE AGLI ALLARMI AMBIENTALI



È come tempo. Il tempo che inizia a mancare per comprendere che quello climatico e ambientale è un'emergenza di cui dobbiamo preoccuparci.

UN PIANO PER SALVARCI

# PREPARIAMOCI

A VIVERE IN UN MONDO CON MENO RISORSE,  
MENO ENERGIA, MENO ABBONDANZA...  
E FORSE PIÙ FELICITÀ

*Luca Mercalli*

chiarelettere