



Cambiamento climatico e resilienze individuali e collettive: come prepararsi al futuro

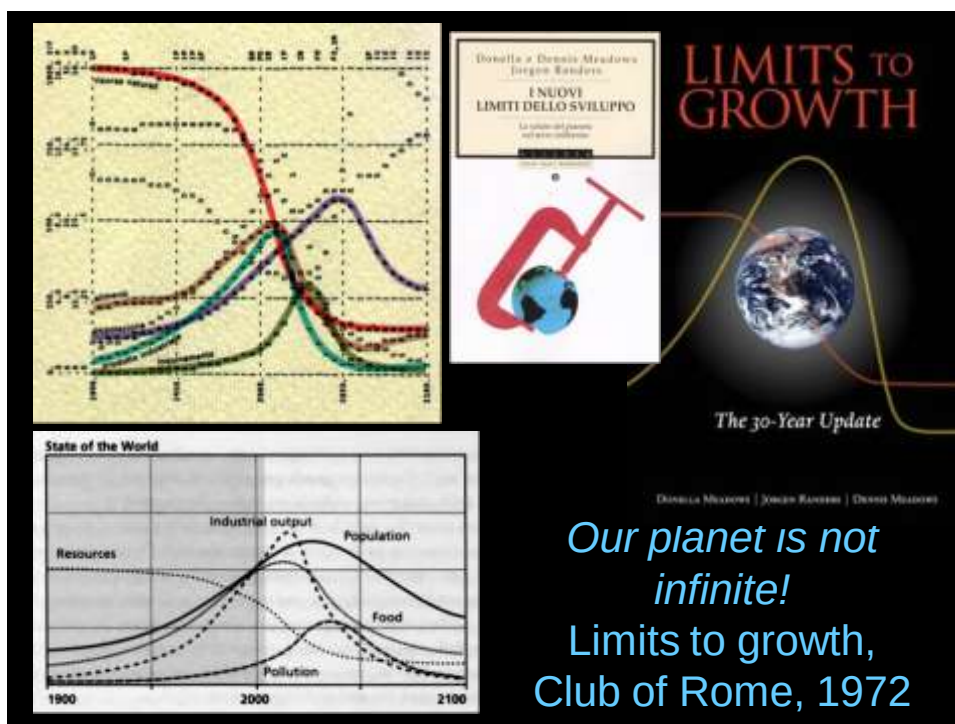
Luca Mercalli

Società Meteorologica Italiana

www.nimbus.it

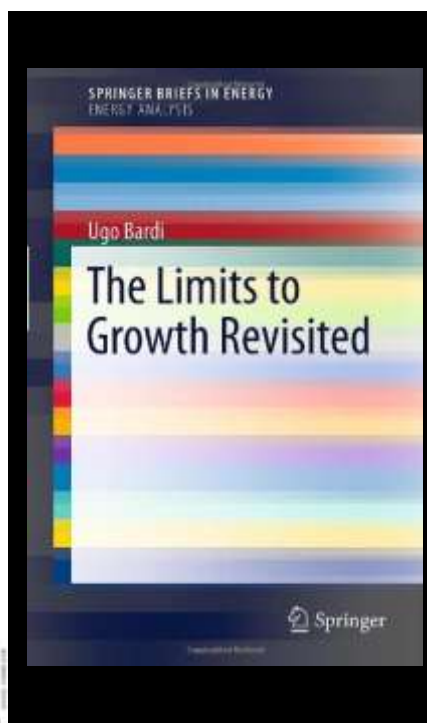
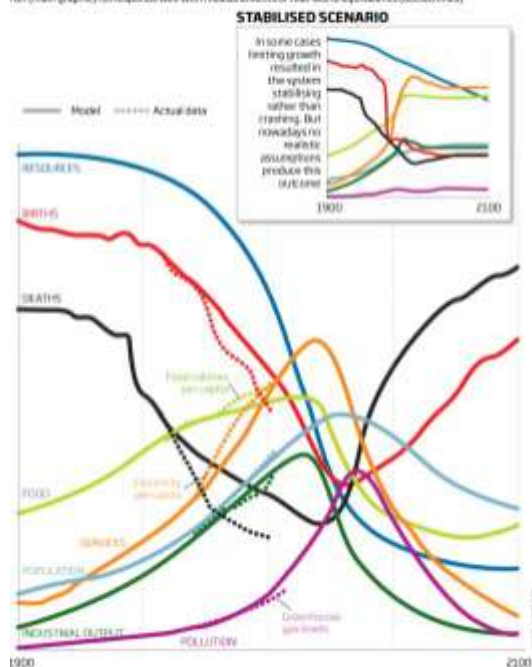




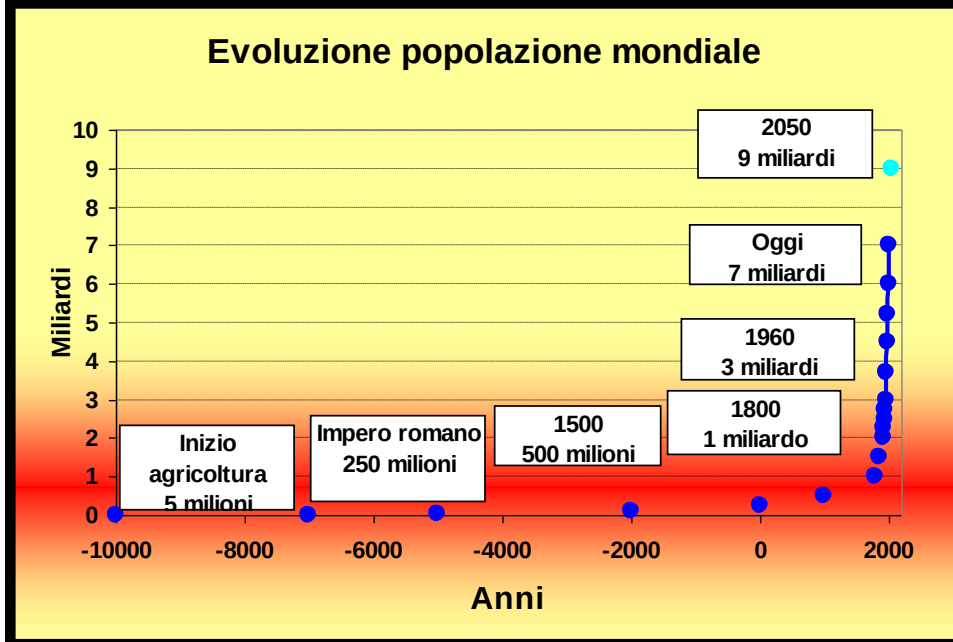


Boom and bust

In most runs of the World3 computer model, rapid growth is followed by sharp decline. So far the standard run (main graphic) corresponds well with measurements of real-world equivalents (dotted lines).



Ottobre 2011 : siamo 7.000.000.000



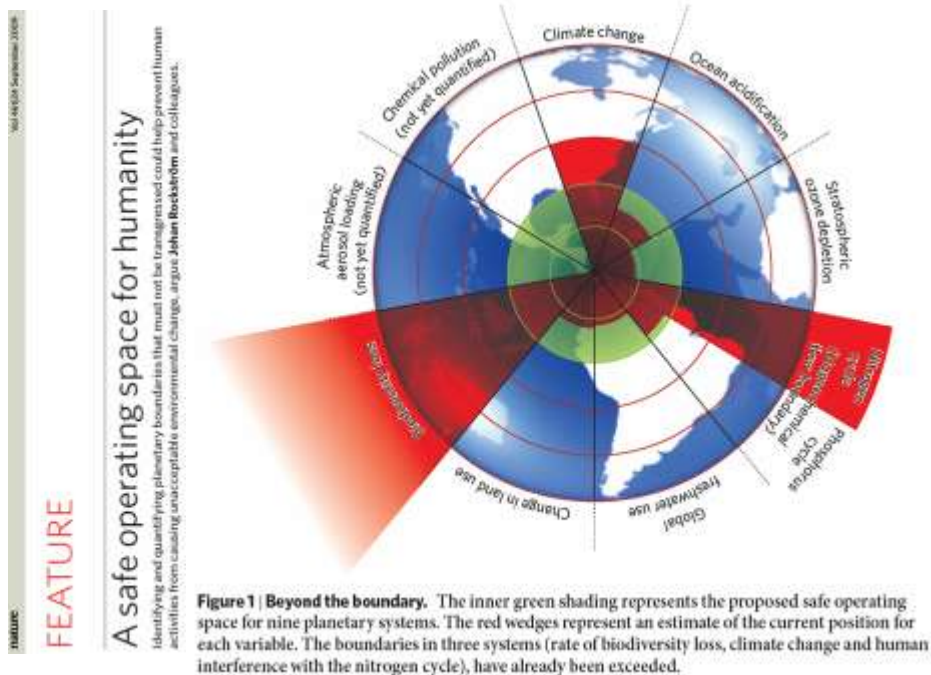
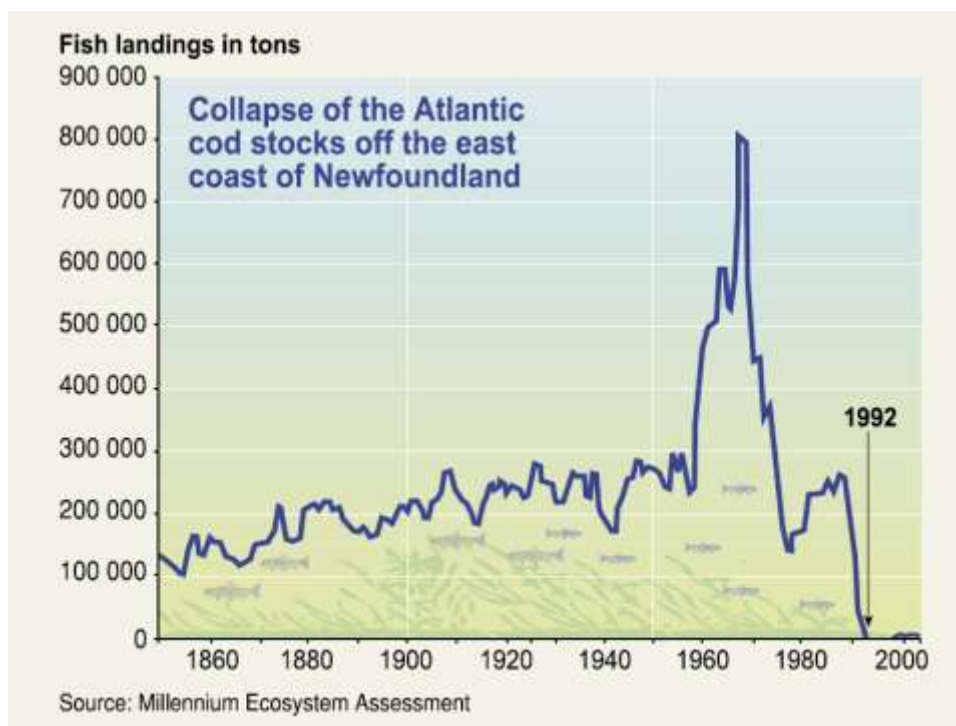
www.maweb.org

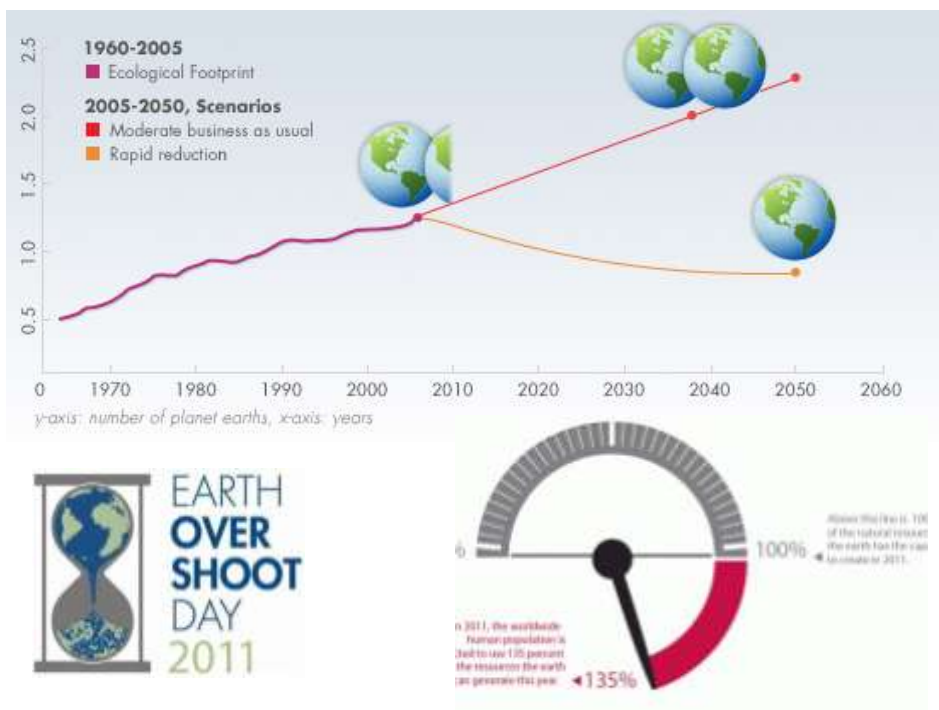
LIVING BEYOND OUR MEANS

NATURAL ASSETS AND HUMAN WELL-BEING

Statement from the Board

 **MILLENNIUM ECOSYSTEM ASSESSMENT**





Home • Overview • Schedule • Agenda • Location

3rd Nobel Laureate Symposium on Global Sustainability
 Tackling the World's Greatest Challenges
 Stockholm, Sweden, May 16-19 2011

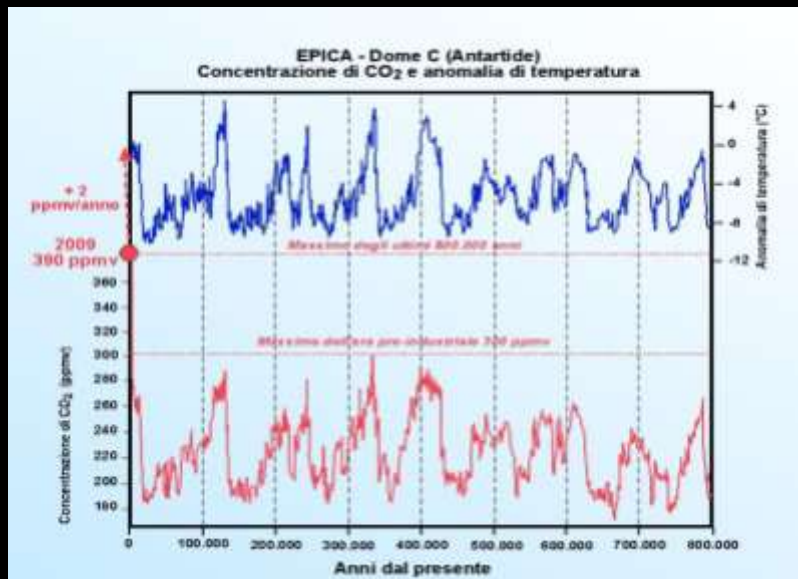
The Stockholm Memorandum
 Nobel Laureates hand over recommendations to UN High Level Panel on global sustainability

Read more

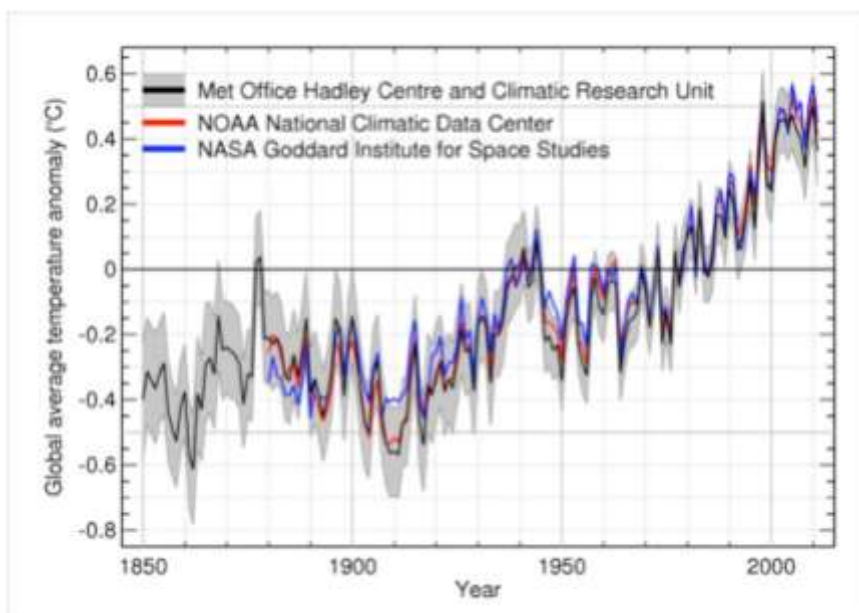
About the Symposium	Programme	Participants	Key outcomes	News and Media
The Symposium will be held in Stockholm between 16-19 May and gathered some 40 of the world's most renowned leaders and experts on global sustainability to discuss new approaches to the way we govern the world's natural and ecological systems.	The Symposium will be held at the Royal Swedish Academy of Sciences in Stockholm and feature keynote presentations, panel discussions and working group sessions.	This Symposium gathered some 30 of the world's most renowned leaders and experts on global sustainability to discuss new approaches to the way we govern the world's natural and ecological systems.	The Symposium's prelude with a memorandum signed by the Nobel Laureates. This was complemented and handed over to the High Level Panel on Global Sustainability appointed by the UN Secretary General.	This website will provide you with all the news updates related to the Symposium. The press releases section also contains contact details related to press enquiries.
Read more	Read more	Read more	Read more	Read more

Home • [3rd Nobel Laureate Symposium](#) • [Stockholm](#) • [Agenda](#) • [Location](#)

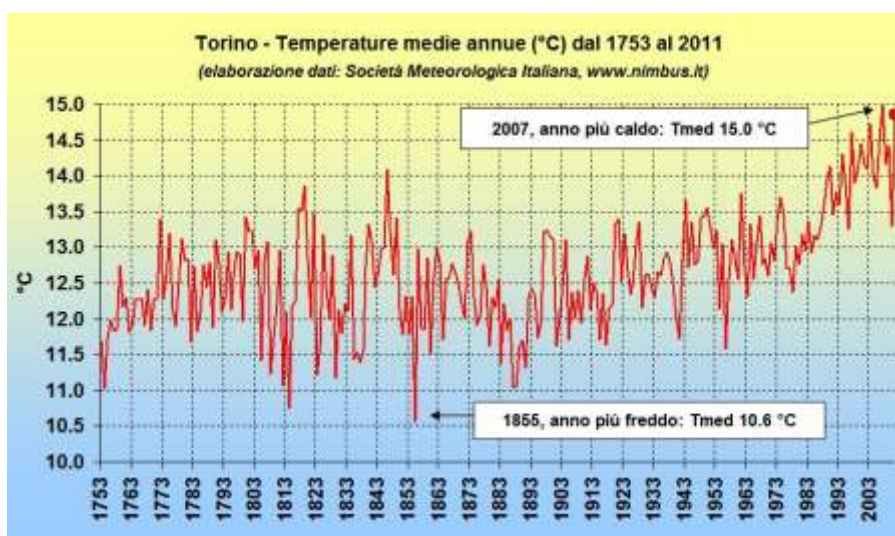
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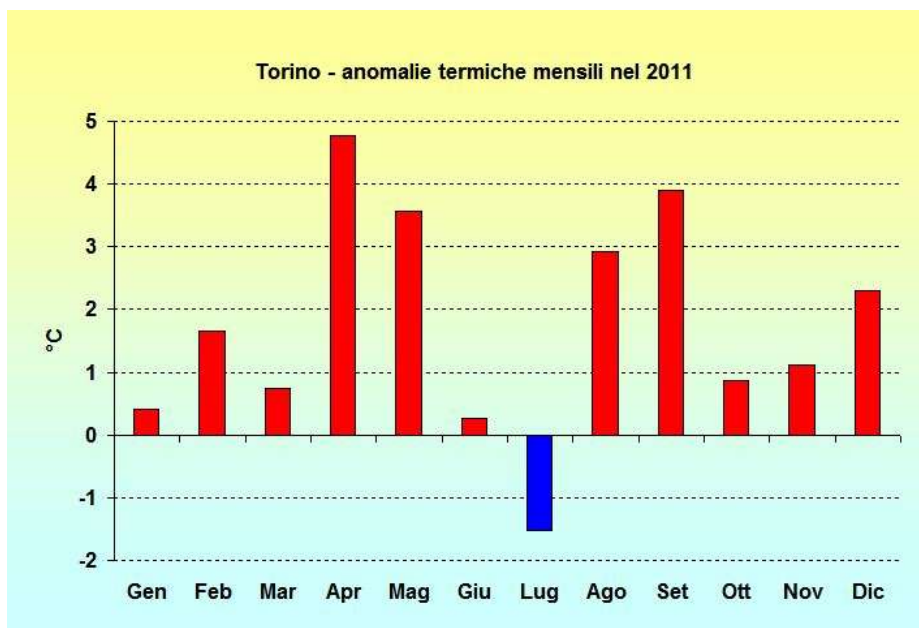
Analisi chimica delle bolle d'aria «fossile» intrappolate nel ghiaccio
CO₂ max. concentrazione 300 ppmv



2011:decimo anno più caldo a livello globale



**2011: secondo tra i più caldi dal 1753
(1.7 °C sopra media)**







**2011: Bilancio di massa negativo al ghiacciaio Ciardoney,
Gran Paradiso (-0.83 m).
Nuova stazione meteorologica automatica.**



Meteo2850
Avvio della diffusione dati in tempo reale
della stazione meteorologica al Ghiacciaio Ciardoney - Gran Paradiso

WEB LIVE STREAMING

23 marzo 2012 - ore 11
<http://nimbus.csp.it>

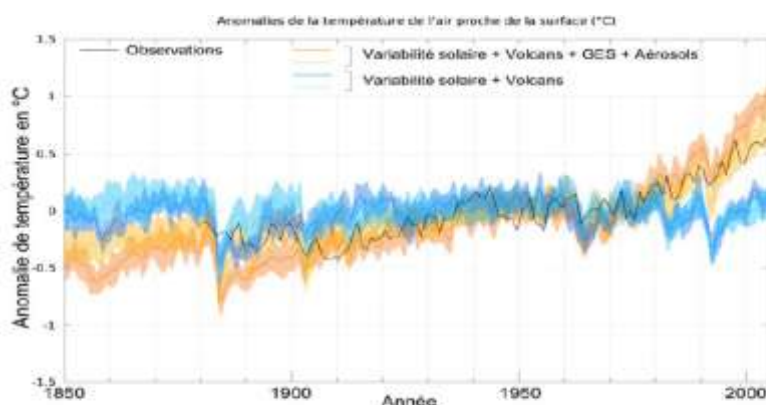
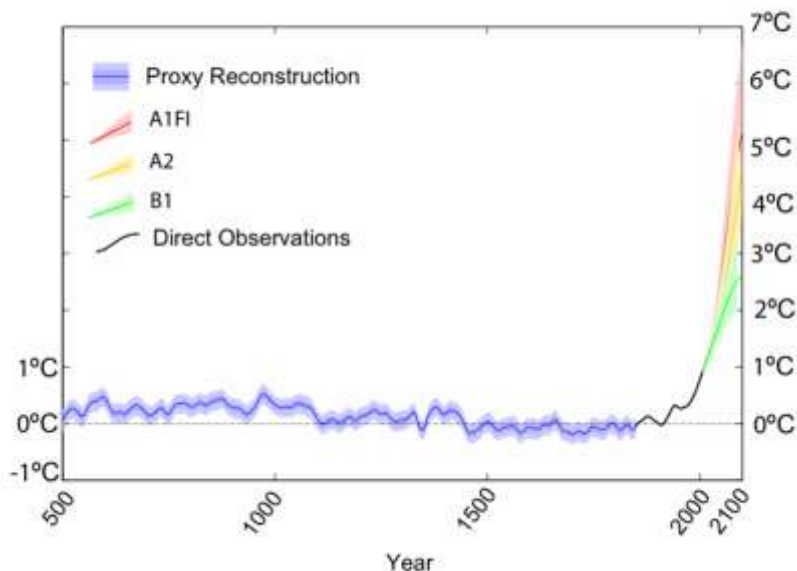


Figure 4.1 : Evolution de la température moyenne à la surface de la Terre mesurée (courbe noire) et calculée par les modèles du CNRM-CERFACS (traits pointillés) et de l'IPSL (traits pleins). Les courbes bleues ne tiennent compte que des forçages naturels (variabilité solaire et volcans) tandis que les courbes en orange prennent compte des forçages naturels et des forçages anthropiques (gaz à effet de serre et aérosols). Pour chacune des courbes, les résultats ont été obtenus à partir d'une dizaine de simulations dont la moyenne correspond à la courbe et la variation autour de cette moyenne correspond à l'enveloppe colorée. Les différences sont calculées par rapport à la période 1901-2000 qui sert de période de référence et donc de passage par 0 pour les différentes courbes.

© Patrick Brockmann (LSCE/IPSL, CEA/CNRS/UVSQ)



Global Temperature Relative to 1800-1900 (°C)



Temperatura degli ultimi 1500 anni e scenari futuri

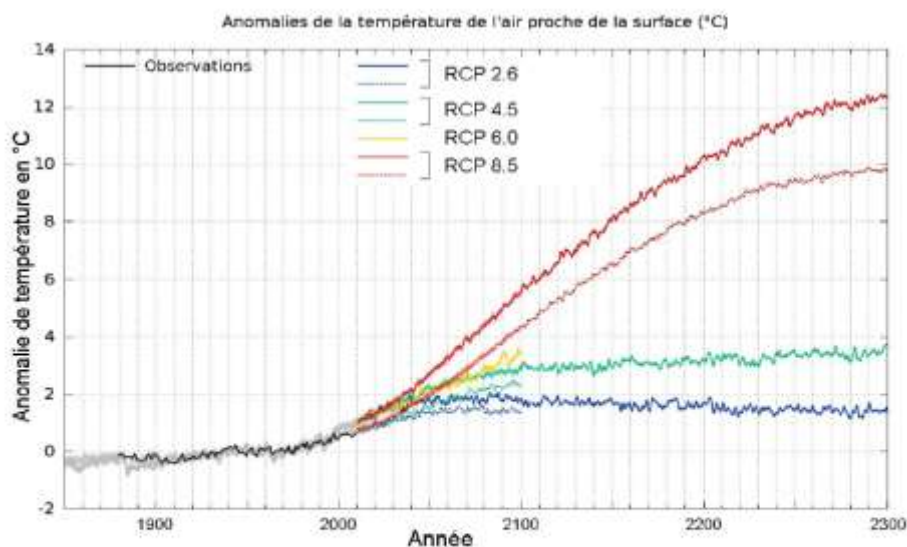
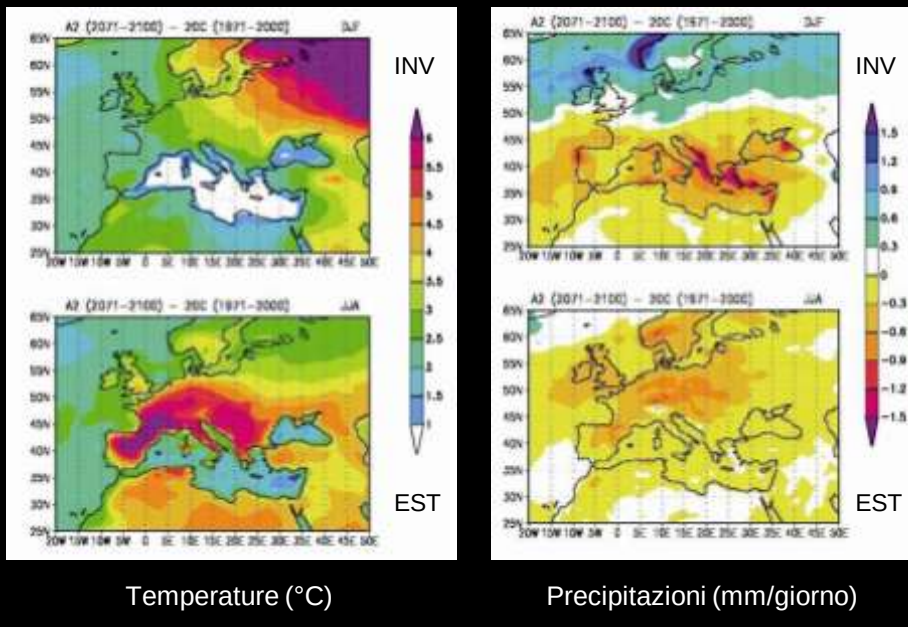


Figure 4.2 : Evolution, de 1850 à 2300, de la température moyenne (°C) à la surface de la Terre par rapport à la moyenne des années 1901-2000 mesurée (courbe noire) et calculée par les modèles du CNRM-CERFACS (traits pointillés) et de l'IPSL (traits pleins) et pour les différents scénarios RCP : RCP2.6 (le plus optimiste), RCP4.5, RCP6.0 et RCP8.5 (le plus sévère).

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Uno “zoom” sull'Europa

(fonte: Centro Euro-Mediterraneo per i Cambiamenti Climatici)



Genova, 4 novembre 2011: 395 mm (274 in 4 ore)

27 settembre 1992: 429 mm

8 ottobre 1970: 389 mm (ma 948 a Bolzaneto, record italiano!)

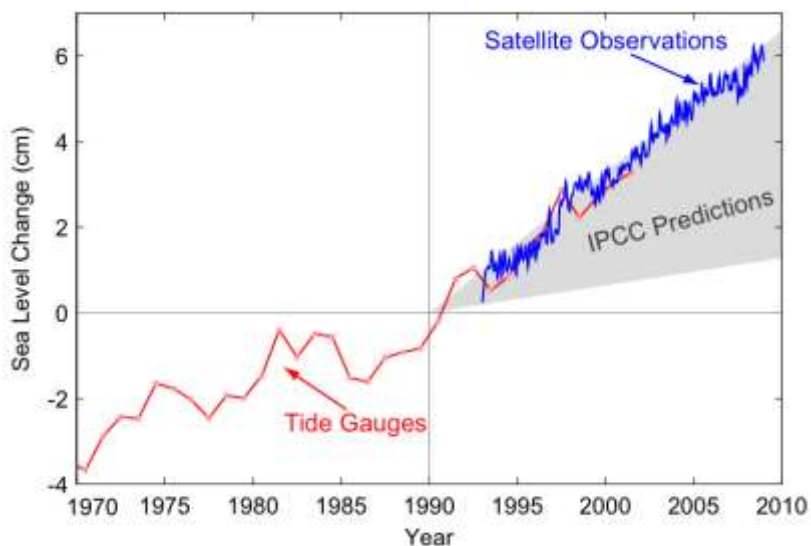
Effetti disastrosi quasi inevitabili, con tali apporti, e tale morfologia
necessità di maggiore educazione al rischio e autoprotezione



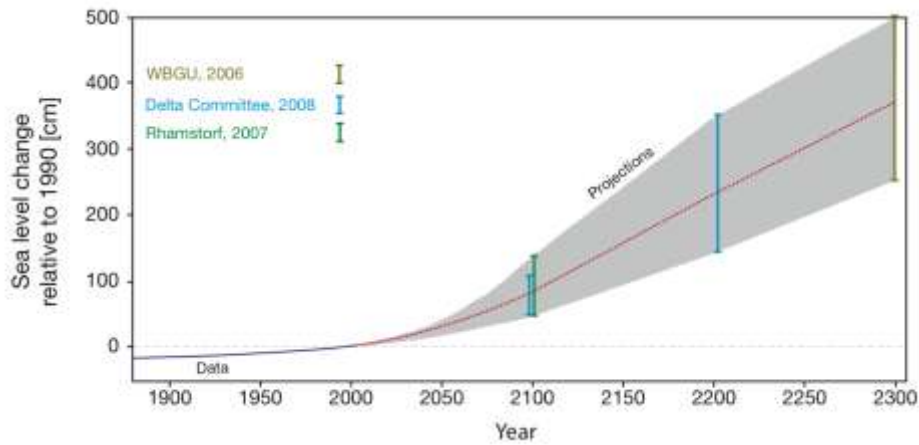
25 ottobre 2011, alluvione
Spezzino e Lunigiana
(542 mm a Brugnato,
Val di Vara)

Precipitazioni
straordinarie su zone poco
abitate, ma interferenze
drammatiche con
infrastrutture in zone
inondabili (F. Magra ad
Aulla) e con la “tombatura”
dei corsi d’acqua
(T. Vernazzola a
Vernazza)

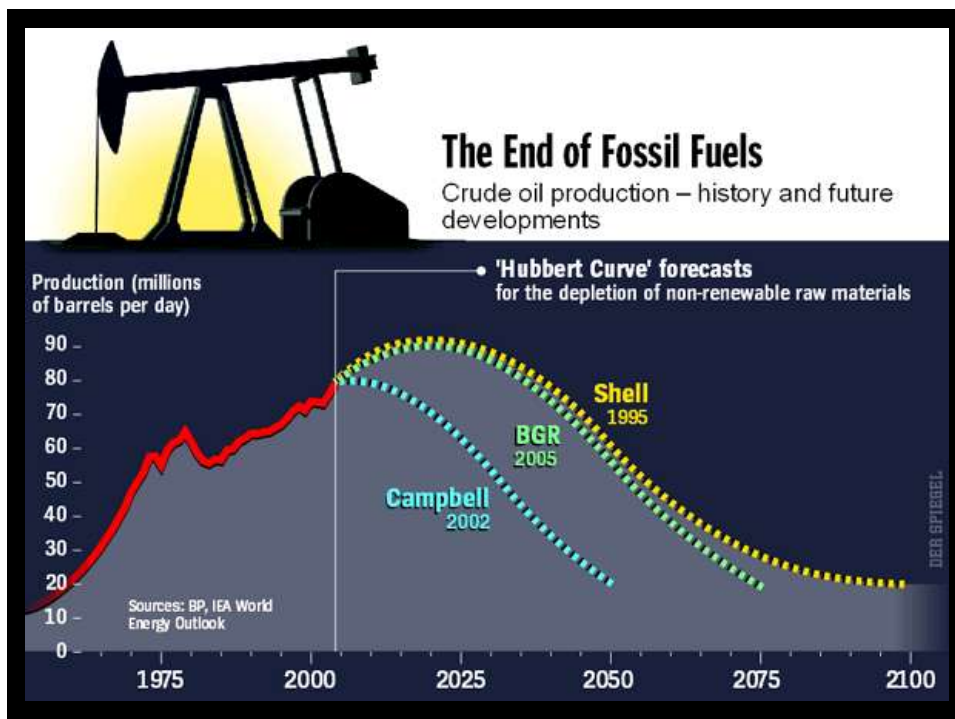
*Alluvionamento poco a monte di Vernazza,
depositi di detrito fino a 7 m (f. G. Staiano)*



Sea-level change 1970-2010



Past and future sea-level projections





Production of oil fields globally, including at the Permian oil field in Bakkenfield, California, is declining at about 4-8% a year.

Oil's tipping point has passed

The economic pain of a flattening supply will trump the environment as a reason to curb the use of fossil fuels, say James Murray and David King.

In many parts of the world, particularly the United States, continuing debates about the quality of climate-change science and doubts about the scale of negative environmental impacts have held back political action against rising greenhouse-gas emissions. But there is a potentially more persuasive argument for lowering global emissions: the impact of dwindling oil supplies on the economy.

There is less fossil-fuel production available to us than many people believe. Since 2005 onwards, conventional crude oil production has not risen to match increasing demand, we argue that the oil market has

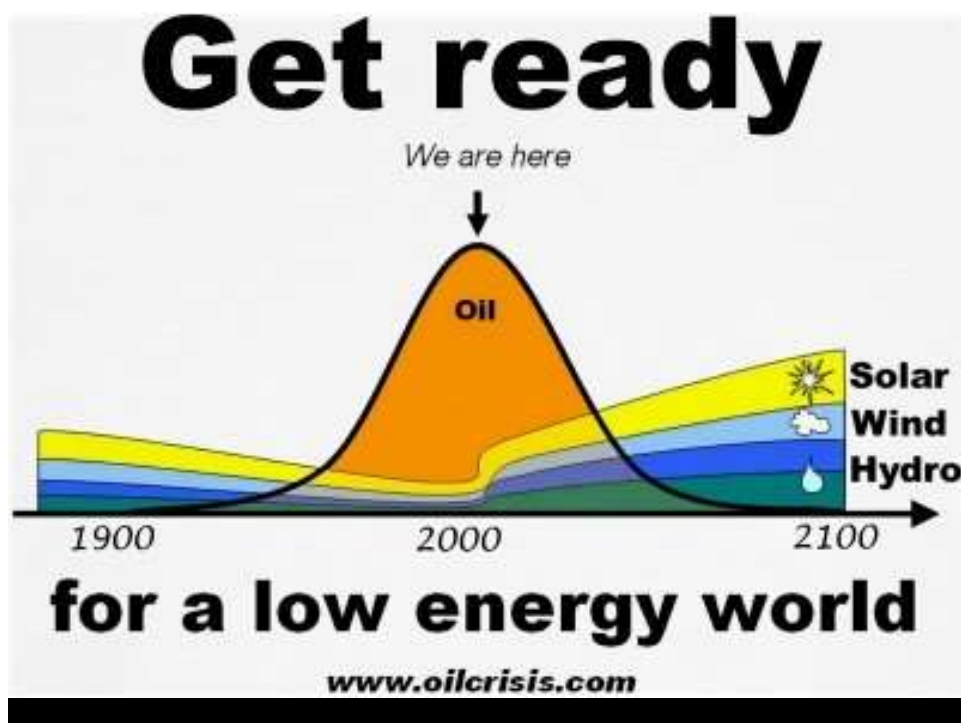
tipped into a new state, similar to a phase transition in physics: production is now 'inelastic', unable to respond to rising demand, and this is leading to wild price swings. Other fossil-fuel resources don't even appear to be making up the difference. Such major spikes in fuel price can cause economic crises, and contributed to the way the world is recovering from now. The future economy is unlikely to be able to bear what oil prices have at times. Only by moving away from fossil fuels can we both avert a more robust economic outlook and address the challenges of climate change. This will be a decades-long transformation.

that needs to start immediately.

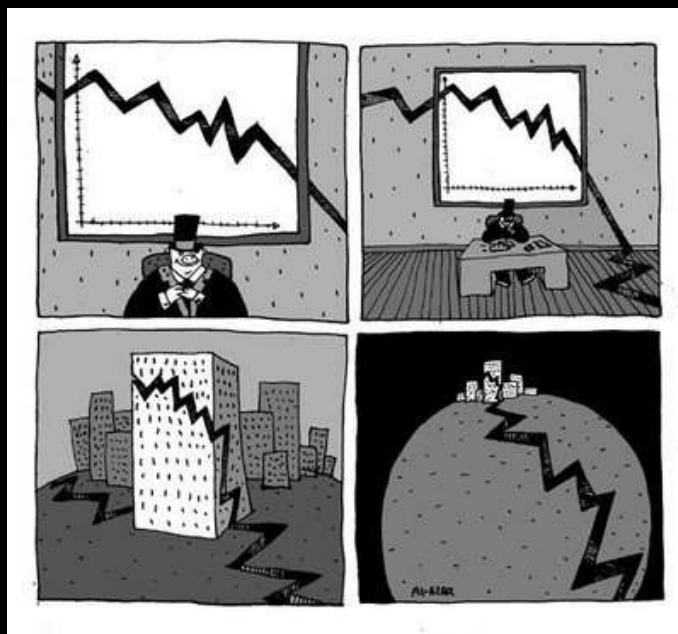
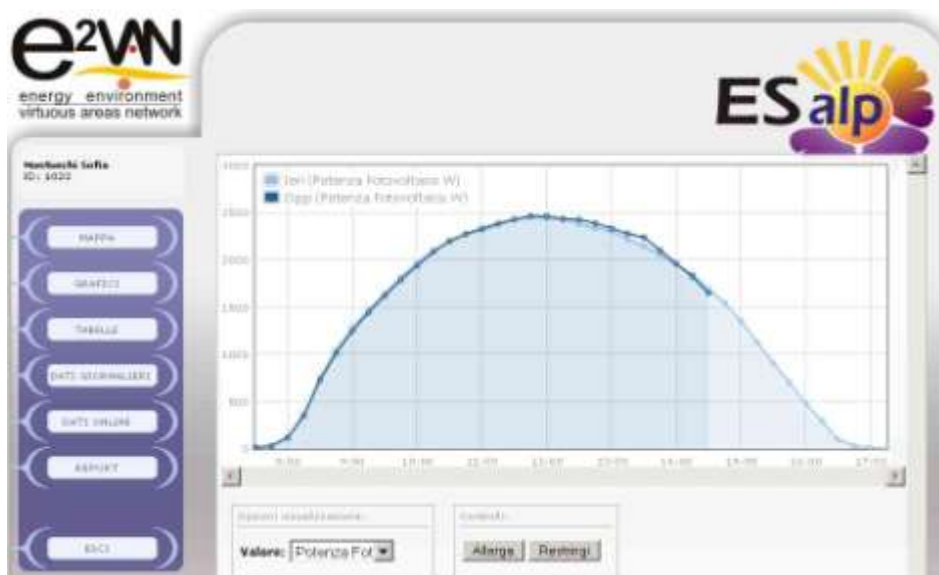
Production of crude oil increased along with demand from 1950 to 2003. But then something changed. Production has been roughly constant for the past seven years, despite an increase in price of around 3.5% per year (at Brent crude (London) prices) from about US\$15 per barrel in 1998 to more than \$140 per barrel in 2008 (see 'Oil production hits a ceiling'). The price still reflects demand; it declined to about \$35 per barrel in 2009 thanks to the 2008-09 recession, and recovered along with the upturn in the global economy to \$120 per barrel before declining to its value today of \$111. But

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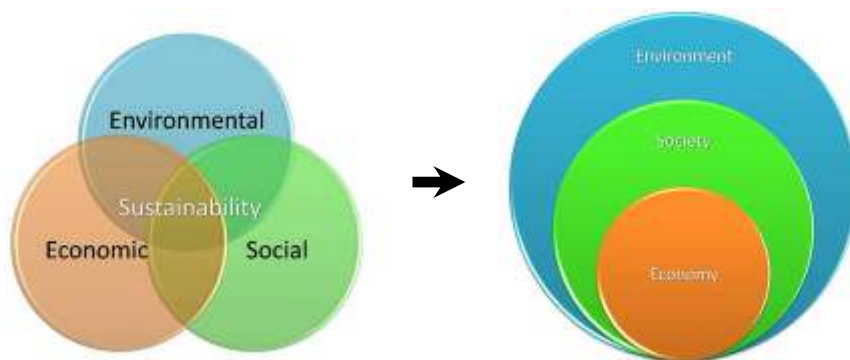
"The price of oil is likely to have been a large contributor to the euro crisis in southern Europe."



Potenza fotovoltaico 17-18.11.2011



Evoluzione paradigma



Investire in RESILIENZA

No grandi opere cementizie, non puntare a crescita infinita per risolvere la crisi, no consumo suolo, no spinta ai consumi



Sì a:

- efficienza energetica
- manutenzione del territorio
- energie rinnovabili
- filiera corta alimentare
- riduzione rifiuti
- telelavoro e connettività ITC

Difendere il soddisfacimento dei bisogni fondamentali, abbandonare il superfluo.

Prepararsi anche psicologicamente, ammettere che le vacche grasse sono finite e volere di meno!

Capire che il cambiamento è già in atto.

Impianto Fv su discarica, Inzago, MI


 A man with a beard, wearing a dark blue suit jacket, a light-colored shirt, and a purple bow tie, stands next to a large, tilted solar panel. The panel is mounted on a metal frame and is set against a clear blue sky. The ground is a mix of gravel and some sparse vegetation.




[www.campagnaseeitalia.it/pubblicazioni/
clima-ed-energia-capire-per-agire/](http://www.campagnaseeitalia.it/pubblicazioni/clima-ed-energia-capire-per-agire/)

Summary

- **Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fiber and fuel**
- The changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty for some groups of people
- The degradation of ecosystem services could grow significantly worse during the first half of this century and is a barrier to achieving the Millennium Development Goals
- The challenge of reversing the degradation of ecosystems while meeting increasing demands for their services can be partially met under some scenarios that the MA has considered but these involve significant changes in policies, institutions and practices, that are not currently under way