



Leaving no one behind

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# Climate change and environmental degradation undermine progress achieved

Global emissions of carbon dioxide have increased by **over 50 per cent** since 1990.

**Water scarcity affects 40 per cent of people in the world** and is projected to increase.

Overexploitation of marine fish stocks led to **declines in the percentage of stocks within safe biological limits**, down from 90 per cent in 1974 to 71 per cent in 2011.



Photo: © UN Photo/Ky Chung



Climate change and environmental degradation undermine progress achieved

# How can environmental issue (CC) worsen social issues (8MDG)?



# Climate change: The great civilisation destroyer?

War and unrest, and the collapse of many mighty empires, often followed changes in local climates. Is this more than a coincidence?



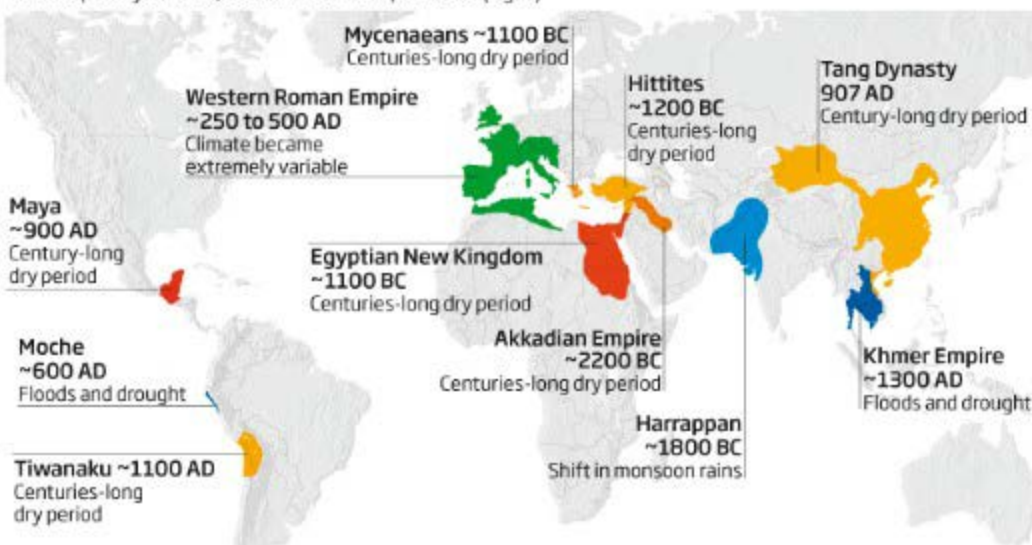
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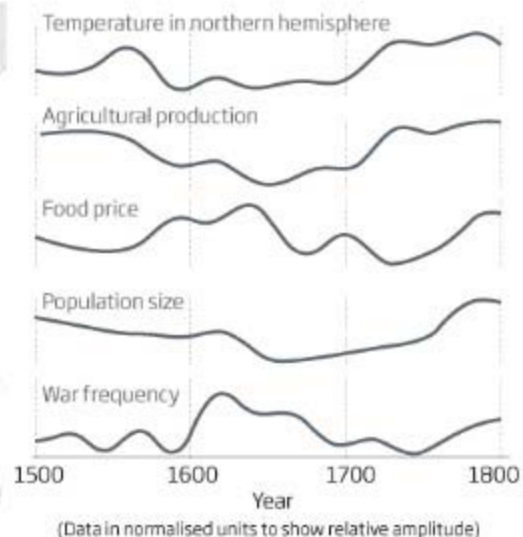


## More than coincidence?

The decline and fall of many civilisations coincided with periods of climate change, and there are also correlations between climate change, population size and the frequency of wars, as data from Europe shows (right)



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# Where is a Middle East?



SCIENCE • CLIMATE CHANGE

## Middle East Drought That May Contribute to Syrian War is Worst in 900 Years, Study Says



TIME KNOW RIGHT NOW HISTORIC DROUGHT

**T** A NEW NASA STUDY SAYS THE MIDDLE EAST HAS BEEN HIT BY THE WORST DROUGHT IN 900 YEARS

BY JUSTIN WORLAND  MARCH 3, 2016

**S**ocial scientists have warned in recent years that drought along the Mediterranean Sea in the Middle East may contribute to instability and conflict in the region. Now, **new research** shows the drought may be the most devastating to strike the region in 900 years.



ZPRÁVY

### Na Blízkém východě trvá nejhorší sucho za 900 let. Vědci se bojí změn v celém Středomoří

bar 4. března 2016 • 13:50



foto: Pixabay



# Environment degradation as a culprit of social issues

As the civil war in Syria shows no sign of slowing down, prompting millions of refugees to flee from that war-torn shell of a country towards an overwhelmed Europe, a study appearing in the Proceedings of the National Academy of Sciences earlier this year added an entirely new perspective to my understanding of the causes of the current crisis. The broader implications of the research provide a chilling reality check for the future of our planet as a whole.

In the paper, lead researcher Colin Kelley claims that climate change was a key contributing factor to the war in Syria that has claimed as many as 300,000 lives to date. A prolonged and devastating drought from 2006 to 2010, exacerbated by the Syrian's regime's failure to prepare or respond effectively, led to a mass migration of some 1.5 million rural workers who, without sufficient water, could no longer farm their lands and headed for the cities.

This unprecedented concentration of "angry unemployed men" – what Kelley calls a "huge population shock" in Syria's most affected urban centers – may have helped "trigger [the] revolution," says Aaron Wolf, a water management expert at Oregon State University. Other factors – broad feelings of discontent in rural areas and the growing gap between rich and poor during the 2000s – undoubtedly played a role as well, adds Dutch researcher Francesca de Châtel.

Now, a long-term decline in rainfall in the Fertile Crescent, which includes Syria, has been ongoing since 1931. But the researchers determined that "natural variability on its own" was unlikely to account for the trends that

Rozhovory Colours of Ostrava Snyder Timothy smírní rozhovor Pevce Prostor Turecko

### Pučisté v Turecku udělali chybu, že Erdoganovi nesebrali telefon, říká historik Snyder

Daniel Konečný - vedoucí kulturní rubriky 18. 7. 2016 00:00 (aktualizováno 02:16) Kultura 5

- Na ostravské diskusní fórum Meltingpot o víkendů přijel americký profesor historie na Yaleově univerzitě Timothy Snyder.
- V rozhovoru hovoří o tureckém pokusu o vojenský převrat a tvrdí, že události takzvaného arabského jara měly ekologické příčiny.
- "Podobné incidenty se budou opakovat, jestliže nezabráníme proměně Blízkého východu a severní Afriky v poušť," říká v rozhovoru.



Nemuset o víkendů absolvovat tři vystoupení na debatním fóru Meltingpot, které se konalo v rámci festivalu Colours of Ostrava, americký historik Timothy Snyder by zcela jistě sledoval, jak jdou dějiny. Jako by nestačil brexit a teroristický útok v Nice, teď do toho přijde ještě pokus o vojenský puč v Turecku, říká Snyder v sobotu odpoledne a hned si posteskne, že v Ostravě nemá dost času nejnovější dění nastudovat.

kurzy.cz 27,93

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ROZHOVOR | Timothy Snyder: Muslimský svět je první obětí změn klimatu. Přijdou další „Sýrie“

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12. 10. 2015 7:28 | Text | G+ | D

Do Prahy jste přijel převzít cenu Nadace Dagmar a Václava Havlových Vize 97. Co pro Vás toto ocenění znamená?

Je to pro mě obzvlášť velká pocta, protože tato cena vychází z tradice,





COMMENT 2 December 2015

# Climate as a cause of Syria's conflict? It's far from settled

World leaders and commentators including Prince Charles talk up climate change as a factor in Syria's war, but its role is debatable, finds Fred Pearce



IT HAS been repeatedly claimed that refugees fleeing Syria are victims of climate change as well as victims of a vicious civil, and now international, conflagration.

*Scientific American* declared that global warming "hastened" the war, and US president Barack Obama said "drought and crop failures and high food prices helped fuel the early unrest". The latest intervention comes from UK royal Prince Charles, who echoed those views in a TV interview broadcast last week.

Každý... Colours of Ostrava Snyder Timothy tenišní rozhodčí Paseka Prostor Turecko

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Hostem Colours of Ostrava byl americký historik Timothy Snyder. Debatoval s ním mimo jiné s ministrem zahraničí Lubomírem Zorčákem. Autor: MPA - ILL/Štěpán

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E15 - NÁZORY - ROZHOVORY - TIMOTHY SNYDER: MUSLIMSKÝ SVĚT JE PRVNÍ

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Rozhovor



12.10.2015 7:28 | Tweet G+ D

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2015 - 2030

# Sustainable development goals (SDG)

- Continuation of successful 8MDG
- set 17 goals with 169 sub-goals !!!





# Which development goal(s) do you consider the most urgent today?

**Top**







# SUSTAINABLE DEVELOPMENT GOALS

**1** NO POVERTY

**2** ZERO HUNGER

**3** GOOD HEALTH AND WELL-BEING

**4** QUALITY EDUCATION

**5** GENDER EQUALITY

**6** CLEAN WATER AND SANITATION

**7** AFFORDABLE AND CLEAN ENERGY

**8** DECENT WORK AND ECONOMIC GROWTH

**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE

**10** REDUCED INEQUALITIES

**11** SUSTAINABLE CITIES AND COMMUNITIES

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION

**13** CLIMATE ACTION

**14** LIFE BELOW WATER

**15** LIFE ON LAND

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

**17** PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS

**2015 - 2030**

**Sustainable development goals**  
**(SDG)**

- Continuation of successful 8MDG
- set 17 goals with 169 sub-goals !!!

**„many priorities = no priority“**



A Better World by 2030 - Post-2015 Development ...



Watch later



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MORE VIDEOS



0:03 / 3:01 • Introduction



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# How to prioritize the „best“ goals?

## A New Way to Set Goals for Fighting World Poverty

Experts have long argued over the best way to reduce poverty and disease around the globe. A group of leading economists has been gathering periodically over the past several years to assess the wisest ways to spend limited funds to promote global development. Their conclusions and ranking methods offer both a new perspective and a challenge to some current orthodoxies about foreign aid. In their most recent assessment, in June, the group—convened by the [Copenhagen Consensus Center](#)—offered a preliminary assessment of the targets proposed by the UN's Open Working Group on Sustained Development Goals.

The Copenhagen Consensus Center group compared the cost of each goal to its likely benefits on a scale from phenomenal to poor or uncertain. Their question: For every dollar spent, how much good is done for the world's poor? Here are some of their rankings. ([Related article: Five Ways to Outgrow World Poverty](#))

Ratings key:

**PHENOMENAL** – Robust evidence for benefits more than 15 times higher than costs

**GOOD** – Robust evidence of benefits between 5 to 15 times higher than costs

**FAIR** – Robust evidence of benefits between 1 to 5 times higher than costs

**POOR** – The benefits are smaller than costs or target poorly specified (e.g. internally inconsistent, incentivizes wrong activity)

**UNCERTAIN** – There is not enough knowledge of the policy options that could reach the target OR the costs and benefits of the actions to reach the target are not well known

*Note: We excluded any goals that had ratings across several categories or any that the group didn't assess. See the [full report here](#).*

<< first < prev 1 2 3 4 next > last >>

Target	Proposed Goal	Rating
By 2020, provide legal identity for all, including birth registrations	Achieve peaceful and inclusive societies, rule of law, effective and capable institutions	Good
Forge unity in diversity through democratic practices and mechanisms at the local, national and international levels	Achieve peaceful and inclusive societies, rule of law, effective and capable institutions	Poor
Promote freedom of media, association and speech	Achieve peaceful and inclusive societies, rule of law, effective and capable institutions	Poor
By 2030, reduce levels of violence and related death rate by x%	Achieve peaceful and inclusive societies, rule of law, effective and capable institutions	Uncertain
By 2030, end abuse, exploitation and violence against children	Achieve peaceful and inclusive societies, rule of law, effective and capable institutions	Uncertain
By 2030, increase inclusive, participatory and representative decision-making at all levels, taking into consideration the interests of present and future generations	Achieve peaceful and inclusive societies, rule of law, effective and capable institutions	Uncertain
By 2020, provide information and education on a culture of non-violence	Achieve peaceful and inclusive societies, rule of law, effective and capable institutions	Uncertain
By 2020, effectively regulate harvesting and end overfishing to restore by 2030 fish stocks to ecologically safe levels that can produce maximum sustainable yield	Attain conservation and sustainable use of marine resources, oceans and seas	Phenomenal
By 2020, eliminate subsidies which contribute to overcapacity and overfishing, and refrain from introducing new such subsidies, taking into account the need of developing countries, notably least developed countries and SIDS	Attain conservation and sustainable use of marine resources, oceans and seas	Phenomenal

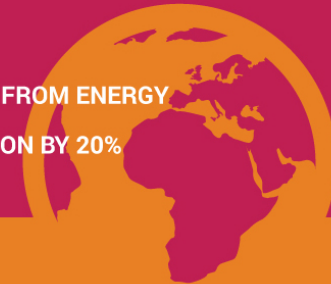
# Smarter Global Targets to 2030

## PEOPLE

- LOWER CHRONIC CHILD MALNUTRITION BY 40%
- HALVE MALARIA INFECTION
- REDUCE TUBERCULOSIS DEATHS BY 90%
- AVOID 1.1M HIV INFECTIONS THROUGH CIRCUMCISION
- CUT EARLY DEATH FROM CHRONIC DISEASE BY 1/3
- REDUCE NEWBORN MORTALITY BY 70%
- INCREASE IMMUNIZATION TO REDUCE CHILD DEATHS BY 25%
- MAKE FAMILY PLANNING AVAILABLE TO EVERYONE
- ELIMINATE VIOLENCE AGAINST WOMEN AND GIRLS

## PLANET

- PHASE OUT FOSSIL FUEL SUBSIDIES
- HALVE CORAL REEF LOSS
- TAX POLLUTION DAMAGE FROM ENERGY
- CUT INDOOR AIR POLLUTION BY 20%

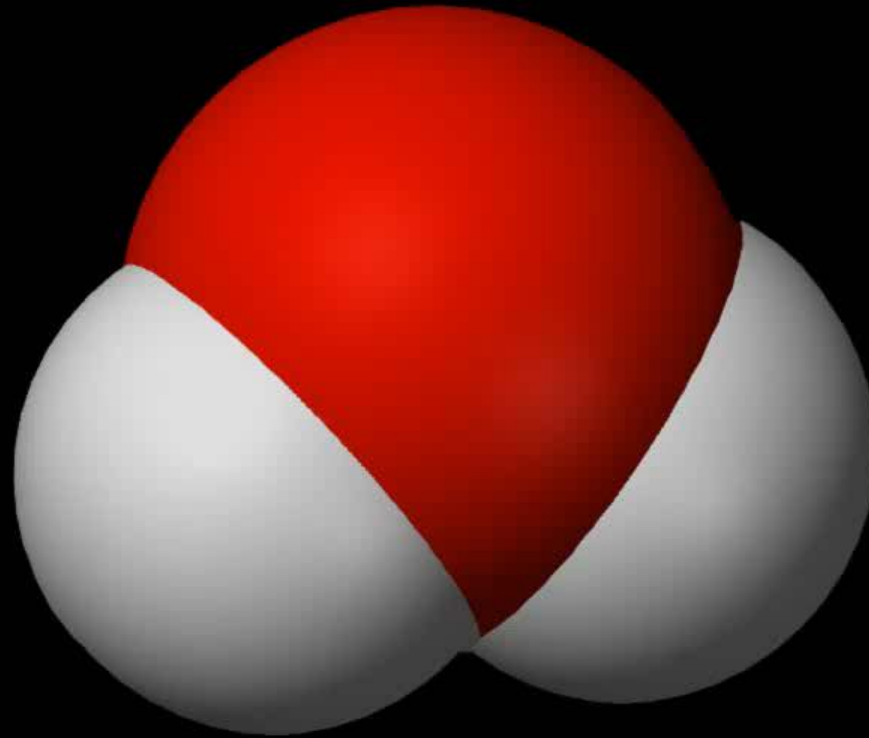


## PROSPERITY

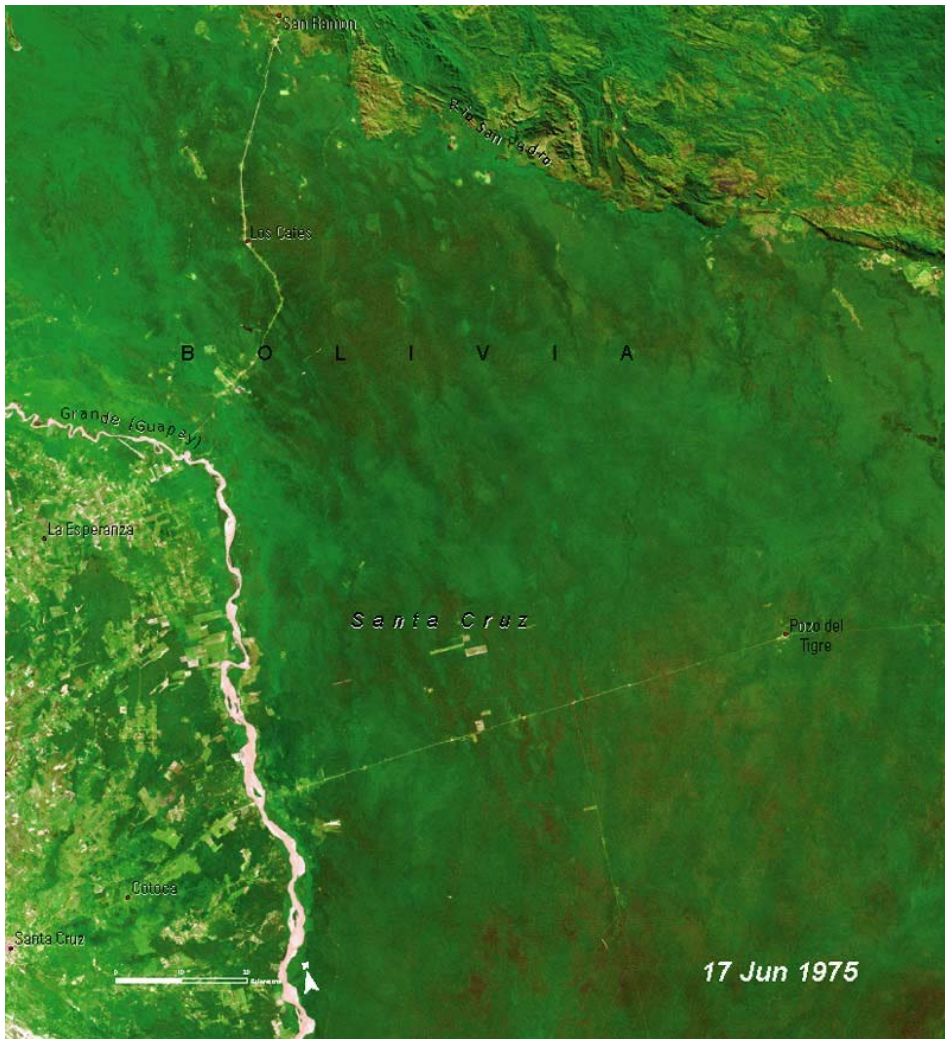
- REDUCE TRADE RESTRICTIONS (FULL DOHA)
- IMPROVE GENDER EQUALITY IN OWNERSHIP, BUSINESS AND POLITICS
- BOOST AGRICULTURAL YIELD GROWTH BY 40%
- INCREASE GIRLS' EDUCATION BY TWO YEARS
- ACHIEVE UNIVERSAL PRIMARY EDUCATION IN SUB-SAHARAN AFRICA
- TRIPLE PRESCHOOL IN SUB-SAHARAN AFRICA



??? Can the 1.7 m tall man change the Earth in  $128 \cdot 10^{12} \text{ m}^2$  ???

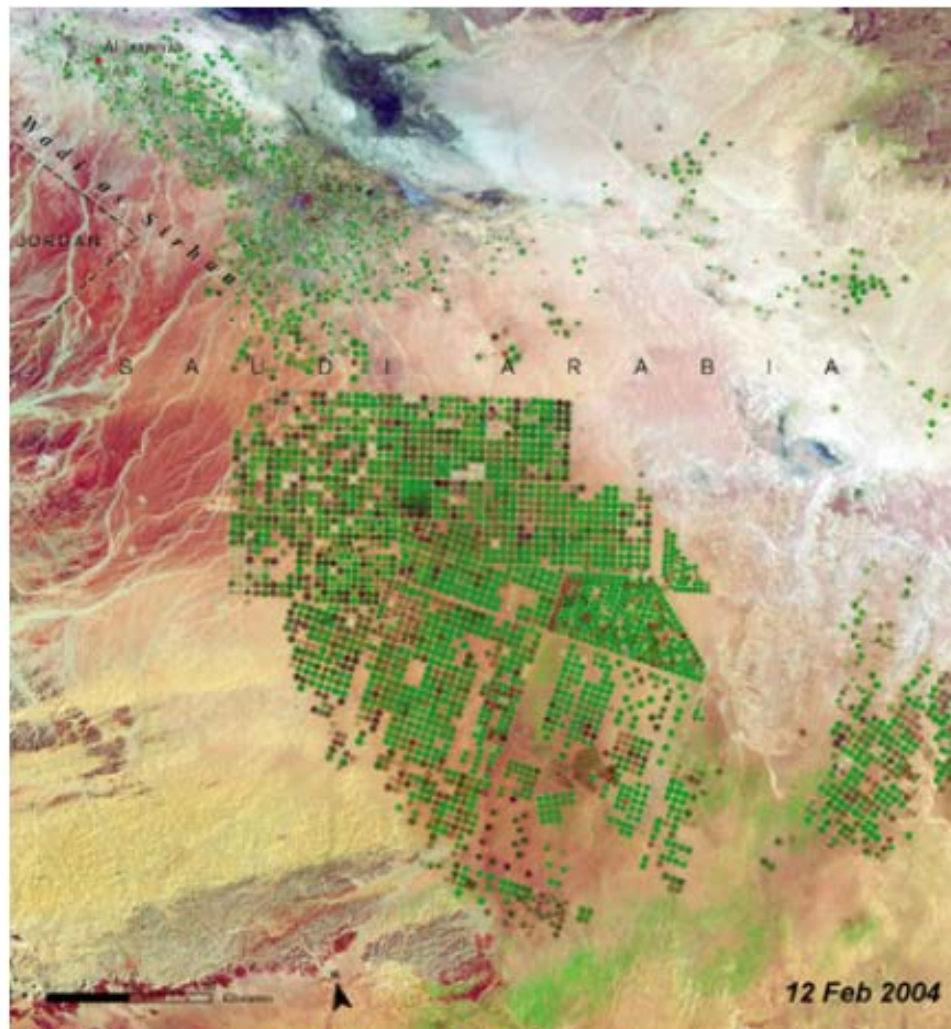
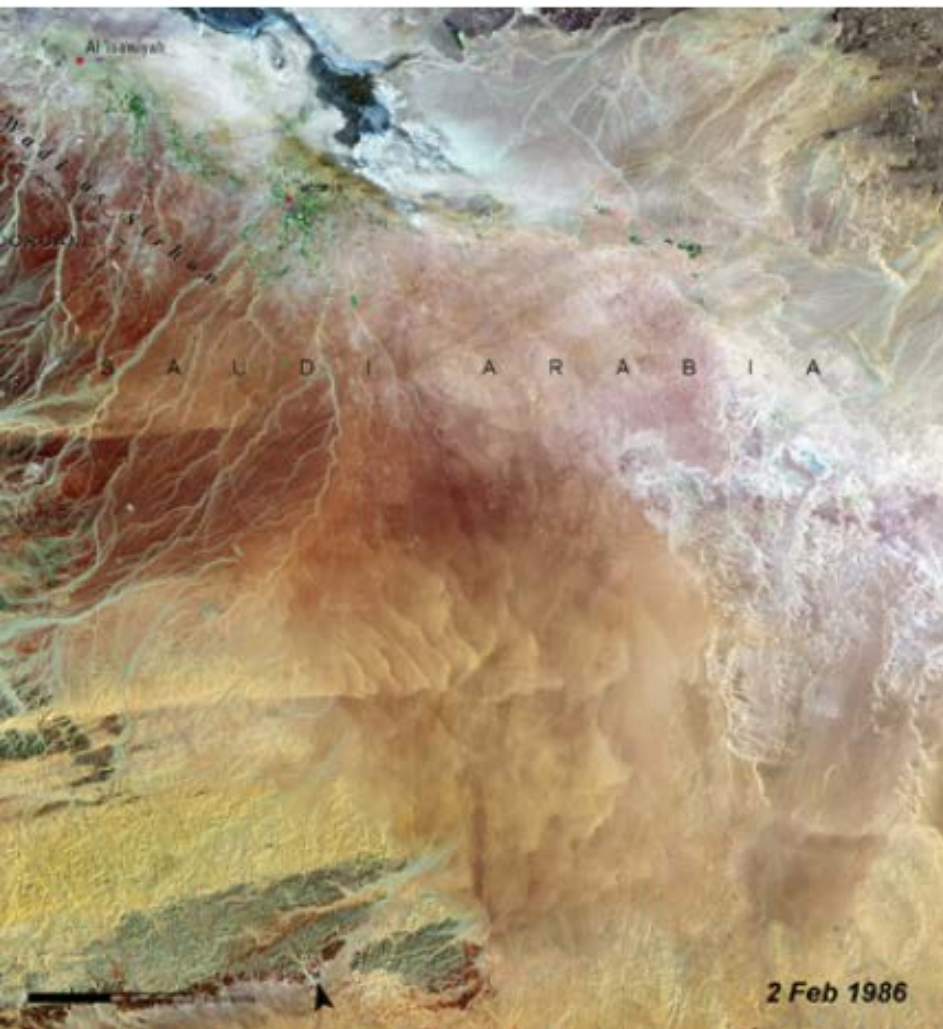


# Santa Cruz, Bolivia



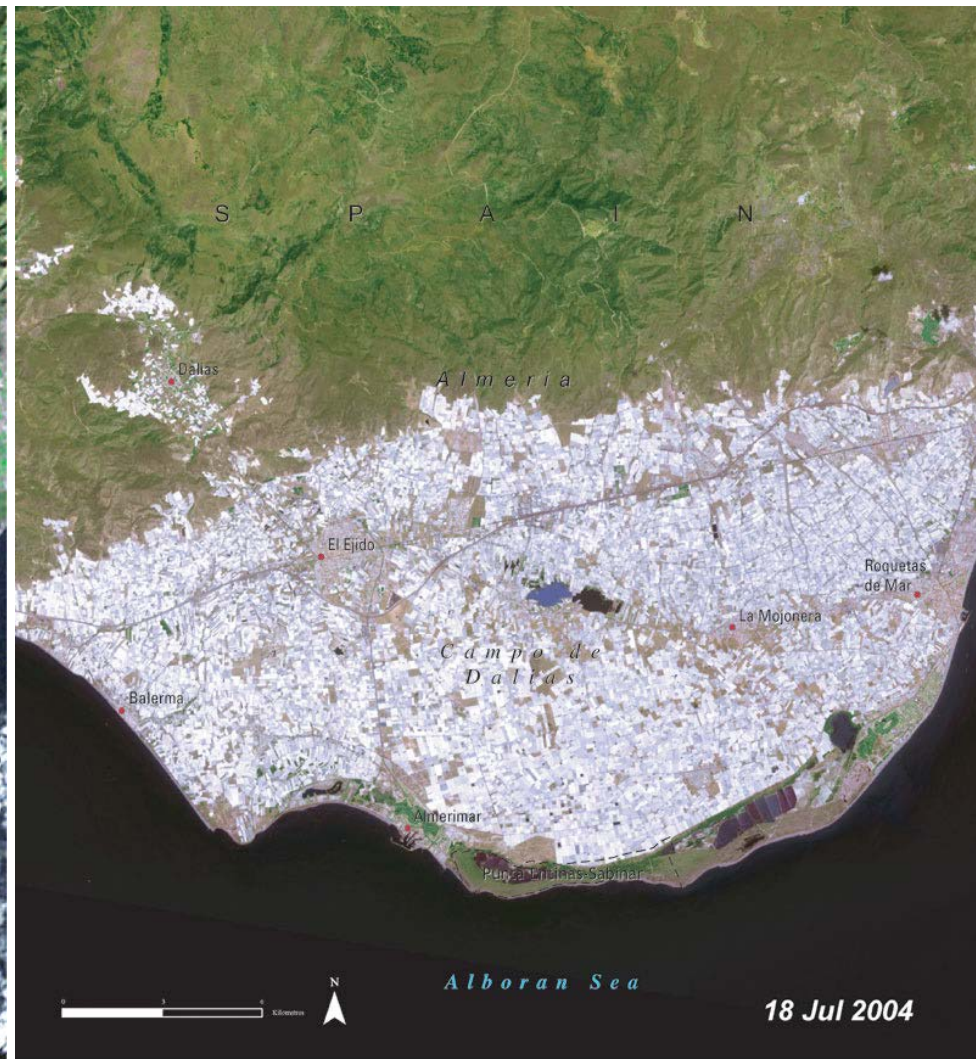


# Al'Isawiyah, Saudi Arabia

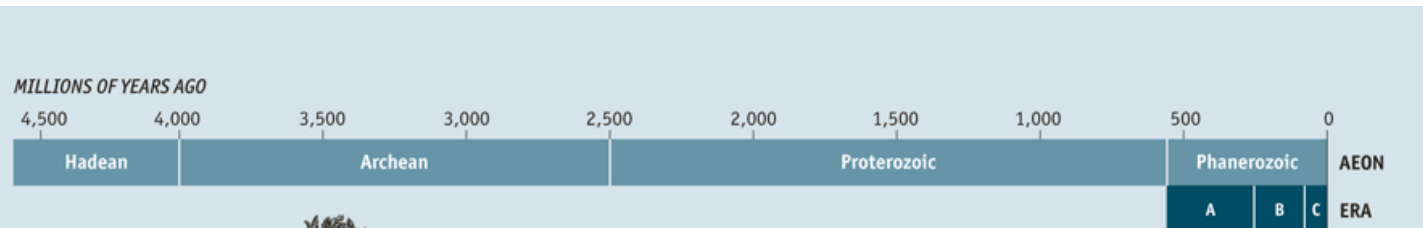




# Almeria, Spain



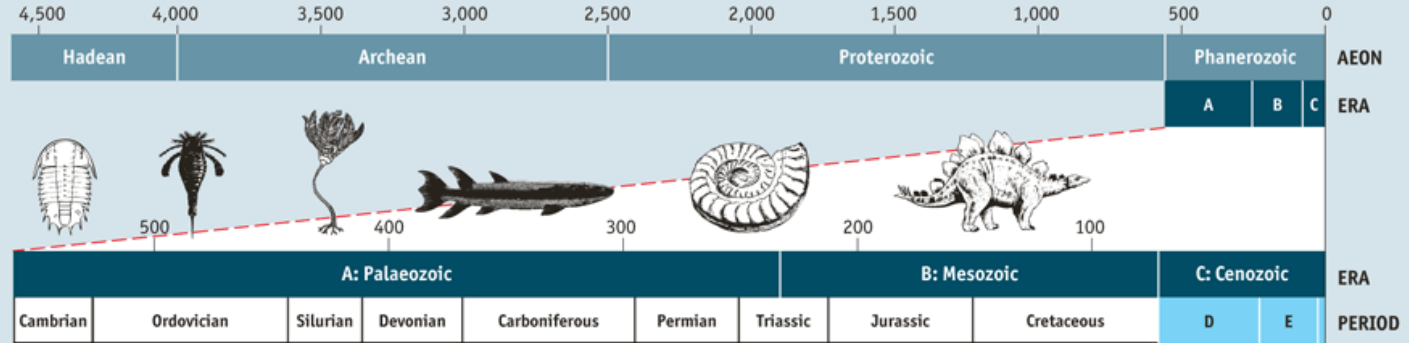
# Brief history of the Earth





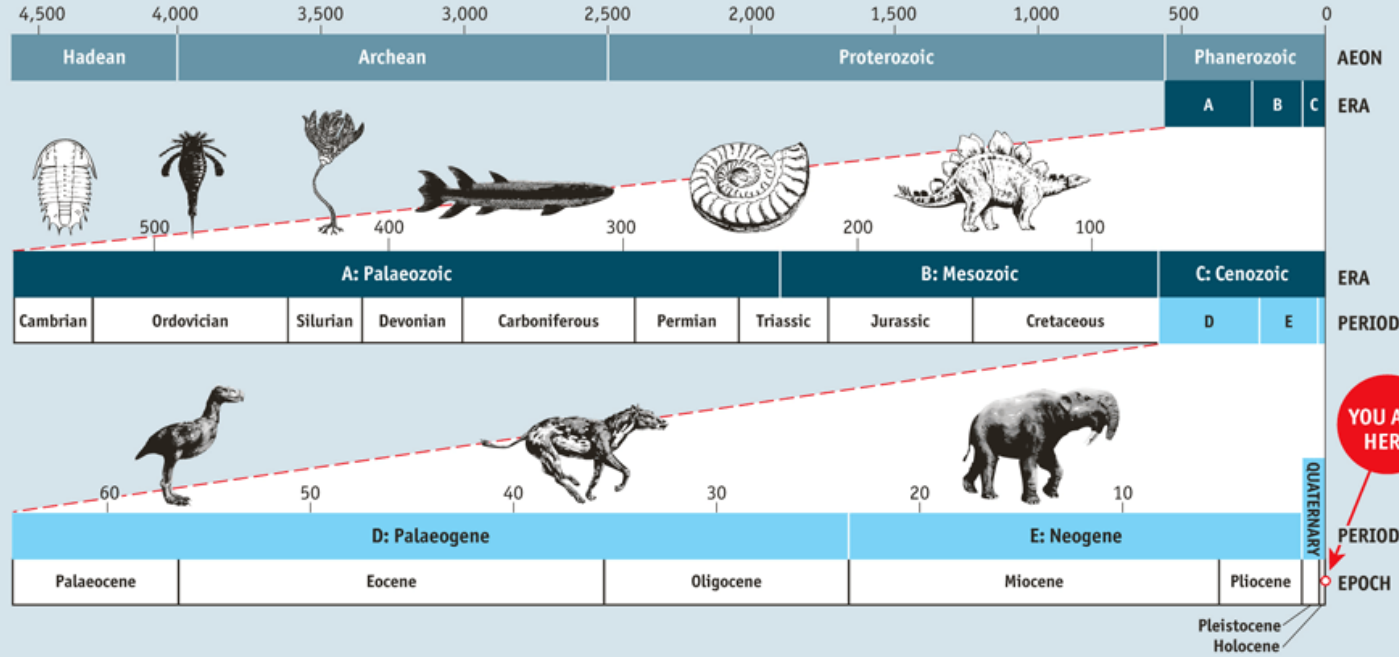


MILLIONS OF YEARS AGO



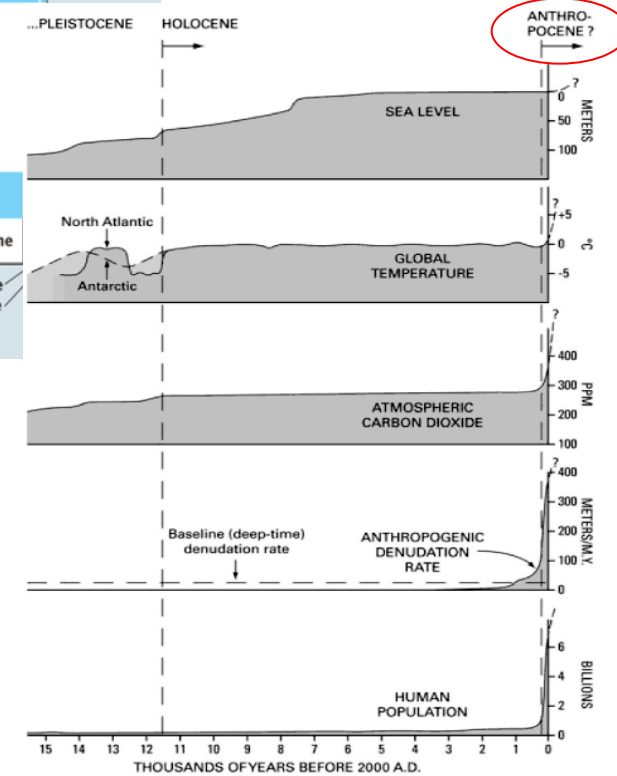
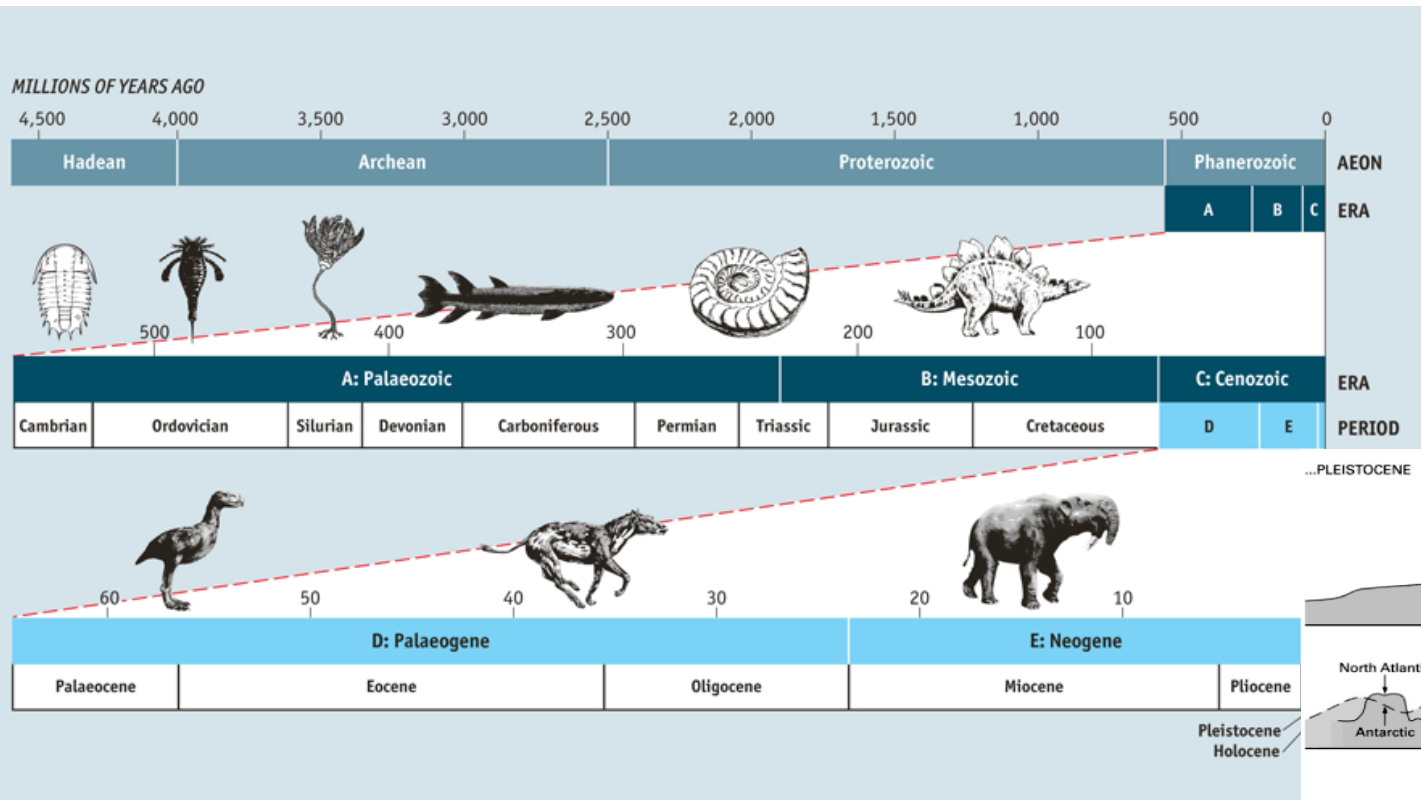


MILLIONS OF YEARS AGO



YOU ARE HERE

# Brief history of the Earth



## Geology of mankind

Paul J. Crutzen

For the past three centuries, the effects of humans on the global environment have escalated. Because of these anthropogenic emissions of carbon dioxide, global climate may depart significantly from natural behavior, forcing a significant

referring to the "anthropozoic era". And in 1926, V. I. Vernadsky acknowledged the increasing impact of mankind: "The direction in which the processes of evolution must proceed, namely towards increasing consciousness and thought, and forms having greater and greater influence on their surroundings." Teilhard de Chardin and

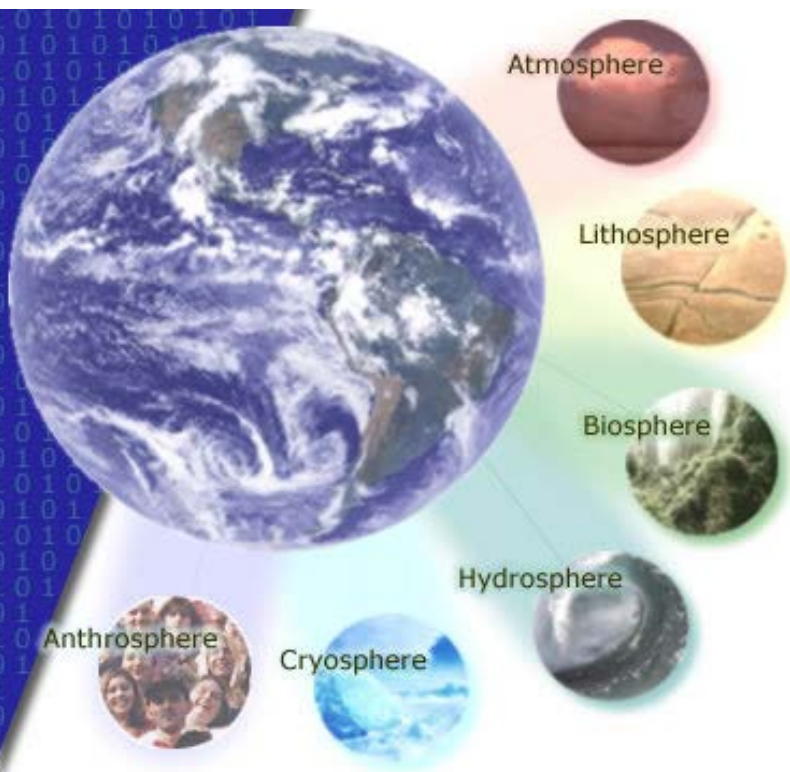
### The Anthropocene

The Anthropocene could be said to have started in the late eighteenth century, when analyses of air trapped in polar ice showed the beginning of growing global concentrations of carbon dioxide and methane.




# Anthropocene



- Geological term popularized by Paul Crutzen
- From industrial revolution / WW2 ( $\frac{1}{2}$  18. cent or  $\frac{1}{2}$  20. cent)
- Period, when man become the most dominant force changing „the Earth systém“



**Earth system** – integrated bio-physico-soci-economic processes and interactions among hydro-, cryo-, bio-, geo- a antroposphere in spatial (from local to global) and time scale, determining the state of the Earth in the space.



**What can be considered as geologic marks of ongoing Anthropocene? Try to see it from the perspective of a geologist living/digging one million years later.**



## Is Earth in a new geological phase thanks to us?

- › 10 November 2014 by [Jan Zalasiewicz](#)
- › Magazine issue [2994](#). [Subscribe and save](#)
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*It may be time for science to recognise Earth's new era – one shaped by humans. So argues a geologist involved in defining new phases in geological time*

WHAT is the legacy that short-lived humanity will leave to an almost eternal Earth? The casual observer might point to tourist sights such as the once mighty city of Angkor, now lying ruined amid the Cambodian jungle, or what survives of the great monuments of ancient Egypt.

They are wonderful, of course, but there is another way to address that question. A little-known working group, part of the International Commission on Stratigraphy, recently met to consider if the human imprint on Earth is now so great, and likely to be detectable for so long, that it deserves to be regarded as a geological epoch in its own right. That would be our real legacy.

Such discussion is not new. George Perkins Marsh, North America's first conservationist, wrote of humans changing the face of the Earth. In 1873 the Italian geologist Antonio Stoppani coined the term *Anthropozoic* – the era in which humans change the course of geological history. Most geologists declared the idea nonsense. The constructions of civilisation may look impressive, they said, but must surely be trivial when set against the collisions of continents and the growth and disappearance of the oceans. When humans disappear, the world will resume its course, and few of our monuments will be left.

But over the past few decades it has become clear that human activities can have geologically far-reaching effects. Science writer Andrew Revkin suggested we were living in what he called the *Anthrocene*; John Curnutt of the US Geological Survey, awed at the transplanting of species across the globe, proposed the *Homogenocene*; marine biologist Daniel Pauly saw the oceans' future as one of slime and jellyfish as a result of overfishing and pollution, and invented the *Myxocene*.

But it was one of the world's most respected scientists, the Nobel-prizewinning atmospheric chemist Paul Crutzen, who proved most influential. He argued that the Holocene, the geological epoch of post-glacial stability in which civilisation arose, had ended and been replaced by the *Anthropocene*, an epoch shaped by humans.

The idea took off. The term was used as if it were a formal epoch. It isn't – but

# Marks of the Anthropocene: 7 signs we have made our own epoch



By [Sam Wong](#)

Even if [humanity is long gone](#) in tens of millions of years, there will still be a clear sign of us and the way we lived left preserved in our planet's geological record.

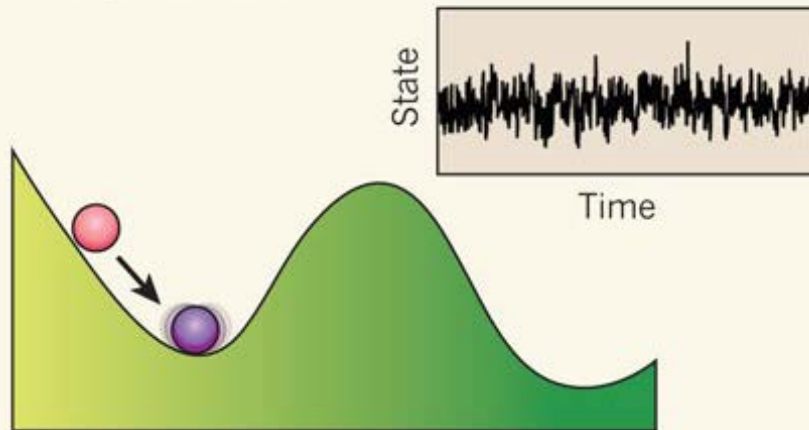
There is now overwhelming evidence that our impact on Earth constitutes its own distinct geological epoch, dating from the middle of the 20th century. Here are the seven signs that will clearly identify the *Anthropocene epoch* for future geologists.

## 1. Nuclear weapons

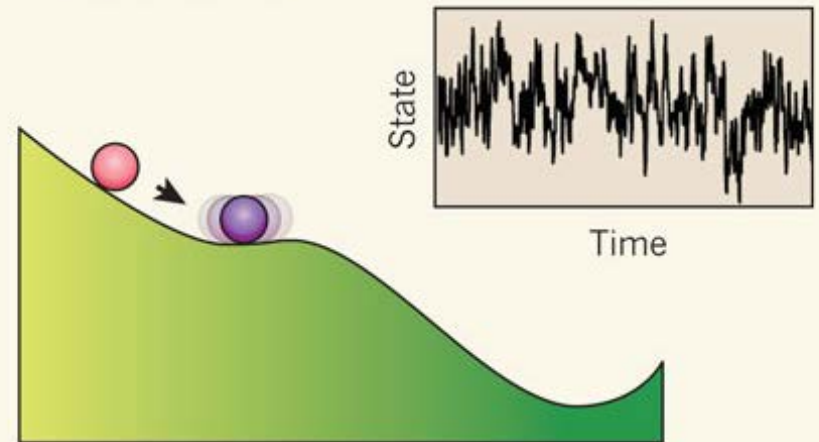
Our war efforts have left their mark on geology. When the first nuclear weapon was detonated on 16 July 1945 in New Mexico, it deposited radionuclides – atoms with excess nuclear energy – across a wide area. Since 1952, more explosive thermonuclear weapons have been tested, leaving a global signature of isotopes such as carbon-14 and plutonium-239.

# Why should we care?

**a** Low risk of transition  
High resilience



**b** High risk of transition  
Low resilience



## FEATURE

## A safe operating space for humanity

Identifying and quantifying planetary boundaries that must not be transgressed could help prevent human activities from causing unacceptable environmental change, argue **Johan Rockström** and colleagues.

Although Earth has undergone many periods of significant environmental change, the planet's environment has been unusually stable for the past 10,000 years<sup>1-3</sup>. This period of stability — known to geologists as the Holocene — has seen human civilizations arise, develop and thrive. Such stability may now be under threat. Since the Industrial Revolution, a new era has arisen, the Anthropocene<sup>4</sup>, in which human actions have become the main driver of global environmental change<sup>5</sup>. This could see human activities push the Earth system outside the stable environmental state of the Holocene, with consequences that are detrimental or even catastrophic for large parts of the world.

During the Holocene, environmental change occurred naturally and Earth's regulatory capacity maintained the conditions that enabled human development. Regular temperatures, freshwater availability and biogeochemical flows all stayed within a relatively narrow range. Now, largely because of a rapidly growing reliance on fossil fuels and



## SUMMARY

- New approach proposed for defining preconditions for human development
- Crossing certain biophysical thresholds could have disastrous consequences for humanity
- Three of nine interlinked planetary boundaries have already been overstepped

industrialized forms of agriculture, human activities have reached a level that could damage the systems that keep Earth in the desirable Holocene state. The result could be irreversible and, in some cases, abrupt environmental change, leading to a state less conducive to human development<sup>6</sup>. Without pressure from humans, the Holocene is expected to continue for at least several thousands of years<sup>7</sup>.

## Planetary boundaries

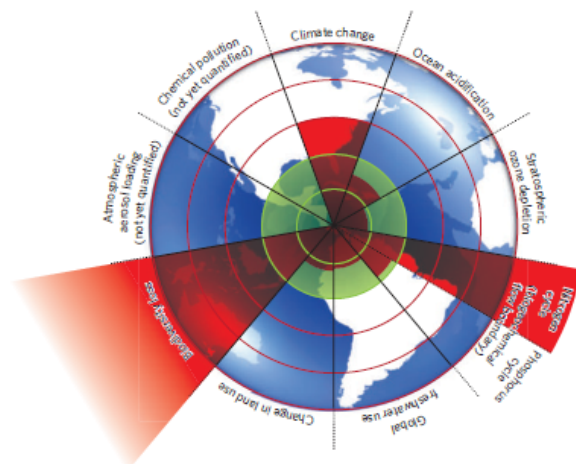
To meet the challenge of maintaining the Holocene state, we propose a framework based on 'planetary boundaries'. These

boundaries define the safe operating space for humanity with respect to the Earth system and are associated with the planet's biophysical subsystems or processes. Although Earth's complex systems sometimes respond smoothly to changing pressures, it seems that this will prove to be the exception rather than the rule. Many subsystems of Earth react in a nonlinear, often abrupt, way, and are particularly sensitive around threshold levels of certain key variables. If these thresholds are crossed, then important subsystems, such as a monsoon system, could shift into a new state, often with deleterious or potentially even disastrous consequences for humans<sup>8,9</sup>.

Most of these thresholds can be defined by a critical value for one or more control variables, such as carbon dioxide concentration. Not all processes or subsystems on Earth have well-defined thresholds, although human actions that undermine the resilience of such processes or subsystems — for example, land and water degradation — can increase the risk that thresholds will also be crossed in other processes, such as the climate system.

We have tried to identify the Earth-system processes and associated thresholds which, if crossed, could generate unacceptable environmental change. We have found nine such processes for which we believe it is necessary to define planetary boundaries: climate change; rate of biodiversity loss (terrestrial and marine); interference with the nitrogen and phosphorus cycles; stratospheric ozone depletion; ocean acidification; global freshwater use; change in land use; chemical pollution; and atmospheric aerosol loading (see Fig. 1 and Table).

In general, planetary boundaries are values for control variables that are either at a 'safe' distance from thresholds — for processes with evidence of threshold behaviour — or at dangerous levels — for processes without



**Figure 1 | Beyond the boundary.** The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.





## A safe operating space for humanity (Rockström et al., 2009)

1a) In which geological period, and when human civilization arise and thrive?


1b) Why the development of our civilization was possible in this period?

1c) What can jeopardize a continuity of our development in the future?

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## A safe operating space for humanity (Rockström et al., 2009)

2a) What are the “Planetary boundaries” about?

2b) Which Earth-system processes were identified (9)?

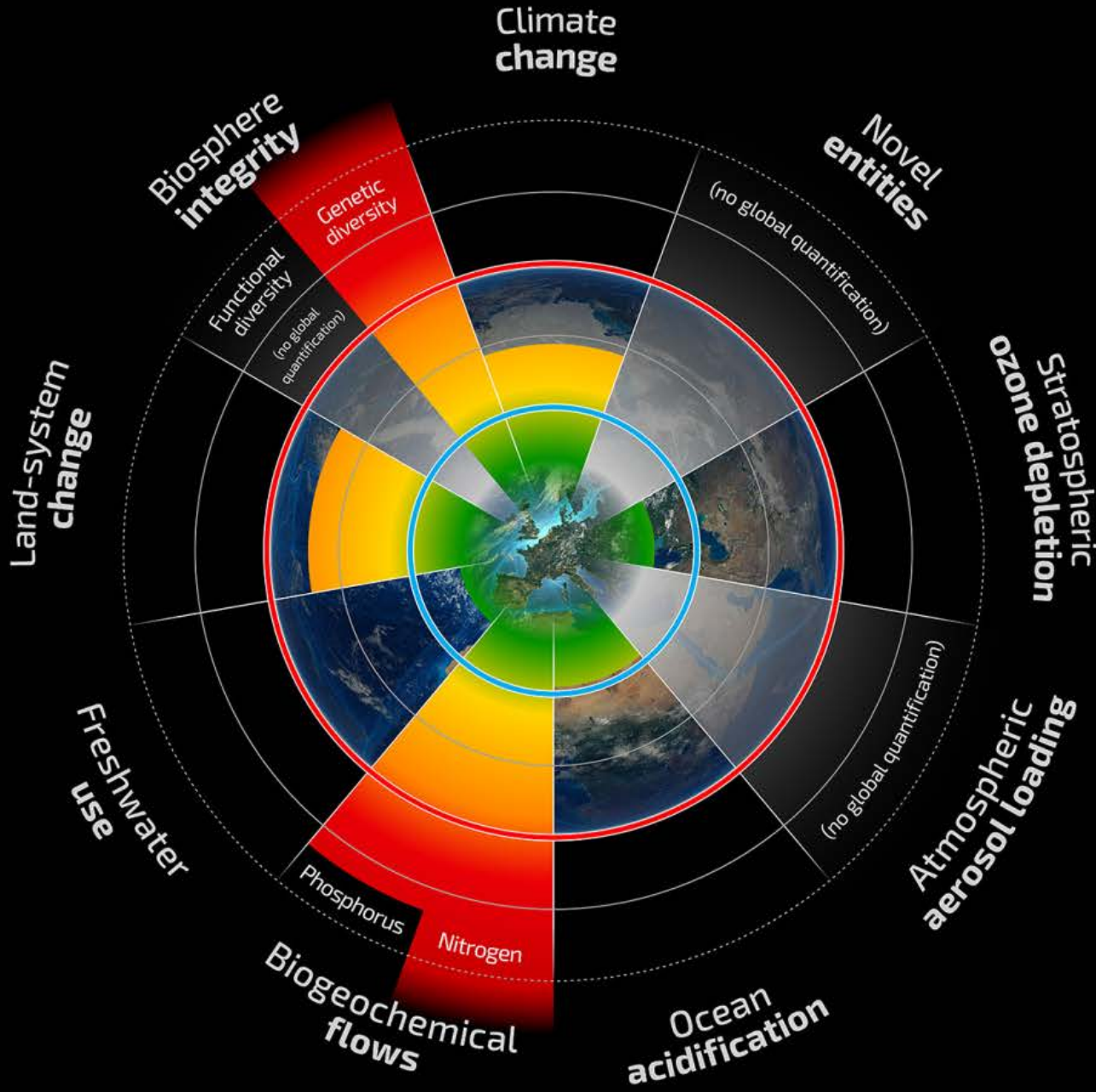
We have tried to identify the Earth-system processes and associated thresholds which, if crossed, could generate unacceptable environmental change. We have found nine such processes for which we believe it is necessary to define planetary boundaries: climate change; rate of biodiversity loss (terrestrial and marine); interference with the nitrogen and phosphorus cycles; stratospheric ozone depletion; ocean acidification; global freshwater use; change in land use; chemical pollution; and atmospheric aerosol loading (see Fig. 1 and Table).

### **Planetary boundaries**

To meet the challenge of maintaining the Holocene state, we propose a framework based on ‘planetary boundaries’. These boundaries define the safe operating space for humanity with respect to the Earth system and are associated with the planet’s biophysical subsystems or processes. Although Earth’s complex systems sometimes respond smoothly to changing pressures, it seems that this will prove to be the exception rather than the rule. Many subsystems of Earth react in a nonlinear, often abrupt, way, and are particularly sensitive around threshold levels of certain key variables. If these thresholds are crossed, then important subsystems, such as a monsoon system, could shift into a new state, often with deleterious or potentially even disastrous consequences for humans<sup>8,9</sup>.

# Planetary Boundaries

A safe operating space for humanity

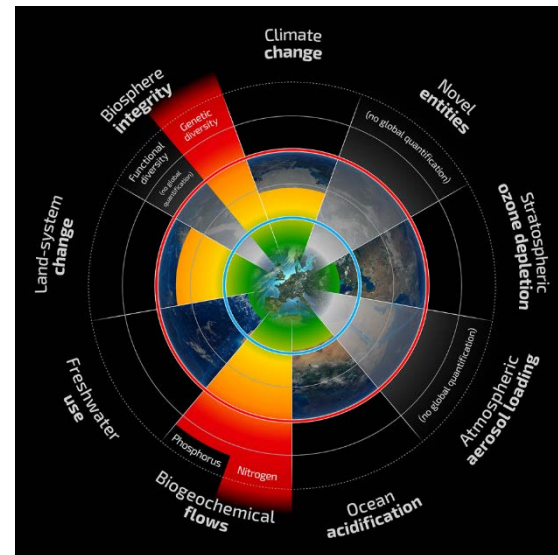


- Red: Beyond zone of uncertainty (high risk)
- Orange: In zone of uncertainty (increasing risk)
- Green: Below boundary (safe)
- Grey: Boundary not yet quantified



# I. Biosphere integrity – genetic x functional

Earth-system process	Control variable(s)	Planetary boundary (zone of uncertainty)	Current value of control variable
Change in biosphere integrity (R2009: Rate of biodiversity loss)	<i>Genetic diversity:</i> Extinction rate	< 10 E/MSY (10–100 E/MSY) but with an aspirational goal of ca. 1 E/MSY (the background rate of extinction loss). E/MSY = extinctions per million species-years	100–1000 E/MSY
	<i>Functional diversity:</i> Biodiversity Intactness Index (BII)	Maintain BII at 90% (90–30%) or above, assessed geographically by biomes/large regional areas (e.g. southern Africa), major marine ecosystems (e.g., coral reefs) or by large functional groups	84%, applied to southern Africa only
	Note: These are interim control variables until more appropriate ones are developed		

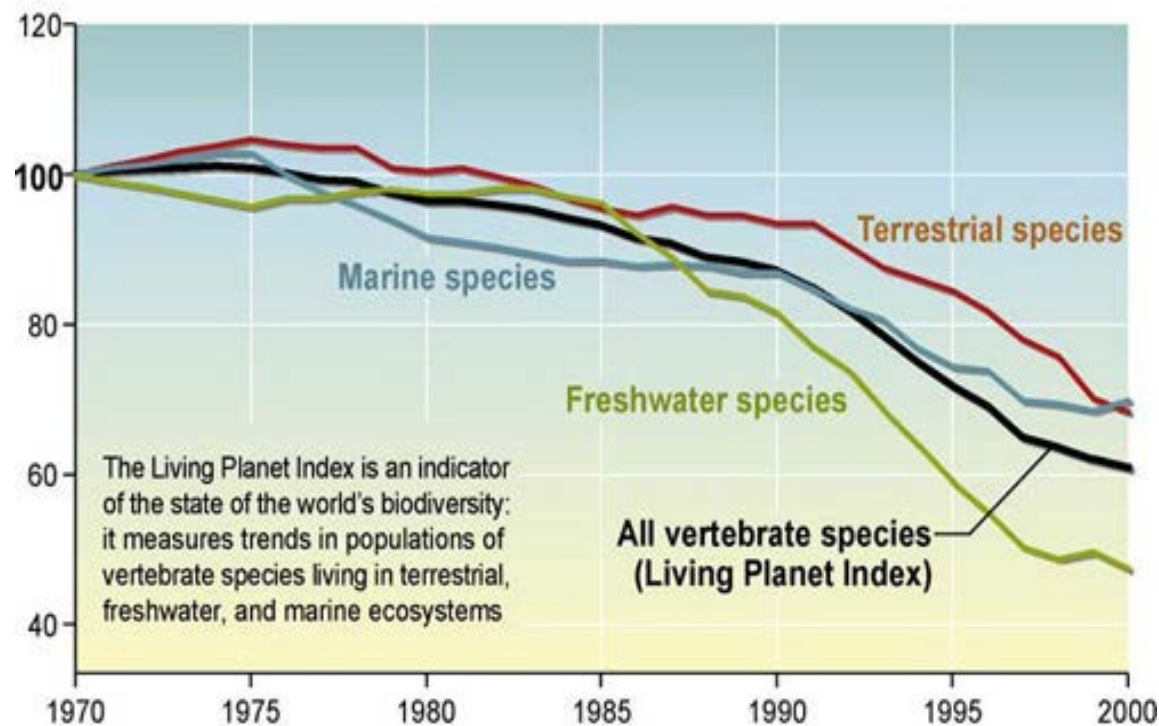


# Biodiversity loss

- 6. great species extinction in the Earth history
- For the first time as a consequence of human activities
- Threatened with extinction 13 % birds species, 23 % mammals species, 25 % conifers, 41 % amphibians

- **Insect?**

Population Index = 100 in 1970



# Biodiversity loss ?

- Not enough data for insect
- **Loss of some species** (e.g. butterflies, dragonflies...)
- Some others are **not changed**, mainly pests (eg. aphids)
- Some are **more abundant**
- **Species homogenization**
- **Functional diversity is kept**

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FEATURE 25 July 2018

## Is life on Earth really at risk? The truth about the extinction crisis

Earth's biodiversity isn't just beautiful, it ensures human survival. But to protect nature's bounty we first need to know exactly how we're harming it



La Scarlatte

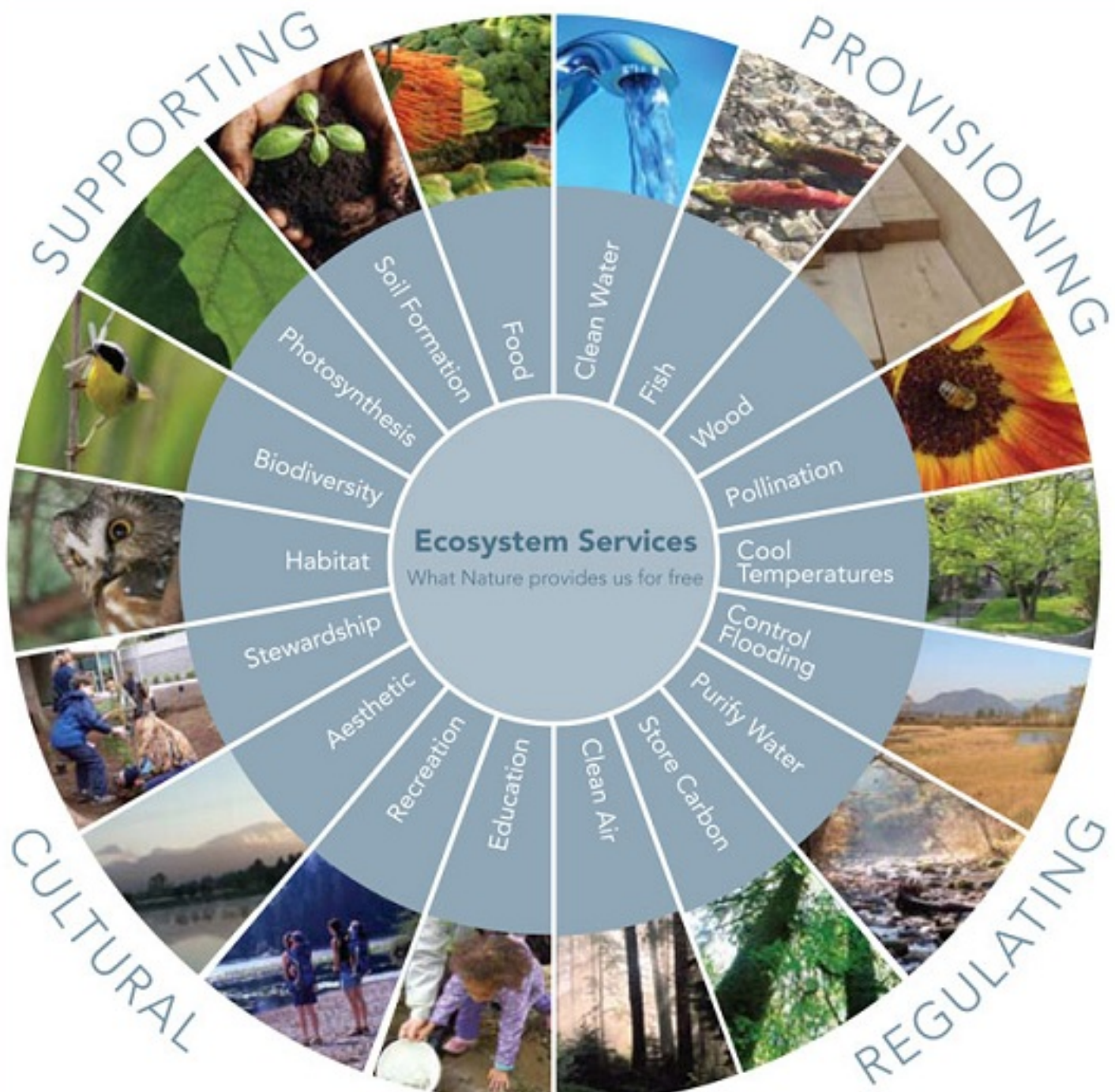


# Why is a functional biodiversity important?

**Top**









# Why is a genetic biodiversity important?



**Top**





# Nobel Prize winner Tu Youyou combed ancient Chinese texts for malaria cure



By **Katie Hunt** and **Shen Lu**, CNN

🕒 Updated 1126 GMT (1926 HKT) October 6, 2015



This photo taken in the 1950s shows Tu Youyou, right, a young pharmacologist with the China Academy of Chinese Medical Sciences in Beijing.

## Story highlights

Scientist Tu Youyou combed ancient Chinese texts for a malaria cure

Her research has earned her the highest accolade in medicine -- the Nobel Prize

**(CNN)** — In the turmoil of China's Cultural Revolution, scientist Tu Youyou joined a covert mission to find a cure for malaria.

"Project 523," was set up in 1967 by Chairman Mao Zedong, who wanted to help Communist troops fighting

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# 3 scientists share Nobel Prize for medicine for work on parasitic diseases



By **Holly Yan** and **Jethro Mullen**, CNN

🕒 Updated 1712 GMT (0112 HKT) October 5, 2015



Nobel Prize in medicine awarded 00:10

## Story highlights

William Campbell and Satoshi Omura are honored for their work fighting elephantiasis and river blindness

**(CNN)** — The Nobel Prize for medicine has been jointly awarded this year to three scientists for their work on parasitic diseases.

Half of the award goes to Ireland's William Campbell and



# Significance of biodiversity

## Functional biodiversity

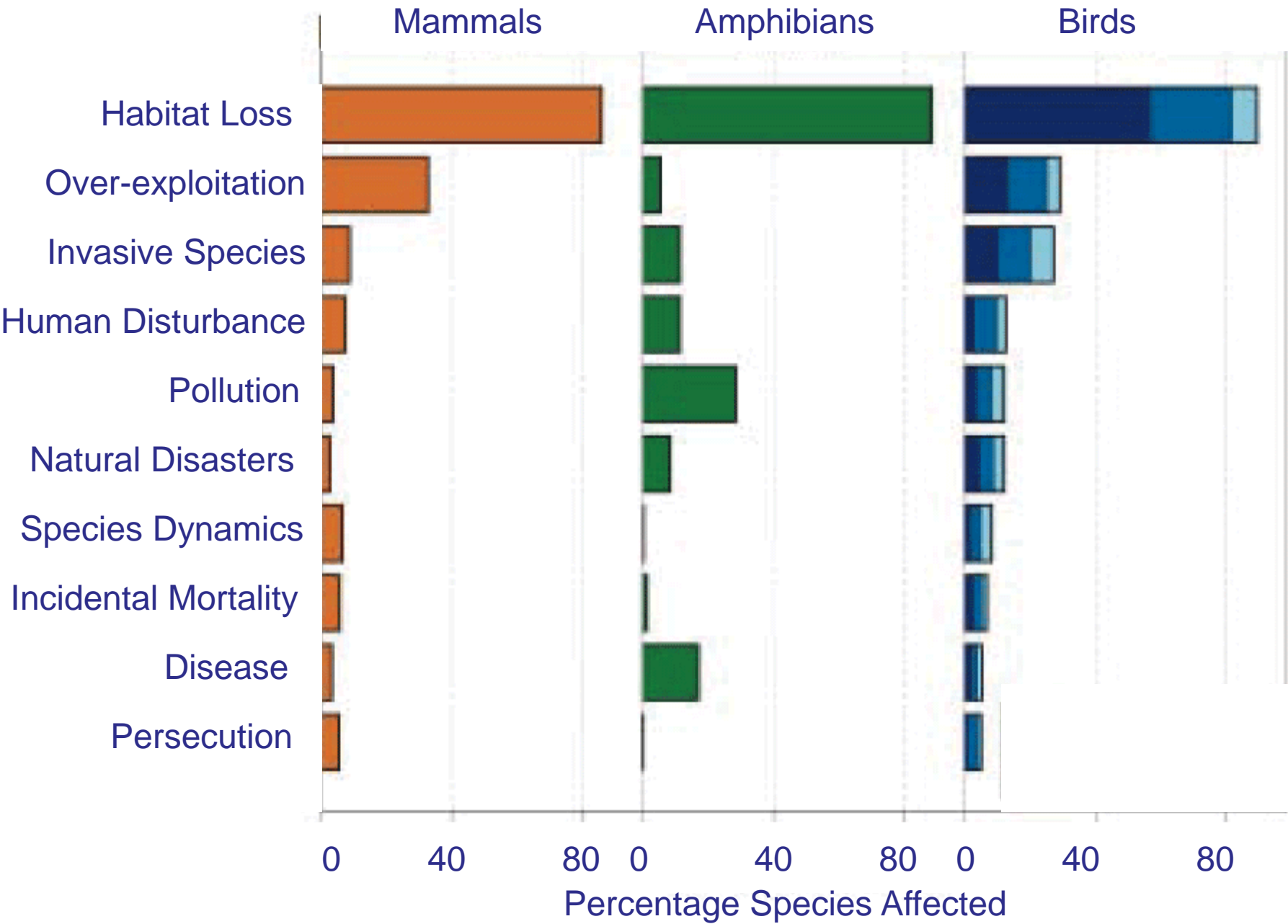
- providing and sustaining of ecosystem services
- maintaining of the resistance and resilience of the ecosystems
- even more important in the changing environment (climate, pH, eutrophication, etc.)

## Genetic (species) biodiversity

- each species = unique surviving strategy
- pool of know-how for the pharmaceutical, chemical, etc. industries (50% of drugs are of plants' origin)
- source of an aesthetic joy
- value of life itself



# Causes of the biodiversity loss = solutions?





# Evolutions traps – a case study

- People are creating such environments where instinctive behaviour of animals (or populations) can be deadly for them

„ *Do you prefer the thing that's worse for you?*“



## Junk food

Albatrosses and other seabirds are drawn to bottle tops, cigarette lighters, golf balls and other plastic rubbish floating on the ocean. Mistaking them for food, the birds swallow them, often to regurgitate to their chicks. Many subsequently die, full but starving.

(Image: Rebecca Hosking/FLPA)



## Mirages

Many aquatic insects need to lay their eggs in water and so have evolved vision sensitive to the polarised light that signals a water surface. Unfortunately, glass buildings, cars, road surfaces and solar panels often polarise light in the same way, leading billions of insects to lay their precious eggs on barren ground.

(Image: Achim Mittler, Frankfurt am Main/Flickr/Getty)



## Beetle beer goggles

Some brown beer bottles have an uncanny similarity to the colour, sheen and texture of female giant jewel beetles. Males have been known to try to copulate with them in a futile embrace.

(Image: AlamyCelebrity/Alamy)



## Turn, turtle!

Newly hatched turtles instinctively head for the horizon. Unfortunately, street lights often bamboozle them into heading away from the sea, towards busy tourist resorts where they are crushed to death.

(Image: Jeff Greenberg/Alamy)



