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## Aspects scientifiques du changement climatique: A quoi devons-nous nous attendre?

**Pierre Ozer**

Département des Sciences et Gestion de l'Environnement



The Hugo Observatory  
Environment, Migration, Politics

Premier Colloque du Plan Climat de la Province de Liège  
La Reid, 29 novembre 2016

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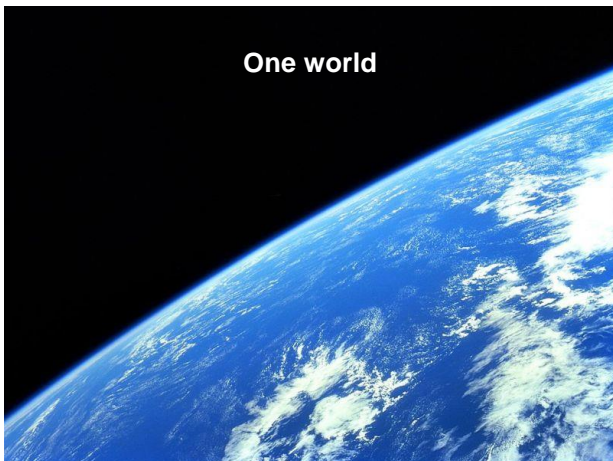
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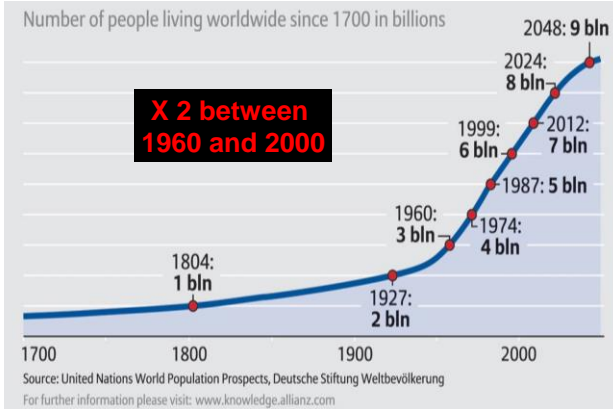
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# Human population of the Earth




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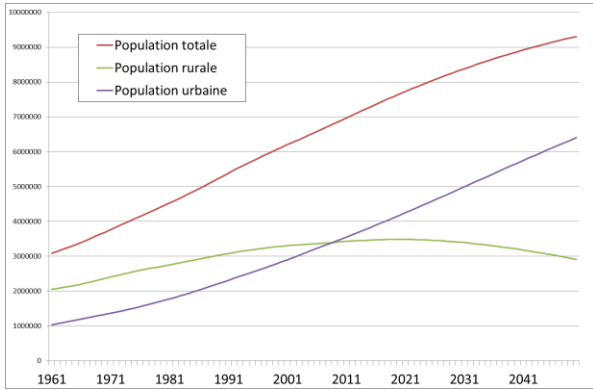
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# World population (1961-2015) and projections (2016-2050)




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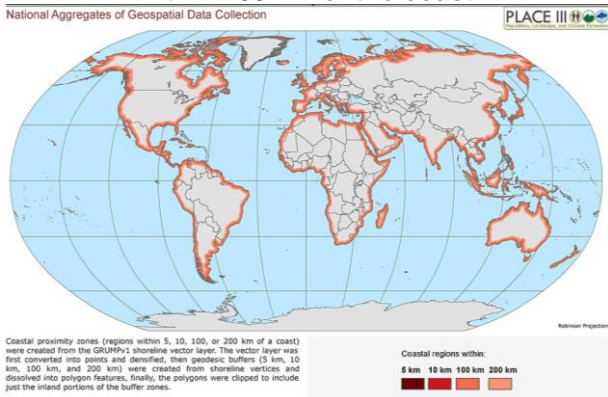
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# 48% of the world population lives within 200 km of the coast




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## Accord décisif sur le climat entre la Chine et les Etats-Unis

LE MONDE | 12.11.2014 à 11h34 • Mis à jour le 15.11.2014 à 09h42 |

Par Laurence Caramel et Brice Pedroletti (Pékin, correspondant)

Abonnez-vous à partir de 1 € Réagir Classer Partager

Recommander Partager 19 personnes recommandent ça. Soyez le premier parmi vos amis.

L'accord sur le climat signé mercredi entre la Chine et les Etats-Unis constitue une avancée décisive pour permettre aux négociations climatiques d'aboutir en 2015 à Paris. En marge du forum de Coopération économique de l'Asie-Pacifique réuni à Pékin sous un ciel nettoyé de sa pollution, le président américain Barack Obama et le président chinois Xi Jinping se sont engagés, mercredi 12 novembre, à de nouvelles réductions d'émissions pour Washington et à l'adoption pour la première fois par la Chine d'un pic de ses émissions de gaz à effet de serre « autour de 2030 » et « si possible avant ».



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## L'Europe se fixe un cap ambitieux sur le climat

LE MONDE | 24.10.2014 à 01h37 • Mis à jour le 24.10.2014 à 12h03 |

Par Laurence Caramel

Abonnez-vous à partir de 1 € Réagir Classer Partager



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## Les trois engagements du G20 : croissance, transparence fiscale et climat

Le Monde.fr | 16.11.2014 à 09h30 - Mis à jour le 16.11.2014 à 12h11 |

Par Claire Guélaud

Abonnez-vous à partir de 1 € Réagir Classer Partager

Recommander Partager 125 personnes recommandent ça. Soyez le premier parmi vos amis.



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## Climat : l'Europe en avance sur ses objectifs de réduction de gaz à effet de serre

Le Monde.fr | 03.06.2014 à 17h35

Abonnez-vous à partir de 1 € Réagir Classer Partager



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## Nouveau record des émissions de CO2 en 2013

Le Monde.fr | 21.09.2014 à 19h29 • Mis à jour le 12.11.2014 à 16h02 |

Par Stéphane Foucart

Abonnez-vous à partir de 1 € Réagir Classer Partager

Recommander Partager 834 personnes recommandent ça. Soyez le premier parmi vos amis.

La hausse des émissions de dioxyde de carbone (CO<sub>2</sub>) se poursuit à un rythme effréné et coïncide avec le plus pessimiste des quatre grands scénarios de développement imaginés par la communauté scientifique.

Dimanche 21 septembre au soir, le Global Carbon Project (GCP), un consortium d'organismes de recherche internationaux de référence, a rendu public le bilan des émissions anthropiques de CO<sub>2</sub> pour l'année 2013 et confirme que celles-ci sont hors de contrôle.

En 2013, la combustion des ressources fossiles (pétrole, gaz, charbon) et les cimenteries, ont émis 36 milliards de tonnes de CO<sub>2</sub> (GtCO<sub>2</sub>), en hausse de 2,3 % par rapport à l'année précédente. Quant à la déforestation, elle a conduit à l'émission de 3,3 GtCO<sub>2</sub>. Soit un total de près de 39,3 milliards de tonnes du principal gaz à effet de serre émis en 2013 par l'homme. C'est un nouveau record qui est battu, en dépit d'une augmentation en deçà du niveau moyen des années 2000, soit 3,3 %.

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## 2015 et 2016 annoncées parmi les années les plus chaudes

Le Monde.fr avec AFP | 14.09.2015 à 11h11 • Mis à jour le 14.09.2015 à 11h14

Abonnez-vous à partir de 1 € Réagir Classer Partager (319) Tweeter



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## En 2013, les catastrophes naturelles ont déplacé trois fois plus de personnes que les conflits

Le Monde.fr | 17.09.2014 à 12h34 • Mis à jour le 17.09.2014 à 16h15 |

Par Laetitia Van Eeckhout

Abonnez-vous à partir de 1 € Réagir Classer Partager



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**DON'T PANIC.  
EVERYTHING IS  
UNDER CONTROL**



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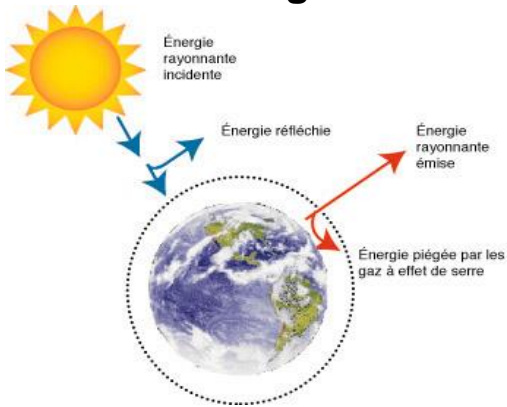
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### Greenhouse is good for life



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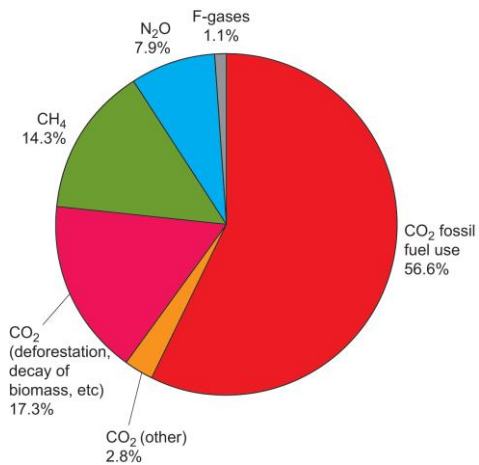
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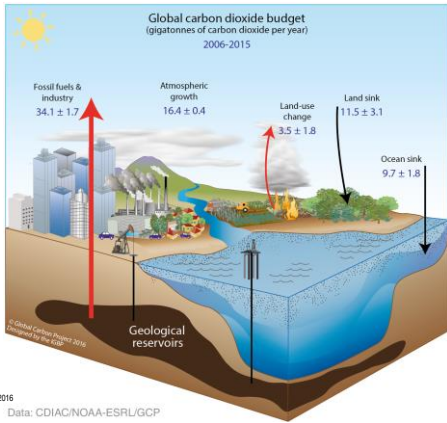
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## Anthropogenic perturbation of the global carbon cycle




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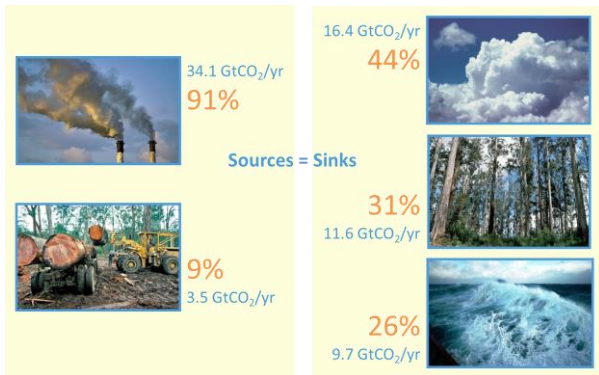
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## Fate of anthropogenic CO<sub>2</sub> emissions (2006-2015)




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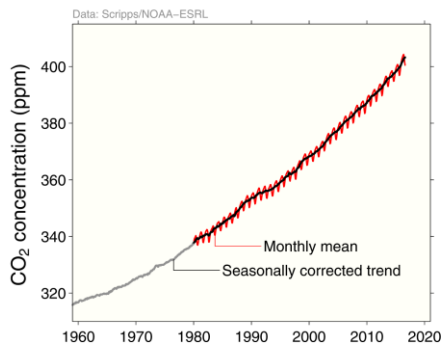
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## Atmospheric concentration




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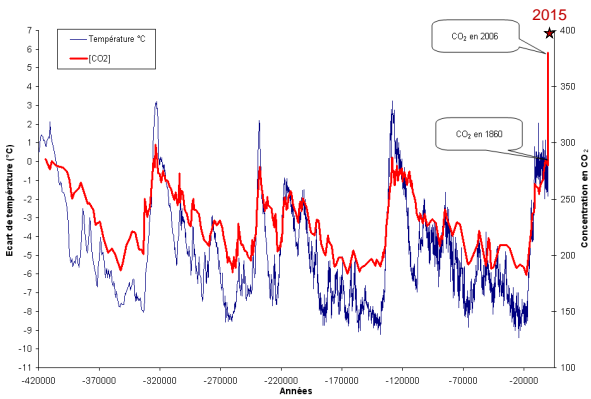
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D'après Petit (2003)



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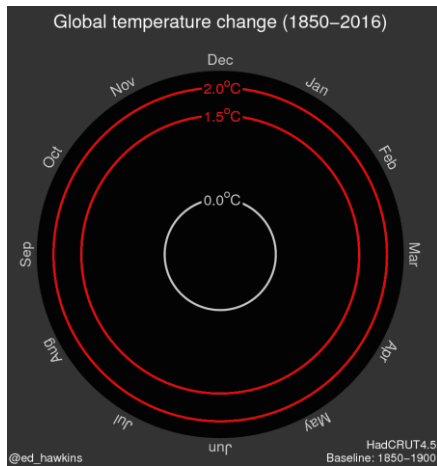
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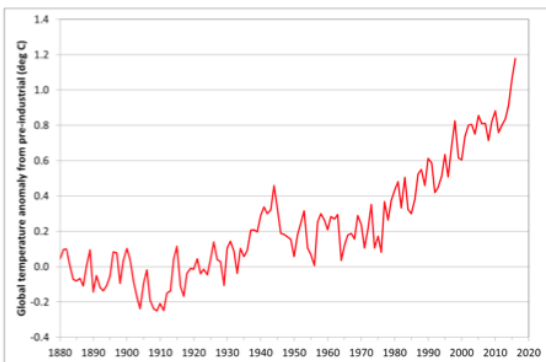
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Global temperatures – change from pre-industrial



Data: NOAA, NASA, UK Met Office/CRU

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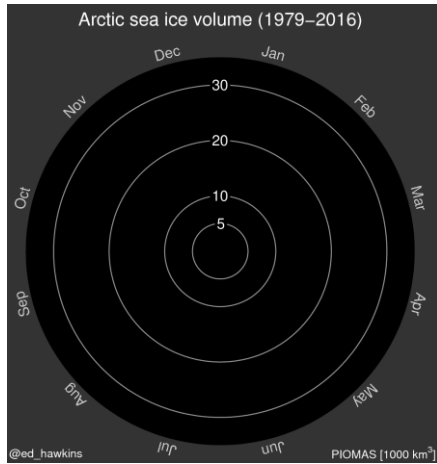
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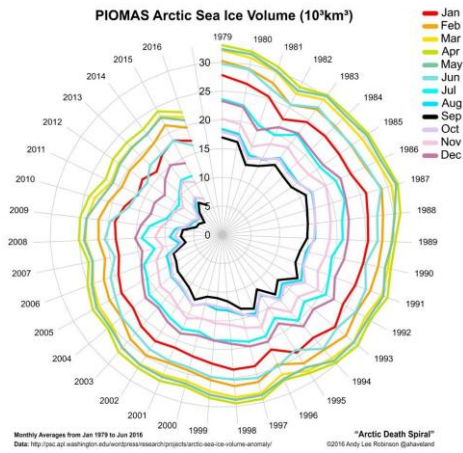
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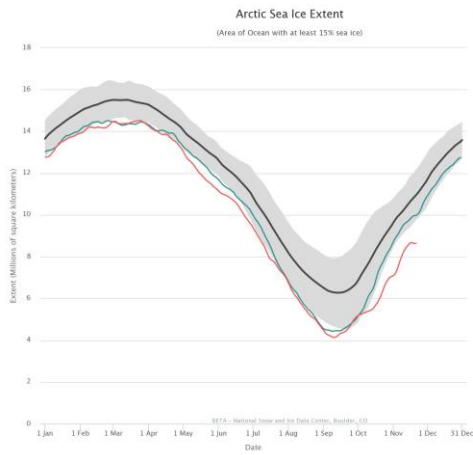
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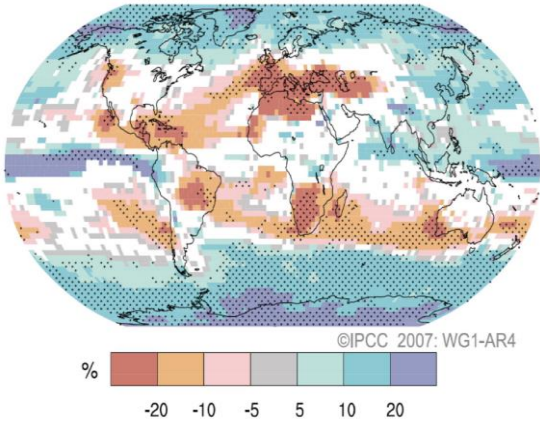
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Rainfall changes by 2090-2099 compared to 1980-1999




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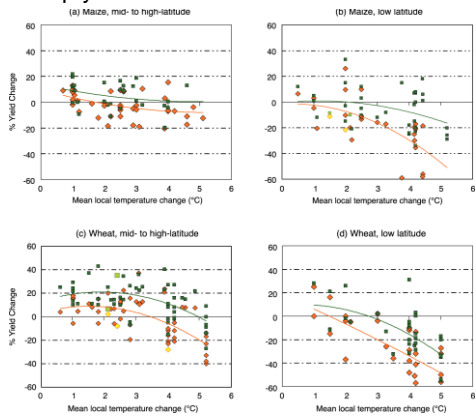
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Crop yields evolution in a warmer climate




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Potential impact of sea level rise: Nile Delta

Population: 3 800 000  
Cropland (Km<sup>2</sup>): 1 800




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Population: 6 100 000  
Cropland (Km<sup>2</sup>): 4 500



0 50 km

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<http://www.climatecentral.org/>

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<http://www.climatecentral.org/>

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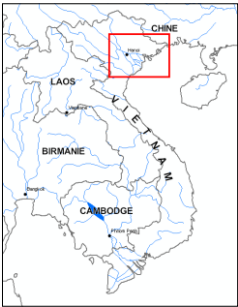
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Vietnam – Red River Delta




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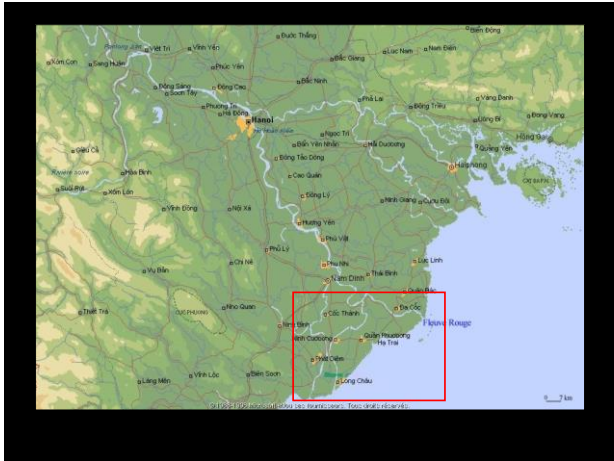
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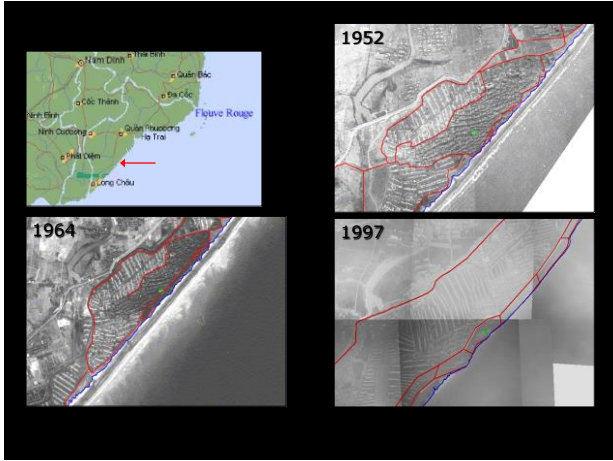
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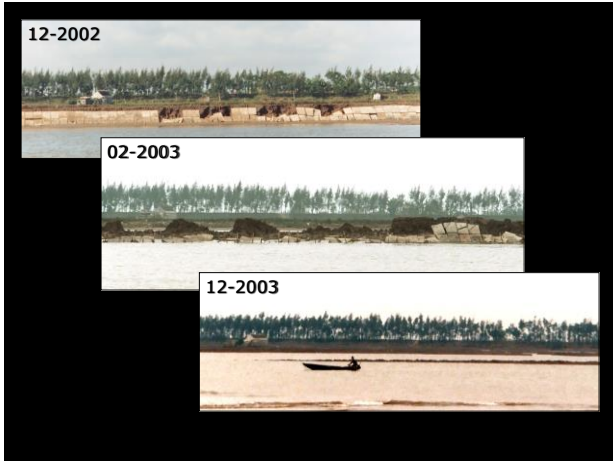
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## Vulnerability of the large deltas



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### Large impacts ...

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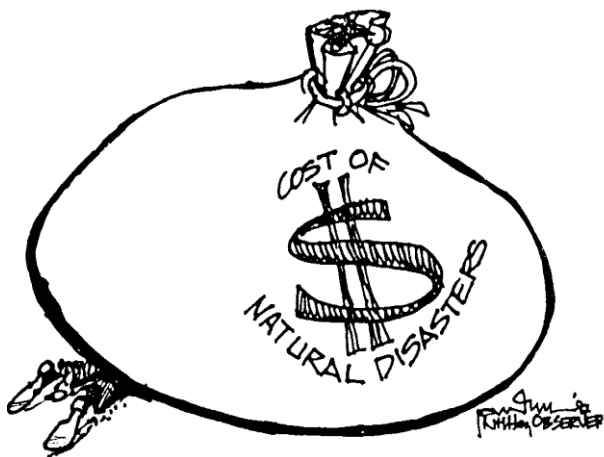
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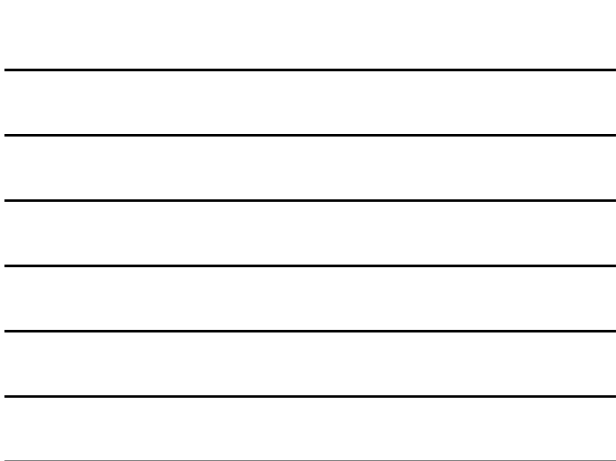
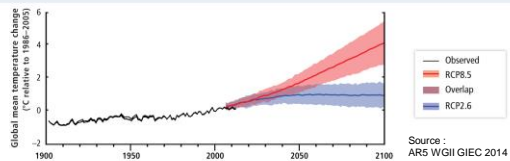
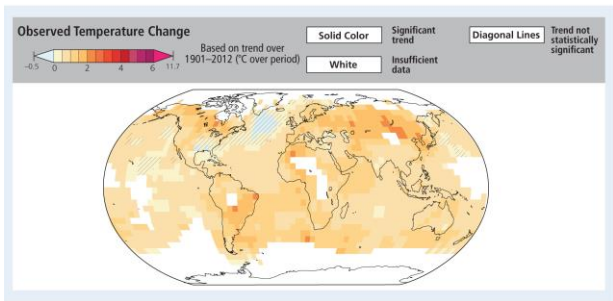
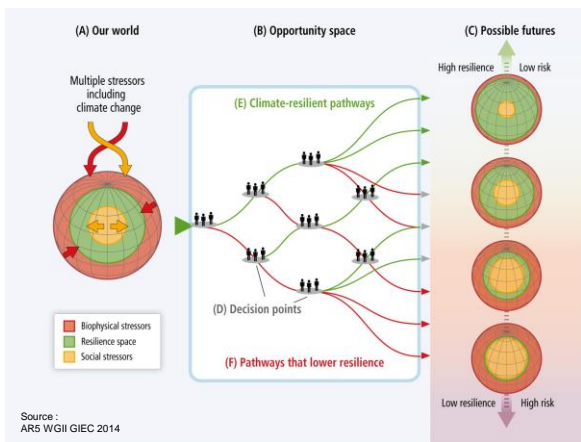
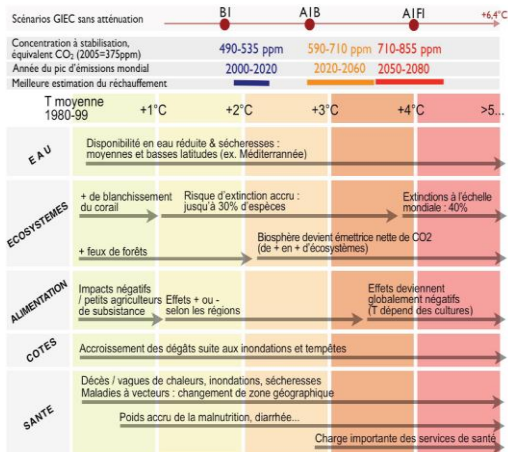
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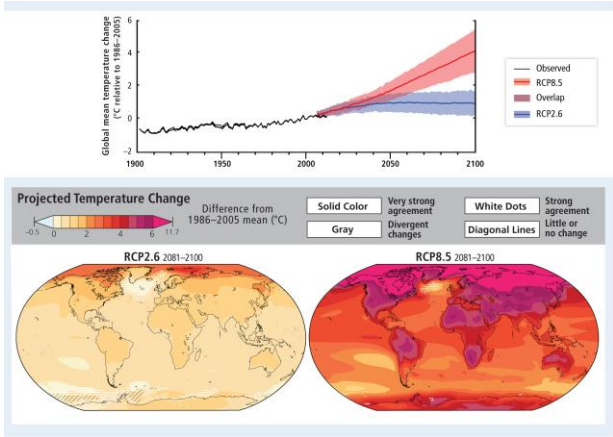
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Source : AR5 WGII GIEC 2014

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**Are WE  
ready to  
CHANGE?**

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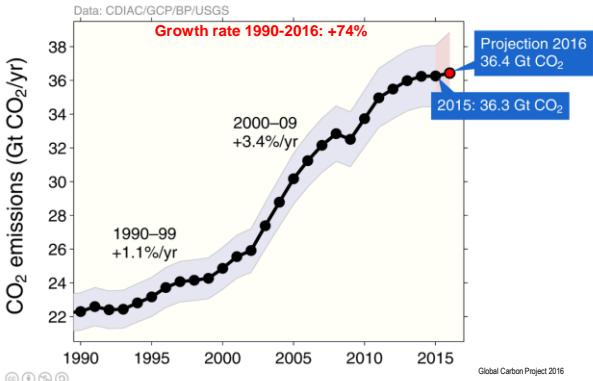
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Emissions from fossil fuel use and industry



© 1 5 0

Global Carbon Project 2016

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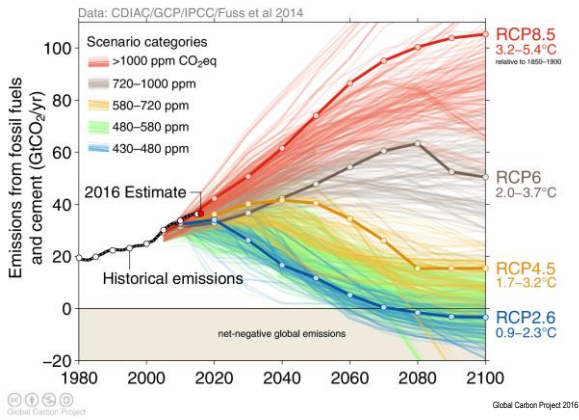
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### Observed emissions and emissions scenarios



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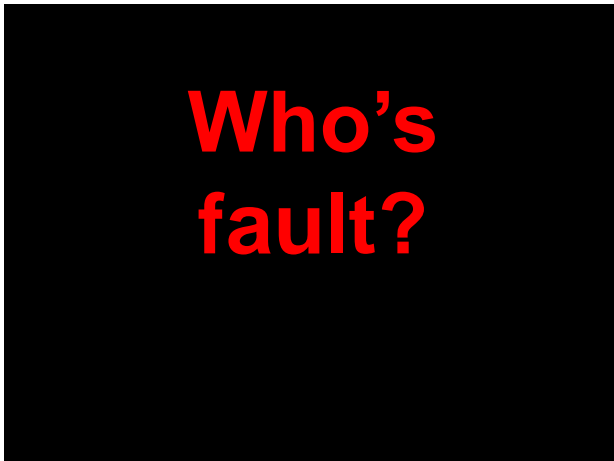
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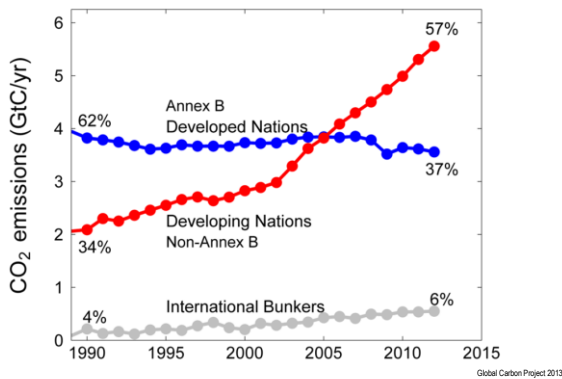
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### Production-based emissions



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2012

8.8 tons CO<sub>2</sub>



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2012

8.8 tons CO<sub>2</sub>



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7.1 tons CO<sub>2</sub>



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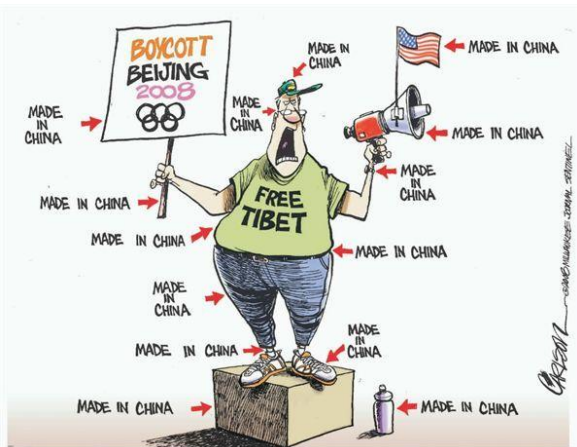
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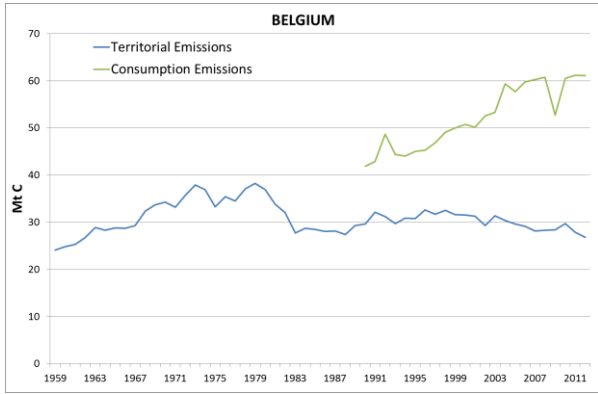
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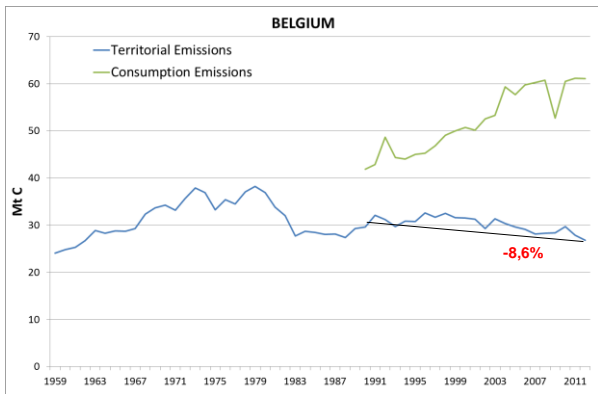
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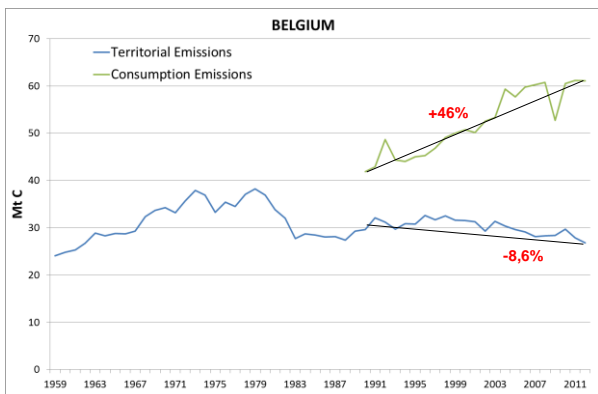
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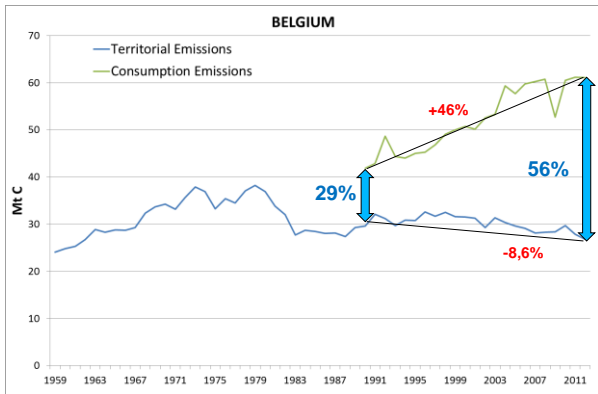
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**Historical  
cumulative  
responsability  
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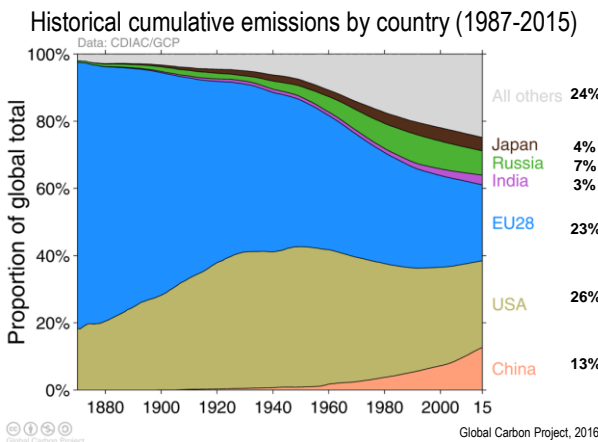
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**During  
this time...**

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Nouakchott

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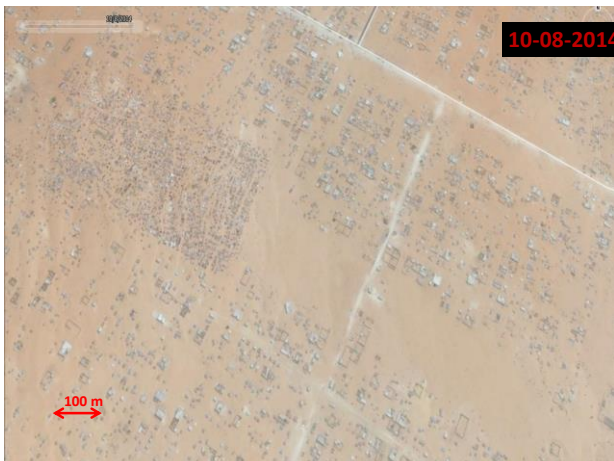
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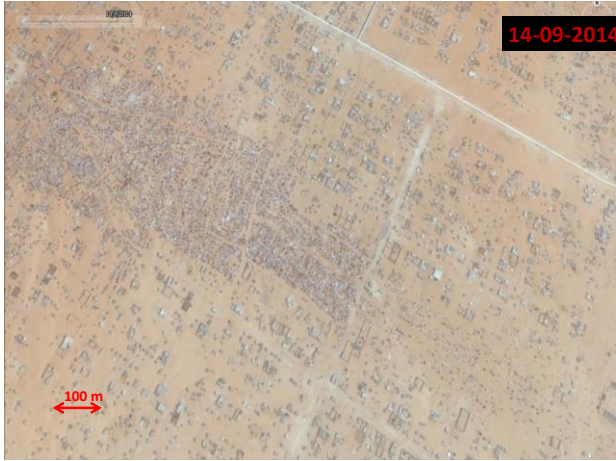
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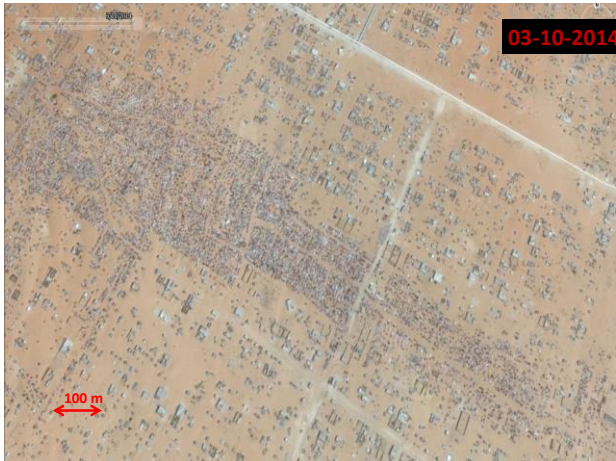
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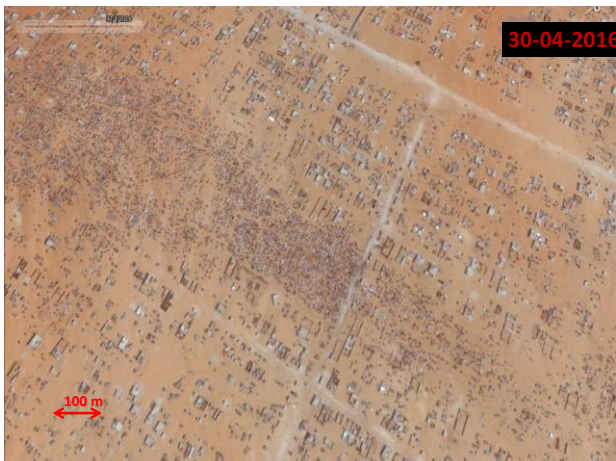
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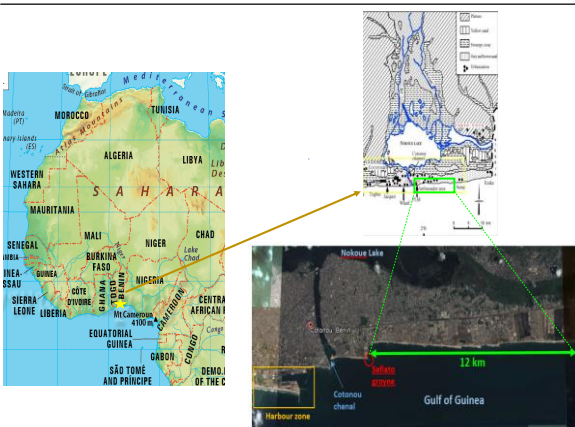
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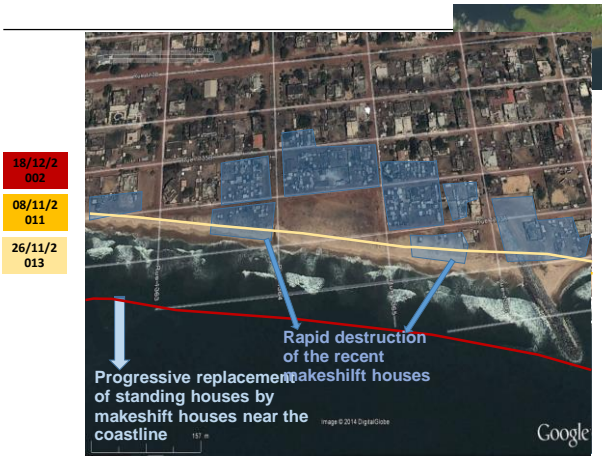
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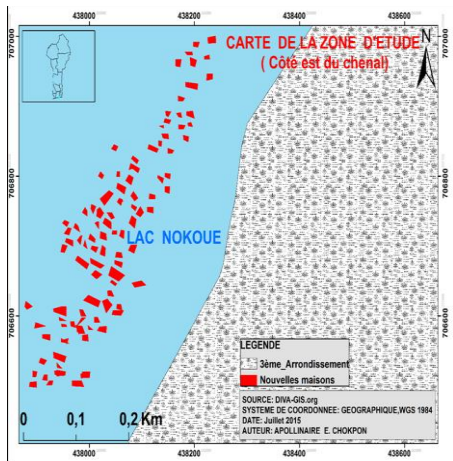
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**At the end...**

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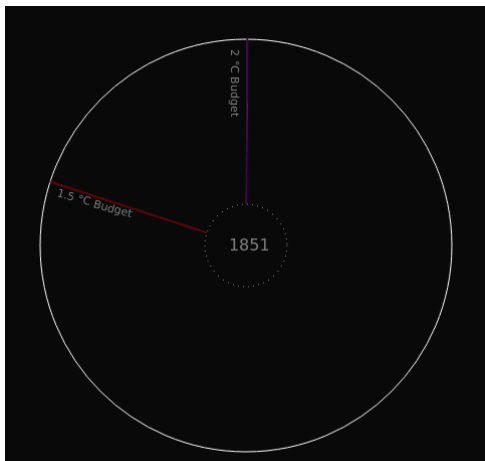
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