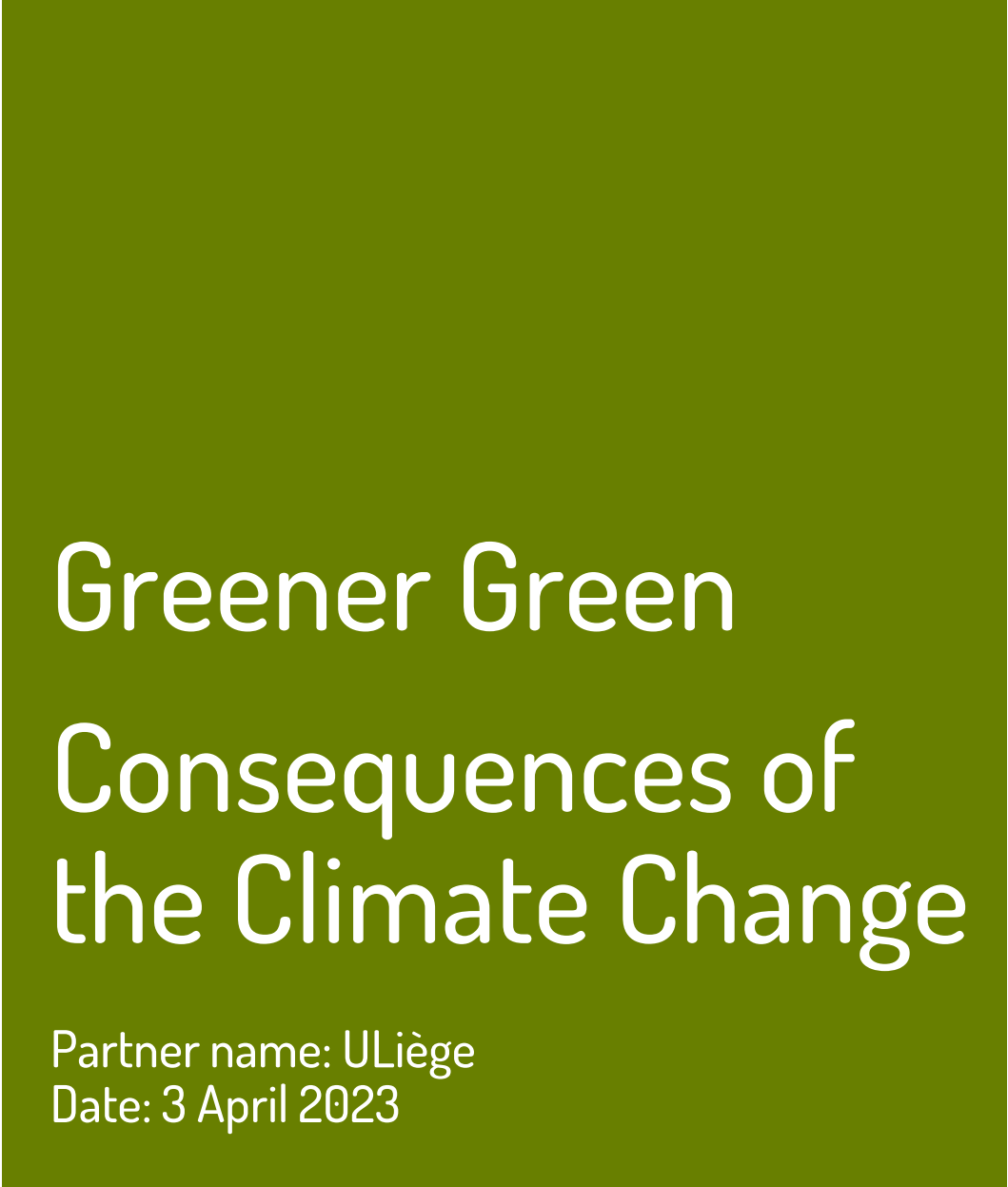




Greener Green Consequences of the Climate Change

Partner name: ULiège
Date: 3 April 2023



Partners

1. BLUE ROOM INNOVATION – SPAIN
2. IDEC – GREECE
3. FEDERATION DES ASSOCIATION DE PARENTS D'ELEVES DU LUXEMBOURG
4. UNIVERSITE DE LIEGE – BELGIUM
5. PRIMARY SCHOOL OF VAREIA – GREECE
6. Instituto Agrario Bell-lloc del Pla SA – SPAIN
7. Scuola Europea di Varese – ITALY



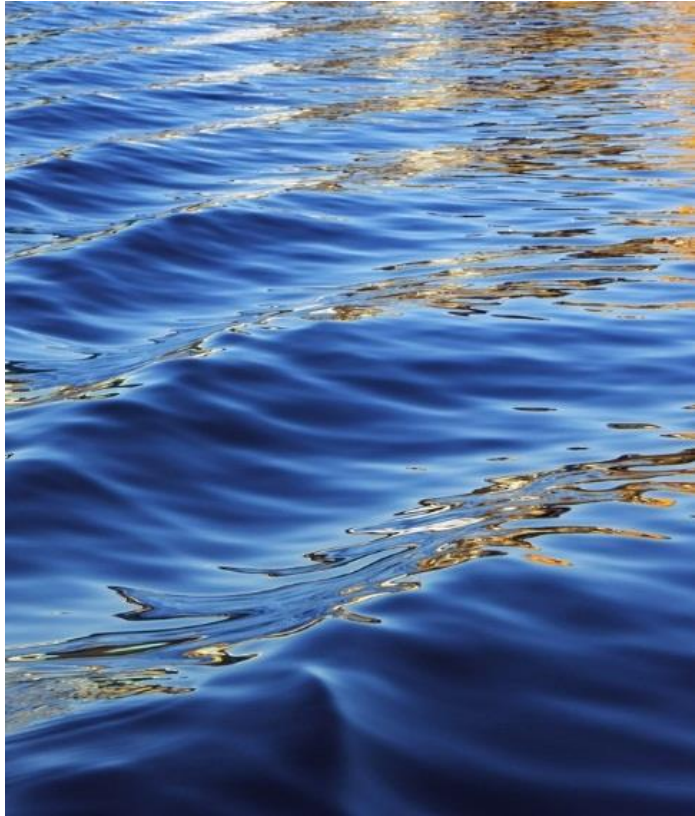
Contents

- Earth is a whole system
- Consequences of climate change are already there !
- By the way ...





Earth is a whole
system



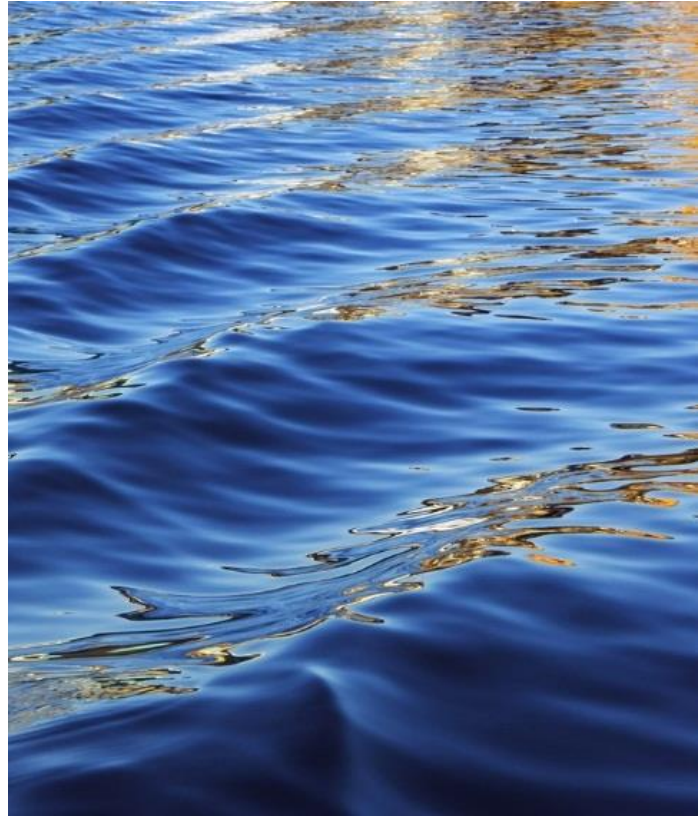
Earth is a whole system...

- Humans induce a perturbation in climate system
 - All the others parts of the system are also perturbed
 - Ocean
 - Land
 - Vegetation
 - ...
 - → HUMANS!



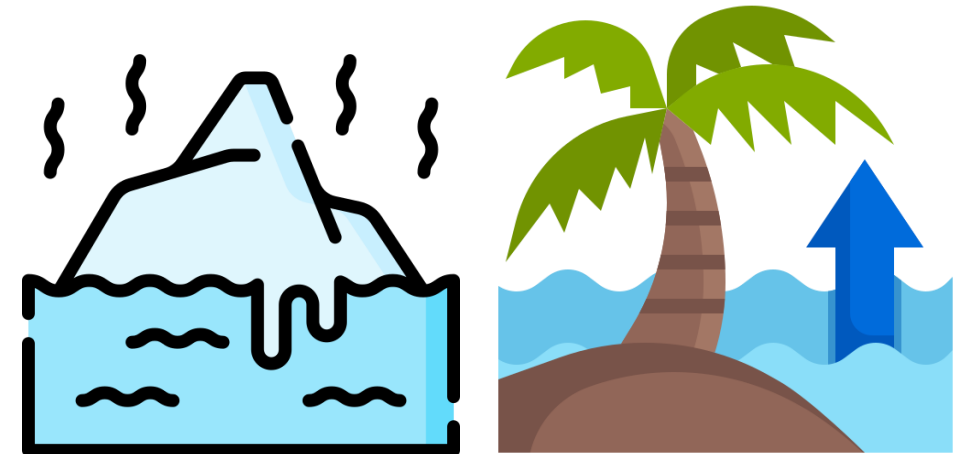


Consequences of
climate change are
already there !



Consequences of climate change are already there !

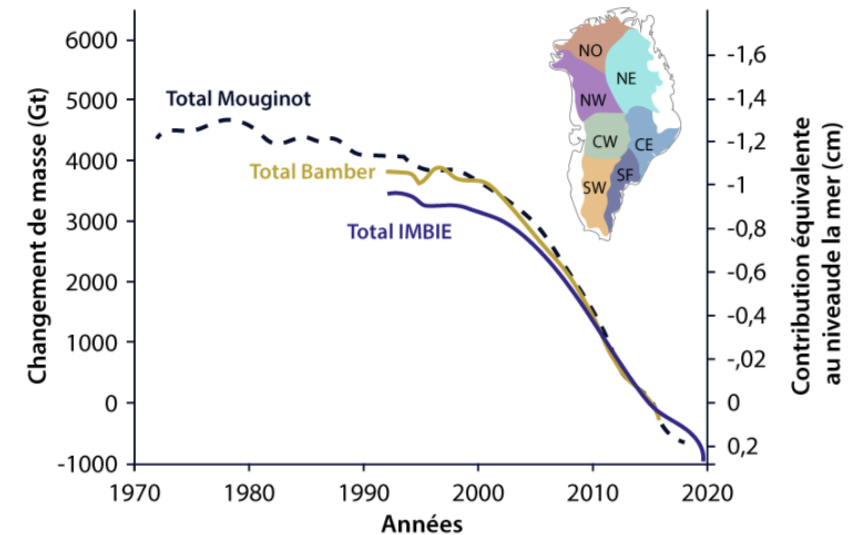
- Increasing temperature
 - → melting ice
 - → sea level rise
 - → land disappear under the sea
- Melting of sea ice
 - Increases considerably temperature in Arctic region



1) melting ice sheet

- Greenland ice sheet
 - Melting
 - Drastically since 2000s
 - -4000 Gt since 1990
 - Increases sea level
 - +1 cm since 20 years

Changement de masse au Groenland par rapport à 2015

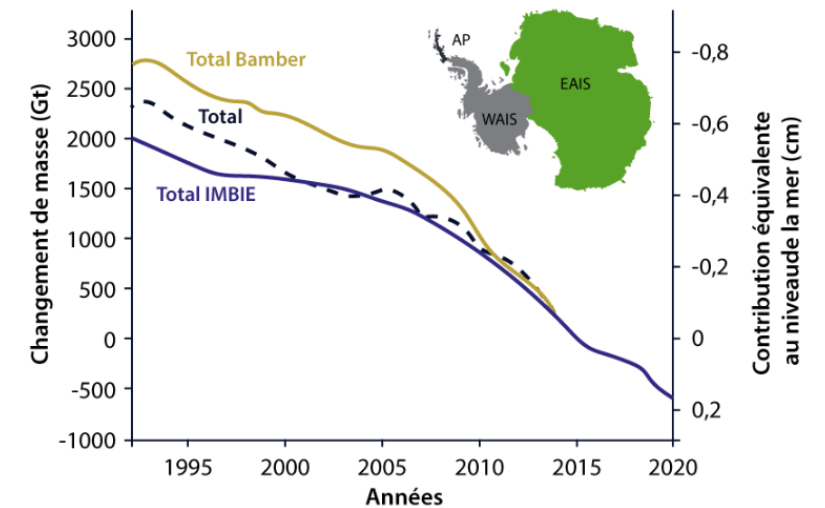


Source : https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_09.pdf

1) melting ice sheet

- Antarctic ice sheet
 - Melting
 - -2500 Gt since 1990
 - Increases sea level
 - + 0,6 cm since 20 years

Changement de masse en Antarctique par rapport à 2015



Source : https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_09.pdf



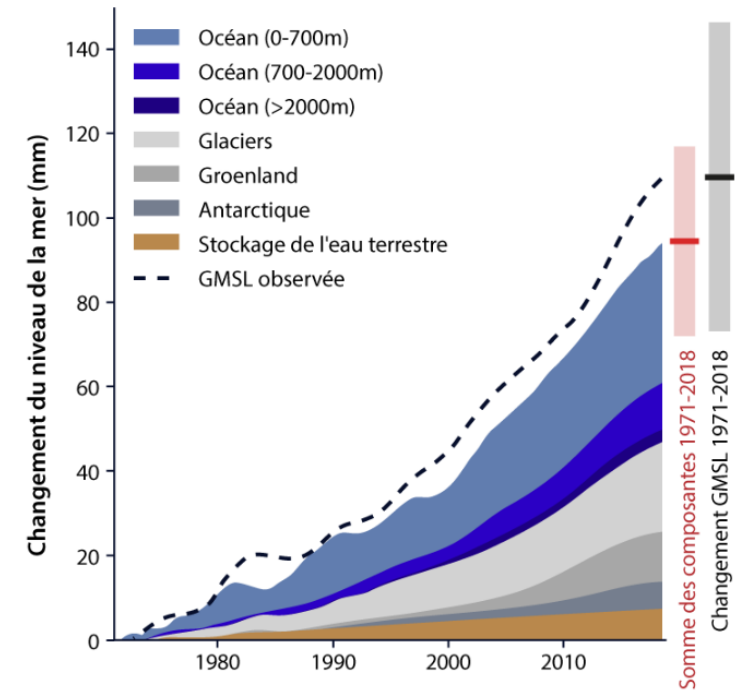
2) Melting mountain glaciers

- Melting
 - Some glaciers disappear
 - Like “Mer de Glace” in Chamonix (French Alps)
 - Increases sea level



3) Thermal expansion of the oceans

- As atmospheric temperature absorbed in water
- Water is expanded by dilatation
- Water occupies a larger volume (blue areas in the figure)
- Sea level rise

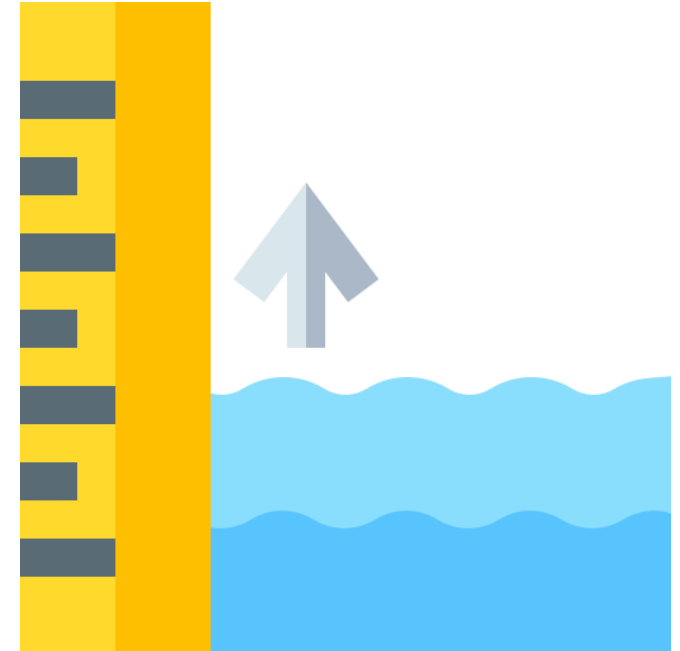


Source : https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_09.pdf



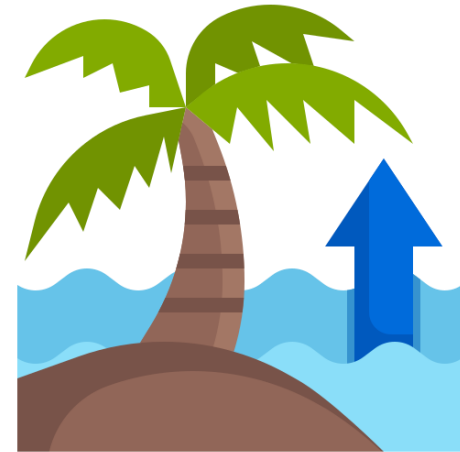
4) Sea level rise

- Melting of
 - Ice sheet
 - Mountain glaciers
- +
- Thermal expansion of the oceans
- =
- Sea level rise



5) Submersion of lands

- Coastlines around the world
 - in North-Western Europe, in USA, in Bangladesh ...
- Islands
 - Maldives ...
- → human migration
- → geopolitical conflicts

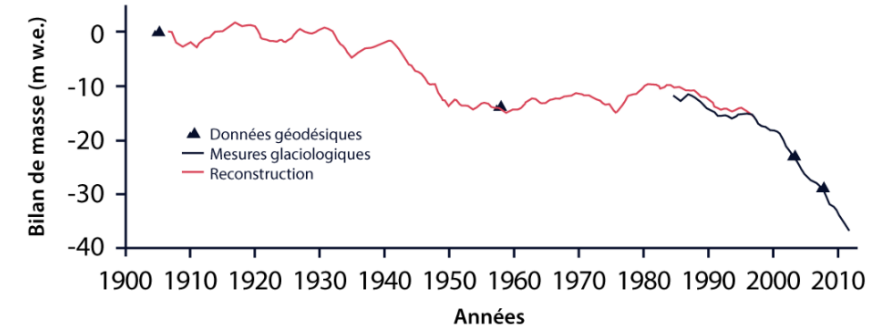


6) Melting of sea ice

- Sea ice
 - is floating ice
 - Grows in winter
 - Melts in summer
- From year to year
 - Observation shows that sea ice extent is getting smaller
- Ocean becoming open water
 - More dark
 - Absorbs more energy
 - Like when we wear a black t-shirt in a sunny day
 - Getting warmer
 - Amplifying warming of Arctic region

→Consequence :

Arctic region warms much fast than the rest of the world !

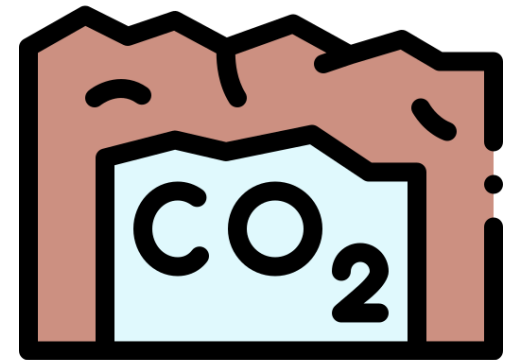


Source : <https://www.cambridge.org/core/journals/annals-of-glaciology/article/future-fluctuations-of-mer-de-glace-french-alps-assessed-using-a-parameterized-model-calibrated-with-past-thickness-changes/C1F75FD440B9255867B7FEAE5437D801#article>



7) What about permafrost ?

- Permafrost
 - are all year frozen lands
 - See → [vidéo](#)
- Melting due to the global warming
- Impacts:
 - Ground becomes muddy
 - Destructure existent buildings, house, roads ...
 - By melting permafrost releases a stock of carbon
 - Increasing (by positive feedback) the global warming



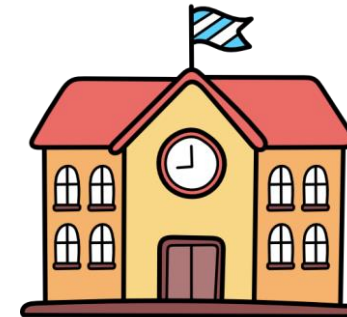


By the way ...



By the way ...

- We do not have to wait 2100 to see impacts of global warming...
- The consequences are already there in front of our eyes
- Informed and aware citizens are the best solution for a positive way out of this issue





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