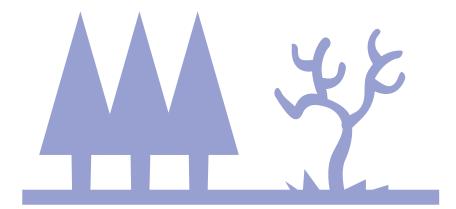


## Climate change is already visible on land, in the oceans and in the atmosphere.

Changes that have already occurred will continue, and some of them will be irreversible for centuries to millennia.

#### **ON LAND**

- climate zones shift poleward
- heavy precipitation is increasingly frequent in many places
- droughts have increased



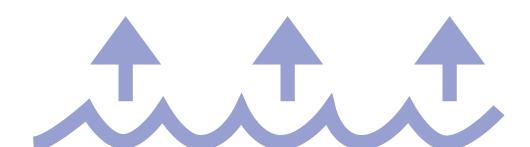
### IN THE OCEANS

- oceans warm up
- global mean sea level rises

**IRREVERSIBLE** 

**IRREVERSIBLE** 

 acidification occurs and oxygen levels fall in oceans



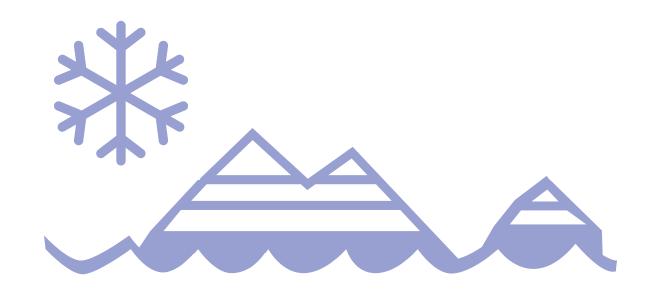
### IN THE ATMOSPHERE

- greenhouse gas concentrations increase
- lowest part of atmosphere warms up
- moisture content increases



### IN SNOW AND ICE COVER

- ice cover on seas and lakes decreases
- snow cover decreases
- glaciers shrink IRREVERSIBLE



DANGEROUS AND HARMFUL WEATHER EVENTS HAVE BECOME MORE COMMON



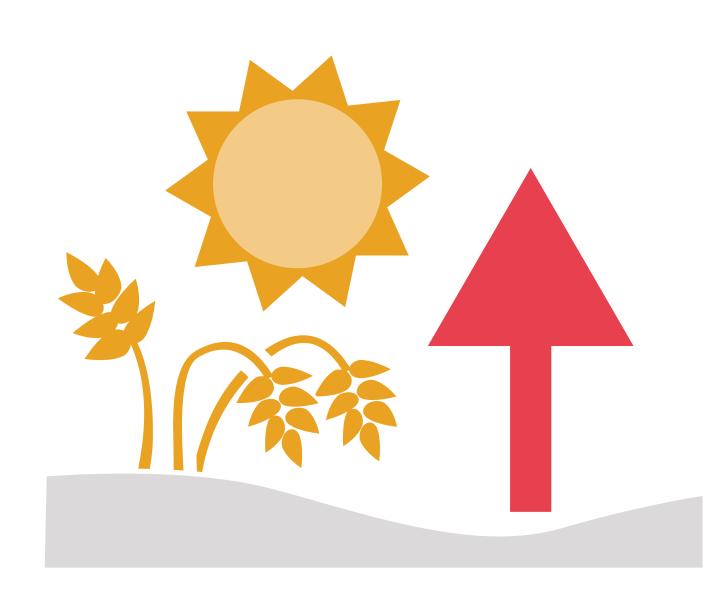
Heatwaves, droughts, heavy precipitation and major tropical cyclones become increasingly frequent.



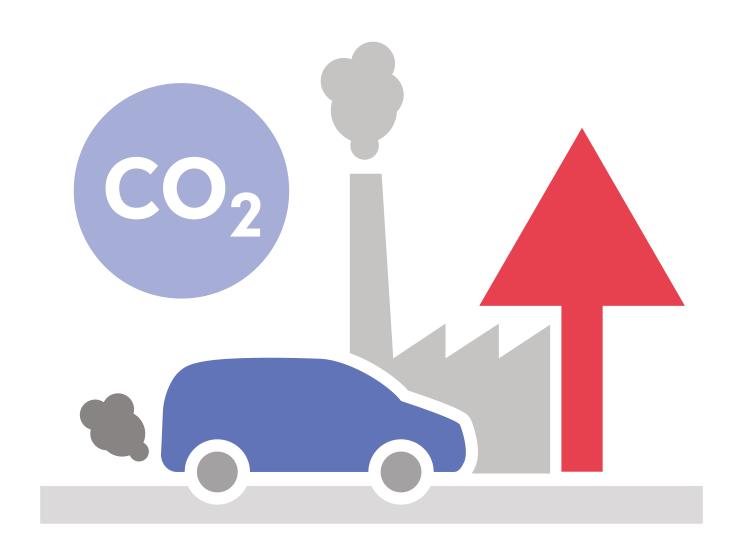




# The rate and scale of the changes in the climate system are unprecedented.



Over the past 50 years, the global average temperature has increased faster than in 2,000 years.



Carbon dioxide concentrations (CO<sub>2</sub>) are at their highest level for at least 2 million years. In 2019 CO<sub>2</sub> concentration reached about 410 ppm.





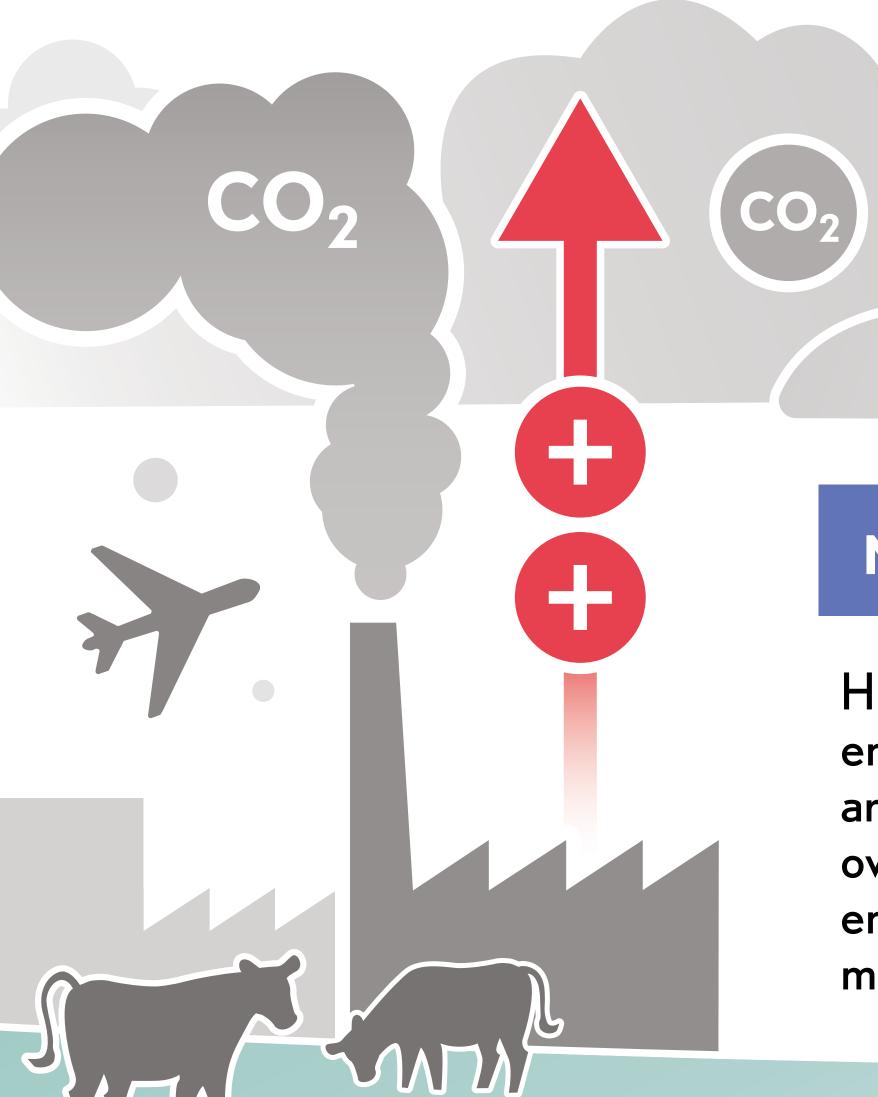
ppm = parts per million in volume







In addition to emission reductions, limiting human-induced climate change also requires that carbon dioxide is removed from the atmosphere.



## NET ZERO EMISSIONS

Human-induced carbon dioxide emissions are in balance with anthropogenic removals of CO<sub>2</sub> over a specific period. Net zero emissions must be reached by the middle of this century.

Humans can create carbon sinks e.g. by sequestering carbon into the soil and forests. Various kinds of technology solutions have also been suggested.

The removal methods often have side effects that may affect the quality and supply of water, food production or biodiversity.







# Risks and impacts of global warming are the higher the more the climate warms up.

Change in extreme weather events that cause damage from pre-industrial times 1850–1900

### **Temperature** Temperature of the hottest day in a decade increases (+°C) **Drought** Drought occurring once 3.1× $2 \times more$ 2.4× in a decade happens **x** times

## **Precipitation**

more frequently

What used to be the wettest day in a decade now occurs **x** times more frequently

## **Tropical cyclones**

Proportion of intense tropical cyclones increases (%)

