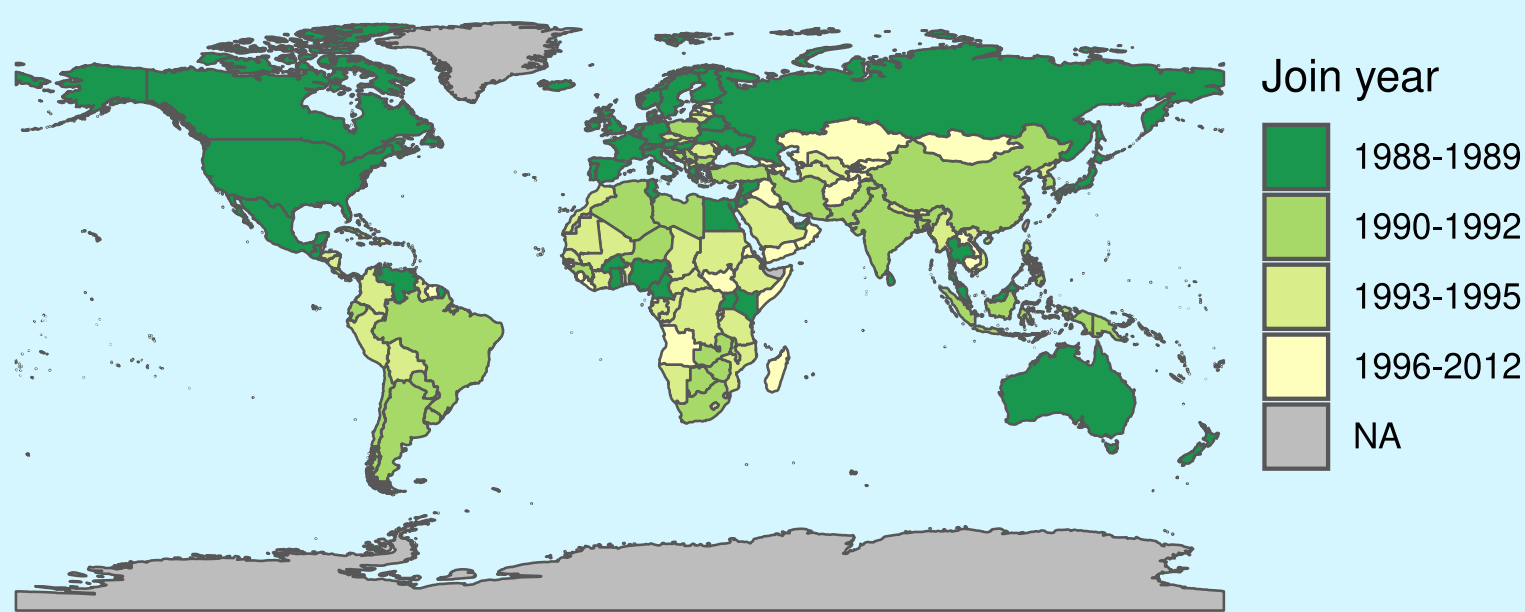


The ozone hole and what we have done about it

The ozone hole has been spotted and realised as a dangerous phenomenon in the late 1970s. It's defined as a lowered amount of ozone (O_3) in the atmosphere around Earth's polar regions. Since then, it's been regarded as a threat to our ecosystem because of it leading to an increased amount of dangerous UV light reaching us and therefore to the global warming.

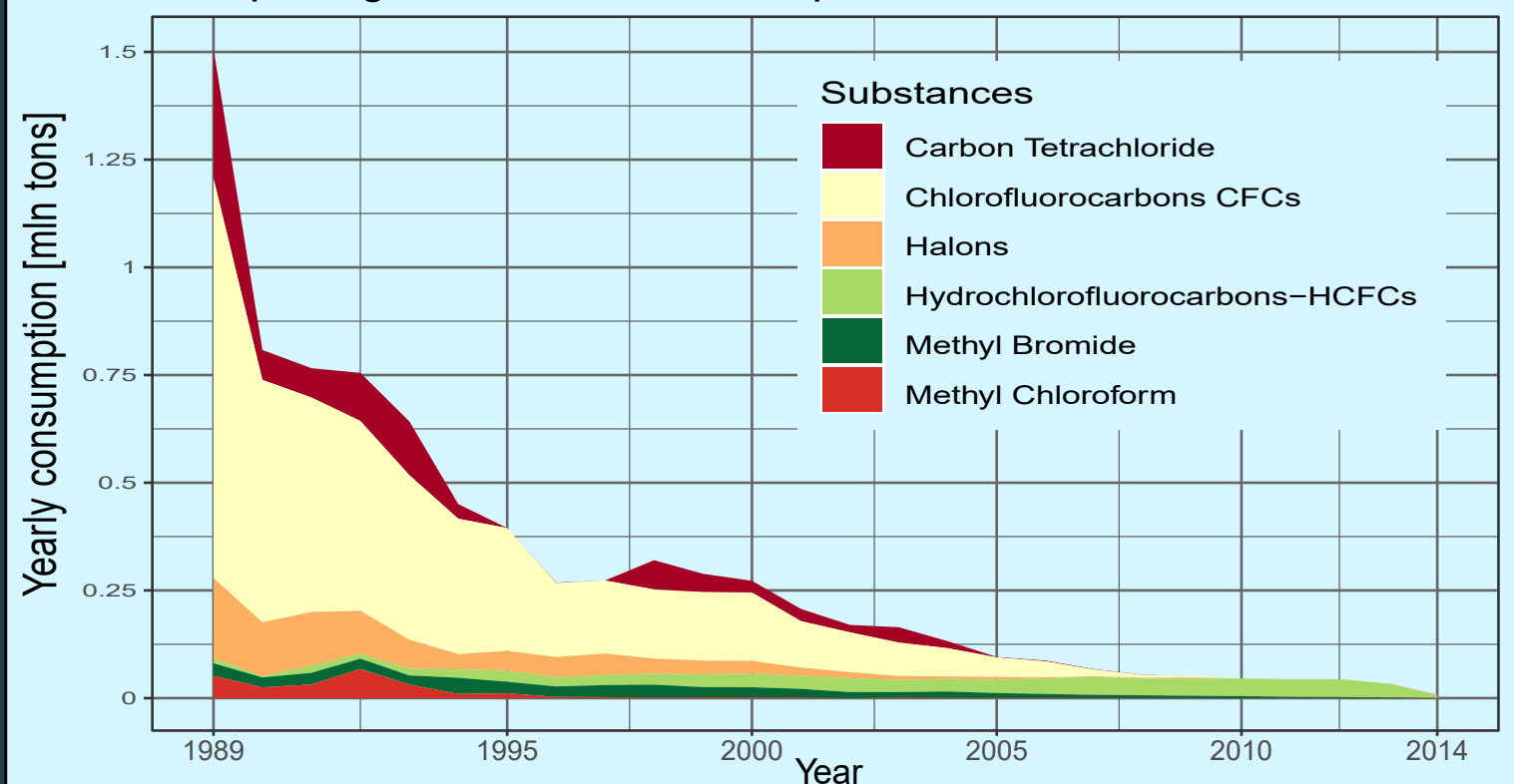
Montreal protocol joining worldwide



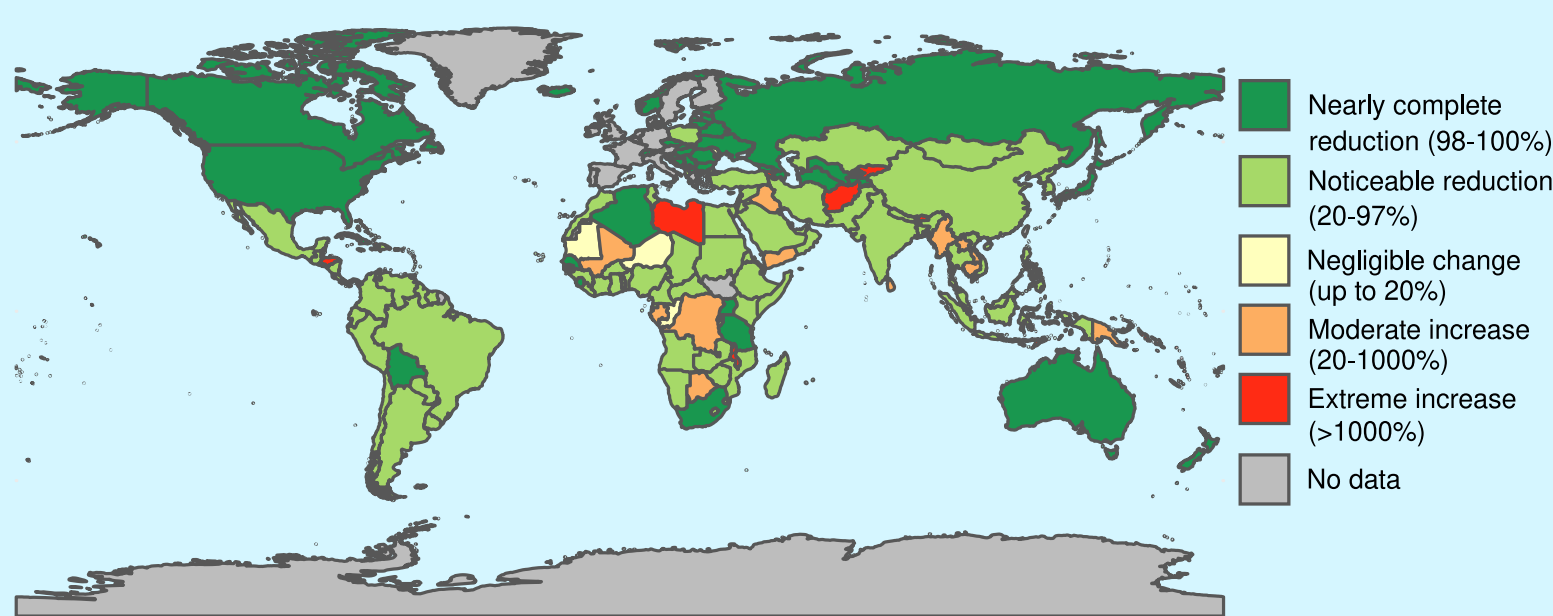
But what is it that actually harms the ozone layer? The so-called "ozone-depleting substances" include, among others, **freons**, or chlorofluorocarbons (**CFCs**), which would be vastly used as refrigerants, propellants and solvents before the Montreal Protocol came into existence. Since then, the use of them has been largely phased out or even prohibited in some countries. They've mostly been replaced with less harmful **HCFCs**. The graph you can see on the right visualises the amount of such substances used worldwide for the last 30 years. The actual amounts have been multiplied by respective ODP (Ozone Depleting Potential) values. Long story short, the larger the amount on the graph, the bigger impact on the ozone layer a substance has or used to have.

The Montreal Protocol on Substances that Deplete the Ozone Layer, also known simply as **the Montreal Protocol**, is an international treaty which was created as an attempt at trying to limit the negative impact we had on the ozone layer. It entered life at the turn of 1988 and 1989 and has since then been revised a total of 9 times, the last revision taking place in 2016 in Kigali. As of today, the protocol has been joined by nearly all countries in the world, making it, as said by Kofi Annan, former UN Secretary-General, "perhaps the single most successful international agreement to date".

Ozone-depleting substances consumption



Change in ozone depleting substances emission from year 1989 to 2014



You may wonder, has the Montreal Protocol actually worked? The answer is: yes, it has. The amount of ozone-depleting substances consumed worldwide has dropped drastically, with many of the countries which produced them the most (the USA, Russia and Japan, to name a few) reducing it almost completely. It's worth noting that even though countries such as Libya, Afghanistan, Guatemala or Kyrgyzstan have increased their respective emissions significantly, they didn't produce a lot to begin with, especially when compared to the largest countries, so that increase isn't something to be worried about that much.

What does it all mean? That the ozone hole can and will shrink back to how small it used to be when it was first observed. On the graph to the right you can see how its area fluctuates from year to year (with 2019 being even more exceptional due to abnormally high temperatures resulting in the ozone hole being smaller than expected). Even though the shrinkage may not be spectacular, it is visible. The red line is what we call a trendline. It shows general direction the values on the chart are heading. Here it's pointing down, which says that the ozone hole really is gradually shrinking. It means that the actions we, as the world, undertake, may really affect the environment and our Earth in general and, however small the impact might be so far, it may really be worth doing something.

Average area of the ozone hole in years 1979 – 2021

