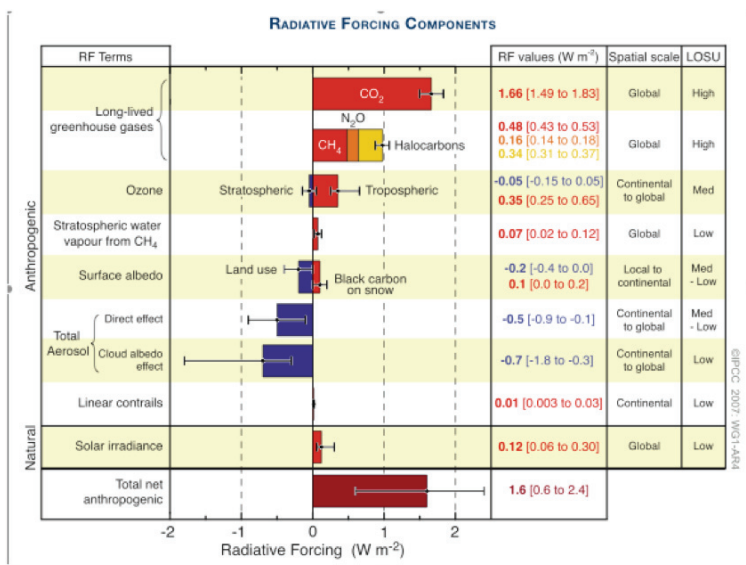
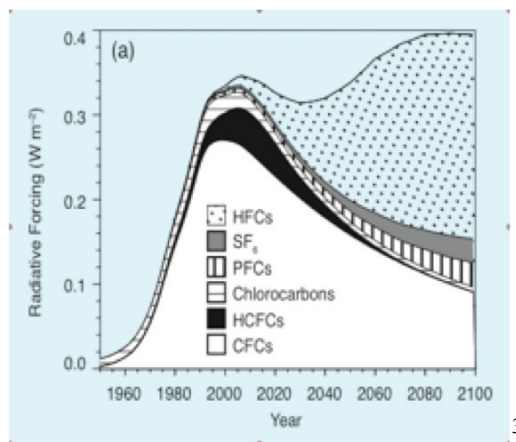


F-gases make up the vast majority of a chemical family known as halocarbons (carbon based chemicals containing either fluorine, chlorine, bromine and/or iodine). Halocarbons were responsible for 18% of global warming in 2005. 93% of that was down to F-gases. That works out to F-gases being responsible for 17% of global warming in 2005.



From this graphic you can see that the total anthropogenic (man-made) radiative forcing (the scientific measure of global warming) in 2005 was  $1.6 W/m^2$  (Watts per meter squared – a Watt is a measure of power which in this case is expressed as heat; so it could also be seen as heat per square meter). Halocarbons contributed  $0.34 W/m^2$ , but the negative forcing of stratospheric ozone means that in total it contributed  $0.29 W/m^2$ . Of this  $0.29 W/m^2$ , F-gases supplied  $0.27 W/m^2$ .

The major contributors to the 2005 F-gas climate chunk were CFCs (they're well known for their ozone depleting properties but they're also very powerful greenhouse gases). CFCs were banned in 1992 and replaced by HCFCs and now HFCs (also very powerful greenhouse gases). HFCs made only a small contribution to global warming in 2005. However, the concentration of HFCs in the atmosphere is growing extremely quickly (13-17%)<sup>2</sup> a year. The huge increase of HFCs is in danger of cancelling out any climate benefit that the decline of CFCs has. This is best shown in the graph below.



<sup>1</sup> 2007 Report - Working Group 1 of the International Panel on Climate Change (IPCC) – Summary for Policy Makers (p.4)

<sup>2</sup> [http://unfccc.int/files/methods\\_and\\_science/other\\_methodological\\_issues/interactions\\_with\\_ozone\\_layer/application/pdf/ipcc-sroc-2.pdf](http://unfccc.int/files/methods_and_science/other_methodological_issues/interactions_with_ozone_layer/application/pdf/ipcc-sroc-2.pdf) (Slide 1)

<sup>3</sup> 2006 IPCC/TEAP Special Report: Safeguarding the Ozone Layer and the Global Climate System – Chapter 1 (p.122)