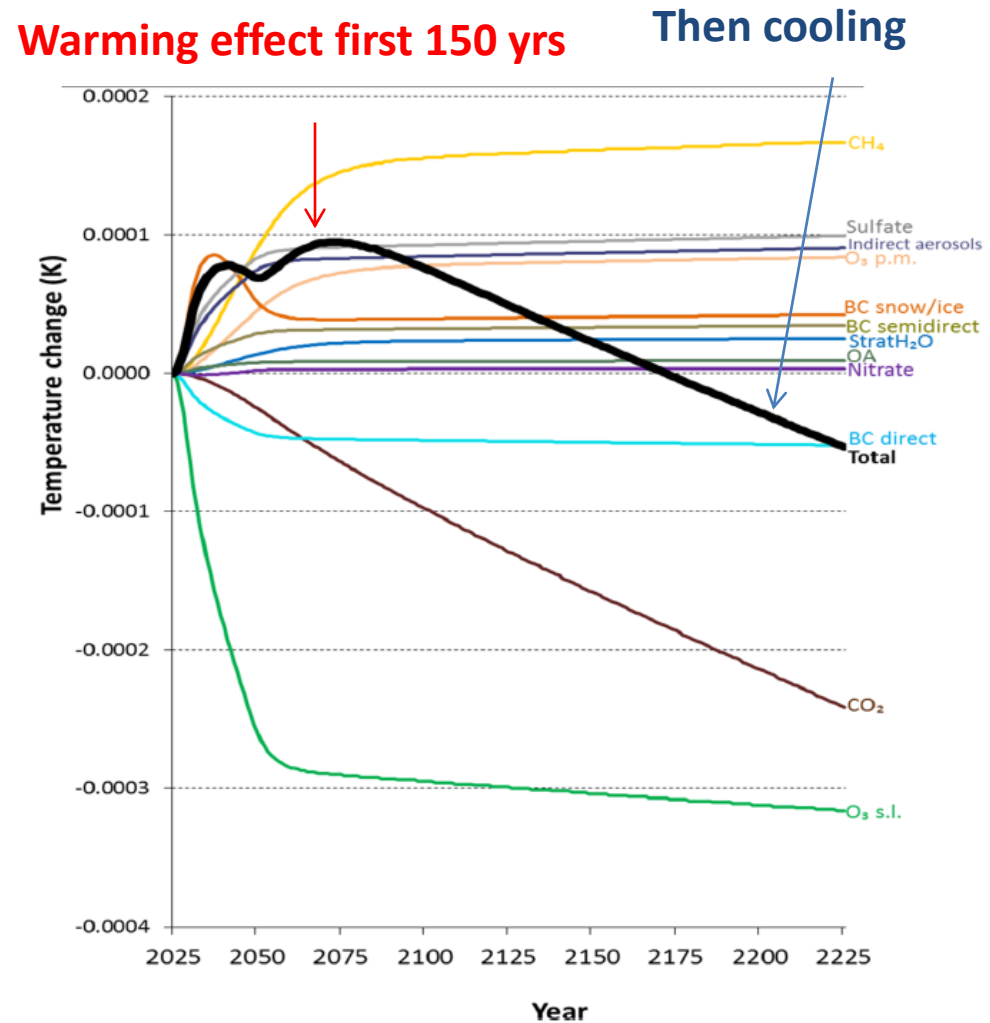


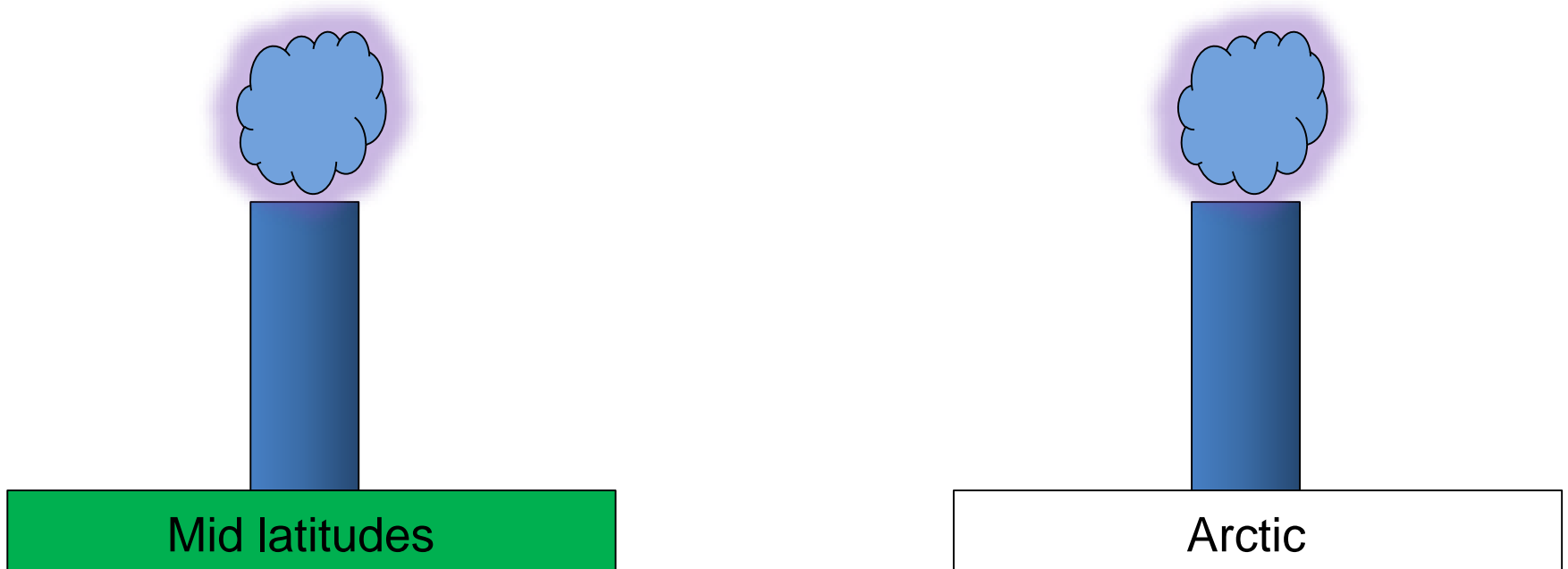
# Climate penalty for shifting shipping emissions to the Arctic



# The Arctic is especially sensitive to black carbon emissions within the region



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1 kg black carbon emitted in the Arctic causes **five times higher** Arctic surface temperature change than 1 kg emitted at mid-latitudes

# Remote black carbon climate forcing also affects Arctic temperature change

Arctic temperature response to within Arctic and remote climate forcing by black carbon from year 2010 on-road diesel in six emission source regions

