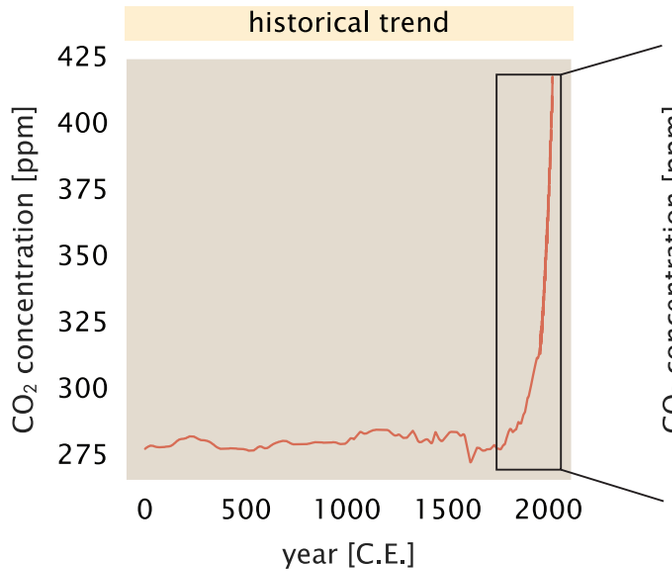
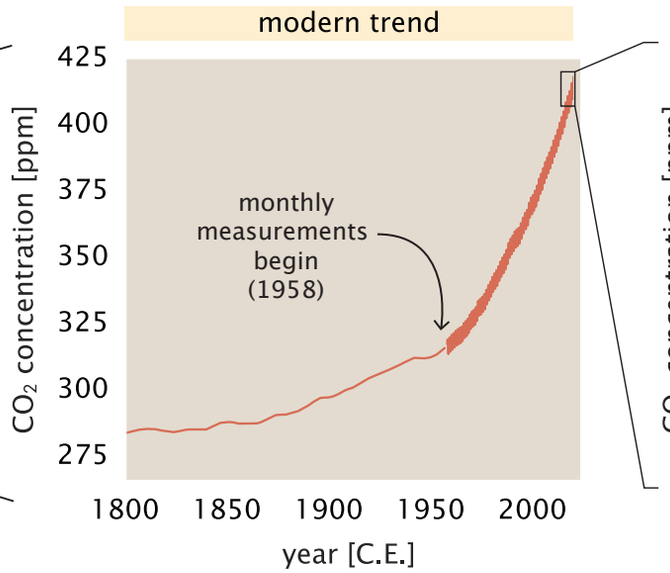
ATMOSPHERIC CO_2 IN THE PRE- AND POST-INDUSTRIAL ERA

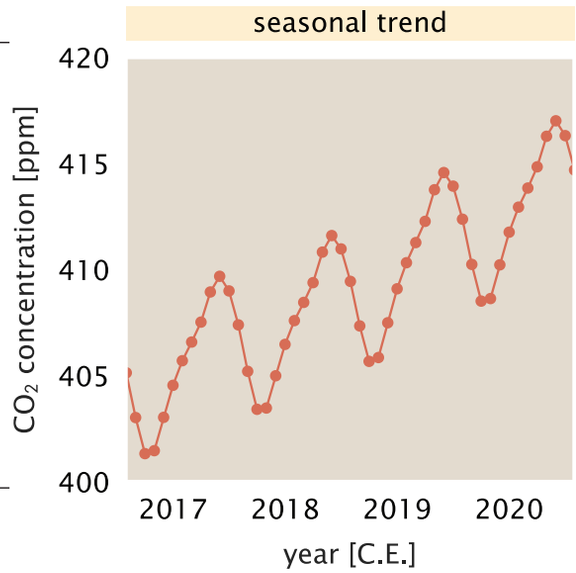
(A)



(B)

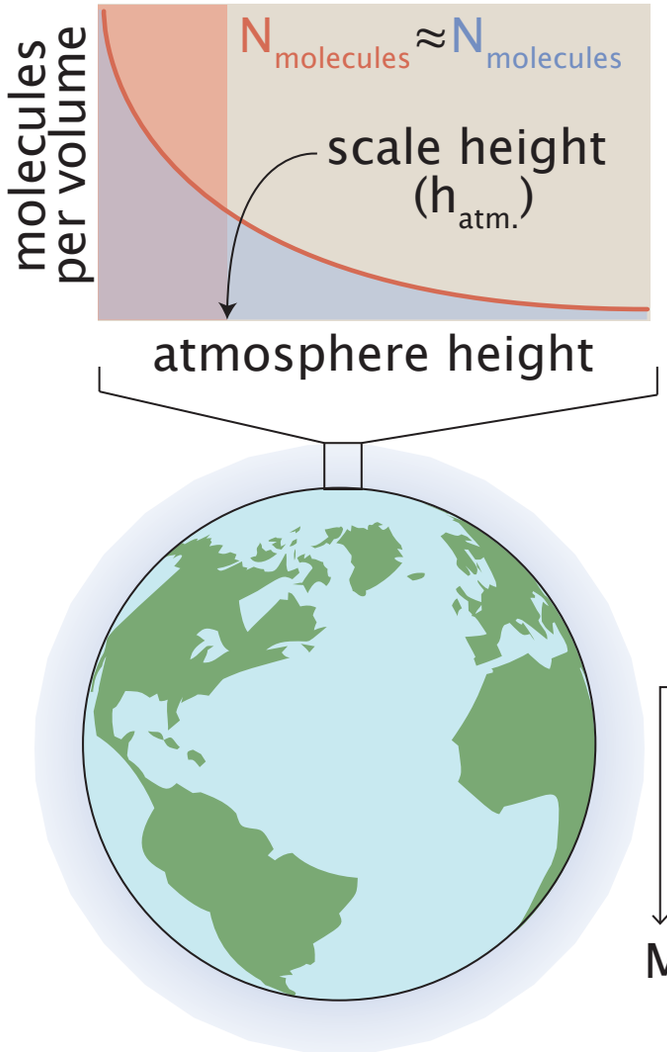


(C)



(D)

WHAT'S THE MASS OF CONTEMPORARY ATMOSPHERIC CO_2?



$h_{atm.} \approx 10$ km

$A_{earth} \approx f \times 10^8$ km^2

$V_{atm.} \approx A_{Earth} \times h_{atm.} \approx 10$ km $\times f \times 10^8$ km^2

$\approx f \times 10^9$ km^3

$\rho_{atm.}^{(sea\ level)} \approx f \times 10^{34}$ molecules / km^3

$N_{molecules} \approx V_{atm.} \times \rho_{atm.}^{(sea\ level)} \approx 10^{44}$ molecules

$c_{CO_2} \approx \frac{420\ CO_2\ molecules}{10^6\ molecules}$

$mw_{CO_2} \approx 44$ Da / molecule

$M_{CO_2} \approx N_{molecules} \times c_{CO_2} \times mw_{CO_2} \approx f \times 10^{15}$ kg CO_2