ATMOSPHERIC CO, IN THE PRE- AND POST-INDUSTRIAL ERA (A) (B) (C) historical trend modern trend seasonal trend 425 425 420 400 400 415 375 375 350 350 410 325 325 405 300 300 275 275 400 2000 2017 vear [C.E.] vear [C.E.] vear [C.E.] WHAT'S THE MASS OF CONTEMPORARY ATMOSPHERIC CO.? molecules per volume N_{molecules}≈N_{molecules} -h_{atm} ≈ 10 km scale height $A_{\text{earth}} \approx f \times 10^8 \text{ km}^2$ (h_{atm}) $V_{atm.} \approx A_{Earth} \times h_{atm.} \approx 10 \text{ km} \times f \times 10^8 \text{ km}^2$ $\approx f \times 10^9 \text{ km}^3$ atmosphere height $\rho_{atm.}^{(sea~level)} \approx f \times 10^{34}~molecules~/~km^3$ $\dot{N}_{\text{molecules}} \approx V_{\text{atm.}} \times \rho_{\text{atm.}}^{(\text{sea level})} \approx 10^{44} \, \text{molecules}$ $c_{CO_2} \approx \frac{420 \text{ CO}_2 \text{ molecules}}{10^6 \text{ molecules}}$ -mw_{co₂} ≈ 44 Da / molecule $M_{CO_3} \approx N_{molecules} \times c_{CO_3} \times mw_{CO_3} \approx f \times 10^{15} \text{ kg CO}_2$