

Question: how much additional energy does a 1 C degree rise store in the atmosphere?

Estimate:

mass of atmosphere  $\sim 5 \times 10^{18}$  kg

(sea level pressure \* Earth's surface area)/g

specific heat of atmosphere  $\sim 1$  J/g-C  
(air)

$Q = M c \Delta T \Rightarrow Q = 5 \times 10^{21}$  J, or 5000

EJ (sensible heat only)

1 Degree C stores  $\sim 96$  hurricane-days

Scale comparison: one day of hurricane

$\sim 52$  EJ

(latent heat only: 1.5 cm/day in 665 km radius—[www.aoml.noaa.gov/hrd/tcfaq/D7.html](http://www.aoml.noaa.gov/hrd/tcfaq/D7.html))

