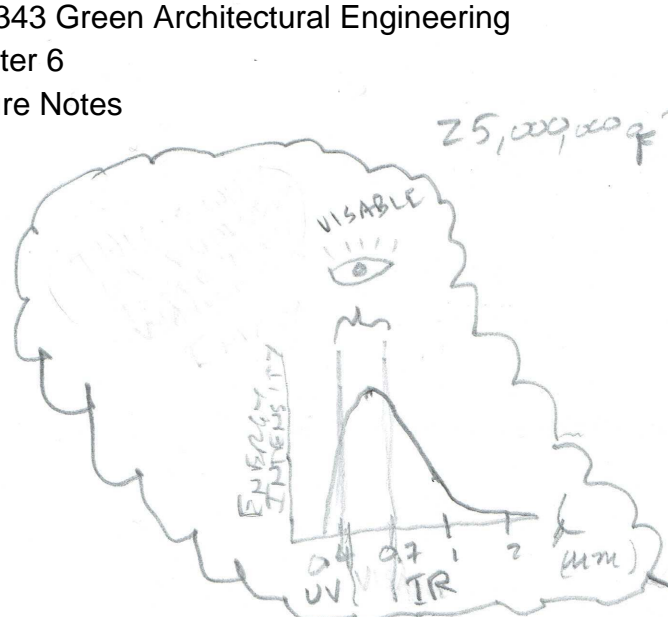


SOLAR GEOMETRY

JT Wunderlich PhD
 EGR343 Green Architectural Engineering
 Chapter 6
 Lecture Notes



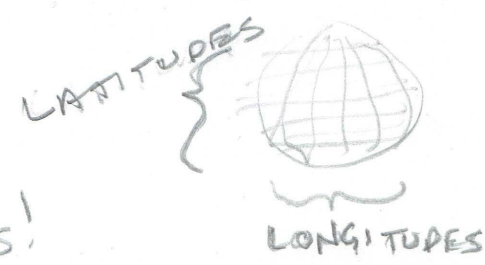
- Big! CAN FIT 1.3 MILLION EARTHS IN IT
- A GIANT HYDROGEN FUSION NUCLEAR REACTOR
- IT'S A STAR OF AVERAGE SIZE
- ~4.5 BILLION YEARS OLD
- WILL BURN OUT IN ~6 BILLION YEARS



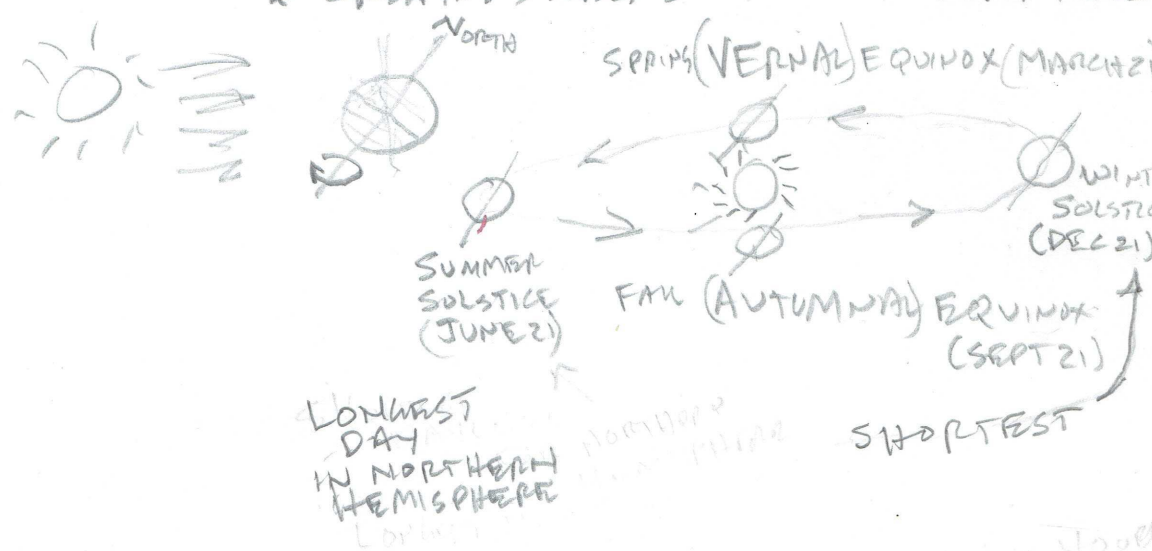
ELLIPTICAL EARTH ORBIT
 NOT SIGNIFICANT IN
 CREATION OF ΔT_{EARTH}



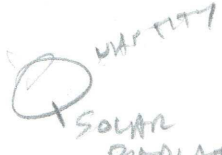
VERY SIGNIFICANT IN ΔT_{EARTH}
 (BY LATITUDE)



→ CREATES SEASONS!



"SOLAR CONSTANT"

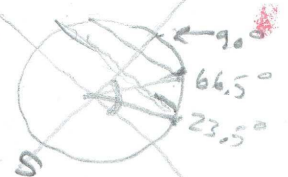


REACHING EARTH N

"LATITUDE ANGLE"



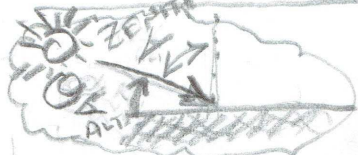
SOLAR RADIATION WITH RESPECT TO EQUATOR



"ALTITUDE ANGLE"

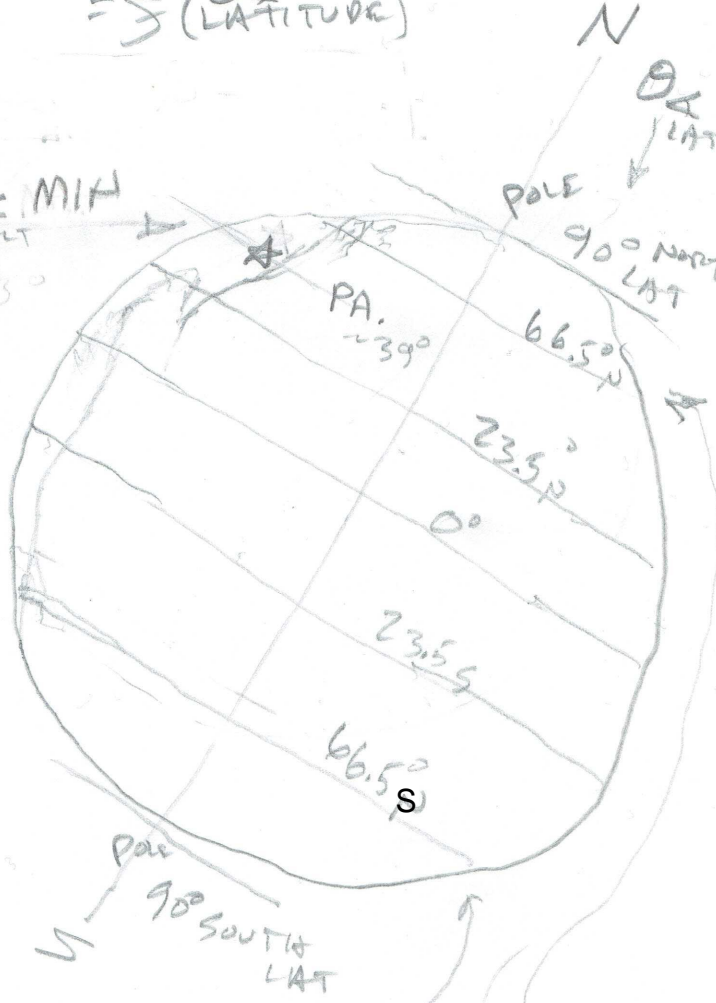
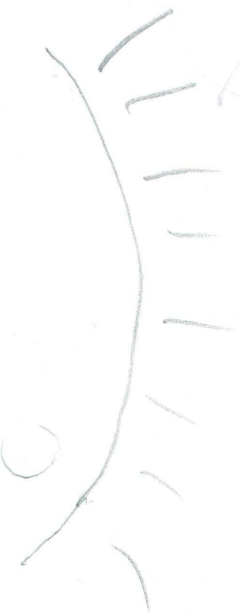


PARALS HIT EARTH'S = (LATITUDE)



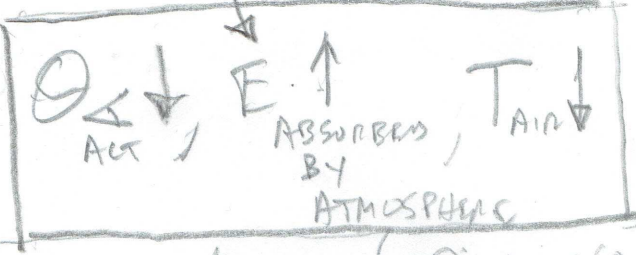
WINTER SOLSTIS

SUN AT LOWEST ALT. MIN



BECAUSE MORE ATMOSPHERE TO GO THROUGH

WINTER



ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
ANTARCTIC CIRCLE

LAT > 66.5 N
24 HOURS OF SUN ON SUMMER SOLSTIS
24 HOURS OF DARK ON WINTER

@ 23.5 N FURTHEST NORTH SUN CAN BE DIRECTLY OVERHEAD

SUN PATHS →

SUMMER

FALL / SPRING

WINTER



ALTITUDE

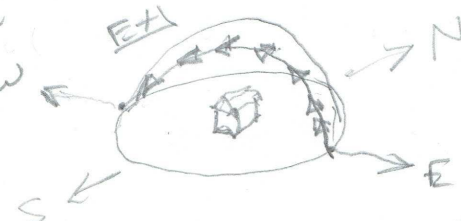
ALTITUDE

AZIMUTH



"SOLAR DOME"

ETX = SOLAR PATH FOR EQUINOX



"SUN PATH DIAGRAMS"

PATHS FROM SOLAR DOME PROTECTED HORIZONTAL (APPROX A)



VERTICAL (APPROX B)



BOOK ON PROTECTOR

FOR LAT'S 0°, 4, 8, 12, 16, 20... 68.9 WE @ 40° NORTH