SEVENTH WEEK
ALAN MINOUEI

TASK 1

Solar radiation is radiant energy emitted by the sun from a nuclear fusion reaction that creates electromagnetic energy. The spectrum of solar radiation is close to that of a black body with a temperature of about 5800 K. About half of the radiation is in the visible short-wave part of the electromagnetic spectrum. The other half is mostly in the near-infrared part, with some in the ultraviolet part of the spectrum. The solar radiation we receive on the Earth is attenuated both in spectral distribution and in total irradiance because of dispersion and absorption phenomena.

The solar radiation reaching the Earth's surface can be divided into two types of solar radiation: Direct beam solar radiation and diffuse solar radiation.

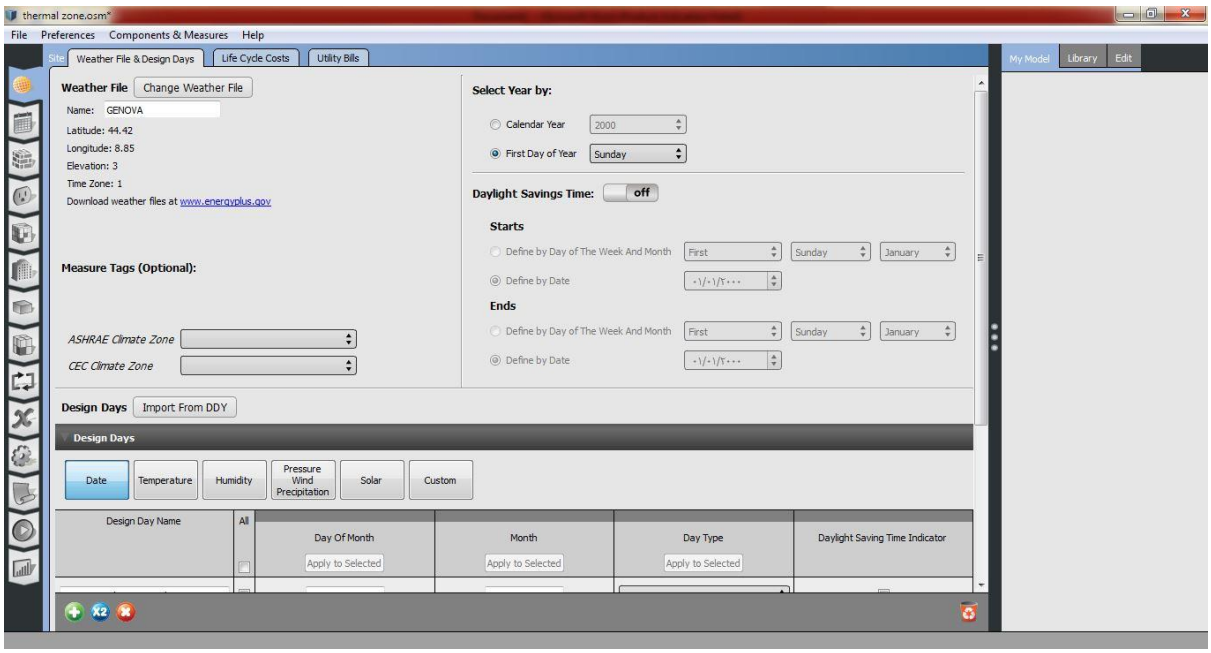
As sunlight passes through the atmosphere, some of it enters the surface of the Earth direct and undisturbed - the so-called beam solar radiation. Beam solar radiation throws sharp shadows and can be focused. Another component of sunlight is the diffuse solar radiation, on its way through the atmosphere it is absorbed, scattered, or reflected by dust, water vapor, clouds, pollutants, etc. Diffuse solar radiation does not throw sharp shadows and cannot be focused. The sum of the diffuse and direct beam solar radiation is called global solar radiation.

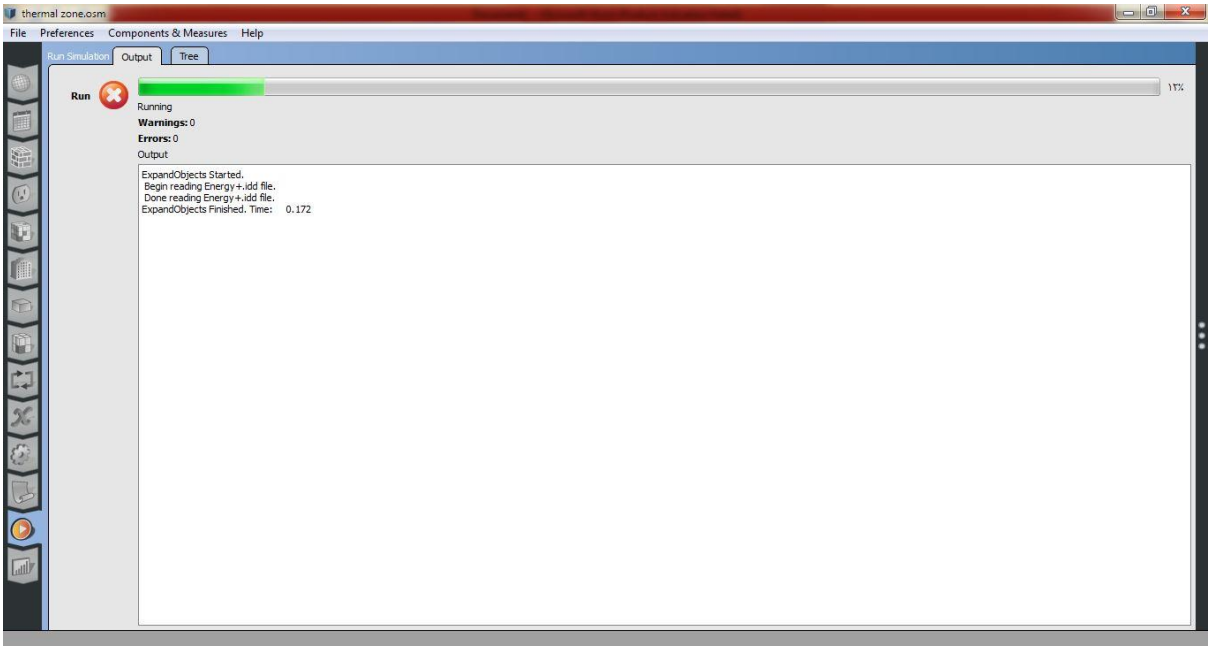
Solar radiation absorption is due to some atmospheric components, especially ozone, water and carbon dioxide. Stratospheric ozone absorbs almost all the ultraviolet component of the solar radiation for wavelength less than 0.29 μm, water vapor has important absorption bands in the infrared field, centered at 1.0, 1.4, and 1.8 μm. Over 2.5 μm the atmosphere becomes practically opaque to solar radiation for the strong absorption due to water and carbon dioxide.

The sun to the zenith crosses the minimum thickness of the atmosphere; the sun with an elevated zenith angle crosses a large thickness of the atmosphere. The solar radiation, available on the Earth’s surface for conversion in other energy forms, depends on the sun position, the weather condition, the site altitude over the sea level, and the daylight hours.

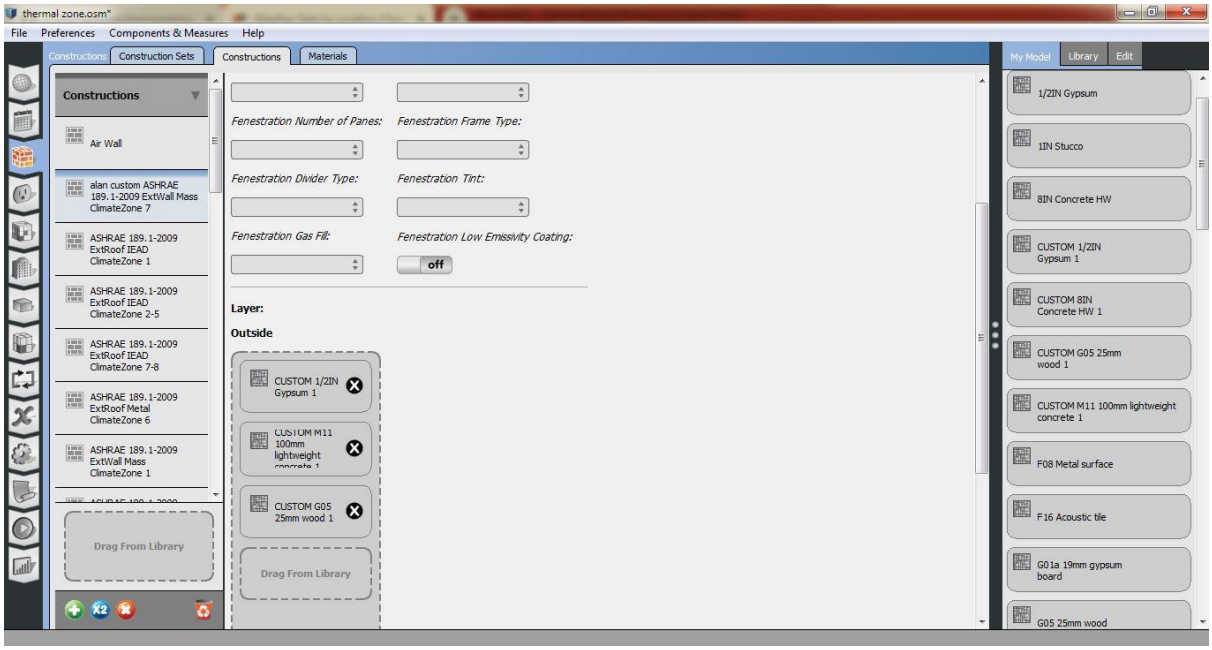
TASK 2

Download ddy and epw files of our location and importing them into open studio and running



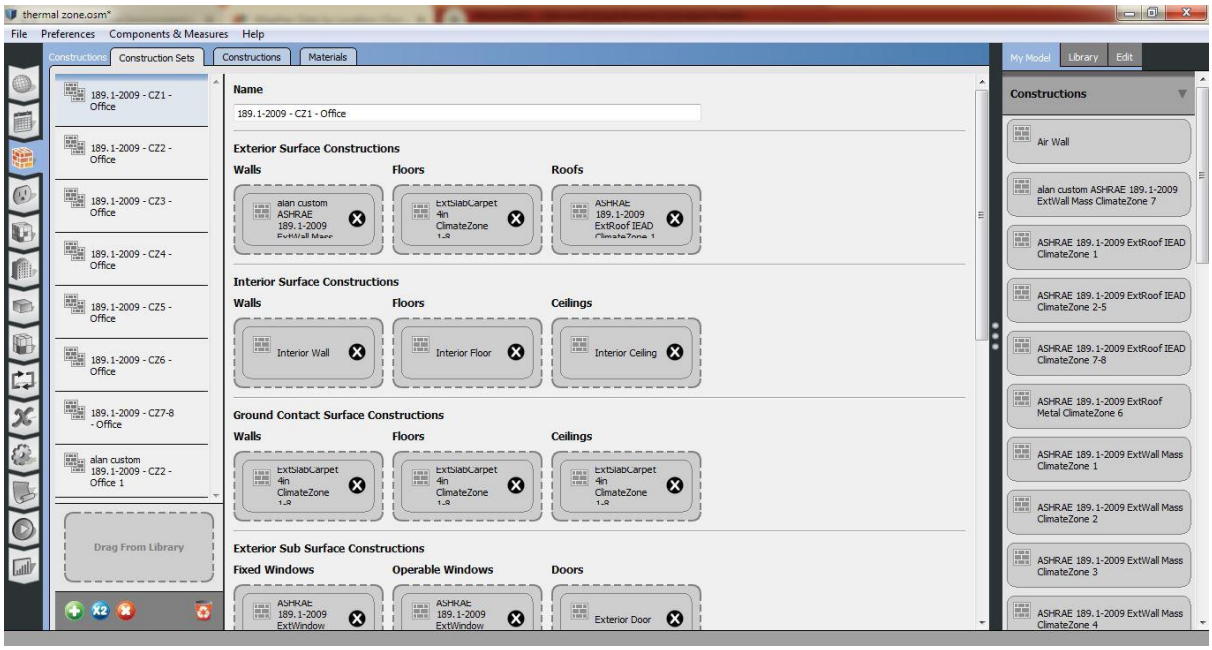


In constrictions tab in constriction sets part starting to customize the building and rename it.



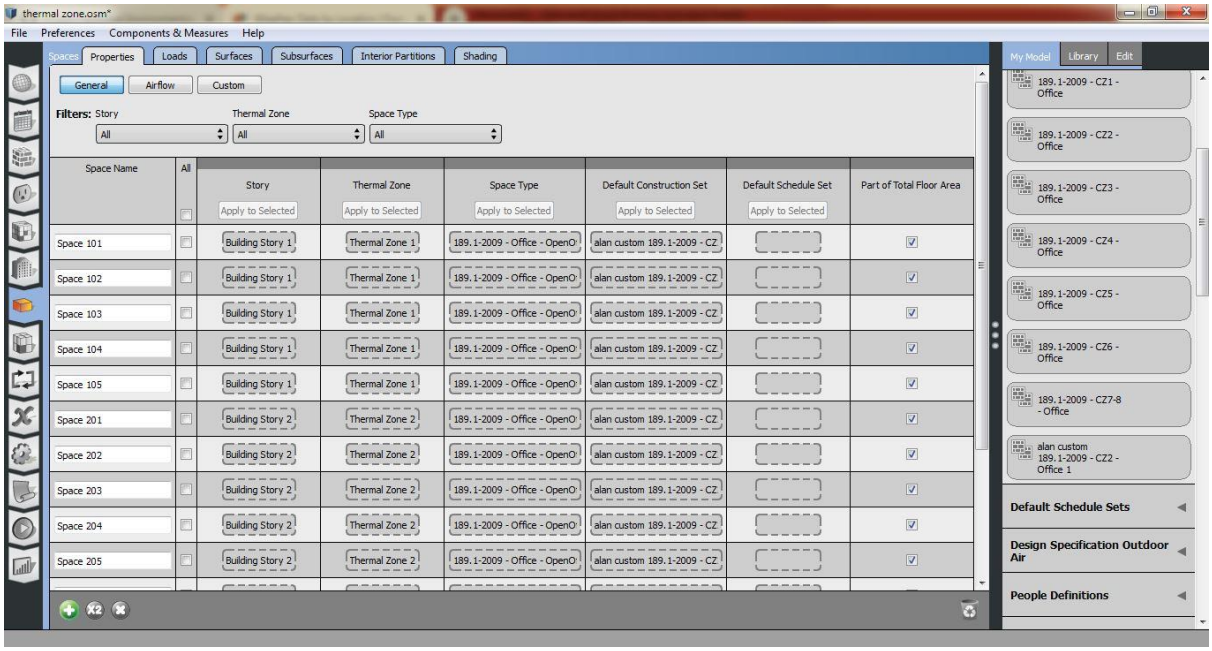
Then starting to change the wall package in construction tab

Then start to determine the type of materials if you don't want the defaults in material tab and insert it into the customized package in constructions tab

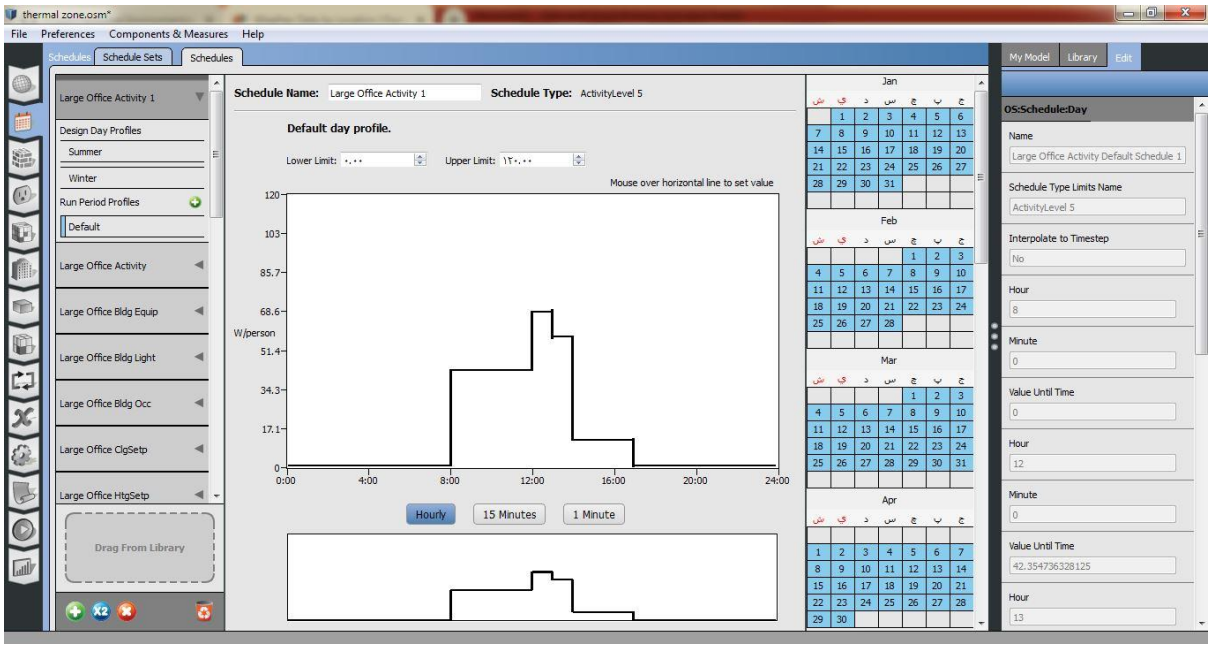


Then insert the wall in the building data

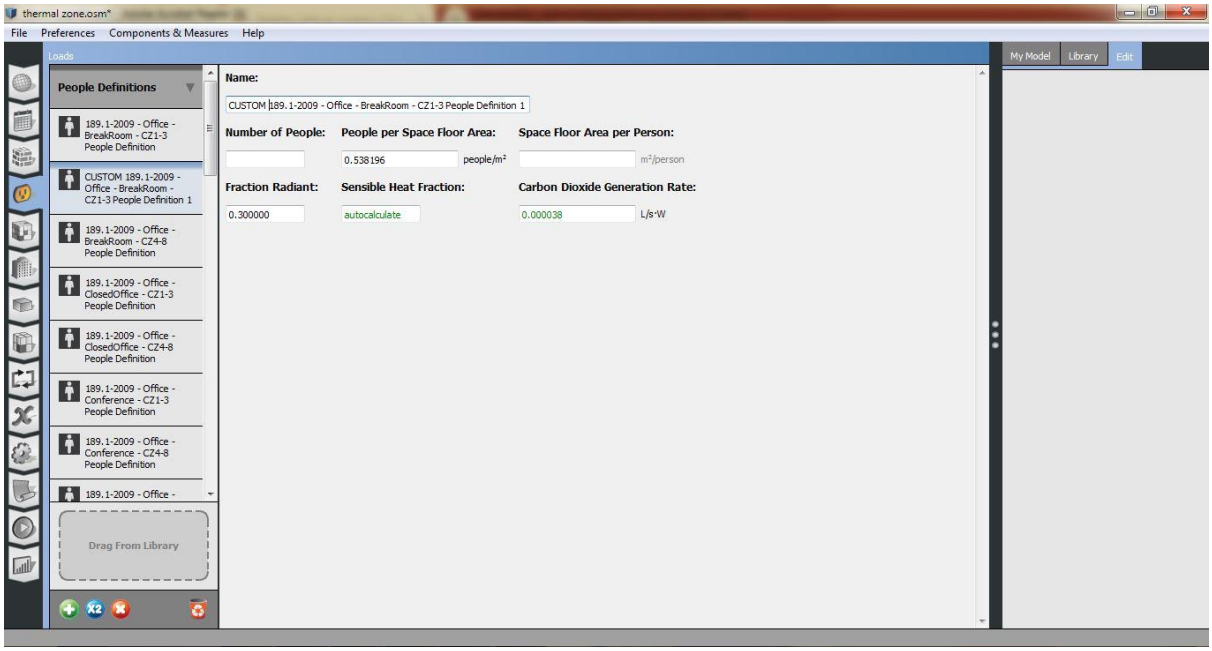
The next step is going to spaces tab and applies the customized layer to the whole building



Then Return to schedule sets to enter all the information relating to activities, equipments, etc and their schedules



Then going to the loads command to change other specifications


thermal zone.osm*
File
Preferences
Components & Measures
Help
Loads
My Model
Library
Edit
People Definitions
189.1-2009 - Office - BreakRoom - CZ1-3 People Definition
CUSTOM 189.1-2009 - Office - BreakRoom - CZ1-3 People Definition 1
189.1-2009 - Office - BreakRoom - CZ4-8 People Definition
189.1-2009 - Office - ClosedOffice - CZ1-3 People Definition
189.1-2009 - Office - ClosedOffice - CZ4-8 People Definition
189.1-2009 - Office - Conference - CZ1-3 People Definition
189.1-2009 - Office - Conference - CZ4-8 People Definition
189.1-2009 - Office -
Drag From Library
Name:
CUSTOM 189.1-2009 - Office - BreakRoom - CZ1-3 People Definition 1
Number of People:
People per Space Floor Area:
0.538196
people/m²
Space Floor Area per Person:
m²/person
Fraction Radiant:
0.300000
Sensible Heat Fraction:
autocalculate
Carbon Dioxide Generation Rate:
0.000038
L/s·W