4.401/4.464 Environmental Technologies in Buildings – Assignment 2

Instructor: Christoph Reinhart

Due Date: Friday of week 3

Type: This is an individual assignment.

Shading Studies and Sun Path Diagrams

Task 1 Direct Shading

The objective of this assignment is to validate the results of direct shading studies provided by DIVA/Radiance and other tools. To do so, you are asked to take a photo of an object of your choice outside at least twice at different times of day under clear sky conditions. You are then asked to model the object in Rhino and generate two clear sky visualizations under the same sky conditions from about the same perspective as the photo. Present your findings. Tips: (a) Remember that we are currently in daylight savings time. (b) Be sure to carefully align your physical model using for example a smartphone compass. An example study is shown below.
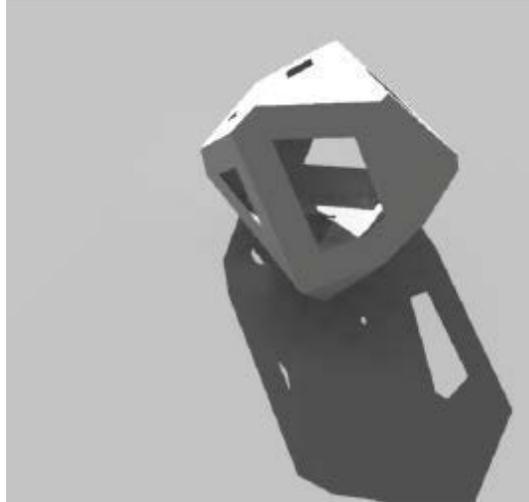

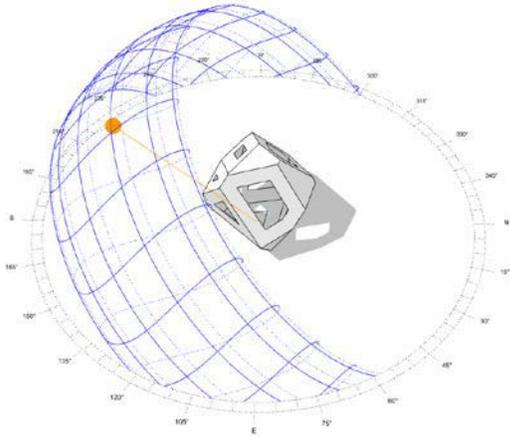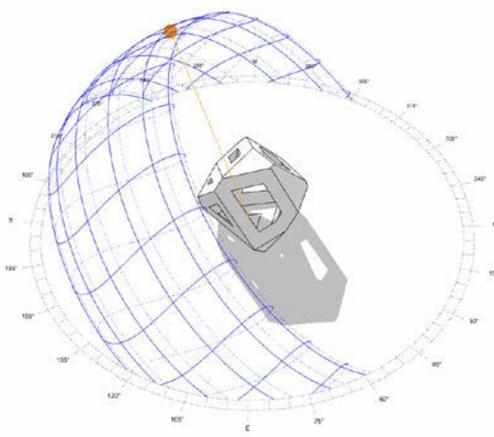September 8, 12pm Photo

September 8, 3:45pm Photo

September 8, 12pm DIVA/Radiance
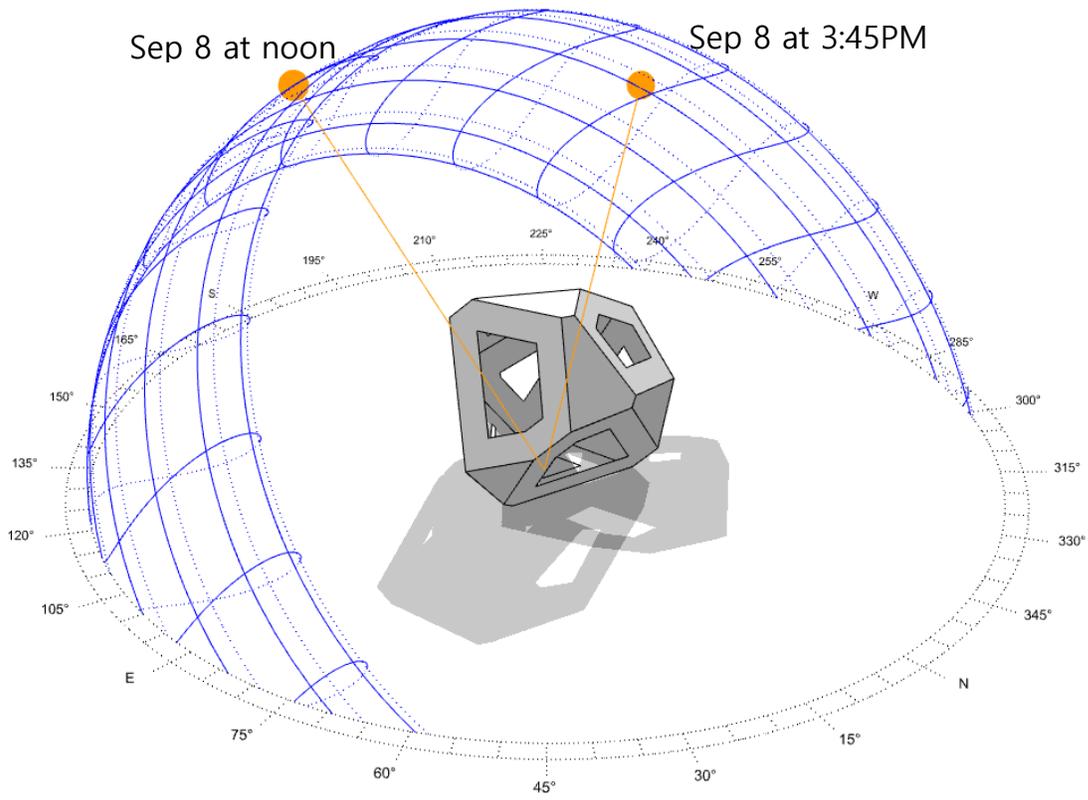

September 8, 3:45pm DIVA/Radiance

September 8, 12pm DIVA/Grasshopper

September 8, 3:45pm DIVA/Grasshopper

Task 2 Annual Sun path diagram

Show an annual sun path diagram of your object using DIVA Grasshopper and mark the two times in the year when the photos from Task 1 were taken. An example result is shown below.

Sep 8 at noon

Sep 8 at 3:45PM

195° 210° 225° 240° 255°

S

165°

285°

150°

W

300°

135°

120°

315°

105°

330°

E

345°

N

75°

15°

60°

30°

45°

Daily Sunpath Diagram in DIVA 4

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