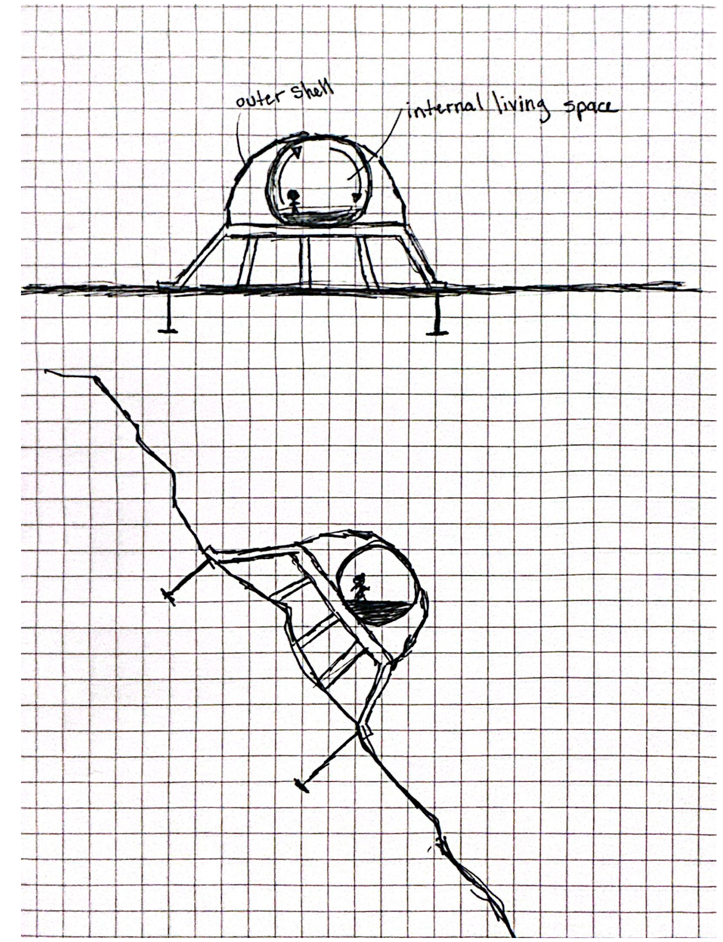
Connor Ferriter
1/17/25
ARCH 565
Computational Journal 1

Typology: Overnight Hiking Shelter
Location: Lake Clark National Park and Preserve, Alaska

Site

Precedent

Sketches



For this project I want to design a "walking" shelter in Lake Clark National Park in Alaska. The structure would have motorized legs that would allow it to move throughout the park. The design itself would contain an outer and inner shell, the inner shell would be attached using gyroscope technology allowing the floor to stay parallel no matter the orientation of the outer shell.

LiDAR Site Analysis

To respond to growing needs for high-quality elevation data across the United States, the U.S. Geological Survey 3D Elevation Program (3DEP) is systematically completing acquisition of nationwide lidar (IfSAR in AK) by 2023 to provide the first-ever national baseline of consistent high-resolution elevation data – both bare earth and 3D point clouds – collected in a timeframe of less than a decade.

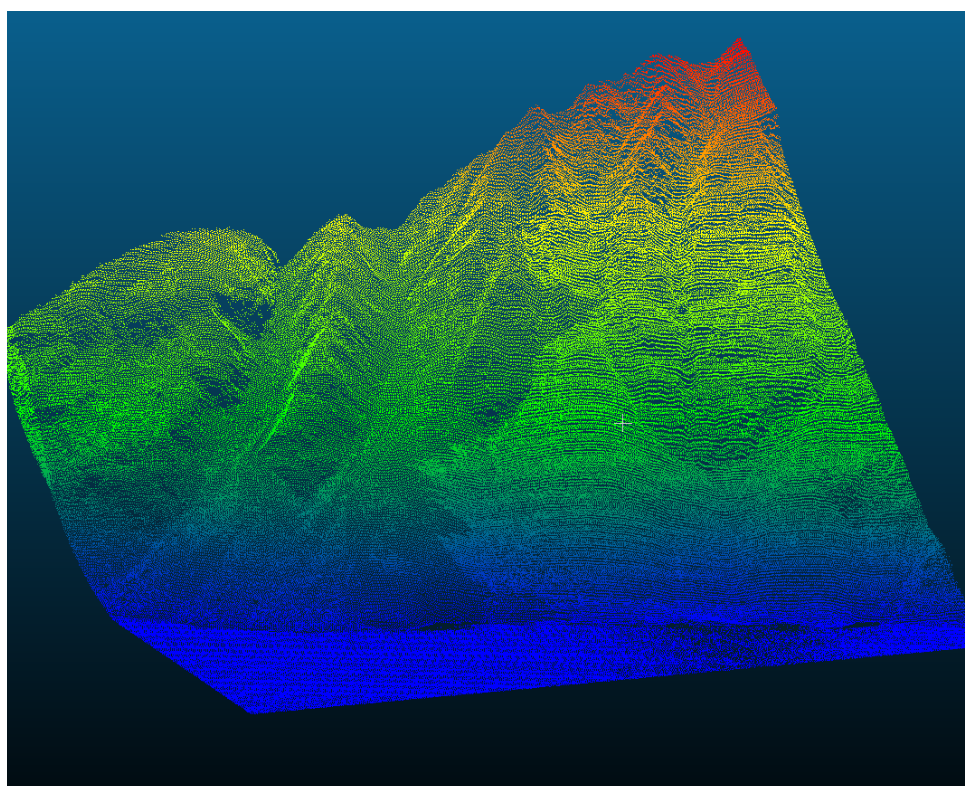
USGS science for a changing world

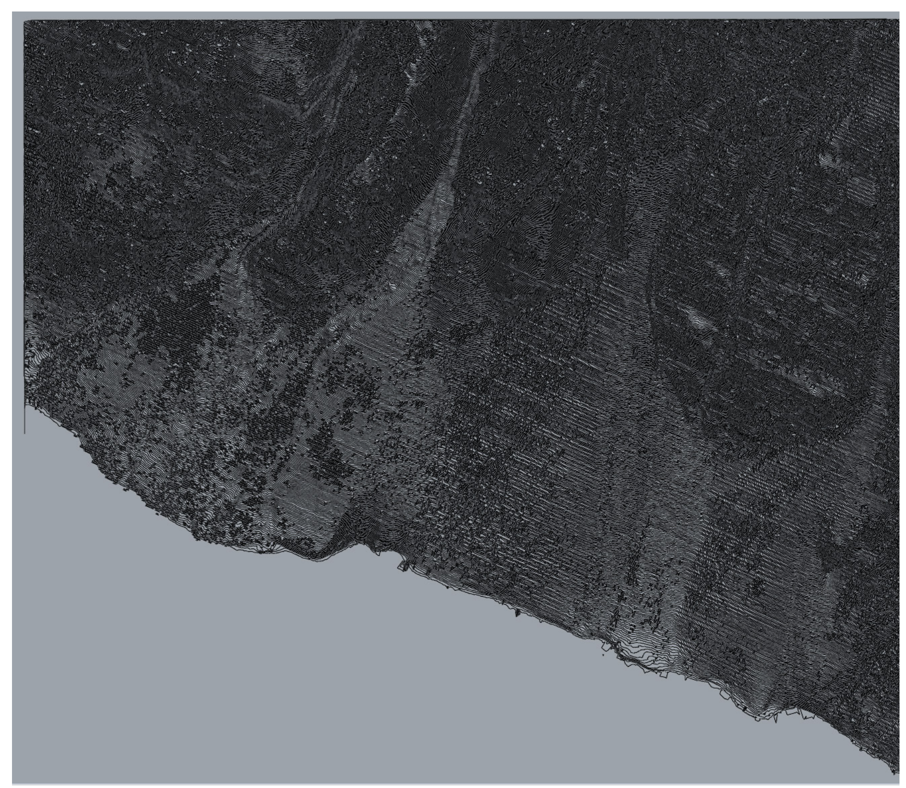
USGS is currently making 3DEP lidar point cloud data available via an Amazon Web Services (AWS) S3 Requester Pays Bucket, and as an AWS Public Dataset. To learn more about 3DEP and AWS see this USGS press release: *USGS 3DEP Lidar Point Cloud Now Available as Amazon Public Dataset*.

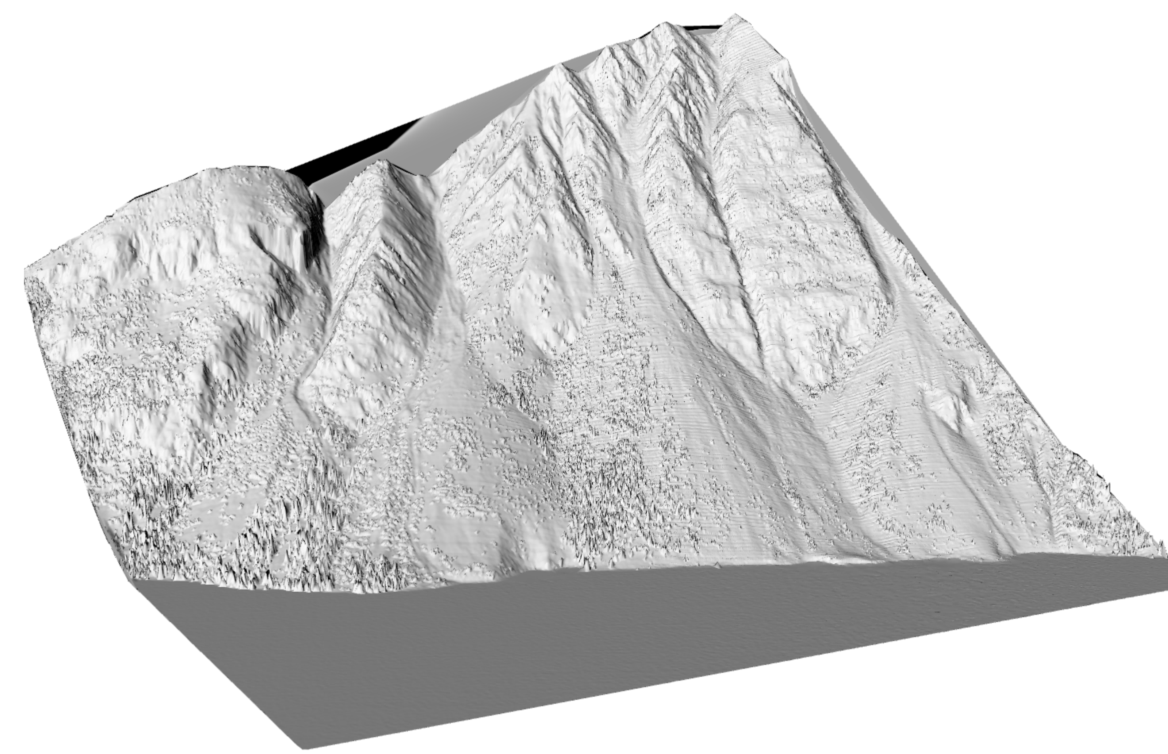
Consistent with OpenTopography's mission of making high resolution topography data easier to discover and use, we are leveraging the USGS 3DEP move to AWS to provide a layer of value-added services that enable our users to subset, grid, download, and/or visualize any portion of the USGS 3DEP collection.

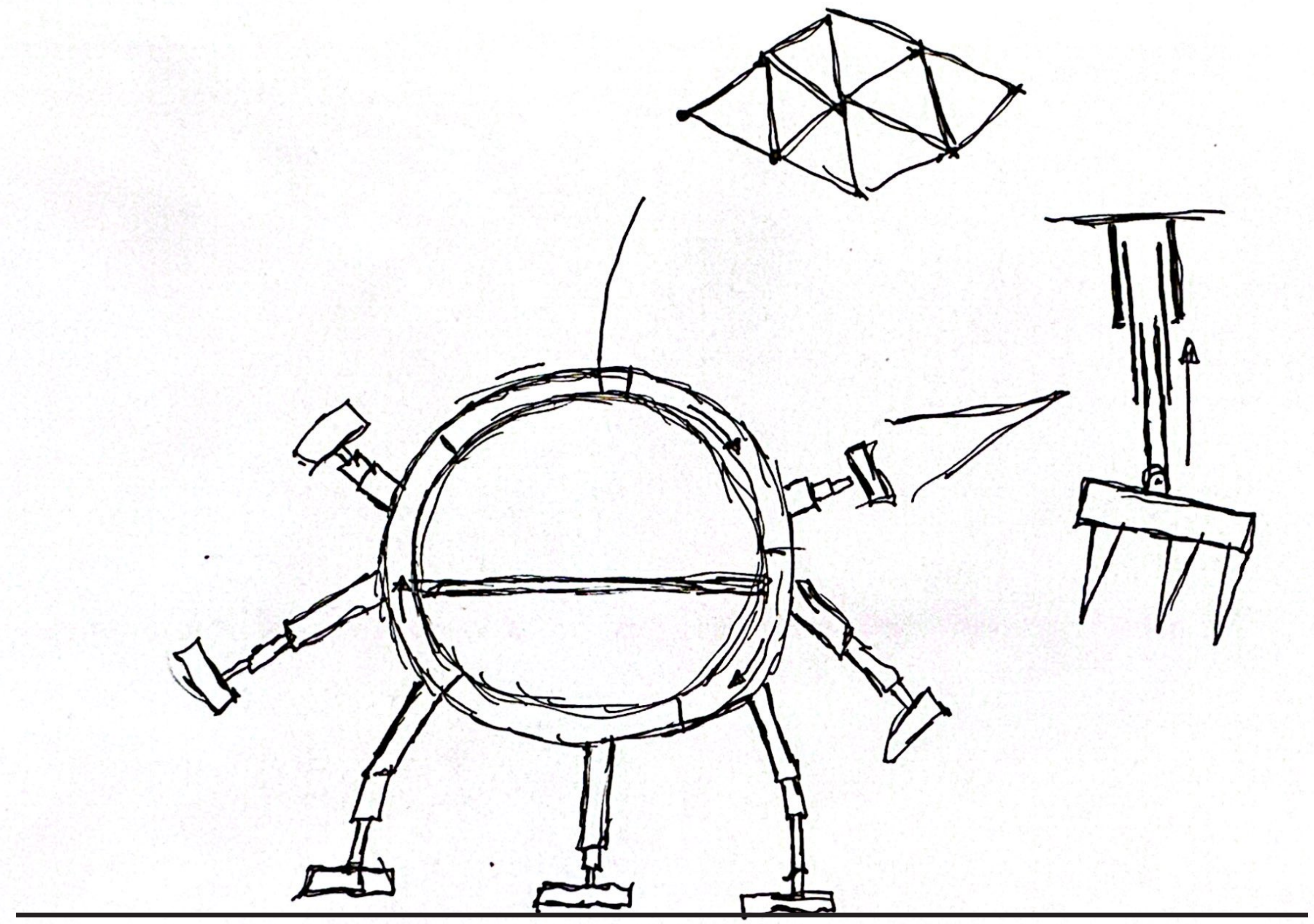
Total points: 14,054,081,536 pts	*Survey Area*: 11,521 km^2	*Point Density*: 1.22 pts/m^2	*Survey Date*: 05/21/2008 - 09/22/2008
Full Metadata	*Use Constraints*:	*Use License*:	*Publication Date*: 09/23/2014

Other Available Data Products: 3DEP 1 meter hydro-flattened DEMs | usgs.entwine.io | Bulk Download

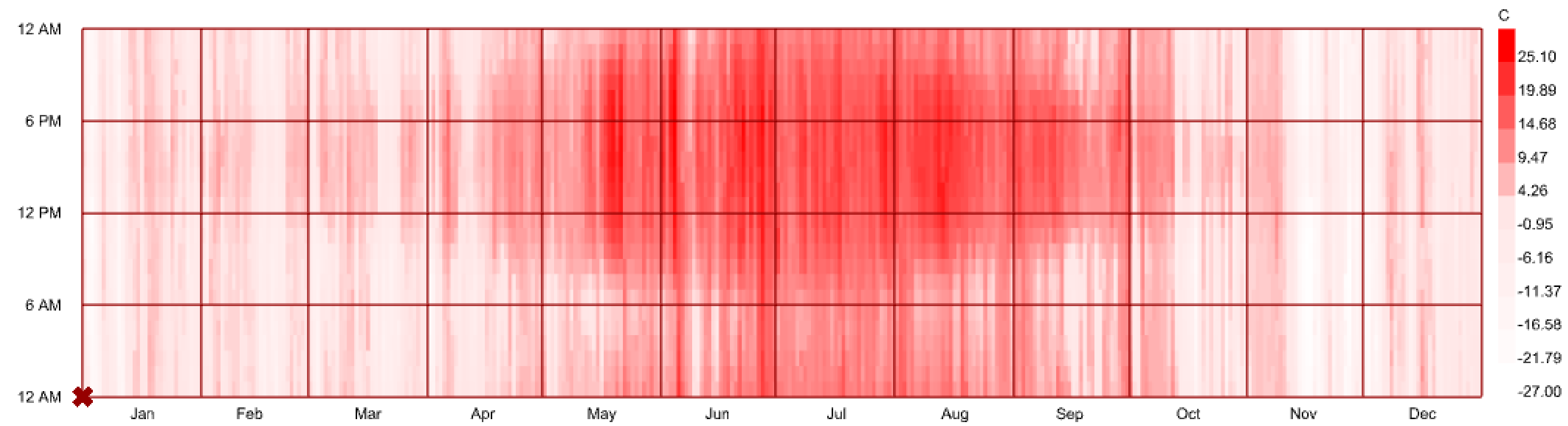




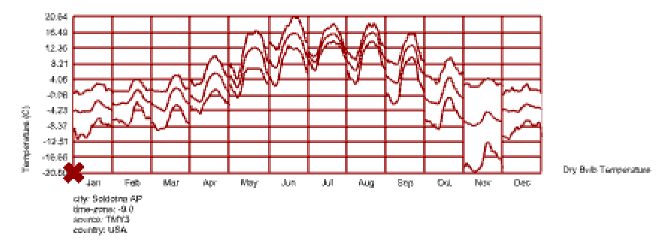


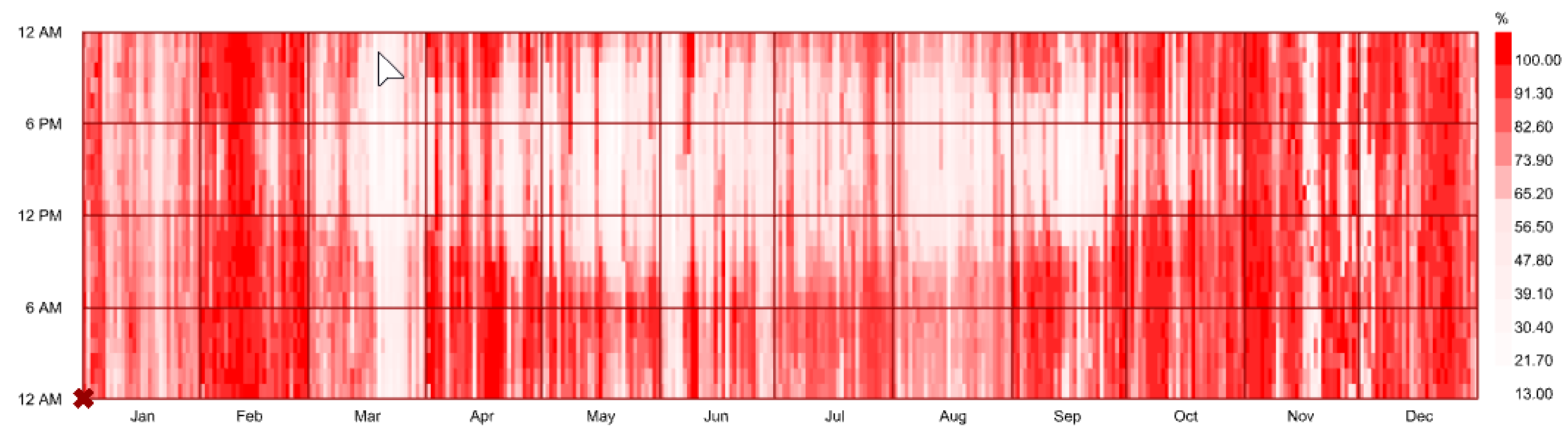


Journal 5: LadyBug



Dry Bulb Temperature (C)
1/1 to 12/31 between 0 and 23 @1
city: Soldotna AP
time-zone: -9.0
source: TMY3
country: USA





Relative Humidity (%)
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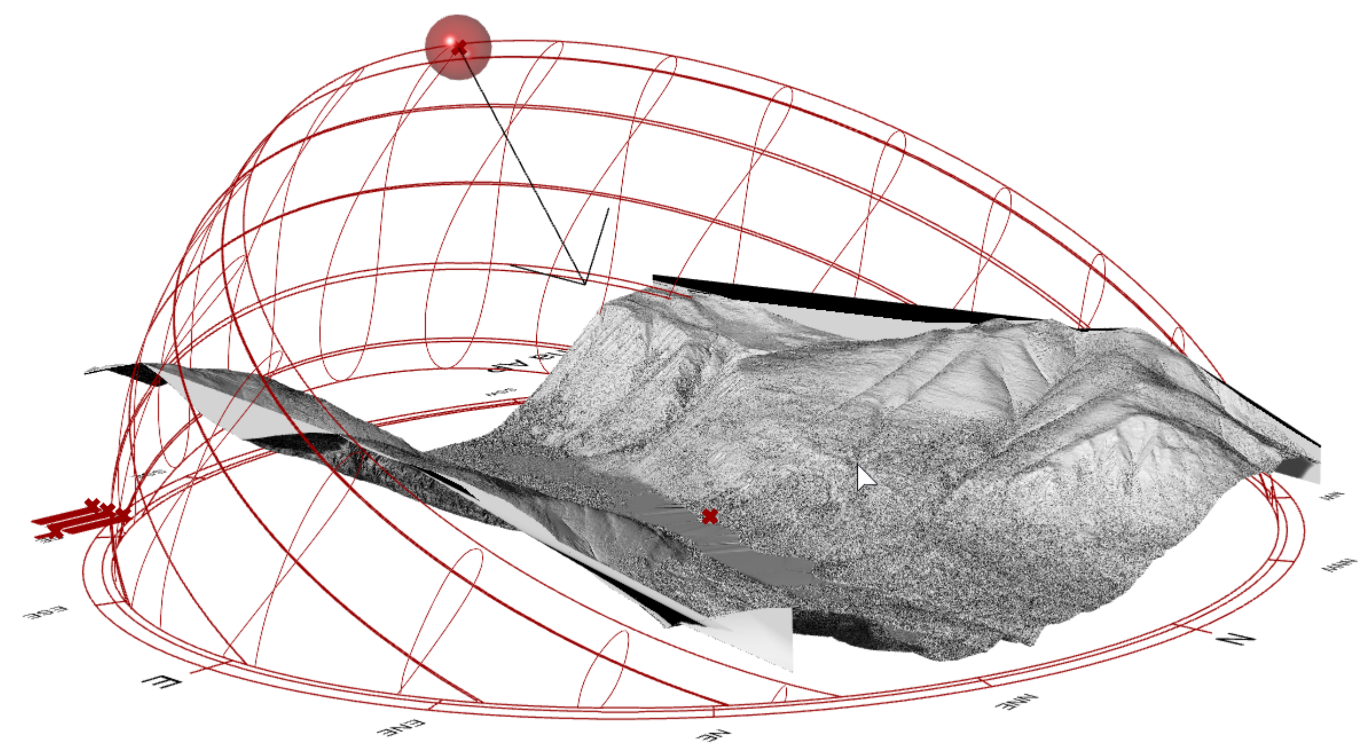
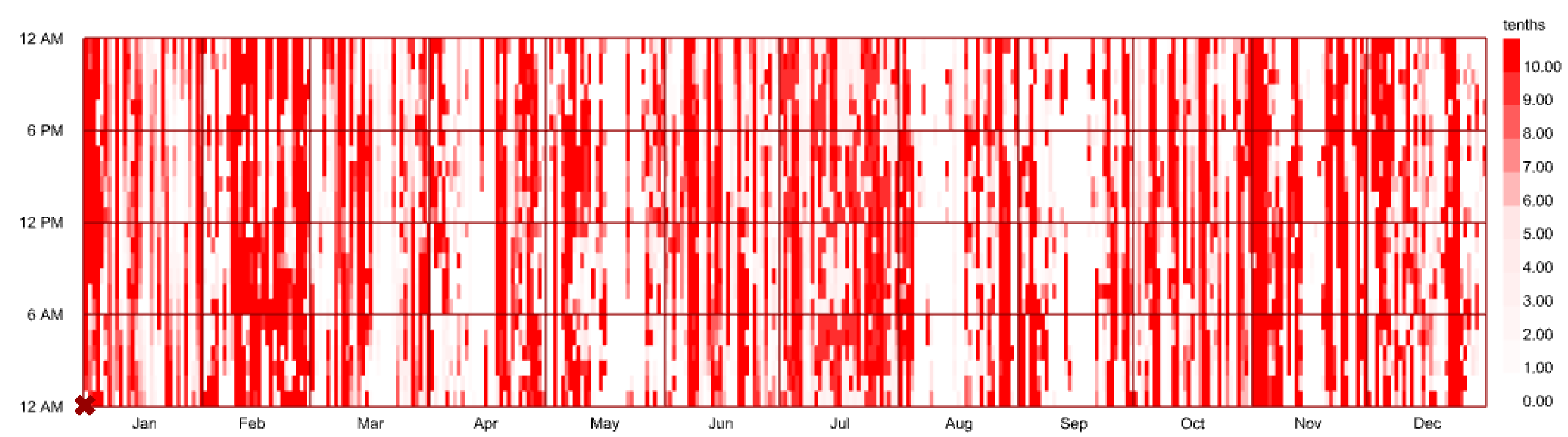
time-zone: -9.0
source: TMY3
country: USA





Total Sky Cover (tenths)
1/1 to 12/31 between 0 and 23 @1
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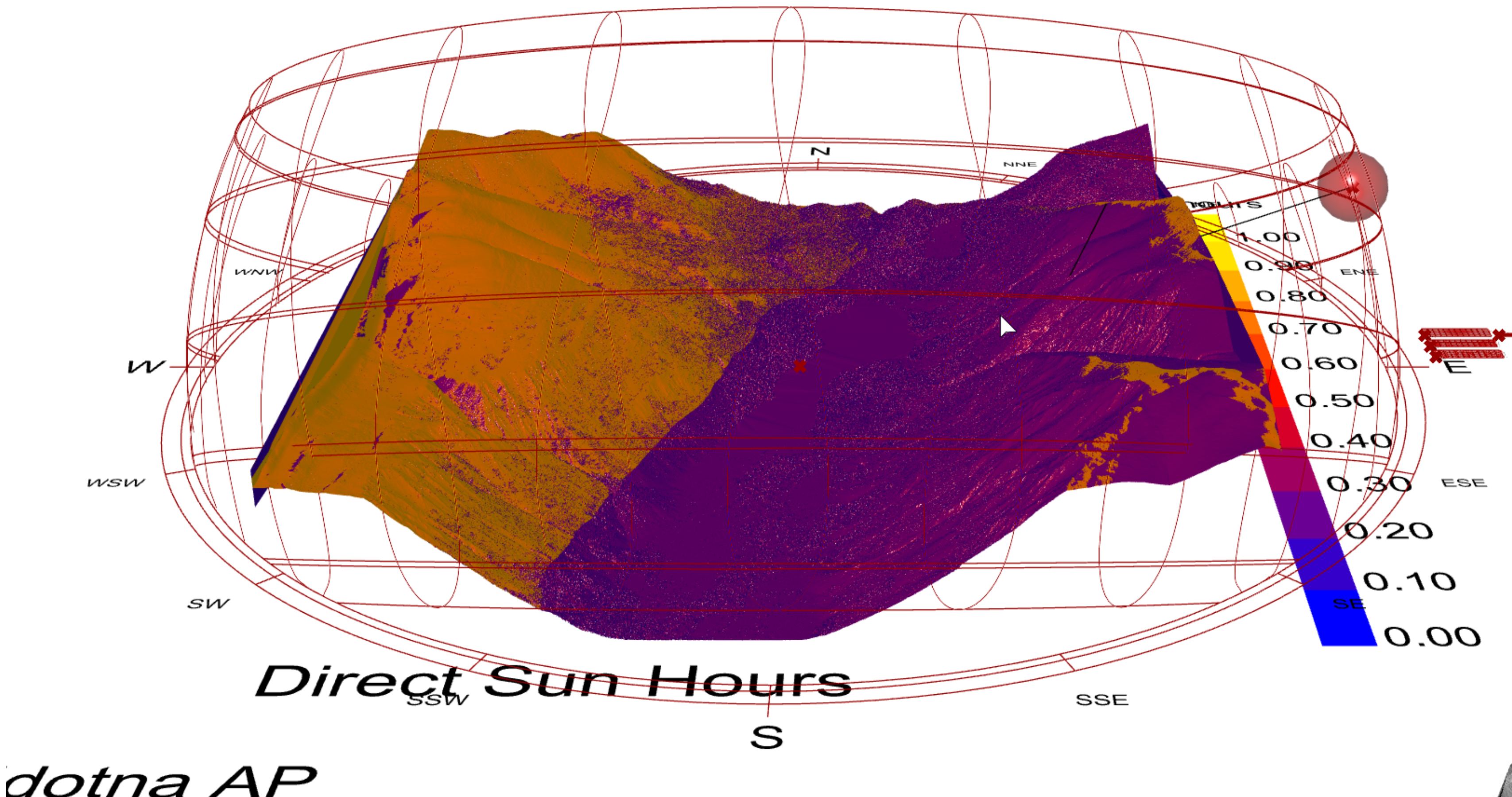
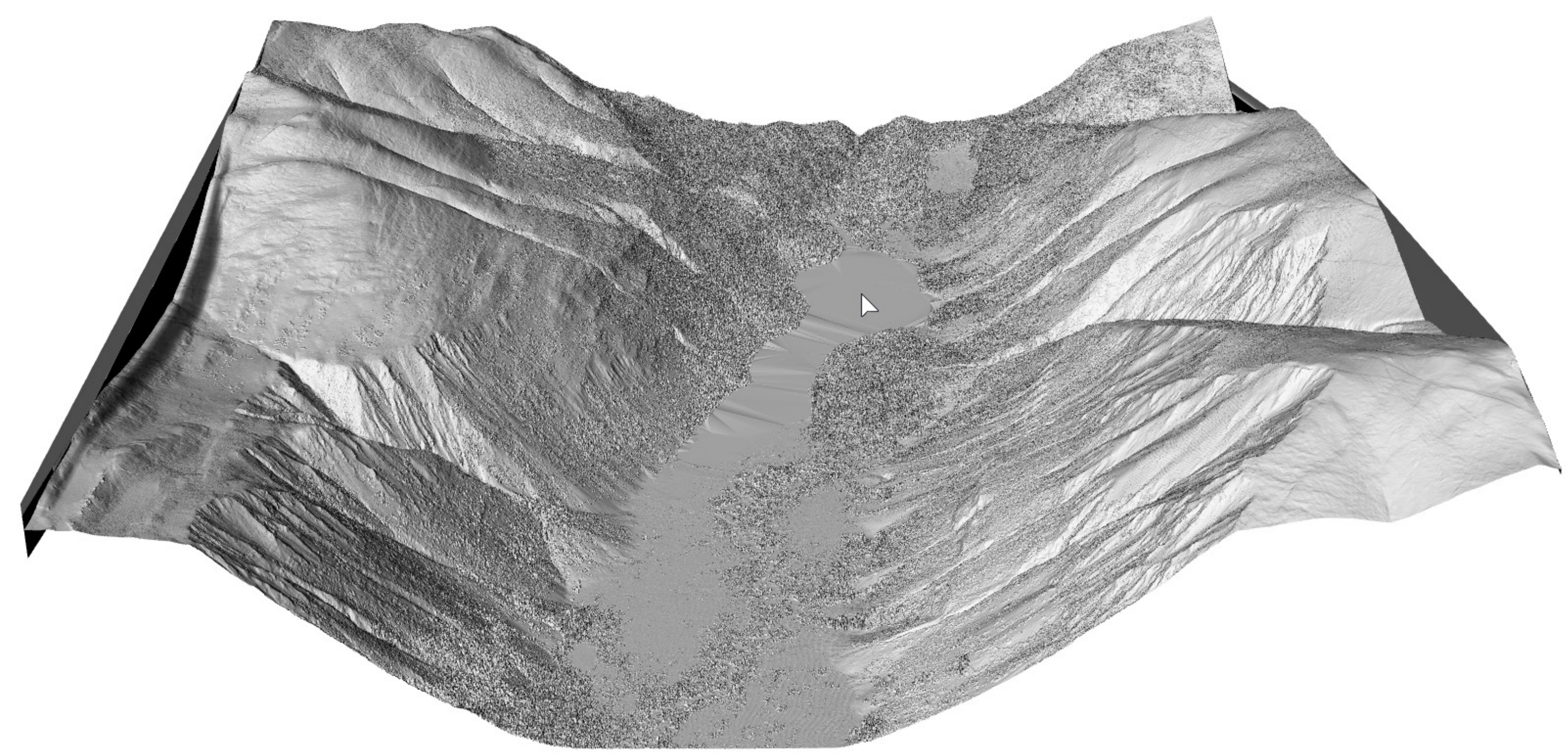
time-zone: -9.0
source: TMY3
country: USA

Journal 5: LadyBug





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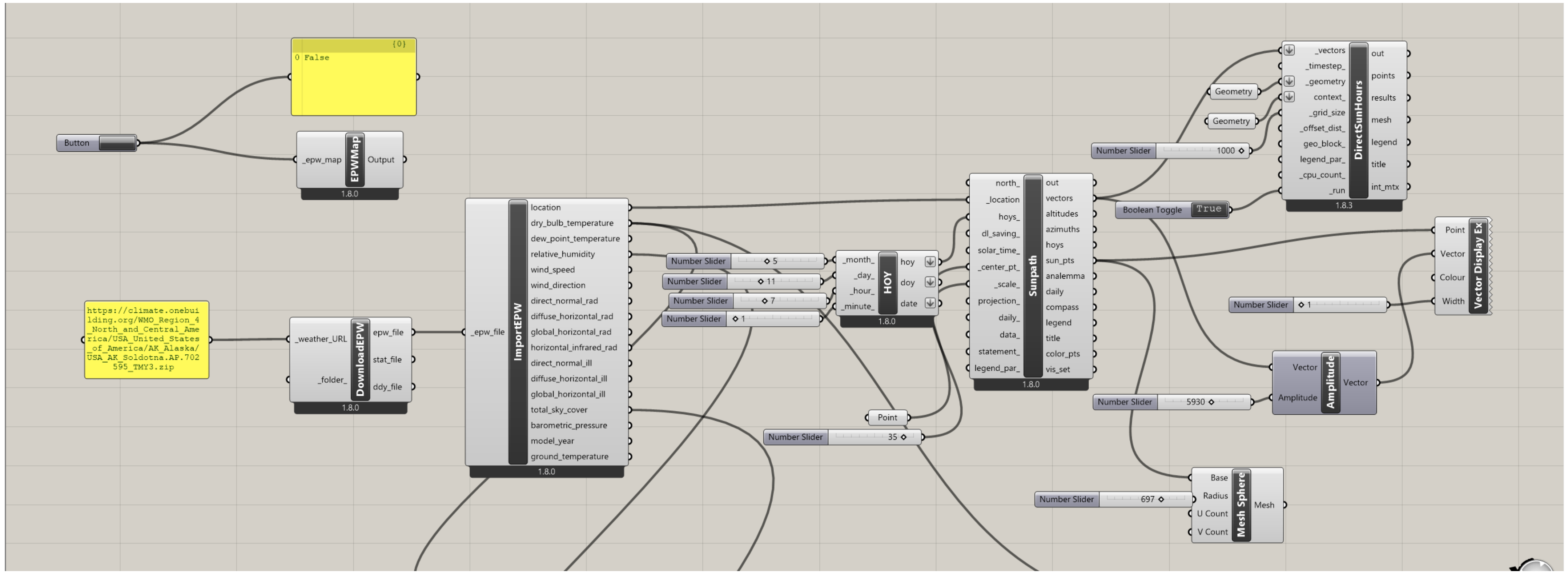
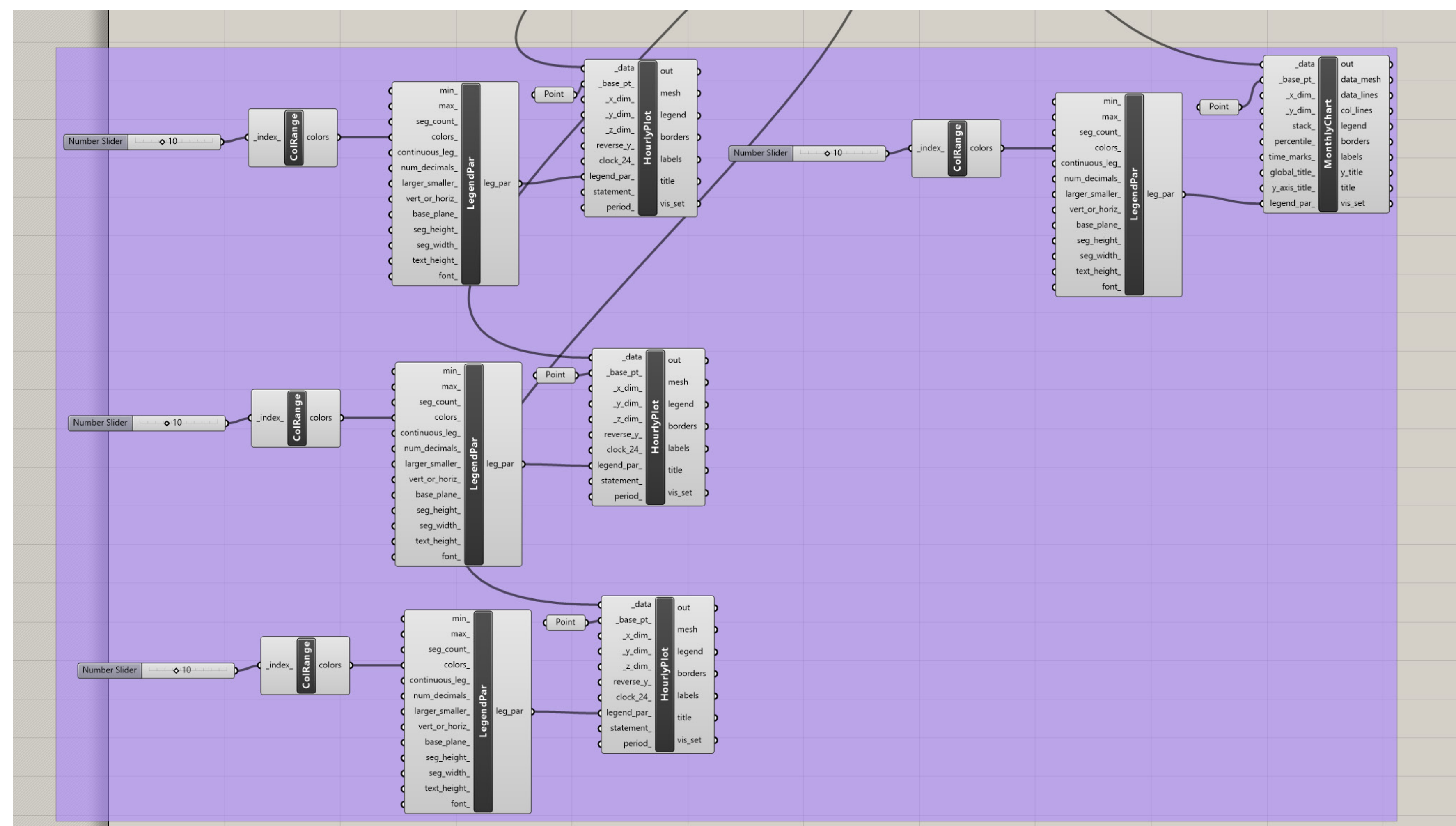
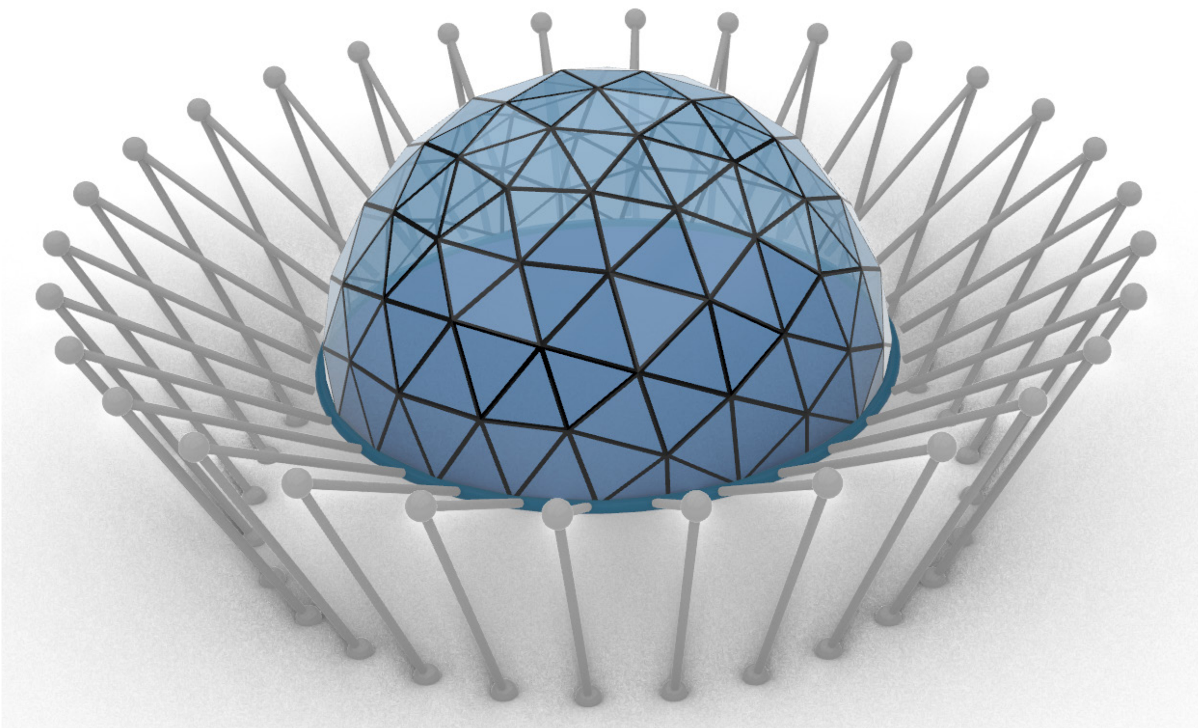
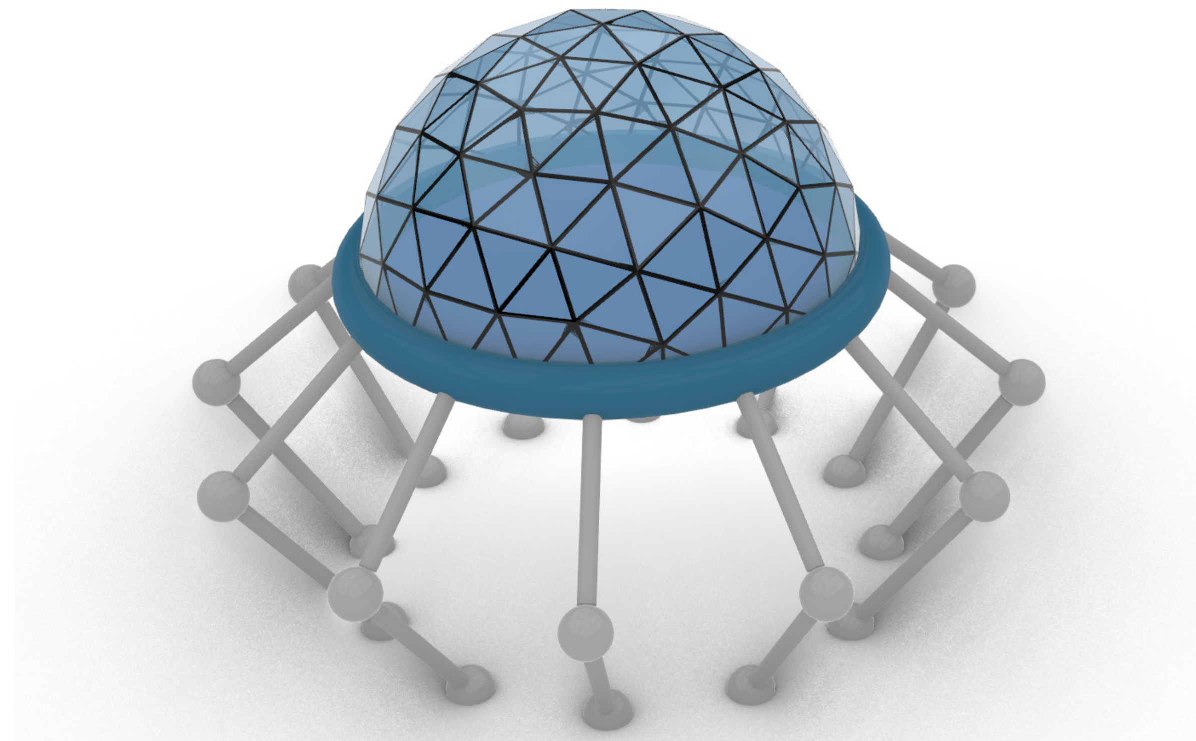
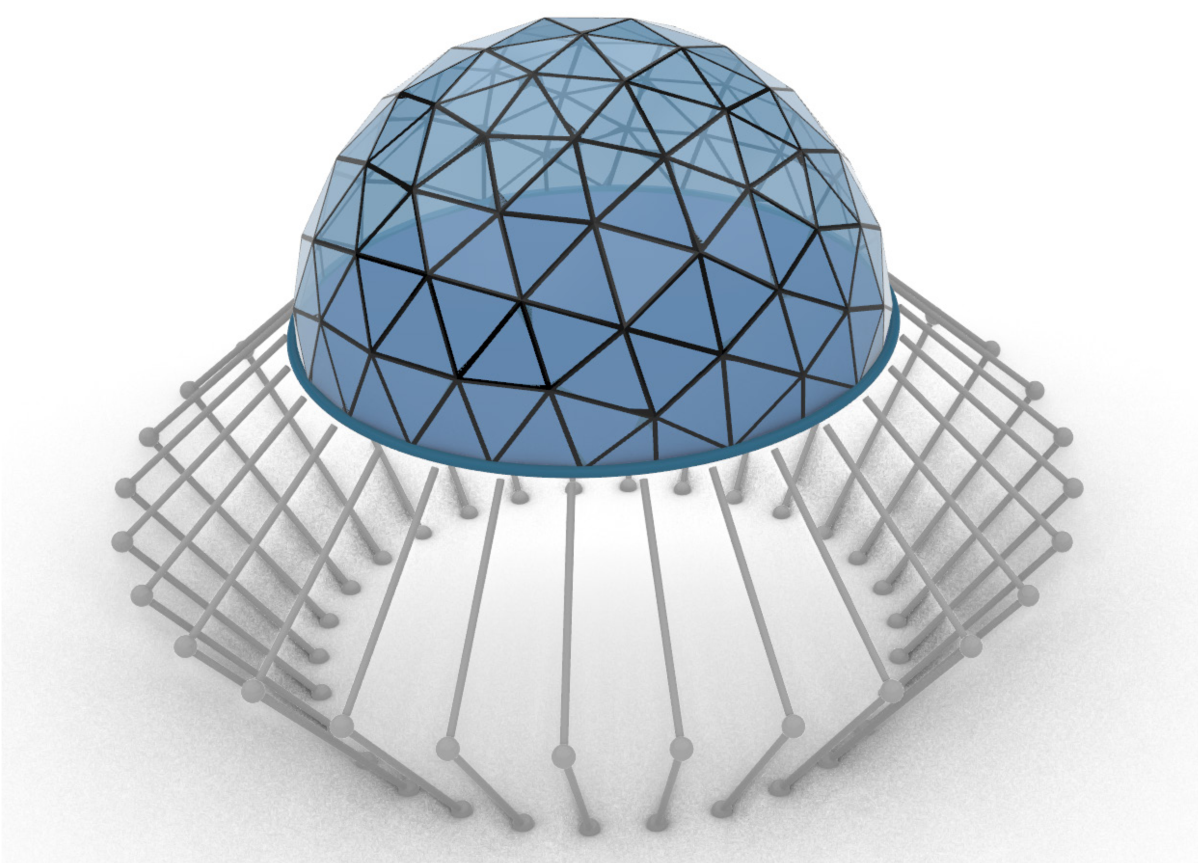


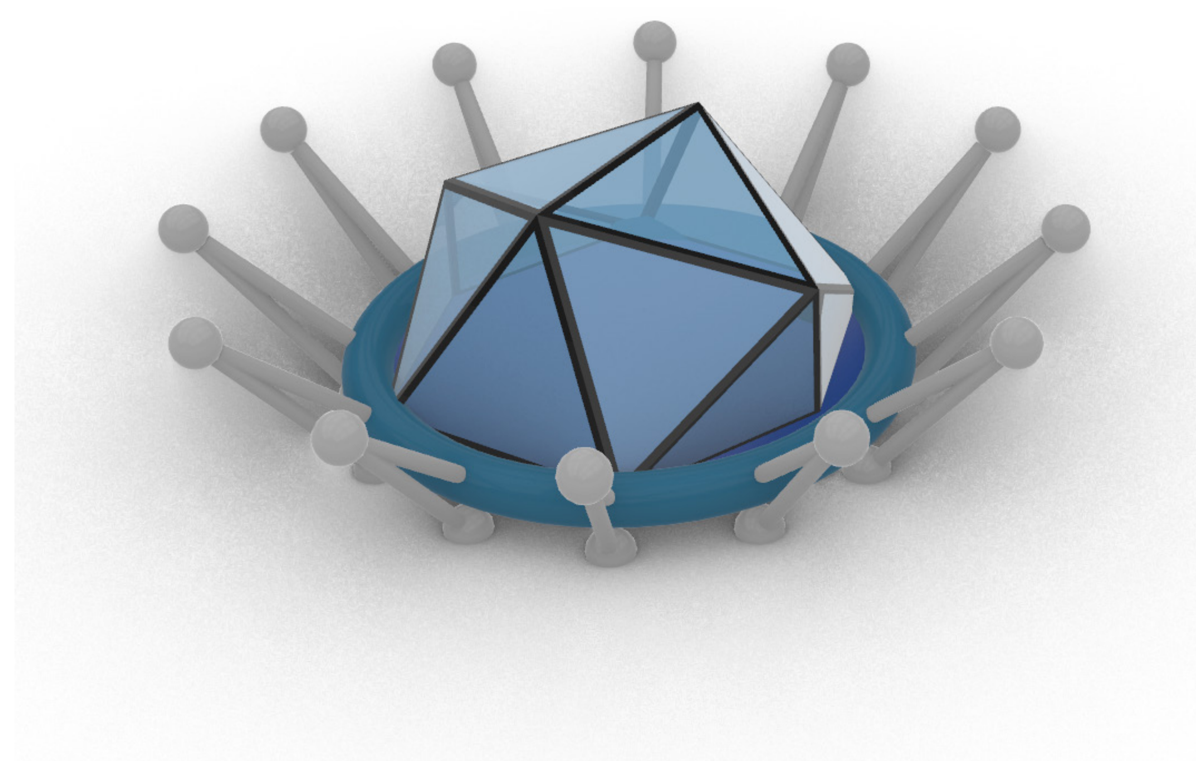


Journal 6: Grasshopper Massing









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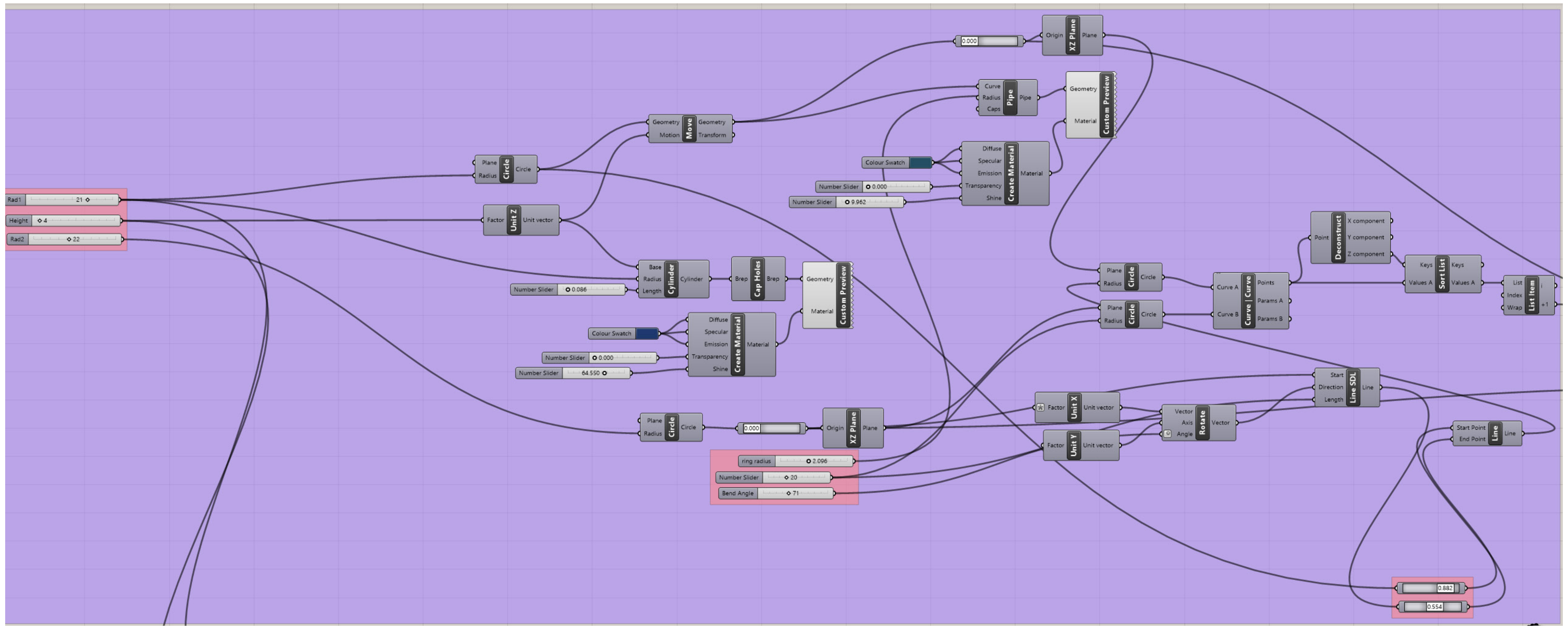

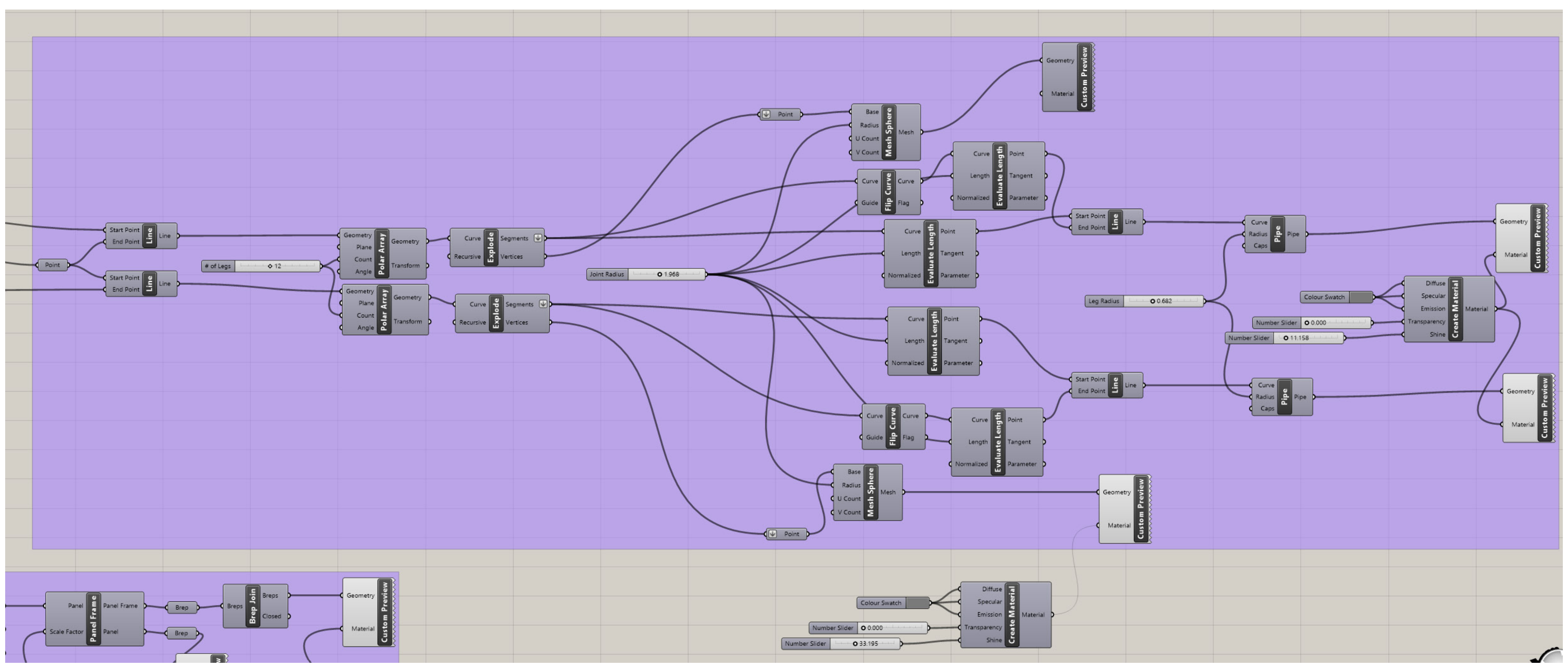

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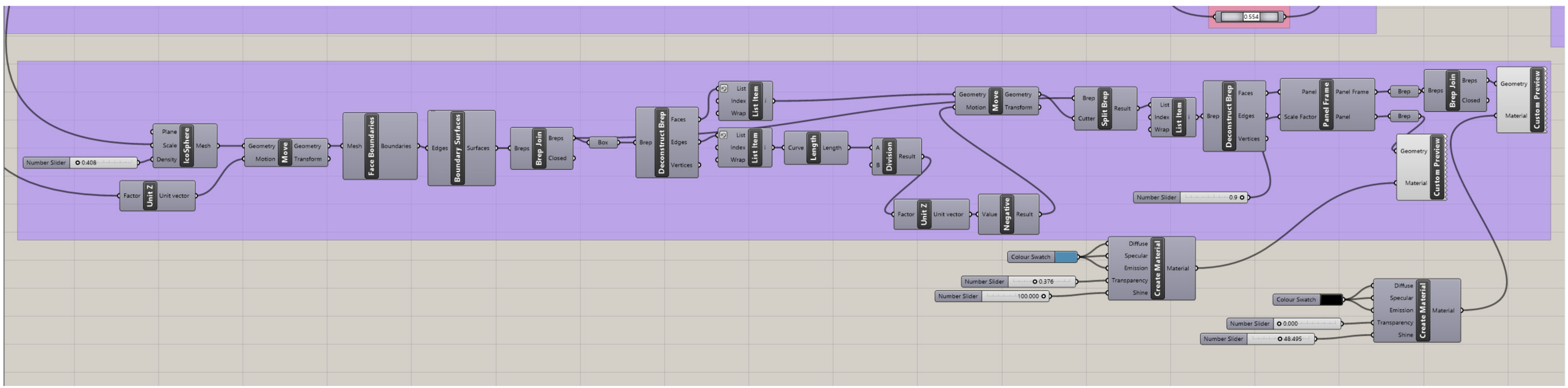
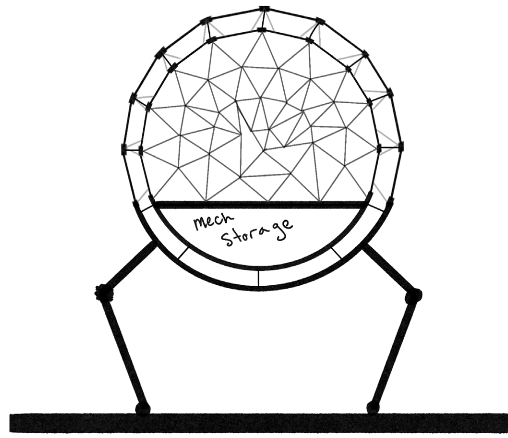
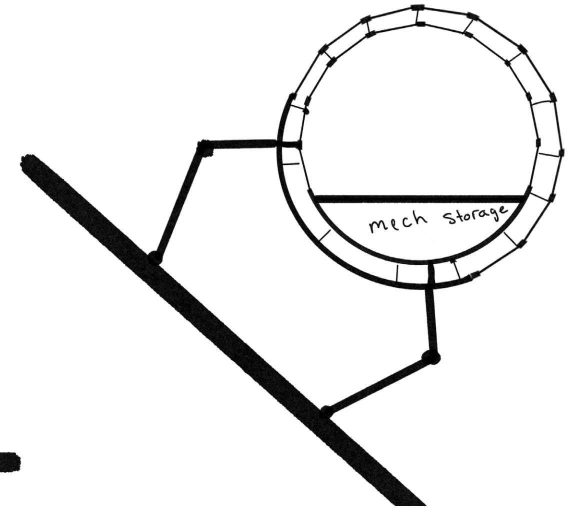
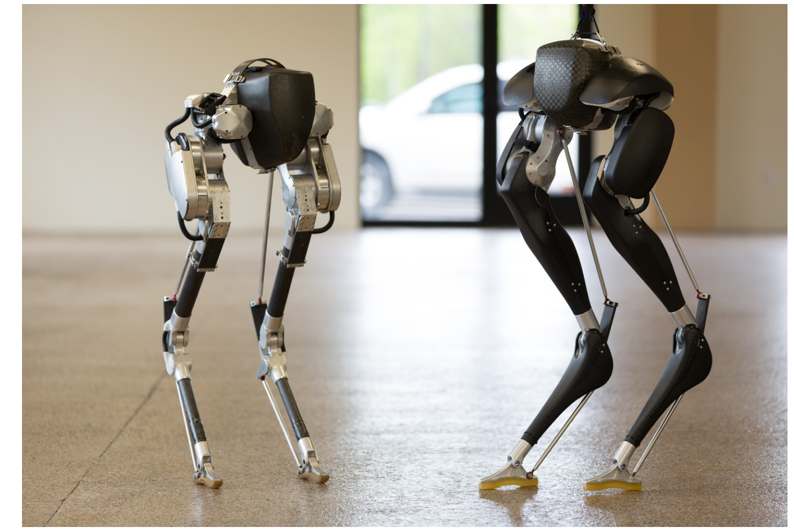


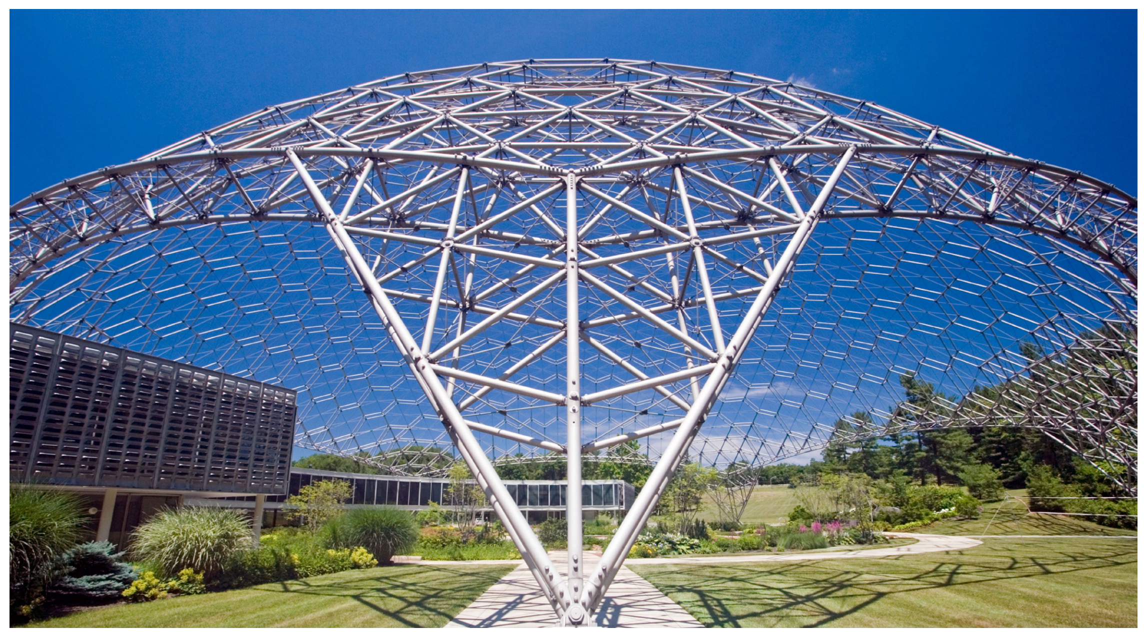
Journal 7: Rhino Inside

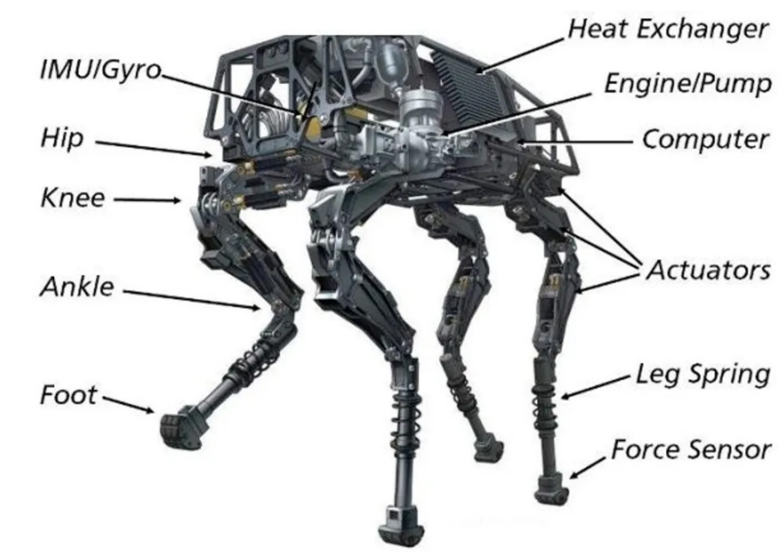
I am going to use steel for the geodesic dome structure since it is lightweight and has high strength. I wanted to develop the hydraulic legs design further, so I started researching current robotic hydraulic legs. Most examples I found have similar anatomy to human and animal legs. The legs I currently have in my grasshopper model are just simple pipe extrusions, so further developing the structure and mechanics of the legs is my current goal. I will keep the dome reasonably simple so I can focus on the development of the legs.

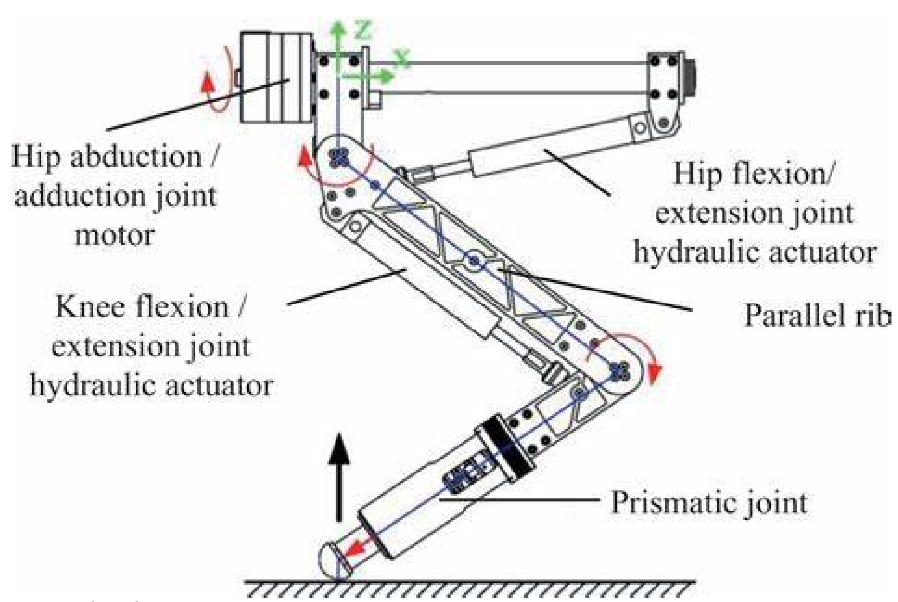


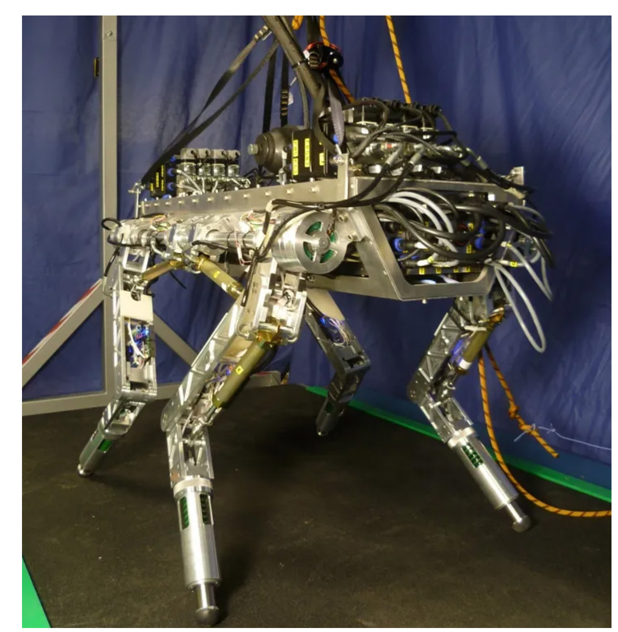




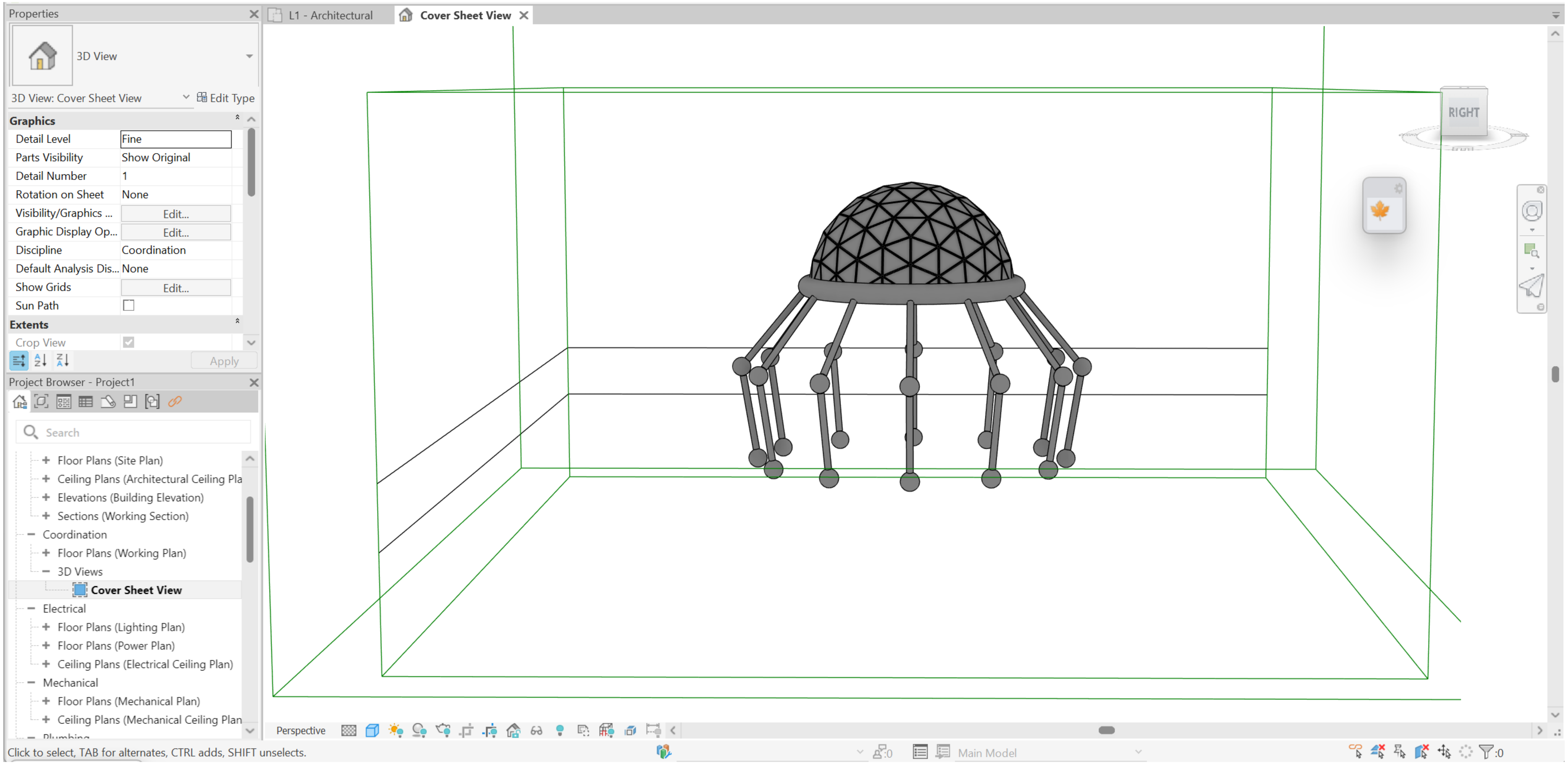




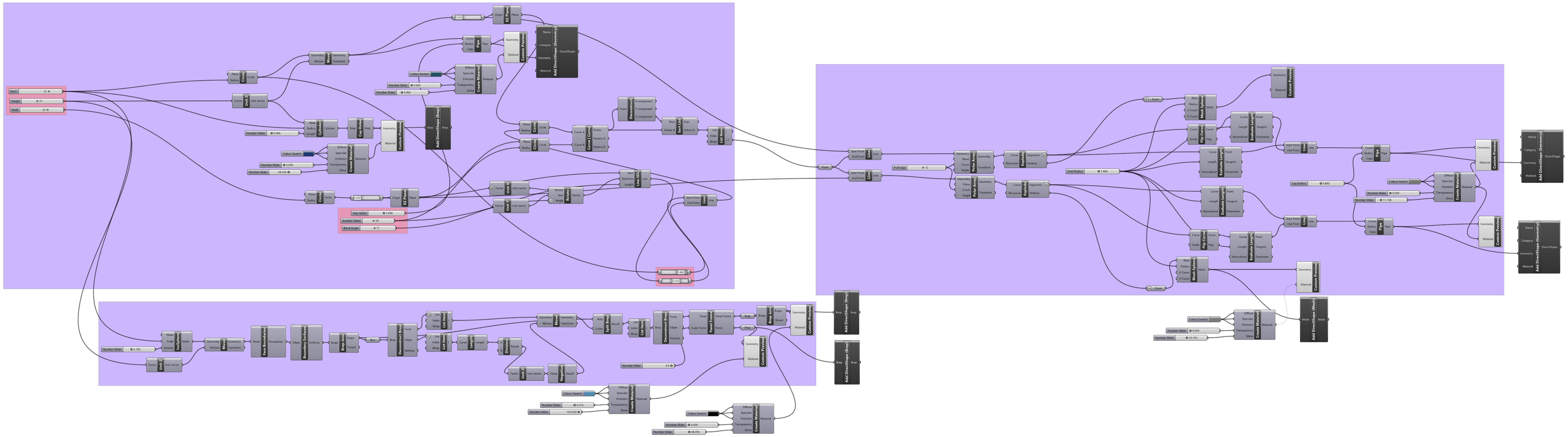




Journal 7: Rhino Inside



Journal 7: Rhino Inside



I initially had issues running Rhino Inside, but after following Kyler's suggestion of uninstalling ClimateStudio, it ran fine. I was able to import my geometry using direct shape, but I want to experiment further with other components to see if there are better options.