

GATHER. REST. CREATE. FLY RANCH.

THE DOME & PODS AT FLY RANCH GEYSER

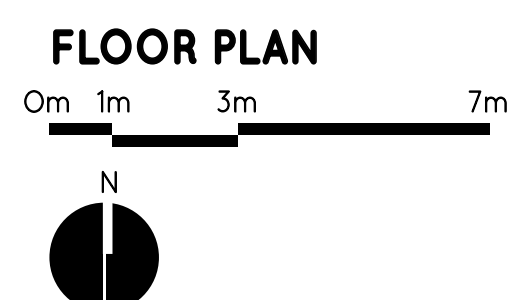
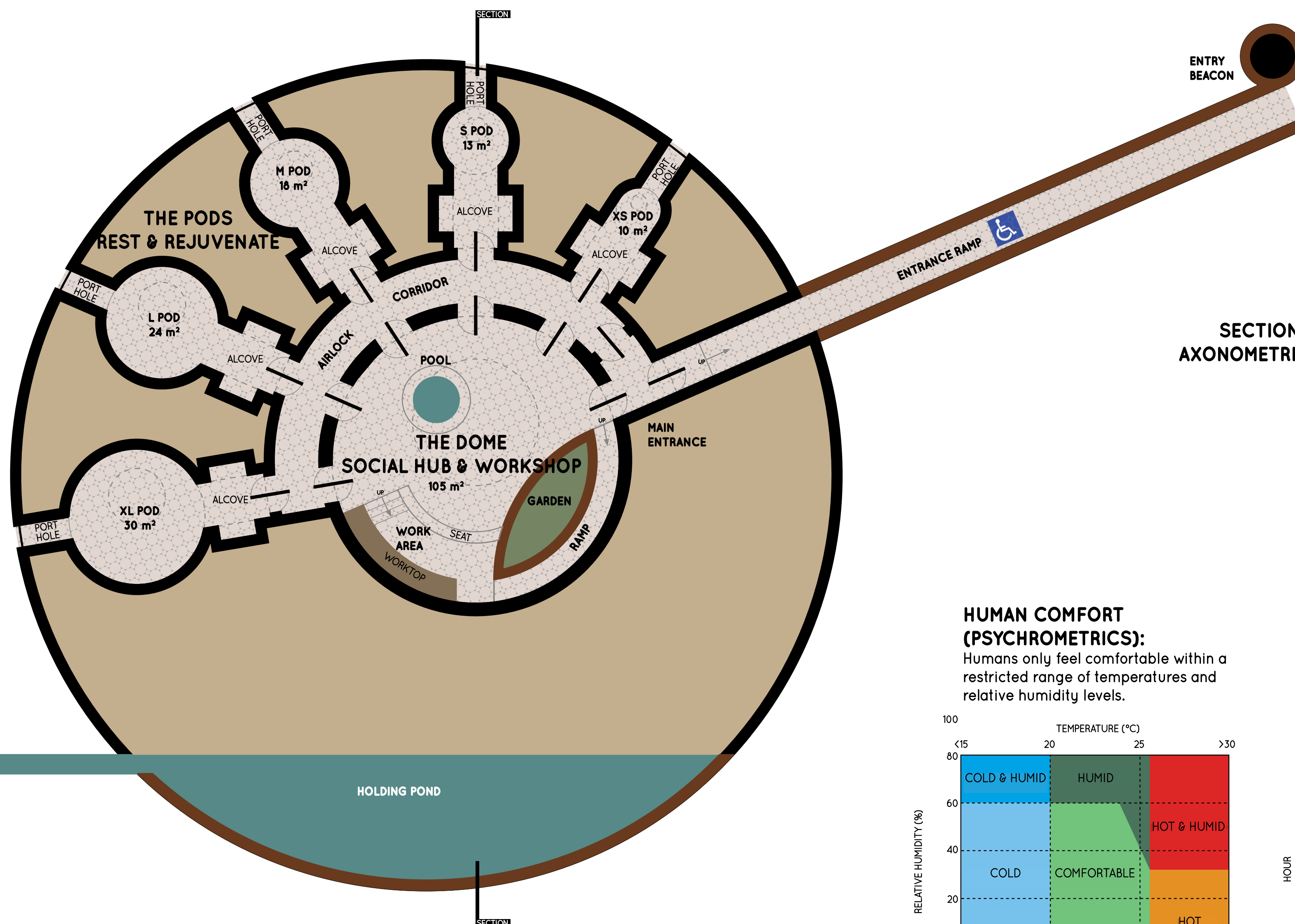
When it comes to climate, Fly Ranch is uncomfortable! Comfortable temperatures are only found a few months out of the year, and even then, only at limited hours of the day. Our main challenge was to create a comfortable environment to accommodate three essential human activities – gathering, resting, and creating – without overly prescribing the program. The philosophy guiding the project is that simple, low-tech strategies are more sustainable than high-tech ones, and solutions inspired by the genius loci of a site – its sense of place – are always the most appropriate.

CLIMATE-INSPIRED DESIGN

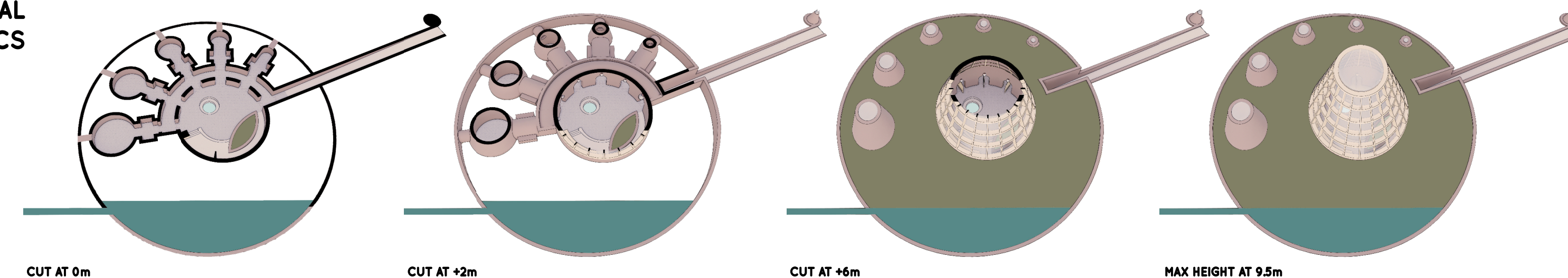
The starting point was a deep dive into climate data, which showed that the biggest challenge in creating human comfort was overcoming both the large diurnal temperature swings in addition to overall cold temperatures most of the year. Fortunately, the site is blessed by high levels of solar radiation which, by creating a glazed structure (The Dome) to induce a greenhouse effect, can generate heat during the day up to 20°C warmer than outside air. In order to retain the heat, the areas of rest (The Pods) are insulated from extreme air temperatures by sinking them up to 4m below grade, where the relatively mild and stable soil temperatures act as insulation. Constructed primarily of super-adobe earthbags, the thermal mass of the shelter helps balance out temperature swings by acting as a heat sink during the day and a source of radiant heat during the night. The result is that in spring, autumn, and winter each pod easily avoids heat loss, and in summer they easily avoid heat gain. We anticipate that with these strategies we can create a comfortable interior environment in each pod for eleven months out of the year through completely passive means!

A COMFORTABLE PLACE TO GATHER, REST, & CREATE

Upon arrival, one is greeted by an entry beacon and descends a ramp which opens onto The Dome. Illuminated with natural light, it serves as a hub for group activities and as an informal workshop space. Five Pods of differing sizes used more private, quiet activities such as resting or meditation are located a few steps away and accessed off an airlock corridor. Through a simple strategy of opening and closing doors and windows at strategic times of the day, the interior environment of each pod is nearly always comfortable. Entirely accessible and wheels-friendly, the building is an inclusive space for everyone.

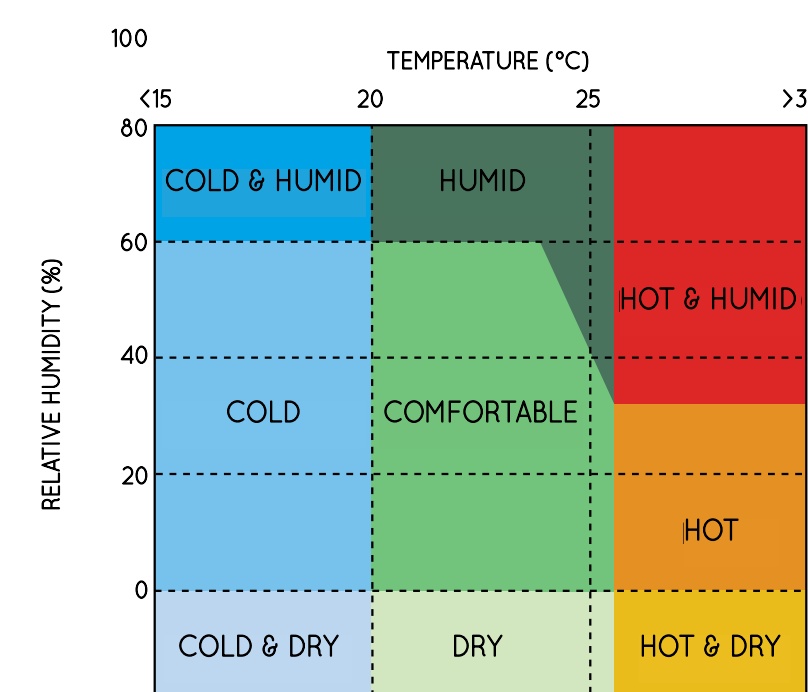


SECTIONAL AXONOMETRICS



HUMAN COMFORT (PSYCHROMETRICS):

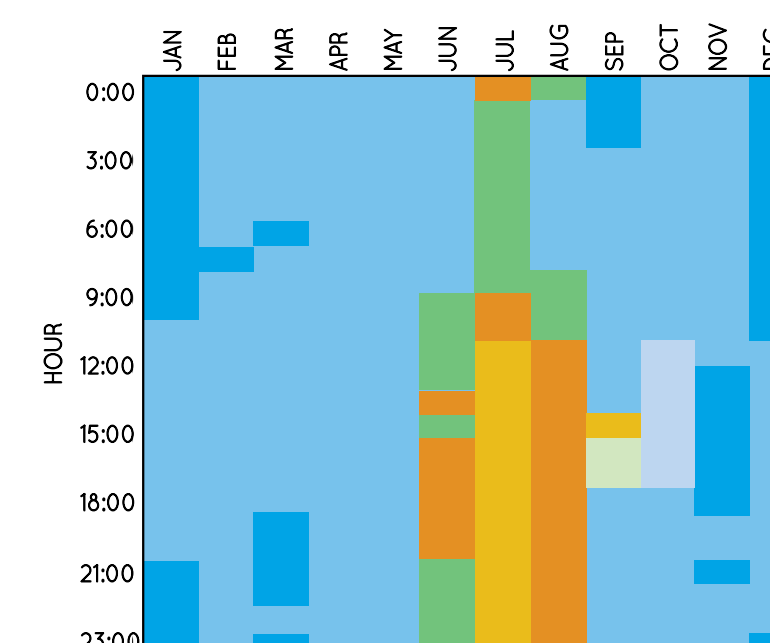
Humans only feel comfortable within a restricted range of temperatures and relative humidity levels.



Human Comfort Indicators

THE PROBLEM:

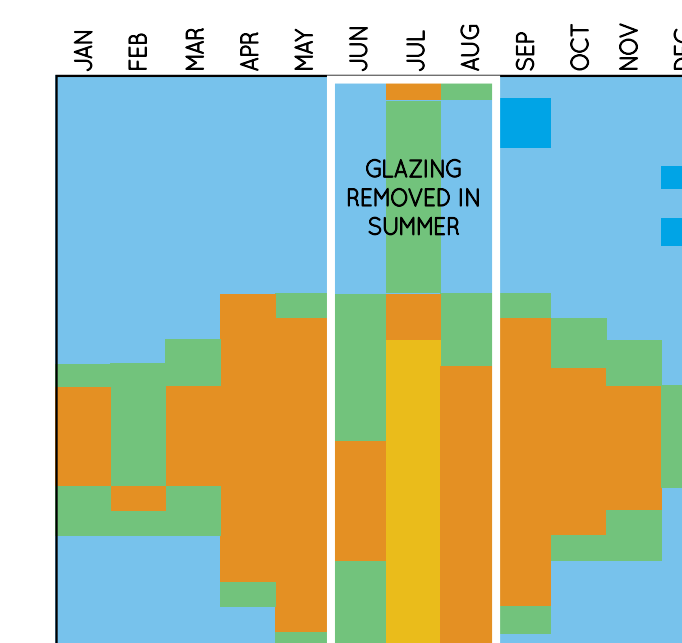
Fly Ranch has extreme temperatures, is rarely comfortable, and is usually too cold for humans.



Hourly average exterior air temperature and humidity level by month

SOLUTION NO. 1:

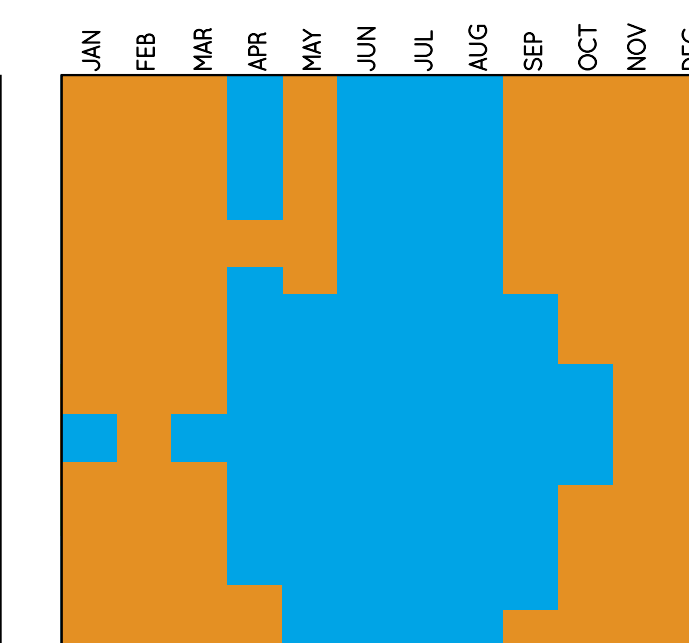
Generate heat with high solar radiation levels on site through greenhouse effect (September to May only).



Projected hourly average air temperature and humidity level inside the Dome by month

SOLUTION NO. 2:

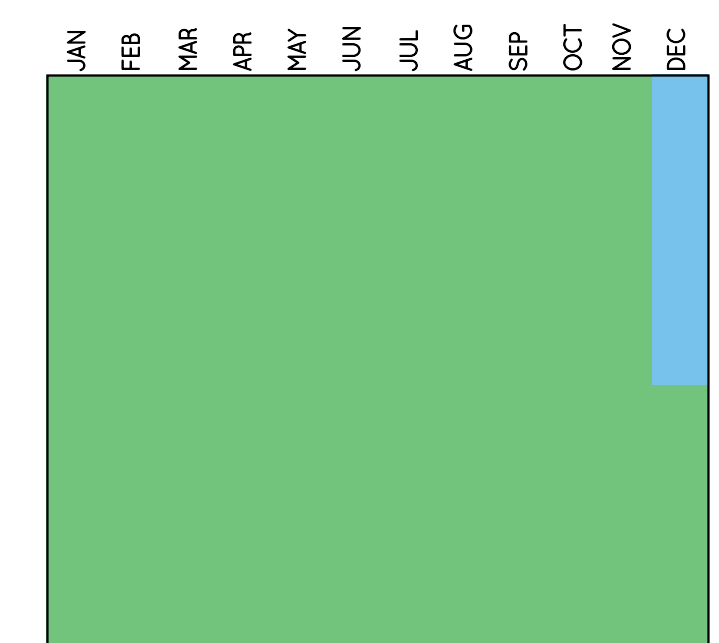
Use stable ground temperatures to insulate interior environment from extreme air temperatures.



Hourly average ground temperature at 3m below grade relative to projected exterior air temperature (orange - warmer, blue - cooler)

THE RESULT:

Interior environment of pods is comfortable nearly the entire year utilizing simple, low-tech solutions.



Projected hourly average air temperature and humidity level inside pods by month.