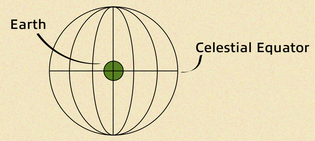
NORTHERN HEMISPHERE

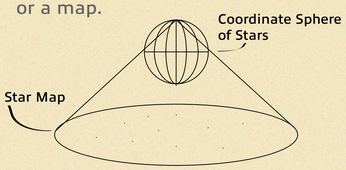
SUBURBAN NIGHT SKY MAP

How to Read the Map

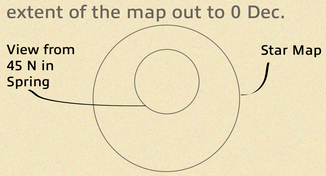
Star coordinates are represented in units of Right Ascension and Declination, similar to latitude and longitude, these values describe the star's position relative to earth's at the vernal equinox (0 Ra., 0 Dec.)



These x and y values mapped representing locations on a sphere can be projected into a 2-D surface or a map.



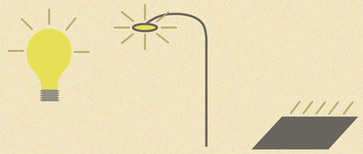
Using the polar projection the stars are now readable on a surface. Now how do you read them? The portion of the star map one could see on a specific night is dependent on both latitude and the time of year. To see what one would see at midnight, identify the time of year first. Then find the time of year around the edge of the map. The outer edge of the map is the southern field of view while the center is the northern part of the field of view. For example at the North Pole one could only see the extent of the map out to 0 Dec.



For different latitudes different sized circles would need to be used and offset by the viewers latitude from the center.

Light Pollution

After the Industrial Revolution the massive expansion of outdoor electric lights allowed for an expanded effective day for individuals to use. However, this expansion of artificial light into night has had unintended and severe consequences on the night sky. Additional effect of this expansion of light sources include adverse environmental effects, increased energy consumption, and potential negative health effects. The problem becomes eminently visible in urban areas, as skyglow caused from excessive lighting, poorly angled lighting, and substantial reflected light can obscure almost all or all celestial objects, barring the moon and the sun.



This star map incorporates this effect by only symbolizing stars of sufficient magnitude to be seen in suburban areas. The numerous small dots and the milky way region of the map are dulled, and can only be seen in rural areas further away from the skyglow effect.

Potential Solutions

- Education and Awareness
- Recommendations to Reduce Light Use
- Shielding of Existing Lights
- City or Community Events to Skygaze

Ultimately, artificial lighting has become and important component of modern life, however, the depth of the night sky has been lost to a degree. Creating opportunities for individuals to occasionally see the night sky while still maintaining the safety of modern lighting is an important component to increasing night sky visibility.

Star Legend

- Main Sequence
- Subgiants
- Giants
- Bright Giants
- Supergiants
- Messier Objects (Galaxies)
- Stars only Visible in Rural Areas

Suburban Visible Stars

Distance in Lightyears

- 0 - 10
- 10 - 100
- 100 - 1000
- 1000 - 10000
- 10000+

Reference Planes

Celestial Equator - A Projection of Earth's Equator

Ecliptic - Apparent Path of the Sun Over a Year

Galactic Equator - Plane of the Milky Way

Milky Way

Inner Milky Way

Outer Milky Way

Dawson Rogers
GEOG 572

North Pole Stereographic Projection
Star Data from Peter Girard at http://www.heather-gabrielsmith.ca/maps/astronomyData.zip
Light Pollution Reference: https://www.darksky-.org/light-pollution/