# Visualizing Celestial Cartography with a Web-based Interface

Before the 1990s, astronomers collected data on demand. They used images to navigate their instruments in the sky and observe a target specific to their research. However, as we became more technologically advanced and our instruments improved, this was no longer efficient. And so, the era of surveys began.

Astronomical surveys are collections of data without a specific target. They often observe one or few bands of the electromagnetic spectrum and usually don't cover the entire sky. The difficulty comes in when an astronomer needs data and doesn't know which survey collected it. Moreover, there's a chance they might look through every existing survey only to discover that the needed patch of sky was never collected in the wavelength they need to begin with! And so, with the new era of data collection, we need new tools.

Therefore, we decided to create a tool for astronomers to help them visualise survey footprints (the areas of the sky a survey looks at) and relate them to each other and to astrophysical phenomena.

The tool is web-based for easy access and all-device availability. It is implemented using JavaScript, HTML and CSS. We used Leaflet, a JavaScript library, to create maps of the sky that can show survey footprints, phenomena and landmarks (or skymarks, I suppose) for better map readability.
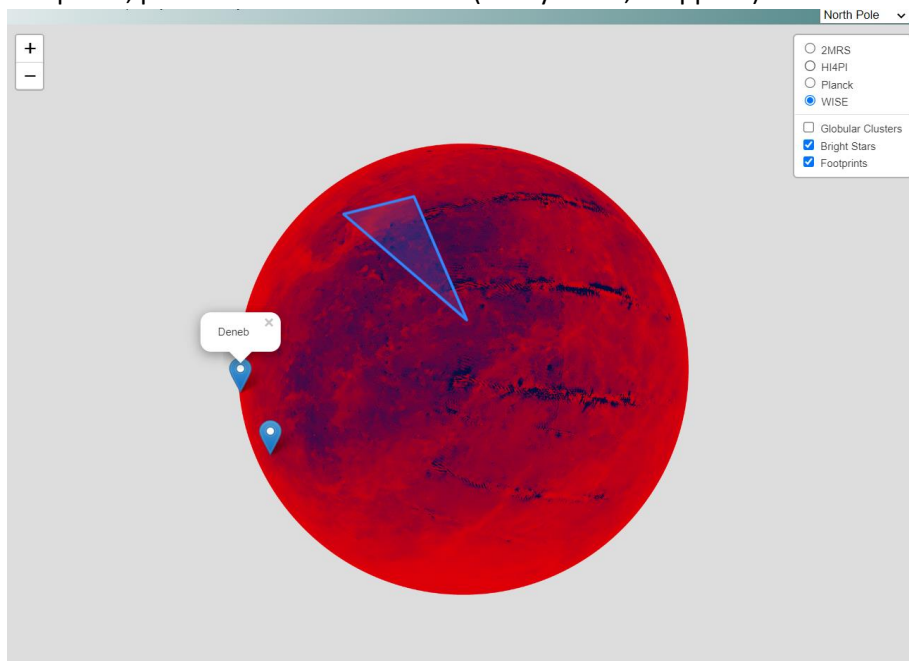
We visualised sky maps in orthographic projection, which linearly projects each point onto a plane. We chose this projection because it is intuitive, as it is what you see when you look at a sphere, which makes it the most useful for understanding locations of surveys and how each one relates to the others and the rest of the sky.

The application is still under construction, but you can visit our [demo page](demo%20page) to get an idea of what it might look like!