Describing and Simulating Rainbow Hazes on Jupiter's Surface using JunoCam and ISIS

Erica Wang
Mentor : Glenn Orton, Jet Propulsion Laboratory/California Institute of Technology

We investigated potential correlations of the dispersion of red, green, and blue peaks of reflected sunlight as a function of distance along the Sun azimuth line for "rainbow" hazes. These are translucent hazes and linear bands with a distinct color separation, a phenomenon that occurs near the terminator of images of Jupiter made by the Juno mission's JunoCam instrument, a public-outreach camera. We used the Integrated Software for Imagers and Spectrometers (ISIS), a free and open-source software (FOSS) developed by the USGS Astrogeology Science Center for NASA and the planetary community. ISIS is a fundamental tool for processing raw archival data into analysis ready products and includes standard imaging processing tools such as contrast, stretch, image algebra, and statistical analysis. We used the ISIS qview Advanced Tracking tool to measure distances between the peak colors. We graph the DN values of the red, green, and blue pixels along the Sun azimuth line according to the LAT and LON distance using Jupyter Notebook and Python programming.