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# Flaring M Dwarfs in the TAOS II Fields

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# TAOS II

Trans Neptunian Automated Occultation Survey

TAOS II is designed to measure the size distribution of small TNOs (Trans Neptunian Objects). They operate three 1.3m telescopes in at the OAN in Baja California, Mexico.

Photo credit: TAOS II - Transneptunian Automated Occultation Survey

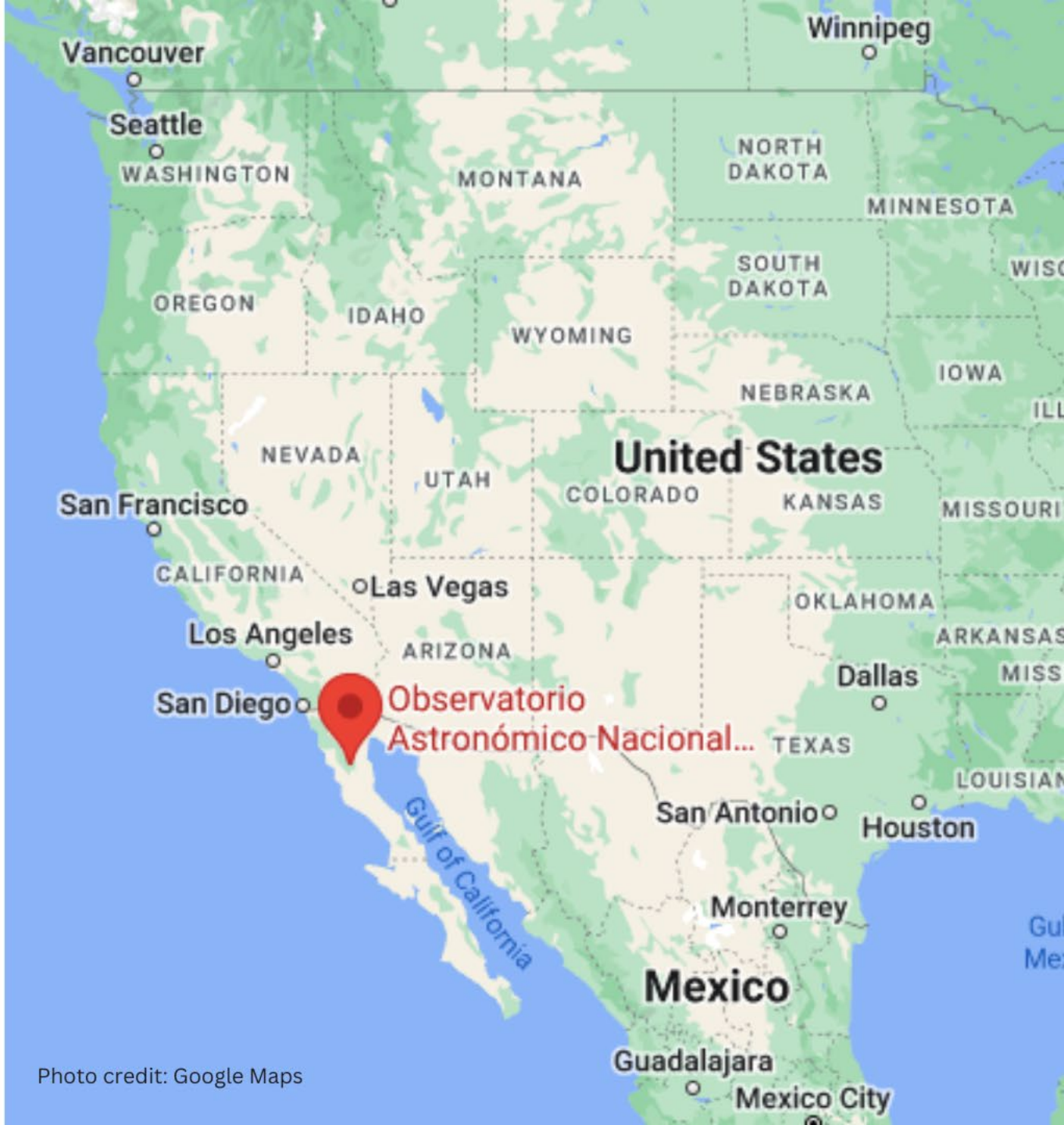
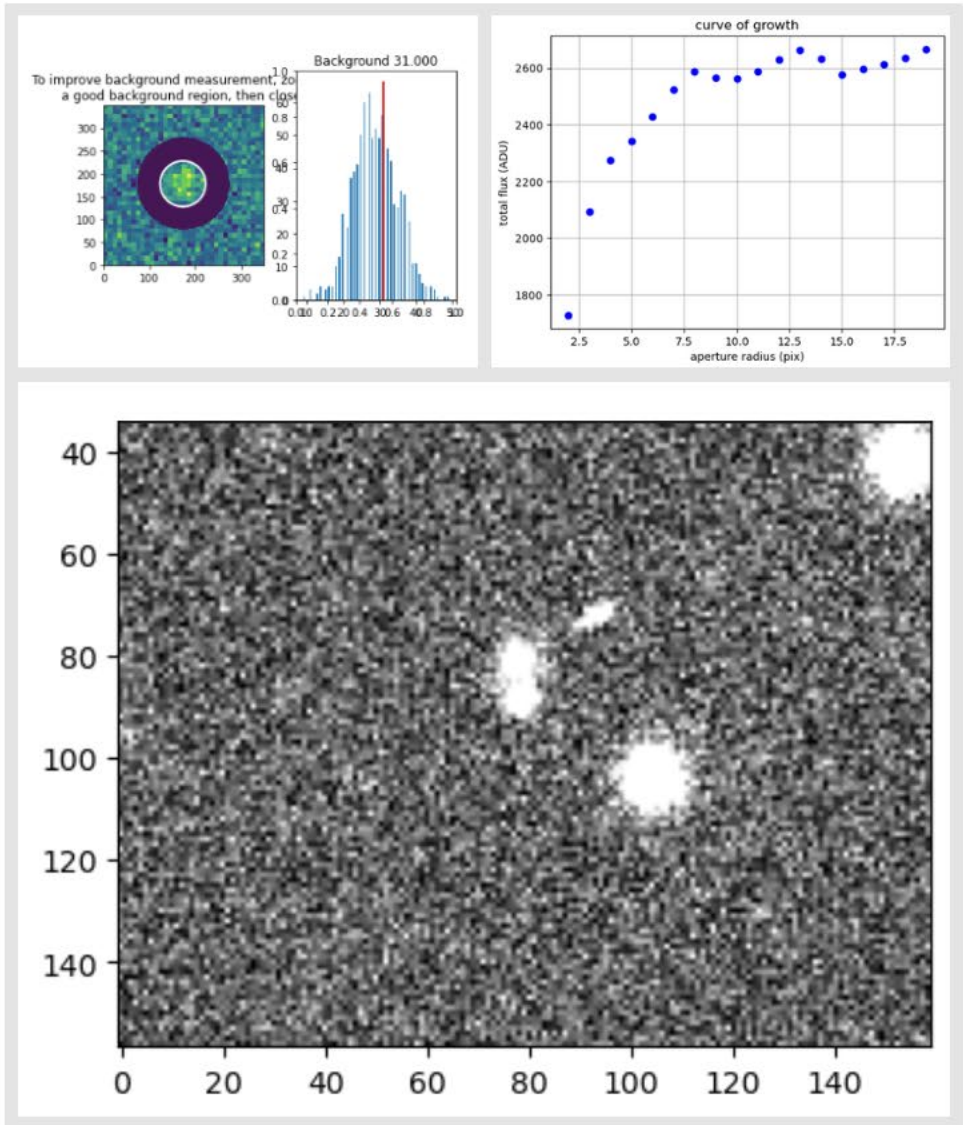



Photo credit: Google Maps




# Flaring M Dwarfs

Using the existing CFIS u-band data, I looked for flaring M dwarf stars in the TAOS II fields. I used aperture photometry to measure the apparent magnitude of the stars, which I then compared to the established CFIS magnitude measurement for each star.

After determining the deviation between the measured and CFIS magnitudes, I then went back and looked at the images of those with large deviation sort the images as binary stars or potential flares.

# Results

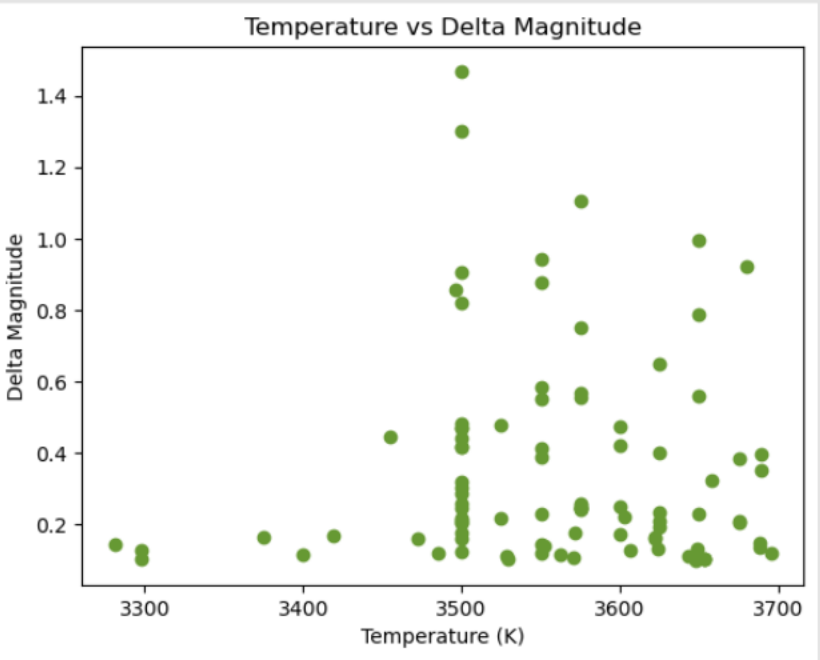
We observed **93 flares** on the **3955 M-stars** in the TAOS II fields. There were **11972 exposures** which lasted an average of **80.096 s** each, and each star had a median of **3 exposures**.

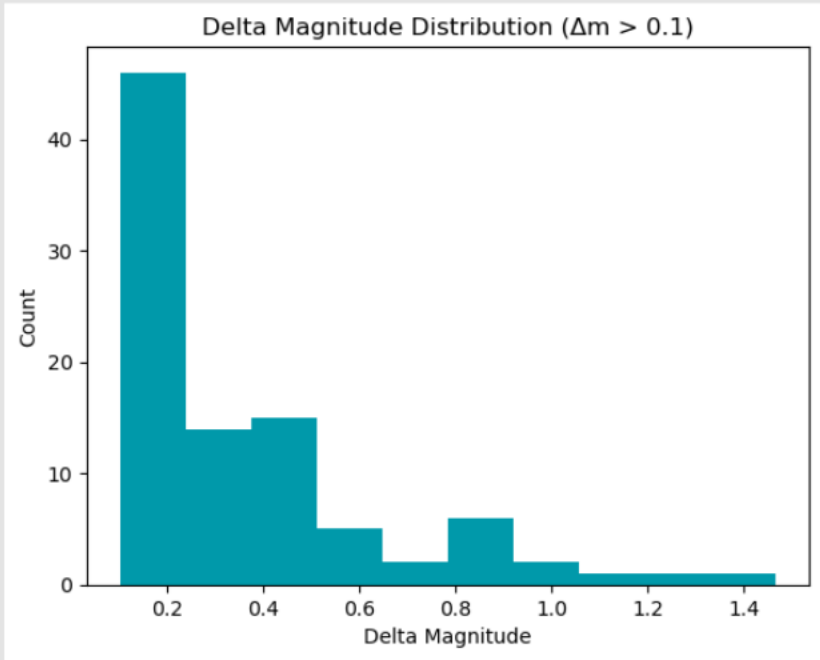
**M Star Flare Rate Upper Limit**

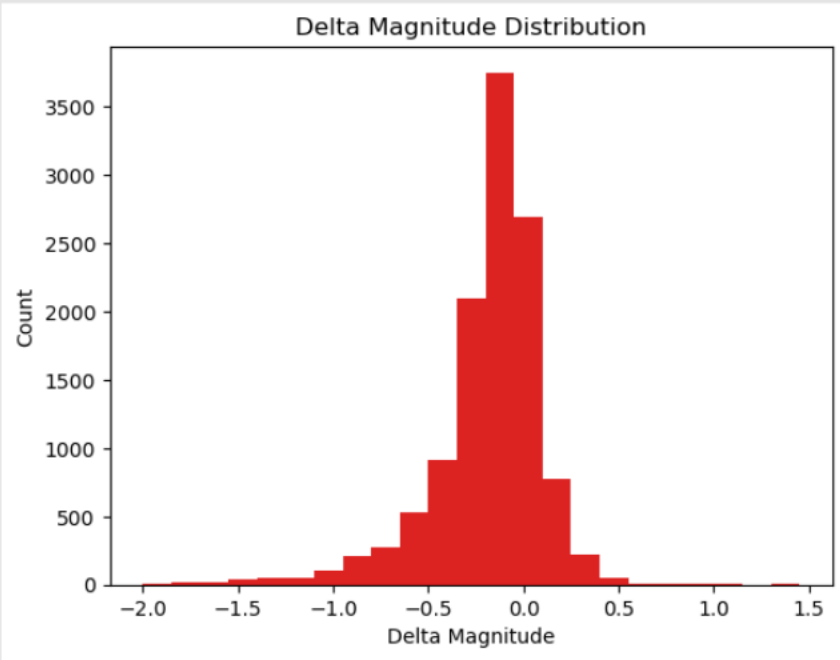
$$\frac{93\ flares}{266.3663\ hrs} = 0.3491\ flares/hr$$

**M Star Flare Rate Lower Limit**

$$\frac{93\ flare}{(25.2486\ hrs)(11972\ exposures)} = 7.3840 \times 10^{-4}\ flares/hr$$



# Thank you

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