The MANTIS CubeSat: Unveiling the ultraviolet lives of exoplanet host stars.

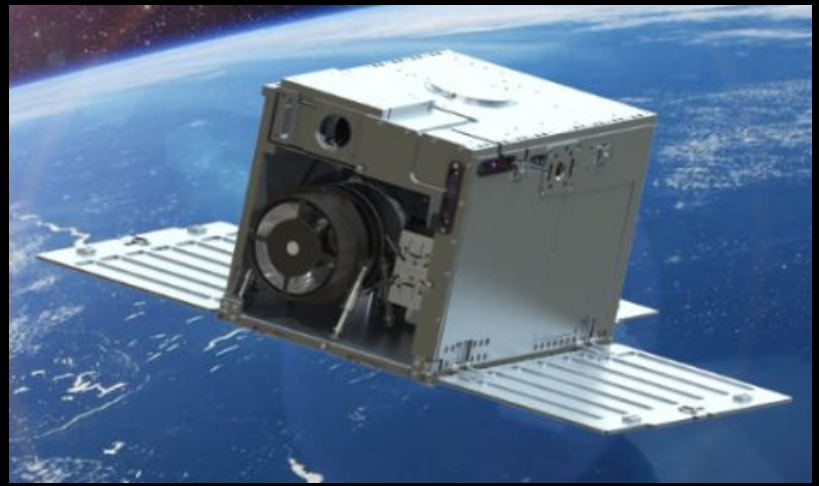
David Wilson
david.wilson@lasp.colorado.edu

Laboratory for Atmospheric and Space Physics
University of Colorado **Boulder**

The MANTIS CubeSat

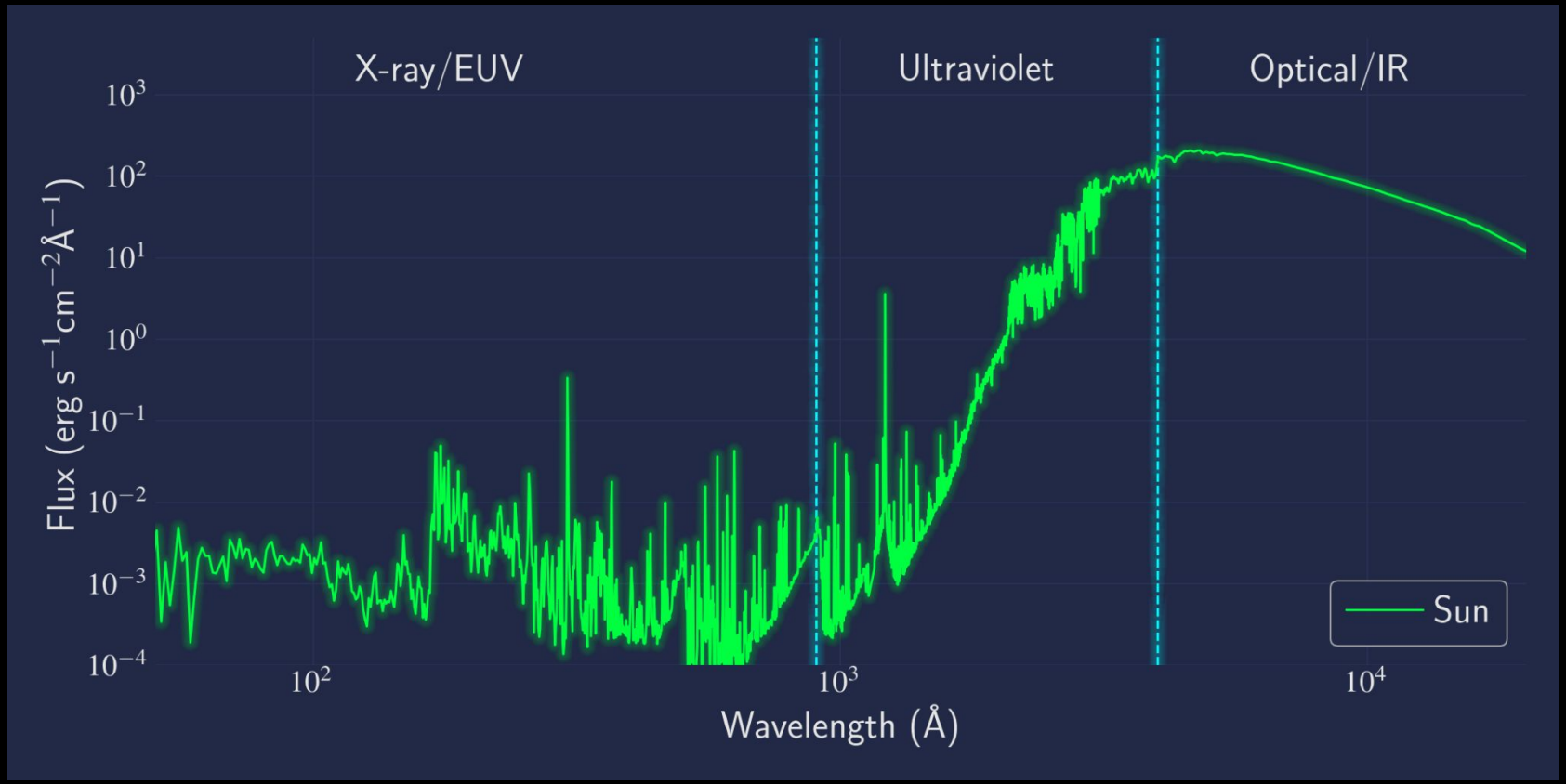
- First 16U astrophysics cubesat.
- Simultaneous NUV, FUV and EUV spectroscopy.
- First orbital astrophysics EUV mission since the 90s!
- Building on the technological legacy of LASP's CUTE and SPRITE cubesats.

PI: Briana Indahl - see poster for technical details!

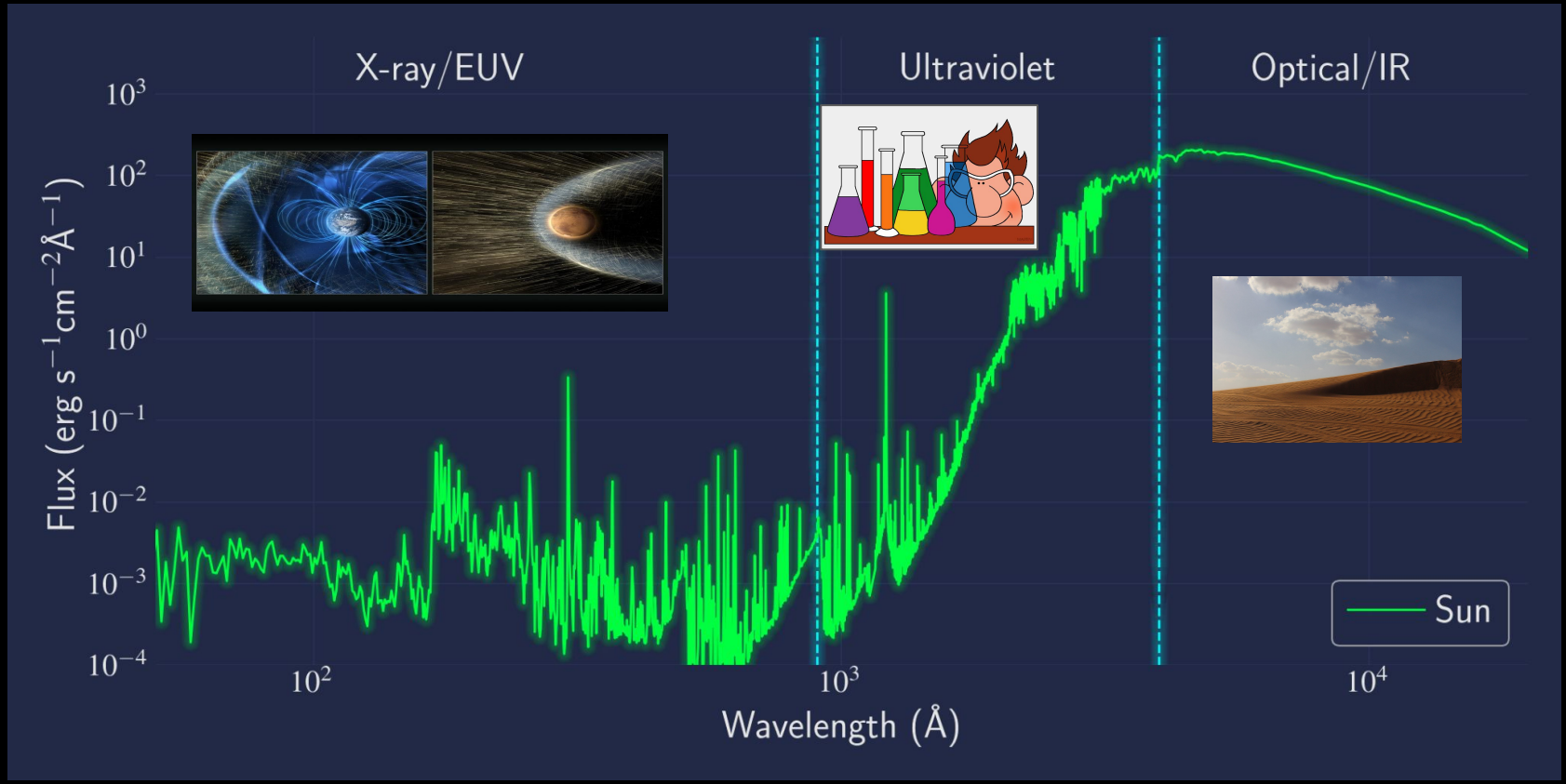


MANTIS: Monitoring Activity of Nearby stars with ultraviolet Imaging and Spectroscopy

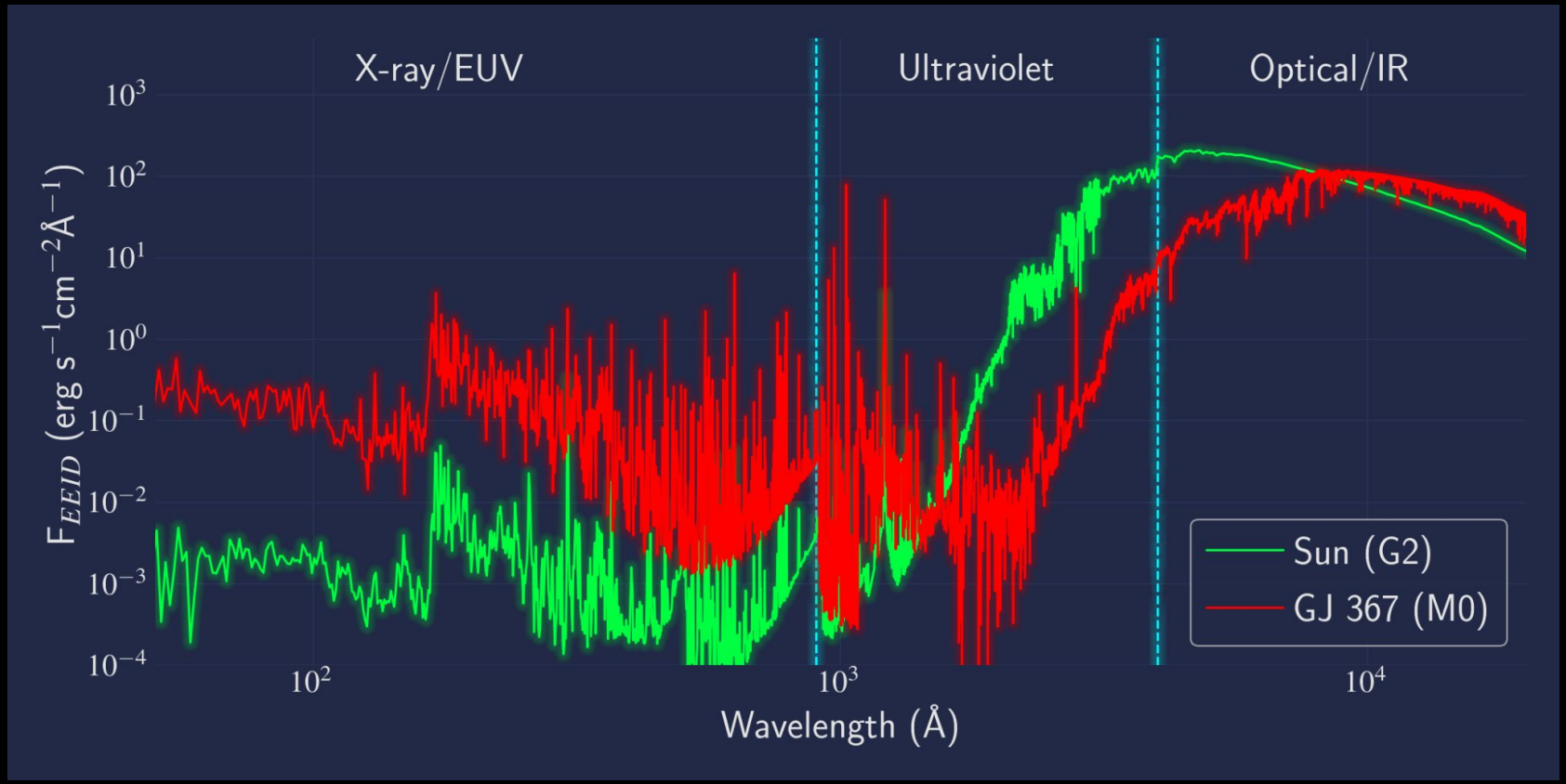
The Sun at high energies



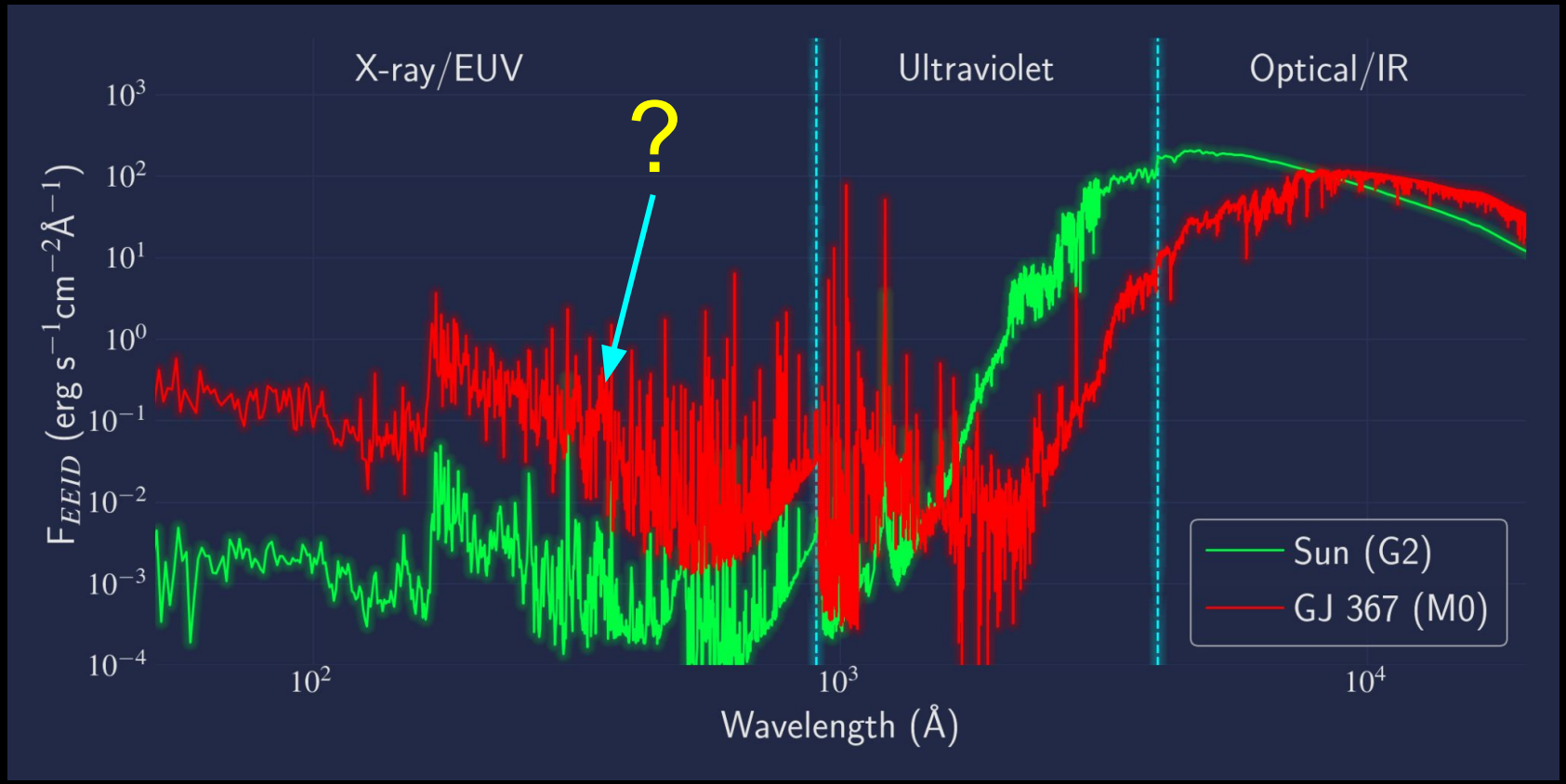
High energy photons sculpt planetary atmospheres



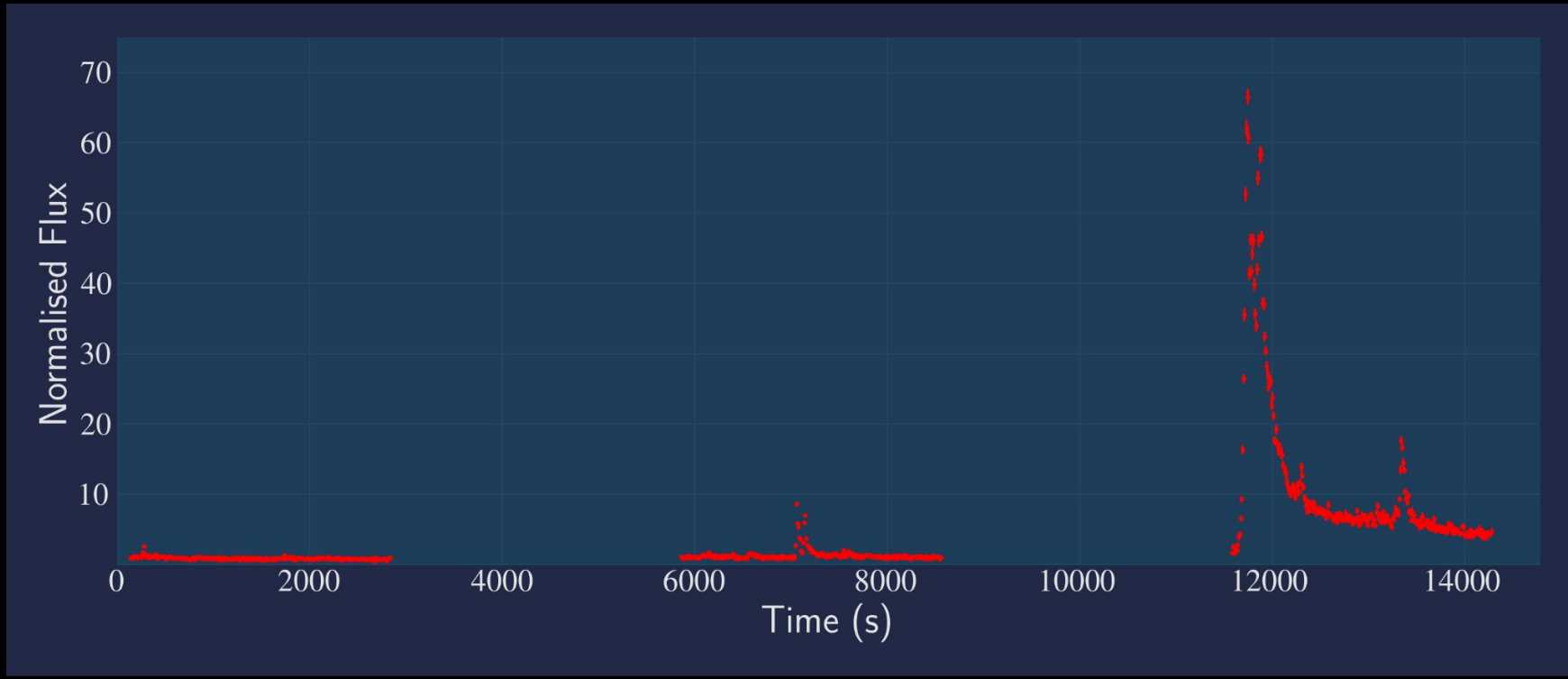
Problem 1: Other stars are not the Sun



Problem 2: We cannot currently observe the EUV

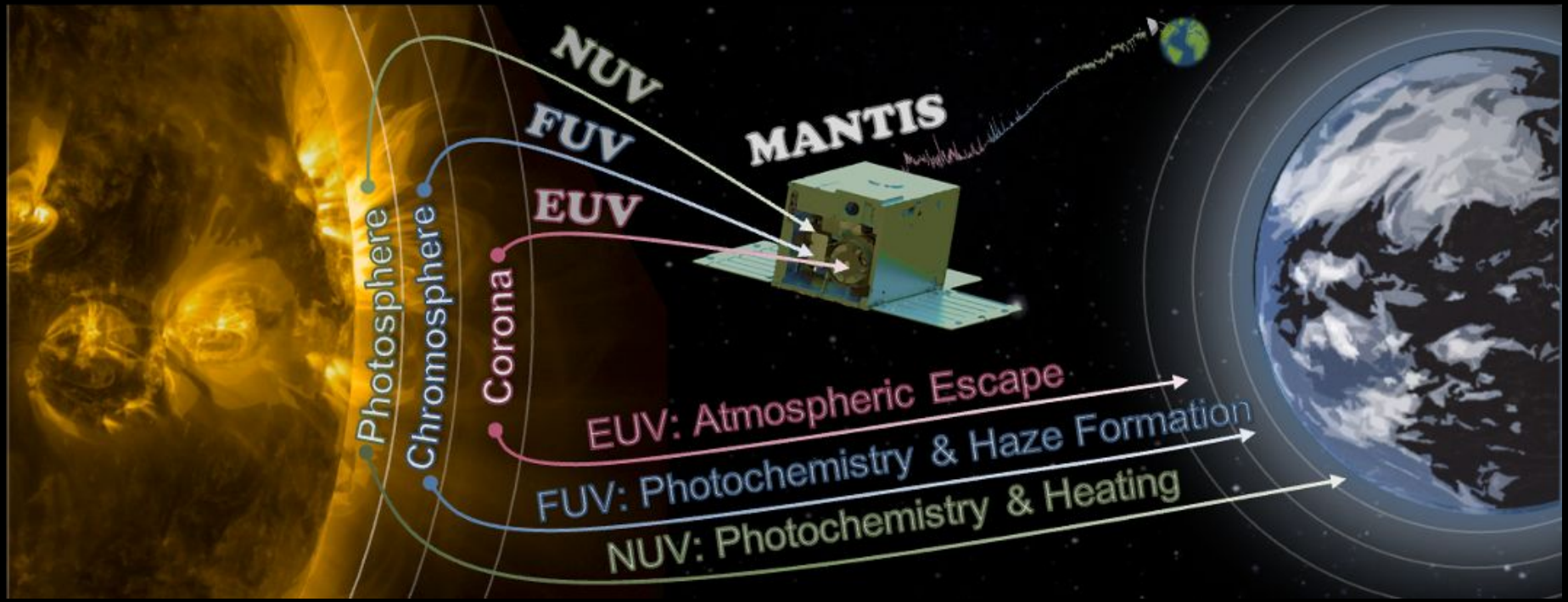


Problem 3: Stars change over time!

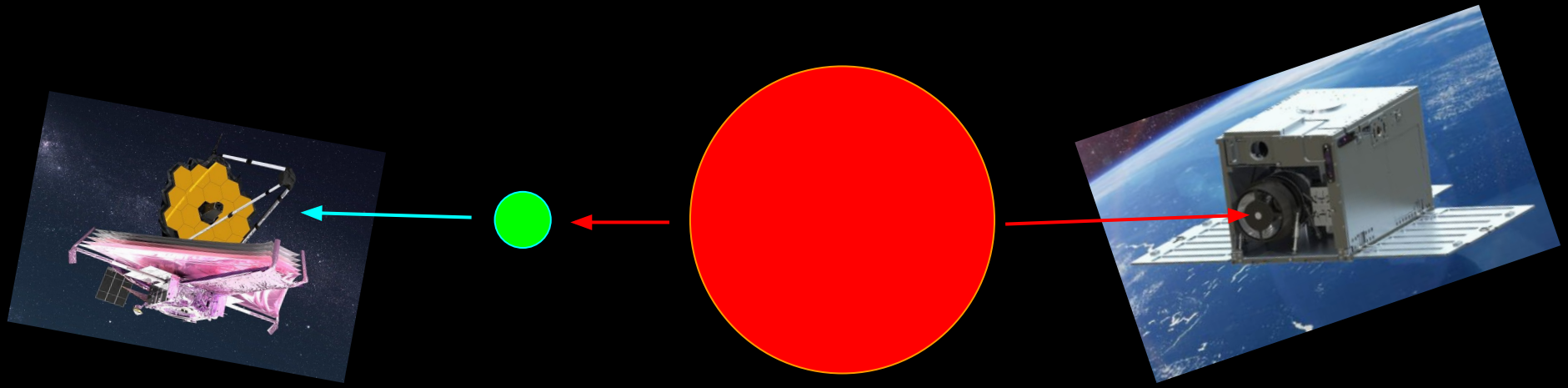


Froning et al. 2019

The MANTIS solution: Observe stars in multiple wavelengths, simultaneously for long time scales

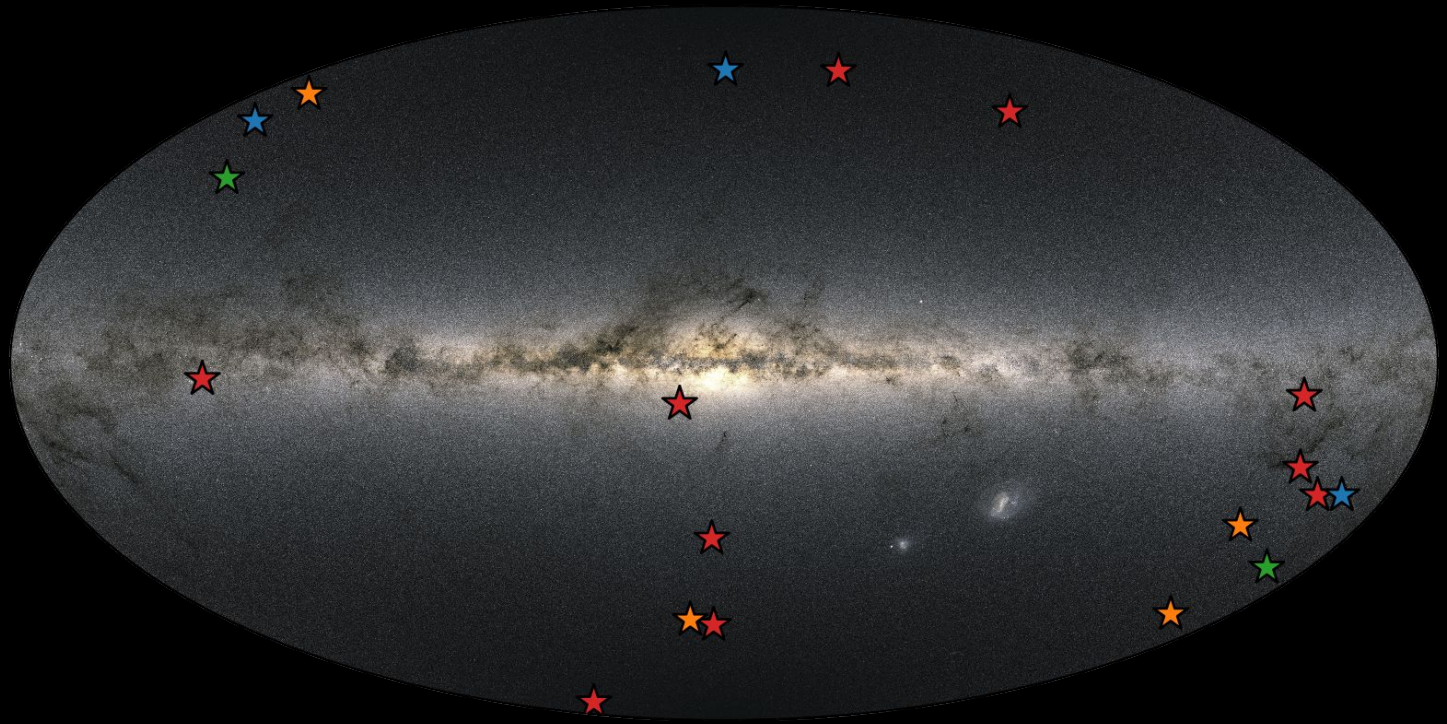


JWST Ultraviolet Monitoring Program (JUMP)



MANTIS will observe stars simultaneously with JWST exoplanet transmission spectroscopy observations.

Multi-band Ultraviolet Monitoring Survey (MUMS)



MANTIS will observe a selection of nearby stars covering a range of mass and ages.

Conclusions

- MANTIS will offer an unprecedented insight into stellar emission and activity in the ultraviolet and its effects on exoplanet atmospheres.
- Simultaneous, time series observations in the NUV, FUV and EUV for JWST targets and nearby stars.
- 16U cubesat with the first orbital astronomy EUV telescope for decades, advancing UV and smallsat technology capabilities.

David Wilson
david.wilson@lasp.colorado.edu

Laboratory for Atmospheric and Space Physics
University of Colorado **Boulder**