# Stellar Spectra in the TESS Northern CVZ

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TESS CVZs Are Ideal to Search for K & M Dwarf Habitable Zone Planets

Northern CVZ

Southern CVZ

TESS Team
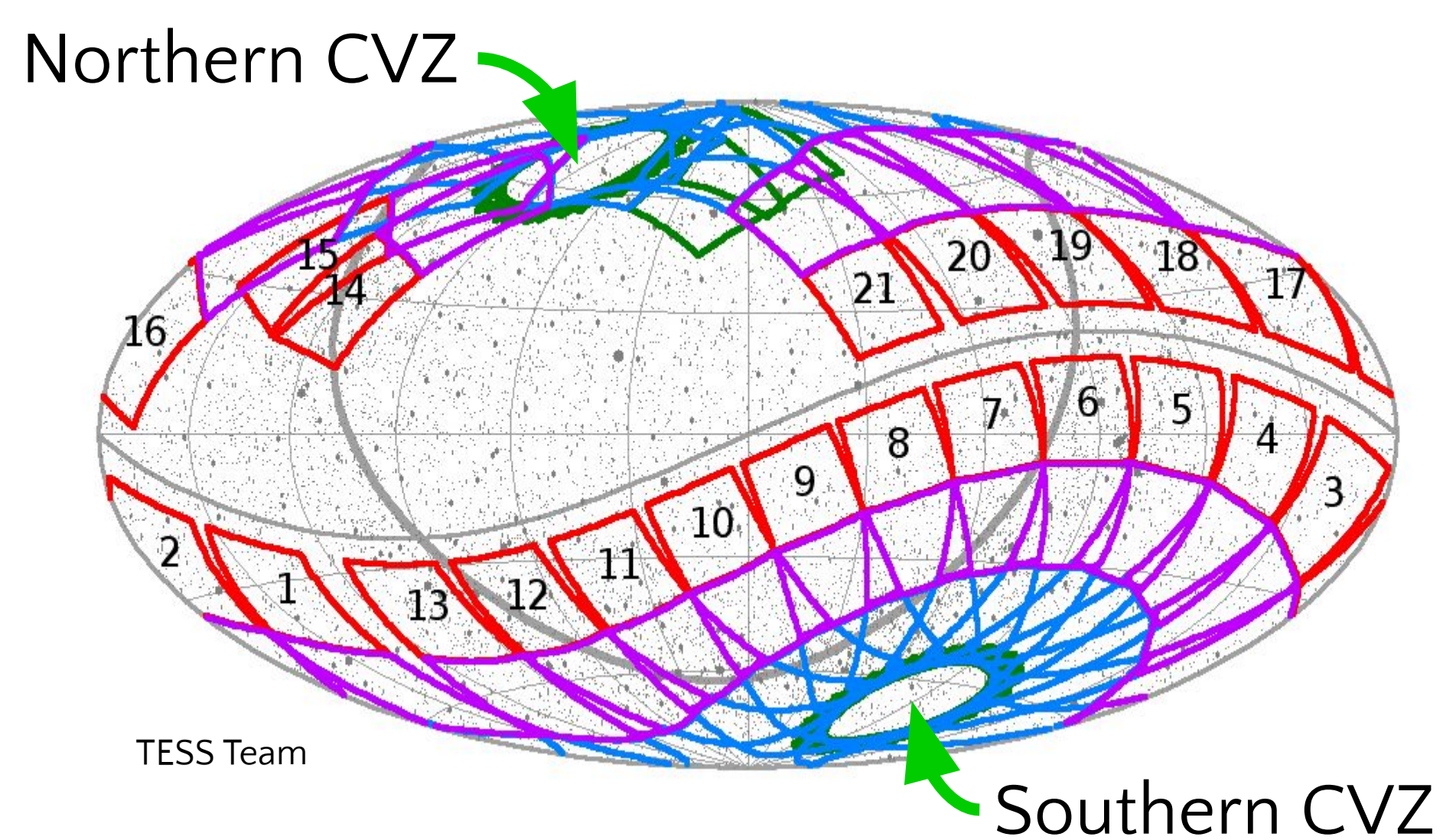
- The Continuous Viewing Zone stars are monitored for over 300 days, enabling discovery of planets with 100 day periods.
- This allows detection of planets in the habitable zones of K and M dwarfs.

In the era of *Gaia*, why do we need spectra?

"Spectral types are defined by appearance of spectra of standard stars... NOT assigned by colors, masses, abs. mags." – E. Mamajek

- *Gaia* distances are invaluable. Combined with photometry, we can learn a lot about stars.
- Adding spectra gives us more precise info about spectral type, T_{eff}, log g, and [Fe/H].

- NASA–NSF Exoplanet Observational Research allowed us to get spectra of ~1000 high priority stars with Hydra on WIYN.
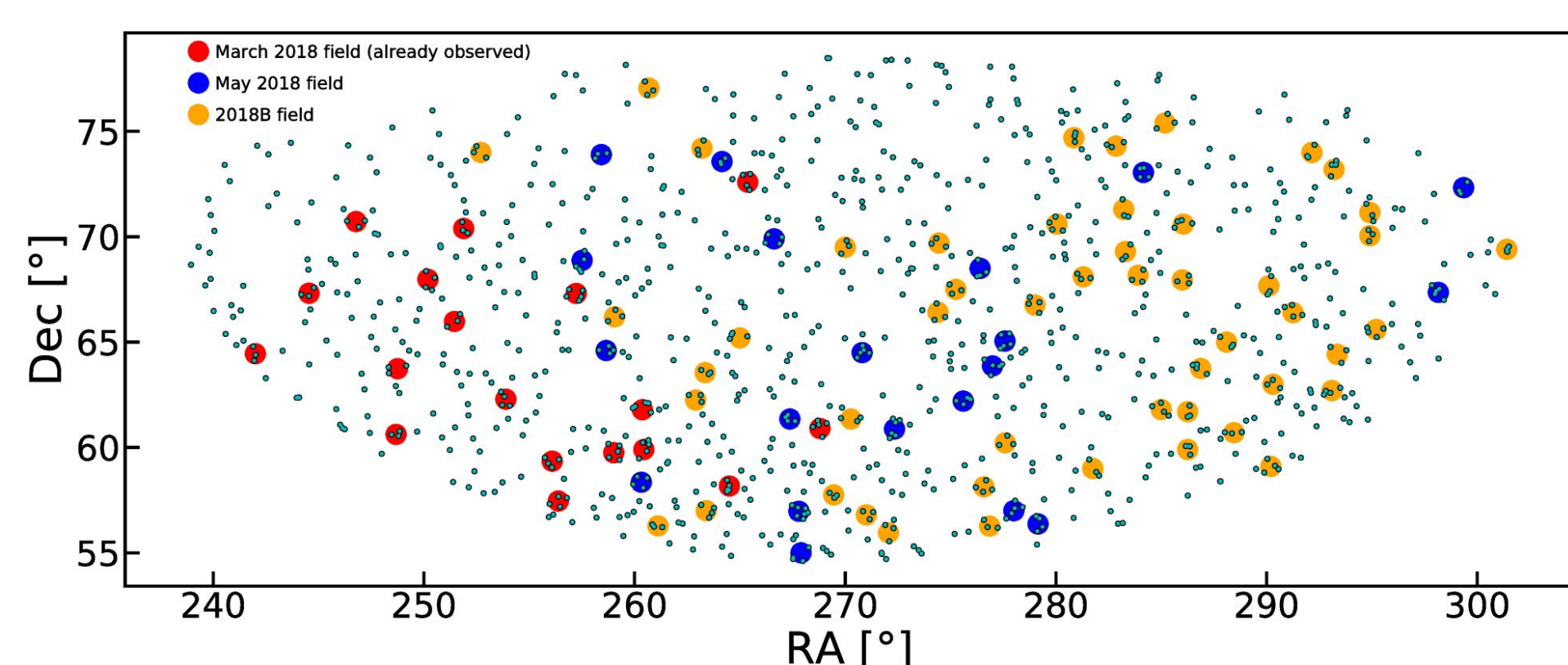
- Location of the 1000 highest priority probable K and M dwarfs in the TESS Northern CVZ.
- The colored circles are 1° fields we targeted over 3 observing semesters.

Spectra of TESS Northern CVZ Targets

O, B, A Stars

F Stars

G Stars

K Stars

M Stars

Other Objects
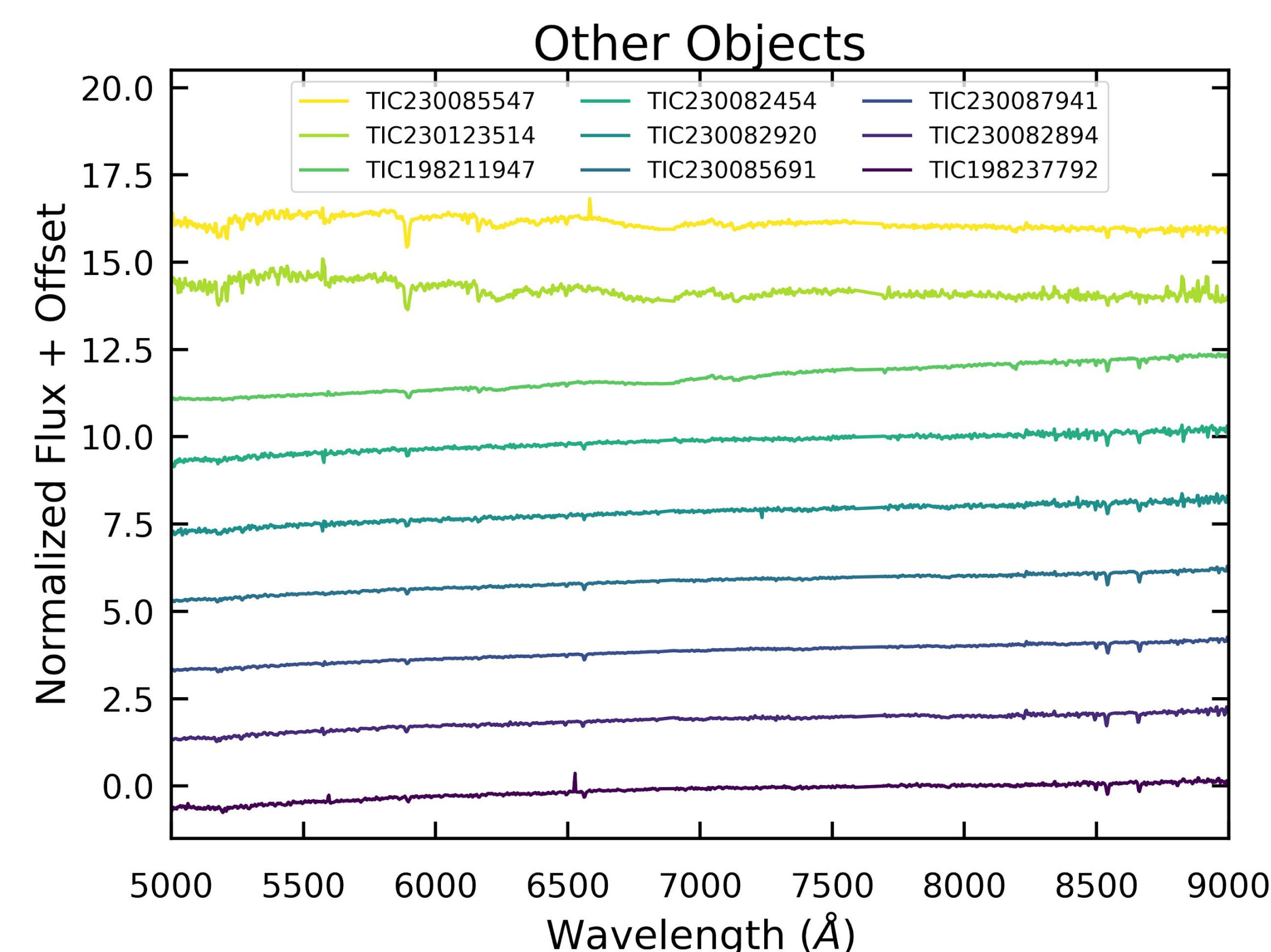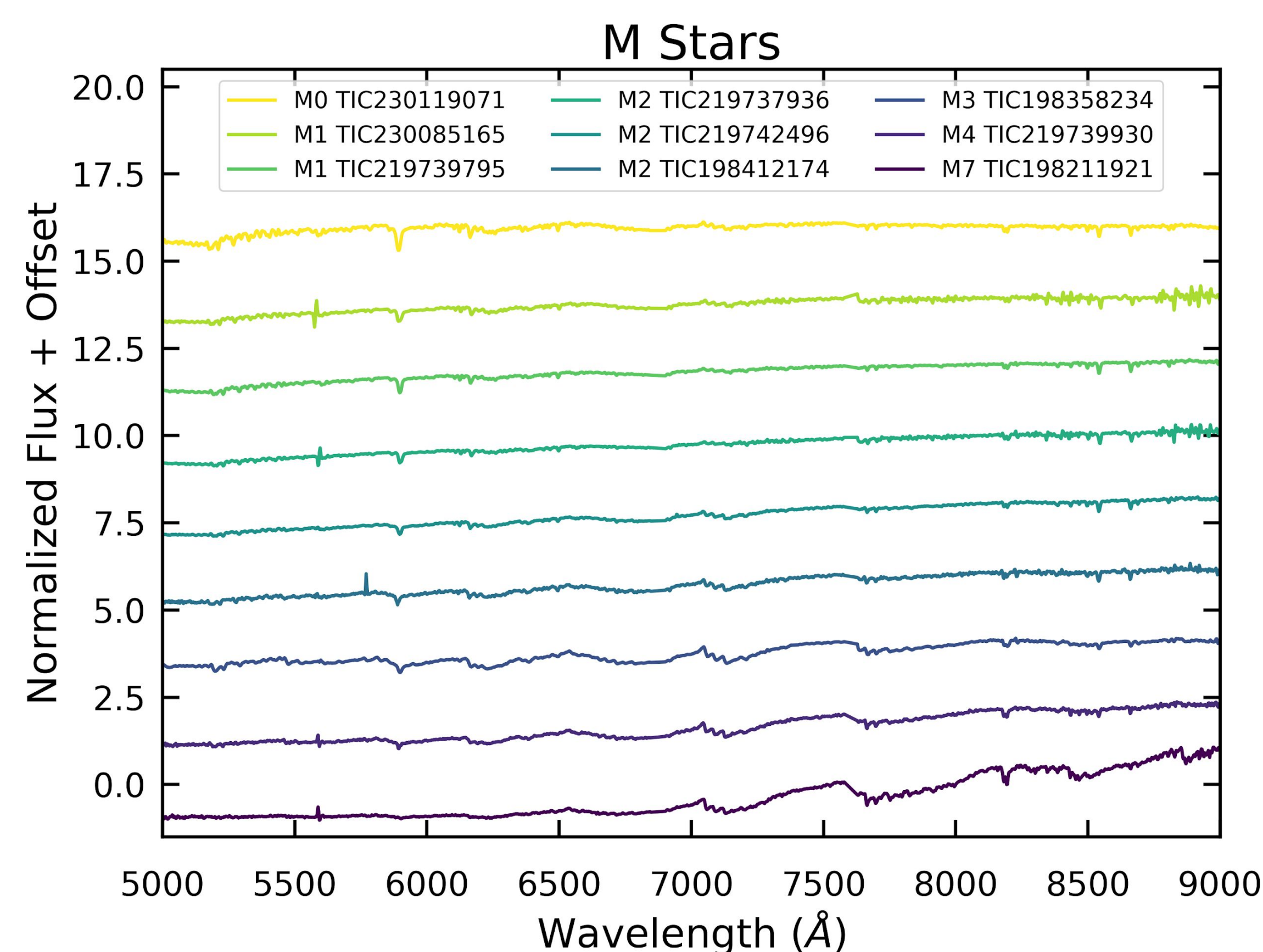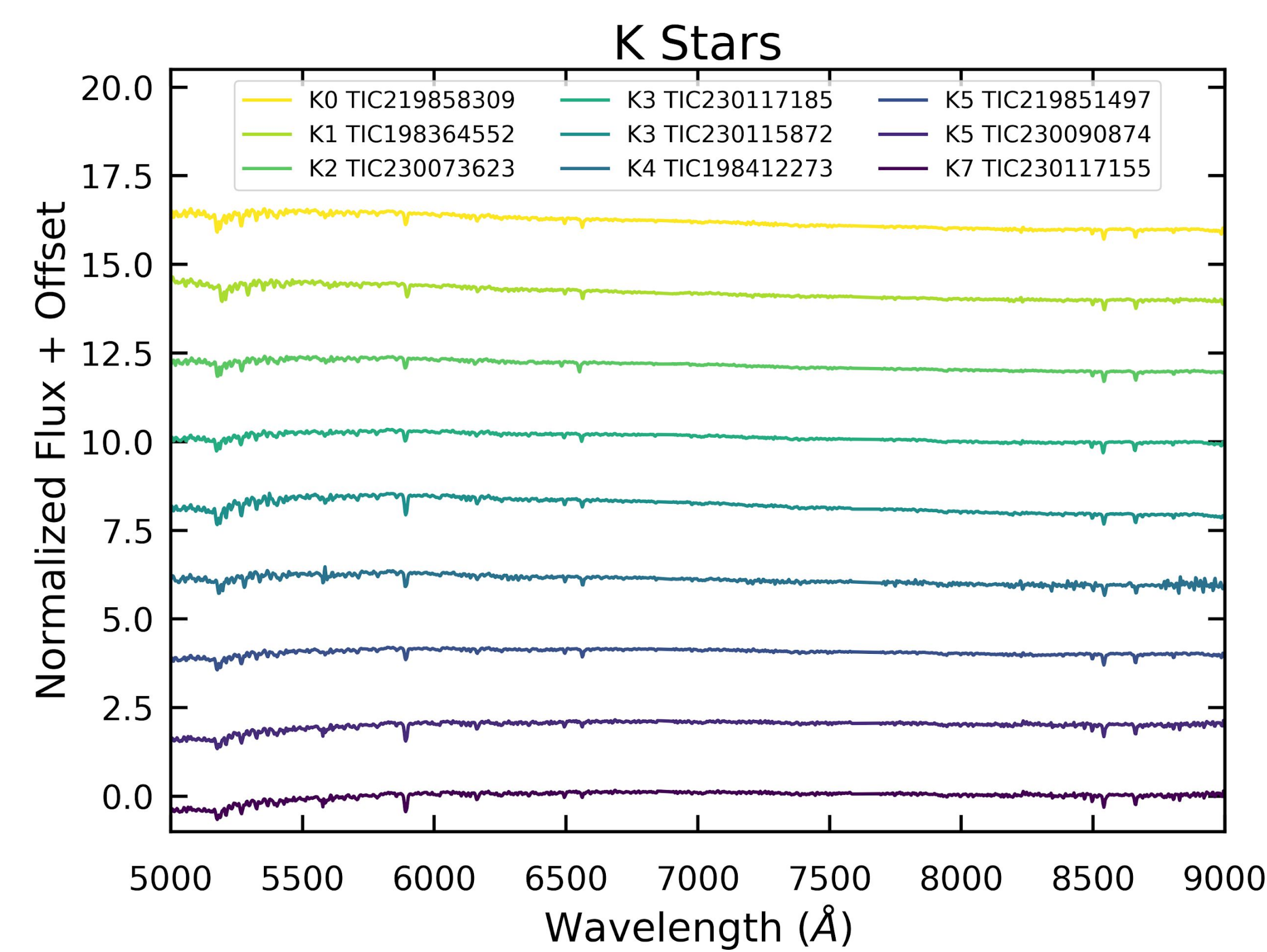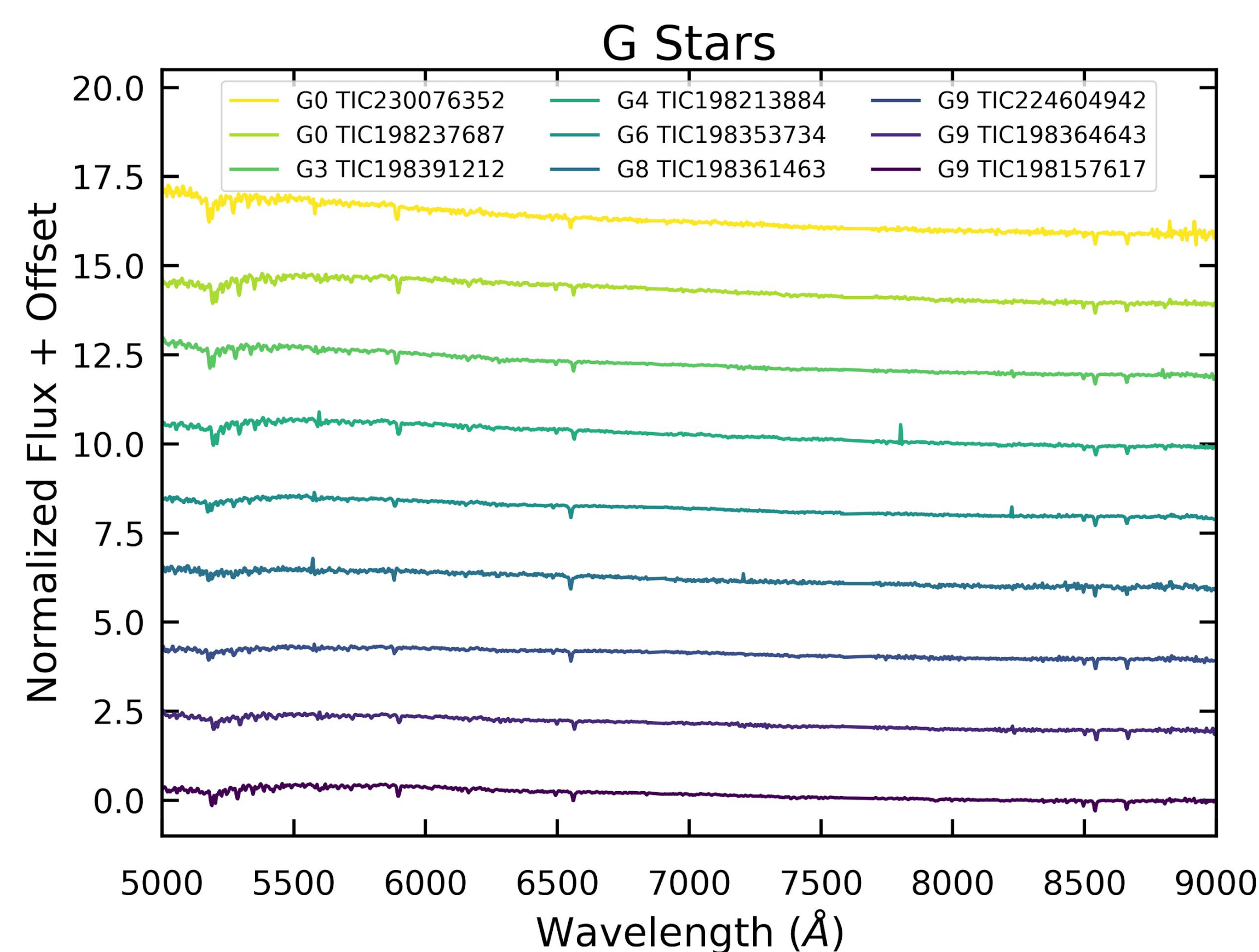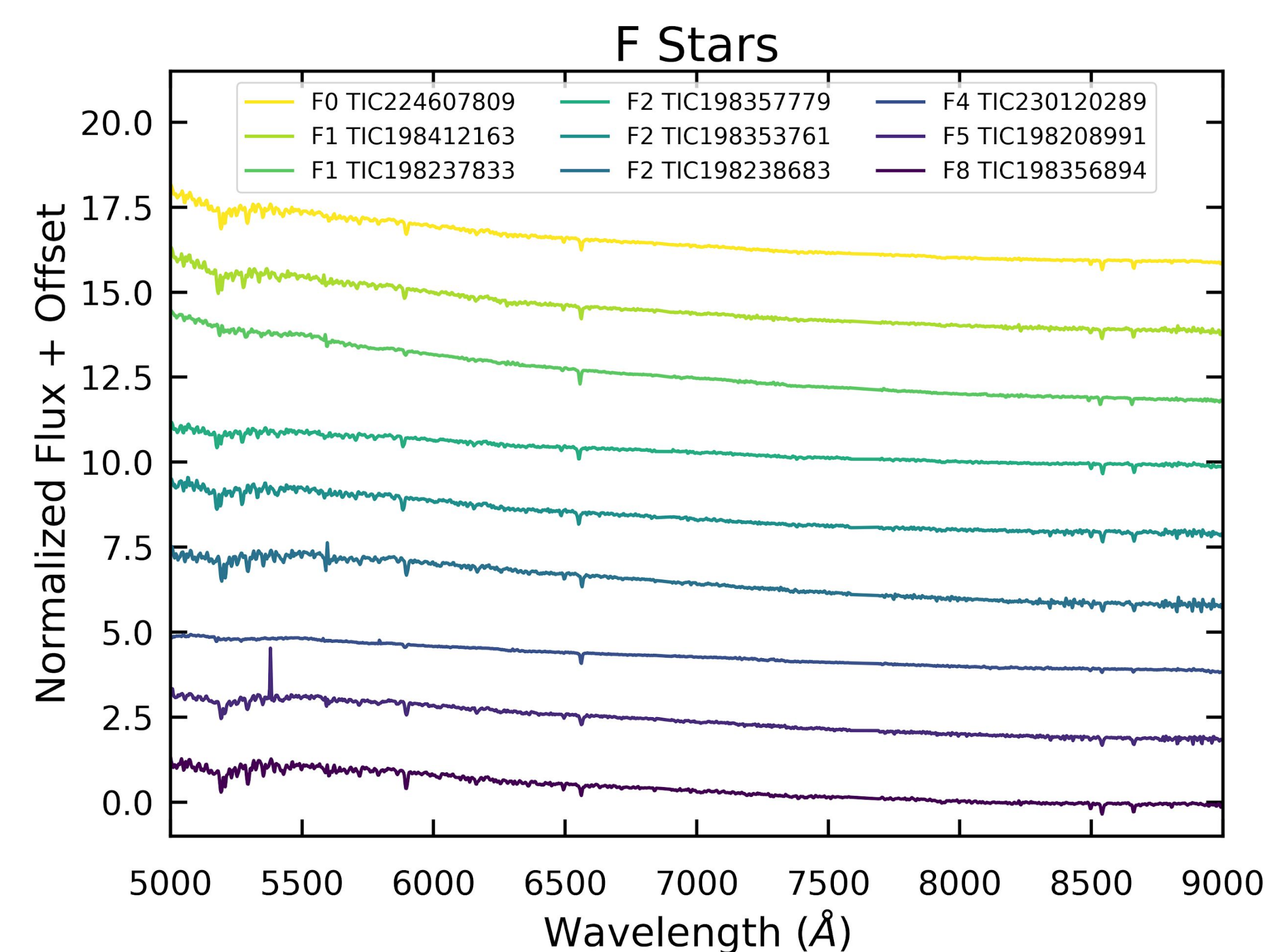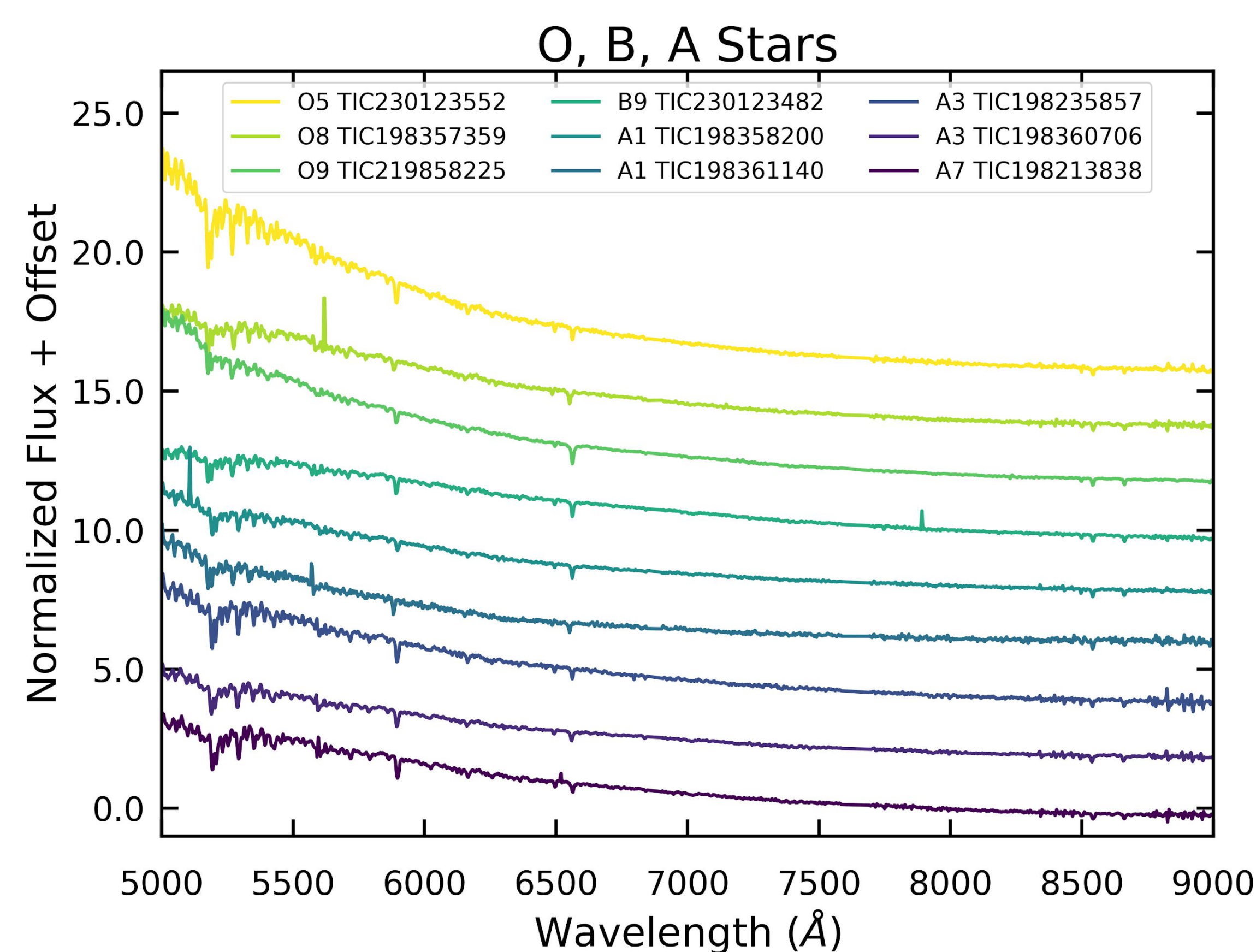
- Primary targets are probable K and M dwarfs in the TESS Input Catalog.
- To optimize yield, we placed fibers on other stars with TESS Input Catalog temperatures < 5000 K.
- This yielded spectra for targets across the stellar sequence (classified using PyHammer, Kesseli et al. 2017) highlighting the need for spectra for accurate stellar classification and properties.
- The bottom right panel contains two probable M dwarf–White Dwarf binaries (top) and several nearly featureless spectra with M dwarf–like slopes.
- This study, in combination with large spectroscopic surveys like LAMOST and APOGEE will be crucial for statistical planet studies with TESS.
- These spectra and the associated stellar properties will be available soon on ExoFOP-TESS.