

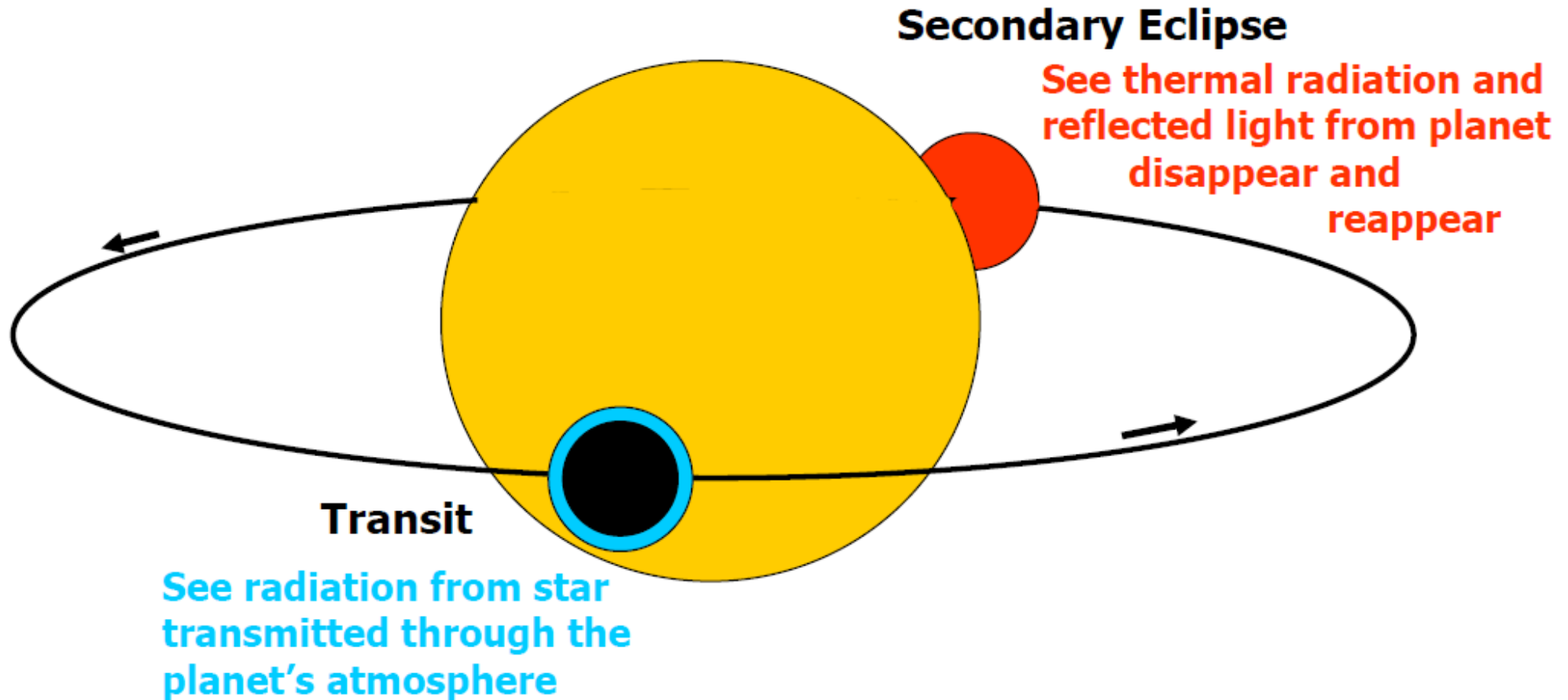


Bryce Croll

***Multiwavelength
Characterization
of the Atmosphere
of Alien Worlds***

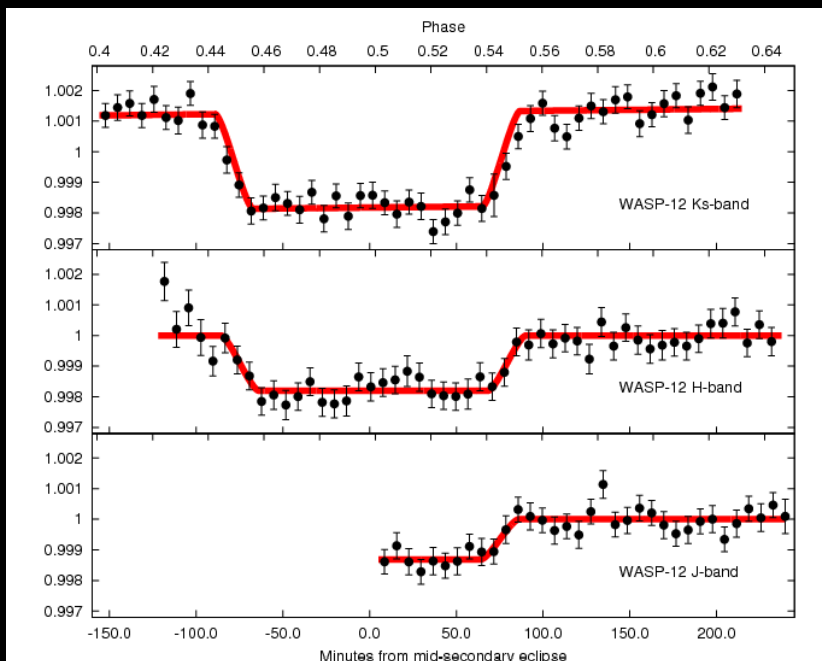
Multiwavelength Characterization of the Atmosphere of Alien Worlds

- I plan to use a variety of telescopes to observe the transits and secondary eclipses of planets big and small – from massive, hot Jupiters to planets just larger than our Earth.

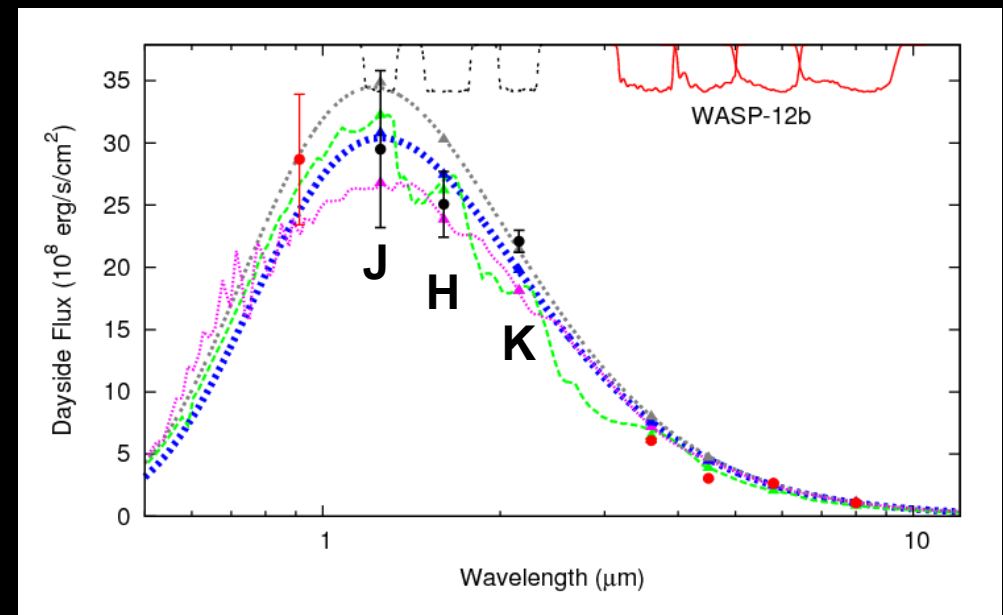


Near-infrared Thermal Emission of hot Jupiters

- I plan to continue to characterize the thermal emission of hot Jupiters from the ground in the near-infrared using the Canada-France-Hawaii Telescope.



Left: Thermal emission detections in the near-infrared JHK bands of the highly irradiated hot Jupiter WASP-12b.

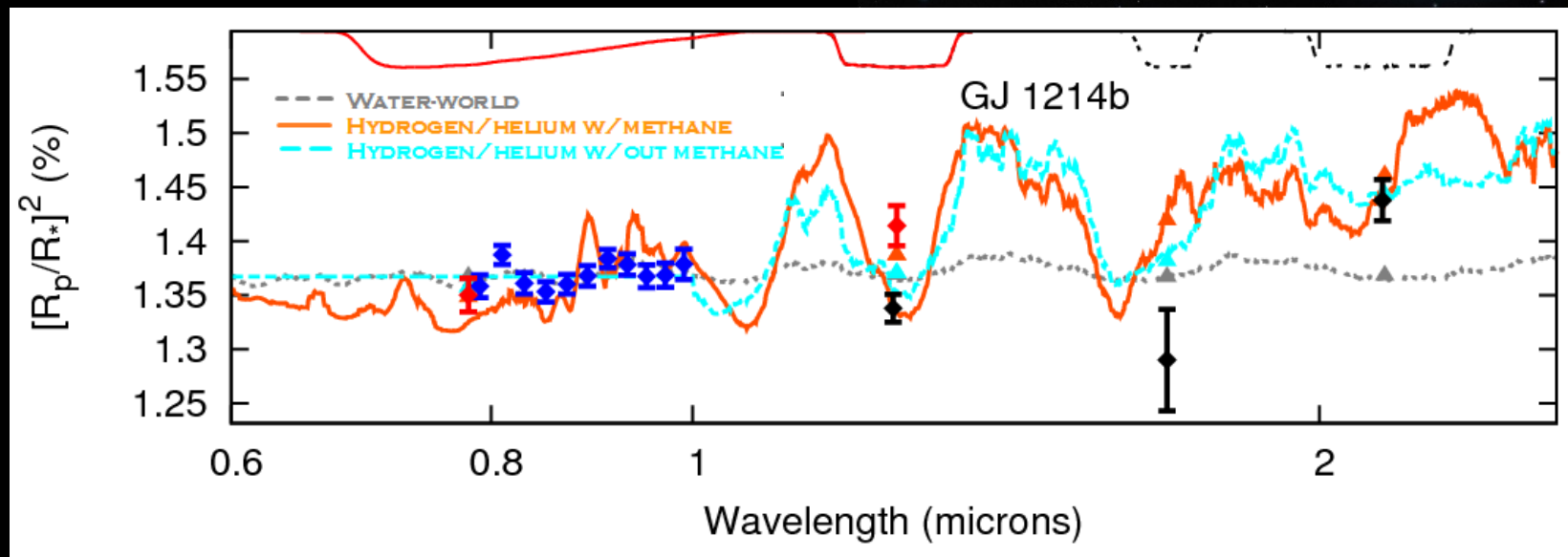


Right: Near-IR constraints are near the peak of the blackbody for hot Jupiters and lead to excellent H constraints on their energy budgets, temperature pressure profiles with depth, and bolometric luminosities.

Characterizing the Atmospheres of super-Earths

- I will search for spectral features from the atmospheres of planets just more massive than our own Earth by searching for the subtle variations in the depths of their transits at different wavelengths. The goal is to determine if the planet is best thought of as a scaled-up terrestrial-like planet or a scaled-down Neptune-like planet.

Image Credit: Lynette Cook



Bottom: Transmission spectroscopy of a super-Earth from other researchers and my own work (black points). If the data show no transit depth variations this argues for a atmosphere similar to that of our Earth, while large variations argue for a planet similar to Neptune.