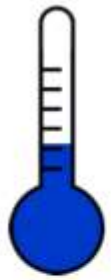
Atelier ExoClock France Part 2

Pierre Drossart IAP

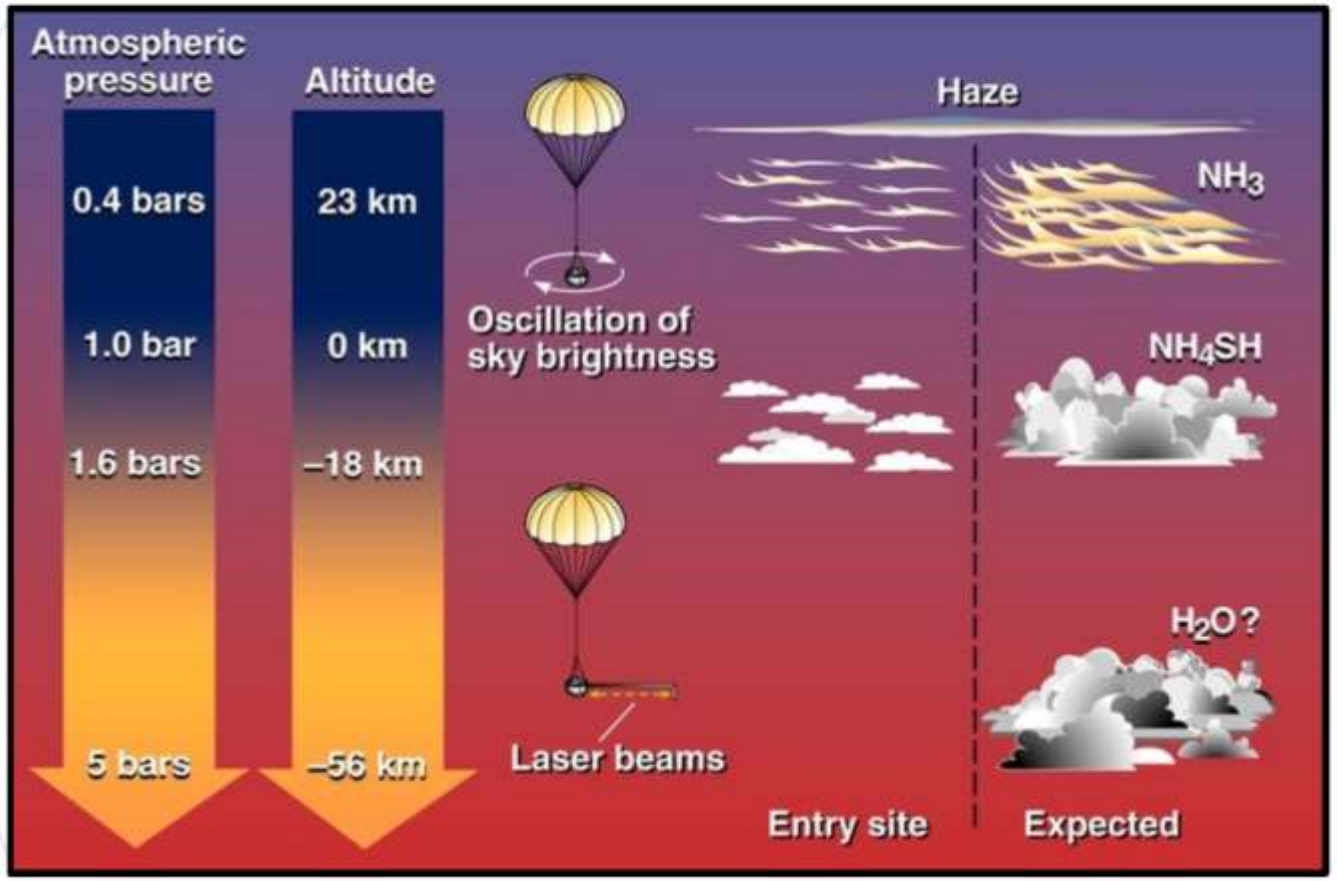
Avec l’aimable contribution de JP Beaulieu (IAP)

Meudon, 12 novembre 2024

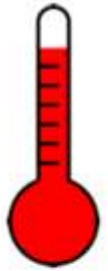
The Sun's planets are cold



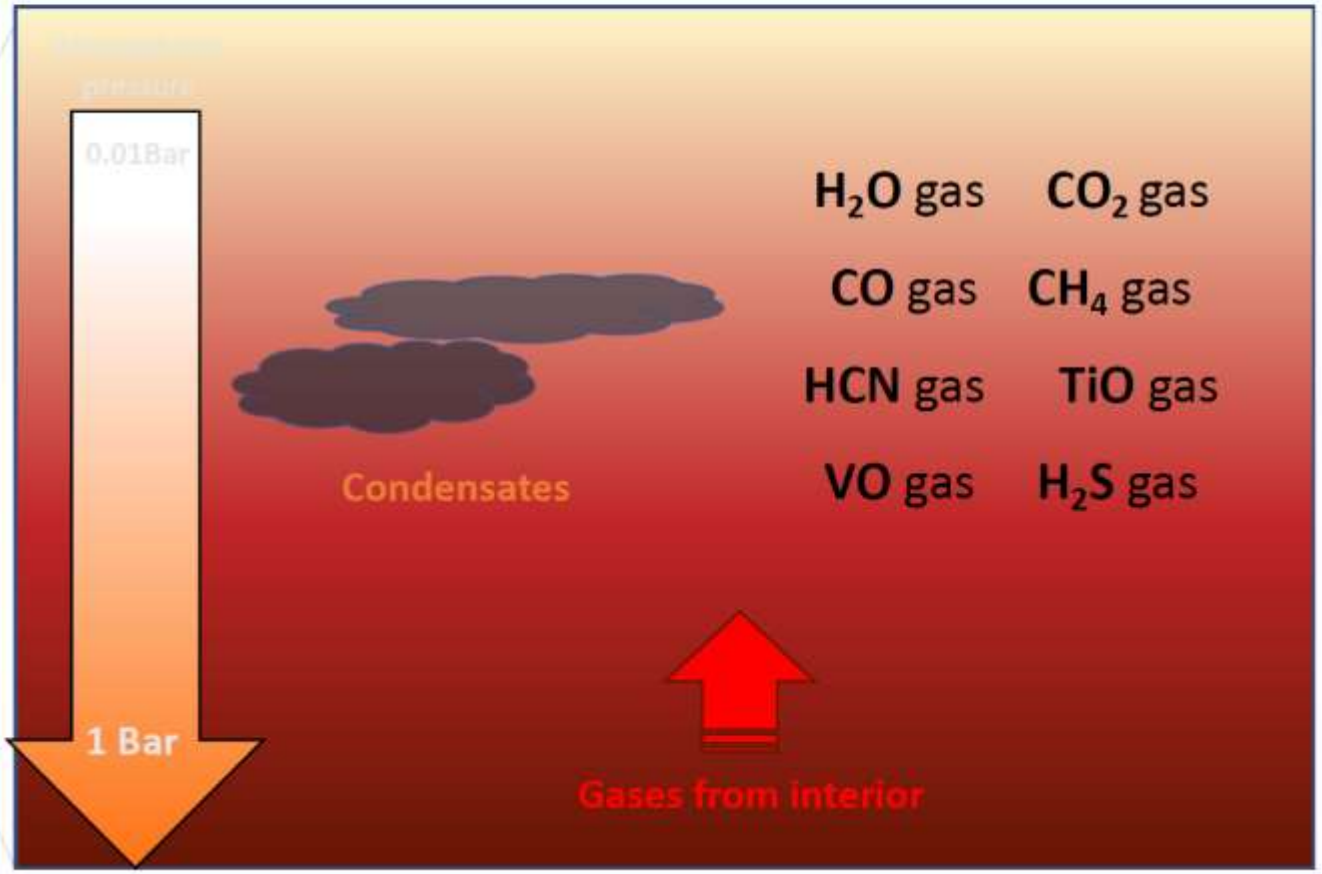
SOME KEY O, C, N, S MOLECULES ARE **NOT** IN GAS FORM



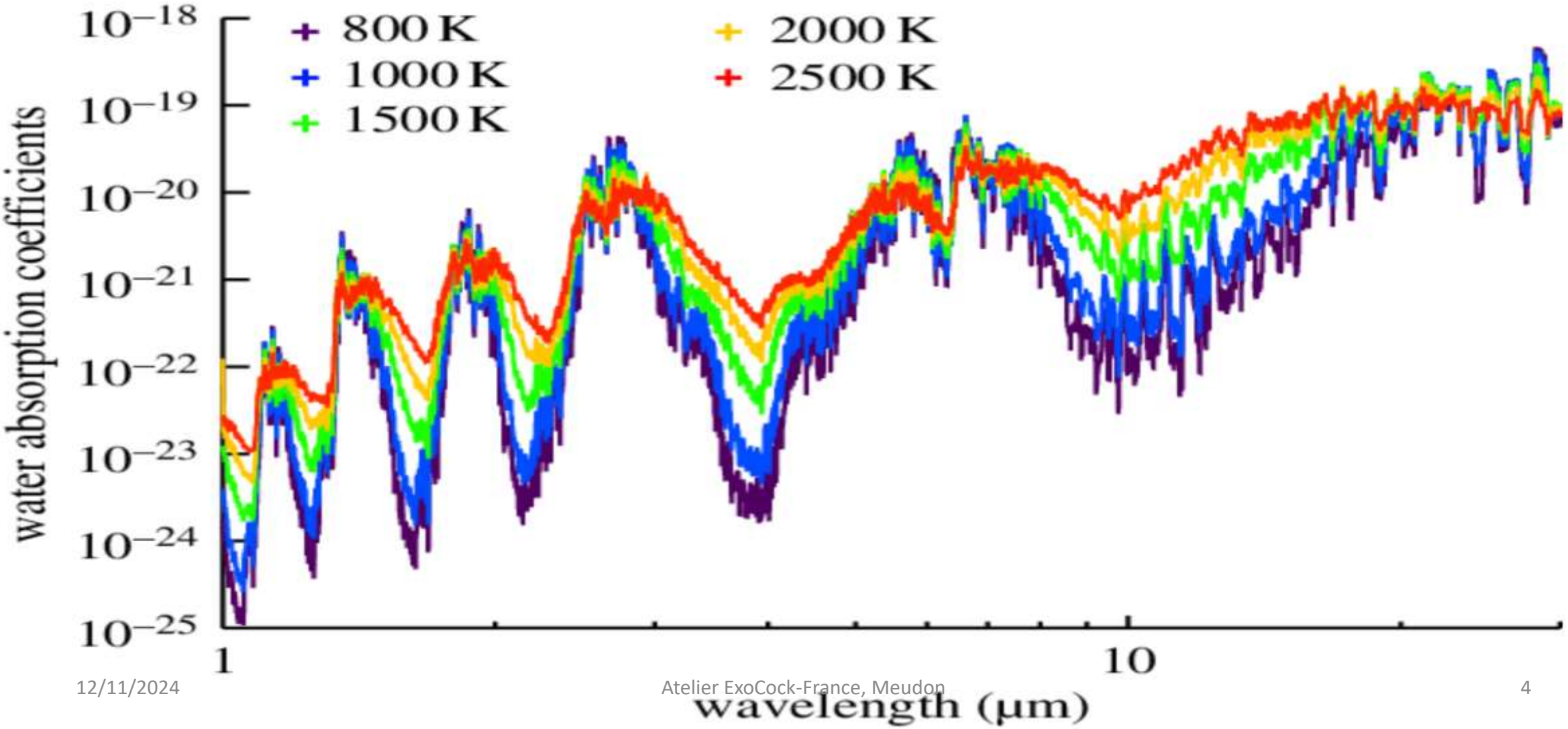
Warm/hot exoplanets

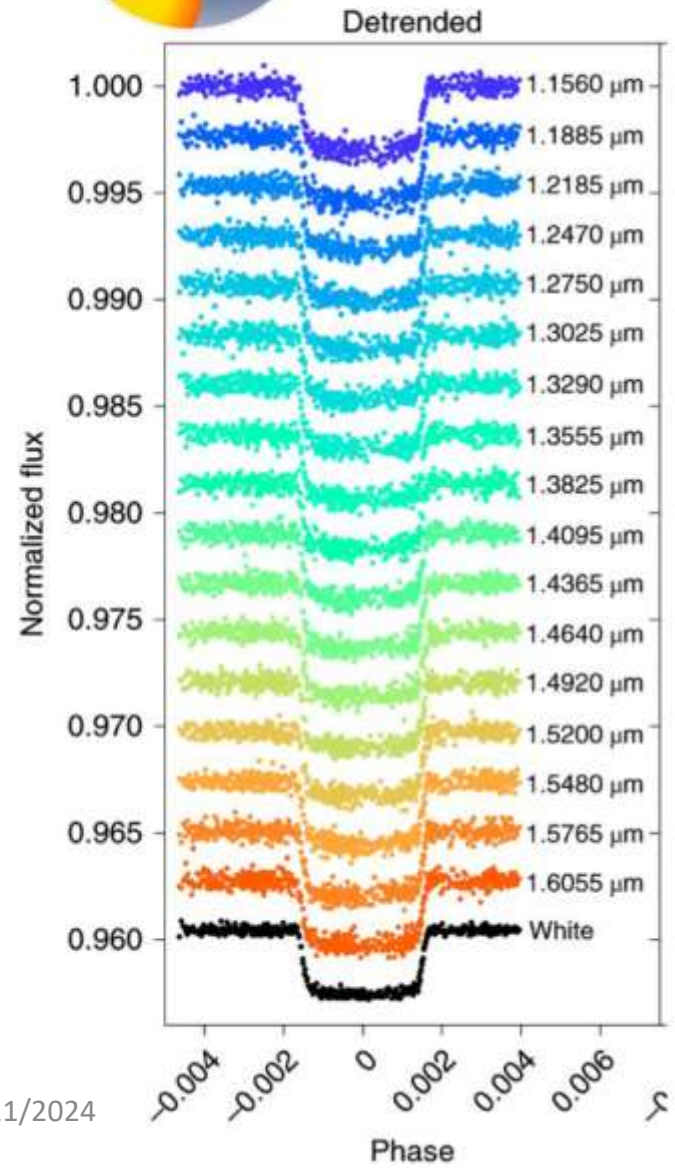


O, C, N, S (Ti, VO, Si) MOLECULES ARE IN GAS FORM



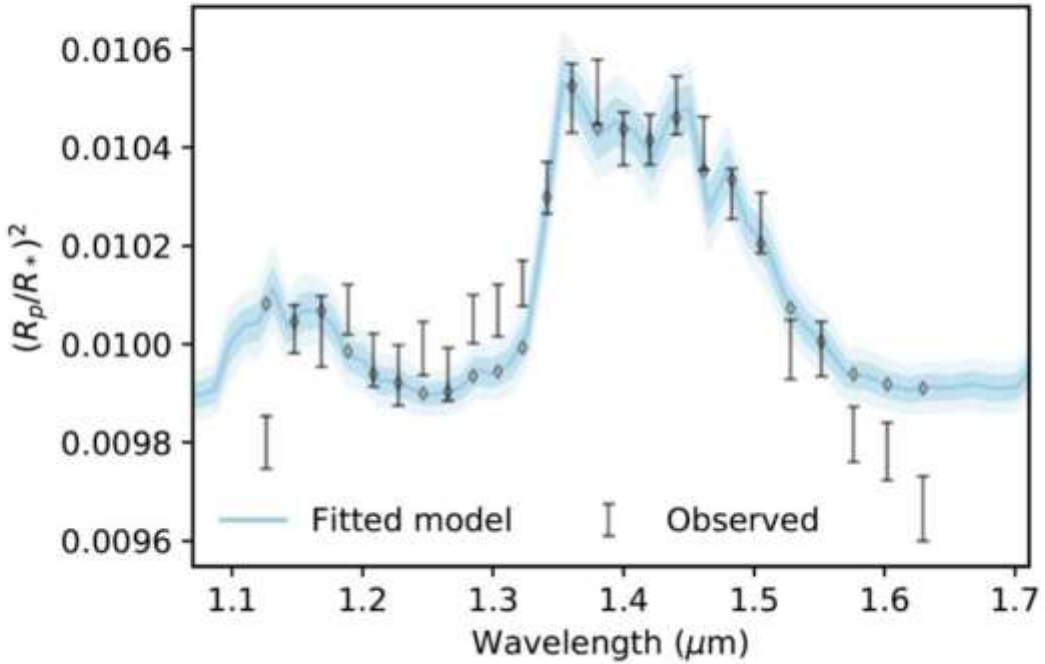
Water vapour absorption as a function of temperature and wavelength





planet WASP-127b, Skaf et al. 2021
Ariel School)

1.1-1.7 microns
H20 dominated spectra



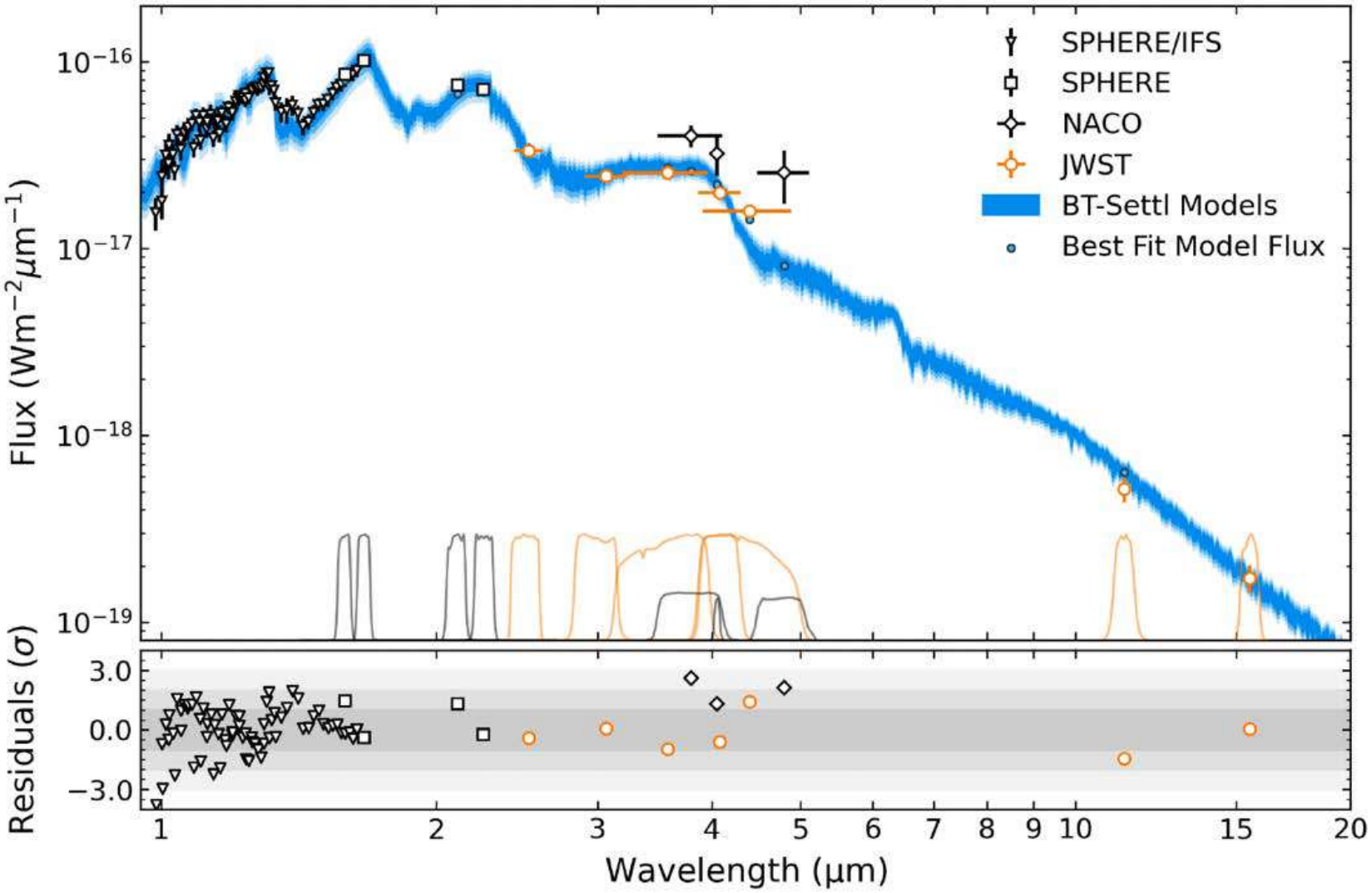


Figure 9. All existing spectroscopic and photometric observations of HIP 65426 b as obtained from SPHERE/IFS (triangles), SPHERE/IRDIS (squares), NaCo (diamonds), and *JWST* (circles). ***Top:*** Data are plotted alongside the 1, 2, and 3σ confidence intervals obtained from fitting to a collection of `BT-SETTL` atmospheric forward models (blue shaded regions), and the model values in the photometric bandpasses (small blue circles). At 3σ, the best fit models occupy parameter ranges of $T_{\rm eff} = 1673^{+27}_{-25}$ K, $\log(g) = 4.10^{+0.20}_{-0.17}$ dex, and $R = 0.90^{+0.04}_{-0.04}$ $R_{\rm Jup}$. The NaCo data have not been included in the model fitting process. Also plotted are the normalised filter throughput profiles for all photometric observations, with the NaCo throughputs scaled by a factor of 2 for improved clarity. ***Bottom:*** Residuals of each data point relative to the best fit model, in addition to 1, 2, and 3σ regions (grey shading).

Le projet Ariel

Mission ESA, sélectionnée en 2018, confirmée en 2021

Giovanna Tinetti, Univ. College London – PI

Participations UK, France, Italie + …

Ariel, mission M4 de l'ESA.

PI Giovanna Tinetti (UK), co-PI Jean-Philippe Beaulieu, Pierre-Olivier Lagage (France), Giusi Micella, Pino Malaguti (Italie), …

Membres du Science Team : Lagage, Leconte, Venot

CNES Pascale Danto

Les 4 labos principaux d'Ariel: IAP, AIM, LESIA, IAS

Des liens forts avec LISA (Créteil), LAB (Bordeaux), LAM (Marseille), LATMOS

- Quelle est la composition des exoplanètes ?
- Comment les systèmes planétaires se forment?
- Comment les planètes et leurs atmosphères évoluent elles au cours du temps ?