

Select a Star

M5 MS

Teff = 3000  
Rstar = 0.2Rsun  
Mstar = 0.15Msun  
FeH = 1  
Log(g) = 5

K2-K3 MS

Teff = 5000  
Rstar = 0.8Rsun  
Mstar = 0.8Msun  
FeH = 1  
Log(g) = 4.5

K2-K3 RGB

Teff = 5000  
Rstar = 10Rsun  
Mstar = 0.8Msun  
FeH = 1  
Log(g) = 2.3

F1 MS

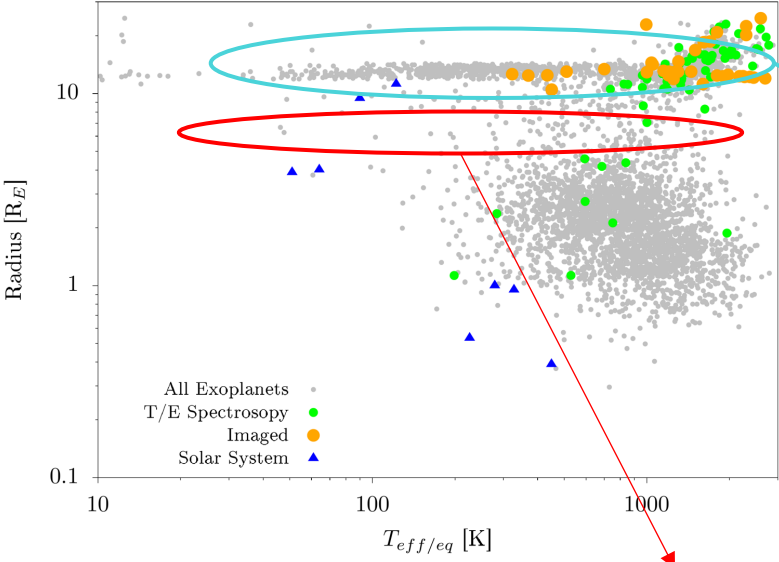
Teff = 7000  
Rstar = 1.7Rsun  
Mstar = 1.5Msun  
FeH = 1  
Log(g) = 4.0

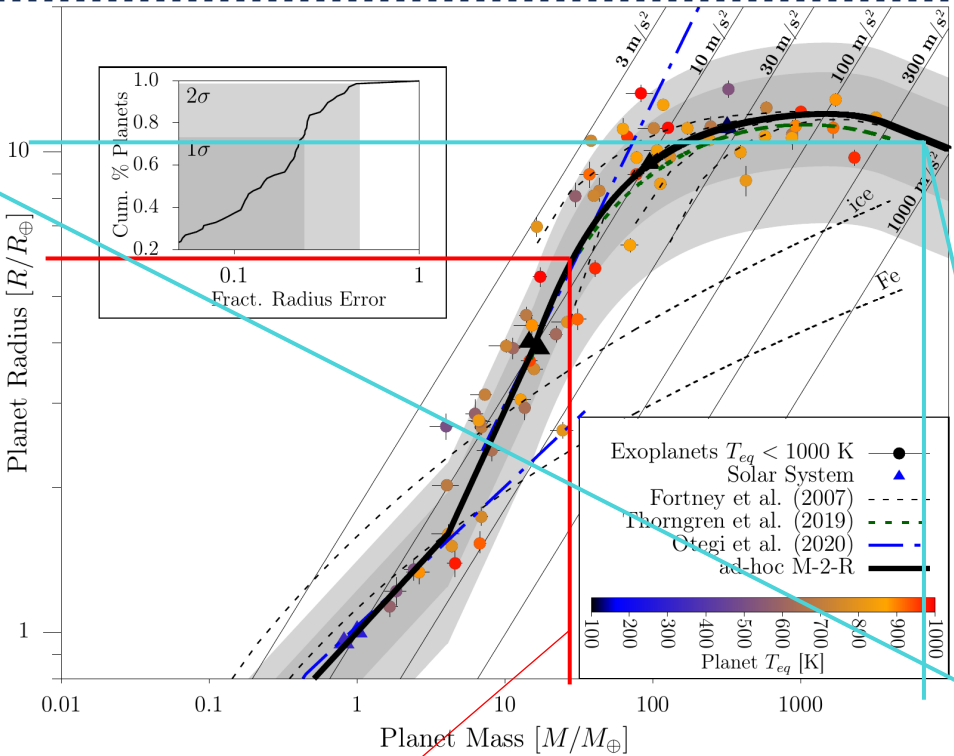
F1 RGB

Teff = 7000  
Rstar = 10Rsun  
Mstar = 1.5Msun  
FeH = 1  
Log(g) = 2.6

Typical masses/radii for given Teff from Mamajek table:  
[https://www.pas.rochester.edu/~emamajek/EEM\\_dwarf\\_UBVIJHK\\_colors\\_Teff.txt](https://www.pas.rochester.edu/~emamajek/EEM_dwarf_UBVIJHK_colors_Teff.txt)

Select a Planet





Neptune

Radius = 4  
Rearth = 0.35Rjup  
  
Mass = 17Mearth = 0.05Mjup  
  
Metallicity = 100

Neptune-Saturn Intermediate

Radius = 6  
Rearth = 0.54Rjup  
  
Mass = 30Mearth = 0.09Mjup  
  
Metallicity = 50

Saturn

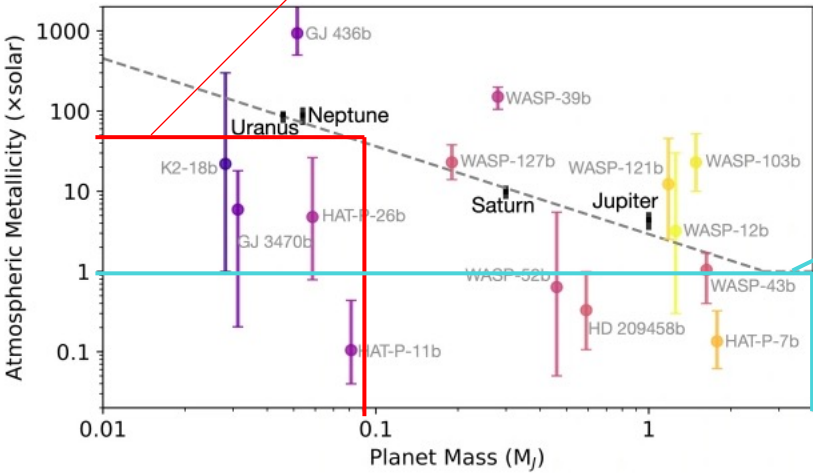
Radius = 9  
Rearth = 0.8Rjup  
  
Mass = 95Mearth = 0.3Mjup  
  
Metallicity = 10

Jupiter

Radius = 11  
Rearth = 1Rjup  
  
Mass = 317Mearth = 1Mjup  
  
Metallicity = 3

Super Jupiter

Radius = 10  
Rearth = 0.9Rjup  
  
Mass = 1560Mearth = 5Mjup  
  
Metallicity = 1



Mass-Metallicity diagram presented in Wakeford & Dalba (2020) Philosophical Transactions of The Royal Society, Future Exploration of the Ice Giants edition.

Select a Separation -> Eq Temp

0.1 au0.5 au1 au3 au10 au

Select a C/O ratio

0.51.5

Select Phase

140 deg120 deg90 deg45 deg0 deg

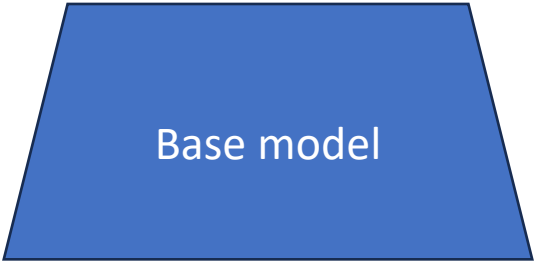
Cloud-free Spectrum

1250 permutations

Base model

250 permutations

Variables kept constant:  
T\_int = 100K  
noTiVO = True  
Rfacv = 0.5  
Nstr\_upper = 85  
Nlevel = 91  
Nstr\_deep = 89  
Nofczns = 1  
P\_bottom = 2  
P\_top = -6



Select an  $f_{\text{sed}}$



0.1

0.5

1

3

6



Select a  $K_{zz}$

1e9

1e11



Apply phase



10 permutations  
per base model

