Make a grid of: Select a Planet Earth: Titan: Water world: Venus: **N2-dominant** CO2-dominant CH4-dominant **H2O-dominant** Surface albedo: 0.2 Surface albedo: 0.2 Surface albedo: 0.1 Surface albedo: 0.06 (https://www.sciencedirect.com/science/article/pii/ (https://iopscience.iop.org/article/10.3847/15 (same as Earth's open 38-4357/ab9cba) S003206330600136X) oceans) Which drives P(T) profiles Select Teq/Clouds NH3 condensation **H2O** condensation Hazes KCI/ZnS (hot) clouds: Teq = 130 clouds: Teq = 250 condensation clouds: Teq = 810**Select Chemistry** 0.01% of each: 1% of each: 0.0001% of each: 20% O2 (Earth Only) H2O, CO2, CH4, O2, CO, H2O, CO2, CH4, O2, CO, H2O, CO2, CH4, O2, CO, 03 03 03 **Select Gravity** 10 m/s^2 5 m/s^2 15 m/s^2 **Select Phase** 140 deg 120 deg Base model 90 deg 45 deg 735 permutations 0 deg Select clouds Grey opacity Cloud free source at 0.1 bar 1470 total permutations Cloud-free Cloudy albedo albedo Spectrum Spectrum To generate Planet Flux spectrum: Take an albedo spectrum Select stellar type (Teff, R*) Select Planet Teq This gives separation This also gives planet Select Planet Radius

mass

Compute Fp/Fs

spectrum