



Remote Prospecting for Life on Distant Worlds

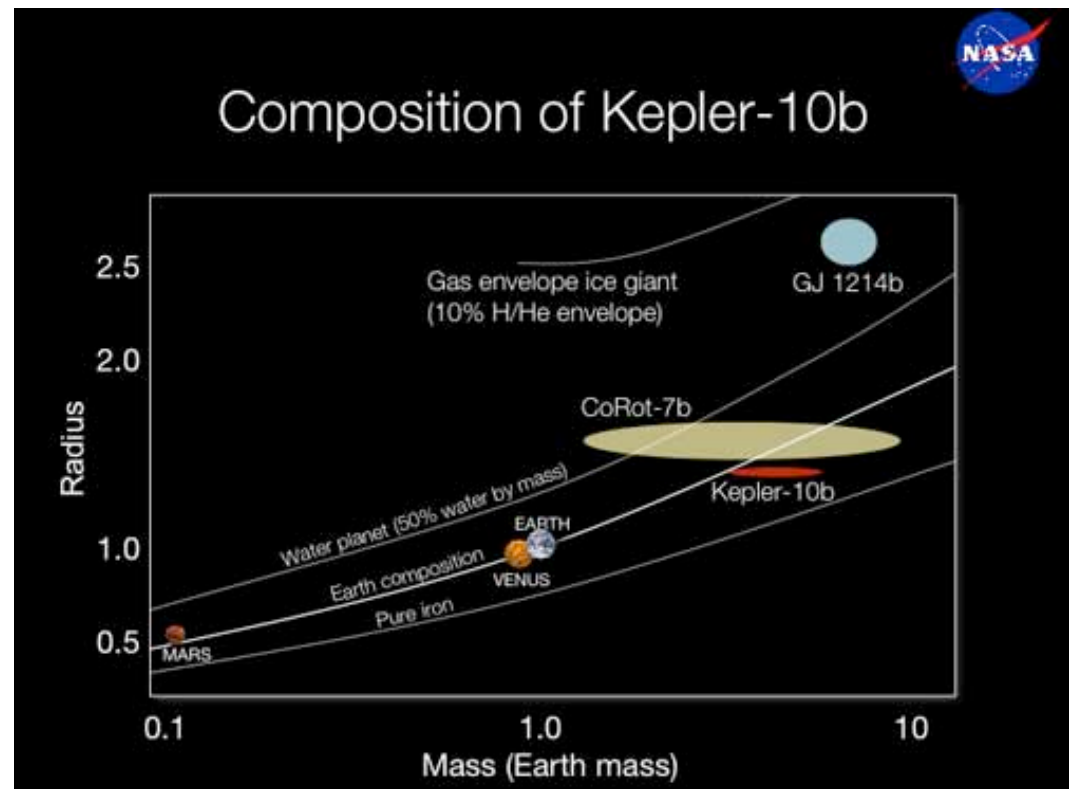
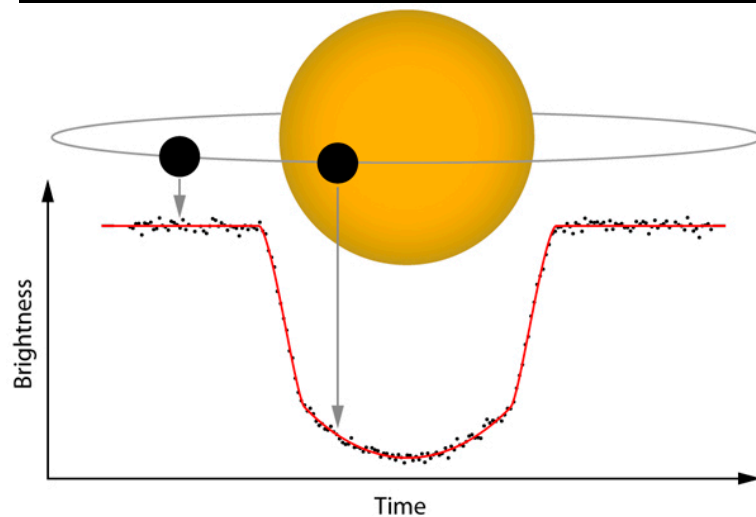
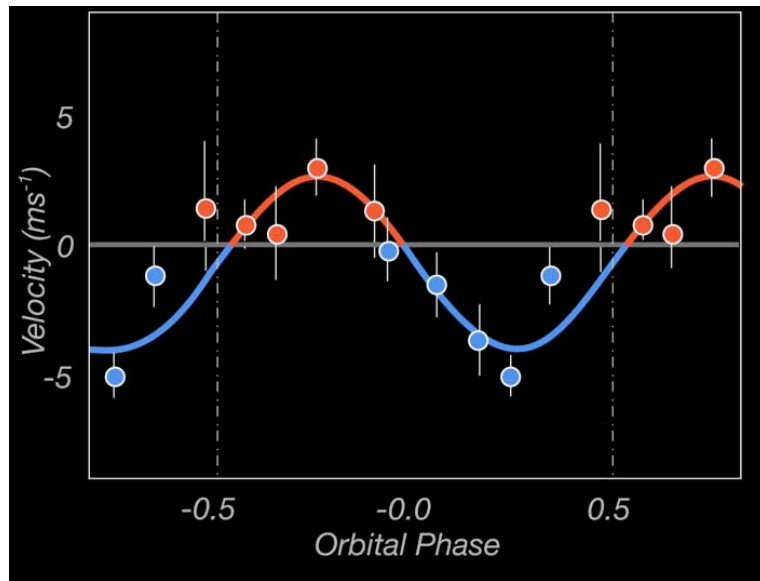
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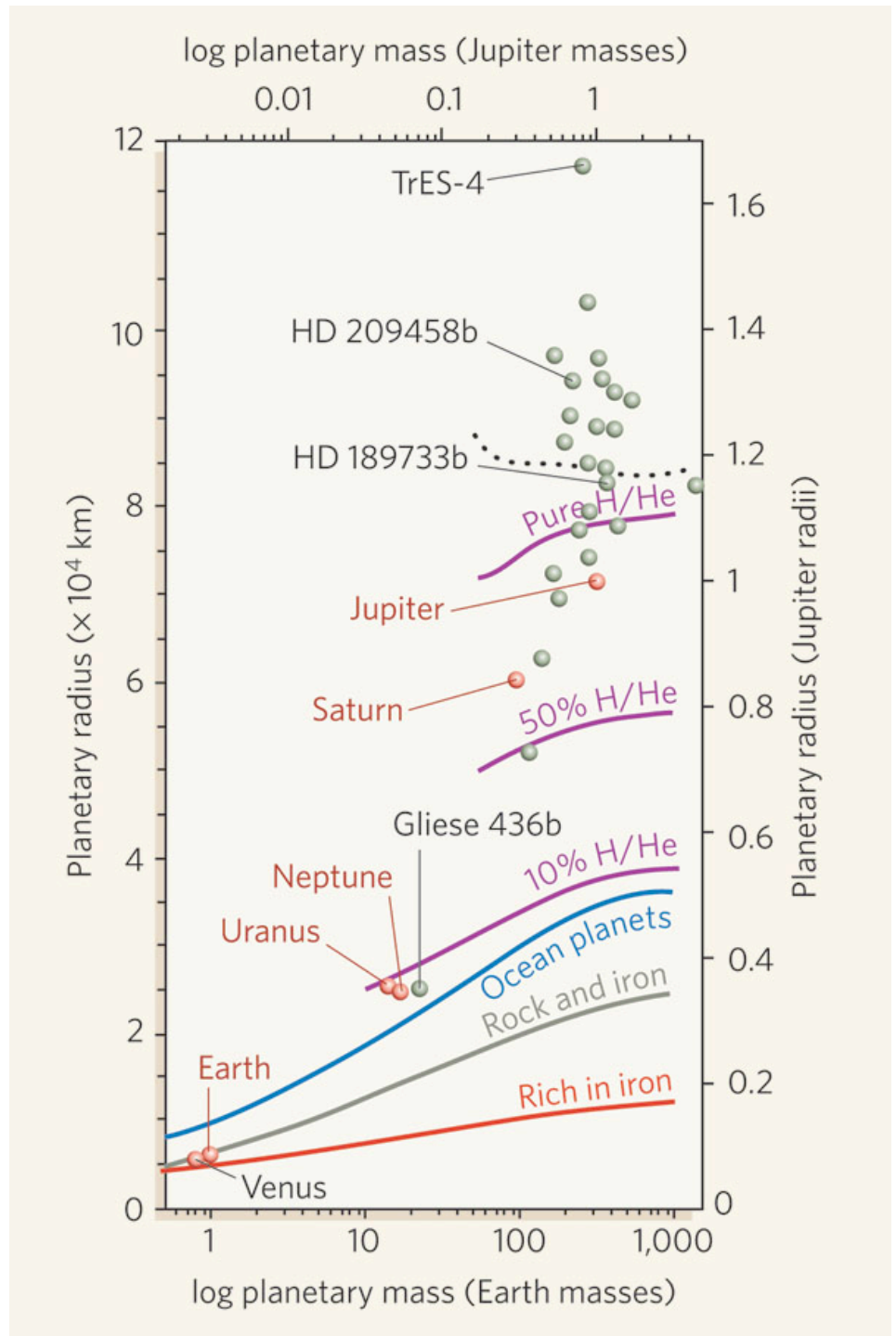
Getting Exoplanet Densities

Densities come from knowing mass (using the Doppler effect and gravity) and size (using transit eclipse effect).



The density of a world reveals its composition, or at least it limits the compositional mix.

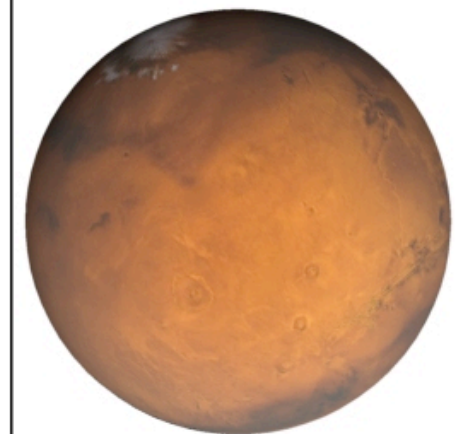
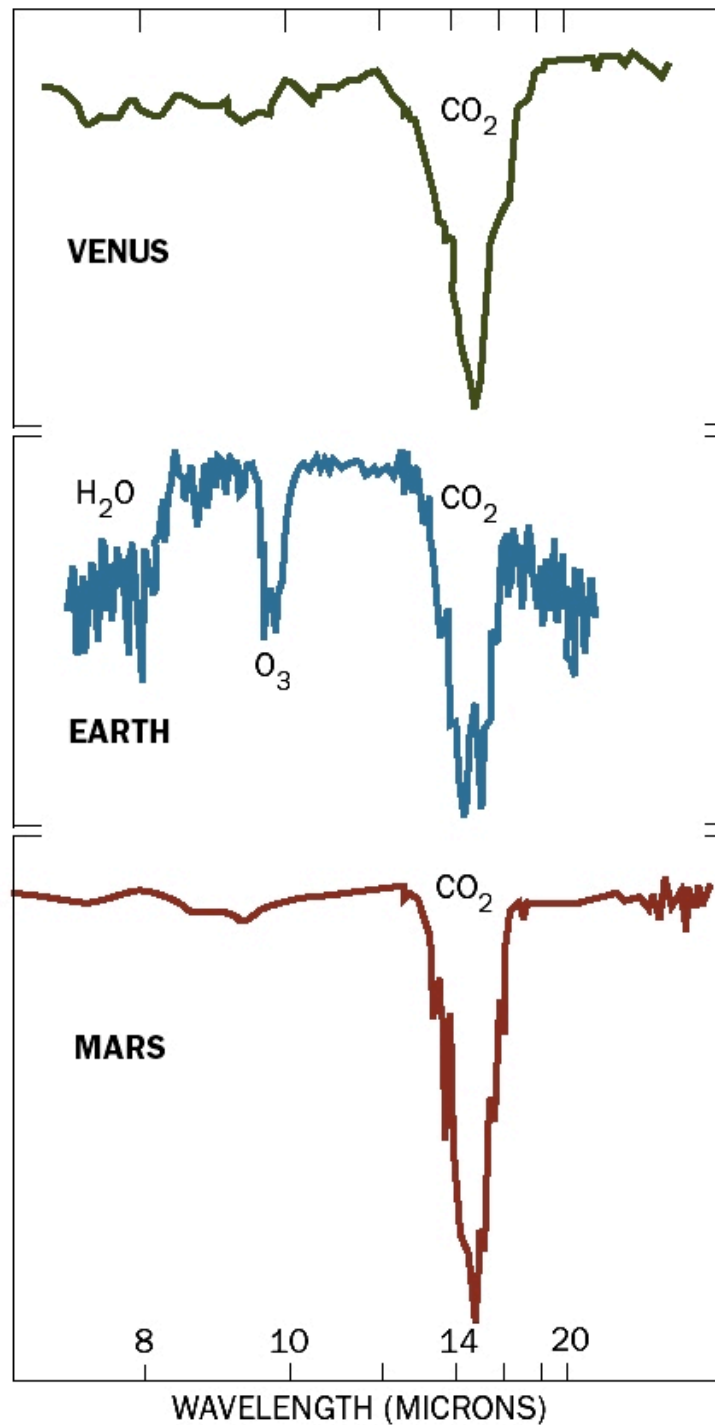
A good example is the Earth and Moon. Both have rocky surfaces, but Earth's density lies between rock and iron. The Moon's density is like rock. As a result, the Earth must have an iron core, but the Moon does not.

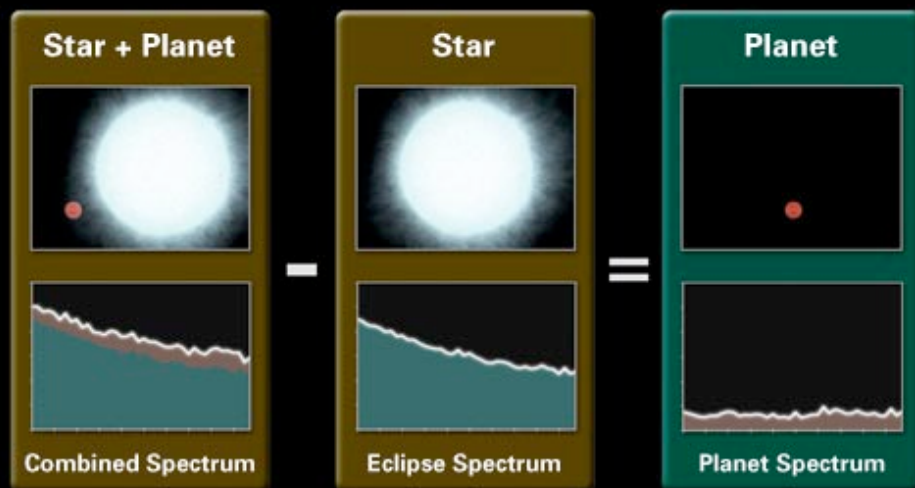


SIGNATURES OF LIFE:

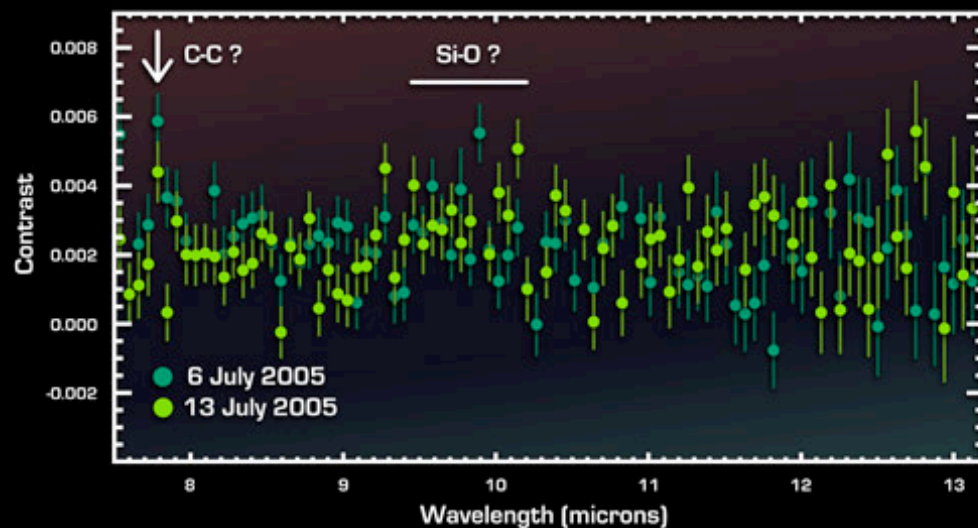
Free oxygen is relatively rare. Oxygen can quickly bind with other atoms to form molecules. On Earth free oxygen is sustained because of photosynthesis by living plant life. However, oxygen can in principle be sustained by non-biological means.

Overall, the detection of free oxygen (such as ozone) in an exoplanet is a strong, but not definitive, indicator of life there.





Isolating a Planet's Spectrum



If life exists on other worlds, it may be very different in form from Earth life. However, we hedge our bets by expecting life everywhere to play by the same rules of physics, chemistry, and basic biology.

