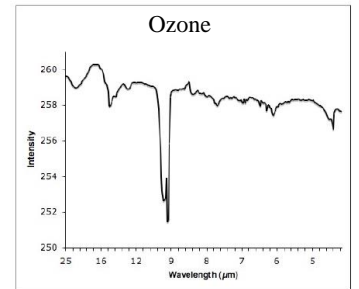
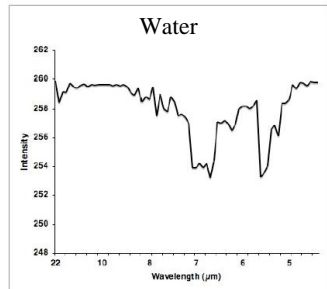
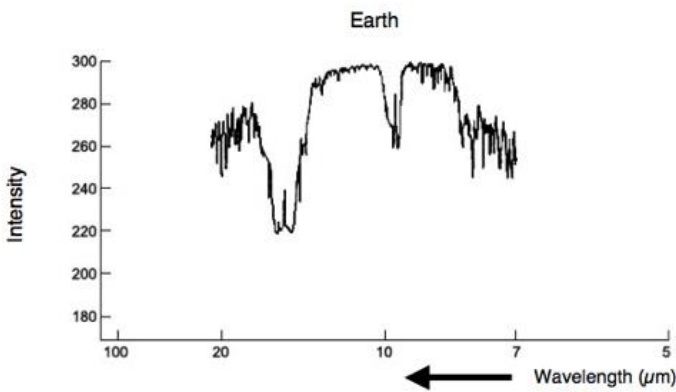
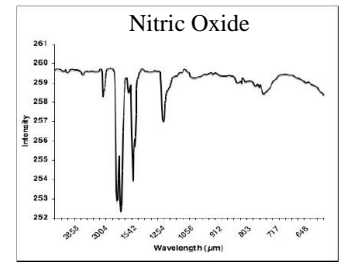
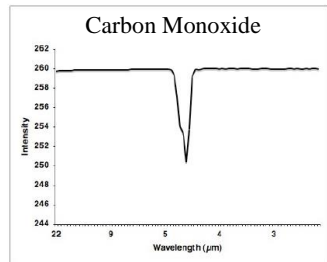
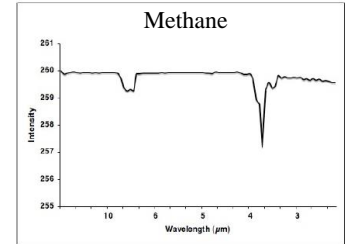
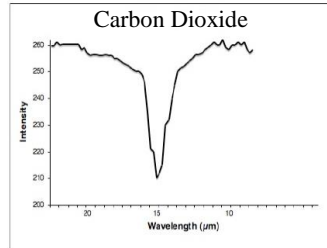
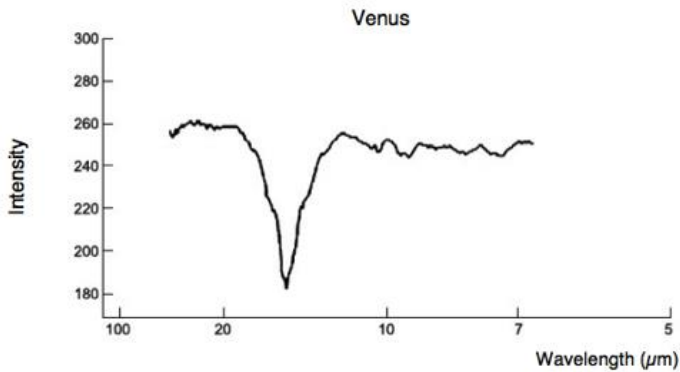


Too Hot, Too Cold, Just Right!

A. Spectral Analysis

Identify the similarities and differences in the spectra.



1. Which components are in both Earth and Venus's atmospheric data?

2. Which components seem to only appear in Earth's data?

3. To which group of gases do these gases belong? What is their relationship to temperature?

B. Temperature Comparison: Earth vs. Venus

	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune
Mean Surface Temperature (°C)	-180 to 430	465	-89 to 58	-82 to 0	-150	-170	-200	-210
Mean Distance from the Sun (AU)	0.39	0.72	1	1.52	5.20	9.54	19.18	30.06
Mass of the Atmosphere (kg)	$<\sim 1000_0$	4.8×10^2_0	5.1×10^1_8	2.5×10^1_6	1.9×10^2_7	5.4×10^2_6	8.6×10^2_5	1.0×10^{26}
Carbon Dioxide		96%	0.06%	95%				
Nitrogen		4%	78%	2.7%				
Oxygen	42%		21%					
Argon			1%	1.6%				
Methane							2.3%	1.0%
Sodium	22%							
Hydrogen	22%				89.8%	96.3%	82.5%	80%
Helium	6%				10.2%	3.2%	15.2%	19%
Other	8%		<1%	0.7%		0.5%		

1. Create a graph comparing the concentrations of Earth and Venus's major atmospheric components. *Think carefully about the type of graph that would best represent this data.*

2. Compare Earth and Venus's CO₂, their temperatures, the mass of their atmospheres, and their distances from the Sun (e.g., higher vs. lower, greater vs. smaller, farther vs. closer).

3. Does Earth or Venus have a stronger greenhouse effect? Explain your answer.

4. What would happen if Earth had no greenhouse effect?
