

Wind Loop Lab

Complete a model of tropical atmospheric circulation.

MS-ESS2-6 "Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates..."

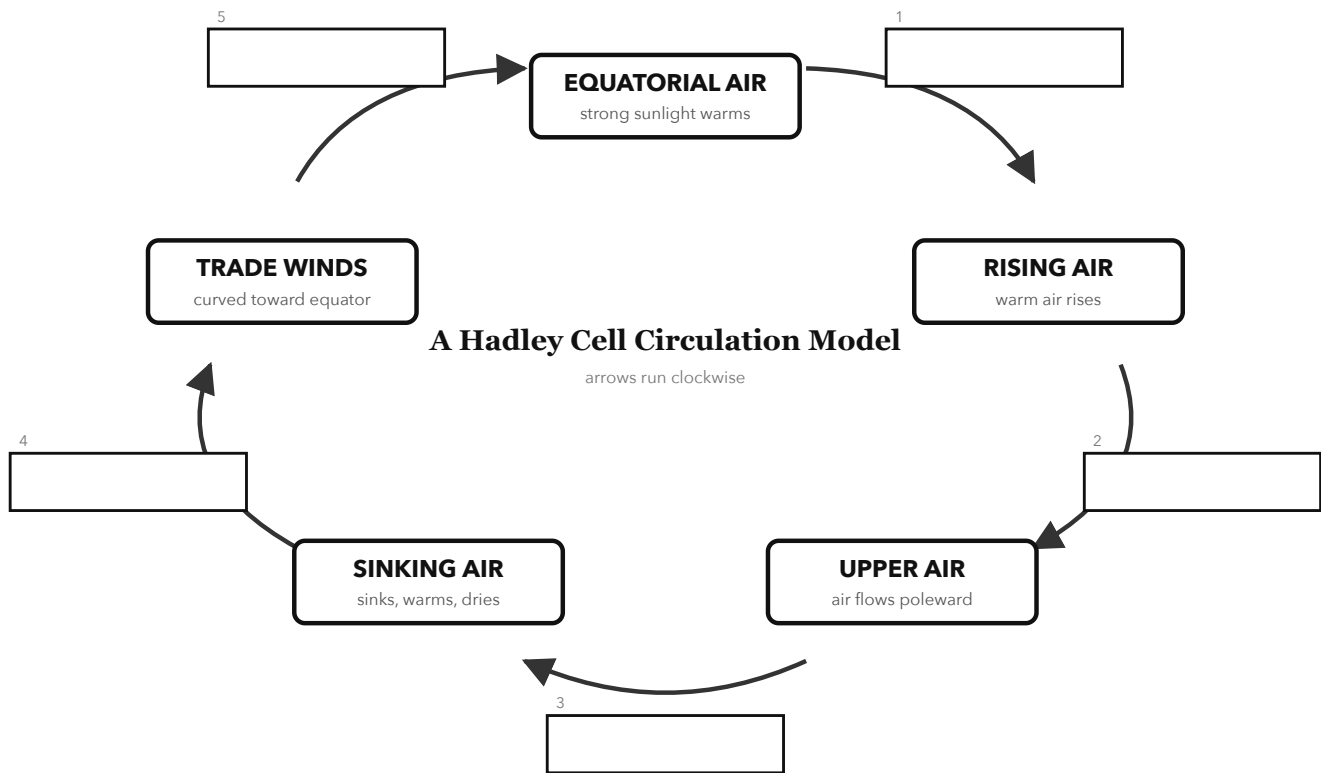
NAME _____

DATE _____

1 LABEL THE MODEL _____ Word bank below

Write one process from the word bank in each numbered box. Follow the arrows to trace the repeating movement of air.

WORD BANK	
air cools and moves poleward	cool air descends and warms
Coriolis curves surface flow	strong heating makes air rise
	winds converge at equator



2 RUN THE MODEL Use your finished diagram

1 After air rises, what happens before it begins to sink?

2 Which stage is linked to drier regional climates, and why?

3 How does Earth's rotation affect the TRADE WINDS stage?

3 CHECK IT Before you turn it in

☐ I used each process once.

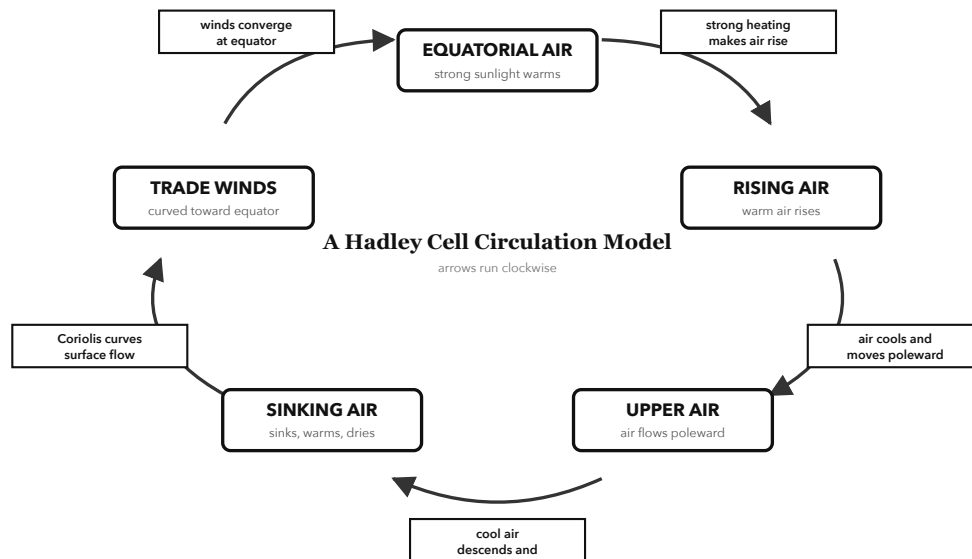
☐ I followed every arrow.

☐ I can explain why winds curve.

TEST THE MODEL

What is one part of Earth's climate system that this air-circulation model leaves out?

PART 1 • COMPLETED MODEL



PART 2 • RUN THE MODEL

1. **It cools and moves poleward high in the atmosphere.** (After air rises, what happens before it begins to sink?)
2. **SINKING AIR, because descending air warms and its relative humidity decreases.** (Which stage is linked to drier regional climates, and why?)
3. **The Coriolis effect curves the surface airflow, creating curved prevailing trade winds.** (How does Earth's rotation affect the TRADE WINDS stage?)

TEST THE MODEL (SAMPLE ANSWERS)

- It leaves out ocean currents that move heat and affect climate.
- It does not show how continents and mountains change wind paths.

This simplified loop represents a Hadley cell. It shows equatorial heating, upper-air movement, sinking air, and curved surface trade winds, but not all global circulation cells.