

Air pressure and weather fronts

Separate pressure-gradient direction from the type of advancing air mass.

Name: _____ Date: _____

1. Compare the pressure pairs below and record direction.
2. Select front 0 (warm) and 1 (cold). Move Front progress and sketch each cross-section.

Left pressure	Right pressure	Difference	Direction
1020	1000		
1000	1020		
1010	1010		

1. Which air mass advances at a cold front? At a warm front?
2. Which air rises in both diagrams?
3. What does this one-dimensional wind explanation omit?

Teacher notes and answers

Air pressure and weather fronts

Differences are +20, -20 and 0 hPa; directions left-to-right, right-to-left and no pressure difference.

Cold air advances at a cold front; warm air advances at a warm front. The warmer air is lifted in both idealised cross-sections.

Earth's rotation, friction, terrain, vertical structure and evolving weather systems are omitted. Equal pressures at two model endpoints do not imply universally calm weather.

Teaching notes

The pressure comparison and front-position control are separate teaching interactions. They are not a forecast or a coupled numerical atmosphere.

Open the matching resource

<https://kiwibee.io/en/simulations/air-pressure-weather-fronts-simulation>

Use the student page separately from this answer section. Model outputs are illustrative and depend on the stated settings.