



NAME: _____

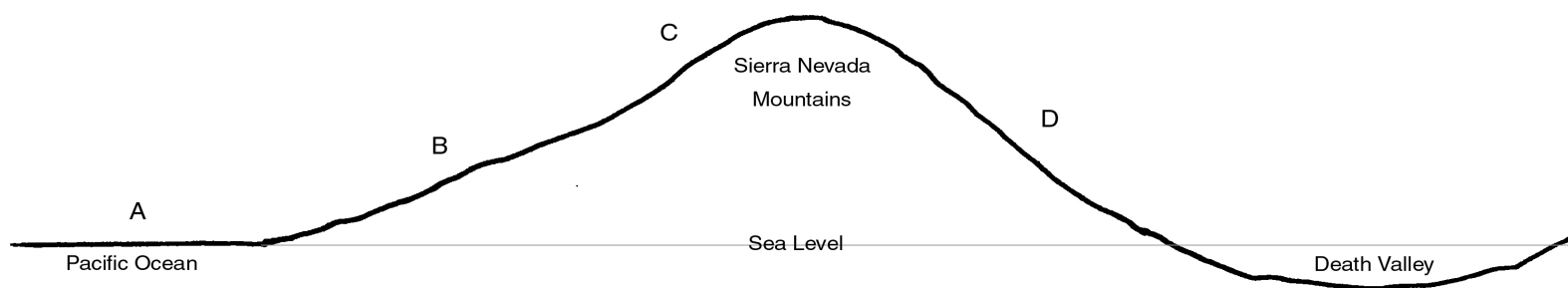
DATE: _____

The Formation of Rain Shadow Deserts / The Orographic Effect

Student Organizer

West

East



Match the appropriate description with its corresponding area (A, B, C, D or Death Valley) from the diagram above:

- _____ Air is very warm¹ and dry, creating a “rain shadow desert” here
- _____ Cooling triggers condensation, forming clouds and precipitation, and releasing additional heat into the air²
- _____ Warm air rises as it moves eastward over the Sierra Nevadas. The air expands³ and cools⁴ as it rises.
- _____ Compression of dry, descending air warms it further.
- _____ Warm moist air moves eastward over coastal California

¹ Adiabatic(occurring without gain or loss of external energy) heating by compression, as well as the earlier release of latent heat during condensation, results in very hot, dry air.

² Condensation releases latent heat of evaporation (stored in water vapor) back into the environment as measurable, sensible heat, keeping the rising air warmer than dry air that has risen to the same altitude. That heat will add to the warming effect on the leeward side of the mountains.

³ Atmospheric pressure decreases with altitude. The decrease in confining pressure causes the rising air to expand.

⁴ Expanding air cools adiabatically.