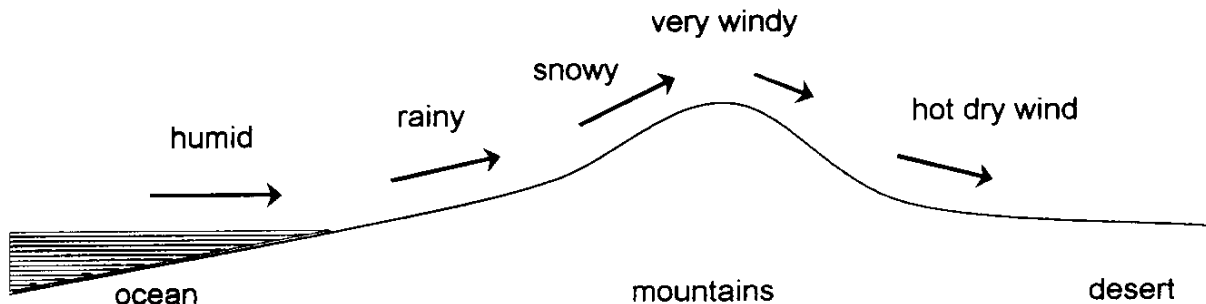


The sketch below shows a highly simplified pattern of the climate on the West Coast. It all starts with a wind (arrows) blowing from the Pacific Ocean to the land. Explain in a nutshell why each of the weather conditions labeled above the arrows occurs. Why doesn't the hot wind in the desert rise, causing convection?



1. Humid

in air
saturated vapor pressure over ocean

2. Rainy

Air is adiabatically cooled as
it rises \rightarrow p_{sat} decreases
 \rightarrow air becomes supersaturated
 \rightarrow water condenses

3. Snowy

T is below freezing point
vapor \rightarrow solid

4. Very windy

Continuity equation!

5. Hot dry windy

Adiabatic compression
 \rightarrow hot and dense; doesn't rise