

Density (D)  $\rightarrow D = \frac{\text{mass}}{\text{volume}} = \frac{\# \text{ of atoms}}{\text{amount of space}}$

$\rightarrow$  how closely packed the molecules/atoms are in a given area.

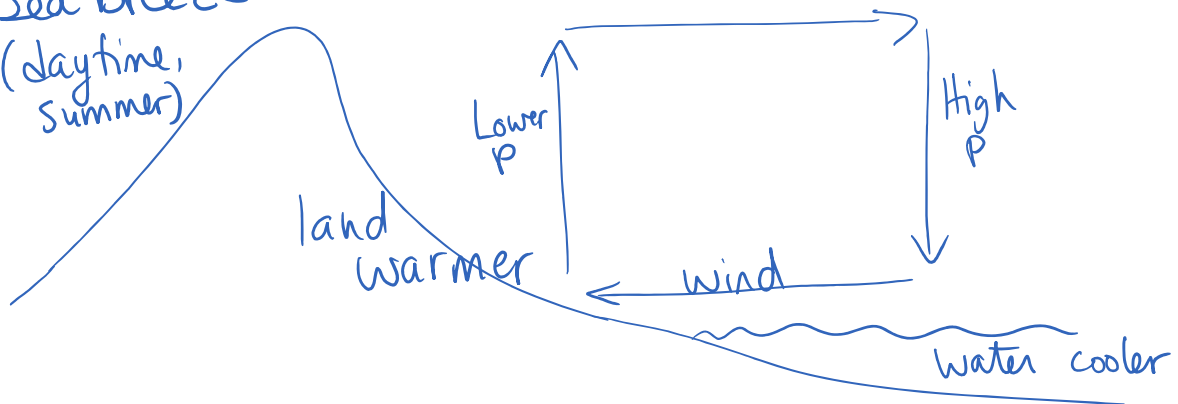
- the less space a volume of air takes up (compressed), the denser it is.

therefore  $\rightarrow \therefore$  the higher the air pressure (as measured by a barometer)

Temperature

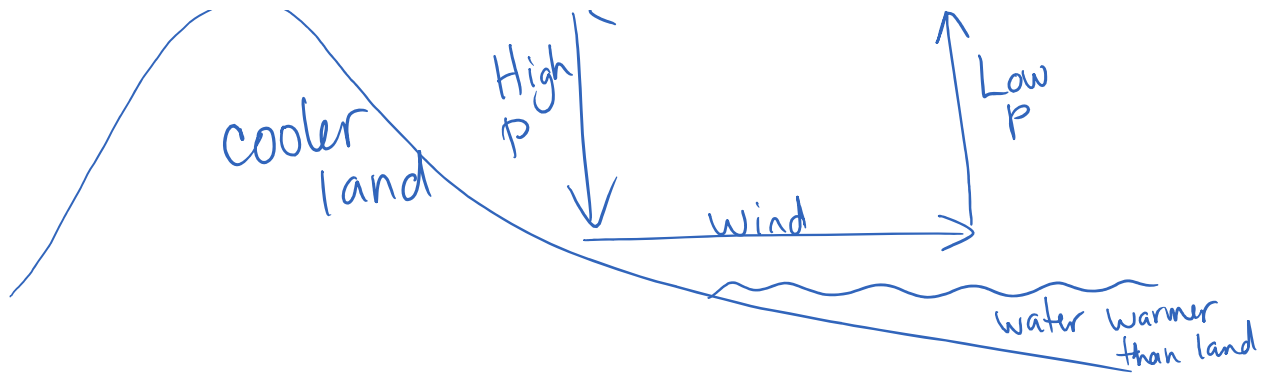
- the warmer the air, the further apart the molecules are, so the density is lower  
 $\therefore$  the air pressure is lower.

$\rightarrow$  Sea breeze (daytime, summer)



$\rightarrow$  land breeze (night, winter)





## Humidity

- humid air has lots of water vapour
- so it weighs less than dry air
- ∴ the air pressure is lower

Dry air

100 atoms	
78-N ✓	
21-O ✓	
1-Other	

extra 2 N  
weighing 28

N weighs 14  
O weighs 16

humid air

H <sub>2</sub> O ✓	
76-N ✓	
20-O ✓	
1 other ✓	

2 N missing  
replaced by 2 H

H weighs 1

2 H = 2 mass

dry air weighs more.  
↑ higher P

↑ Lower P

## In Summary

- Falling barometer (P is dropping) means warmer, wetter weather
- ↑ lower P
- ↑ lower P

→ high pressure area → cool, dry air  
(cold snap in winter)

→ low pressure area → warm, humid air (rain)