A collage of several globes and a sun-like planet. On the left is a large, glowing orange and red sun-like planet. In the center and right are several globes of Earth, some showing realistic cloud patterns, others with color-coded atmospheric or temperature maps. The background is a dark space scene with a nebula or galaxy structure.

ACA-115

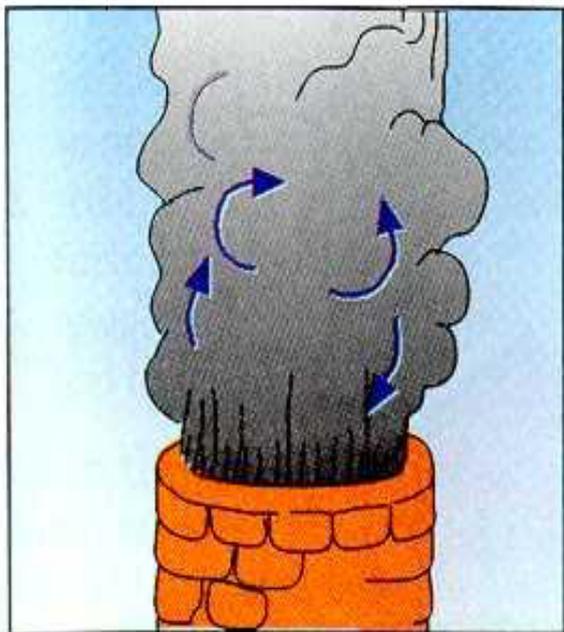
Introdução a Ciências Atmosféricas

Os Movimentos da Atmosfera

Aula 5

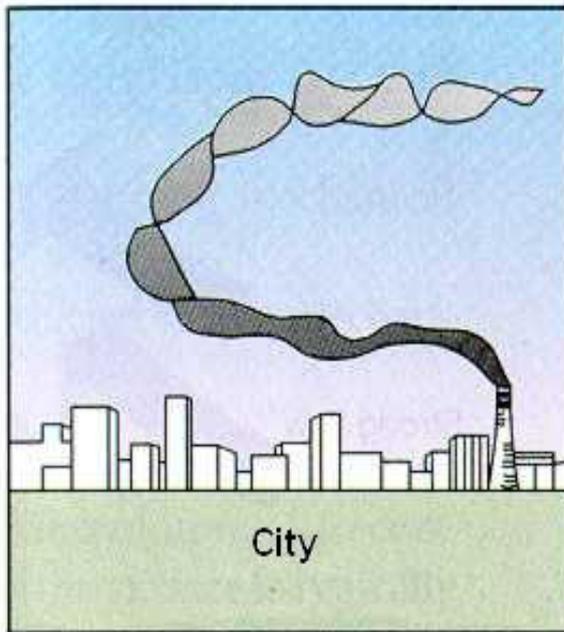
Circulações Locais

2 km



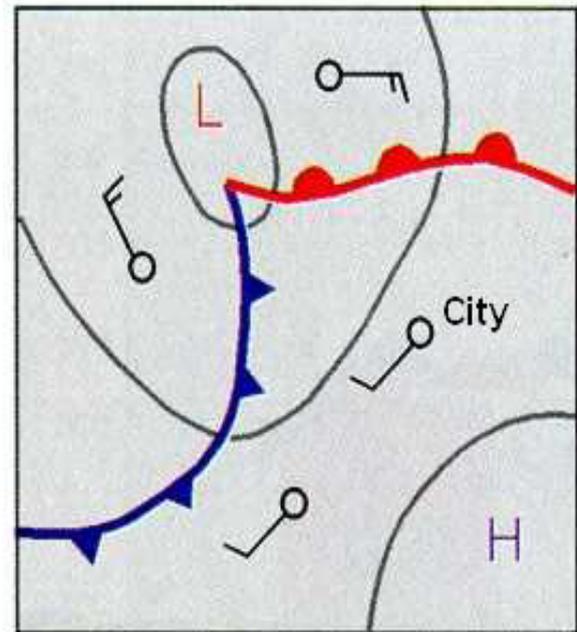
(a) Microscale

20 km



(b) Mesoscale

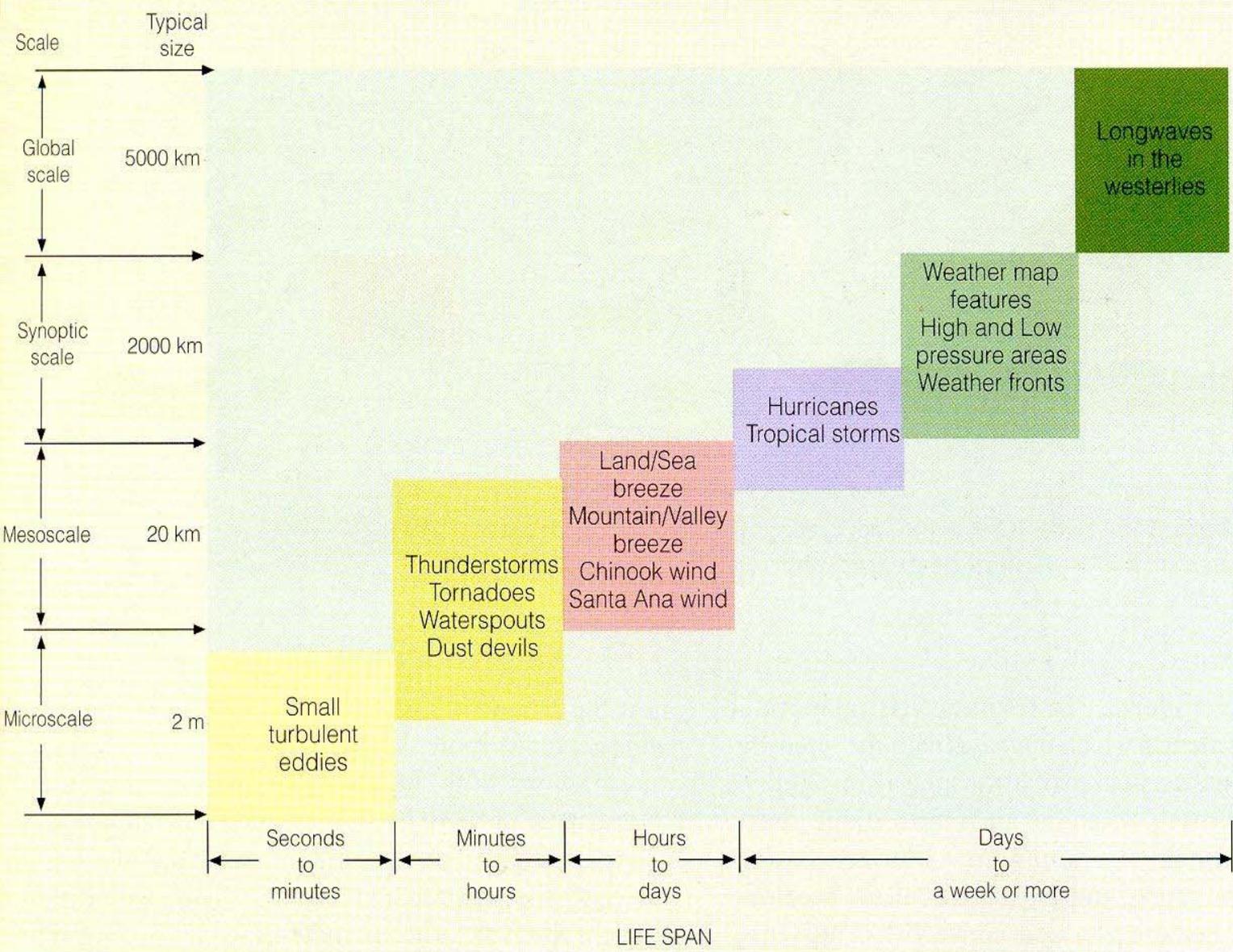
2000 km



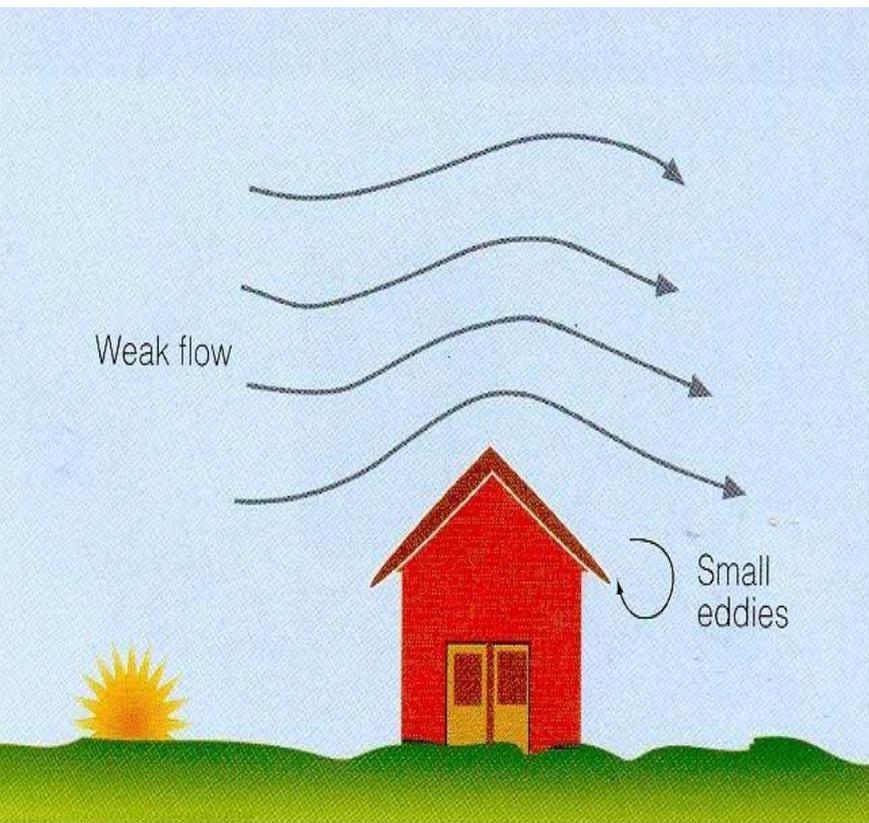
(c) Synoptic Scale

Escalas de movimento atmosférico.

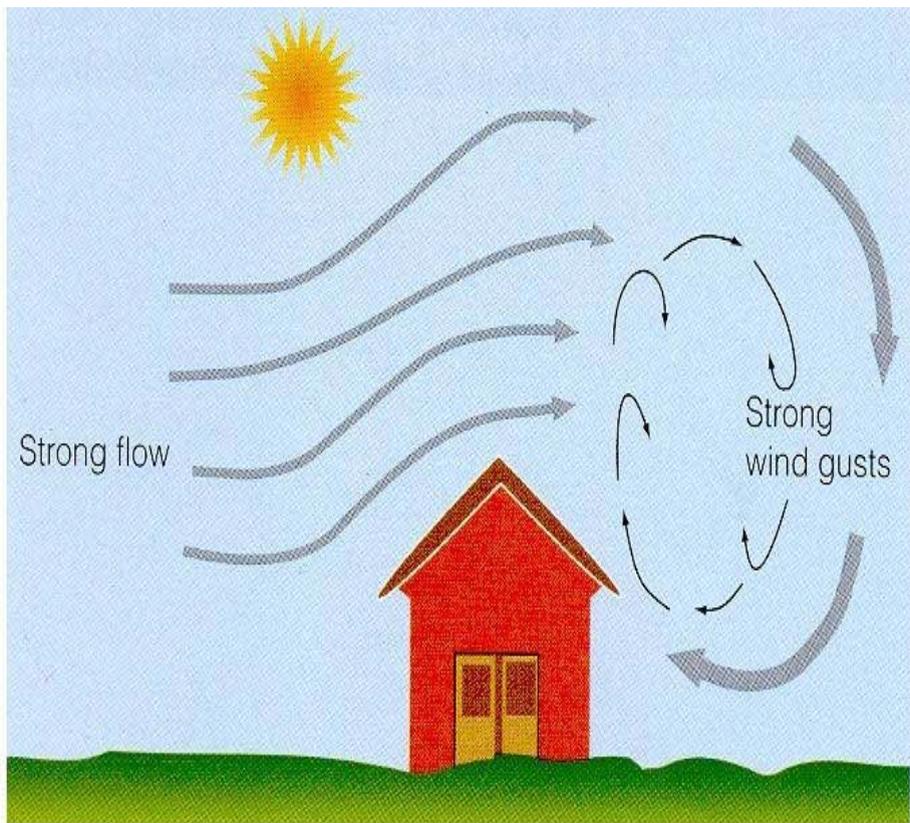
Table 10.1 The Scales of Atmospheric Motion with the Phenomenon's Average Size and Life Span*



*Because the actual size of certain features may vary, some of the features fall into more than one category.

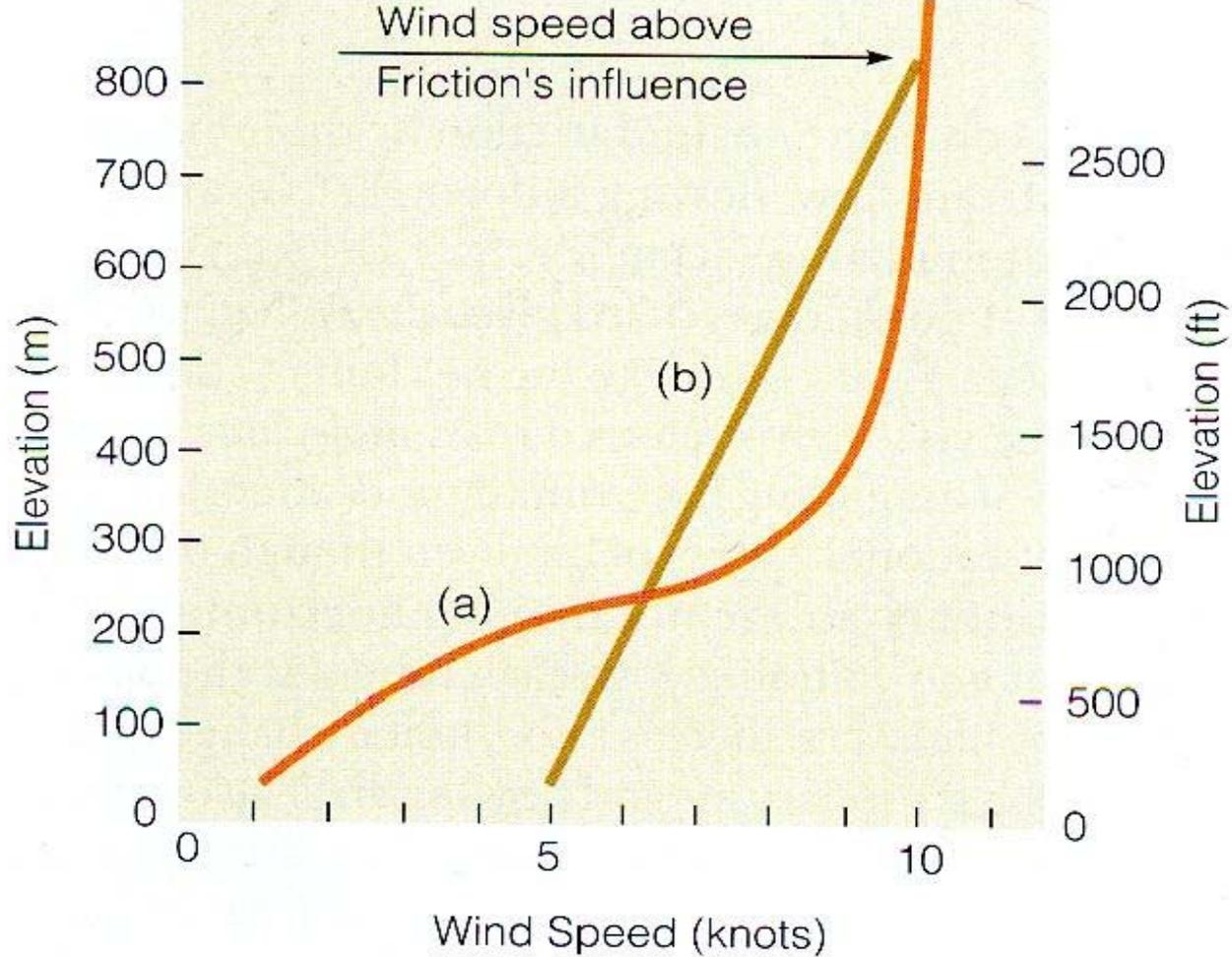


(a) Stable air



(b) Unstable air

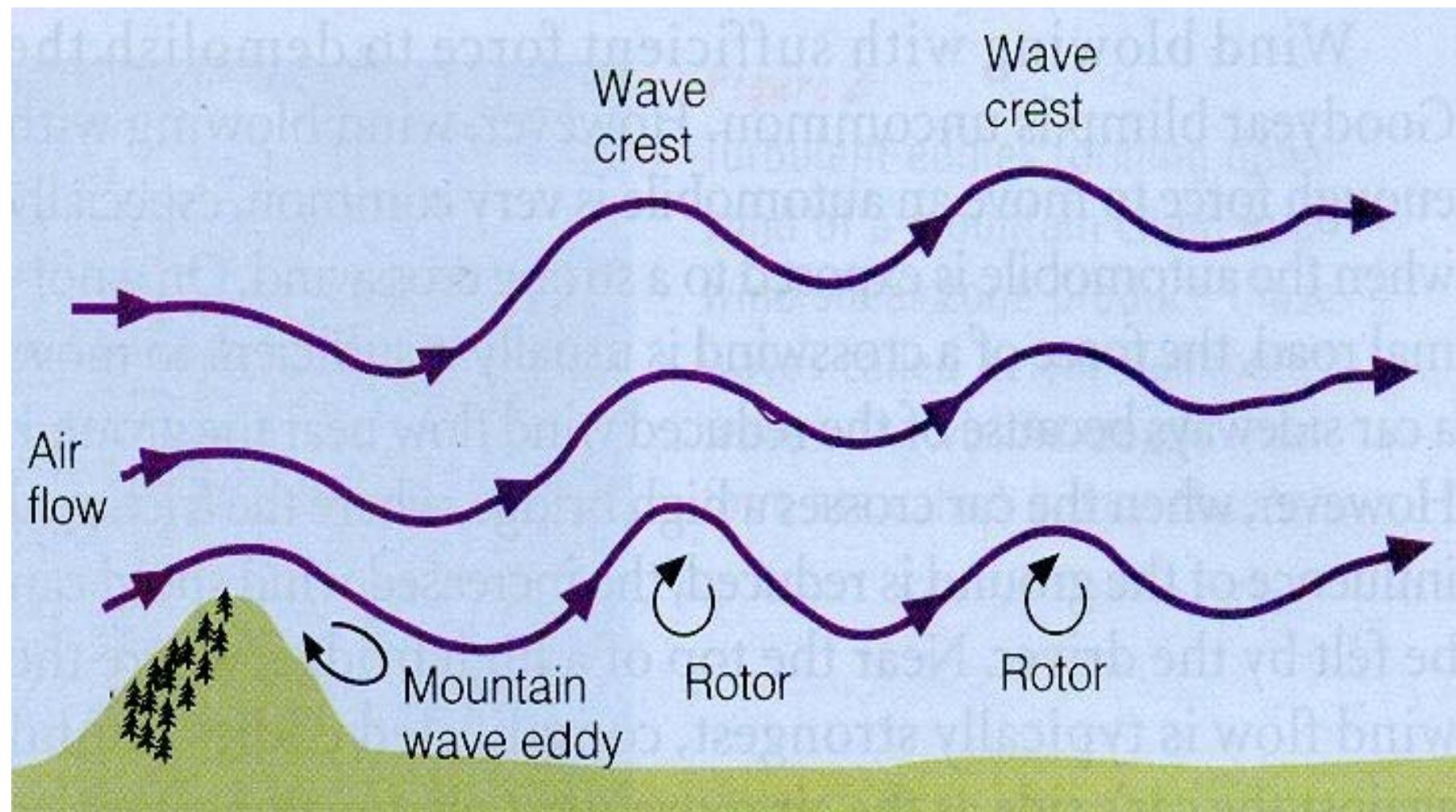
Ventos e obstáculos. (a) Ar estável e ventos fracos produzem pequenos turbilhões (eddies) e pouca mistura vertical. (b) Ar instável e ventos fortes produzem grande mistura na vertical e turbilhões maiores.



(a) Ar estável e superfície plana produzem pequena mistura vertical e efeito do atrito limitado à superfície; (b) Ar instável e superfície irregular produzem grande mistura vertical com aumento do vento na superfície e diminuição do mesmo com altitude.

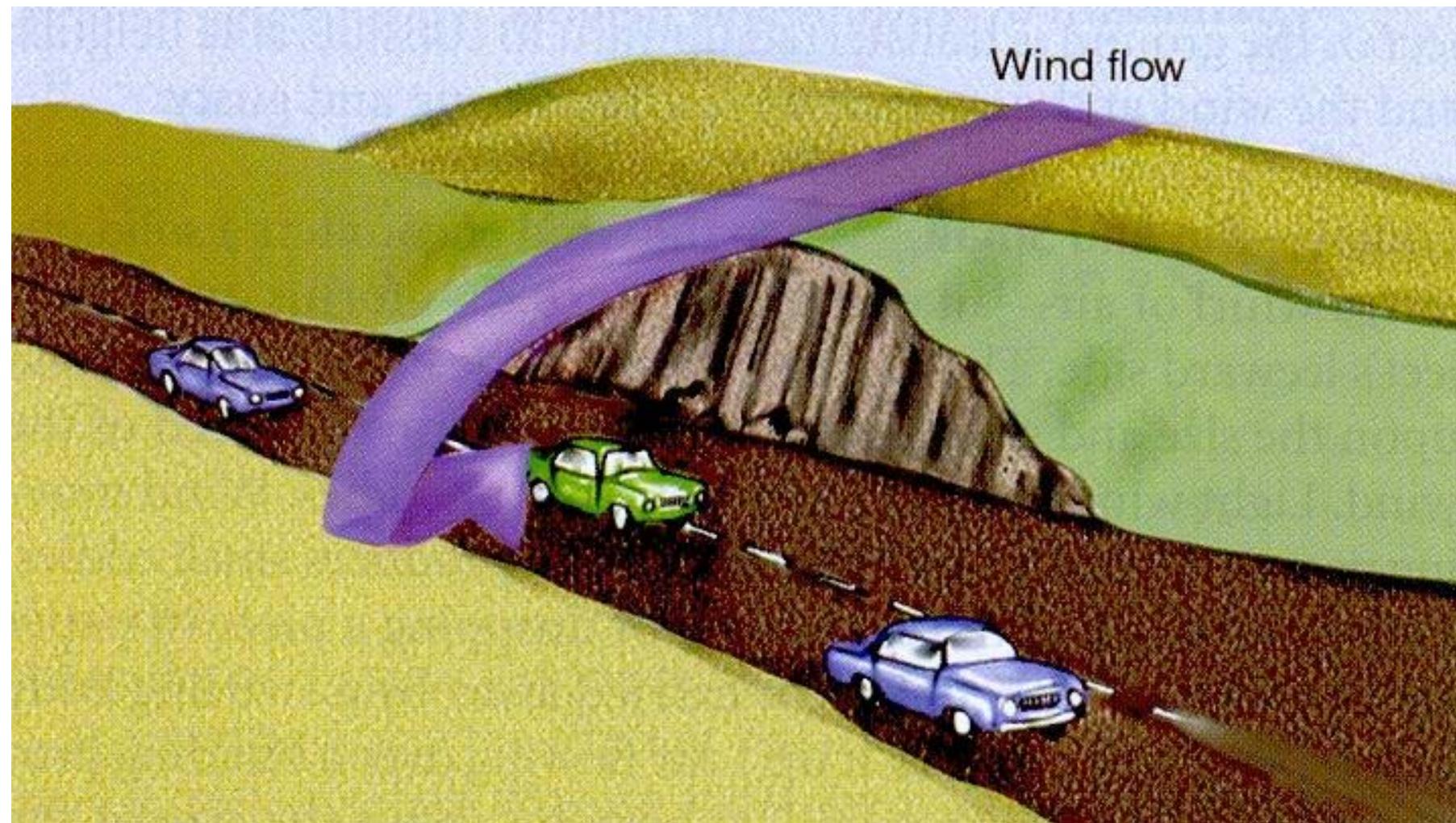


Circulação horizontal (vórtice de von Karman) gerada por uma montanha.

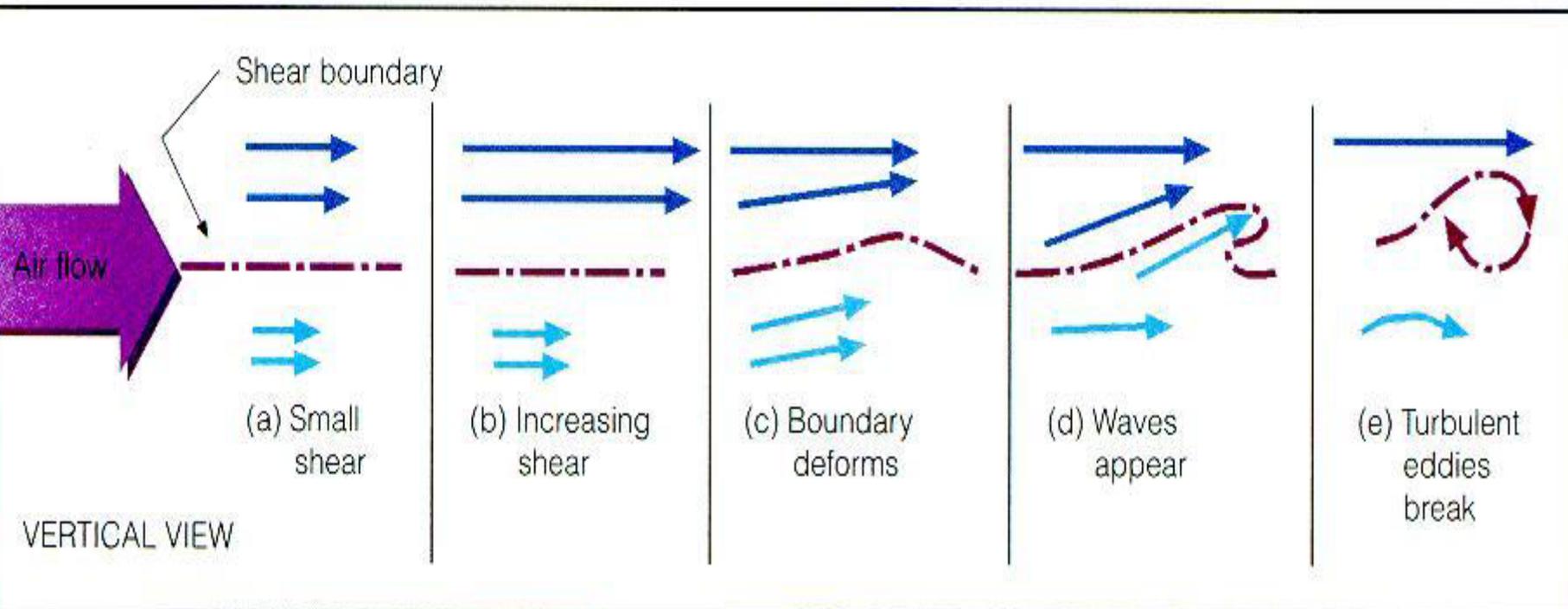


Ar estável que passa uma montanha produz ondas e eddies com grande extensão vertical e horizontal.

Wind flow



Fluxo reverso gerado por obstáculo.



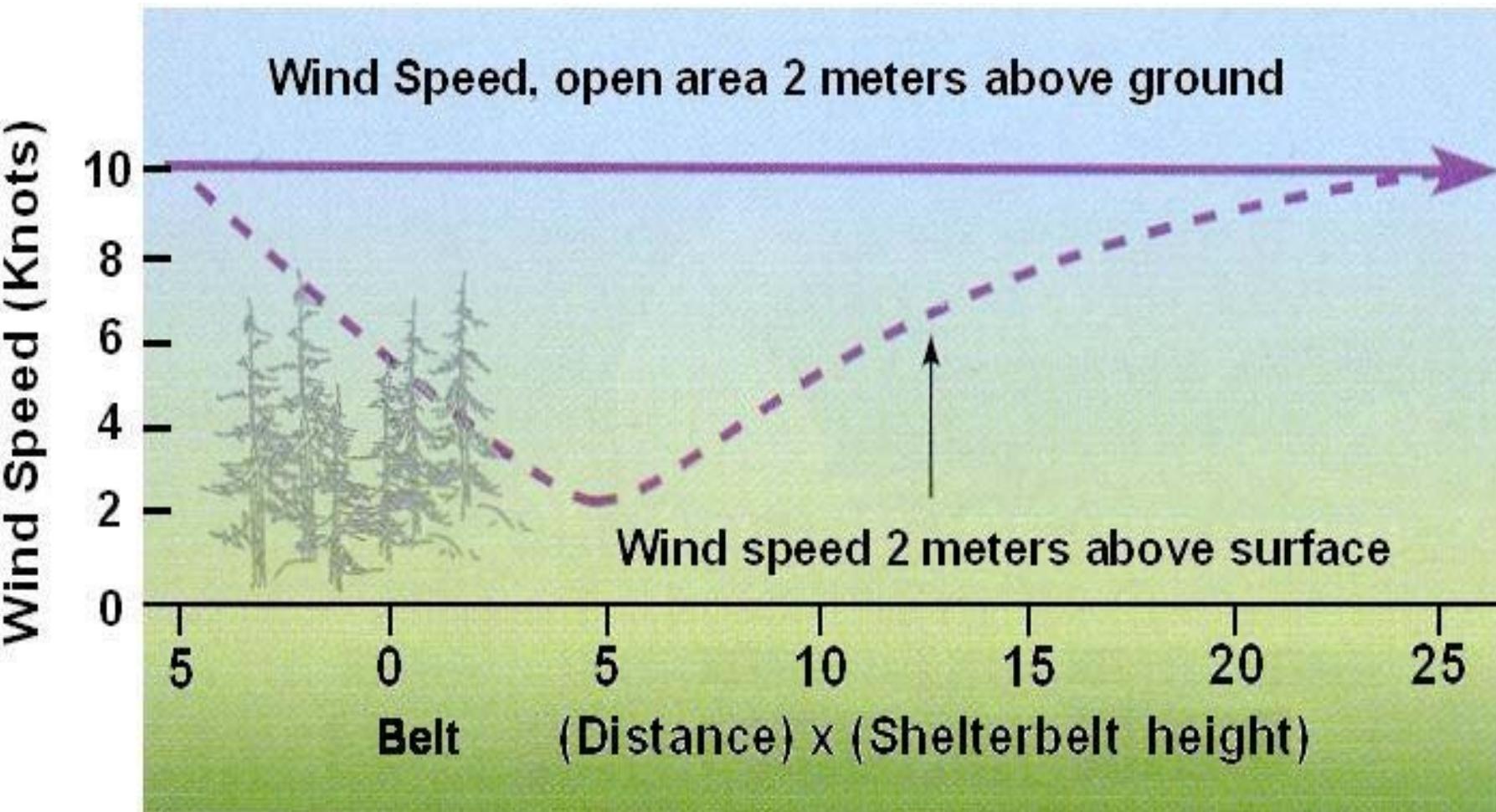
Desenvolvimento de turbulência de céu claro (CAT).



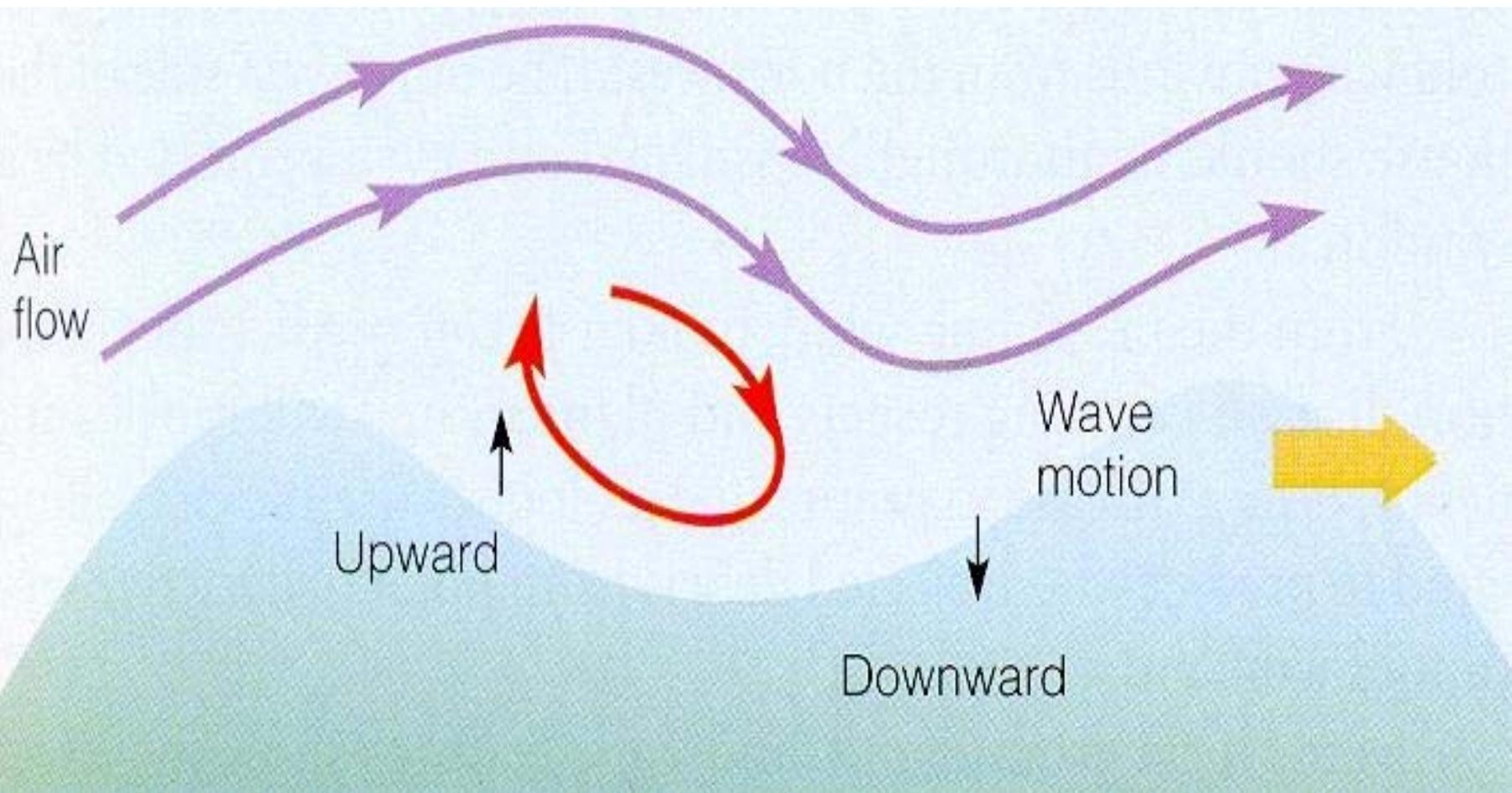
Eddies turbulentos (ondas de Kelvin-Helmholtz).



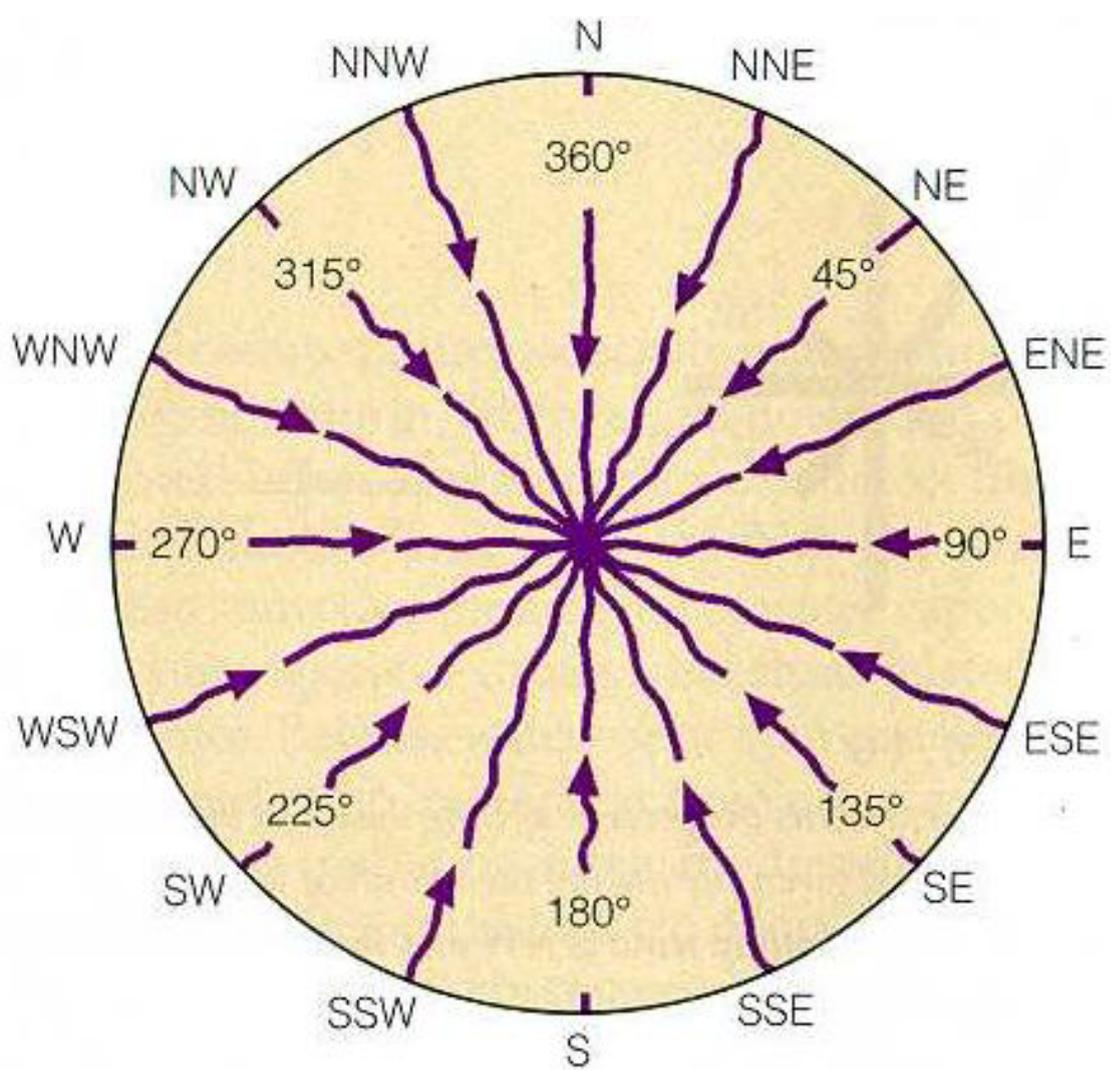
Montanha de areia produzida por vento que soprou da esquerda para a direita.



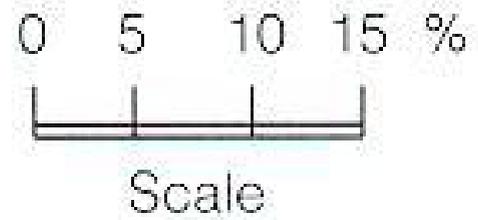
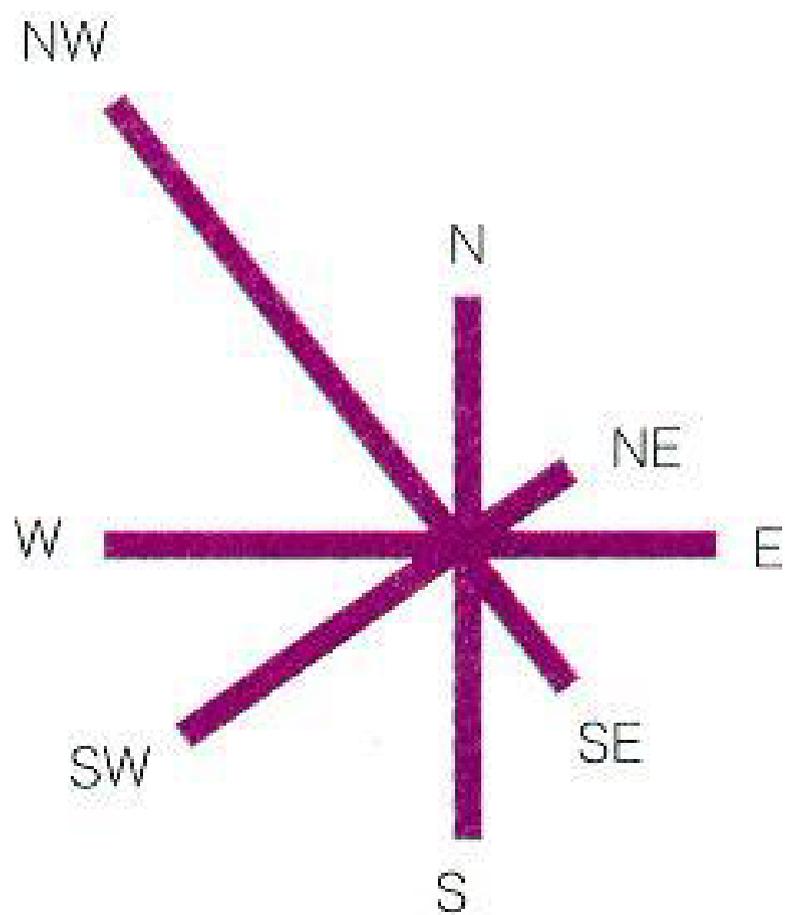
Redução do vento por obstáculos.



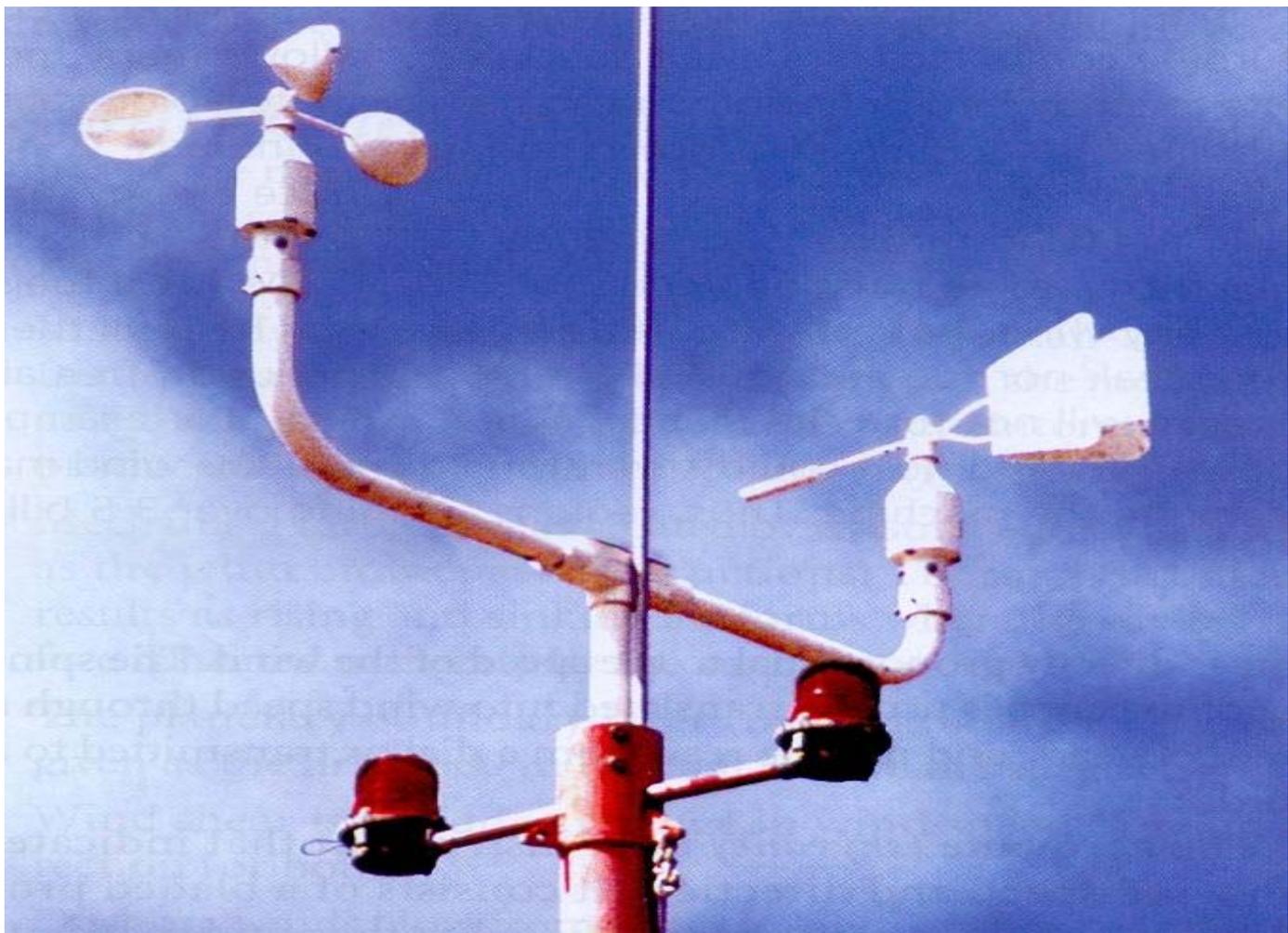
Vento sobre uma cresta produz pequenos eddies que reforçam movimento vertical da água.



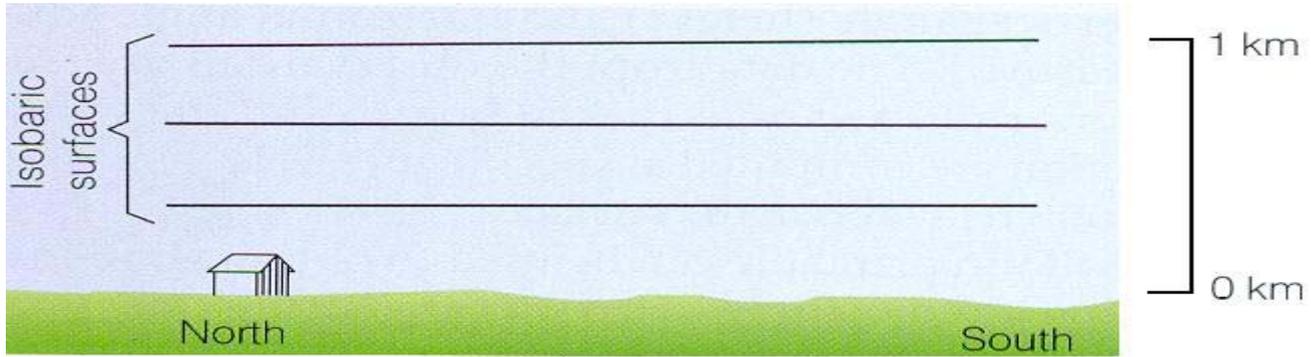
Direção do vento em Meteorologia.



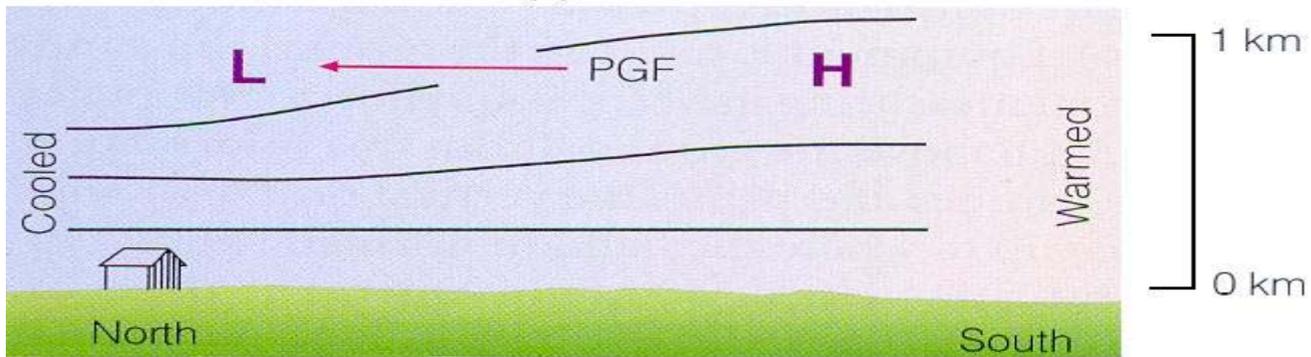
Rosa dos ventos.



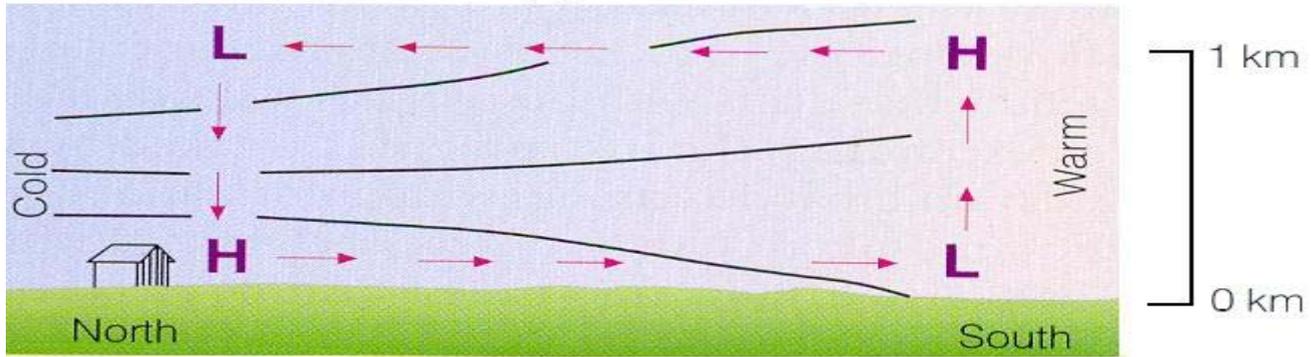
Anemômetro de copo e pá direcional.



(a)



(b)



(c)

Circulação térmica produzida por aquecimento e resfriamento próximo da superfície.

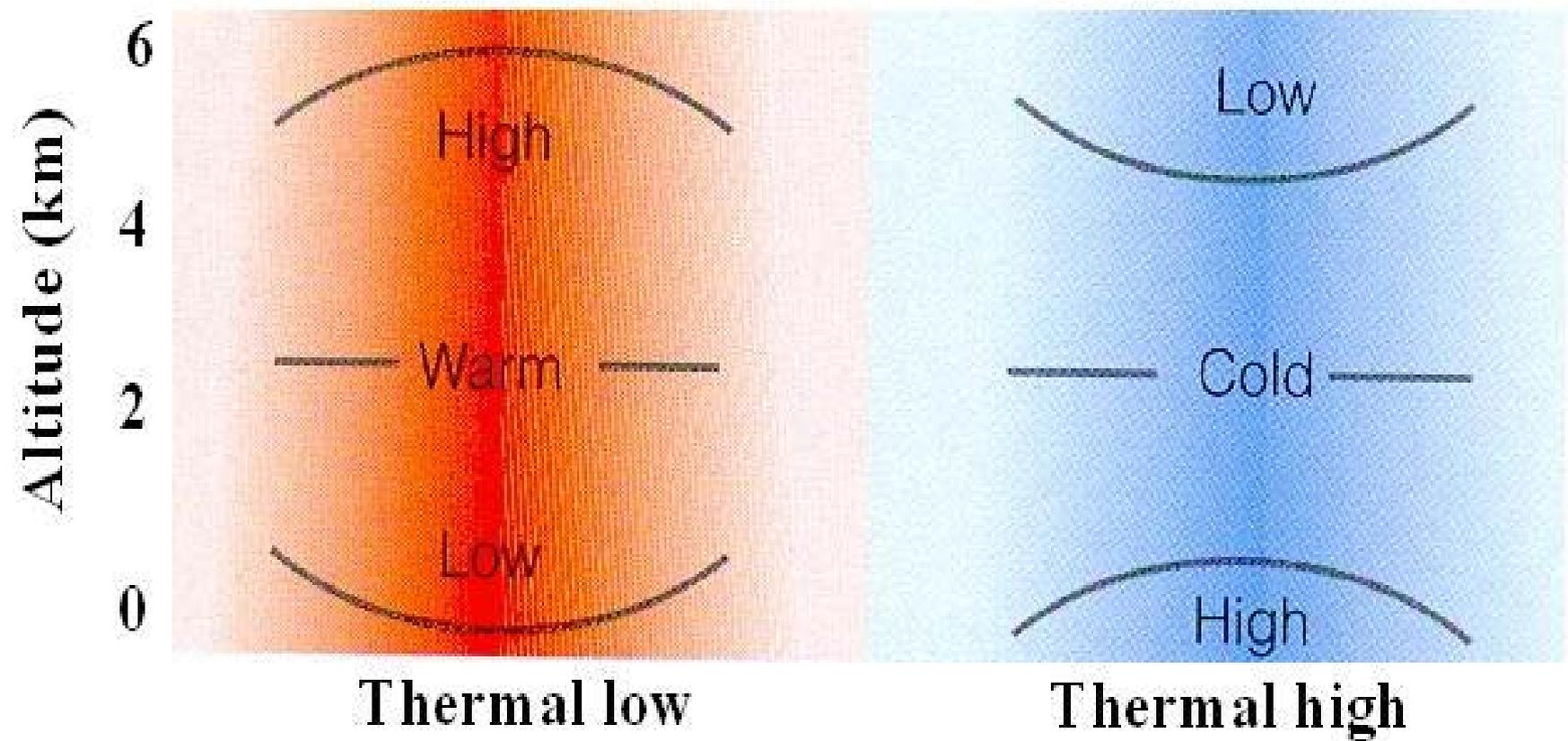
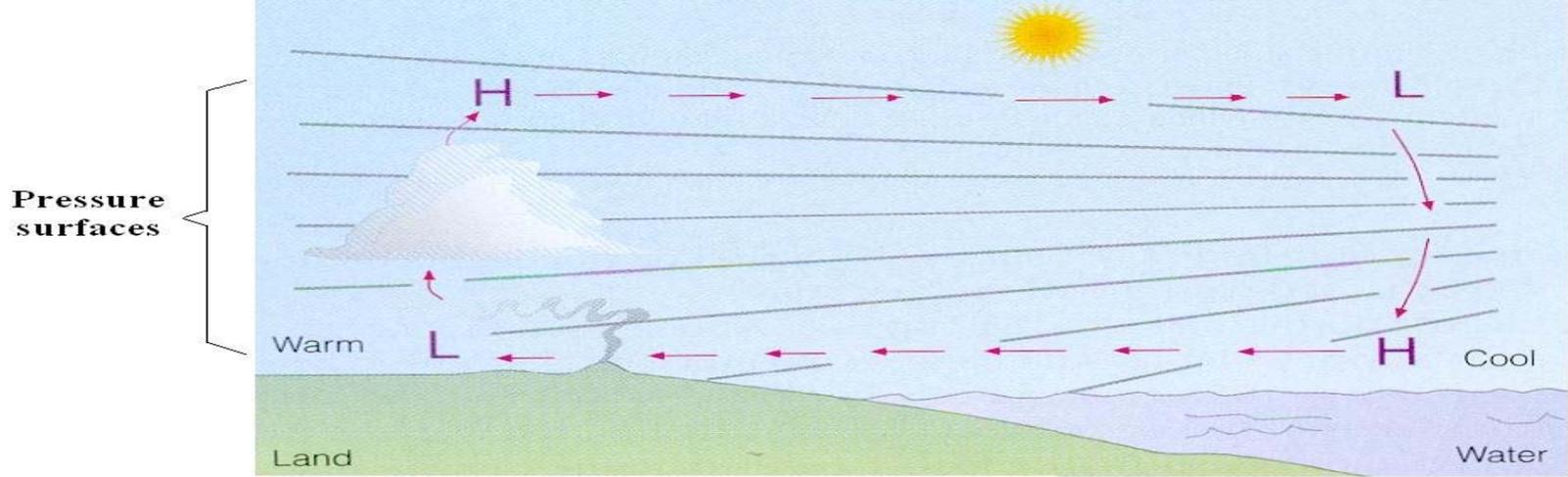
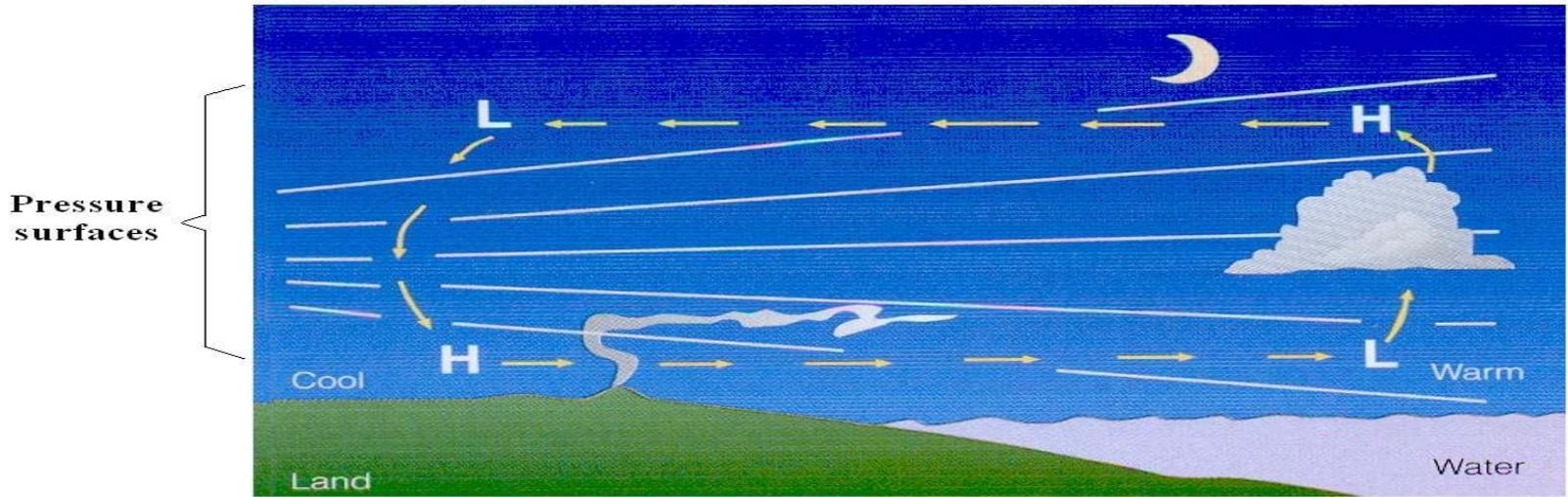


Figure 10.23 Baixa a alta térmicas.



(a) Sea breeze

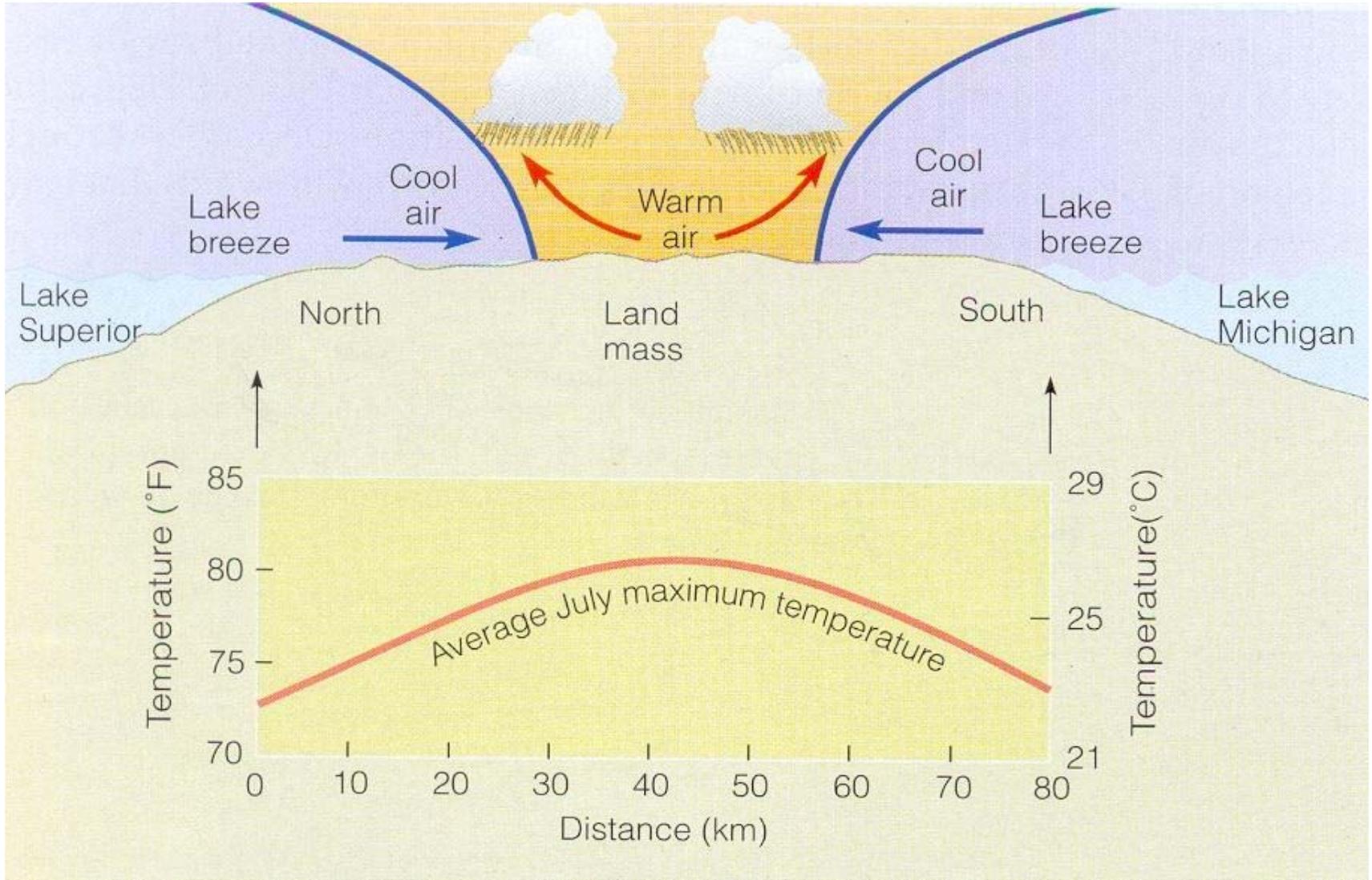


(b) Land breeze

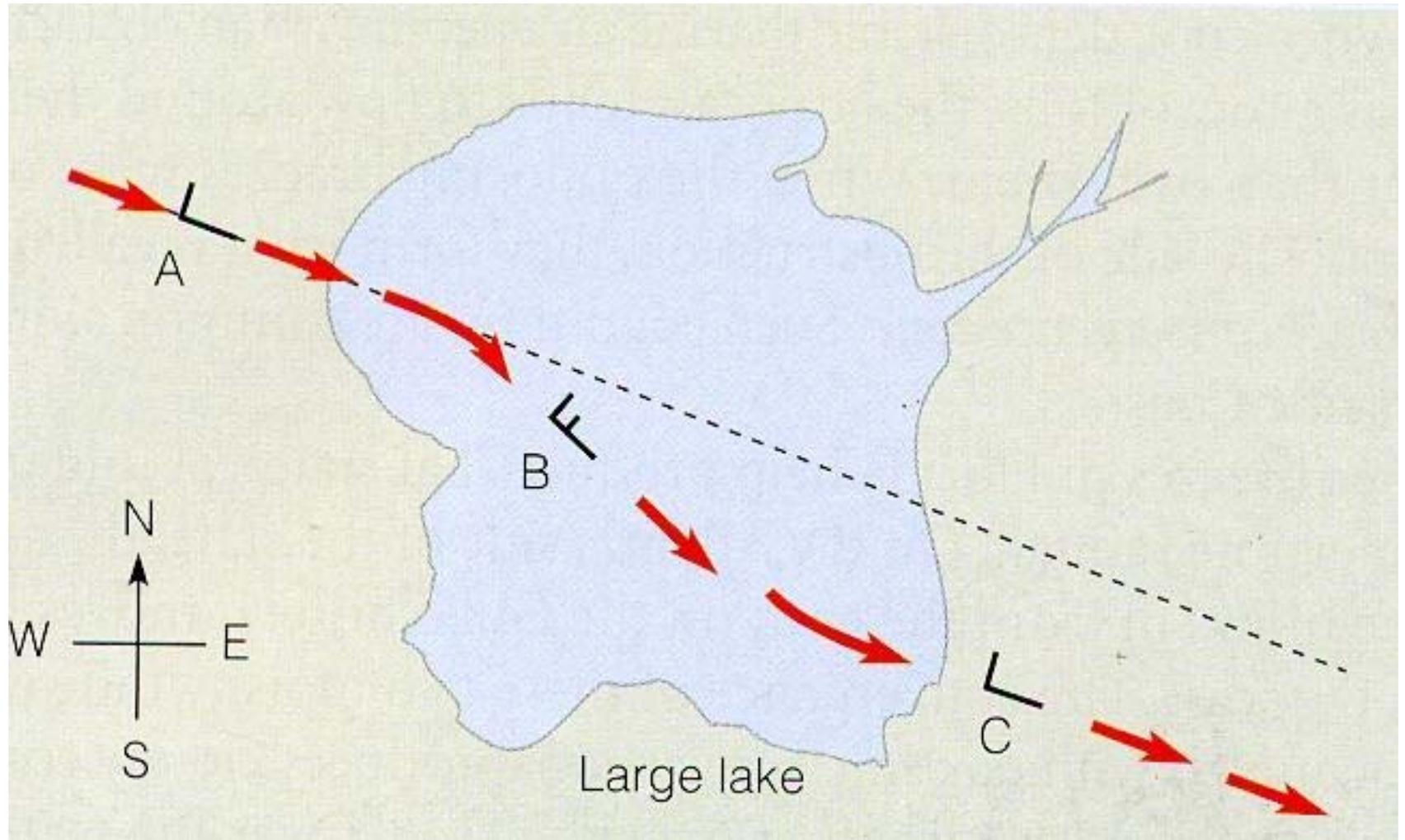
Figure 10.24 Circulações de brisa marítima (a) e terrestre (b). Qual é a mais intensa?



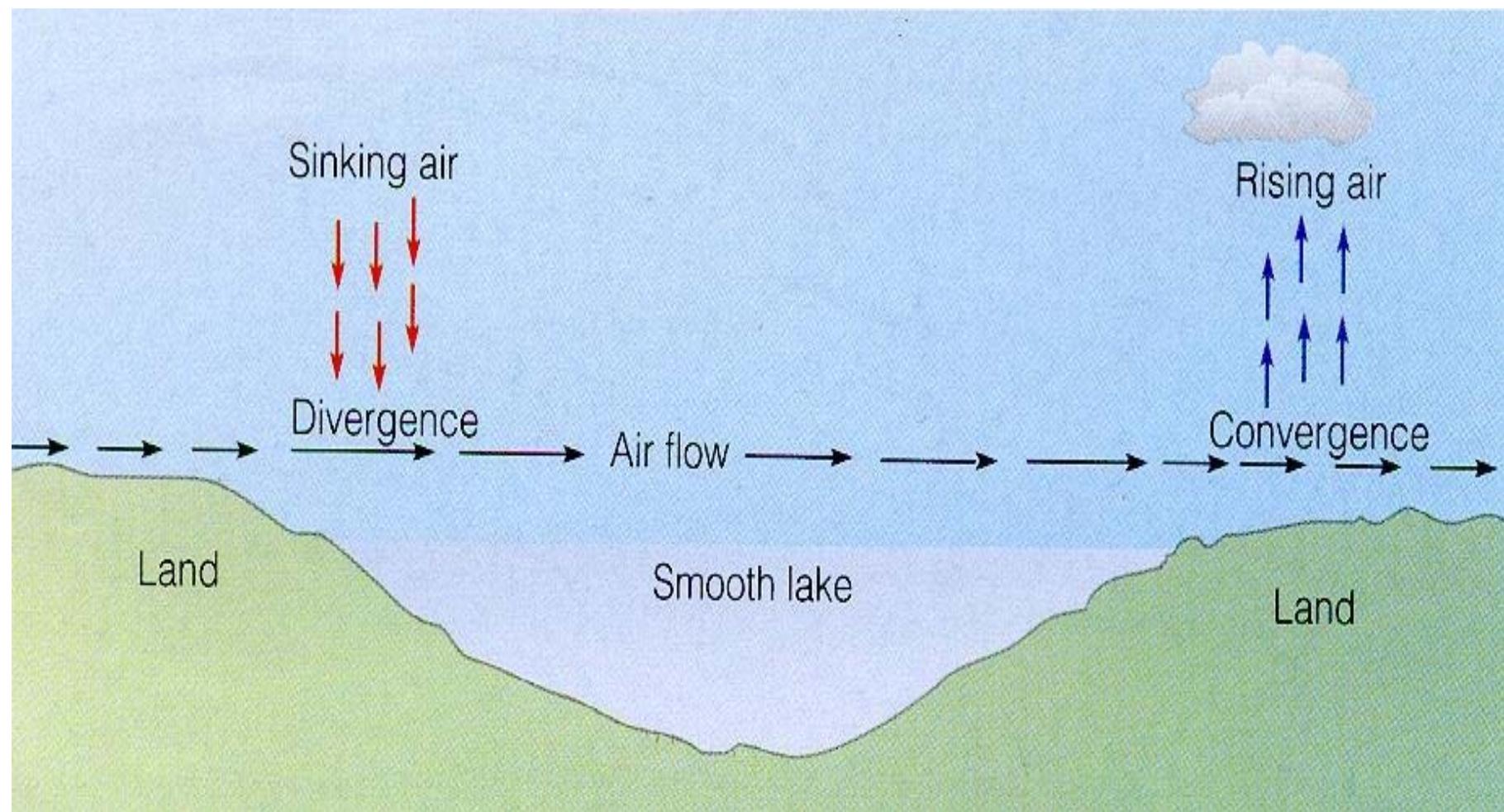
Linha de tempestades produzidas por brisa marítima.



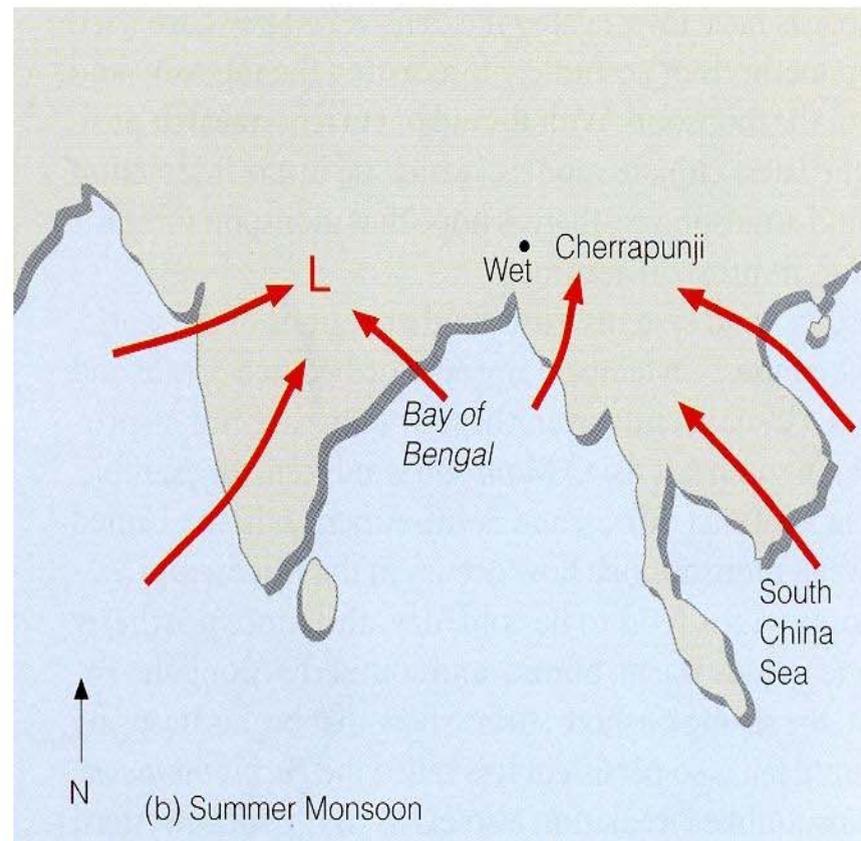
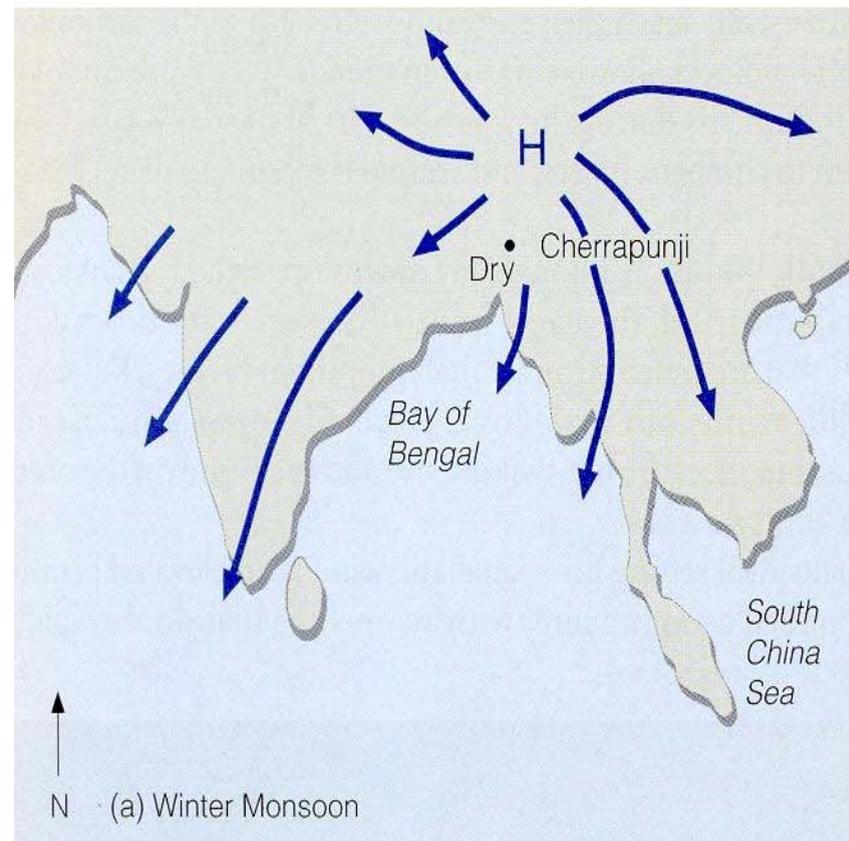
Convergência produzida por brisas lacustres.



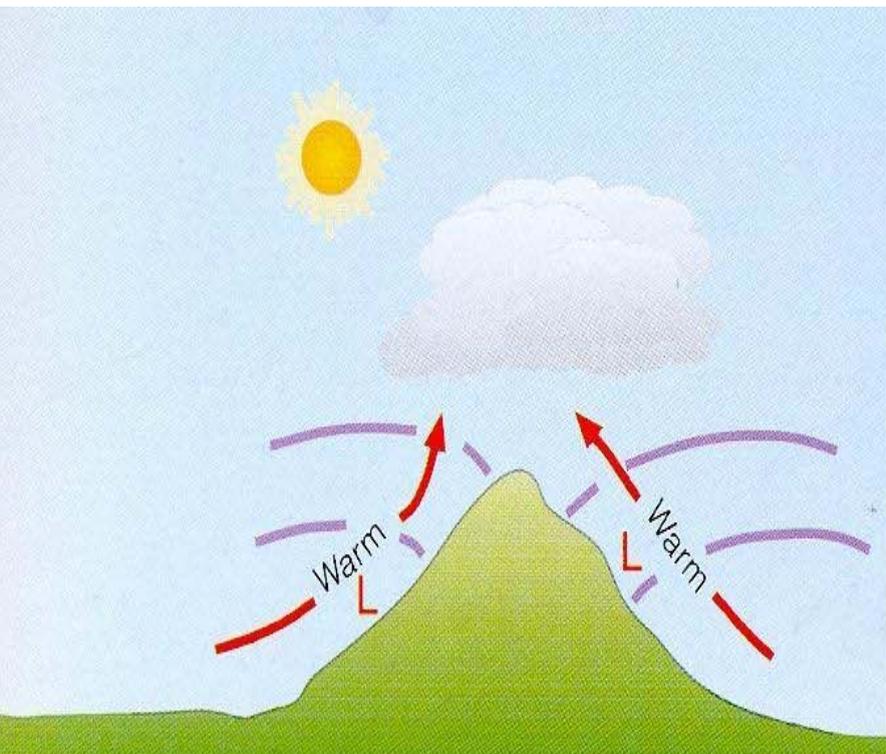
Mudança de direção do vento sobre lago. HN.



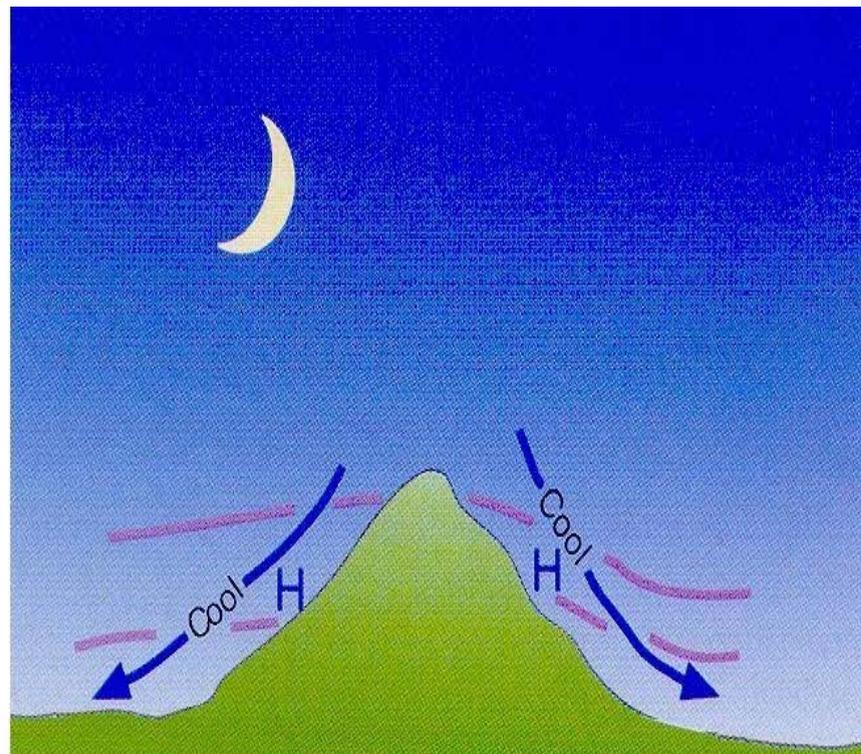
Levantamento e subsidência produzidas pela força de atrito.



Monção de inverno e verão na Ásia.

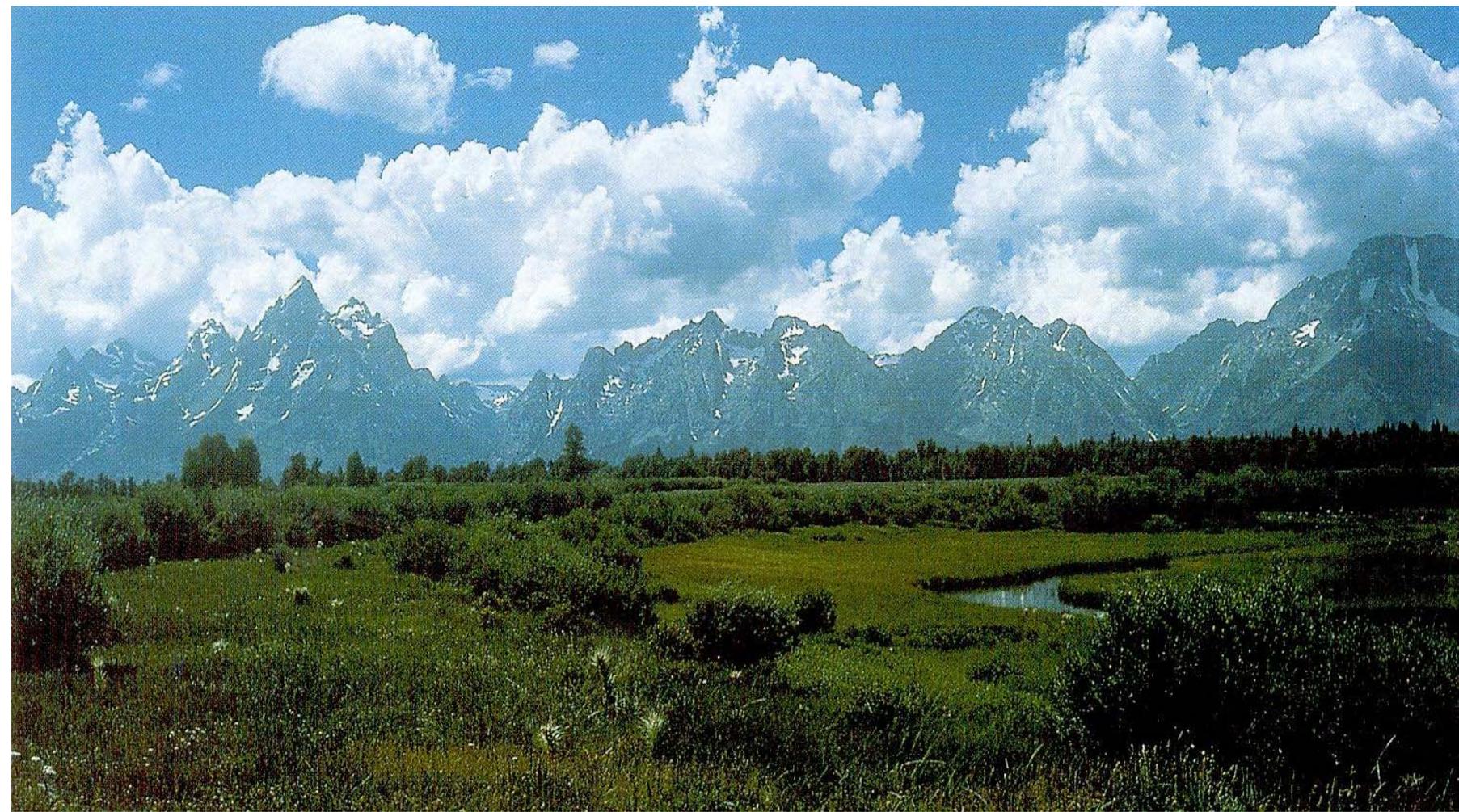


Valley breeze

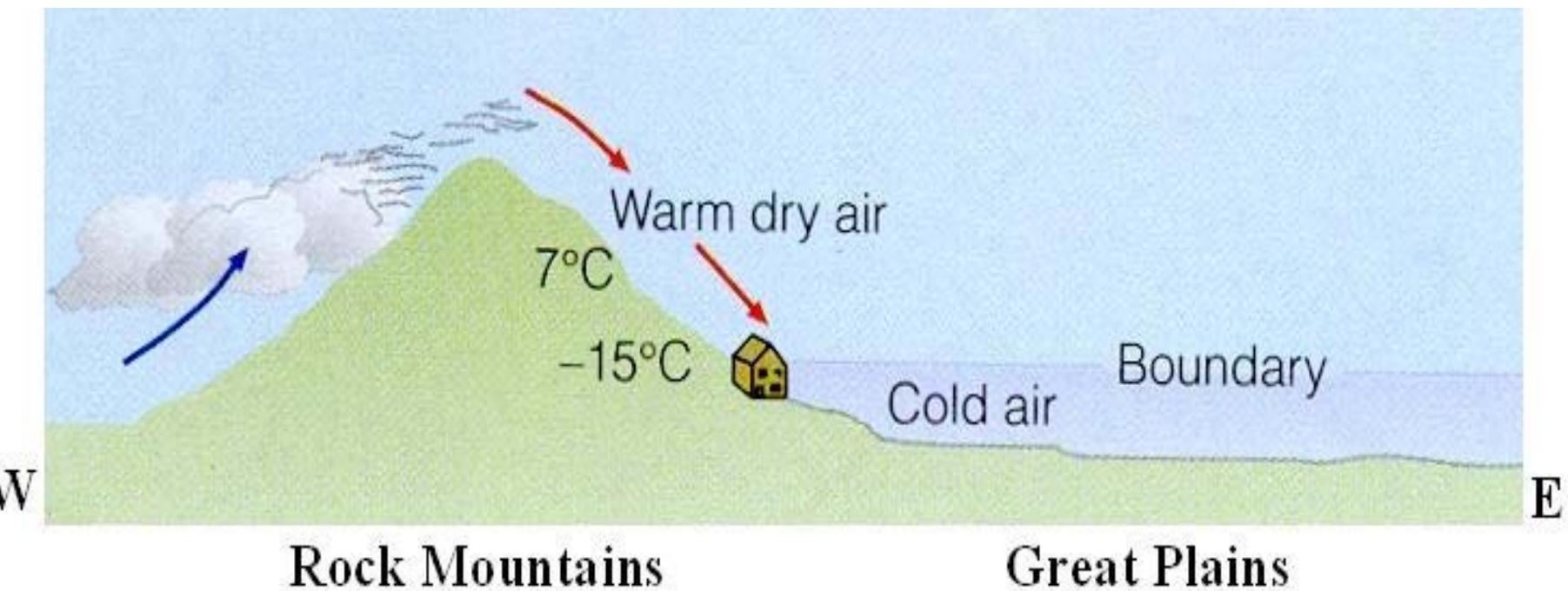


Mountain breeze

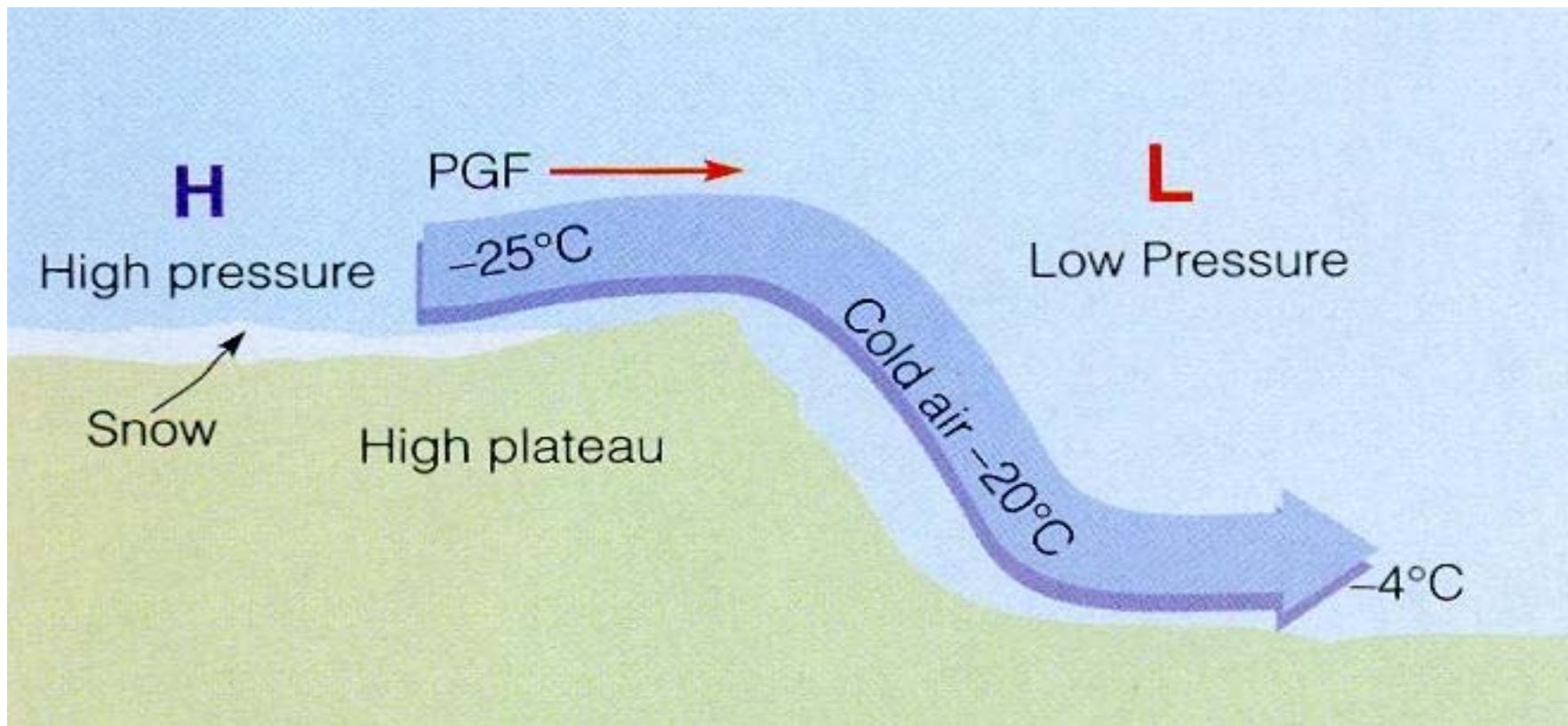
Circulações de montanha e vale.



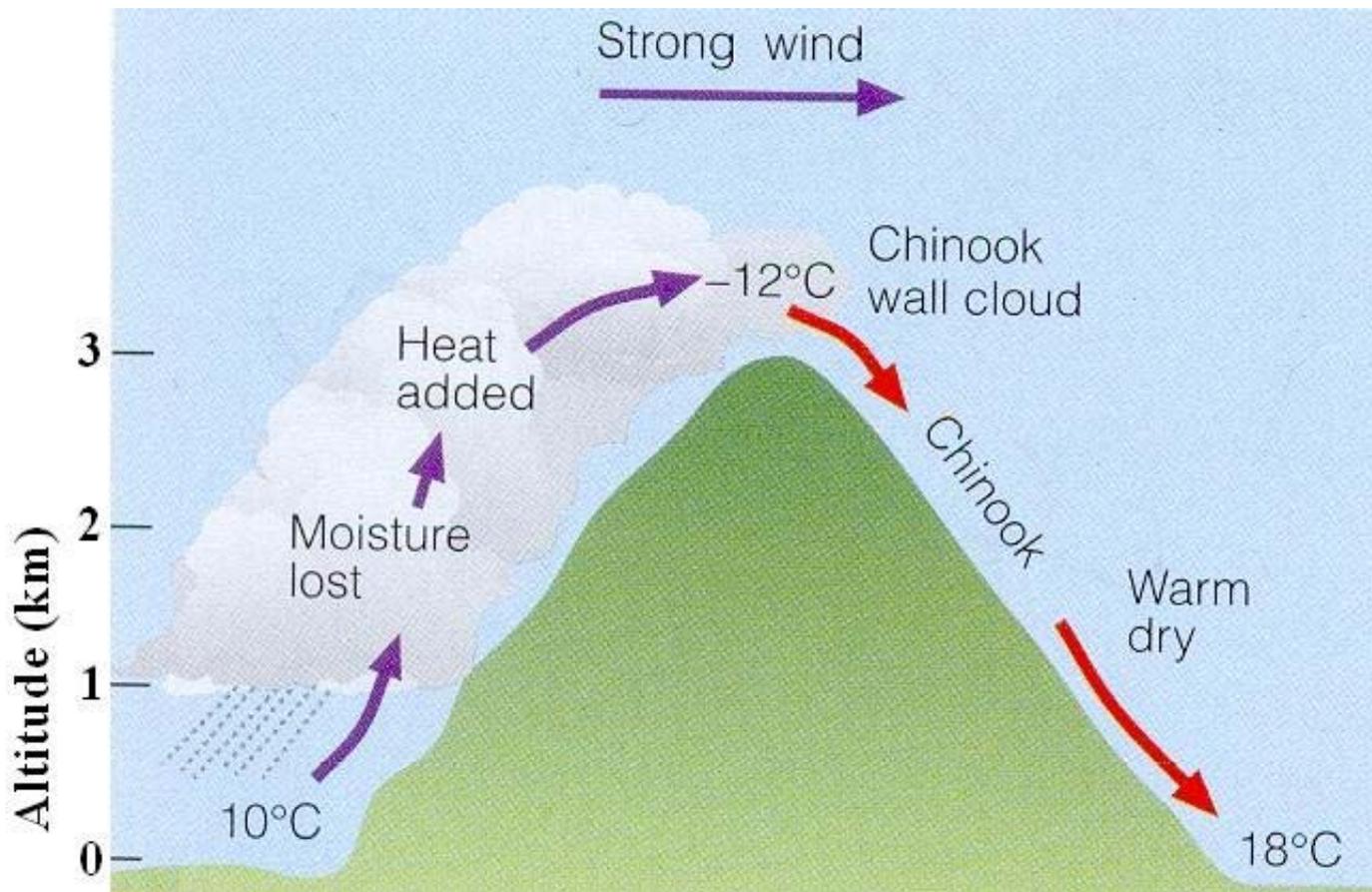
Nuvens sobre as montanhas durante o dia. Por quê?



Vento catabático.



Vento catabático intenso.



Secagem e aquecimento do ar que passa por montanha (Fohen no Alpes e chinook nas Rochosas).

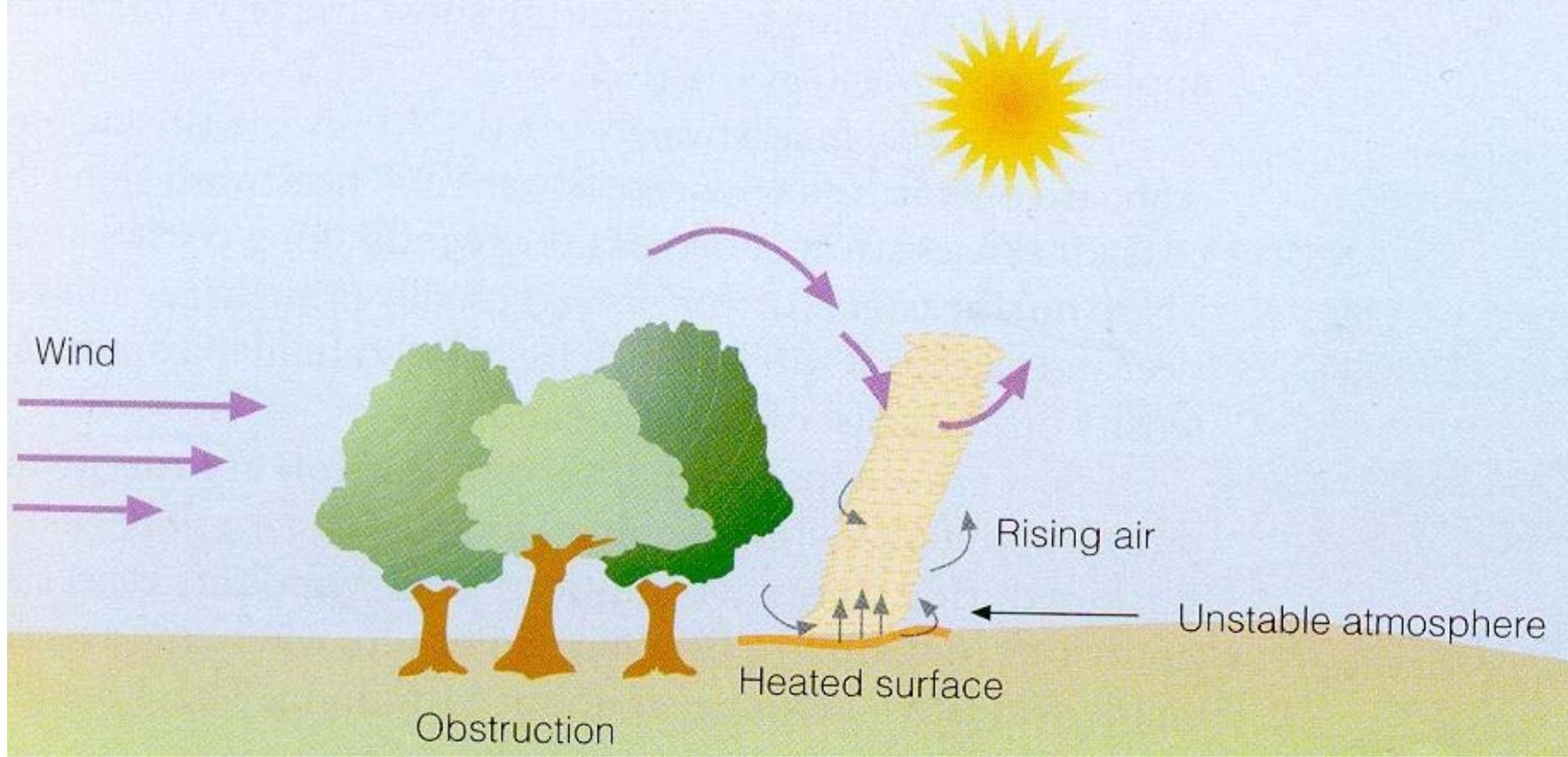


Figure 10.39 Formação de redemoinho (dust devil).



Dust devil no Arizona.

FIM