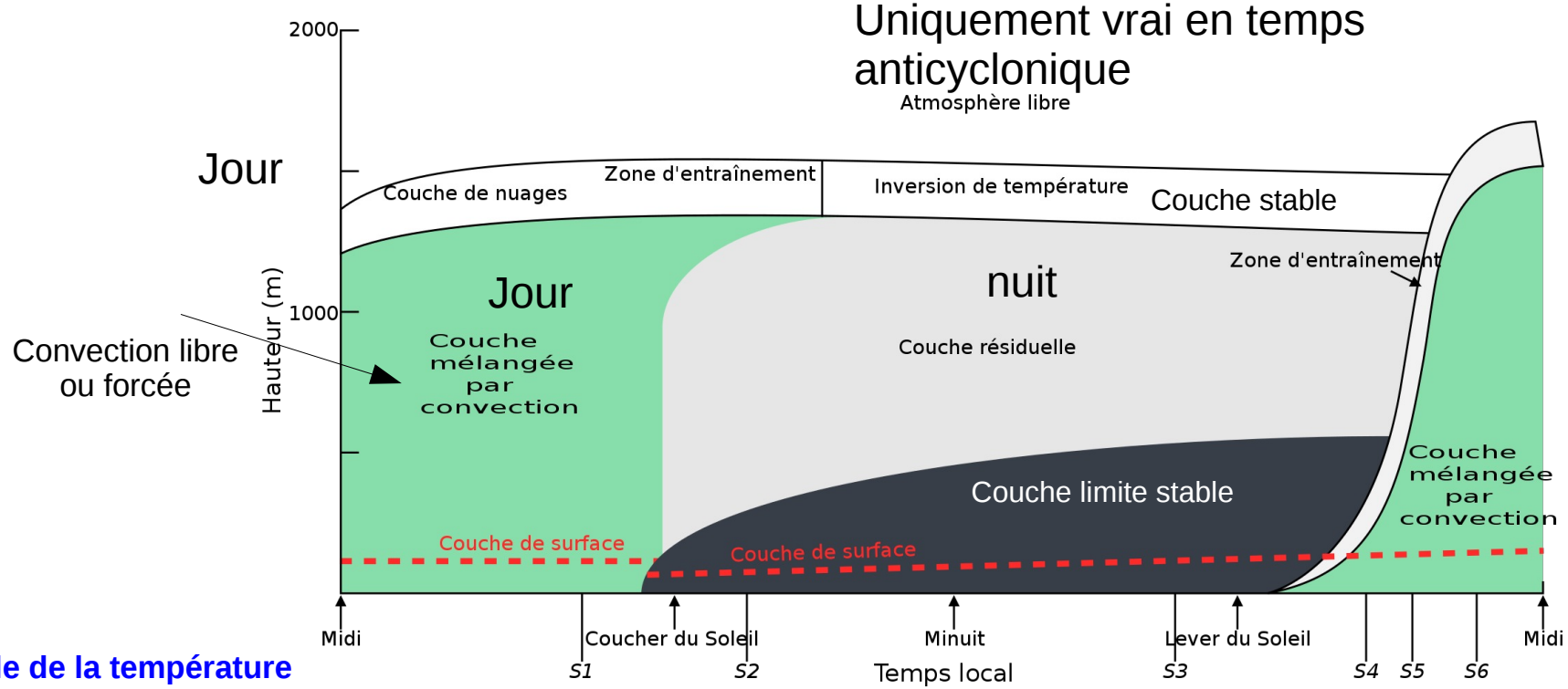
1. Couche limite

Uniquement vrai en temps anticyclonique

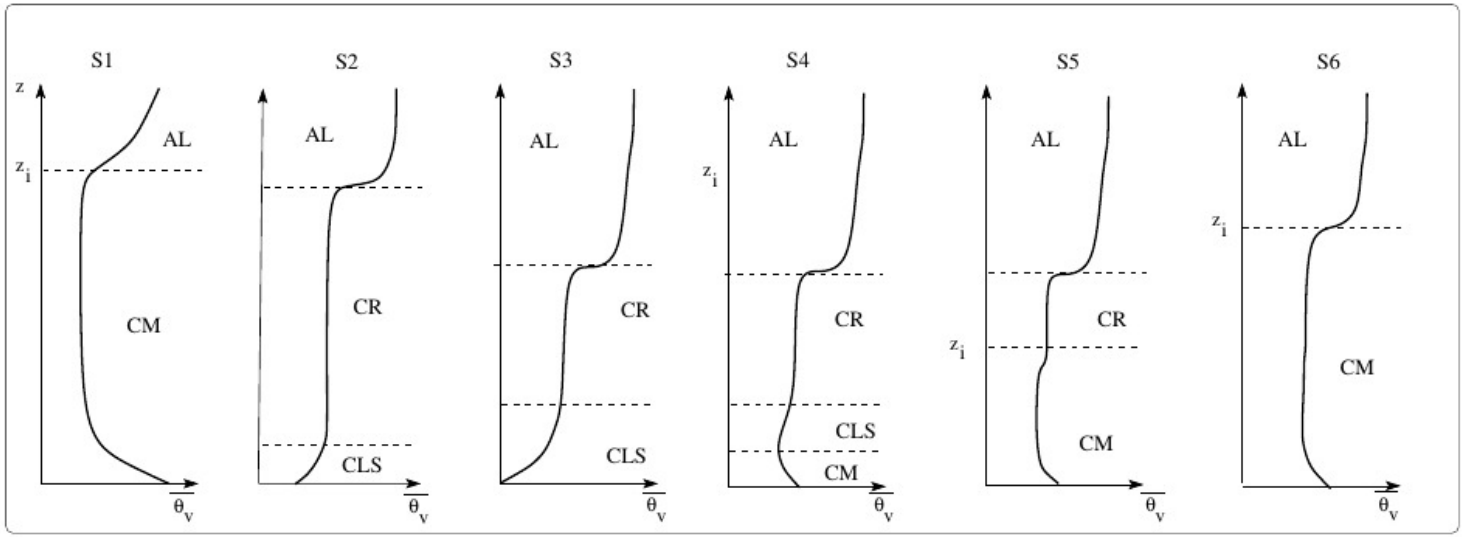


Profile de la température virtuelle potentielle

stable

neutre

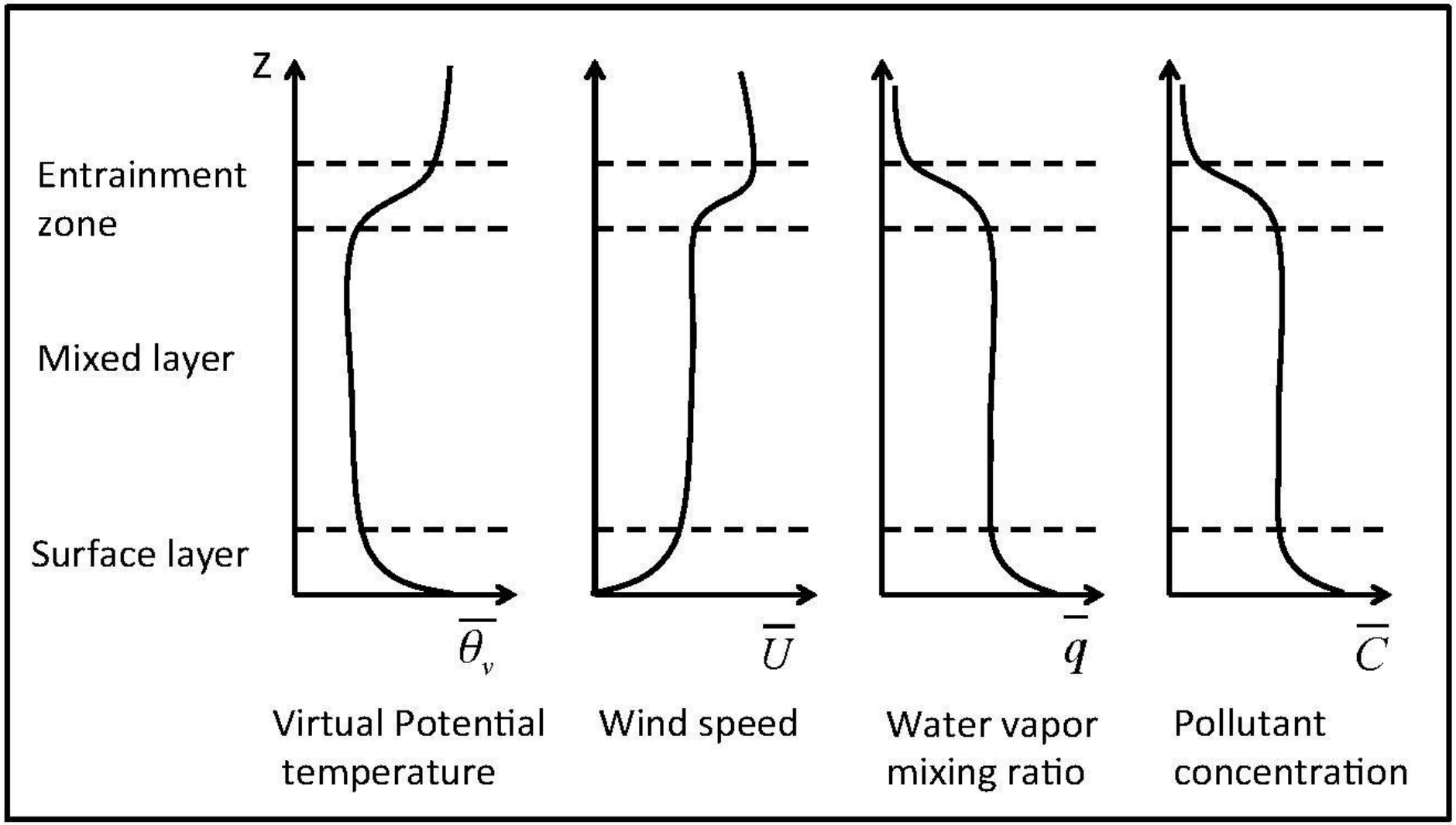
instable



CM = couche de mélange
CLS= couche limite stable
CR= couche résiduel
AL = atmosphère libre

1. Couche limite

A midi, si conditions anticycloniques ...



1. Couche limite

Pendant la nuit ...

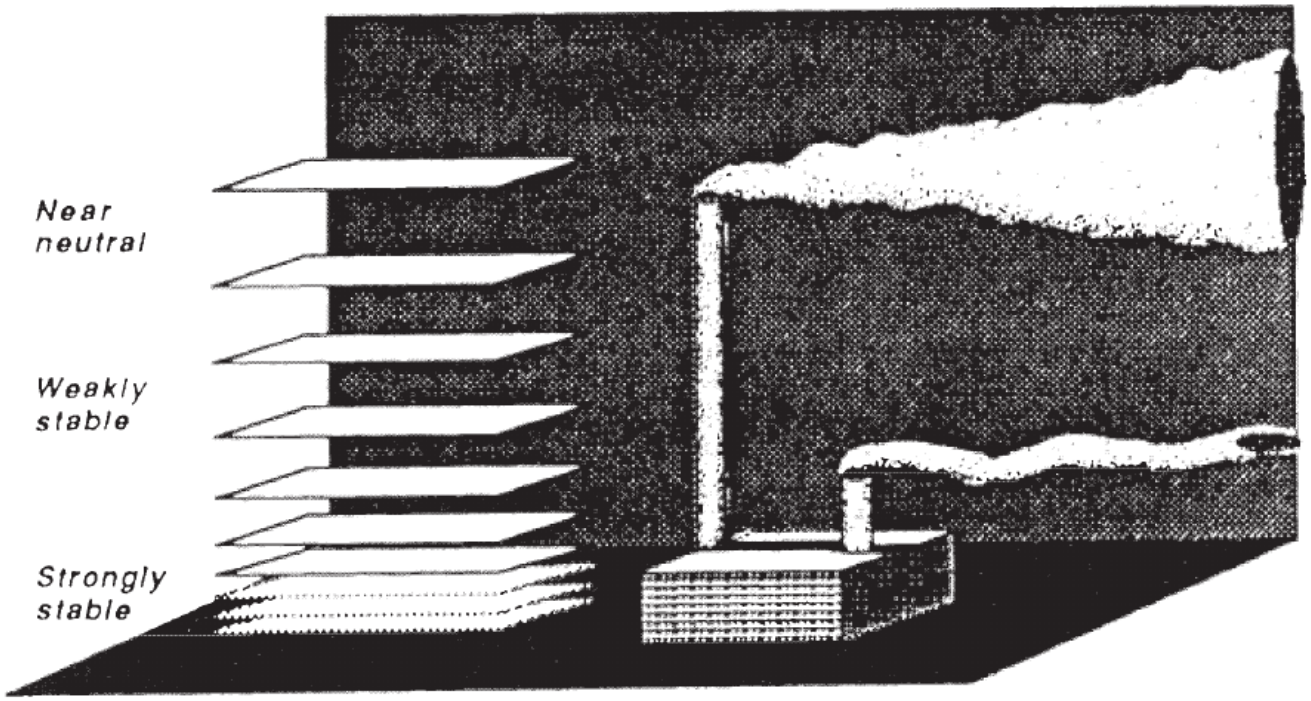


Fig. 1.10 The static stability decreases with height in the nocturnal boundary layer, gradually blending into the neutrally-stratified residual layer aloft, as indicated by the isentropic surfaces sketched on the left. Smoke emissions into the stable air fan out in the horizontal with little vertical dispersion other than wavelike oscillations. Smoke emissions in the neutral residual-layer air spread with an almost equal rate in the vertical and horizontal, allowing the smoke plume to assume a cone-like shape.

1. Couche limite

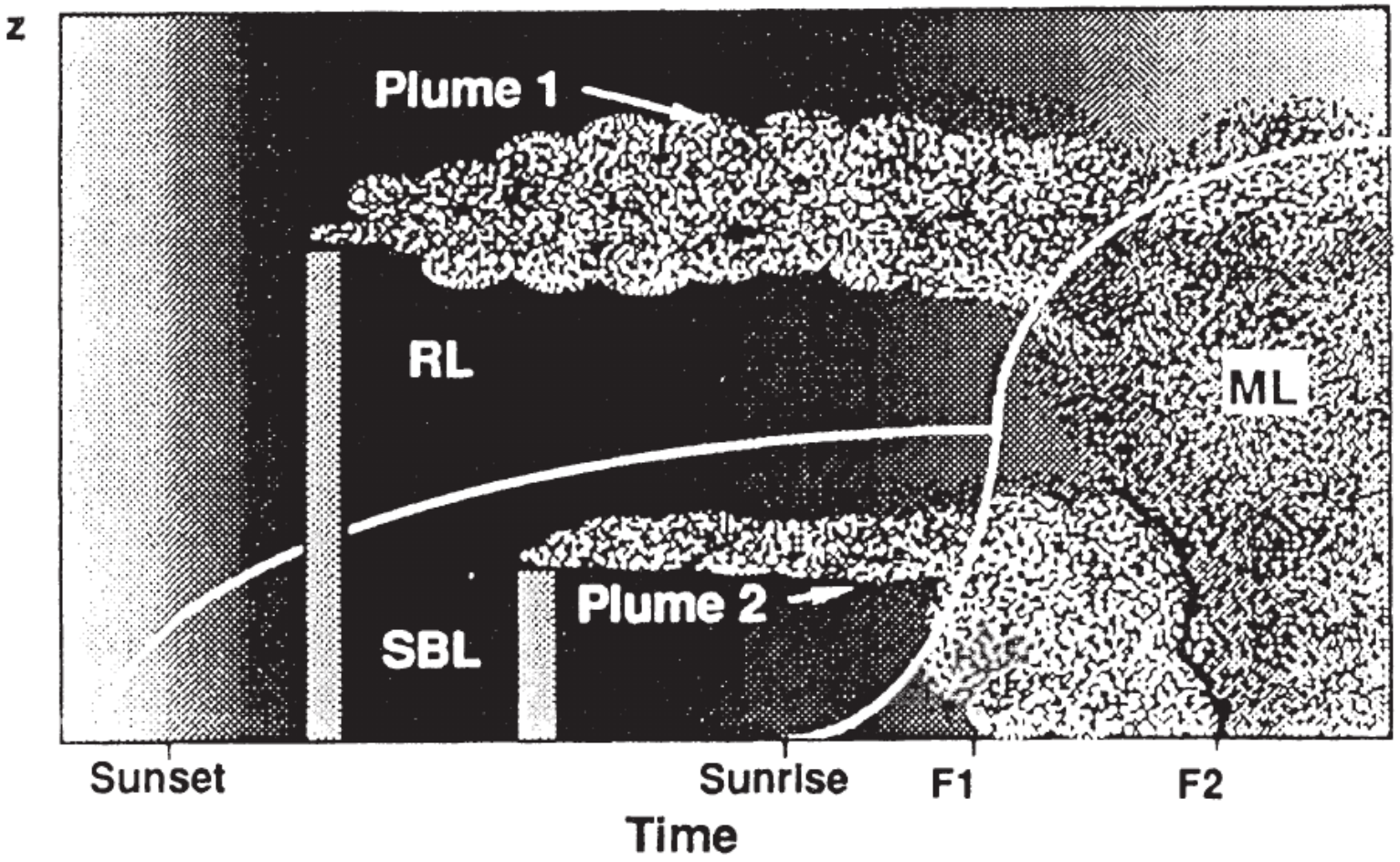
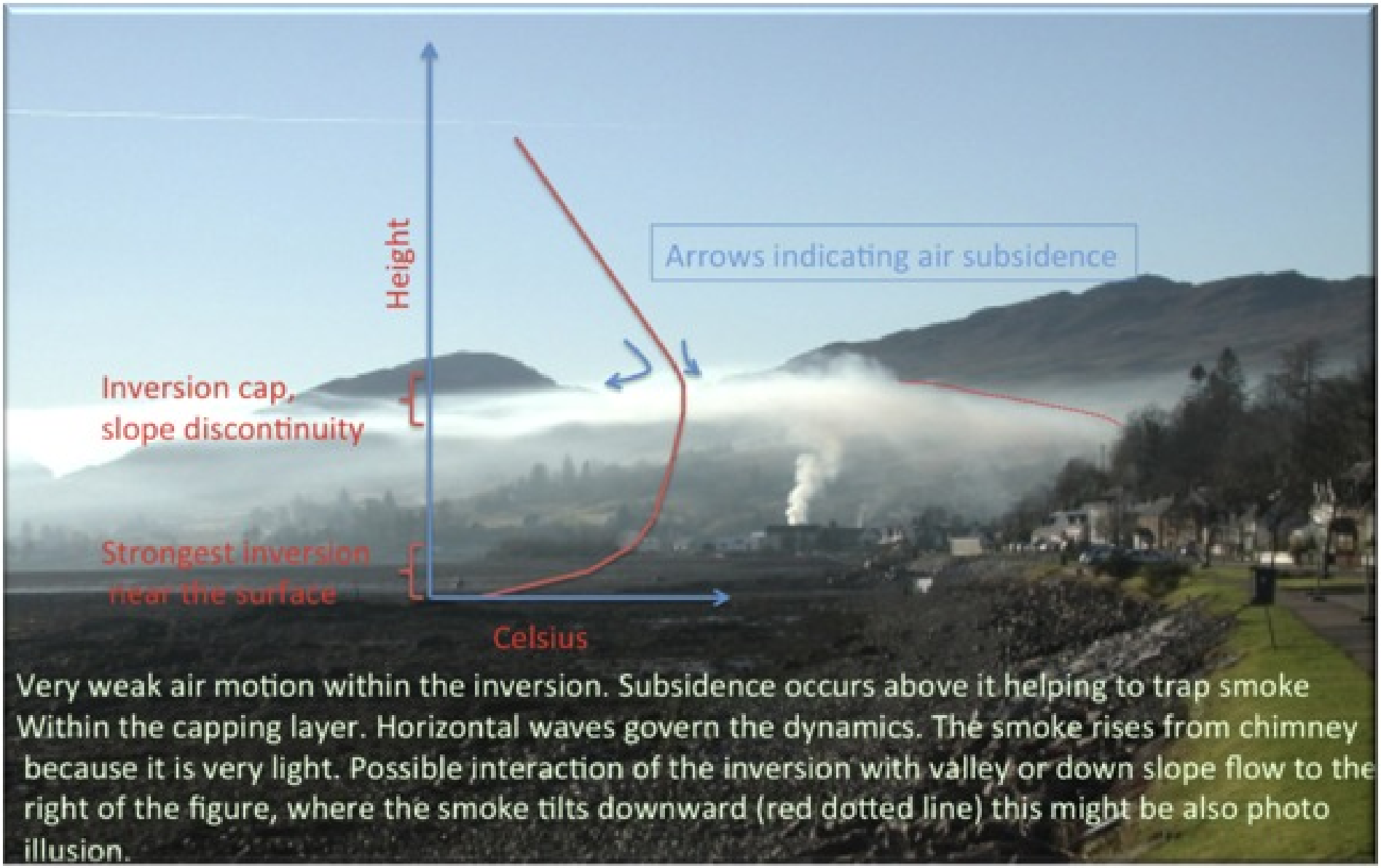


Fig. 1.14 Sketch of the fumigation process, where a growing mixed layer mixes elevated smoke plumes down to the ground. Smoke plume 1 is fumigated at time F1, while plume 2 is fumigated at time F2.

1. Couche limite



2. Brise de mer - terre

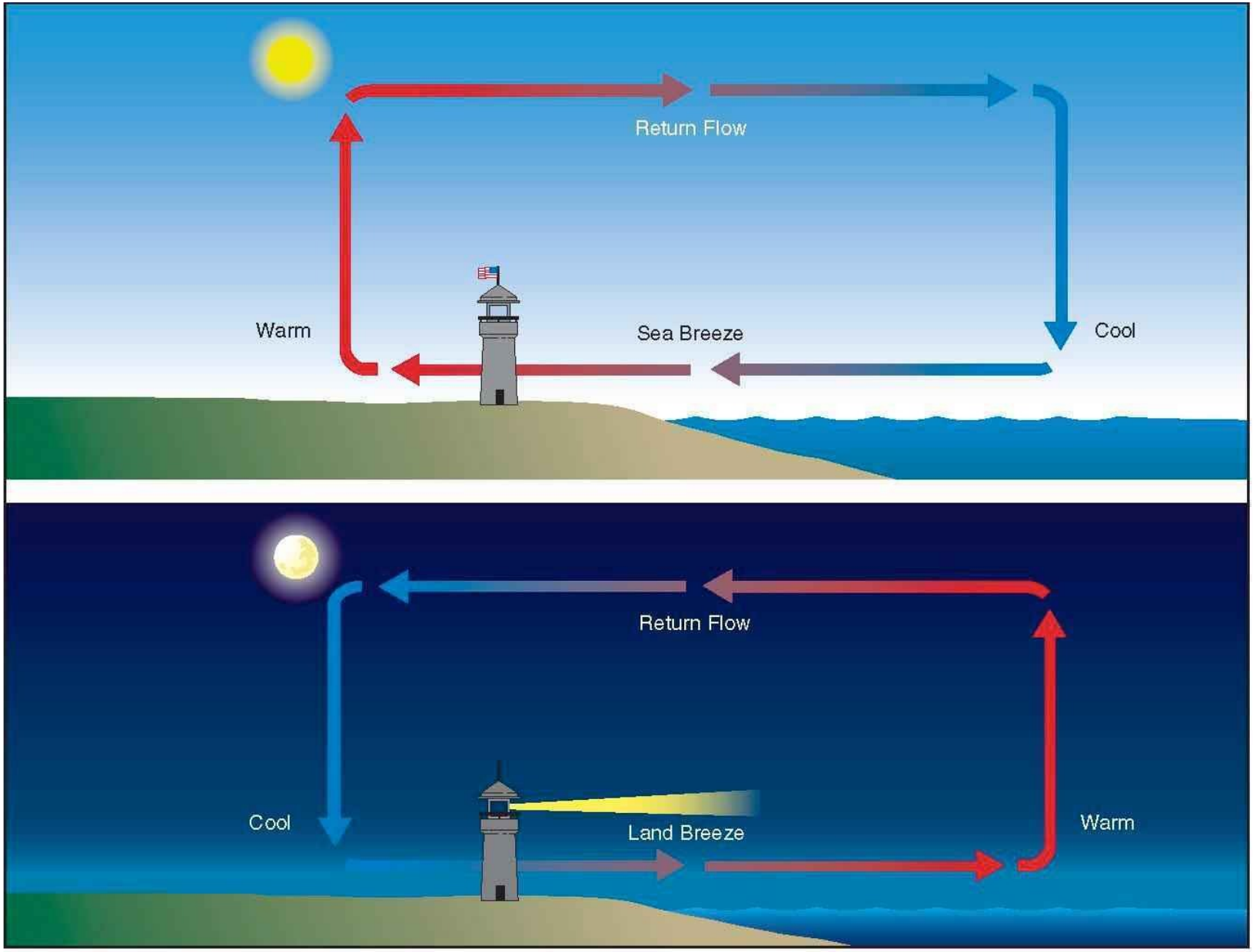
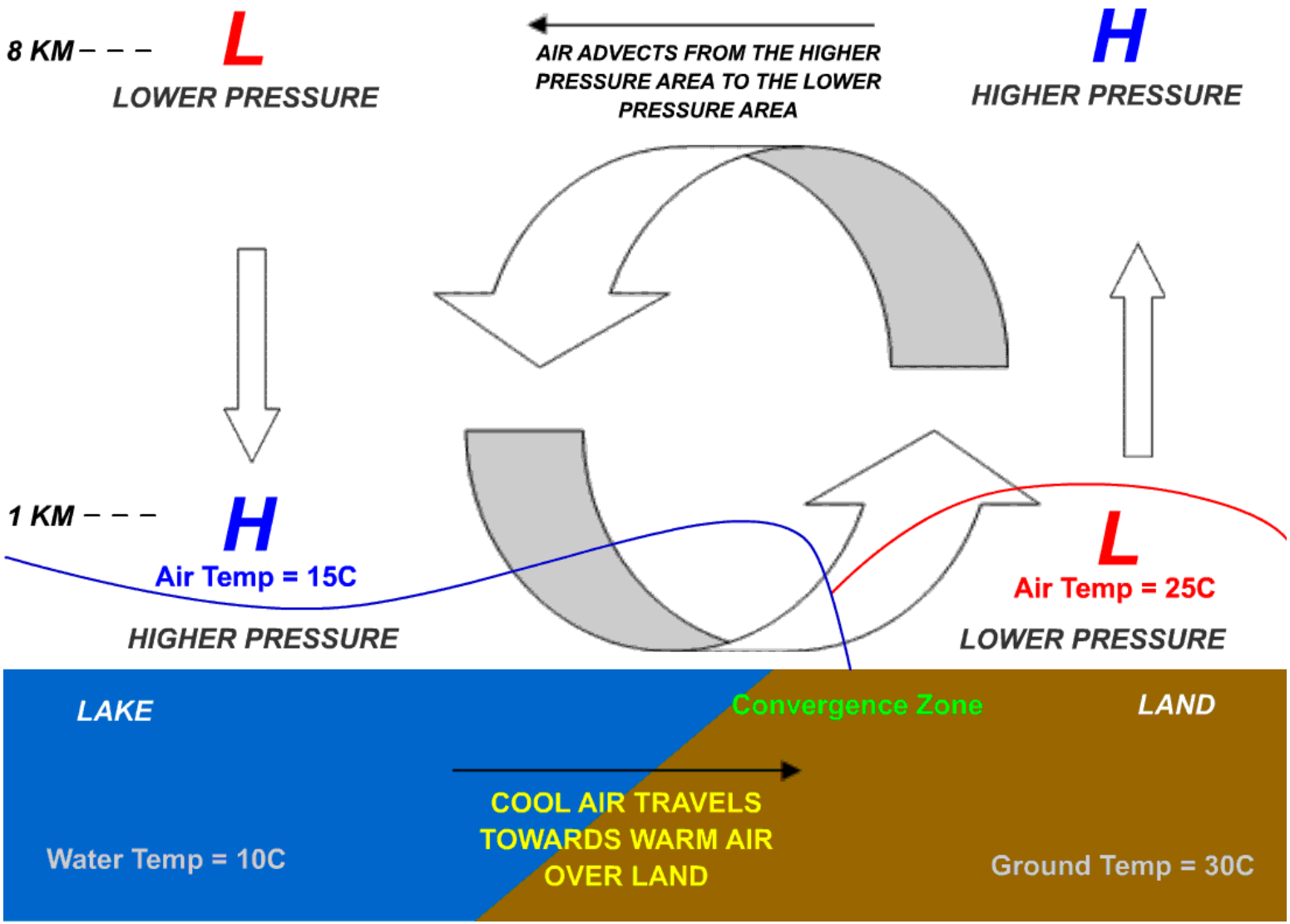
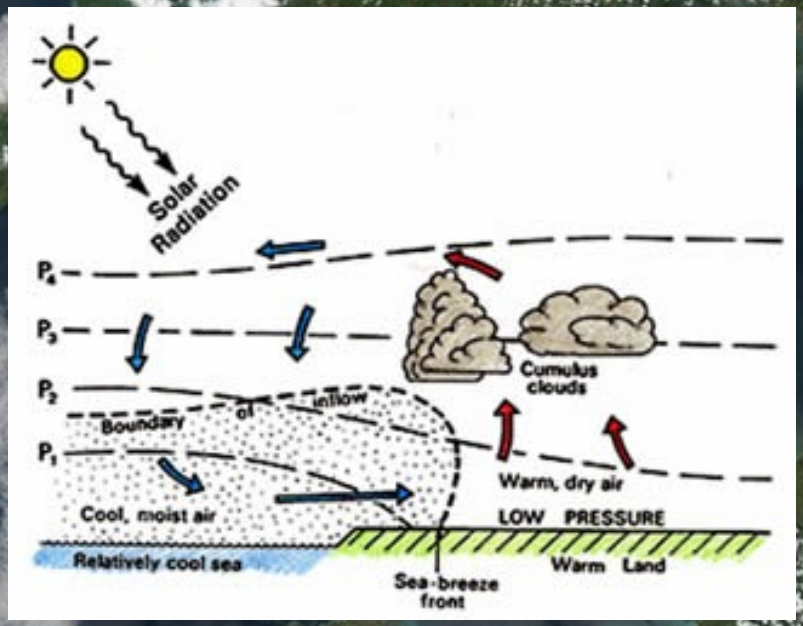


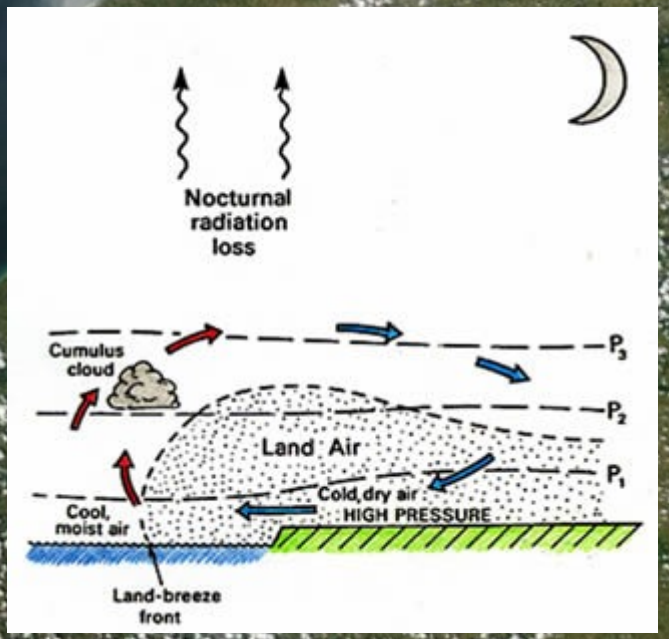
Figure 10-13. Sea breeze and land breeze wind circulation patterns.

2. Brise de mer - terre



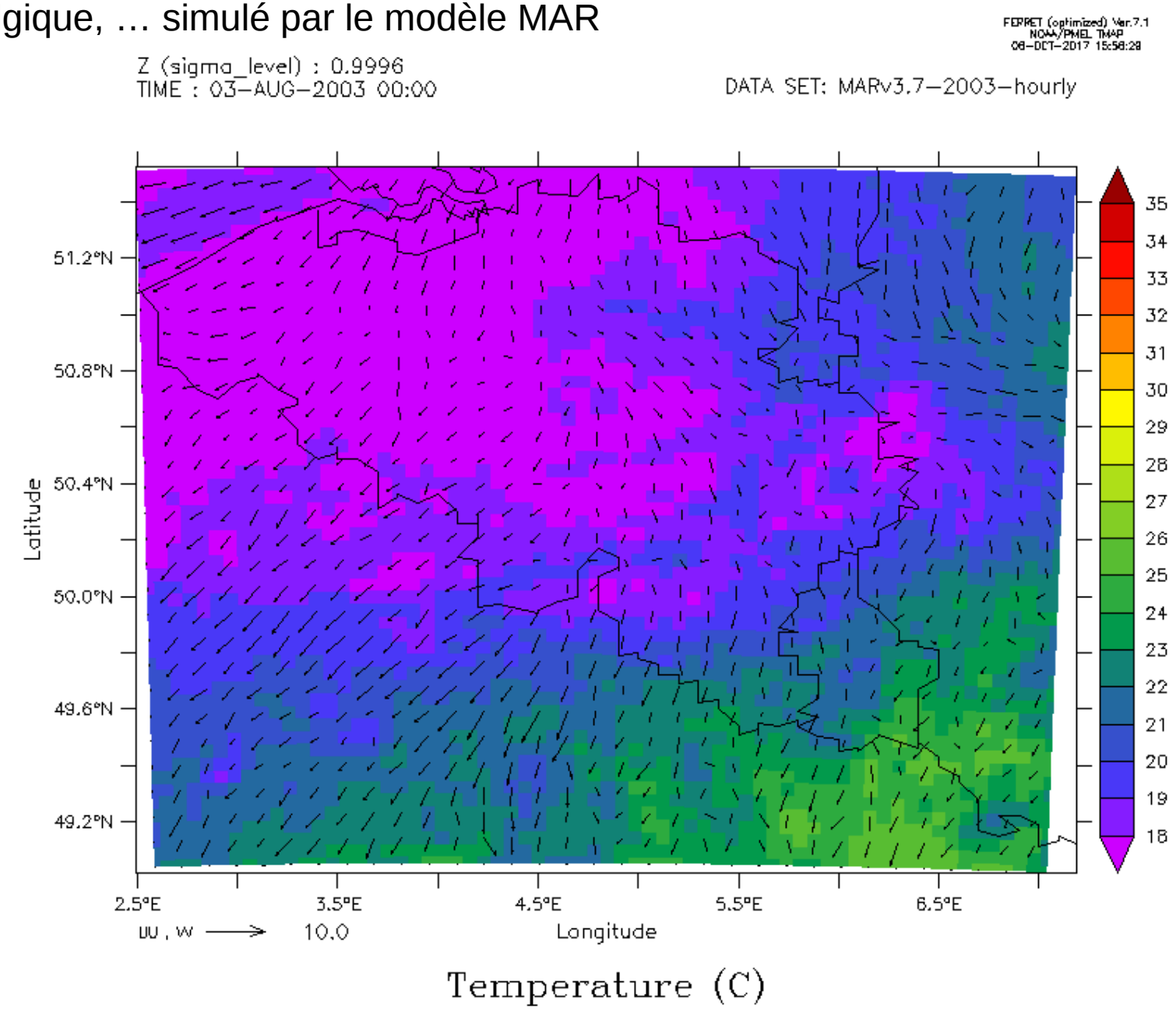
2. Brise de mer - terre





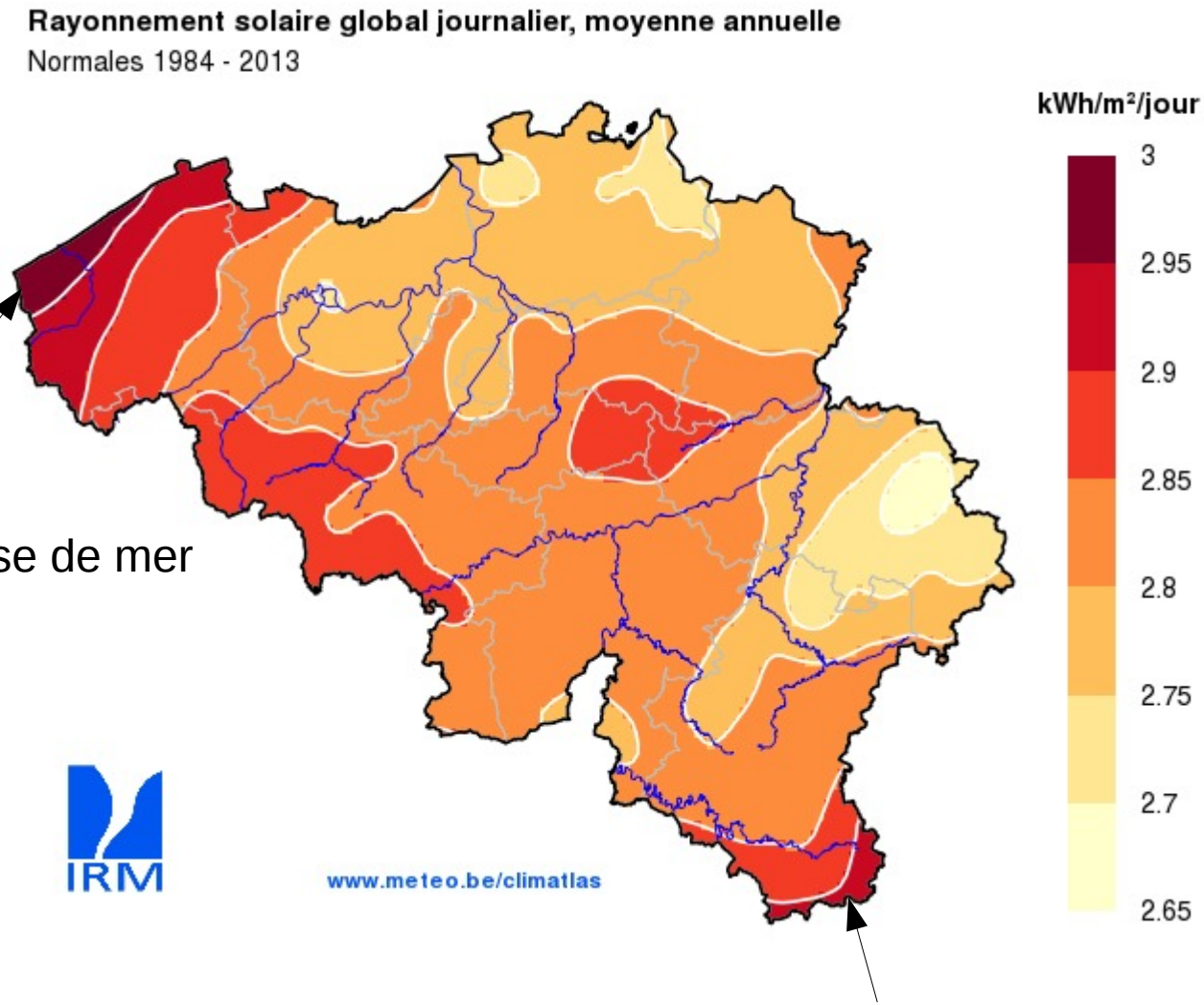
2. Brise de mer - terre

En Belgique, … simulé par le modèle MAR



2. Brise de mer - terre

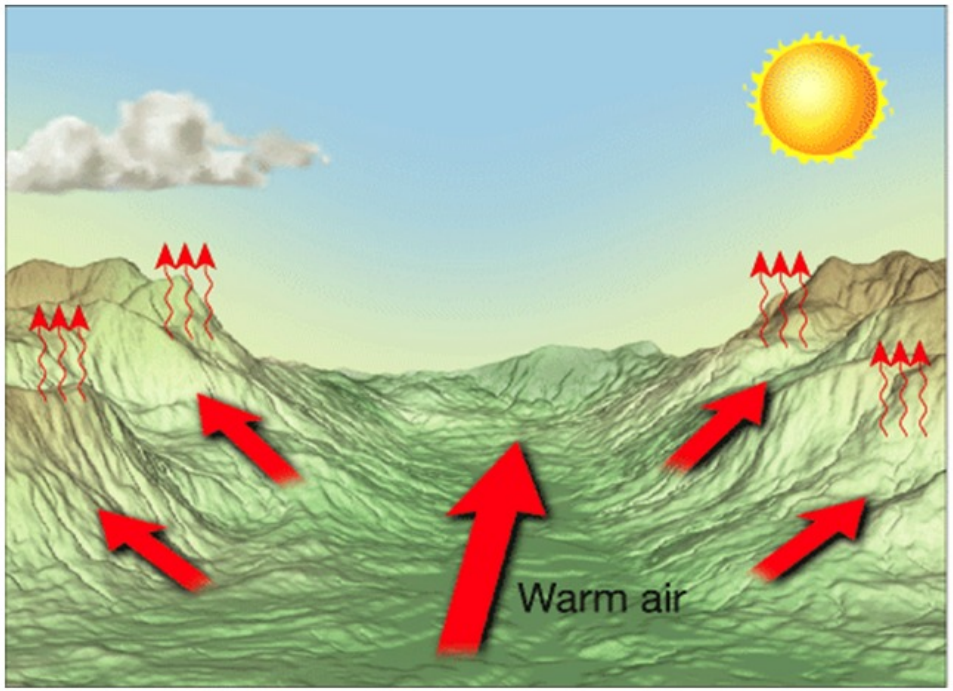
Fait-il plus beau à la côte ??

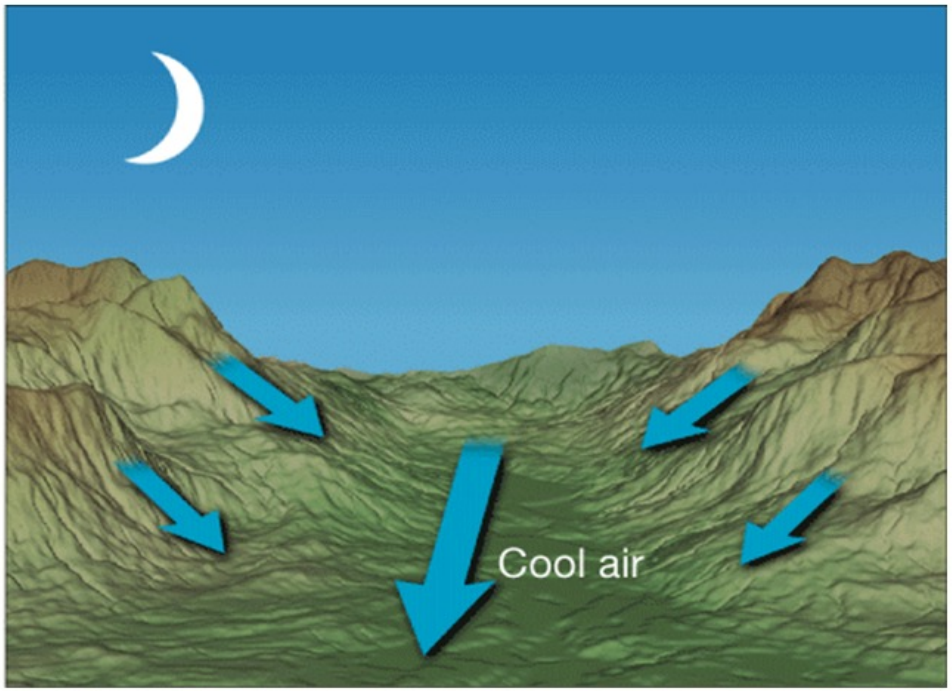


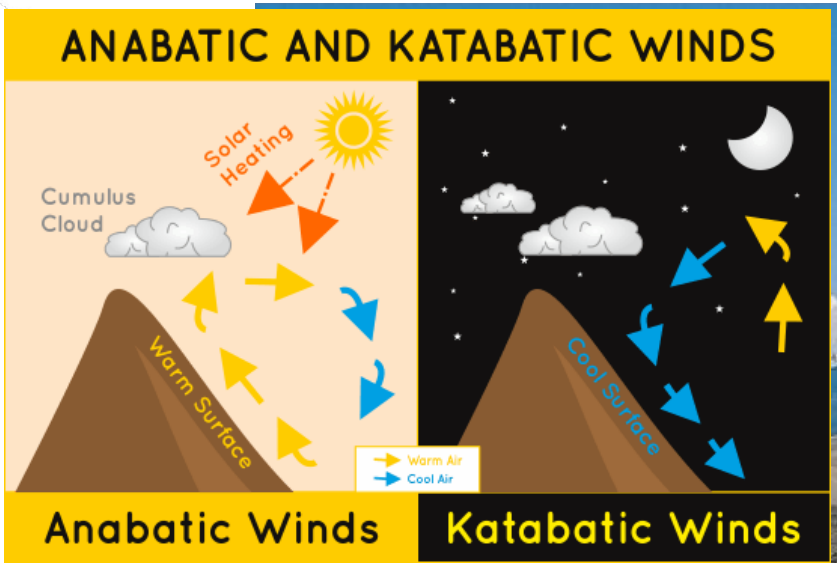
A cause de la brise de mer

À cause de la latitude et de la continentalité

3. Brise de vallée

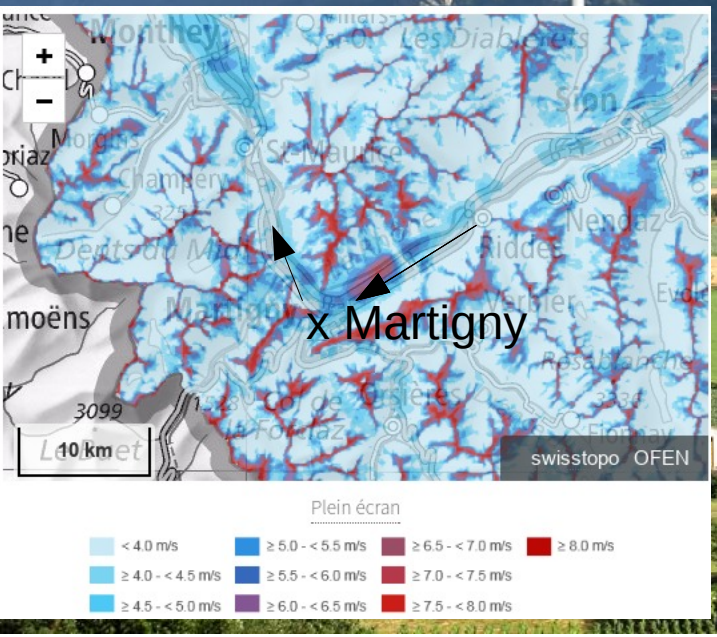






3. Brise de vallée

Utilisation des vents catabatiques

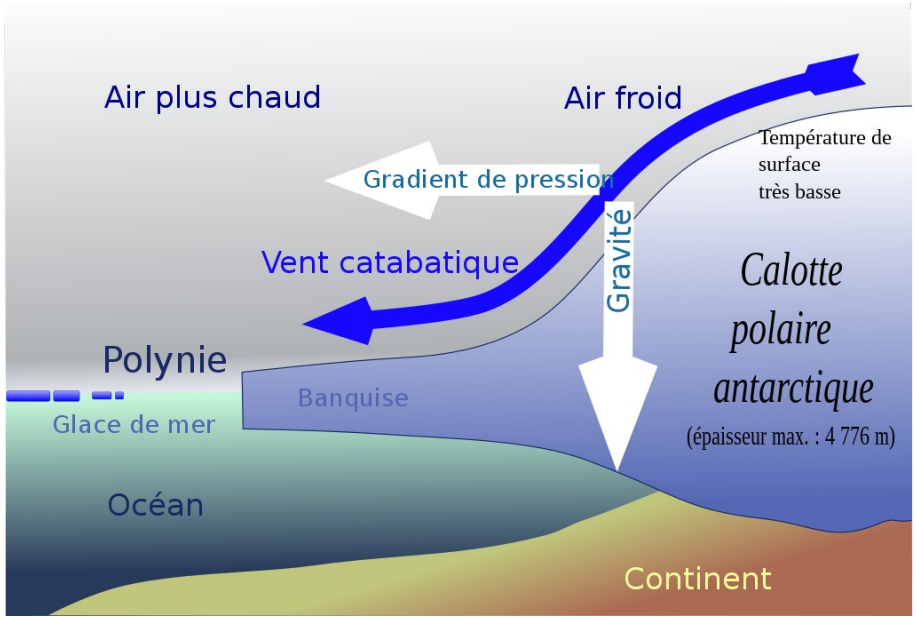


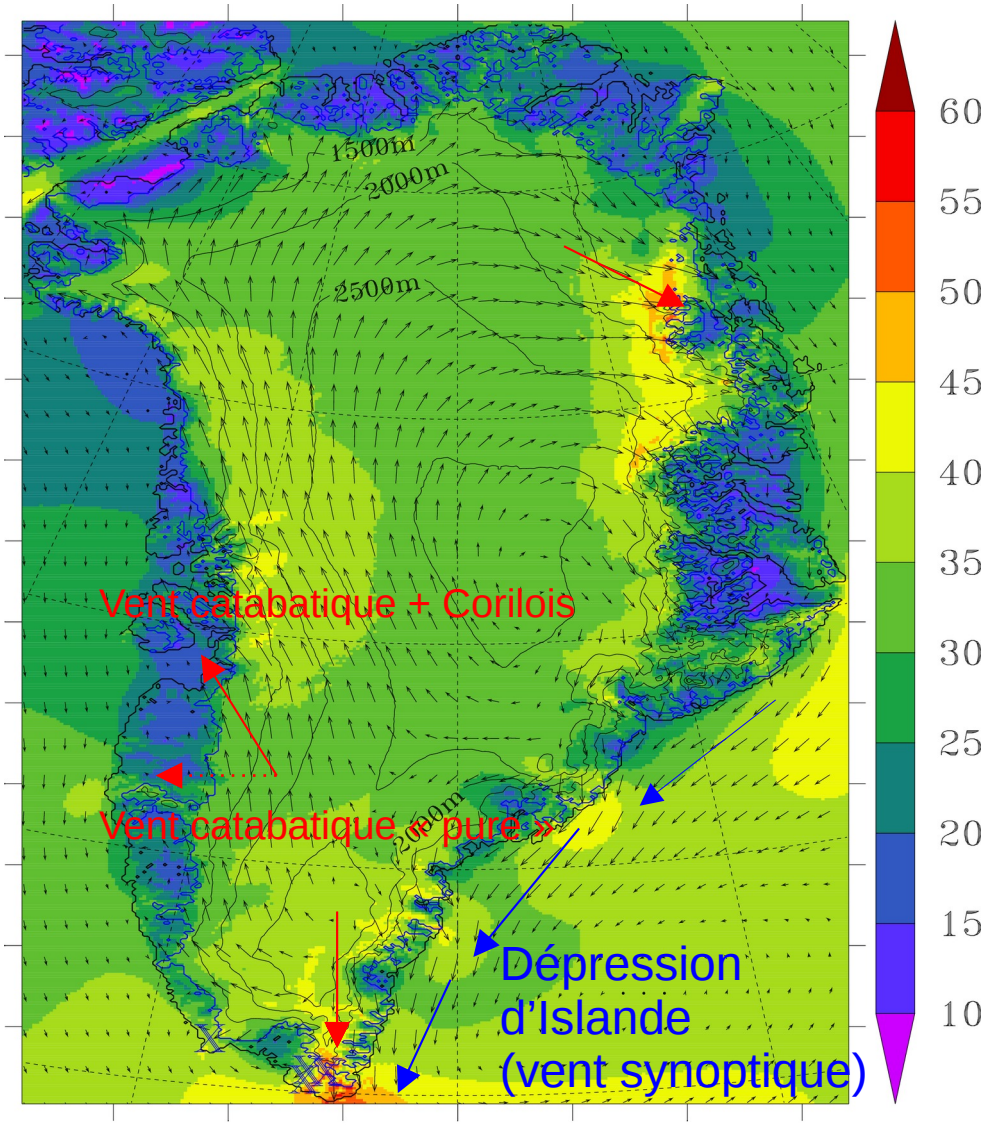
Éoliennes dans le Valais (Suisse)

3. Brise de vallée

LIÈGE université
Katabata project

Utilisation des vents catabatiques :
(quand le vent local souffle dans la même direction que le vent synoptique !)



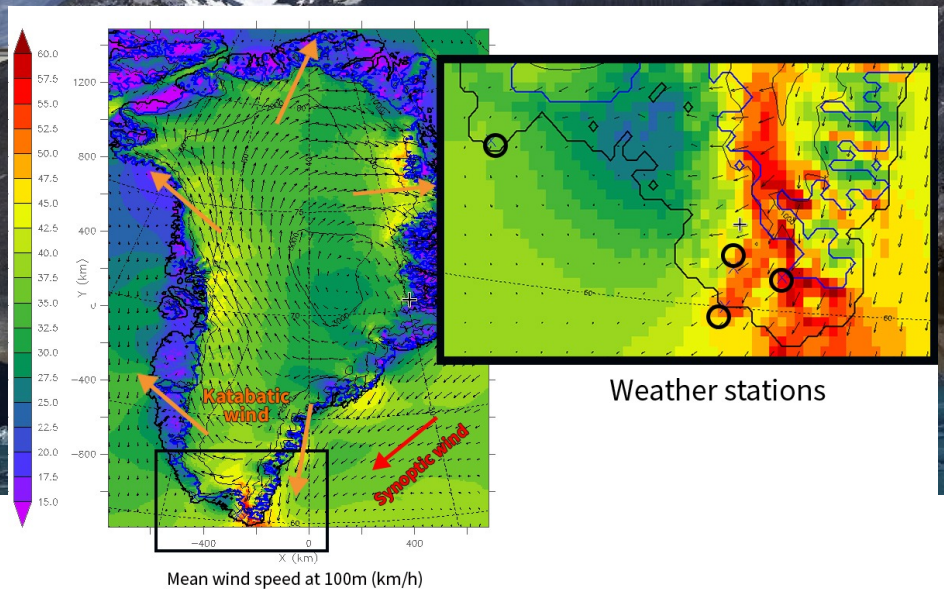


Mean Wind speed at 100m (km/h)

3. Brise de vallée

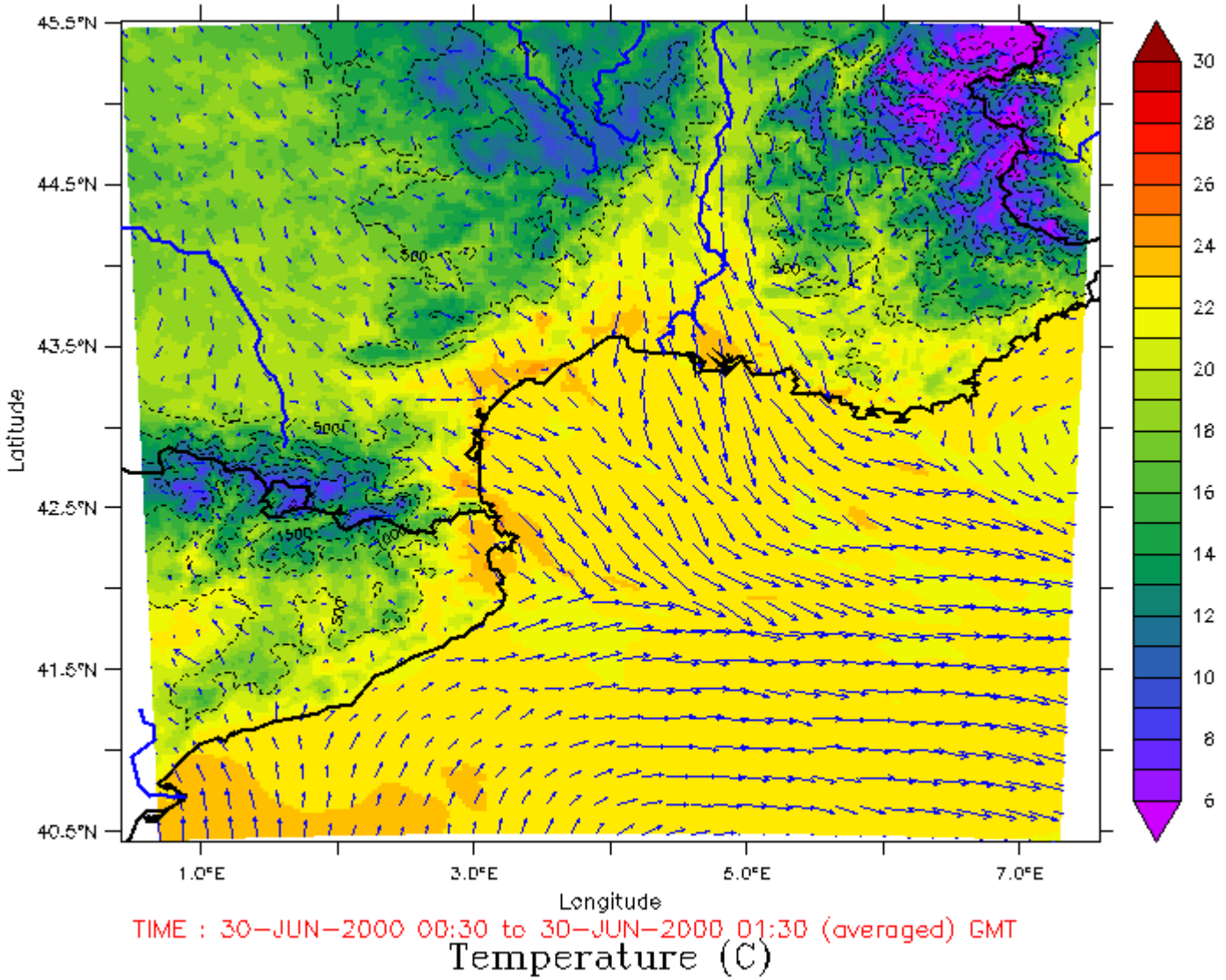
LIÈGE université
Katabata project

Utilisation des vents catabatiques :
(quand le vent local souffle dans la même direction que le vent synoptique !)



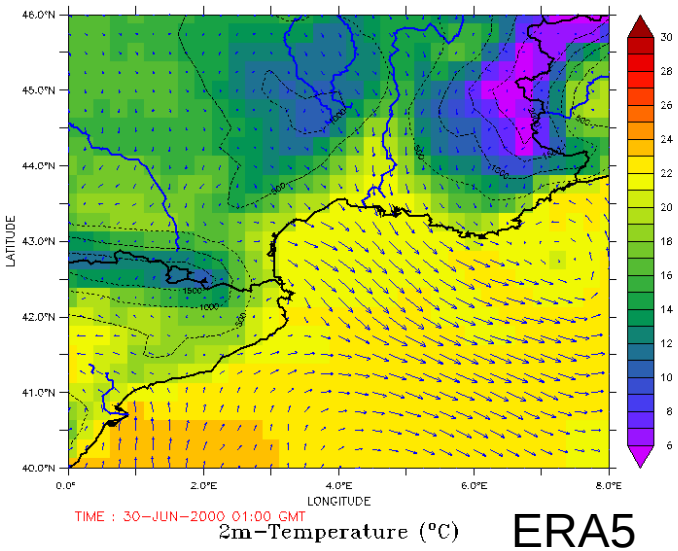
4. Brise de mer et de vallée

Simulée par MAR à 2.5km

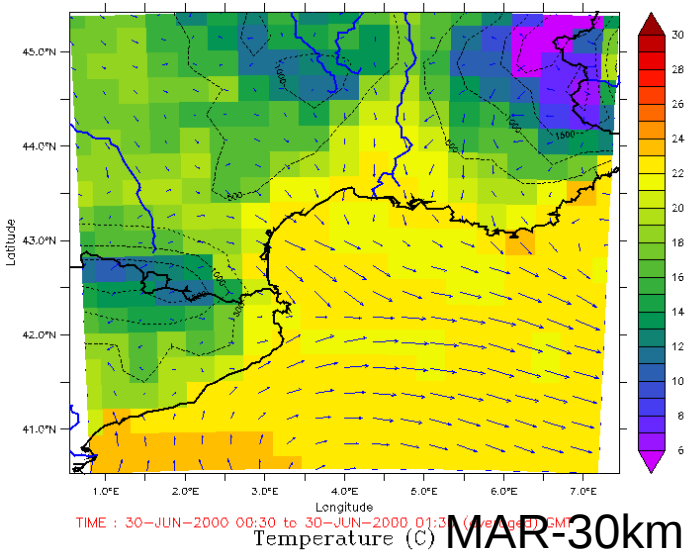


4. Brise de mer et de vallée

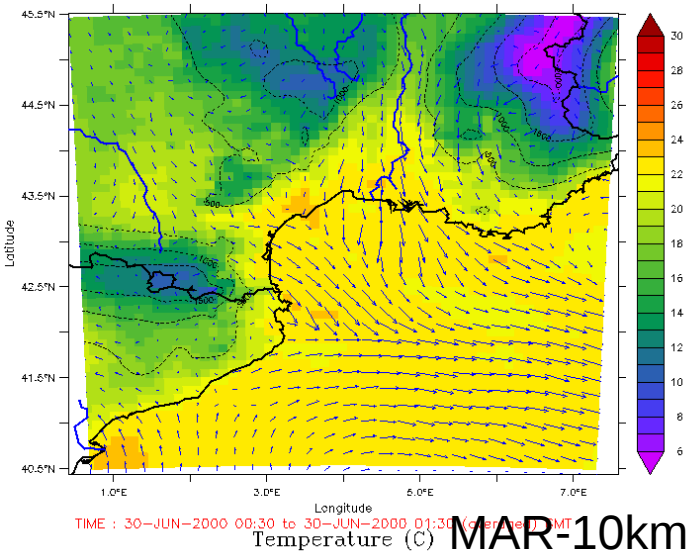
Simulée par MAR...



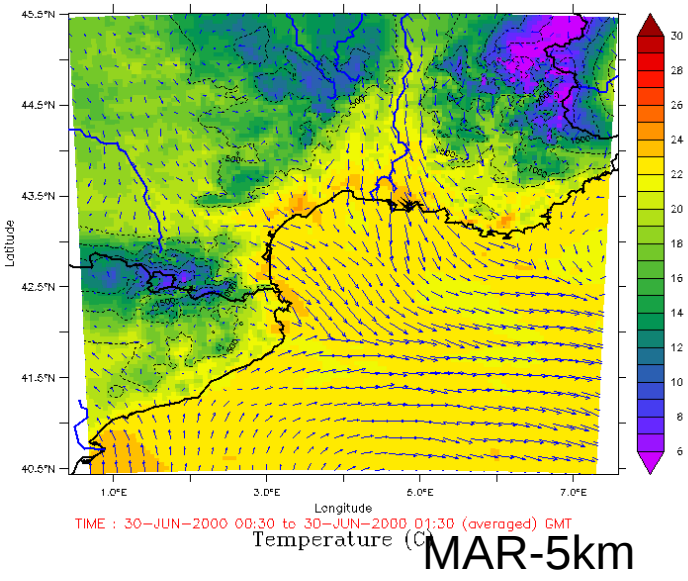
ERA5



MAR-30km

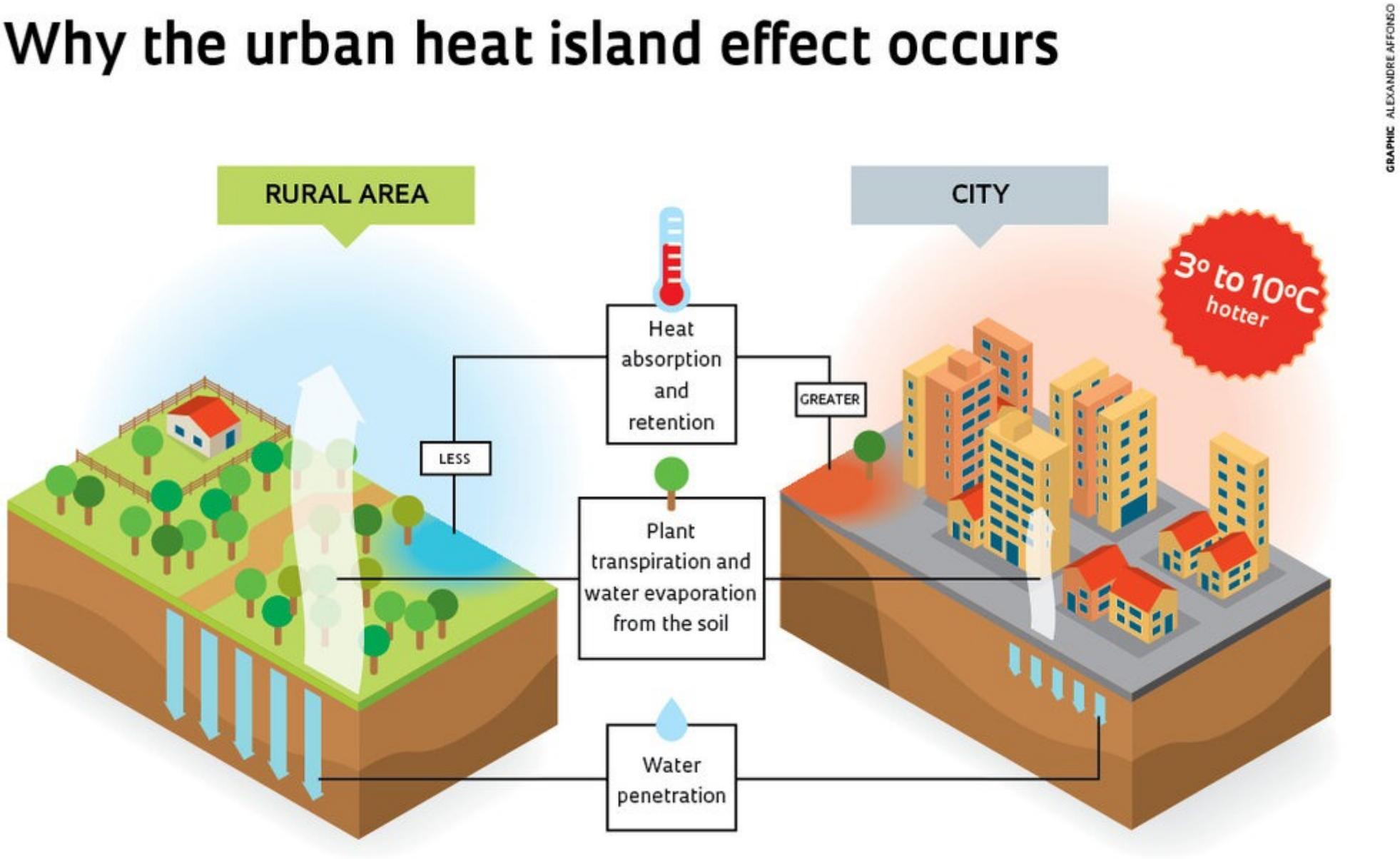


MAR-10km

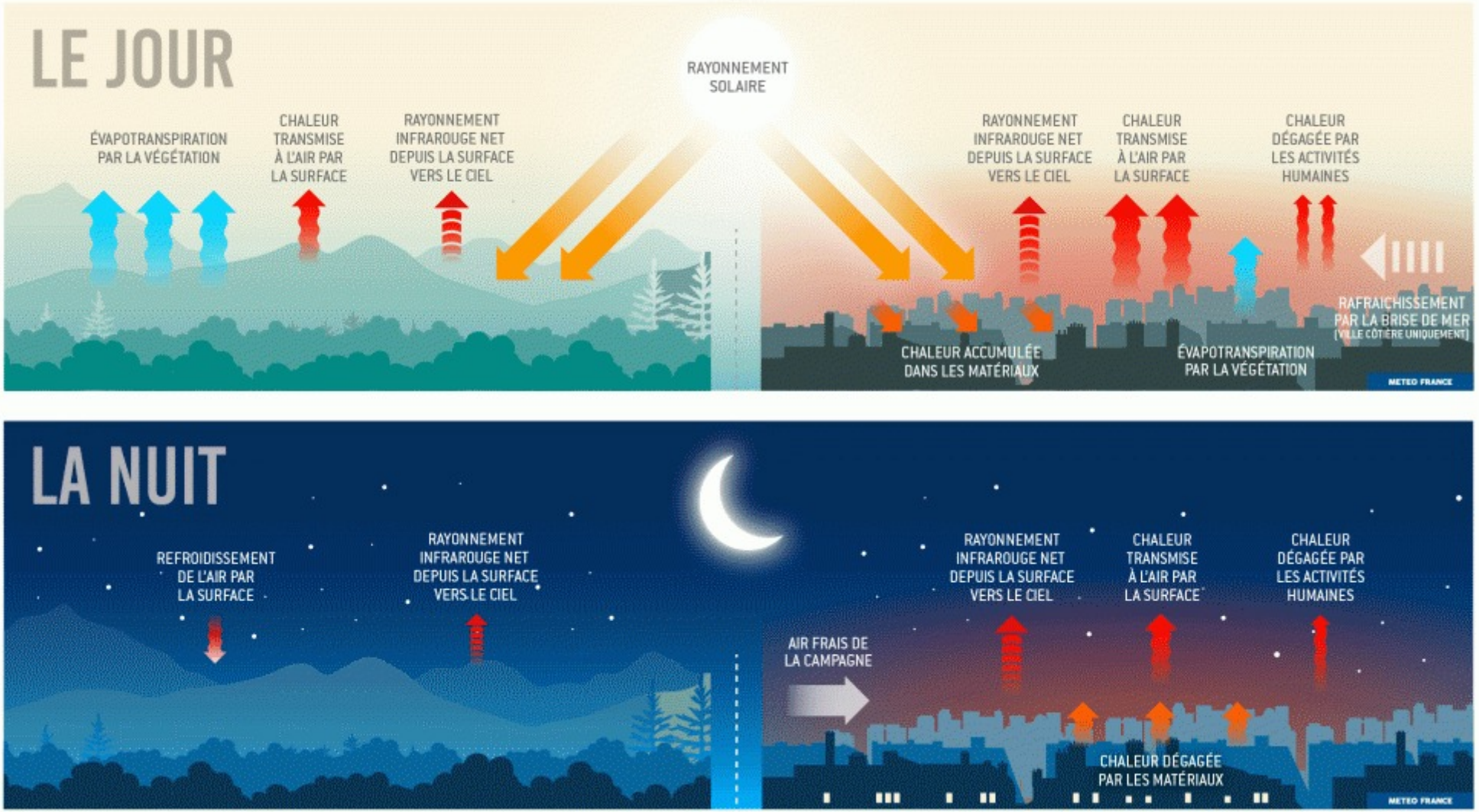


MAR-5km

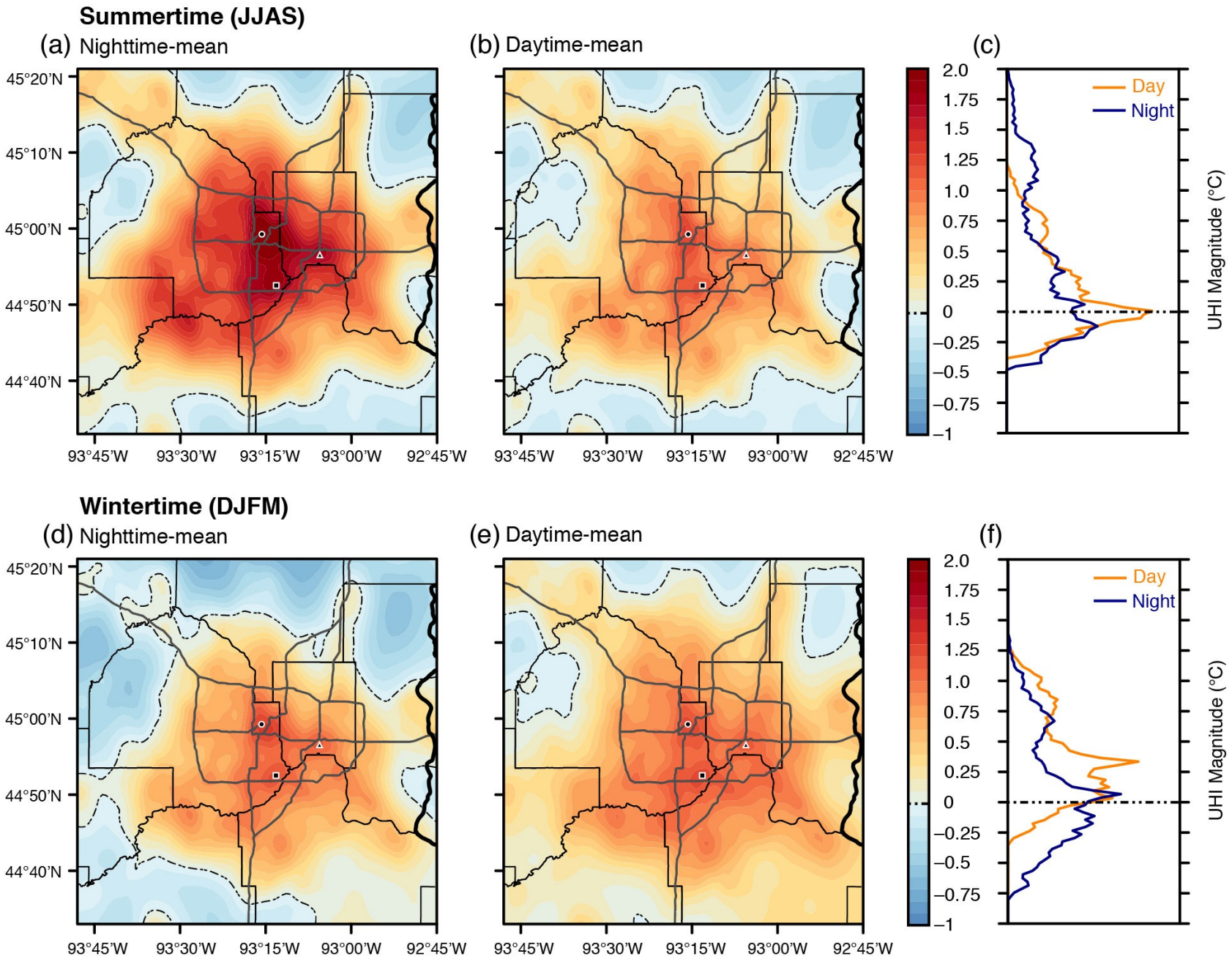
5. Îlot de chaleur urbain (UHI)



5. Îlot de chaleur urbain (UHI)

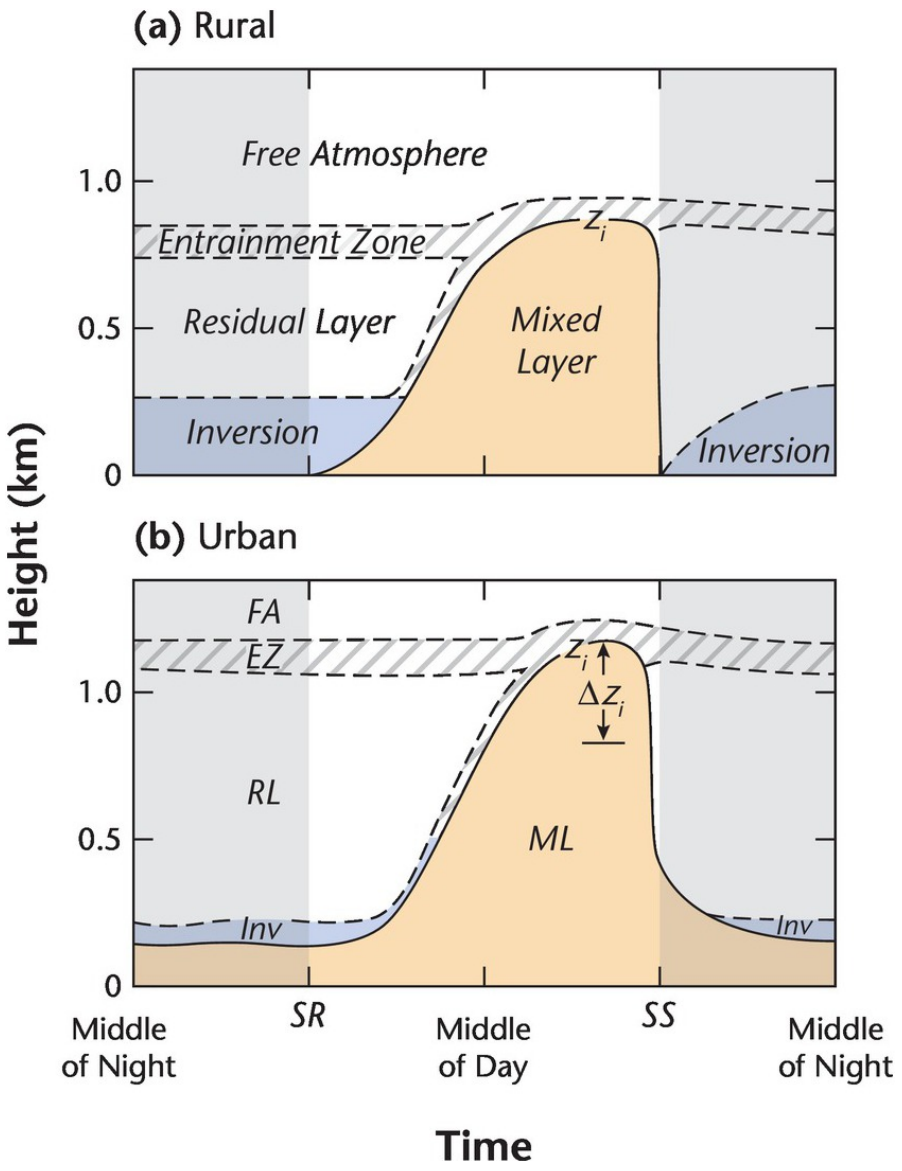


5. Îlot de chaleur urbain (UHI)

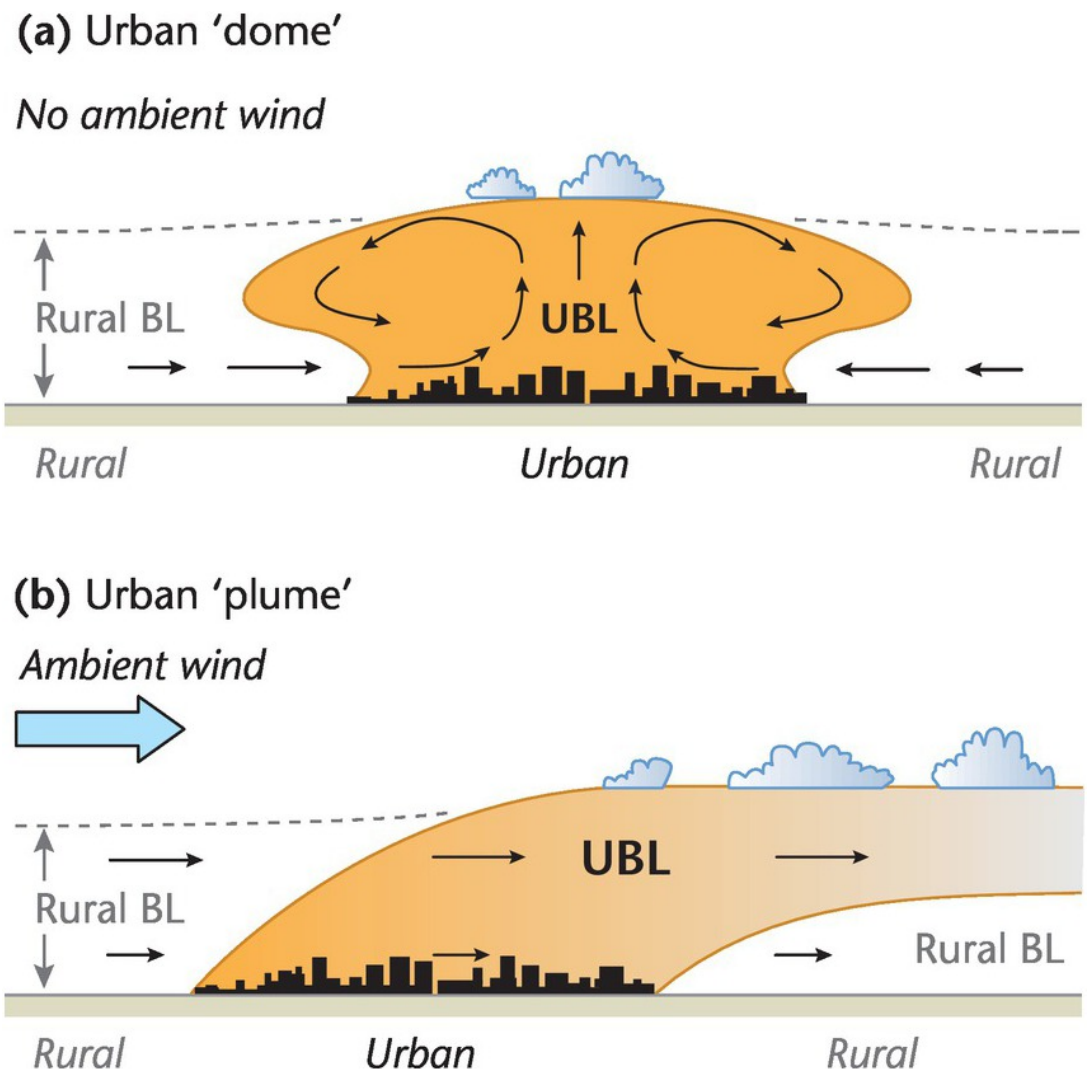


5. Îlot de chaleur urbain (UHI)

Impact dans le temps ...



Impact dans l'espace ...



5. Îlot de chaleur urbain (UHI)

Impact sur les précipitations...

AGU PUBLICATIONS

JGR

Journal of Geophysical Research: Atmospheres

RESEARCH ARTICLE
10.1002/2015JD023753

Special Section:
East Asian Study of Tropospheric Aerosols and Impact on Cloud and Precipitation

A case study of urbanization impact on summer precipitation in the Greater Beijing Metropolitan Area: Urban heat island versus aerosol effects

Shi Zhong[1,2], Yun Qian[2], Chun Zhao[2], Ruby Leung[2], and Xiu-Qun Yang[1]

[1]School of Atmospheric Sciences, Nanjing University, Nanjing, China, [2]Pacific Northwest National Laboratory, Richland, Washington, USA

La ville impacte aussi les précipitations via les aérosols qui sont émis.

Received: 11 October 2018 | Revised: 25 April 2019 | Accepted: 25 April 2019 | Published on: 26 May 2019

DOI: 10.1002/qj.3555

RESEARCH ARTICLE

Quarterly Journal of the Royal Meteorological Society RMetS

Urban impacts on the spatiotemporal pattern of short-duration convective precipitation in a coastal city adjacent to a mountain range

Hiroyuki Kusaka[1] | Akifumi Nishi[2] | Mayumi Mizunari[2] | Hitoshi Yokoyama[3]

A ville (Tokyo) ralentit la brise de mer ce qui génère des précipitations plus « tôt ».