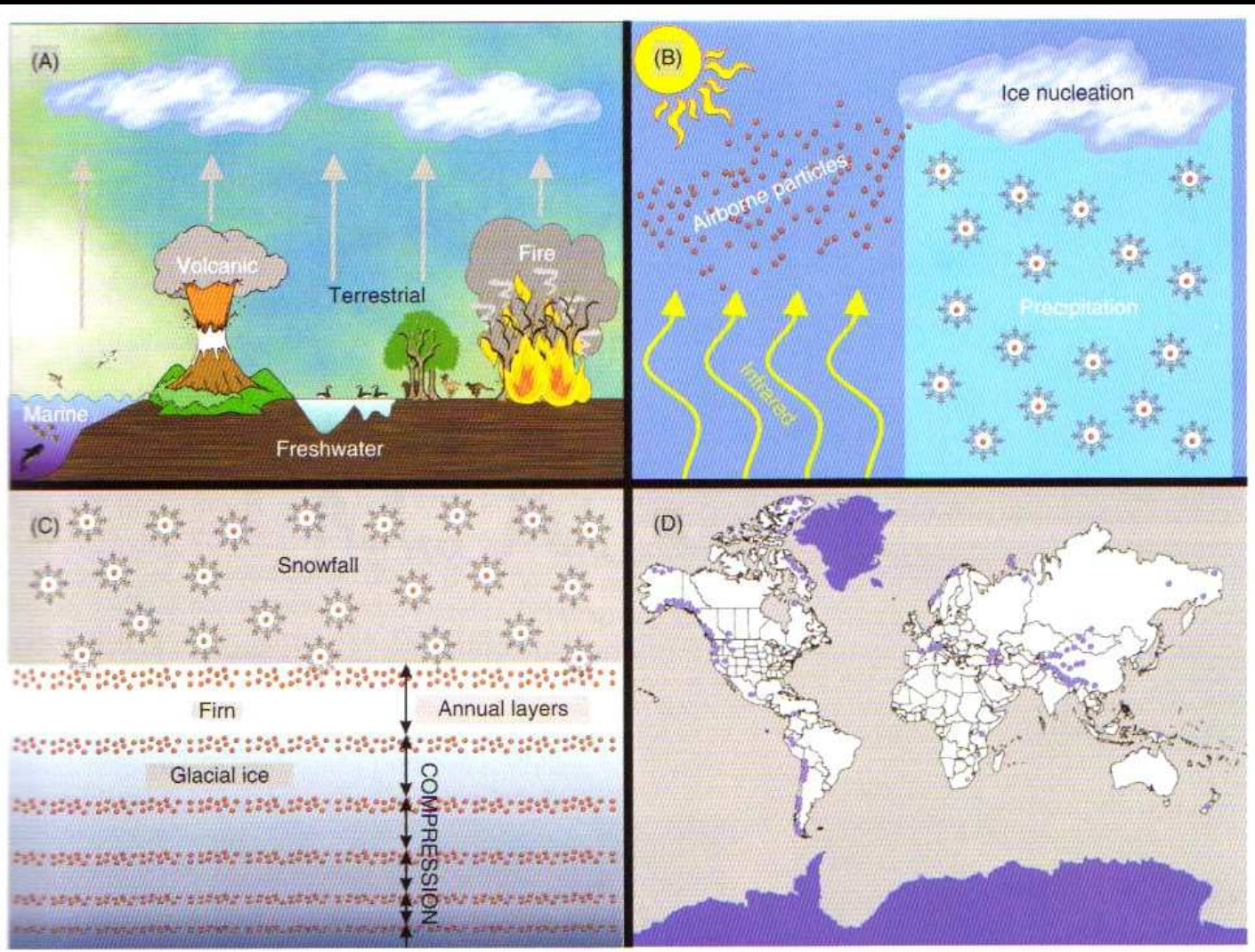
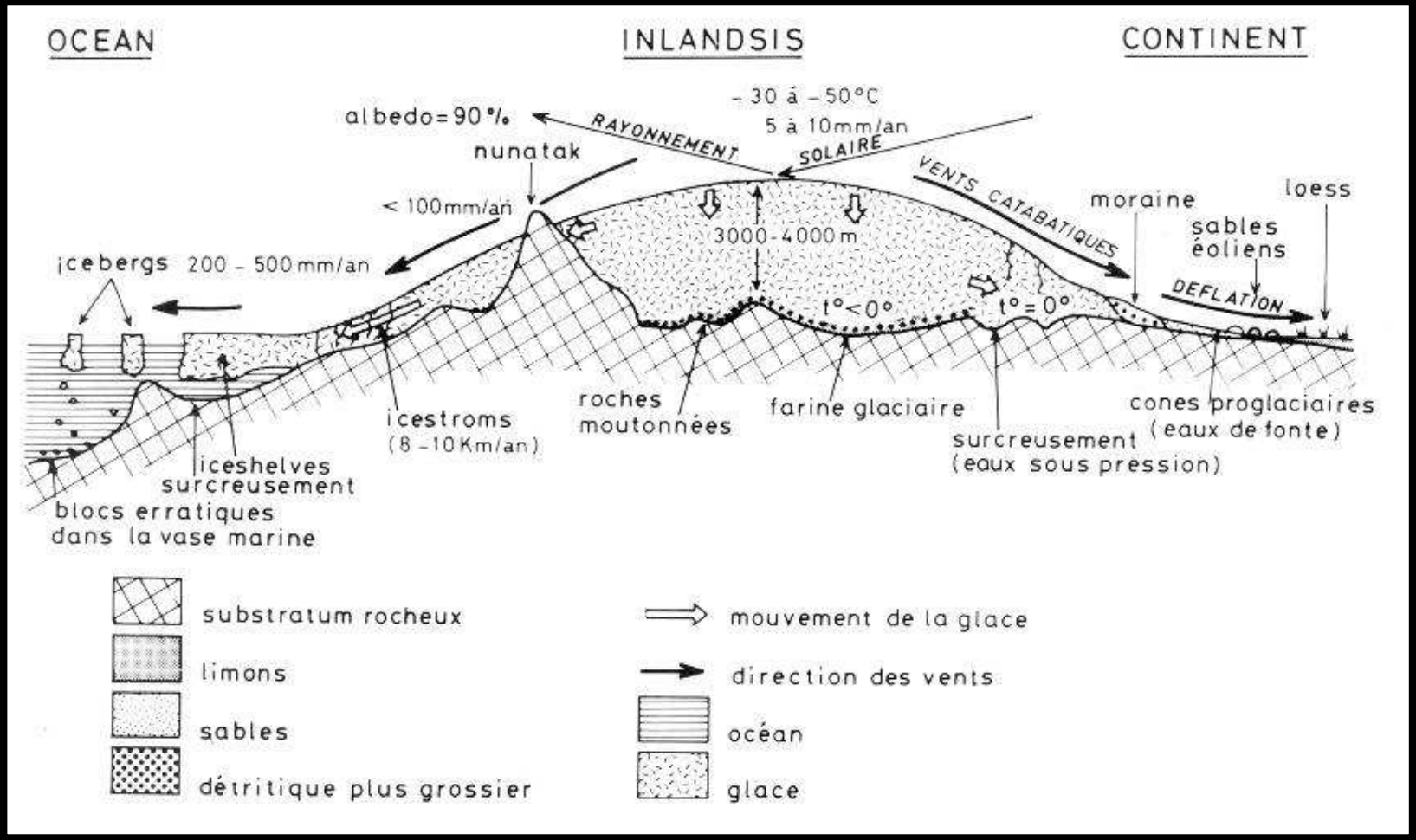
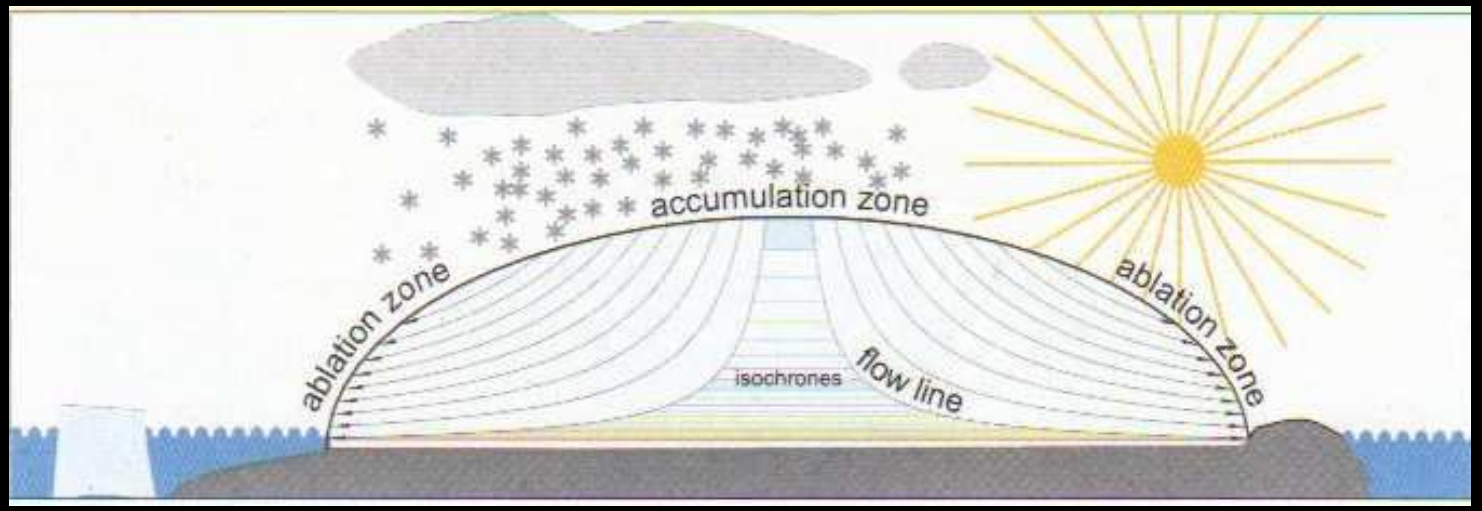
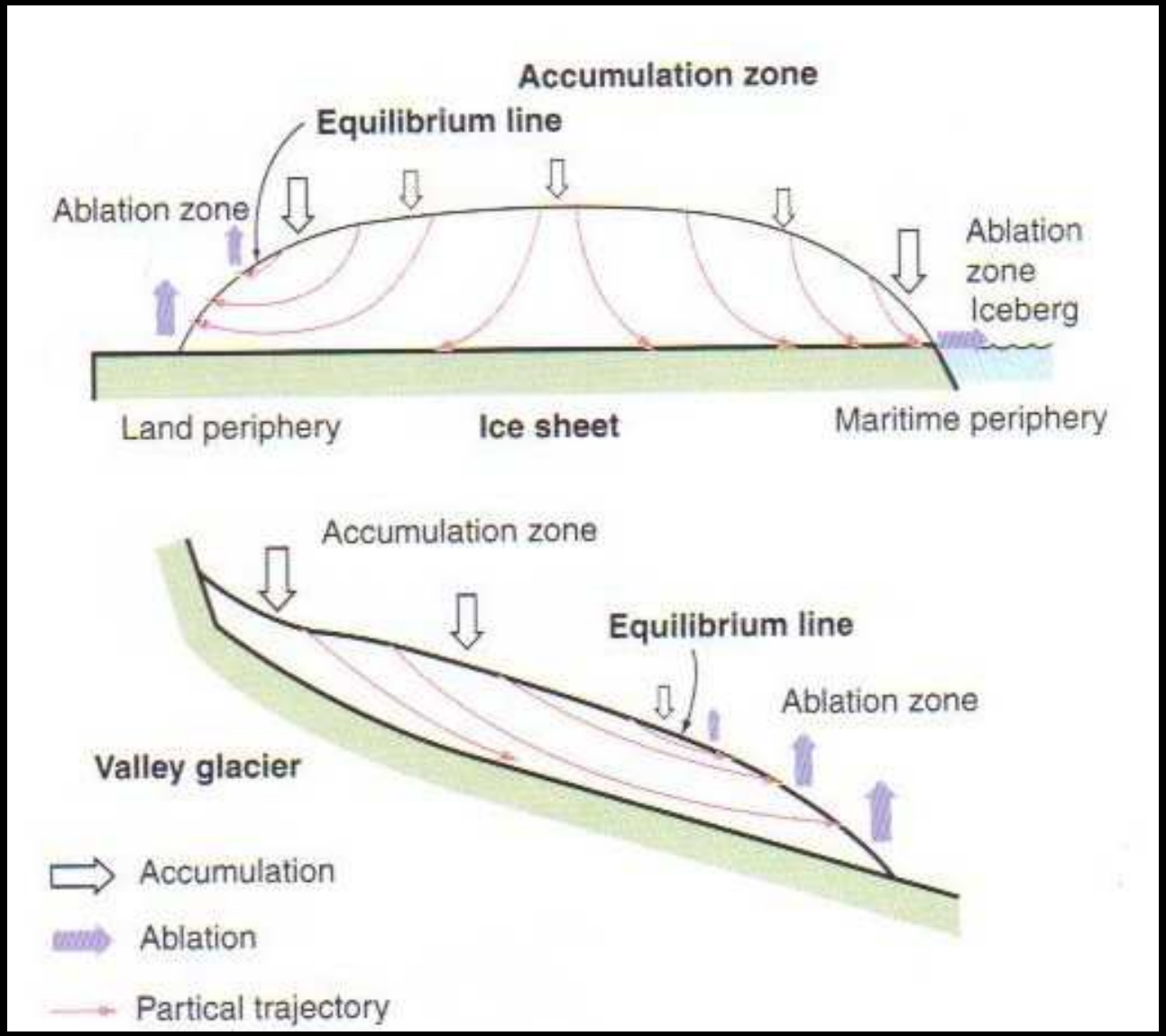
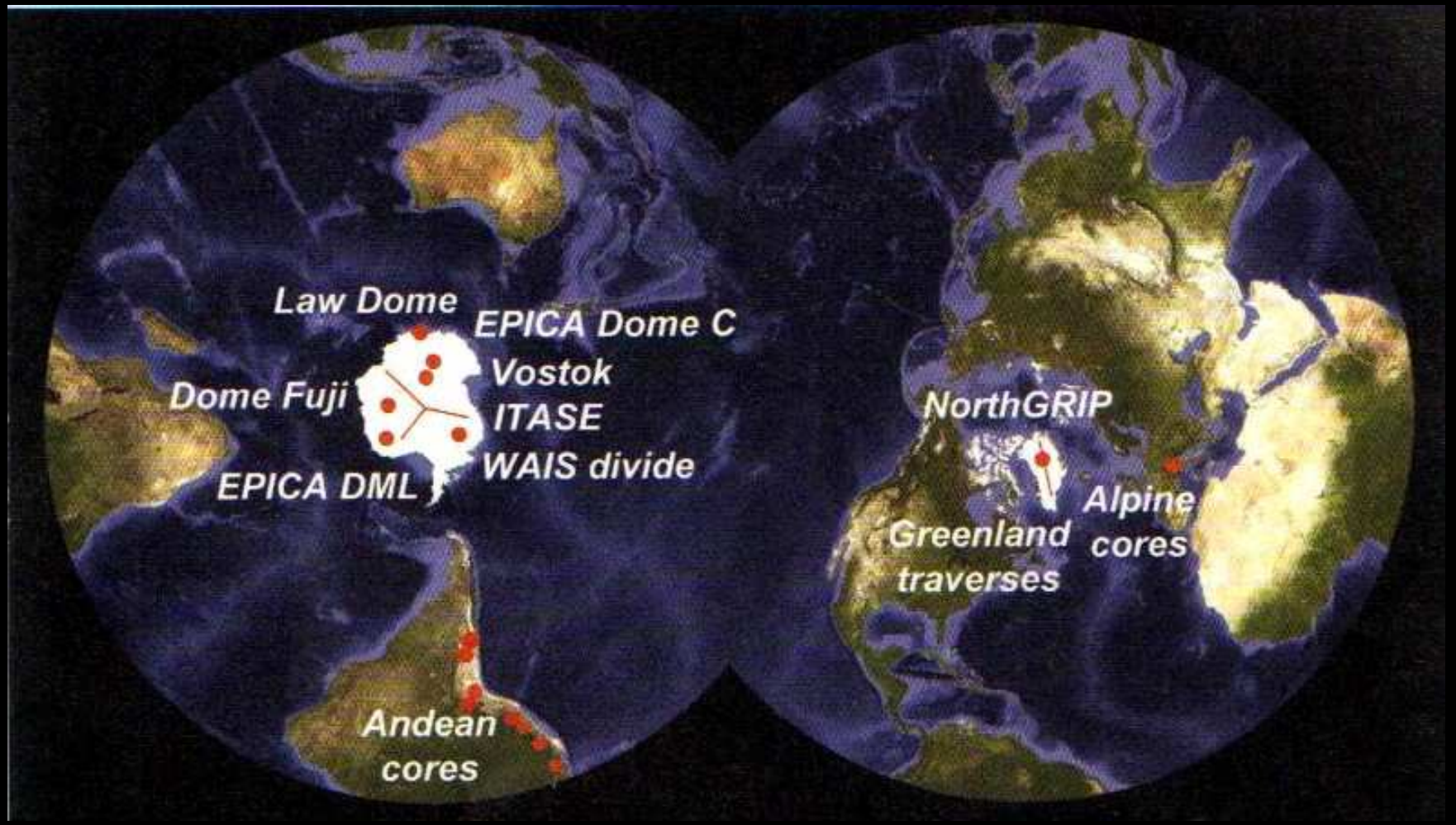


Figure 1 History of entrapped particles in glacial ice and the present-day distribution of glaciers. (A) Schematic illustrating the range of source environments that contribute particles to the atmosphere. (B) Advective currents, created by solar generated infared radiation, inject surface derived aerosols high in the atmosphere. Such aerosols (red dots) may serve as primary ice nuclei in clouds, and are subsequently precipitated in snowfall or rain. (C) In geographical locations where the annual temperature remains cold enough for snowfall to accumulate annually, particles from the atmosphere are archived in a chronological sequence in firn and glacial ice. (D) Global locations of present-day ice sheets and mountain glaciers (in blue). Each glacial environment is unique, as the nearest ecosystems that would most likely contribute the majority of airborne biological particles are very different. Distribution data based in part on Satellite Image Atlas of Glaciers of the World (US Geological Survey, (2002) Satellite Image Atlas of Glaciers of the World).


OCEAN
INLANDSIS
CONTINENT
albedo=90 %
RAYONNEMENT SOLAIRE
- 30 à - 50°C
5 à 10mm/an
nunatak
< 100mm/an
VENTS CATABATIQUES
moraine
loess
sables éoliens
3000-4000 m
icebergs 200 - 500 mm/an
t°<0°
t°=0°
DEFLATION
icestroms (8 -10 Km/an)
roches moutonnées
farine glaciaire
cones proglaciaires (eaux de fonte)
surcreusement (eaux sous pression)
iceshelves surcreusement
blocs erratiques dans la vase marine
substratum rocheux
limons
sables
détritique plus grossier
mouvement de la glace
direction des vents
océan
glace


accumulation zone
ablation zone
ablation zone
isochrones
flow line


Accumulation zone
Equilibrium line
Ablation zone
Ablation zone
Iceberg
Land periphery
Ice sheet
Maritime periphery
Accumulation zone
Equilibrium line
Ablation zone
Valley glacier
Accumulation
Ablation
Partical trajectory


Law Dome
EPICA Dome C
Vostok
Dome Fuji
ITASE
WAIS divide
EPICA DML
Andean cores
NorthGRIP
Alpine cores
Greenland traverses

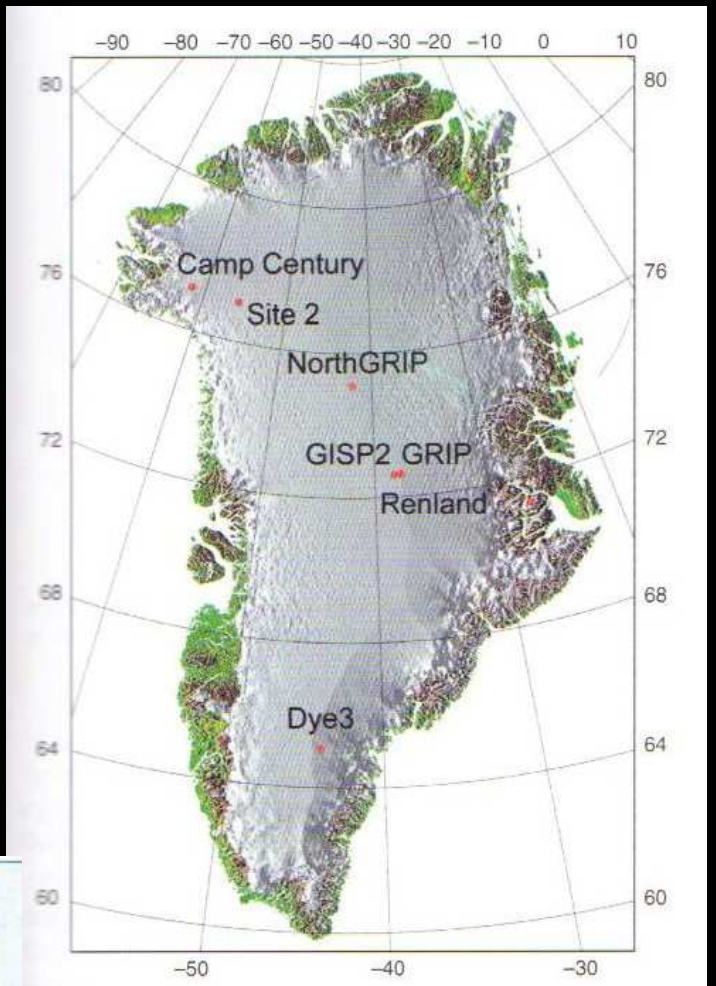
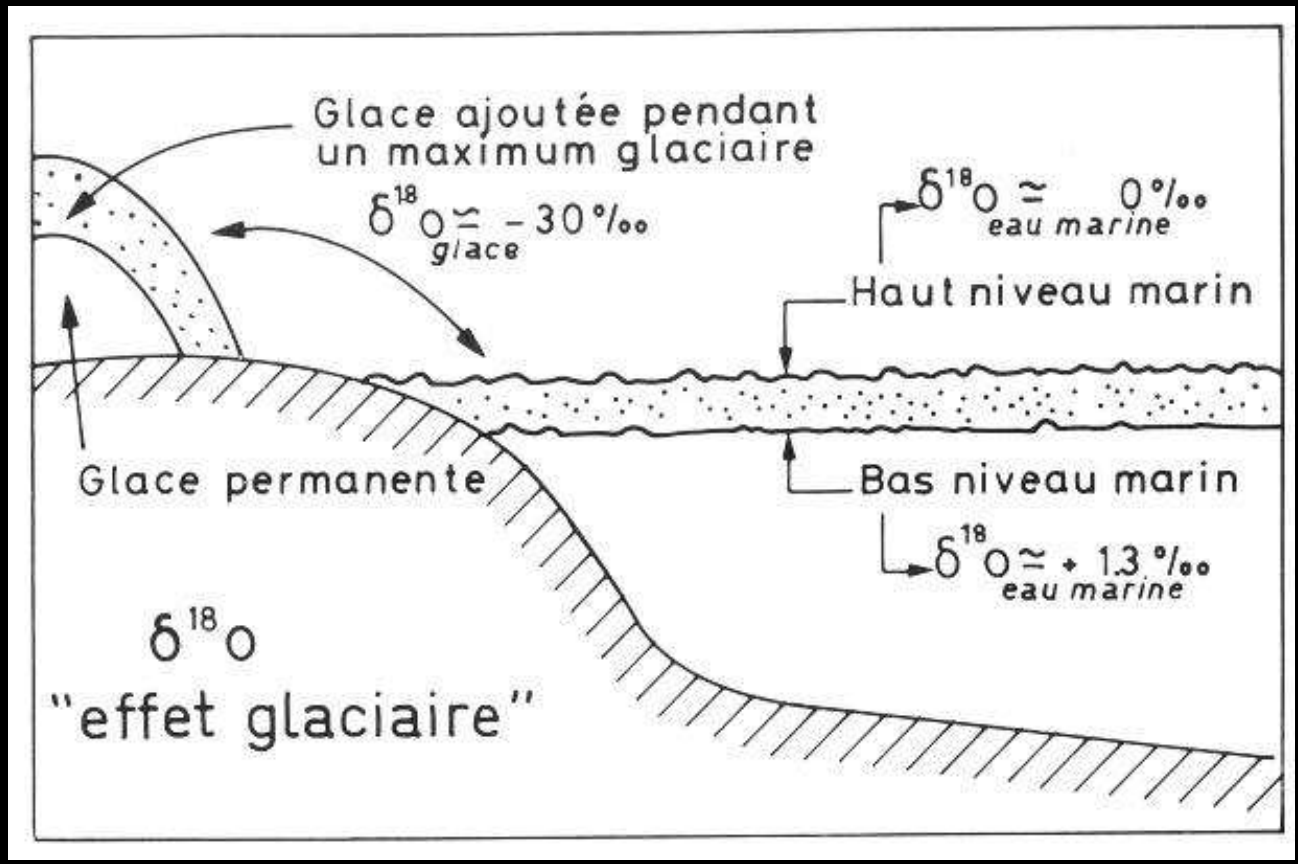


Figure 1 Locations of selected Greenland ice cores. The Site 2 core was the first ice core drilled in Greenland. The Camp Century, Dye-3, GISP2, GRIP, NGRIP, and Renland cores all contain ice from the Holocene, Glacial, and Eemian periods.

Effetto glaciale



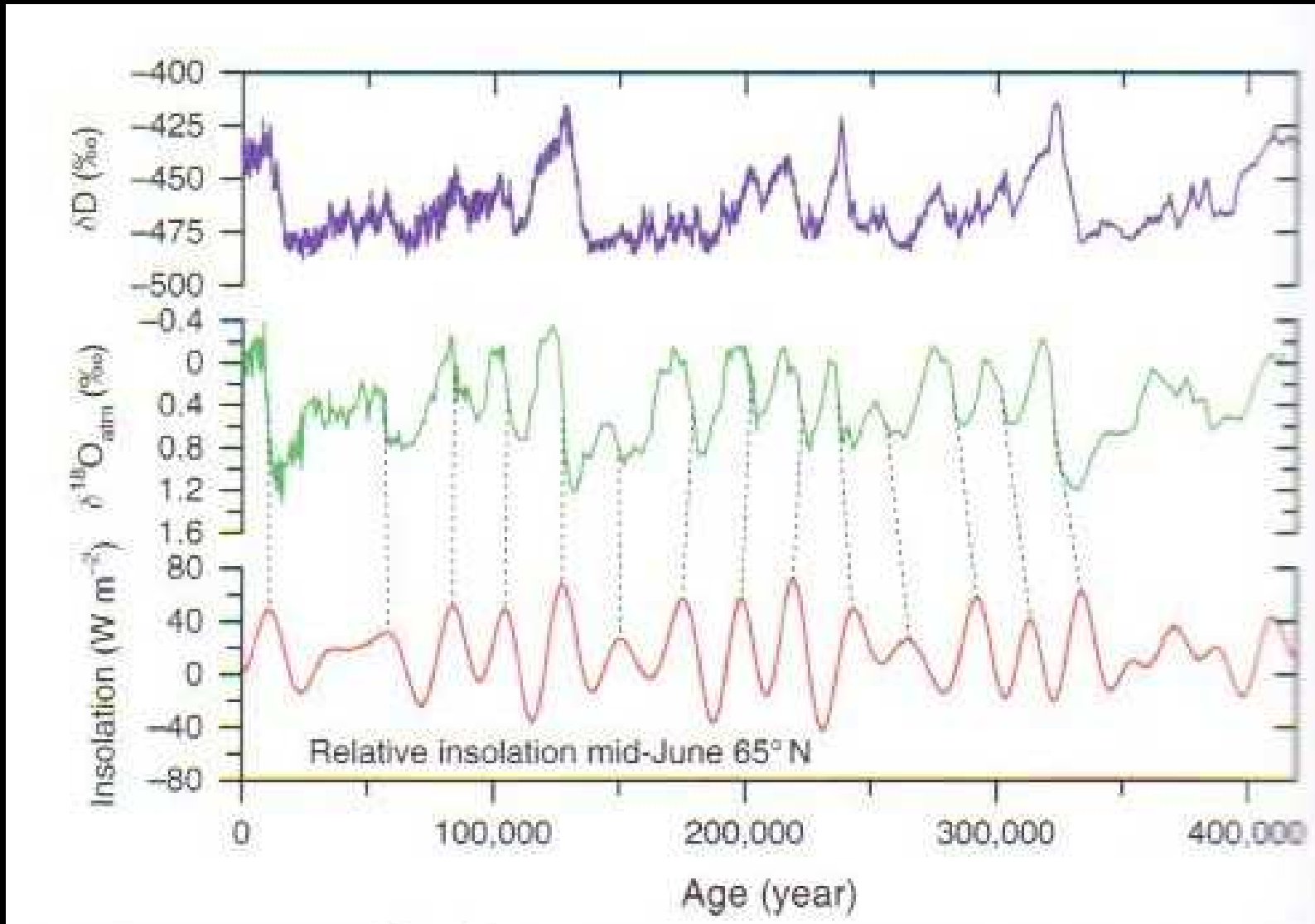
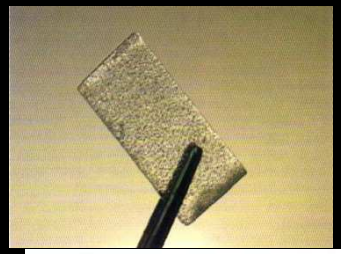
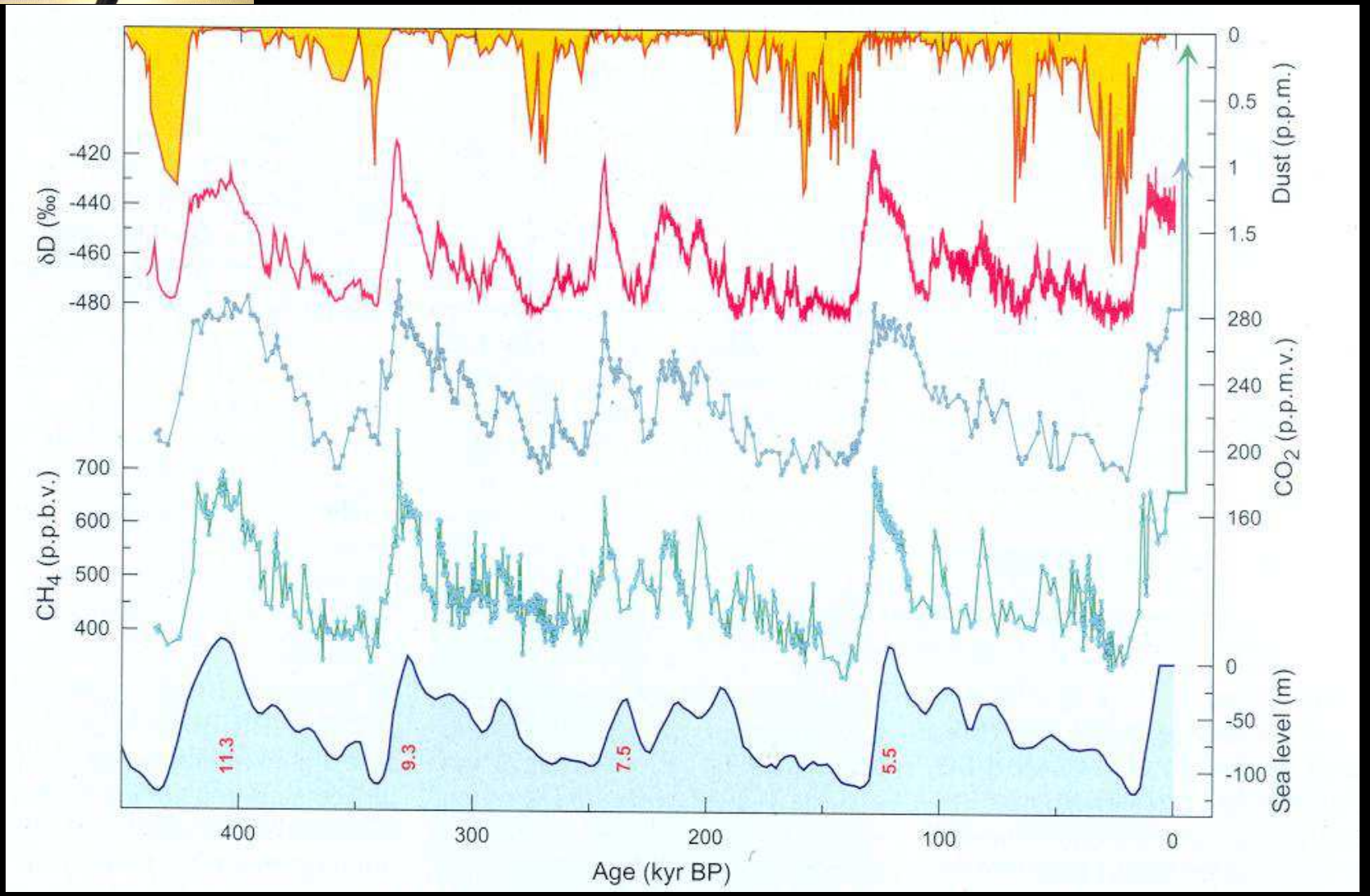
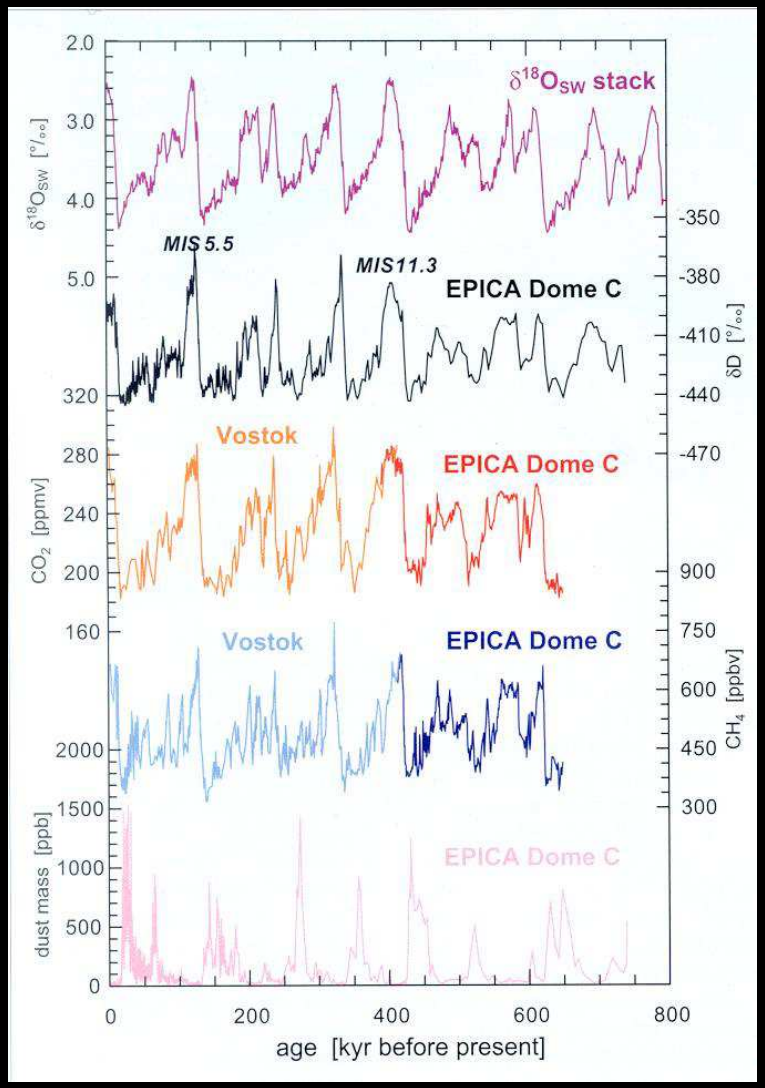


Figure 6 The $^{18}O/^{16}O$ isotope ratio of the air in the Vostok ice core correlates with the insolation at 65 °N. The stable isotope ratio of the ice (δD) is a proxy for local temperature.




δD (‰)
-420
-440
-460
-480
CH4 (p.p.b.v.)
700
600
500
400
Dust (p.p.m.)
0
0.5
1
1.5
CO2 (p.p.m.v.)
280
240
200
160
Sea level (m)
0
-50
-100
11.3
9.3
7.5
5.5
400
300
200
100
0
Age (kyr BP)


δ18Osw stack
MIS 5.5
MIS11.3
EPICA Dome C
Vostok
EPICA Dome C
Vostok
EPICA Dome C
EPICA Dome C
δ18Osw [‰]
δD [‰]
CO2 [ppmv]
CH4 [ppbv]
dust mass [ppb]
age [kyr before present]
2.0
3.0
4.0
5.0
320
280
240
200
160
2000
1500
1000
500
0
-350
-380
-410
-440
-470
900
750
600
450
300
0
200
400
600
800