Le linee di intersezione delle superfici isobariche con la superficie terrestre, sono le familiari "isobare", e cioè linee di ugual pressione.

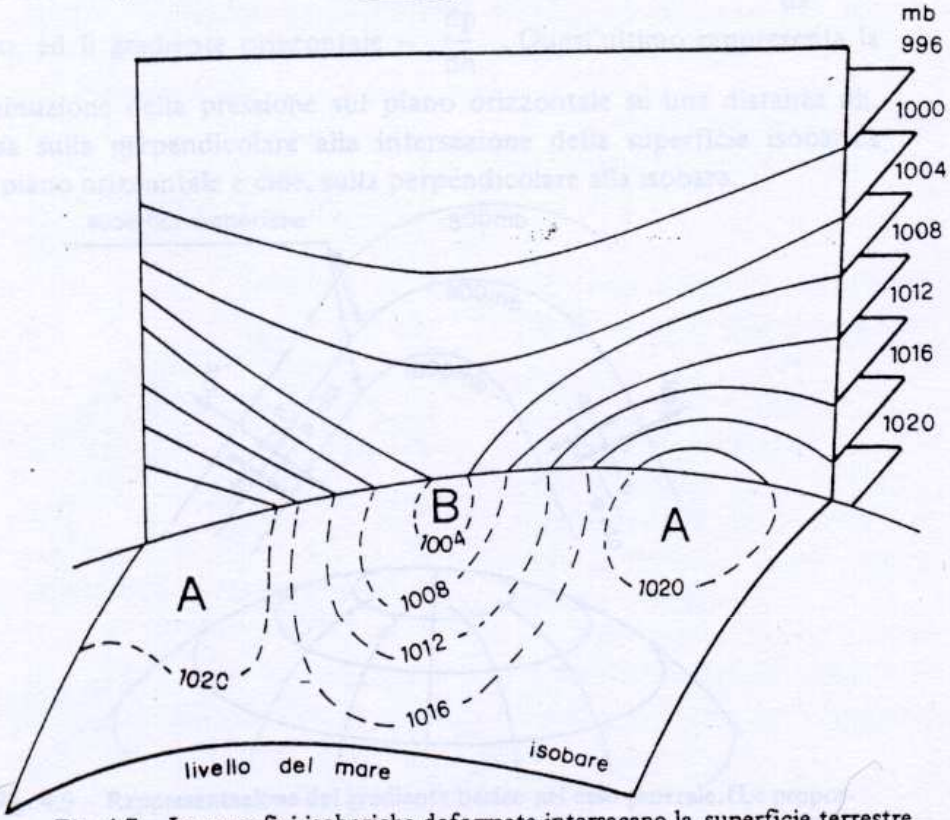



Fig. 4.7 - Le superfici isobariche deformate intersecano la superficie terrestre lungo le isobare.

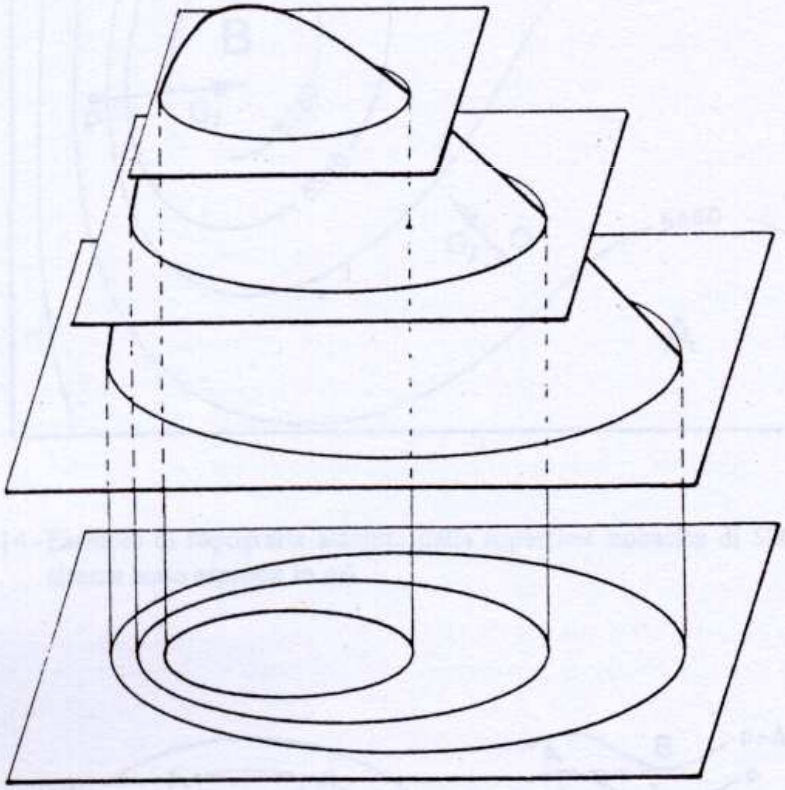
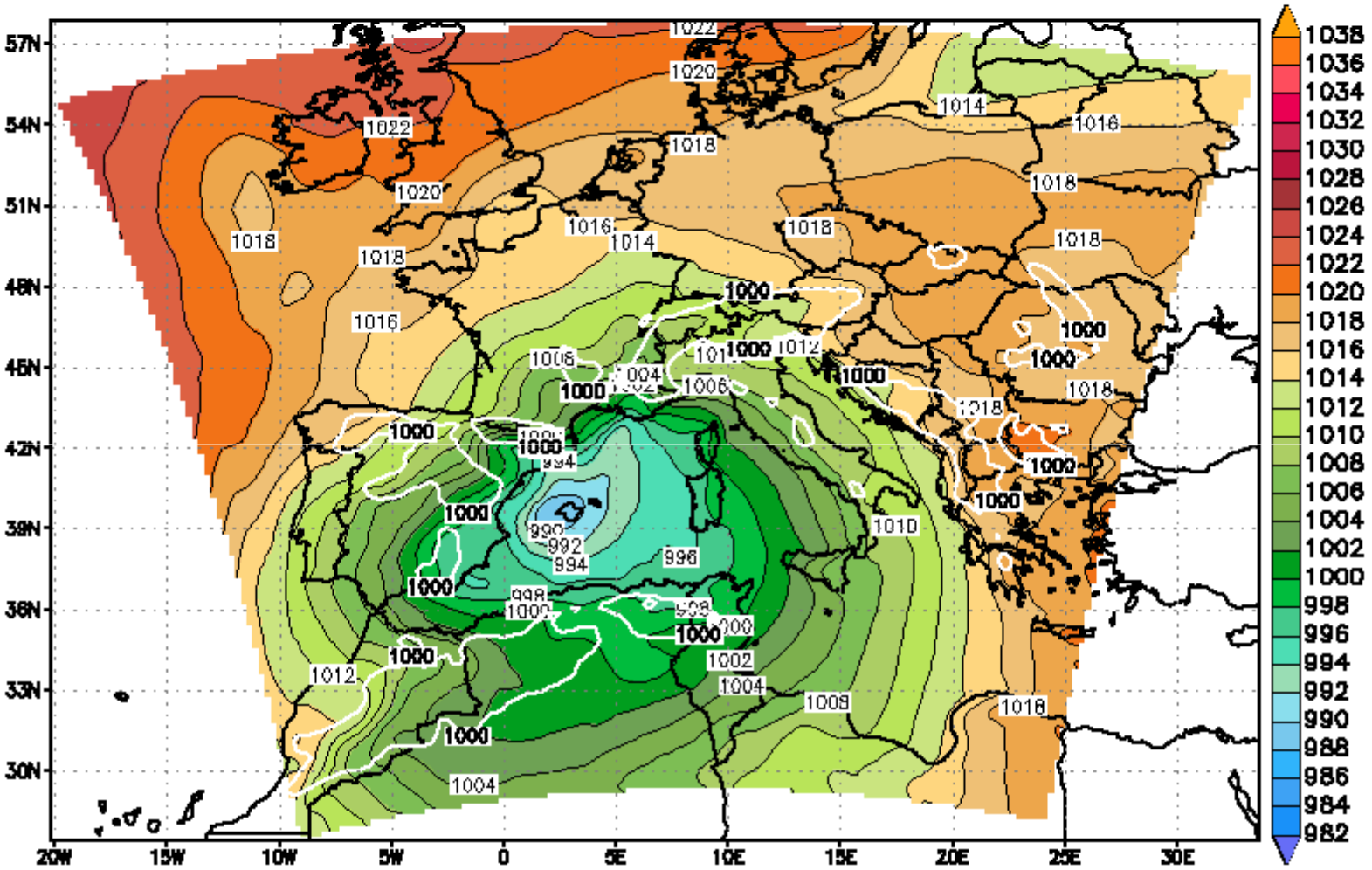


Fig. 4.13 - Rappresentazione topografica di una superficie isobarica.

*ARPAL (Genoa – Italy) – DIFI (Genoa – Italy) – ISAC-CNR (Bologna – Italy)*

**Mean Sea Level Pressure [hPa] and orography [m]**

00Z Fri 08 JAN $\tau$ = 24h

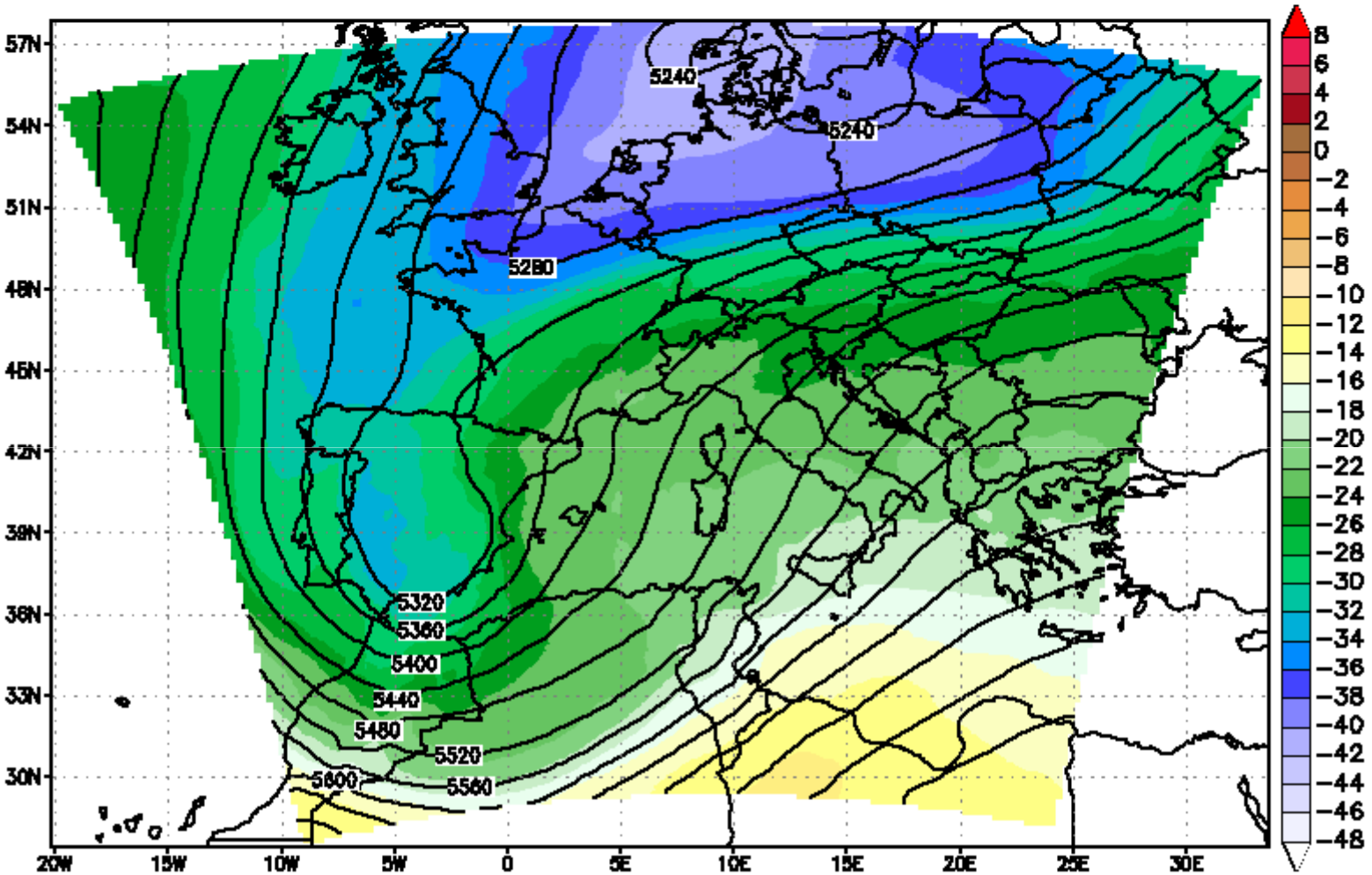



Model: **BOLAM2002AR_02x02**
Time 0: 00Z07JAN2010 Resolution: 0.2719°x0.2000°

*ARPAL (Genoa – Italy) – DIFI (Genoa – Italy) – ISAC-CNR (Bologna – Italy)*

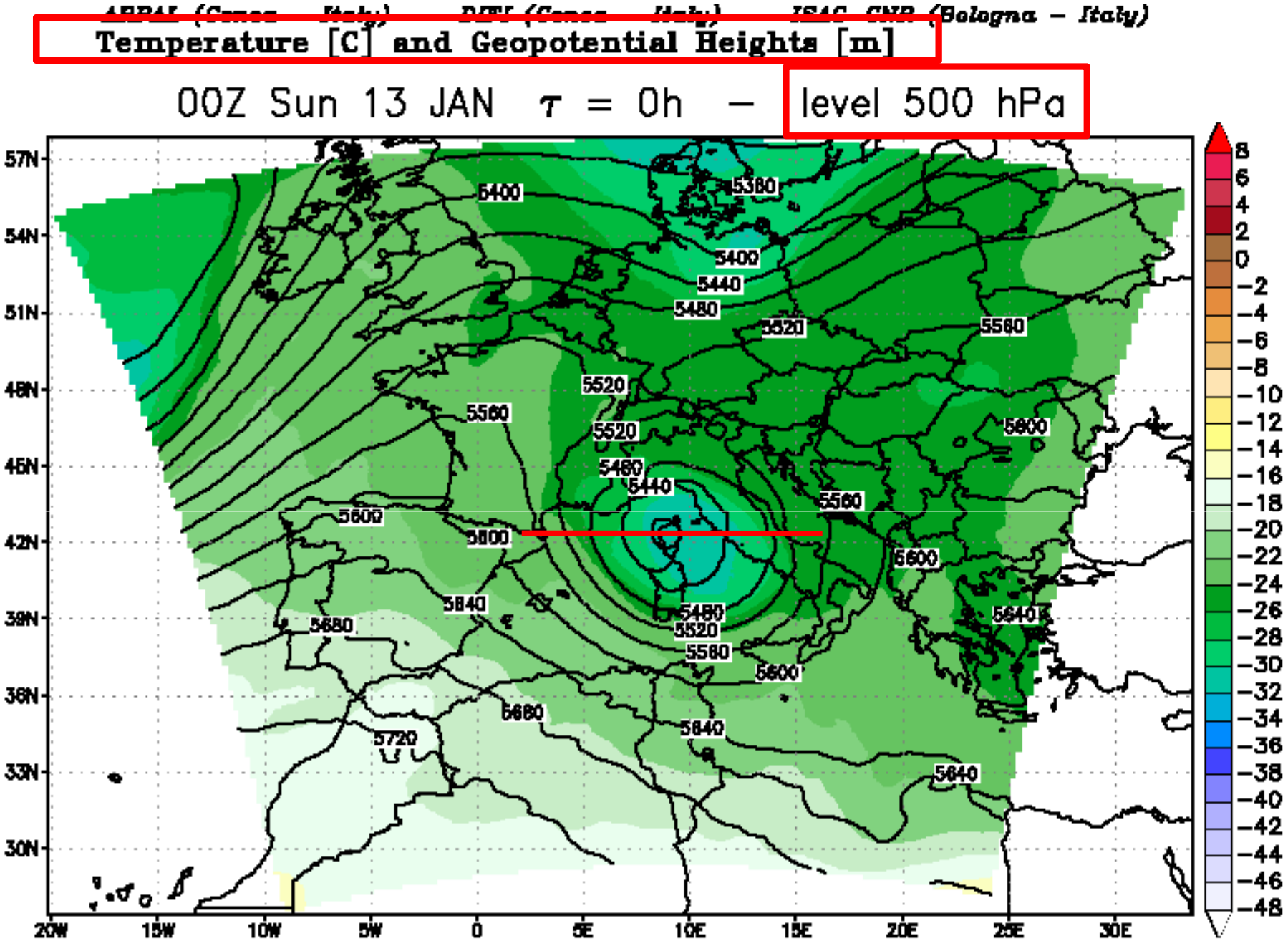
**Temperature [C] and Geopotential Heights [m]**

00Z Fri 08 JAN $\tau$ = 24h – level 500 hPa

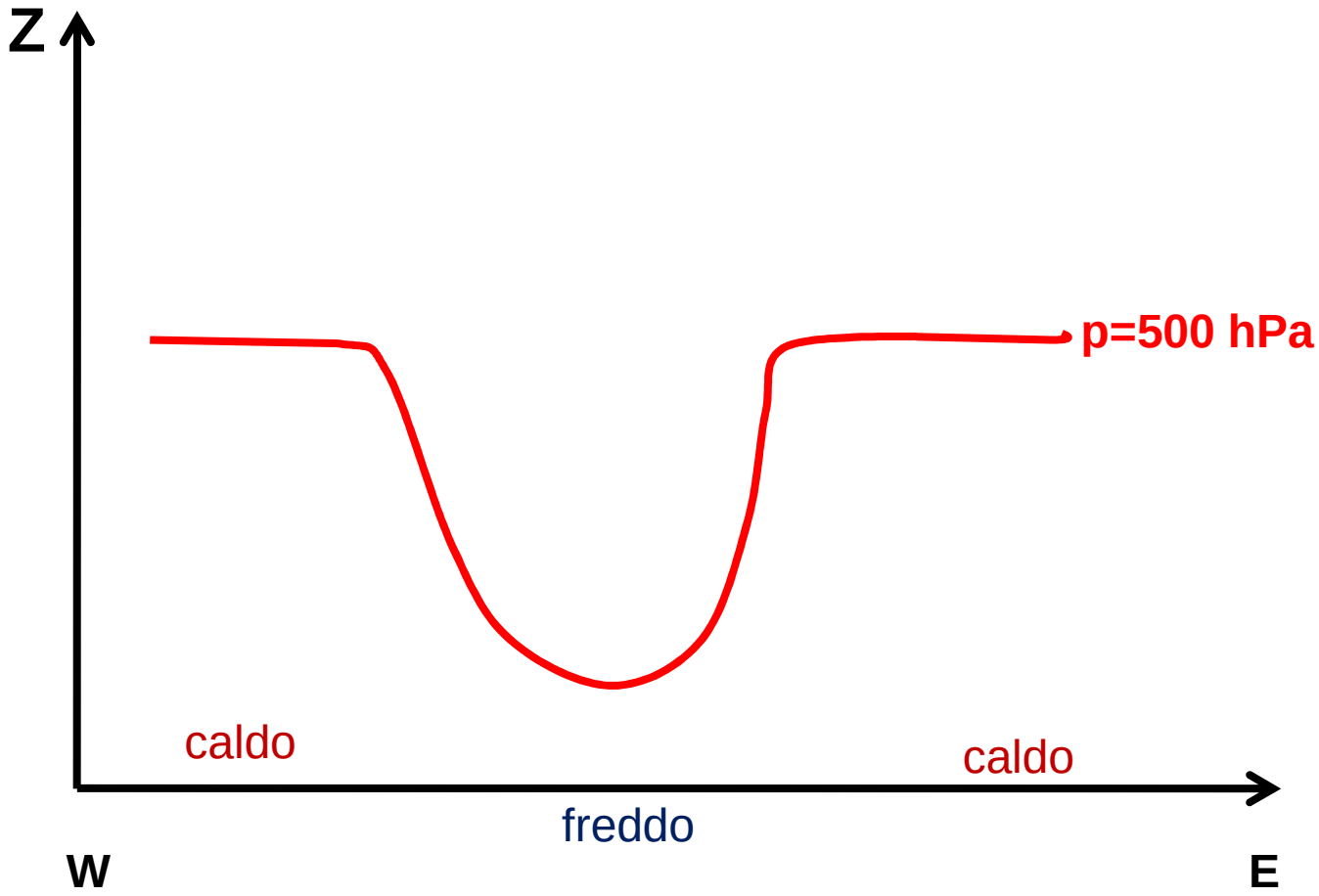



Model: **BOLAM2002AR_02x02**
Time 0: 00Z07JAN2010 Resolution: 0.2719°x0.2000°

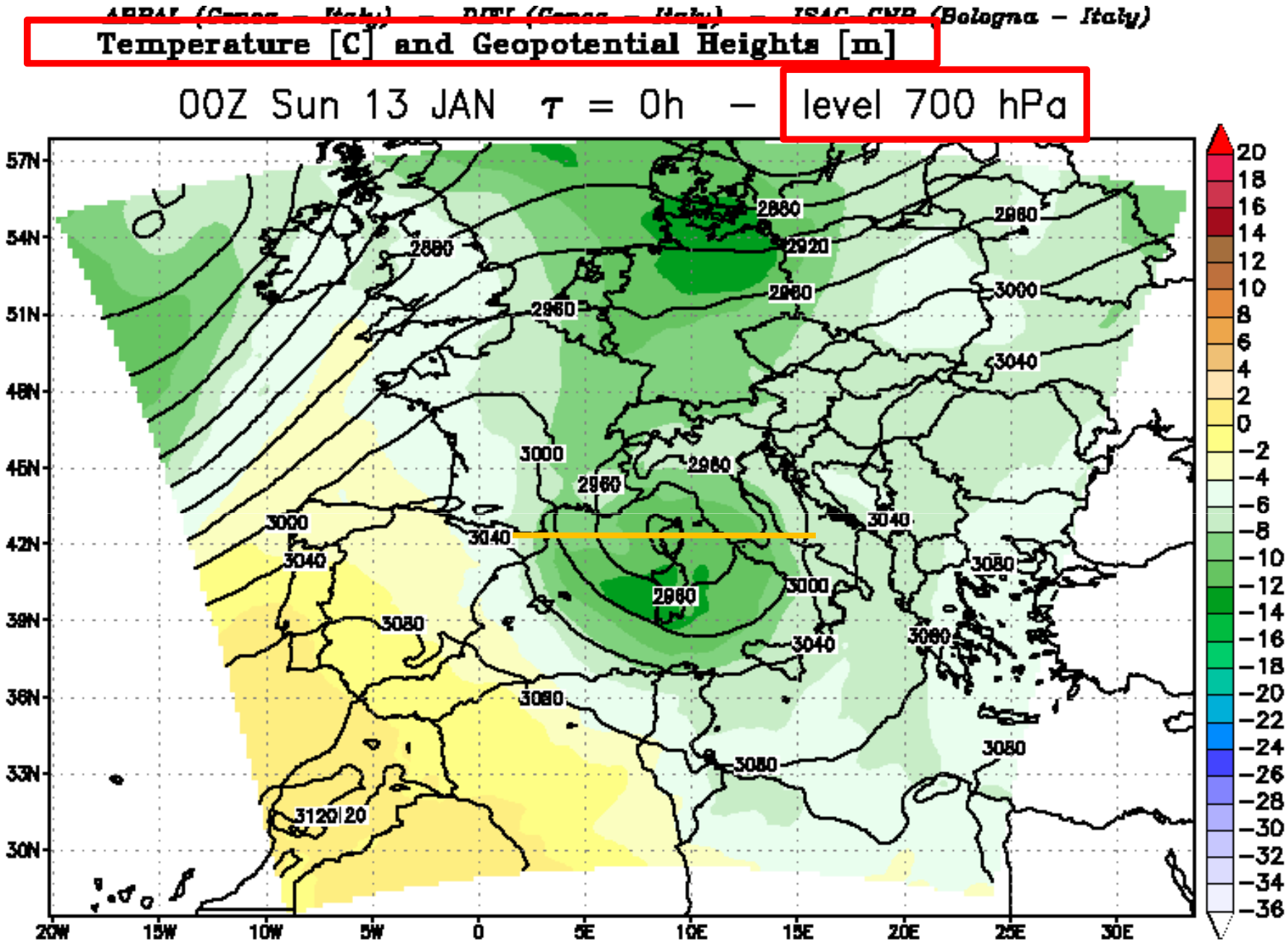
# Applicazione dell’equazione ipsometrica per l’interpretazione di un ciclone a cuore freddo

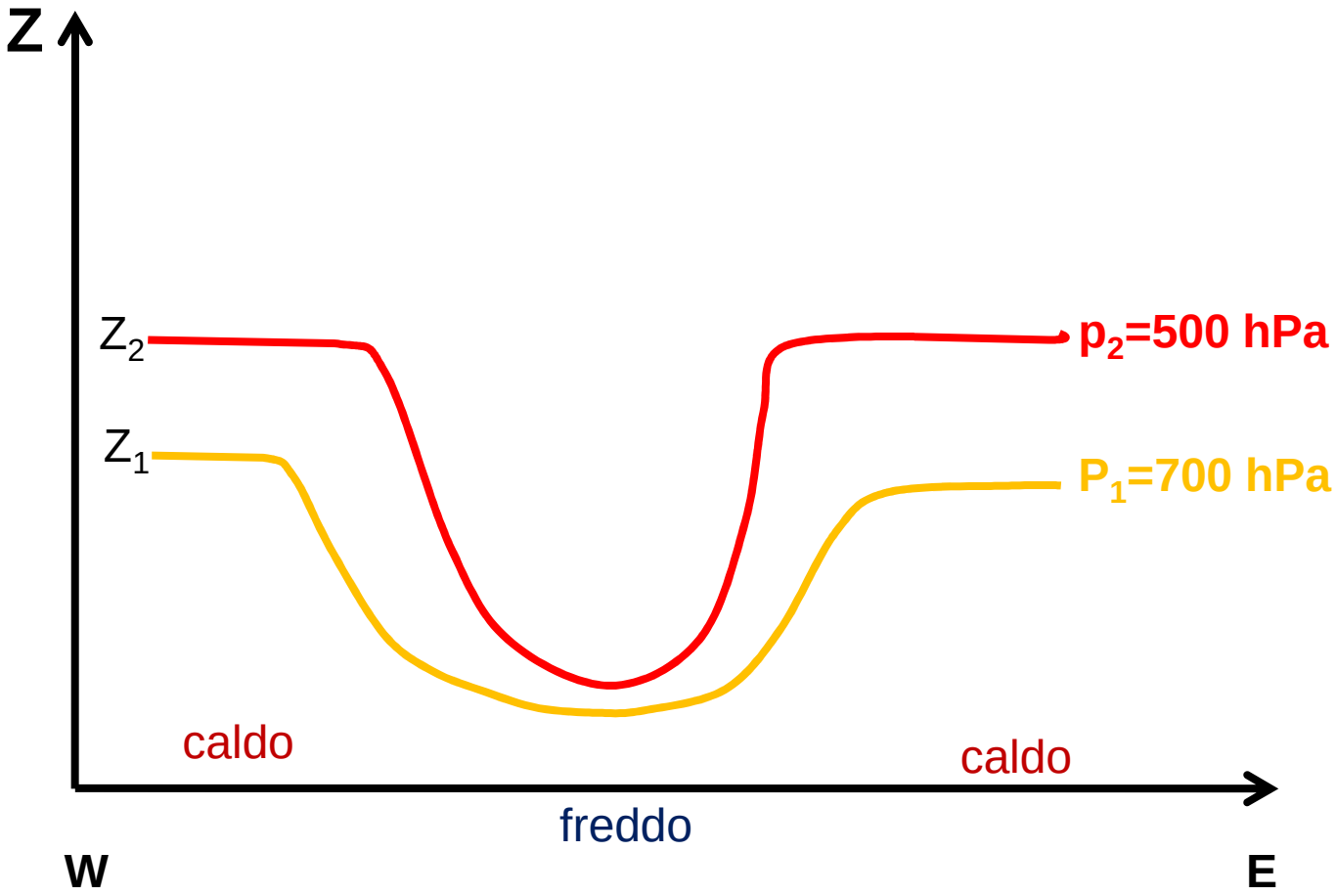



Model: BOLAM2002AR_02x02
Time 0: 00Z13JAN2008 Resolution: 0.2719°x0.2000°

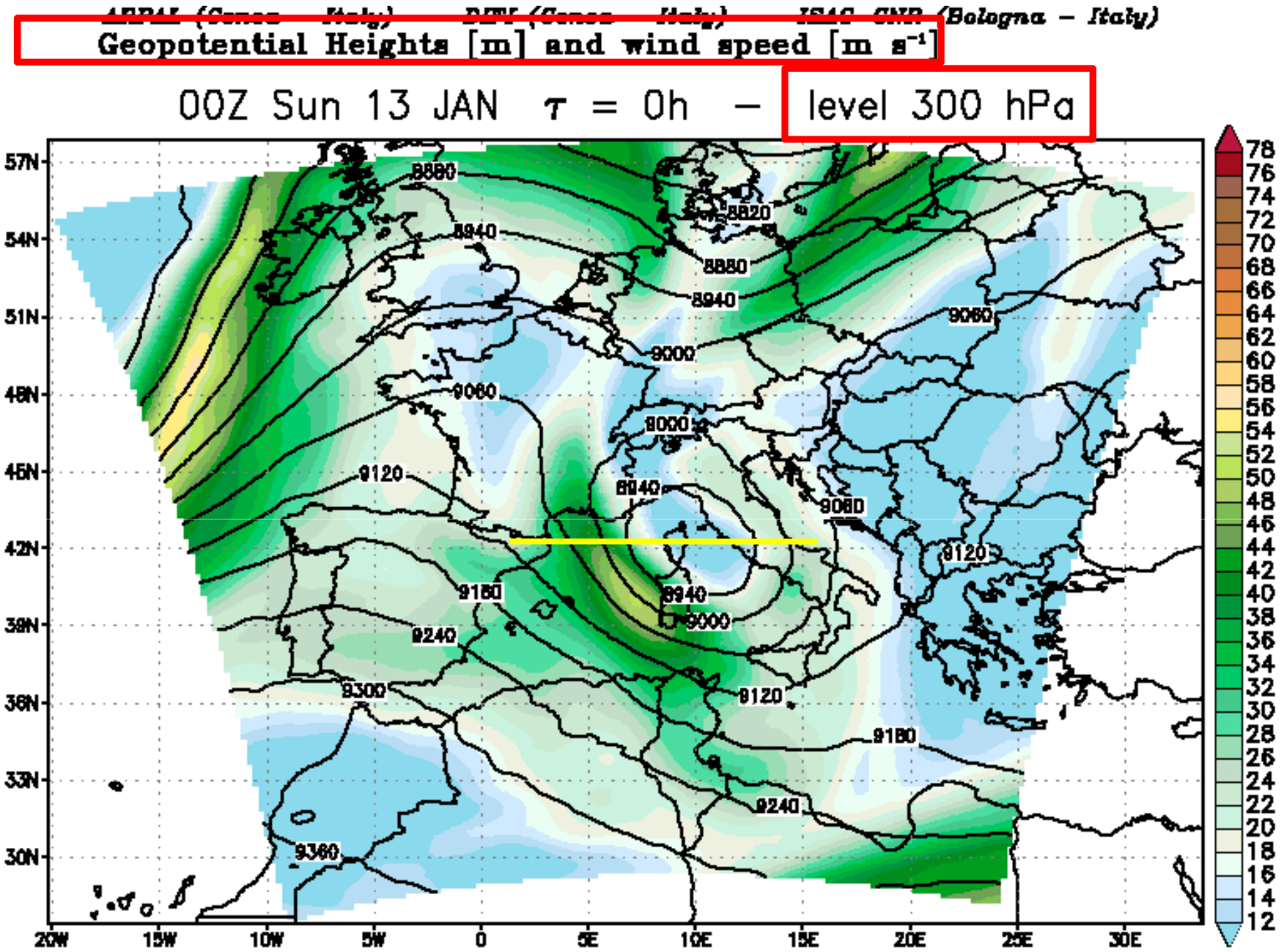



$$Z_2 - Z_1 = \frac{R_d \overline{T}_V}{g_0} \ln\left(\frac{p_1}{p_2}\right)$$

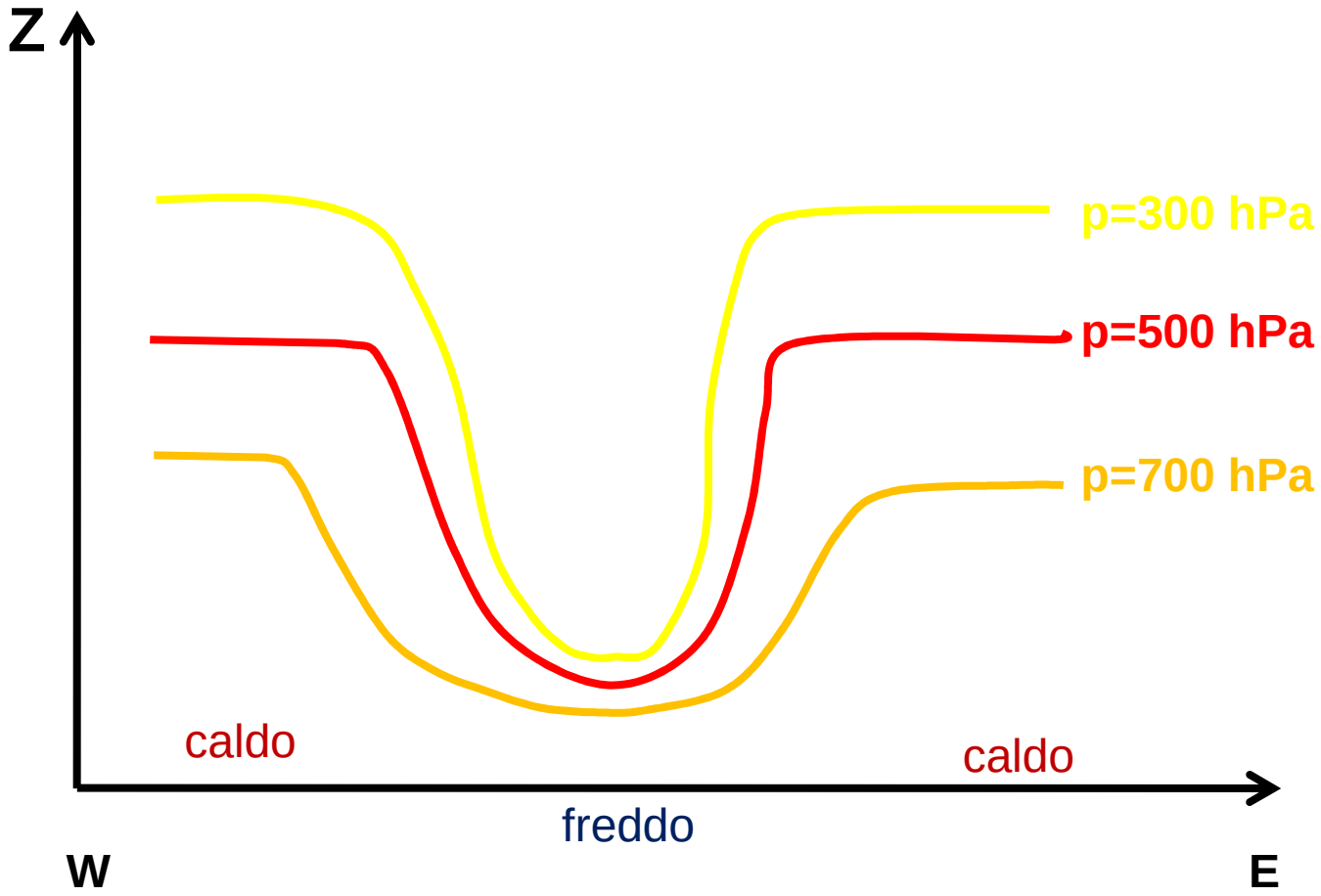

ARPAL (Genoa – Italy) – DTI (Genoa – Italy) – ISAC-CNR (Bologna – Italy)
Temperature [C] and Geopotential Heights [m]
00Z Sun 13 JAN τ = 0h – level 700 hPa
57N
54N
51N
48N
45N
42N
39N
36N
33N
30N
20W
15W
10W
5W
0
5E
10E
15E
20E
25E
30E
2880
2920
2960
3000
3040
3080
3120
20
18
16
14
12
10
8
6
4
2
0
−2
−4
−6
−8
−10
−12
−14
−16
−18
−20
−22
−24
−26
−28
−30
−32
−34
−36
Model: BOLAM2002AR_02x02
Time 0: 00Z13JAN2008 Resolution: 0.2719°x0.2000°




$$Z_2 - Z_1 = \frac{R_d \overline{T}_V}{g_0} \ln\left(\frac{p_1}{p_2}\right)$$



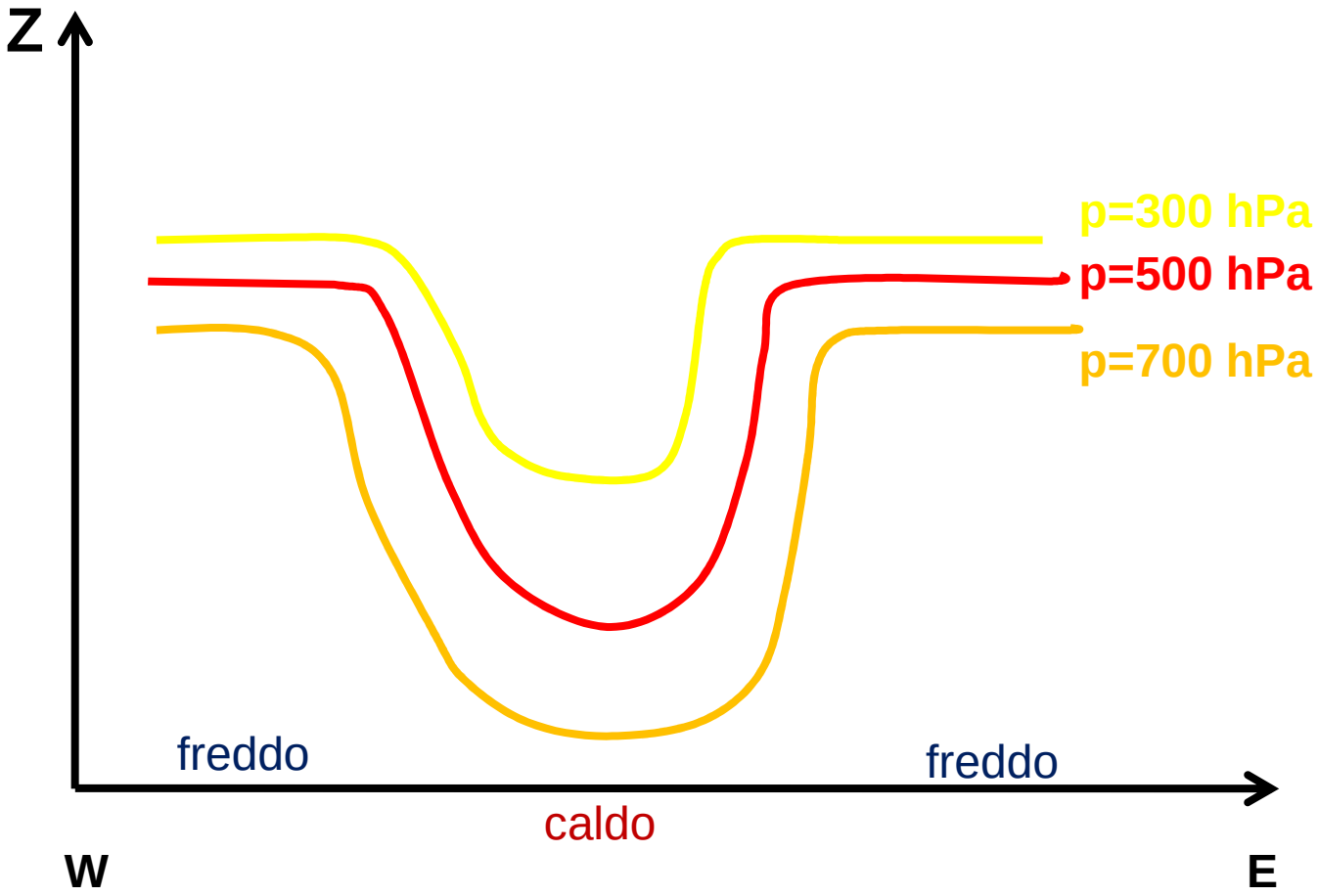

Model: **BOLAM2002AR_02x02**
Time 0: 00Z13JAN2008 Resolution: 0.2719°x0.2000°




$$Z_2 - Z_1 = \frac{R_d \overline{T}_V}{g_0} \ln\left(\frac{p_1}{p_2}\right)$$

Il ciclone a cuore freddo si intensifica con la quota

# Applicazione dell’equazione ipsometrica per l’interpretazione di un ciclone a cuore caldo




Il ciclone a cuore caldo si indebolisce con la quota

Ciclone a cuore caldo: si indebolisce con la quota e resta limitato alla bassa troposfera

Ciclone a cuore freddo: si intensifica con la quota ed è sviluppato su tutta la troposfera

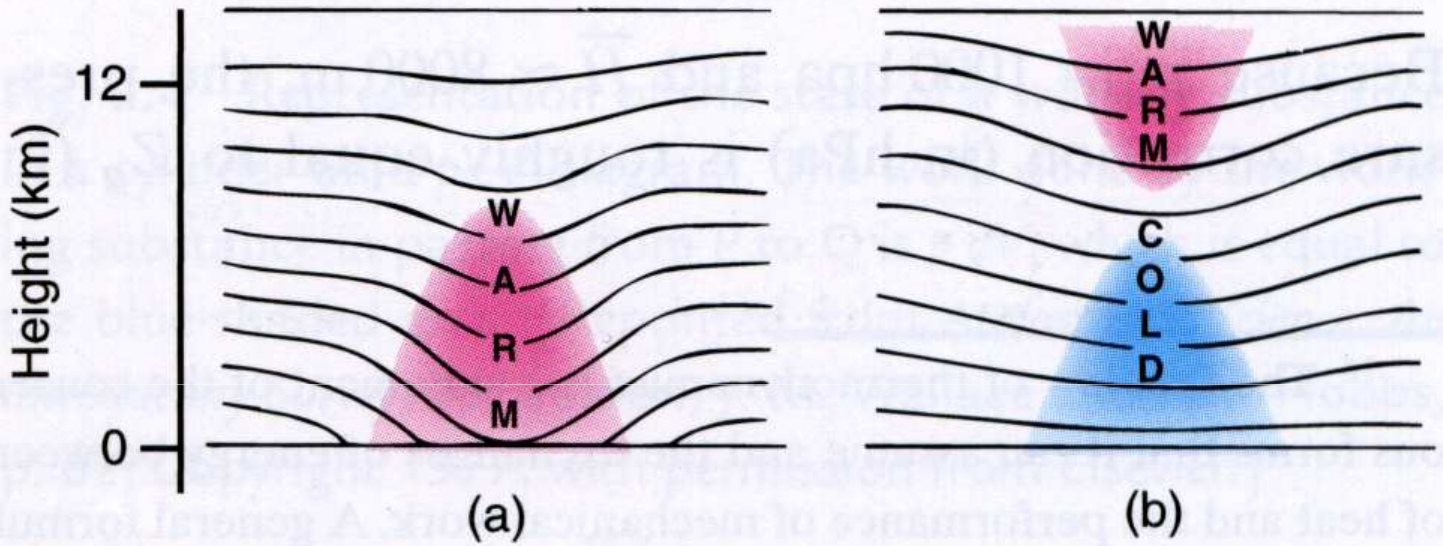



**Fig. 3.3** Cross sections in the longitude–height plane. The solid lines indicate various constant pressure surfaces. The sections are drawn such that the thickness between adjacent pressure surfaces is smaller in the cold (blue) regions and larger in the warm (red) regions.

$$Z_2 - Z_1 = \frac{R_d \overline{T}_V}{g_0} \ln\left(\frac{p_1}{p_2}\right)$$

Se sono note:
-distribuzione spaziale 3D della Tv
-distribuzione del geopotenziale su una superficie isobarica (Z1 e $p_1$)

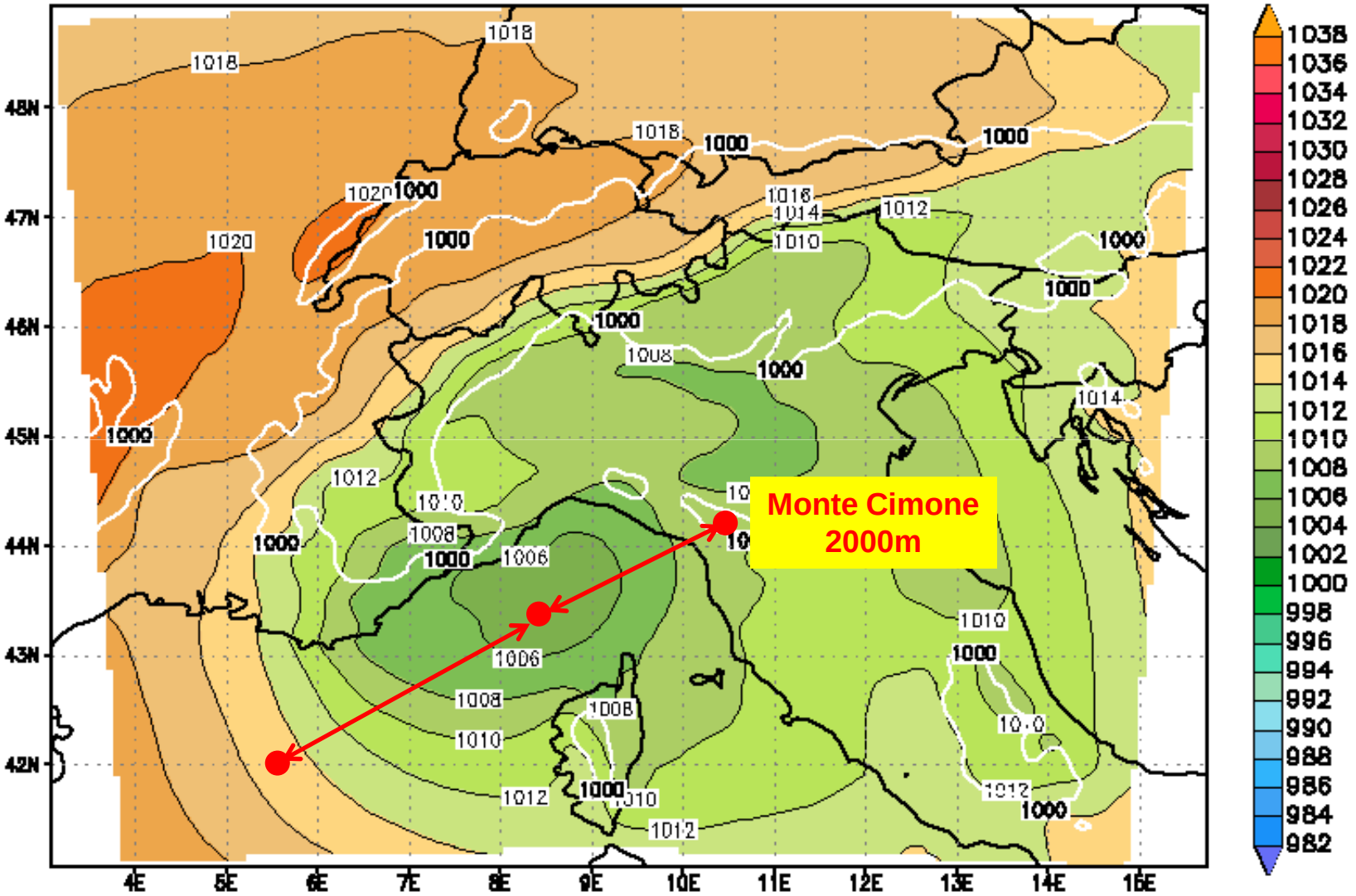
Allora scelta una superficie isobarica $p_2$ posso calcolarne l'altezza geopotenziale in ogni punto.
Siccome lo posso fare per qualsiasi superficie, posso dire che conosco la distribuzione 3D del geopotenziale.

# Applicazione dell’equazione ipsometrica per la riduzione della pressione al livello del mare

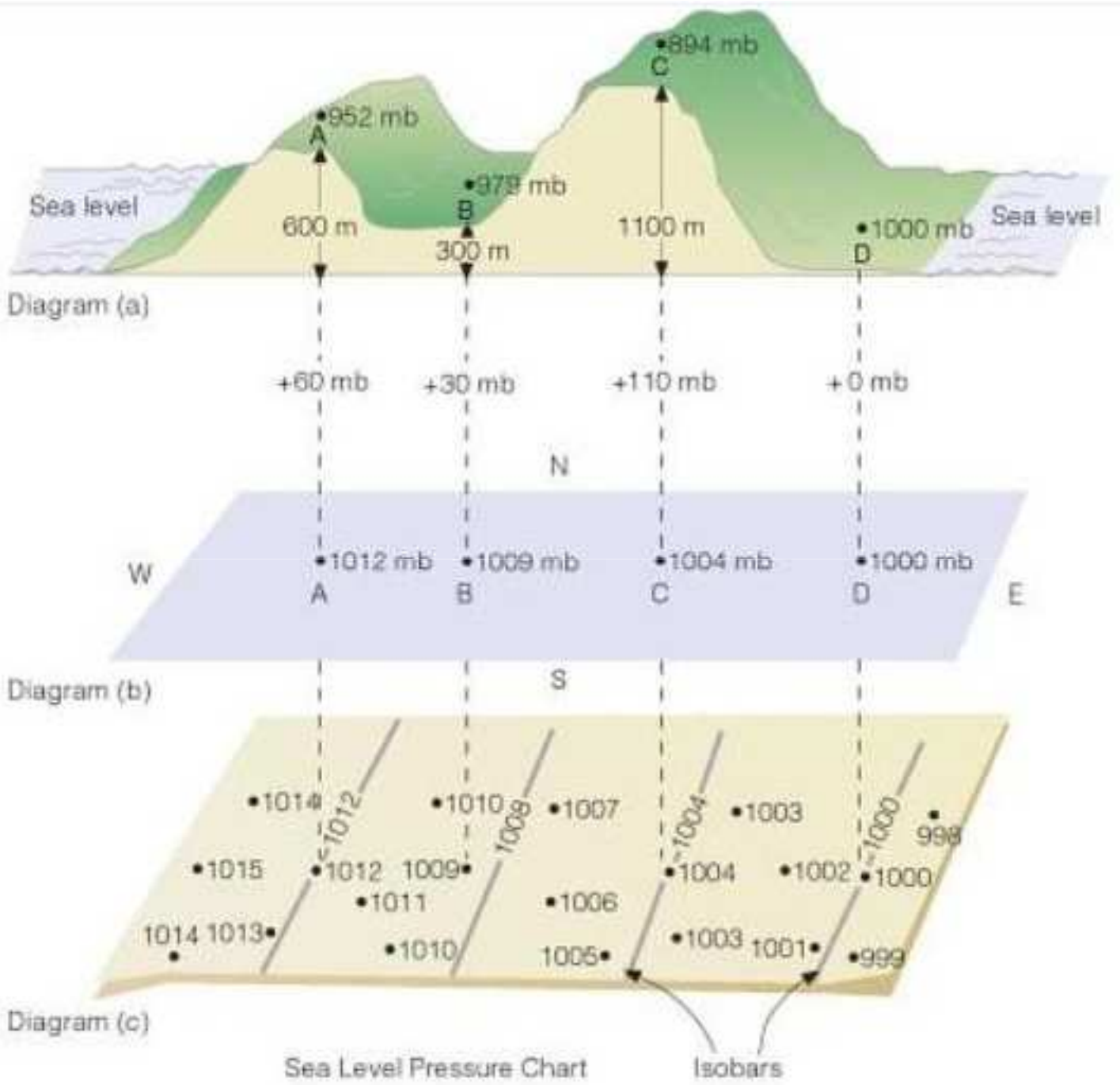
*ARPAL (Genoa – Italy) – DIFI (Genoa – Italy) – ISAC-CNR (Bologna – Italy)*

**Mean Sea Level Pressure [hPa] and orography [m]**

18Z Sat 12 JAN $\tau$ = 6h




Model: **BOLAM99_006x006**
Time 0: 12Z12JAN2008 Resolution: 0.0849°x0.0600°


894 mb
C
952 mb
A
979 mb
B
Sea level
600 m
300 m
1100 m
1000 mb
D
Sea level
Diagram (a)
+60 mb
+30 mb
+110 mb
+0 mb
N
W
1012 mb
1009 mb
1004 mb
1000 mb
A
B
C
D
E
Diagram (b)
S
1014
1012
1010
1008
1007
1004
1003
1000
998
1015
1012
1009
1004
1002
1000
1011
1006
1014
1013
1010
1005
1003
1001
999
Diagram (c)
Sea Level Pressure Chart
Isobars