Cloud droplets to precipitation:

N(d), LWC, w, ϑ...
time evolution
kinematic structure

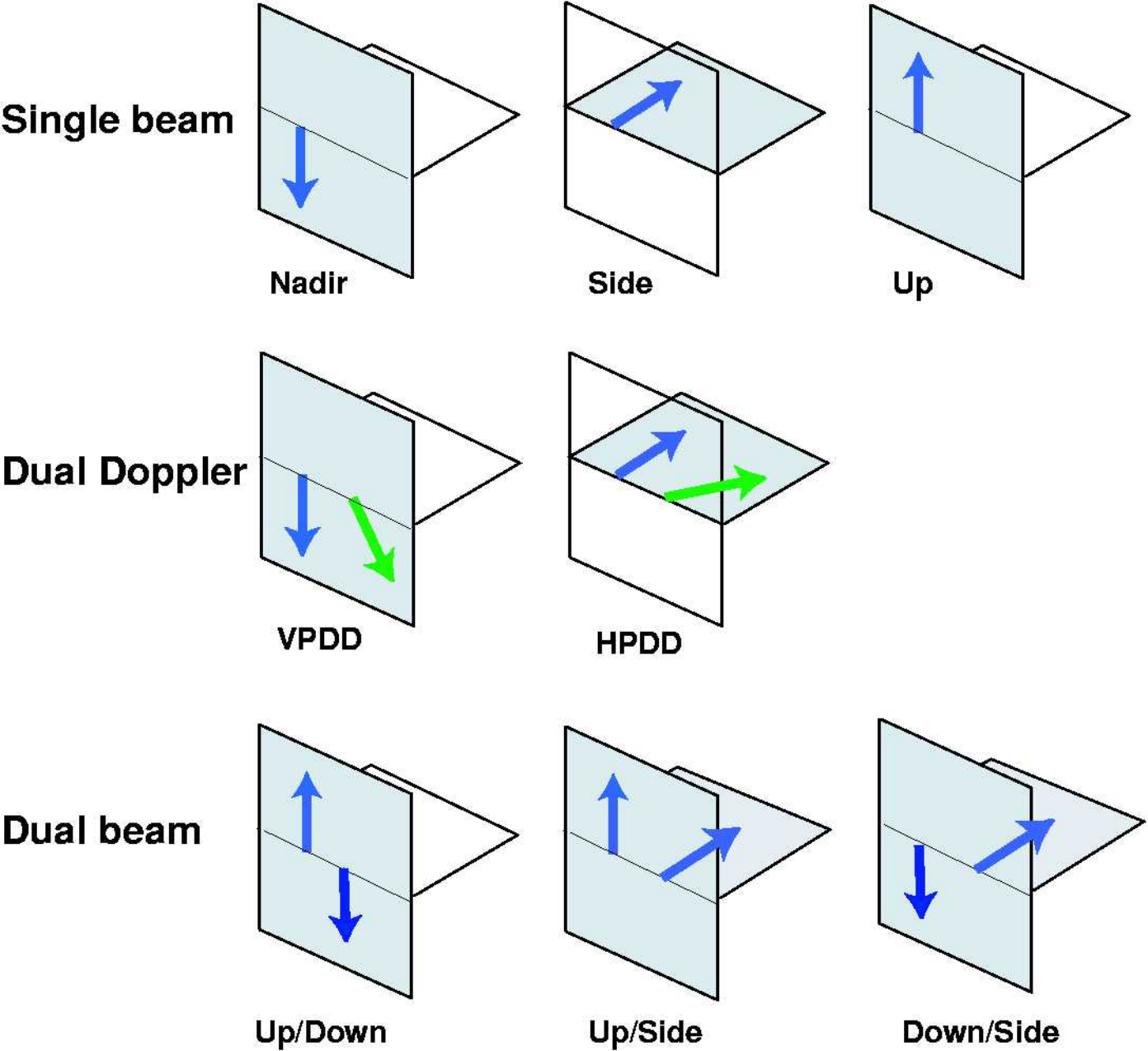
SCMS Florida '95:
pulsating growth
early drizzle/rain spotty, 'random'

KingAir – in situ air motions and microphysics

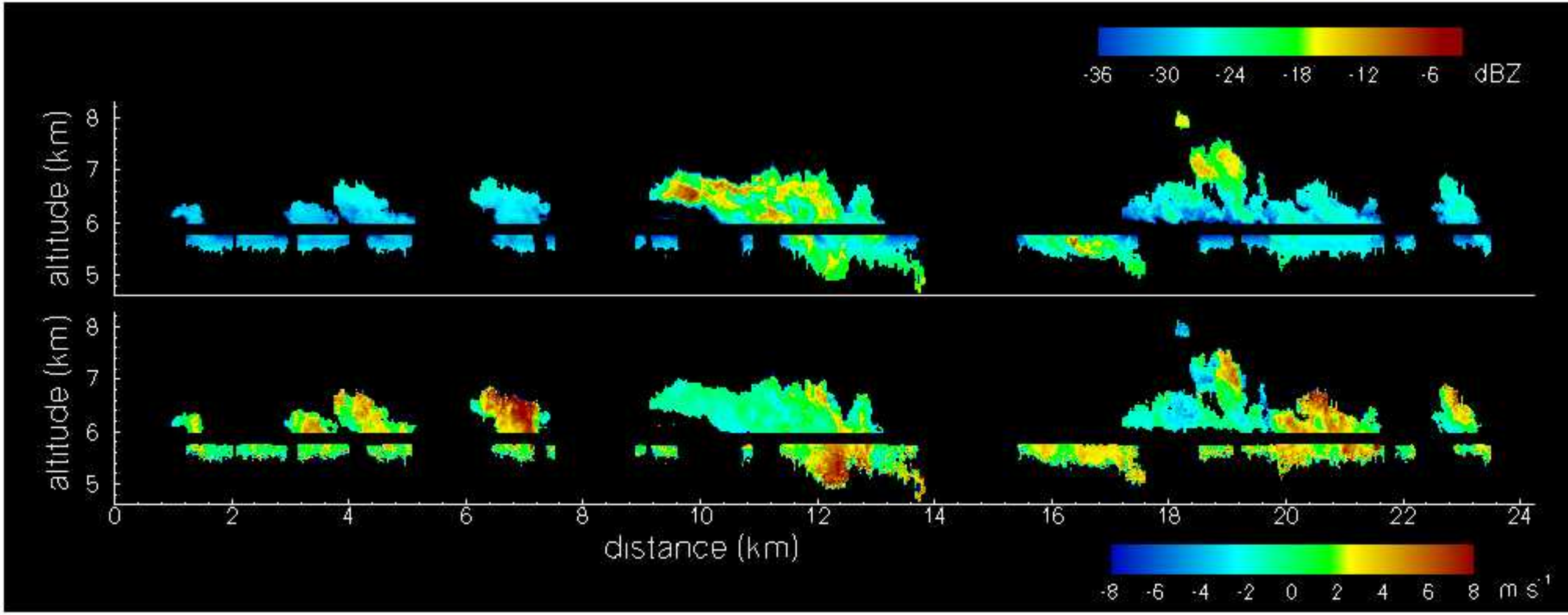
Wyoming Cloud Radar – reflectivity, Doppler velocity

repeat sampling
ensemble sampling

Supporting observations: SPOL (time evolution)
SABLE (cloud base)
C130 (aerosol and CCN)
Cloud photography


Single beam
Nadir
Side
Up
Dual Doppler
VPDD
HPDD
Dual beam
Up/Down
Up/Side
Down/Side

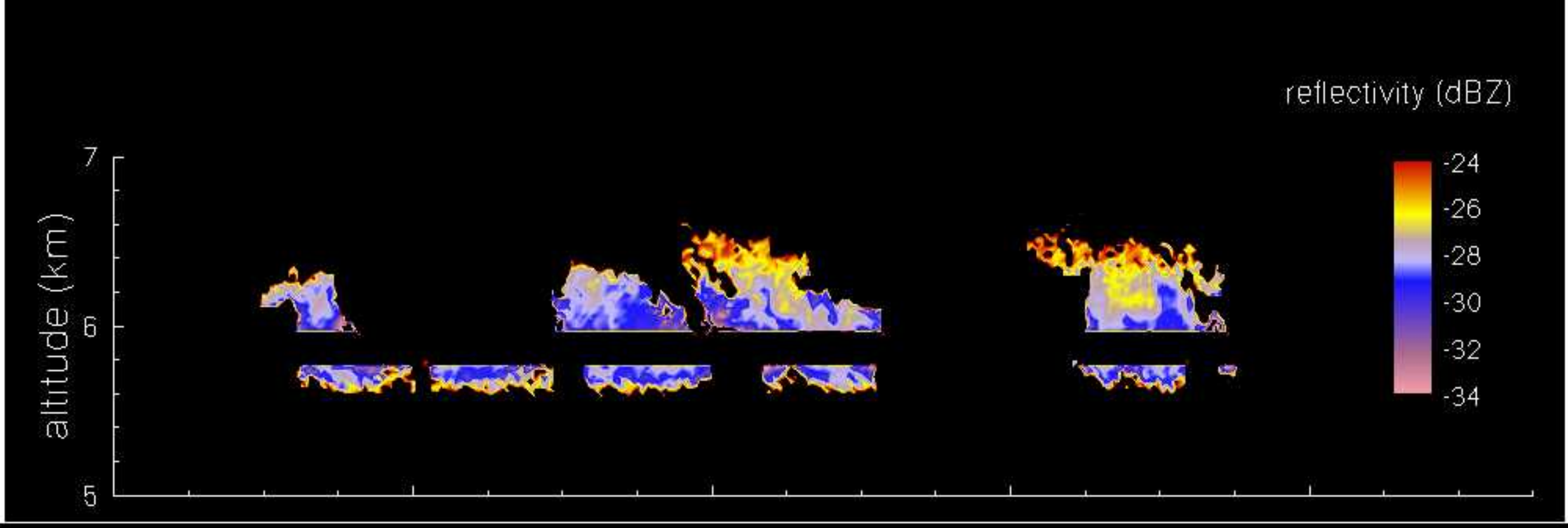
reflectivity

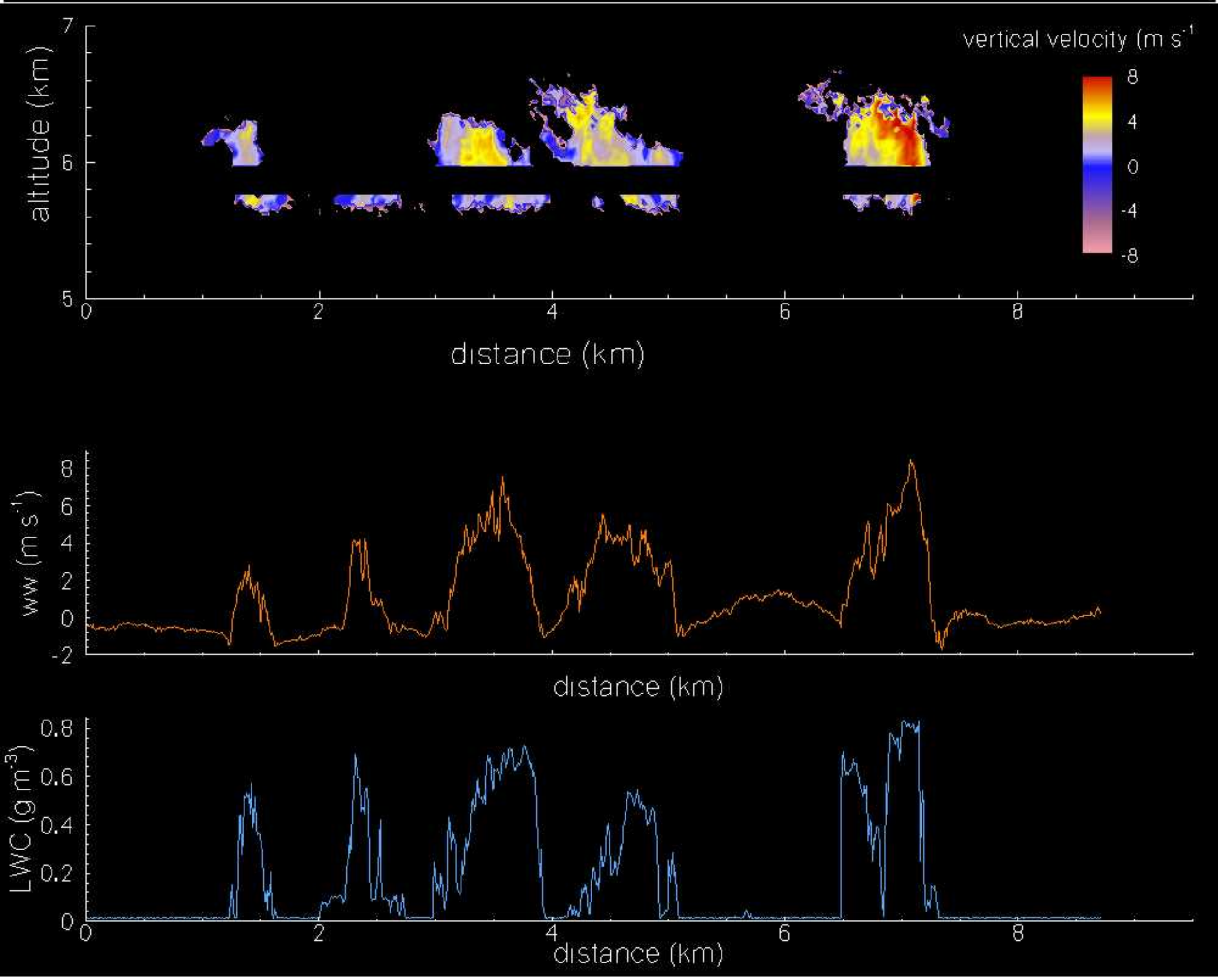


vertical velocity

HiCu03 aug 7; line from NW to SE; 20:32 - 20:36
5860 m; -6.6°C

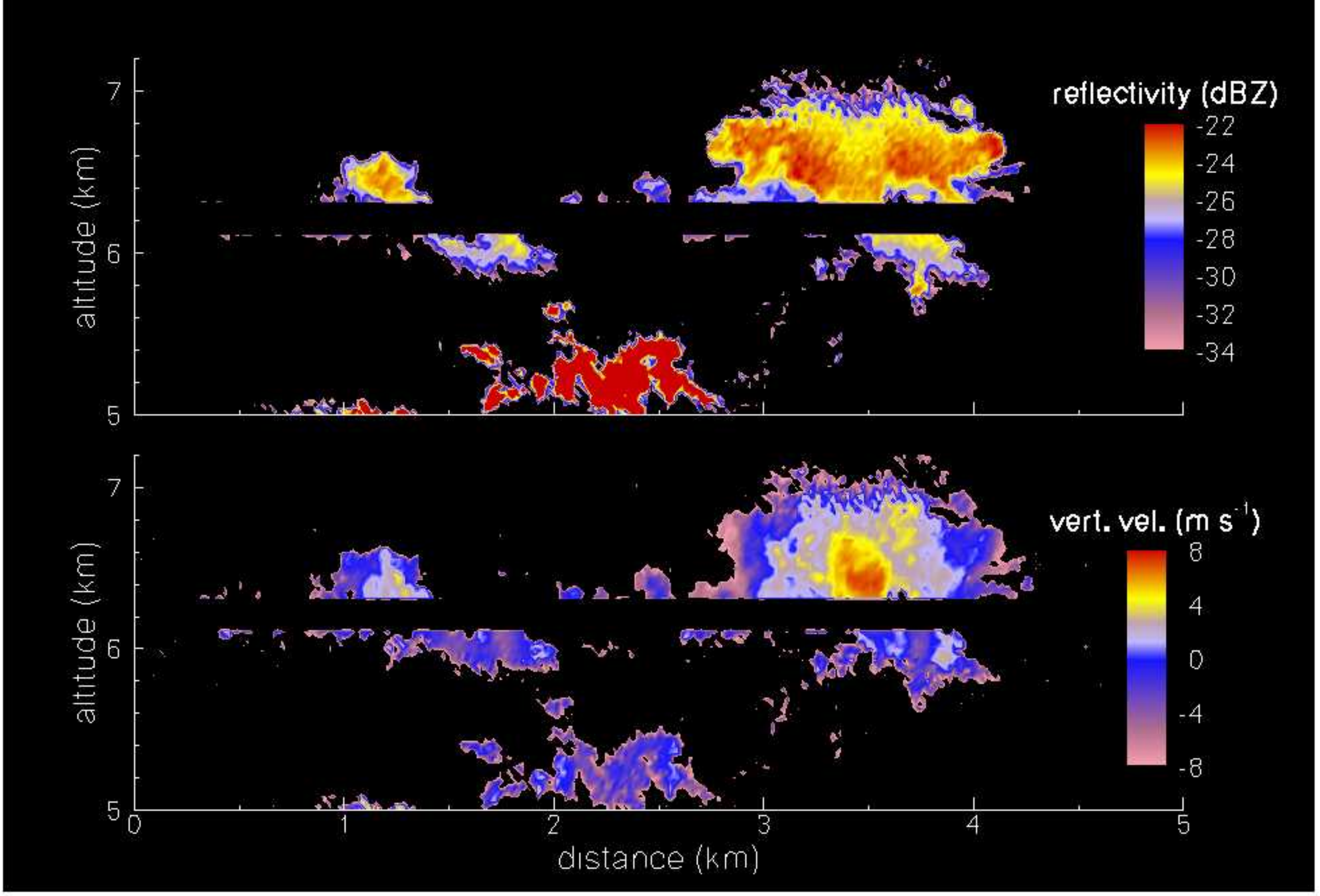
23 Feb 2004 18:37:13 zv_2032-2036.lpk

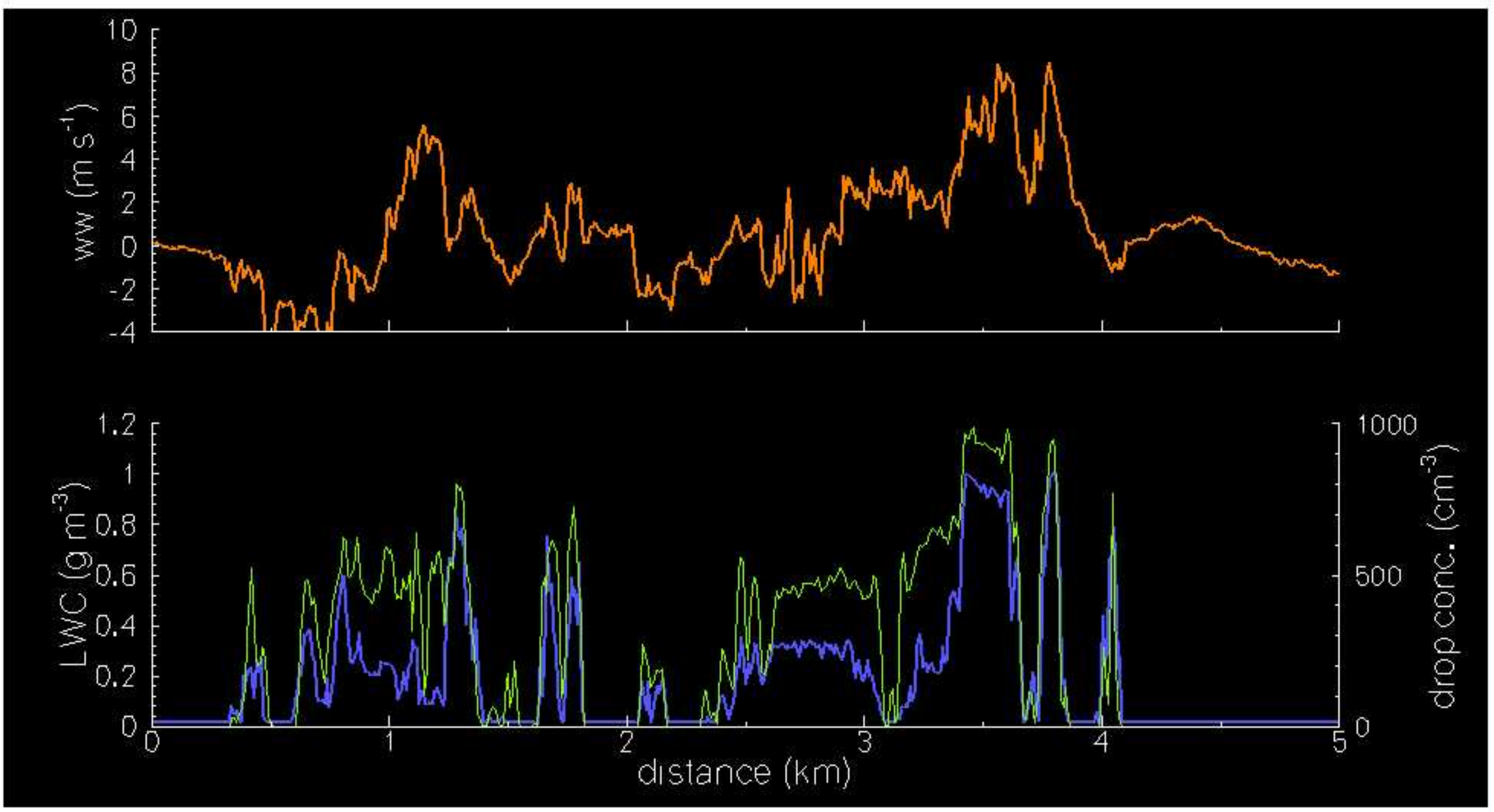




HiCu03; aug 7 NW to SW line; 20:32:00 - 20:33:35 5860 m -6.6°C

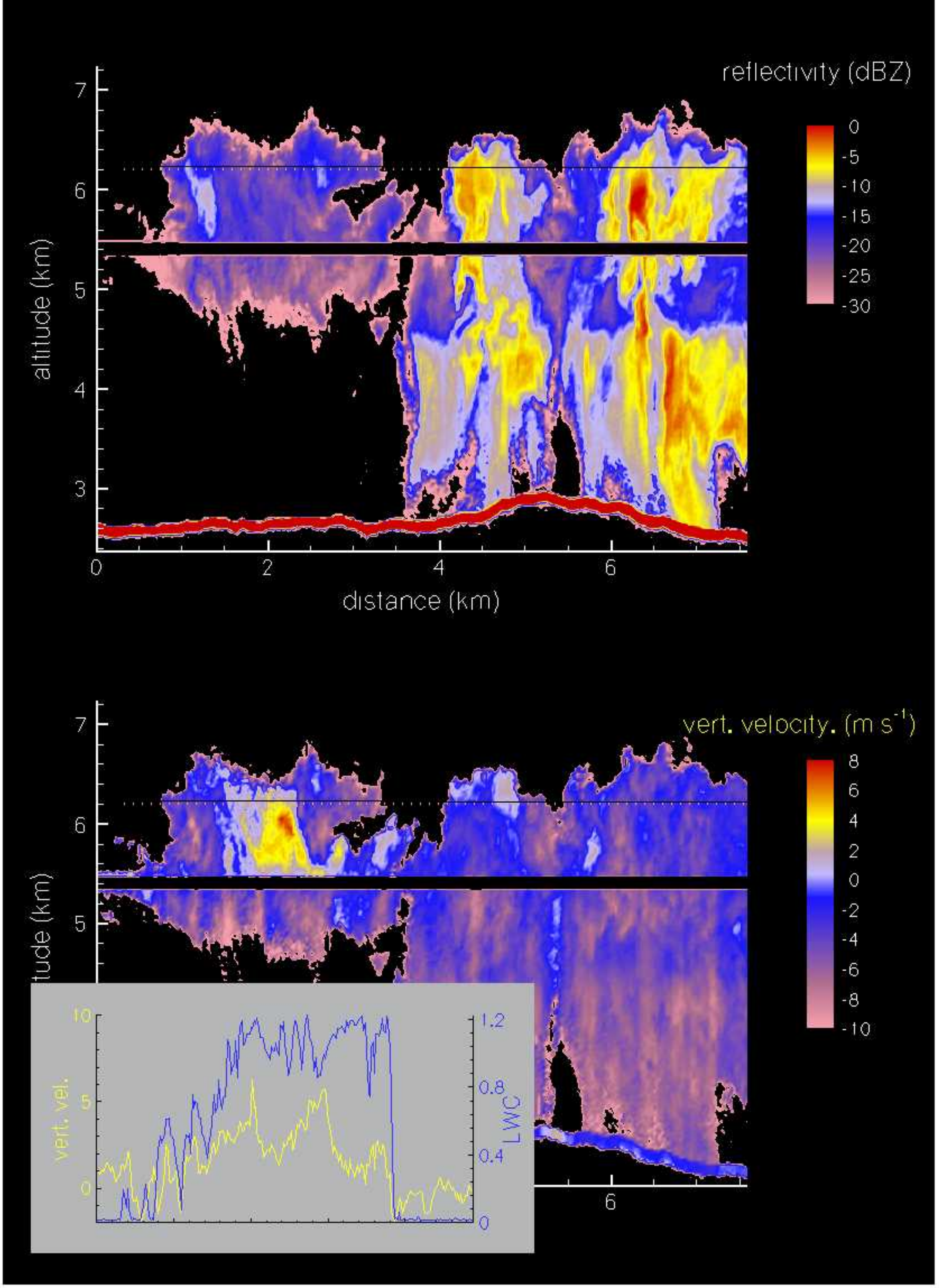
23 Feb 2004 19:02:47 smalldd.lpk





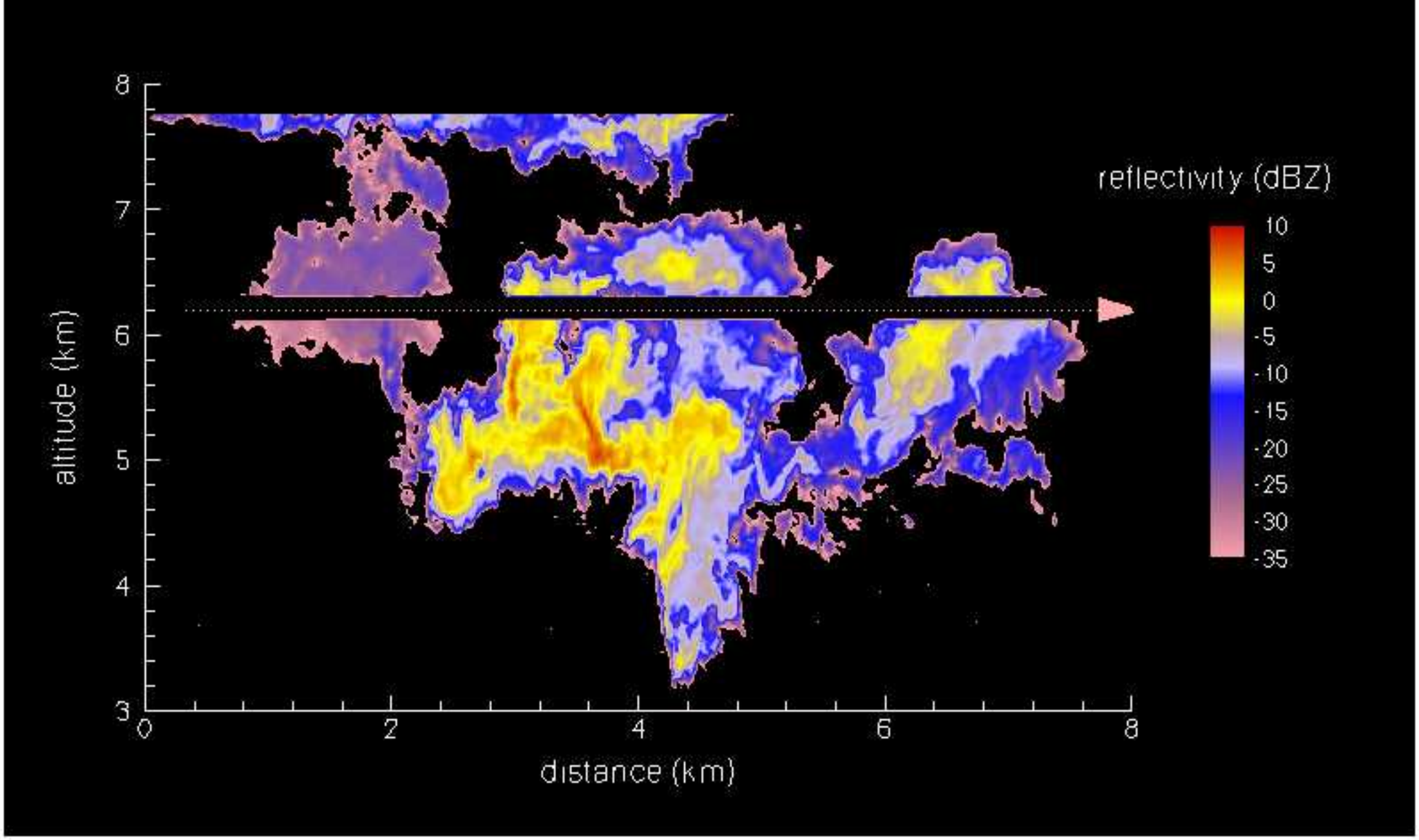
HiCu03; aug 7 NW to SE pass; 20:46:31 - 20:47:30 6210 m -8.9°C

23 Feb 2004 18:37:54 last_dd.lpk

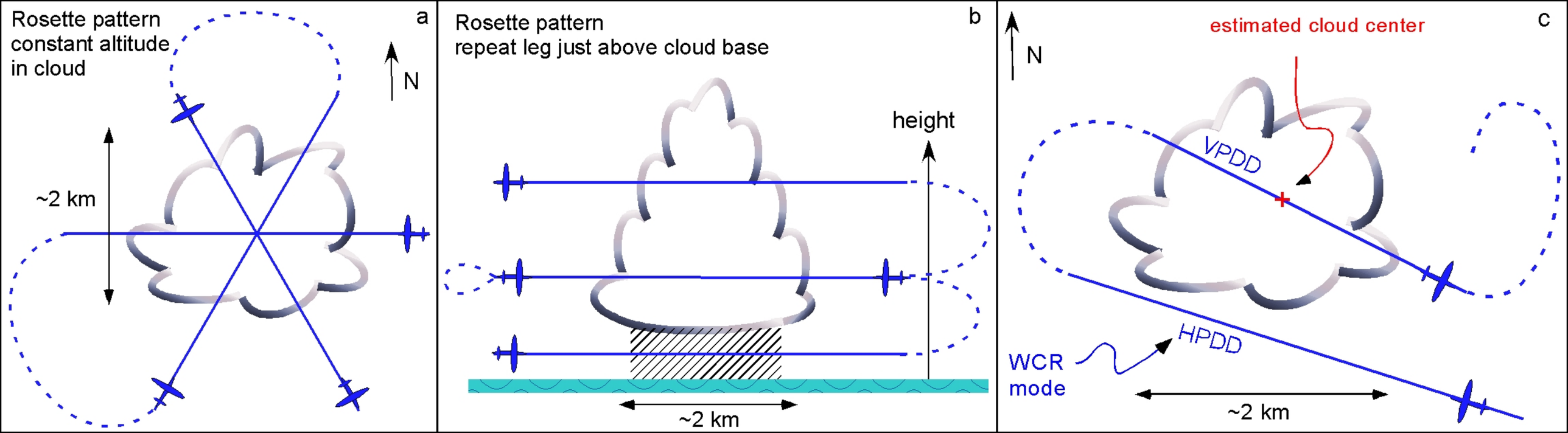


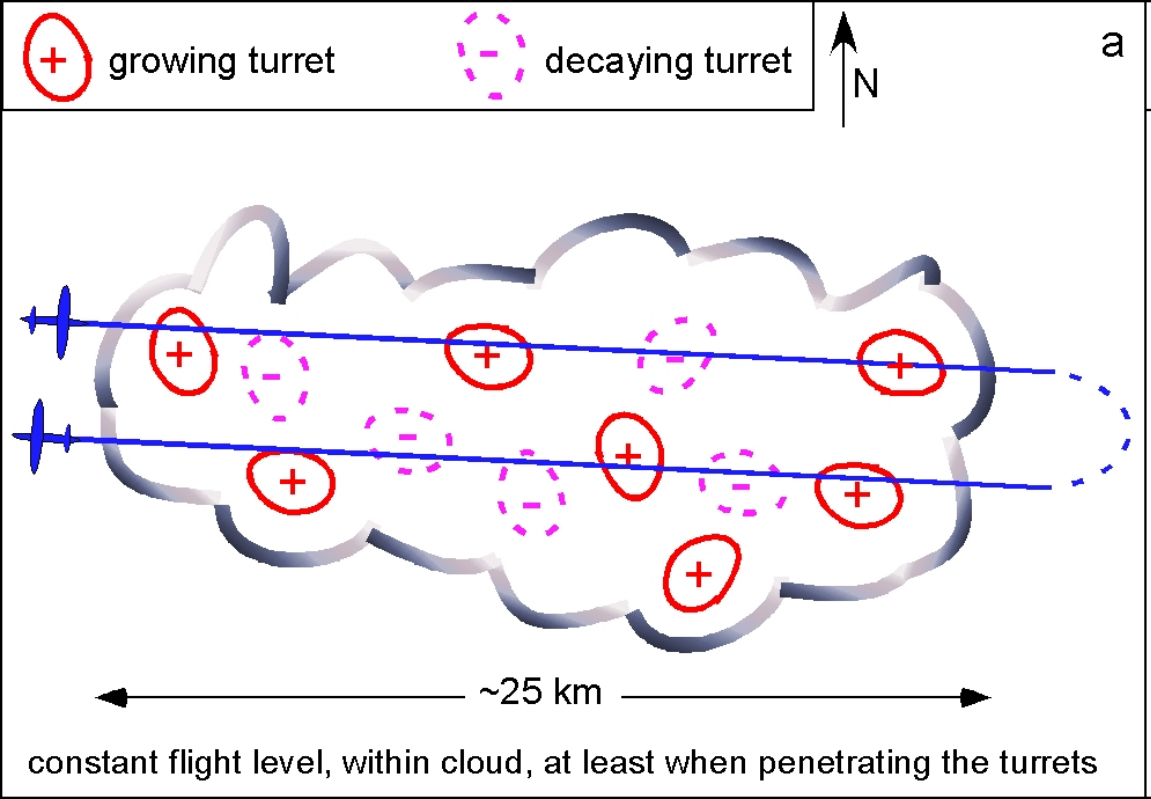
HiCu03 aug 8; S to N pass; 19:53:00 - 19:54:25
5405 m; -3.2°C

23 Feb 2004 18:38:57 aug08/1753/zv.lpk

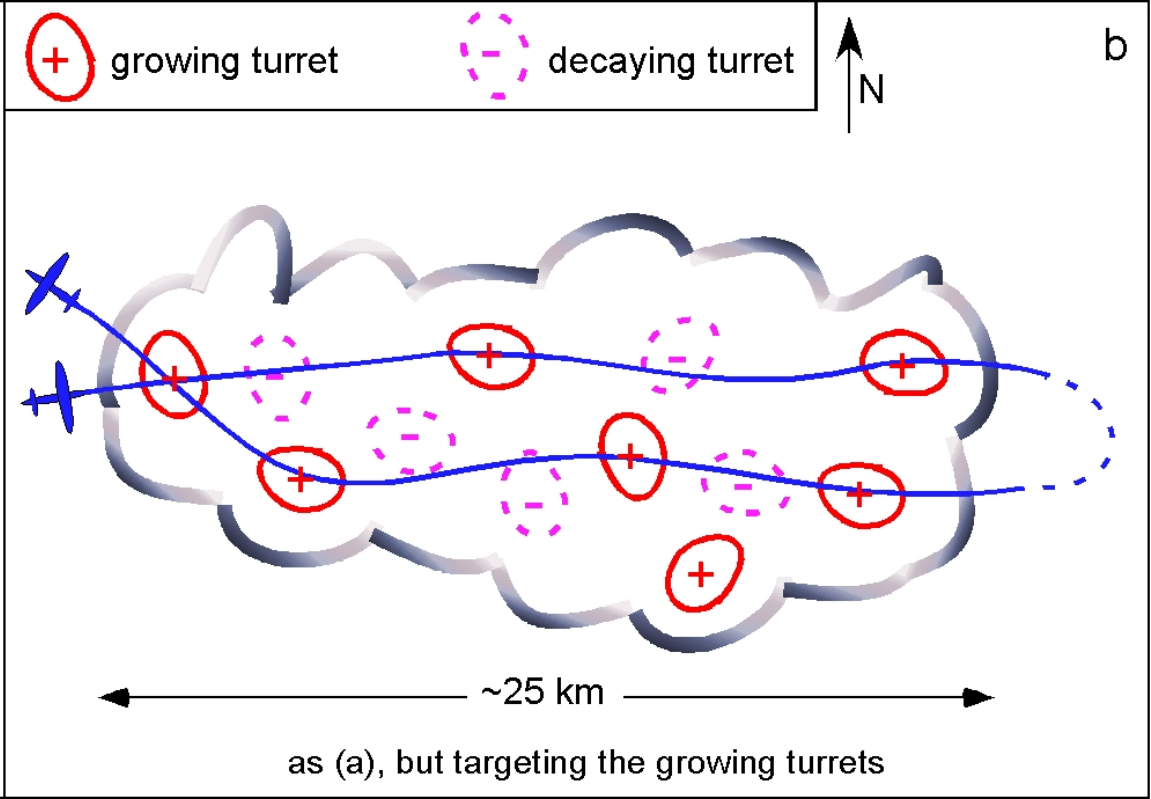


HiCu03 aug 7; NW to SE pass; 20:44:19 - 20:46:01
6210 m; -8.9°C

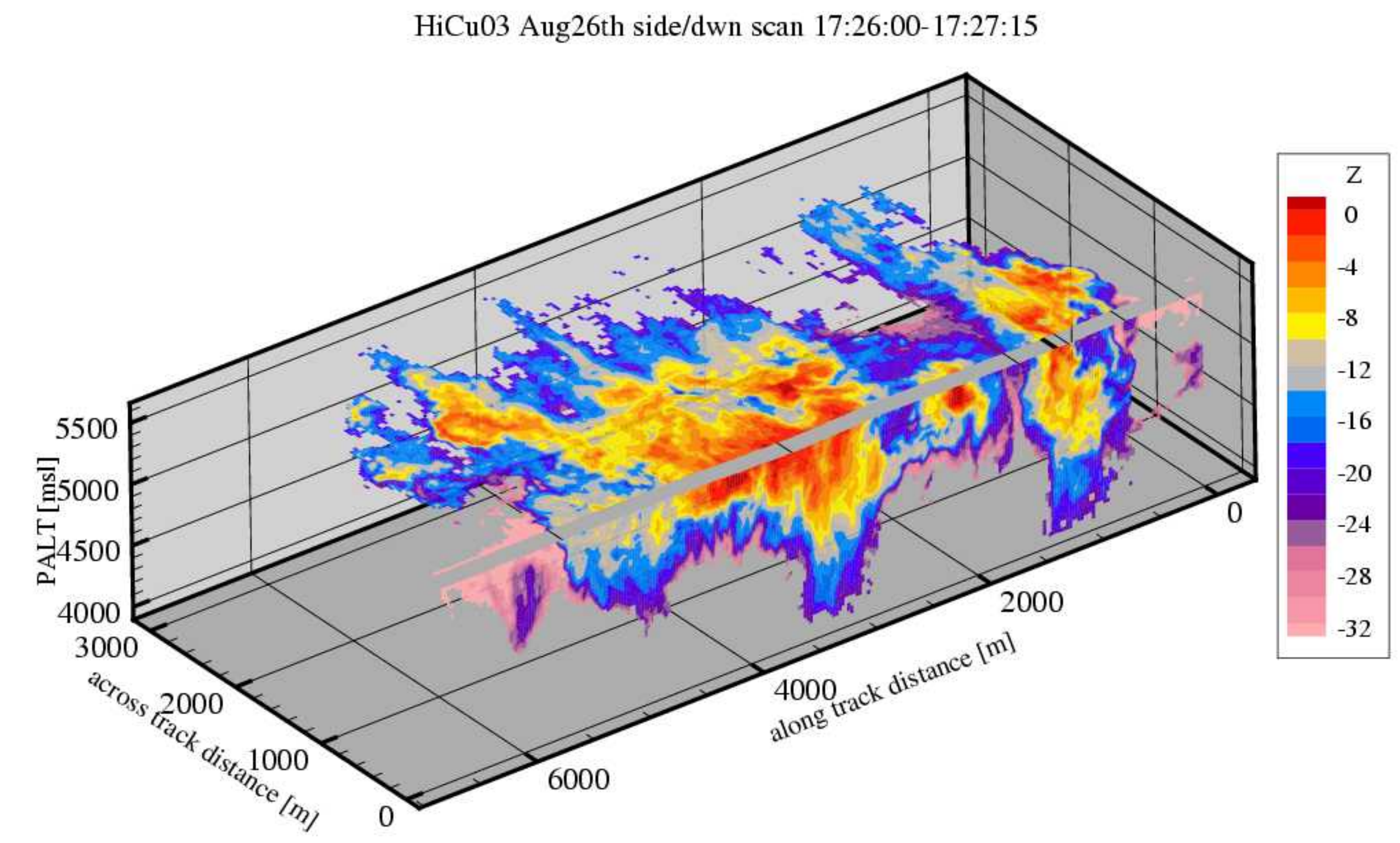

a
Rosette pattern
constant altitude
in cloud
N
~2 km
b
Rosette pattern
repeat leg just above cloud base
height
~2 km
c
estimated cloud center
N
VPDD
HPDD
WCR
mode
~2 km

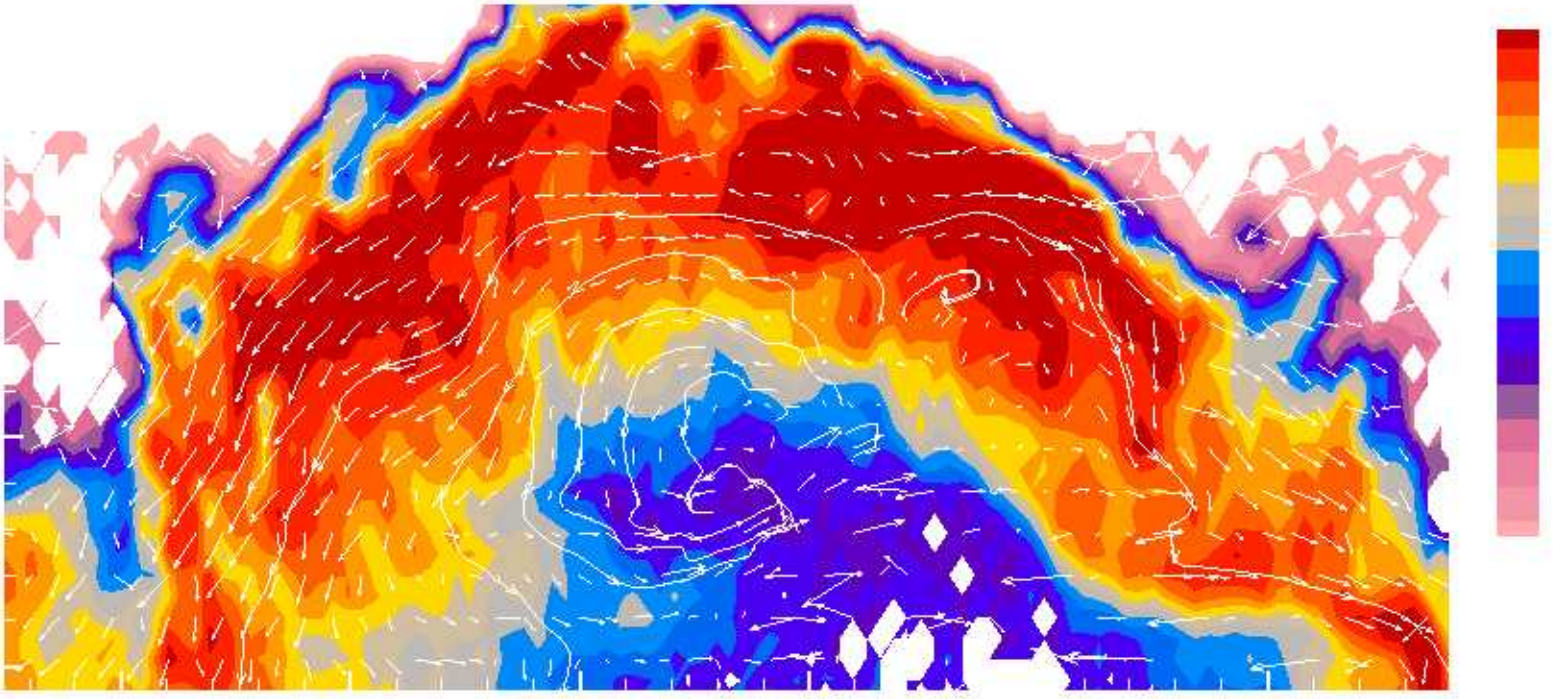


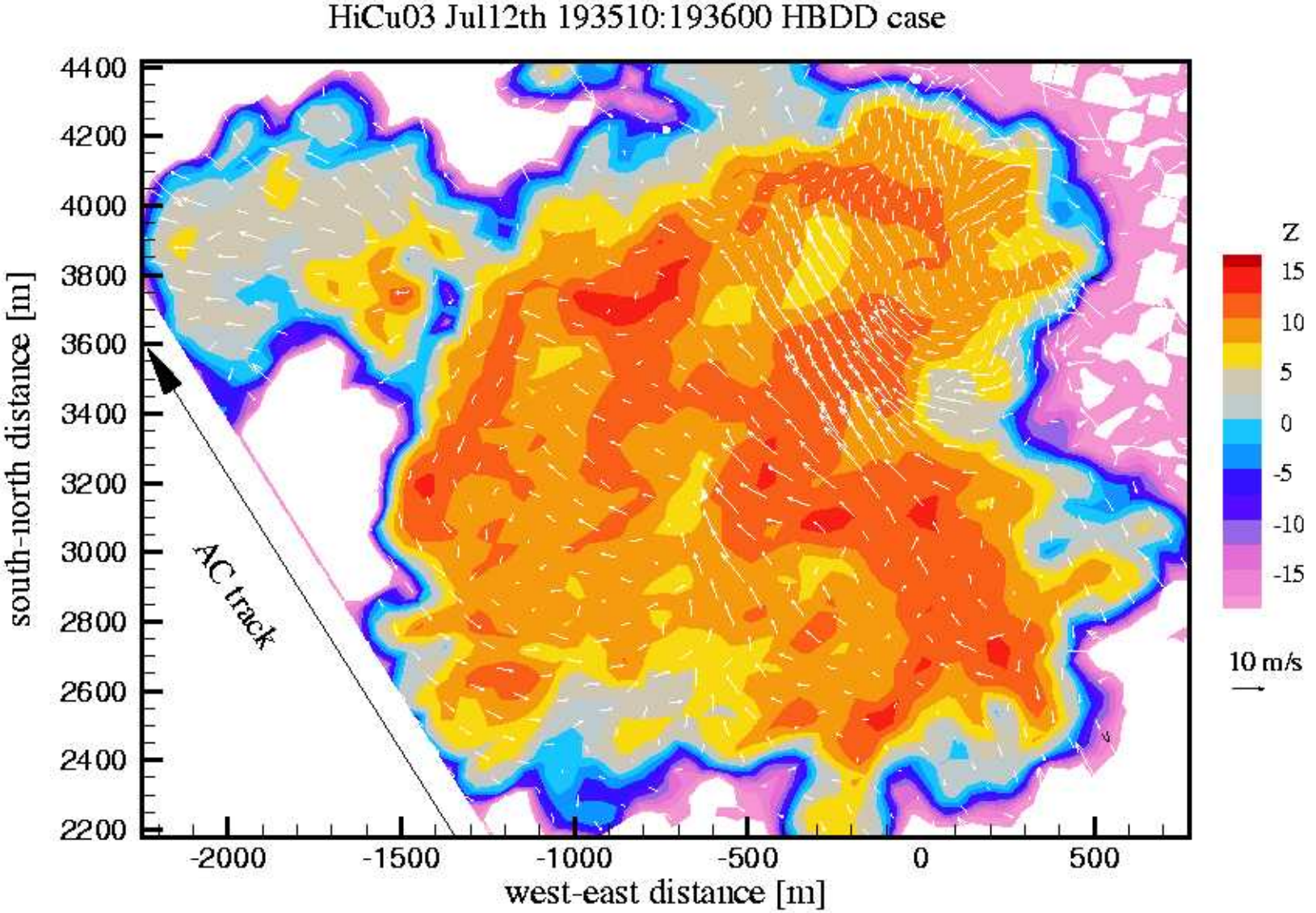
constant flight level, within cloud, at least when penetrating the turrets



as (a), but targeting the growing turrets


HiCu03 Aug26th side/dwn scan 17:26:00-17:27:15
Z
0
-4
-8
-12
-16
-20
-24
-28
-32
PALT [msl]
5500
5000
4500
4000
3000
2000
1000
0
across track distance [m]
6000
4000
2000
0
along track distance [m]




HiCu03 Jul12th 193510:193600 HBDD case
south-north distance [m]
4400
4200
4000
3800
3600
3400
3200
3000
2800
2600
2400
2200
AC track
-2000
-1500
-1000
-500
0
500
west-east distance [m]
Z
15
10
5
0
-5
-10
-15
10 m/s