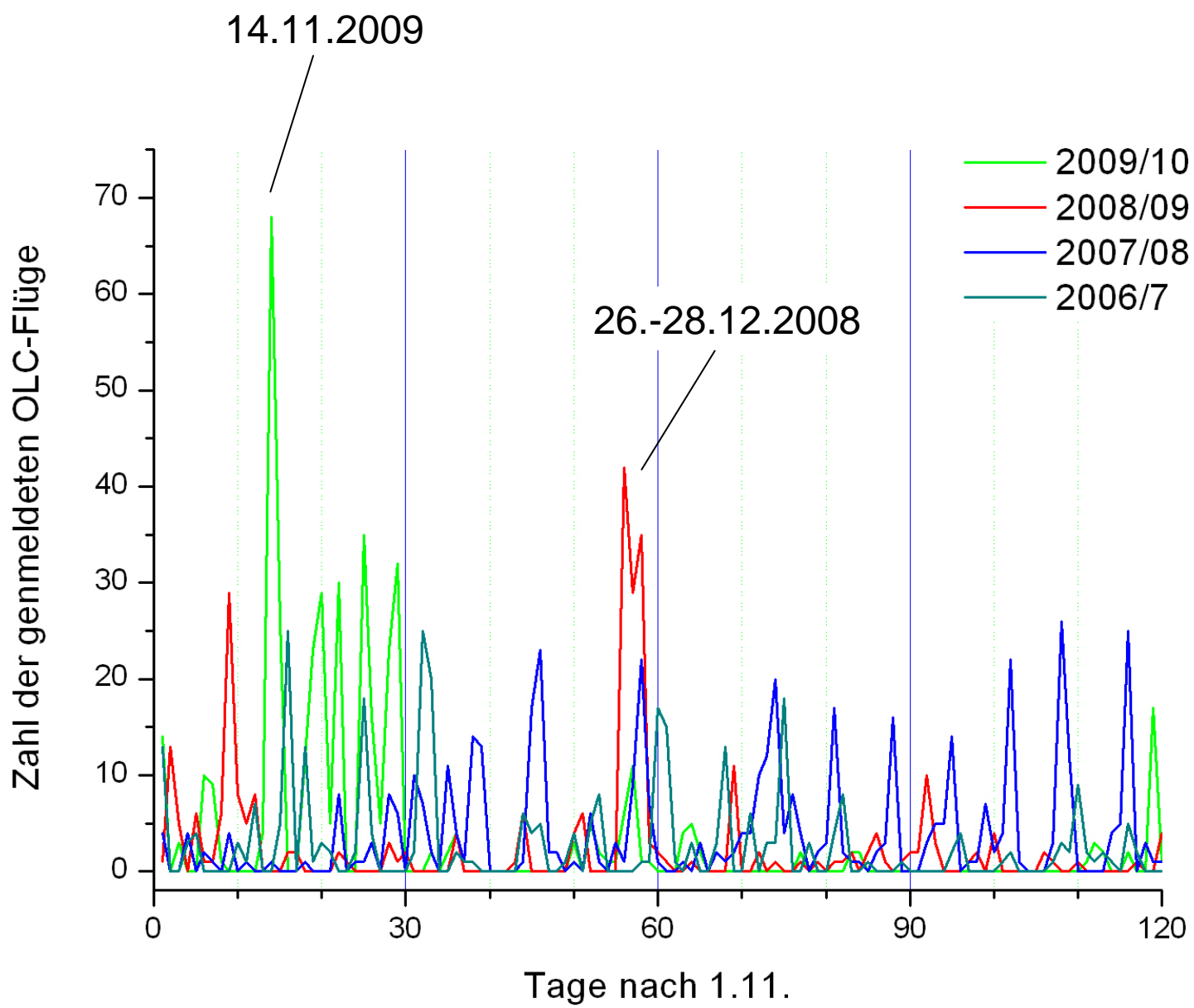




Evaluierung der Wellenvorhersagen für den Harz am 14. und 20.11.09

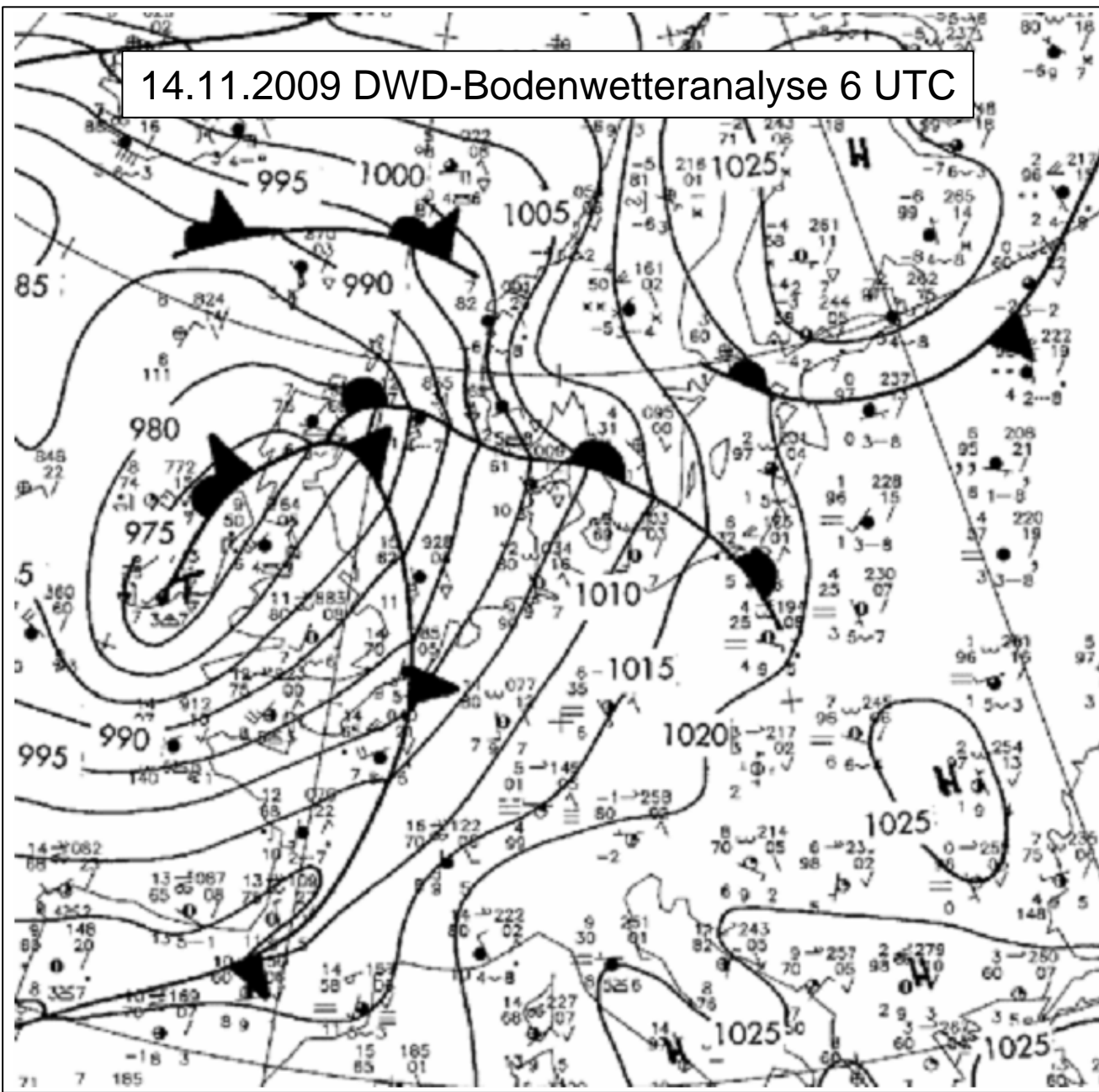
Christof Maul, Akaflieg Frankfurt



Helmut von Keitz, \*18.07.1928, † 14.11.2009



14.11.2009 DWD-Bodenwetteranalyse 6 UTC



Satellitenbild IR

Satellitenbild VIS

RASP-Vorhersage 850 mbar

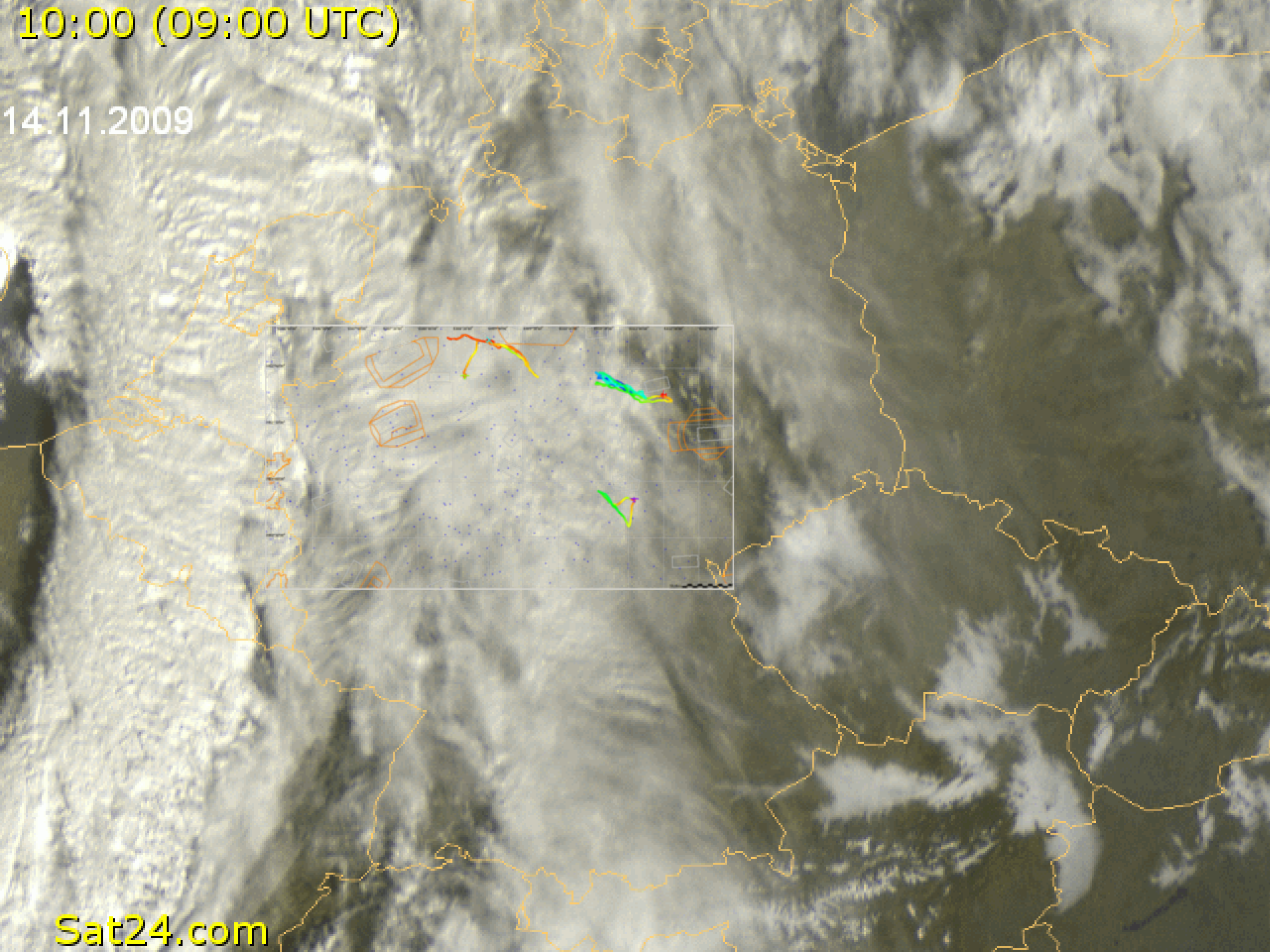
RASP-Vorhersage 700 mbar

RASP-Vorhersage 500 mbar



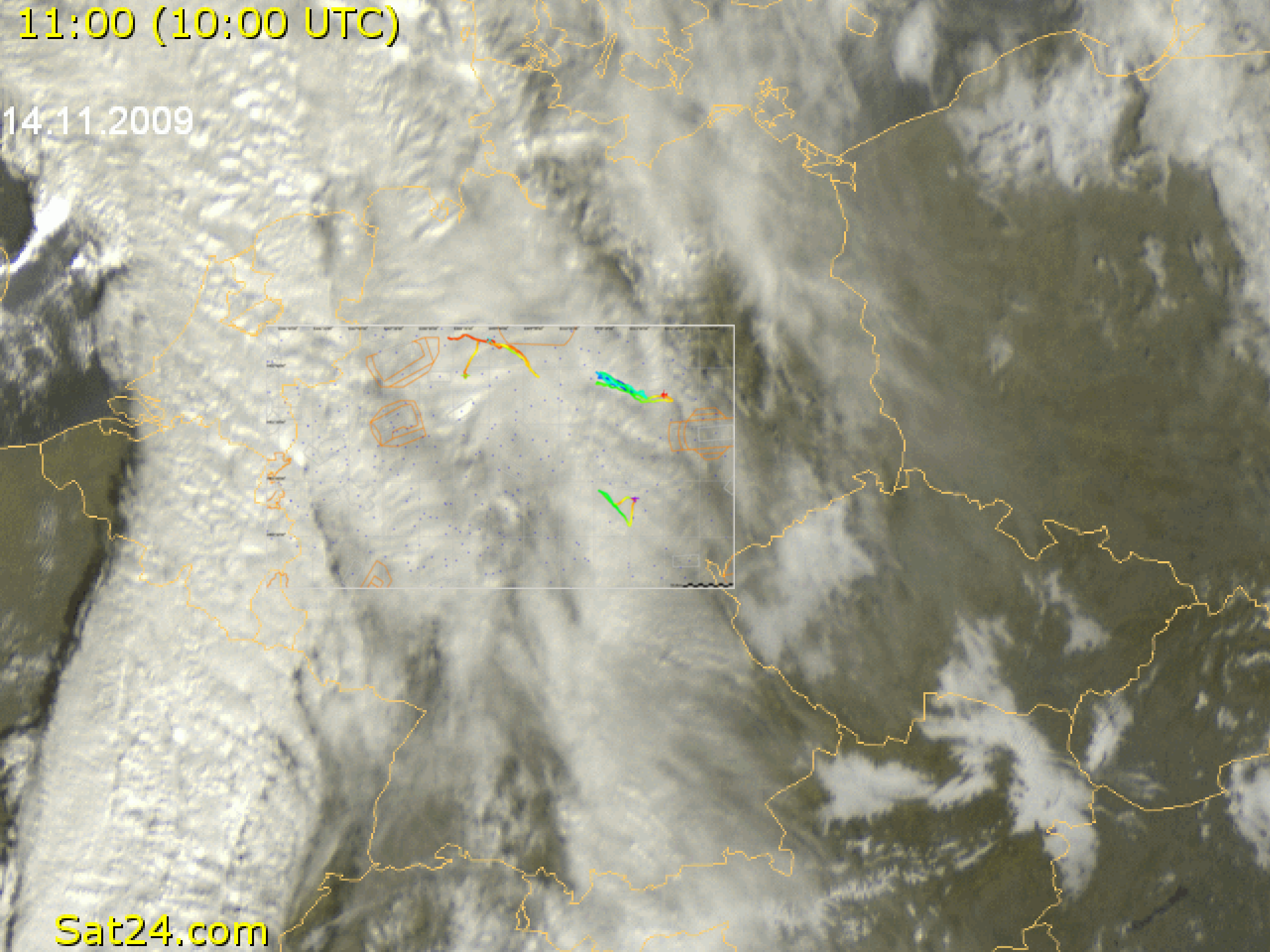
10:00 (09:00 UTC)

14.11.2009



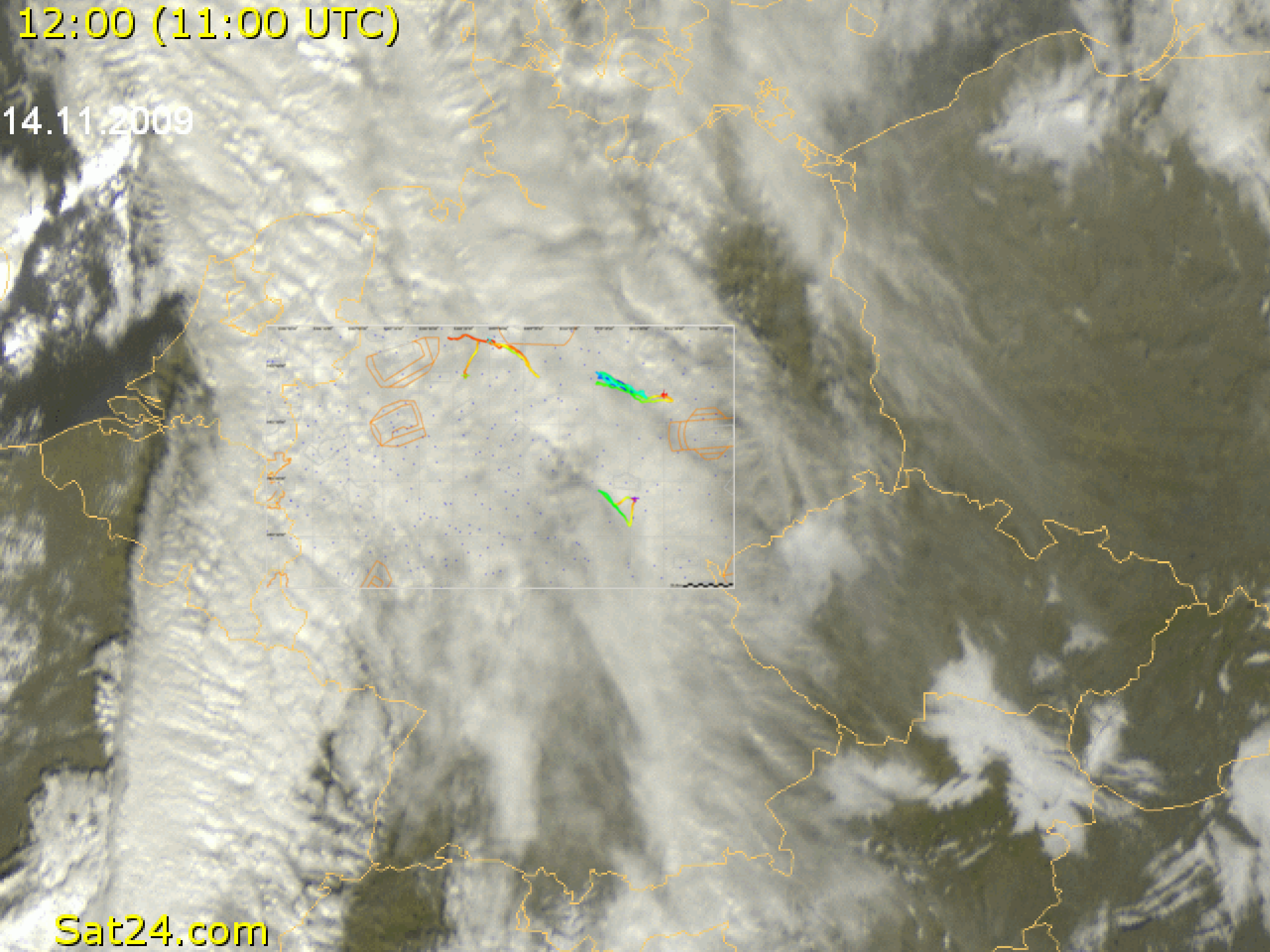
11:00 (10:00 UTC)

14.11.2009



12:00 (11:00 UTC)

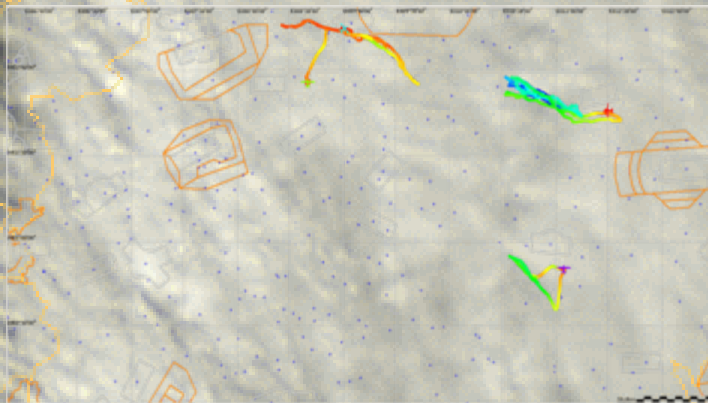
14.11.2009





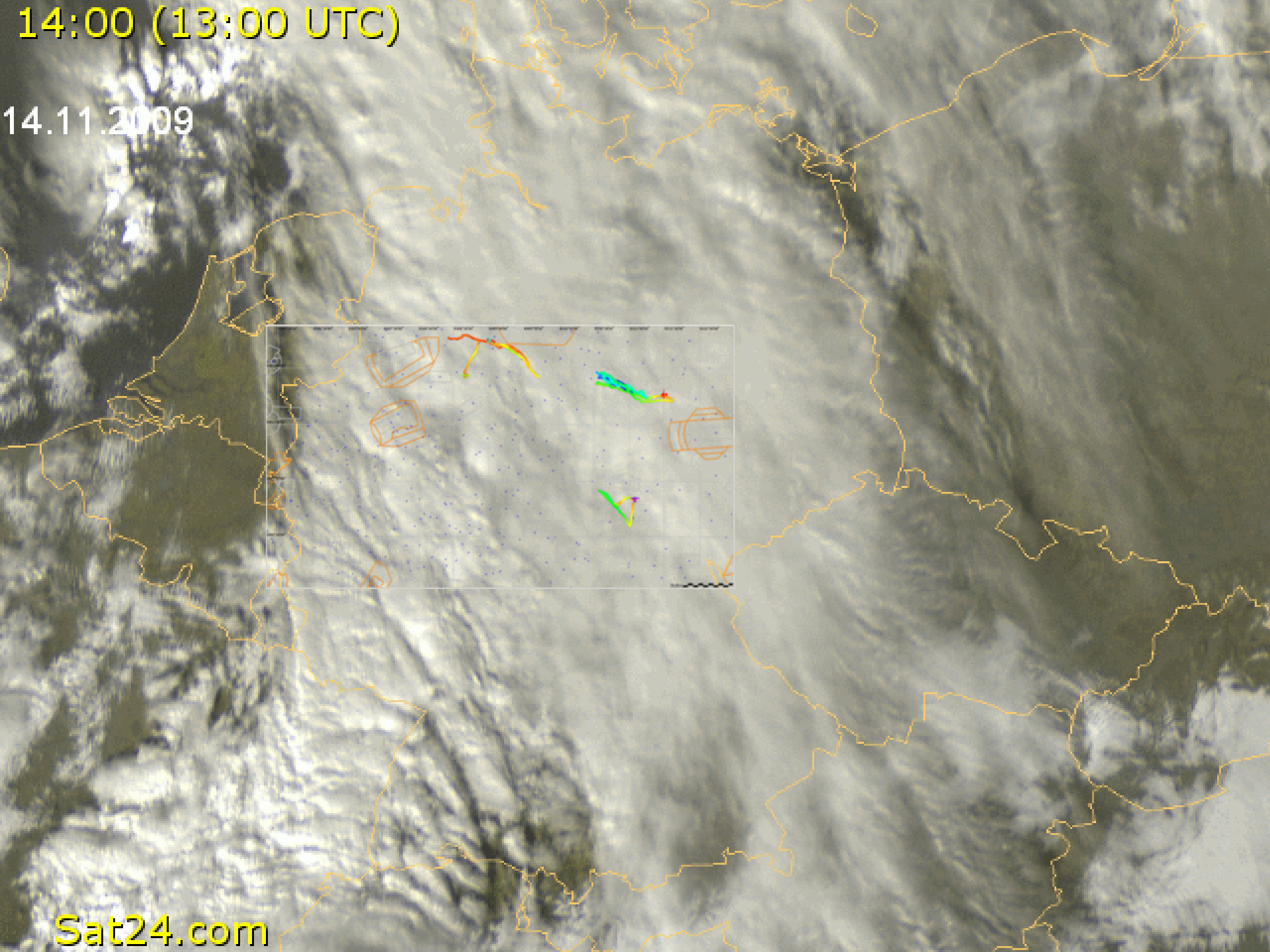
13:00 (12:00 UTC)

14.11.2009



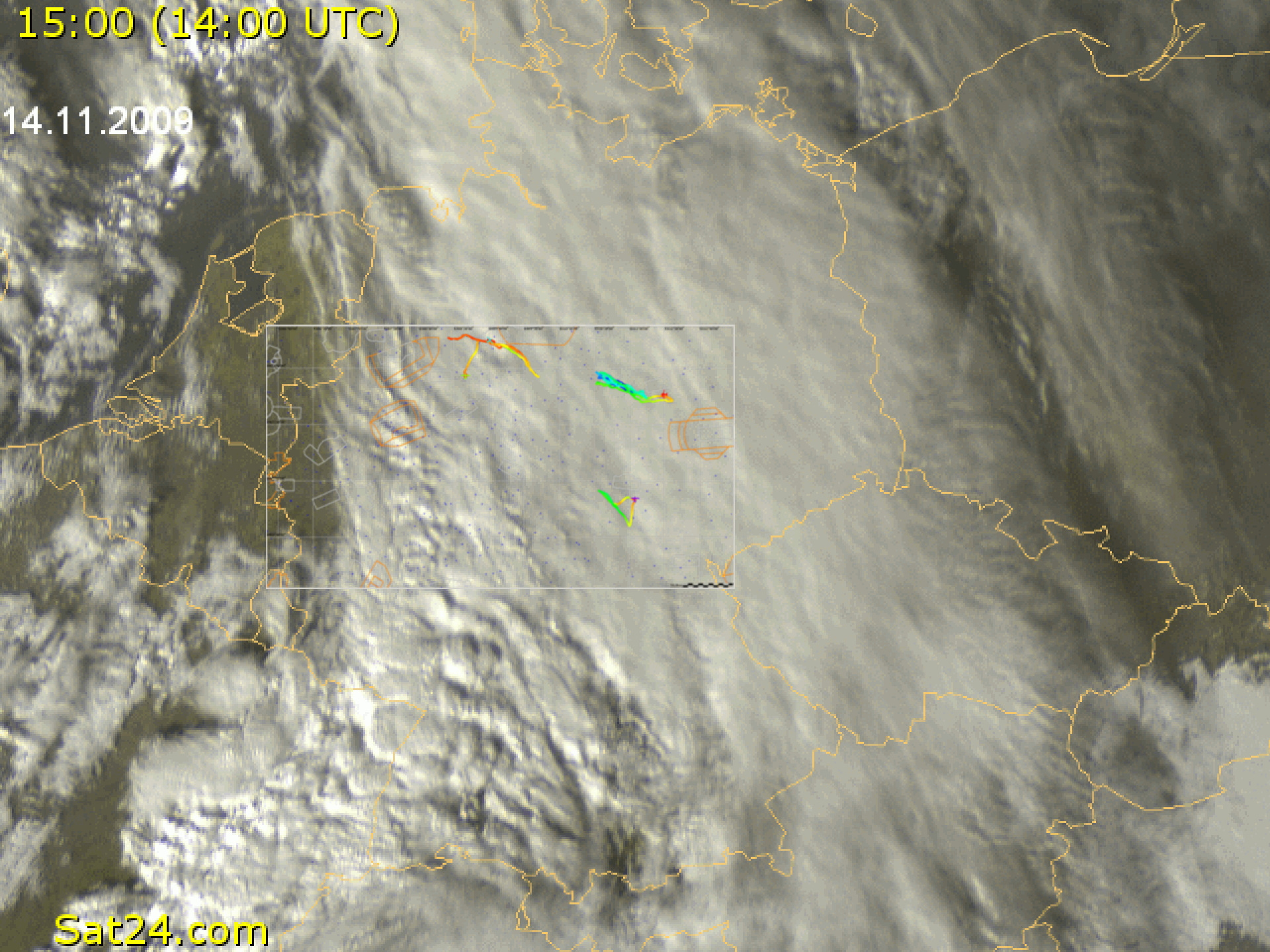
14:00 (13:00 UTC)

14.11.2009



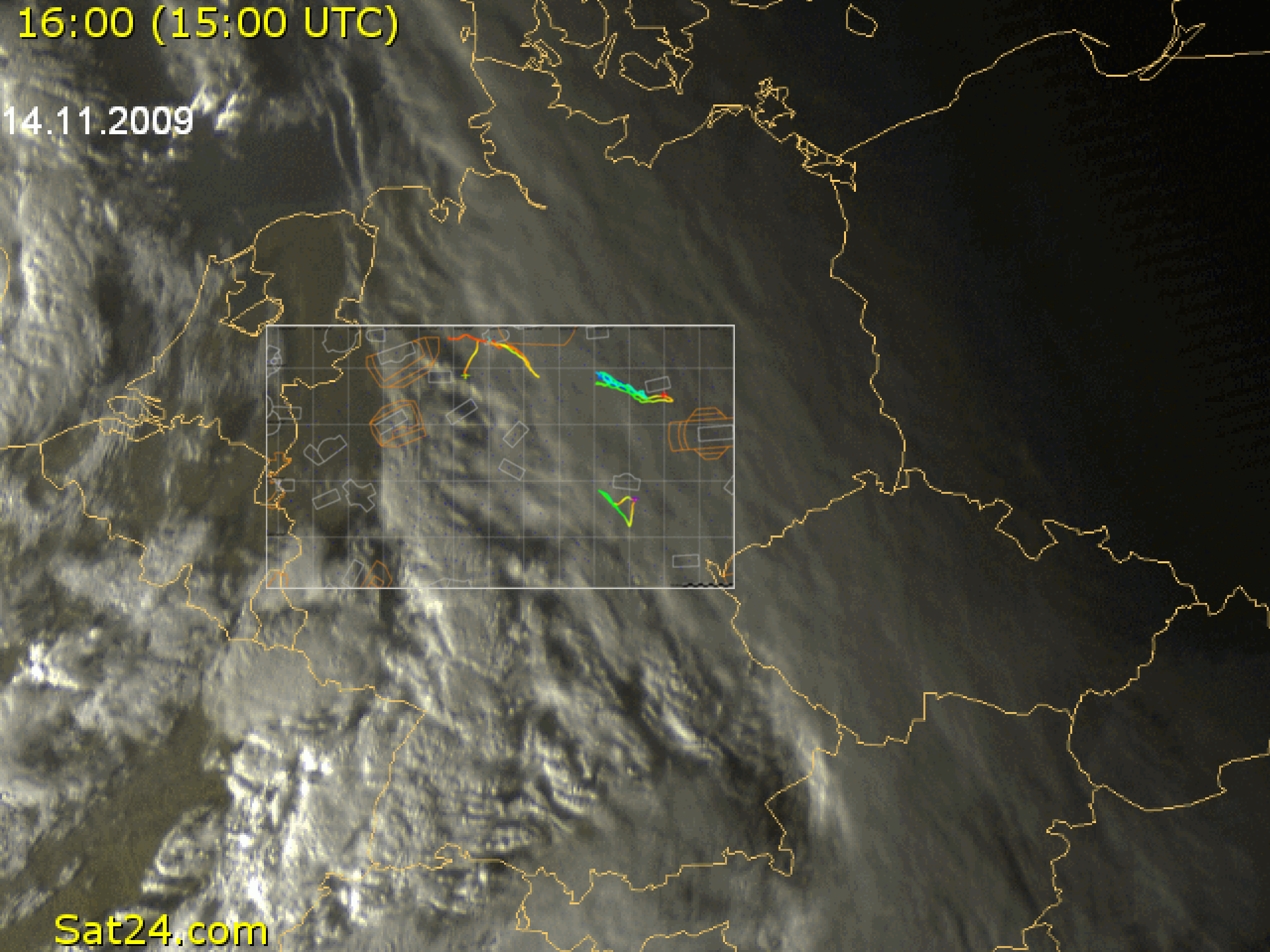
15:00 (14:00 UTC)

14.11.2009



16:00 (15:00 UTC)

14.11.2009



# Harzflüge 14.11.2009

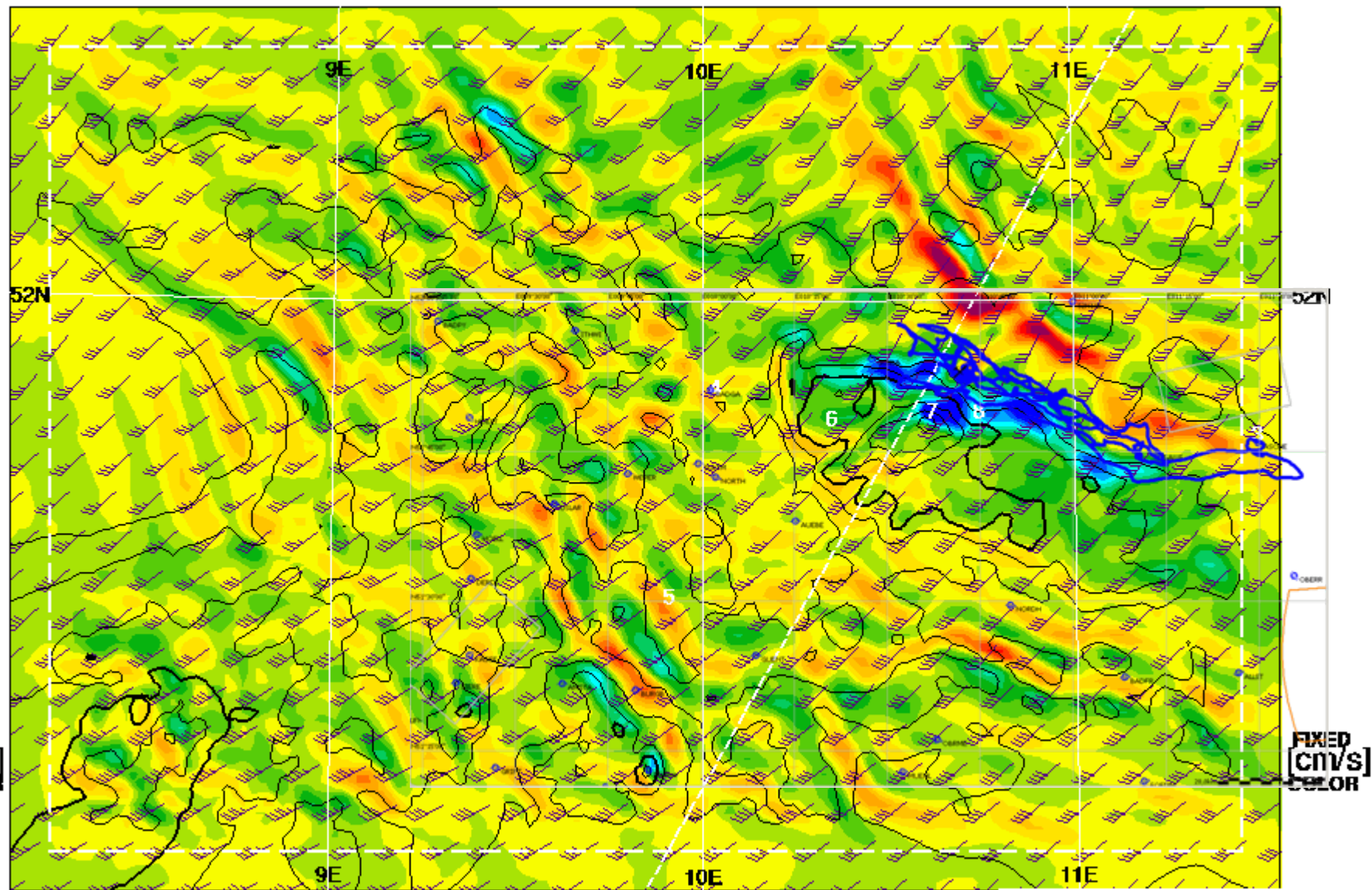


RASP  
14.11.2009  
850 mbar  
1300 m



# Vertical Velocity & Wind [kt] at 850mb

Valid 1000 CET (0900Z) SAT 14 Nov 2009 [27hrFcst@1600z]  
box Wmax=257@52.00,10.73,1518m

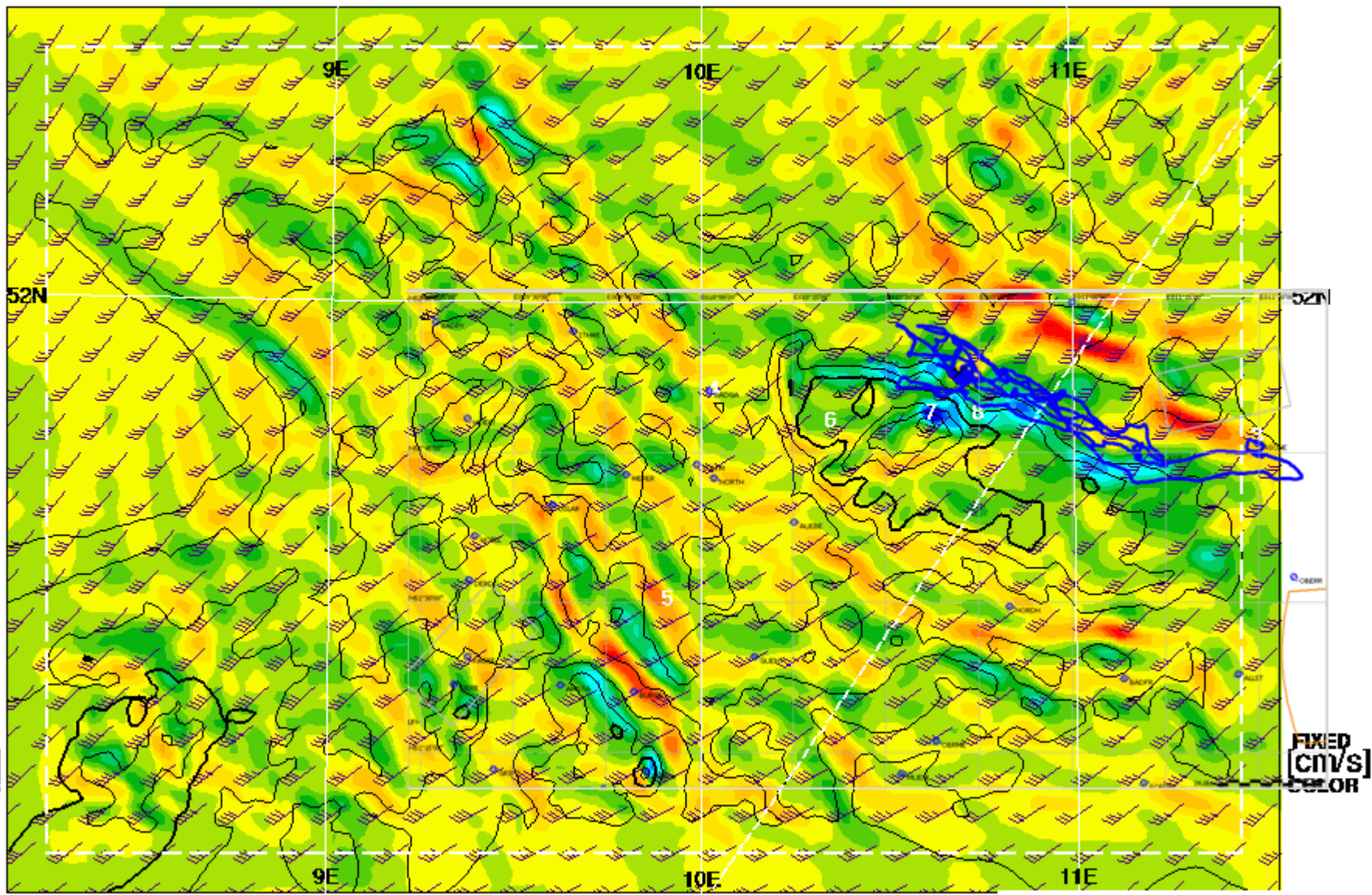


Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 850mb

Valid 1100 CET (1000Z) SAT 14 Nov 2009 [28hrFcst@1623z]  
box Wmax=215@51.93,11.04,1417m



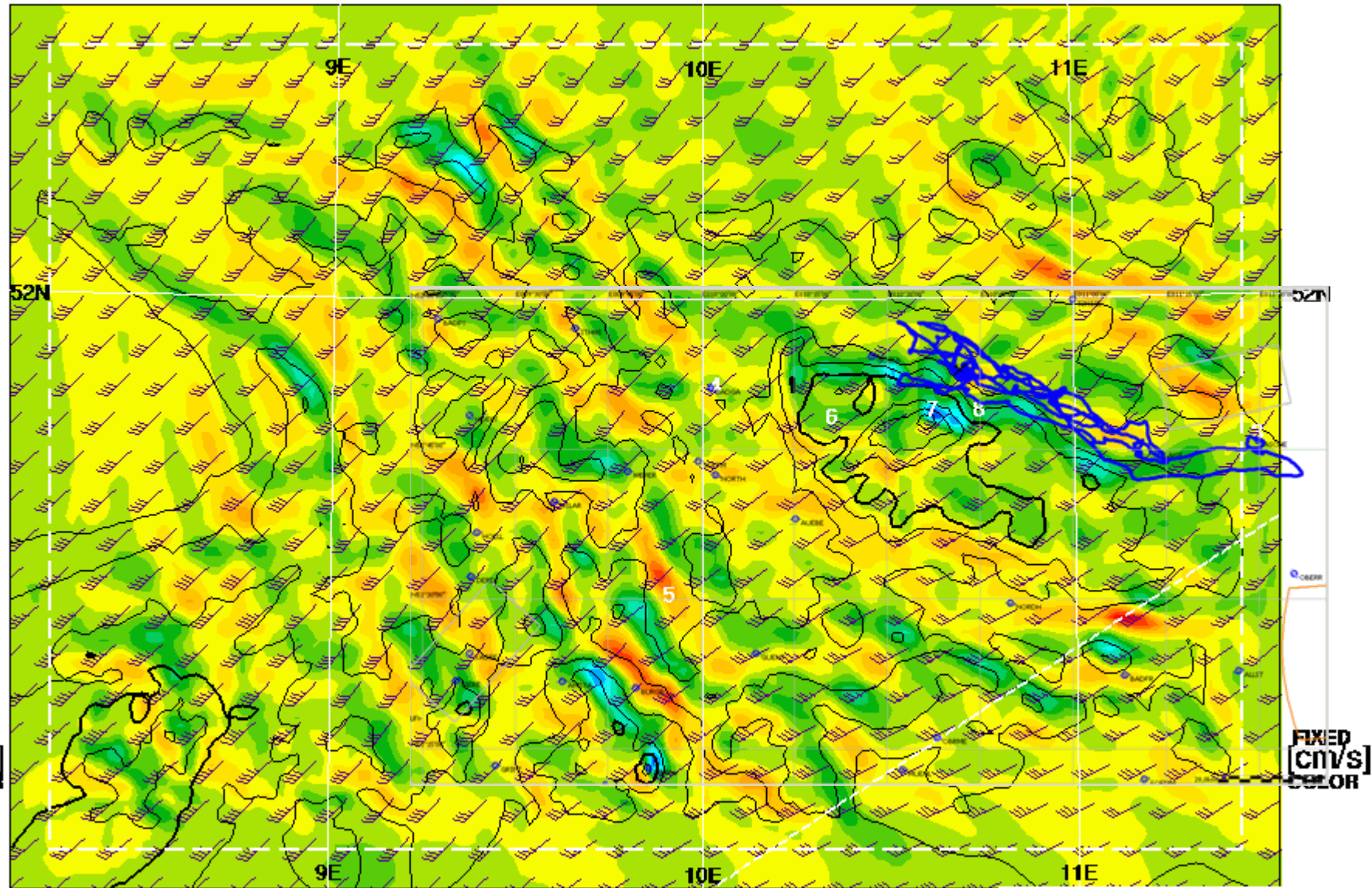
Terrain contours: 125 m





# Vertical Velocity & Wind [kt] at 850mb

Valid 1200 CET (1100Z) SAT 14 Nov 2009 [29hrFcst@1646z]  
box Wmax=185@51.46,11.13,14.45m

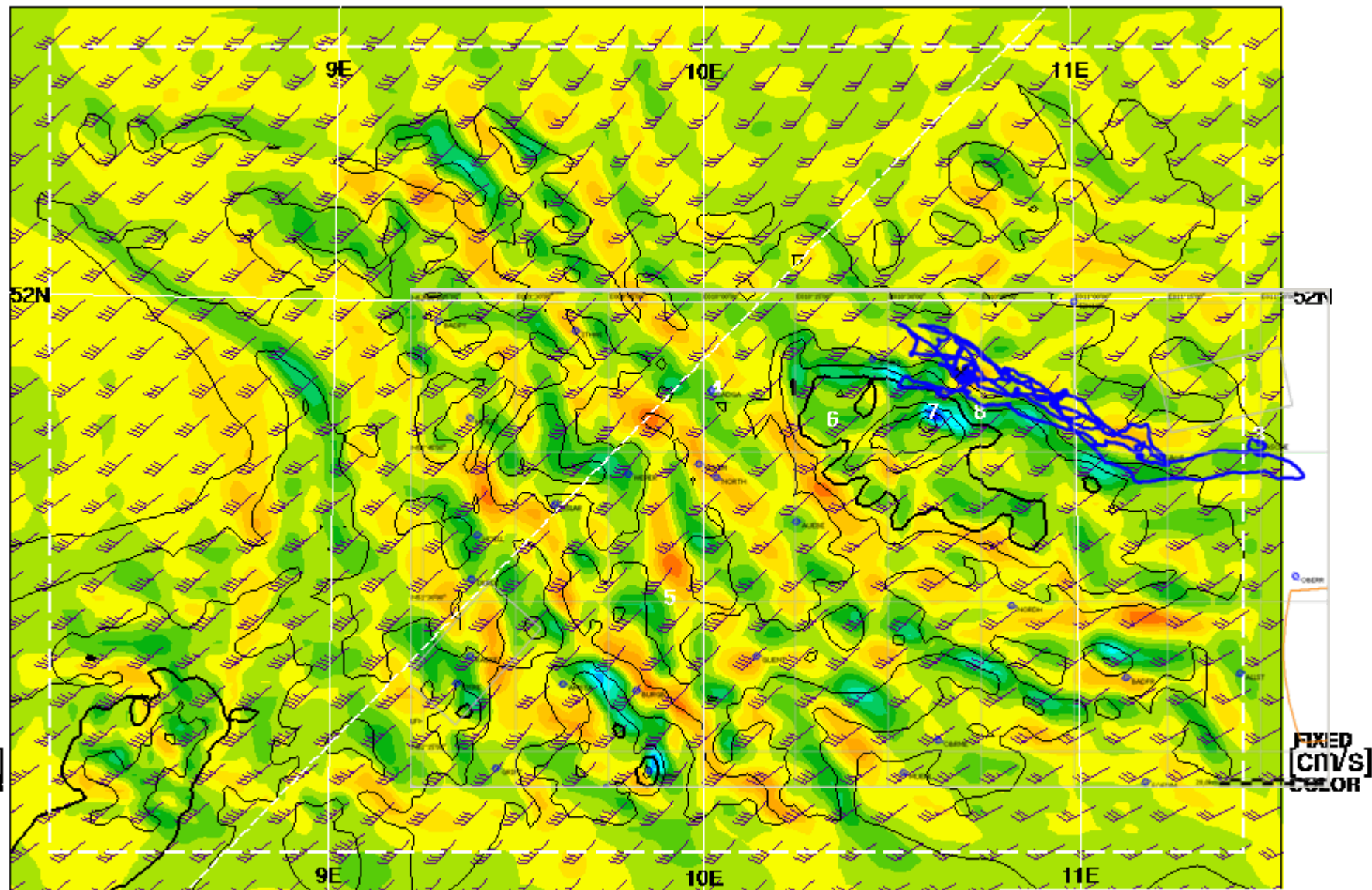


Terrain contours: 125 m



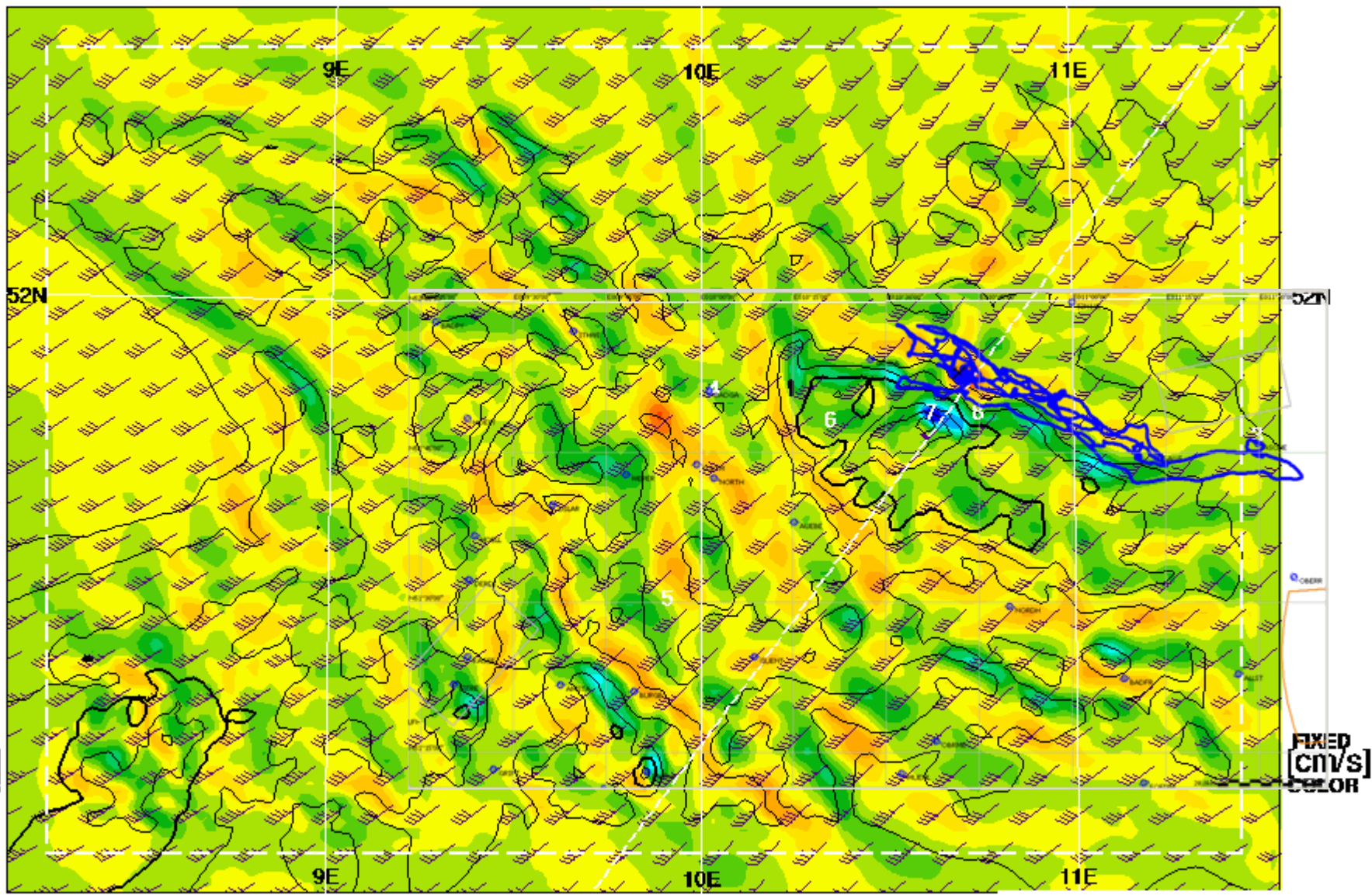
# Vertical Velocity & Wind [kt] at 850mb

Valid 1300 CET (1200Z) SAT 14 Nov 2009 [30hrFcst@1708z]  
box Wmax=126@51.80,9.84,1393m



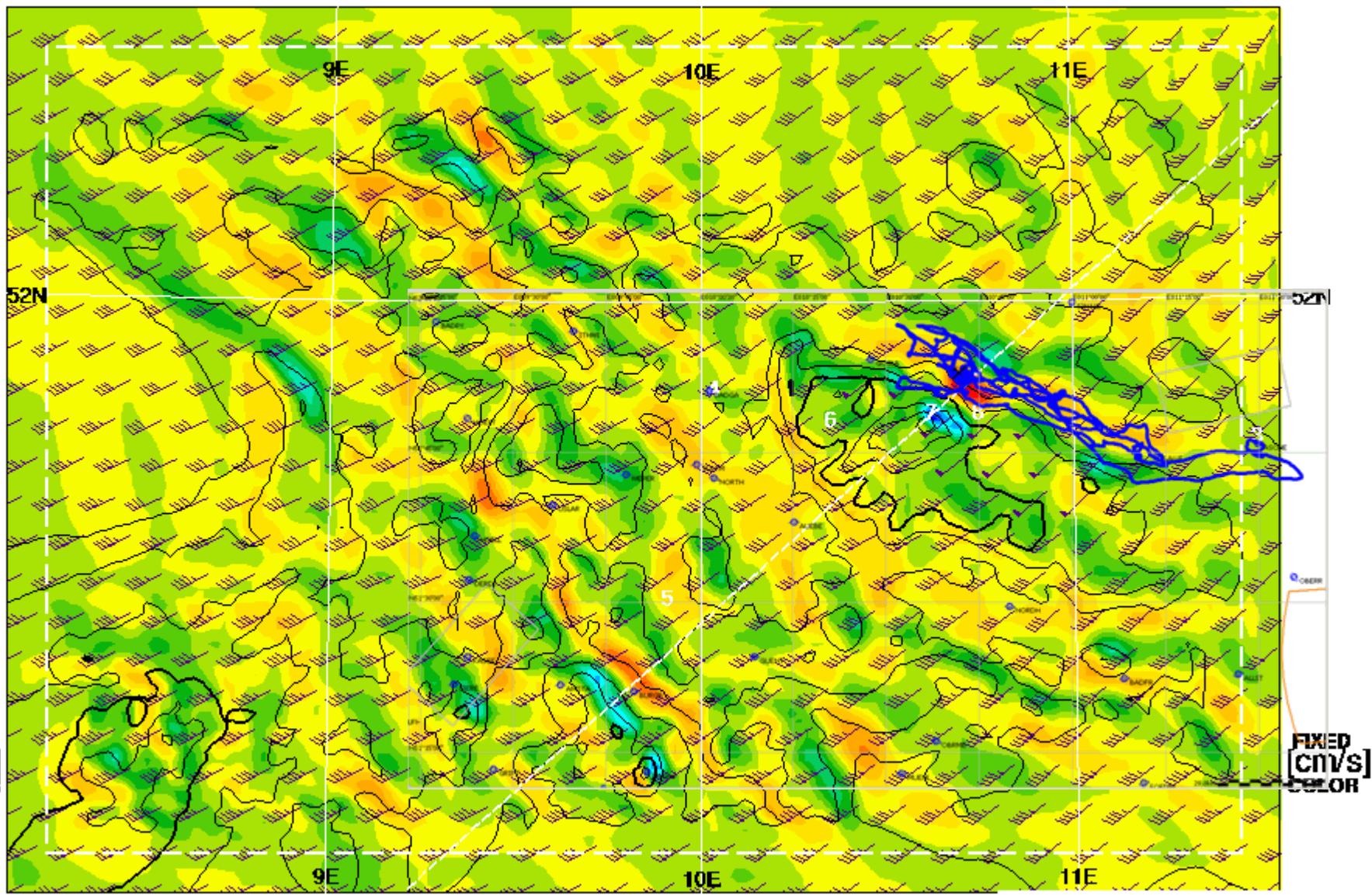
# Vertical Velocity & Wind [kt] at 850mb

Valid 1400 CET (1300Z) SAT 14 Nov 2009 [31hrFcst@1731z]  
box Wmax=155@51.87,10.72,1503m



# Vertical Velocity & Wind [kt] at 850mb

Valid 1500 CET (1400Z) SAT 14 Nov 2009 [32hrFcst@1755z]  
box Wmax=203 @ 51.85, 10.70, 15.44m

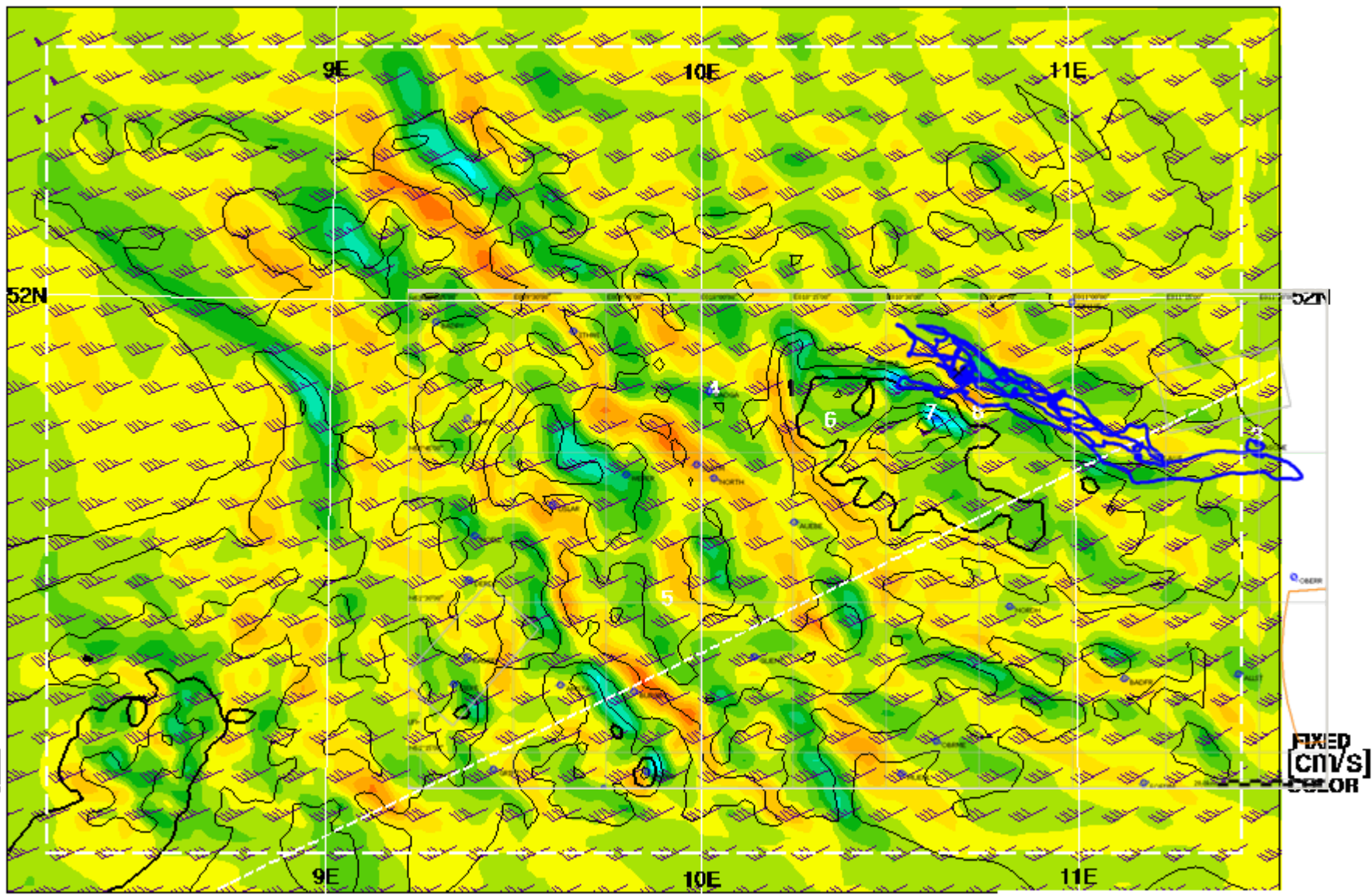


Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 850mb

Valid 1600 CET (1500Z) SAT 14 Nov 2009 [33hrFcst@1819z]  
box Wmax=136@51.36,9.84,1541m



Terrain contours: 125 m

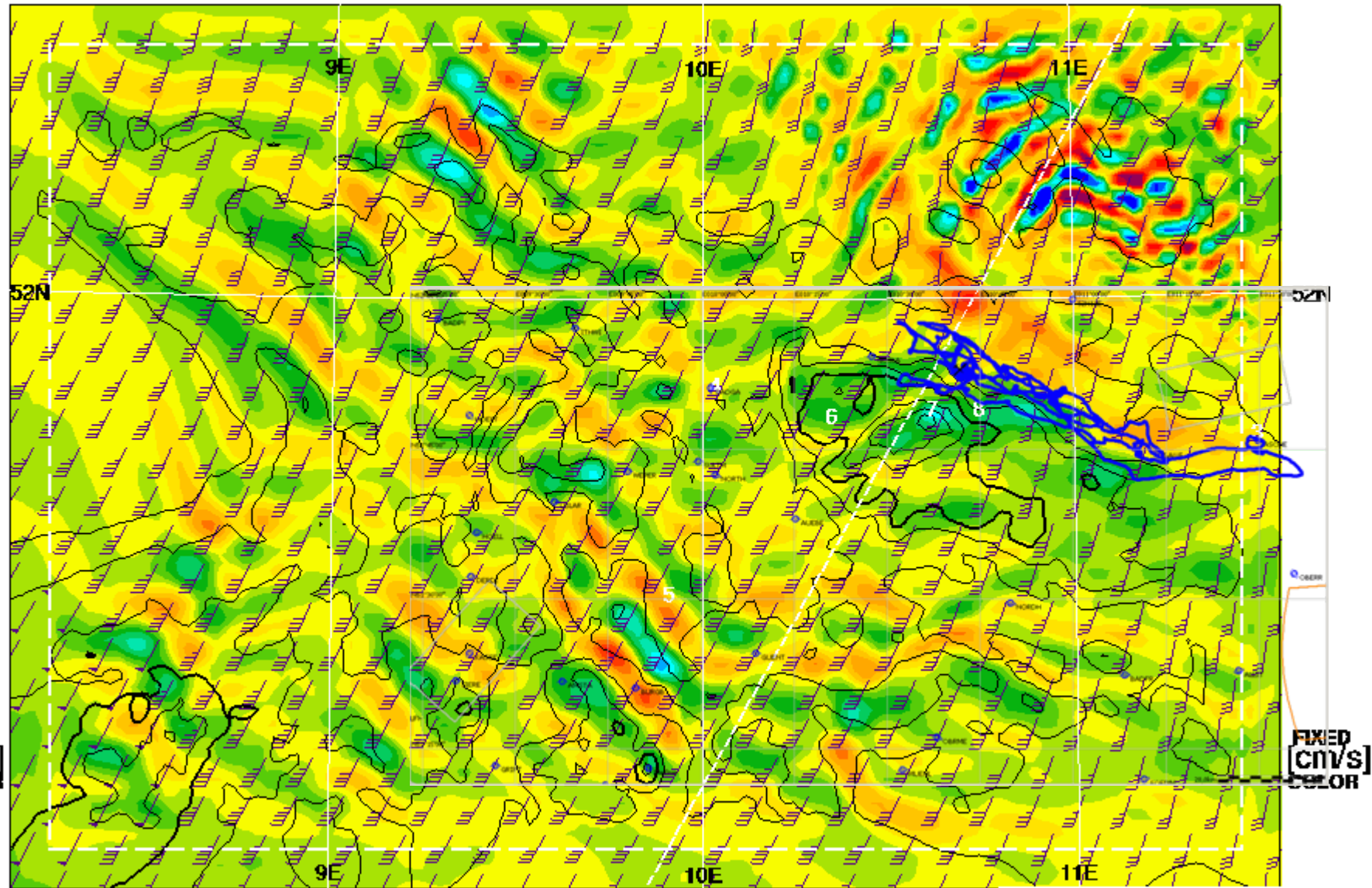


RASP  
14.11.2009  
700 mbar  
3000 m



# Vertical Velocity & Wind [kt] at 700mb

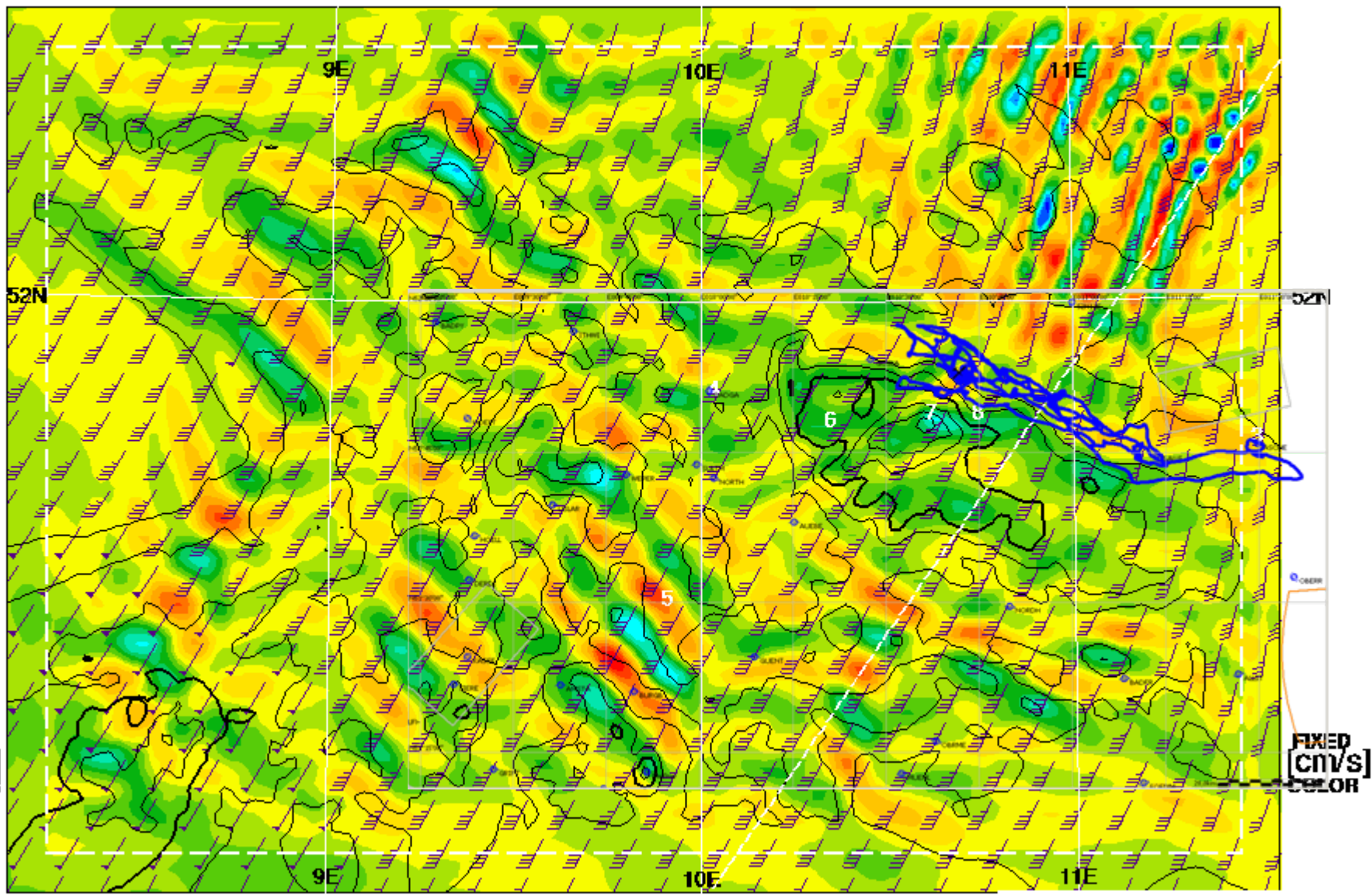
Valid 1000 CET (0900Z) SAT 14 Nov 2009 [27hrFcst@1600z]  
box Wmax=257@52.00,10.73,1518m



Terrain contours: 125 m

# Vertical Velocity & Wind [kt] at 700mb

Valid 1100 CET (1000Z) SAT 14 Nov 2009 [28hrFcst@1623z]  
box Wmax=215@51.93,11.04,14.17m



FIXED  
[cm/s]  
COLOR

FIXED  
[cm/s]  
COLOR

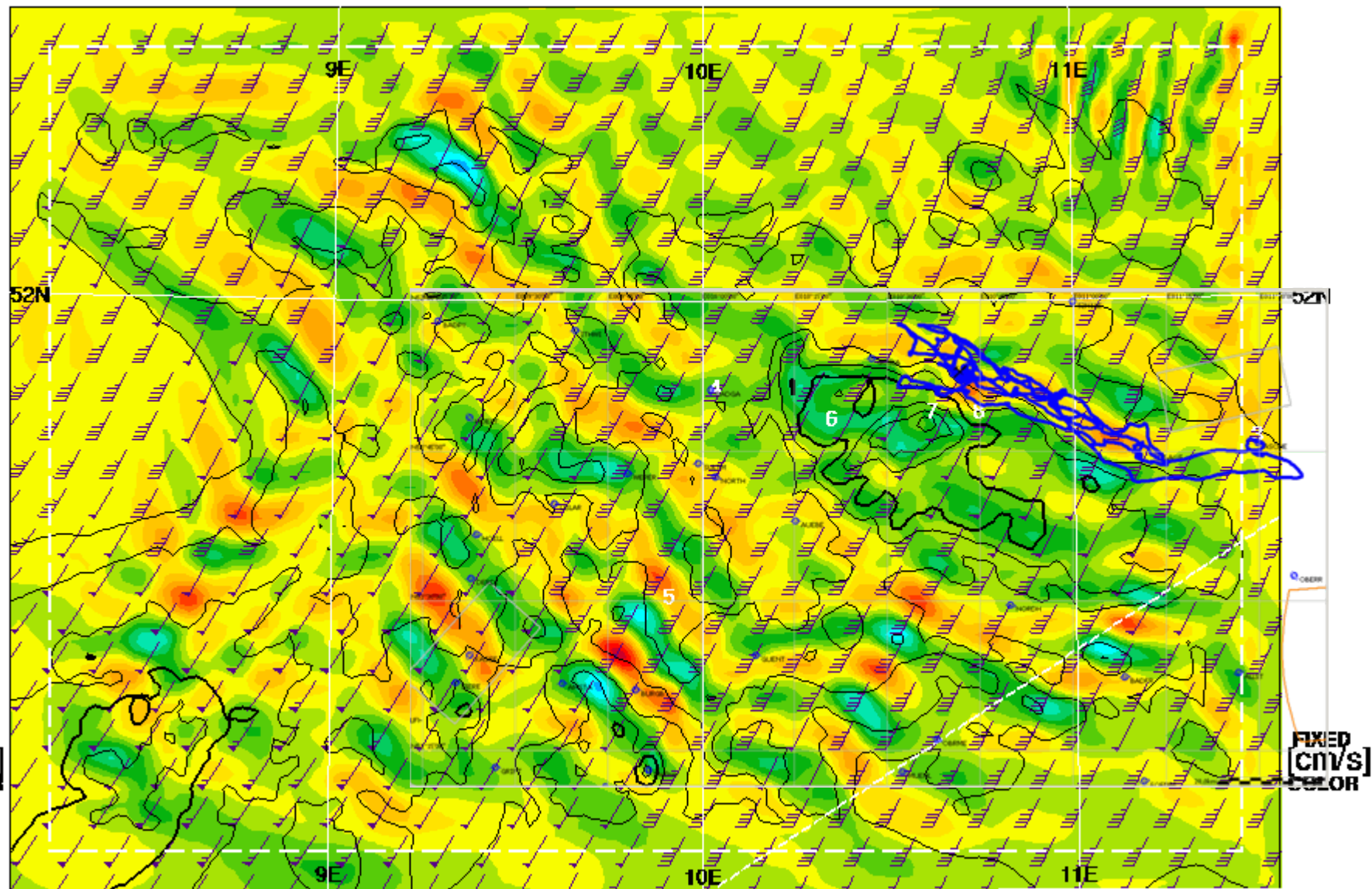
Terrain contours: 125 m





# Vertical Velocity & Wind [kt] at 700mb

Valid 1200 CET (1100Z) SAT 14 Nov 2009 [29hrFcst@1646z]  
box Wmax=185@51.46,11.13,1445m

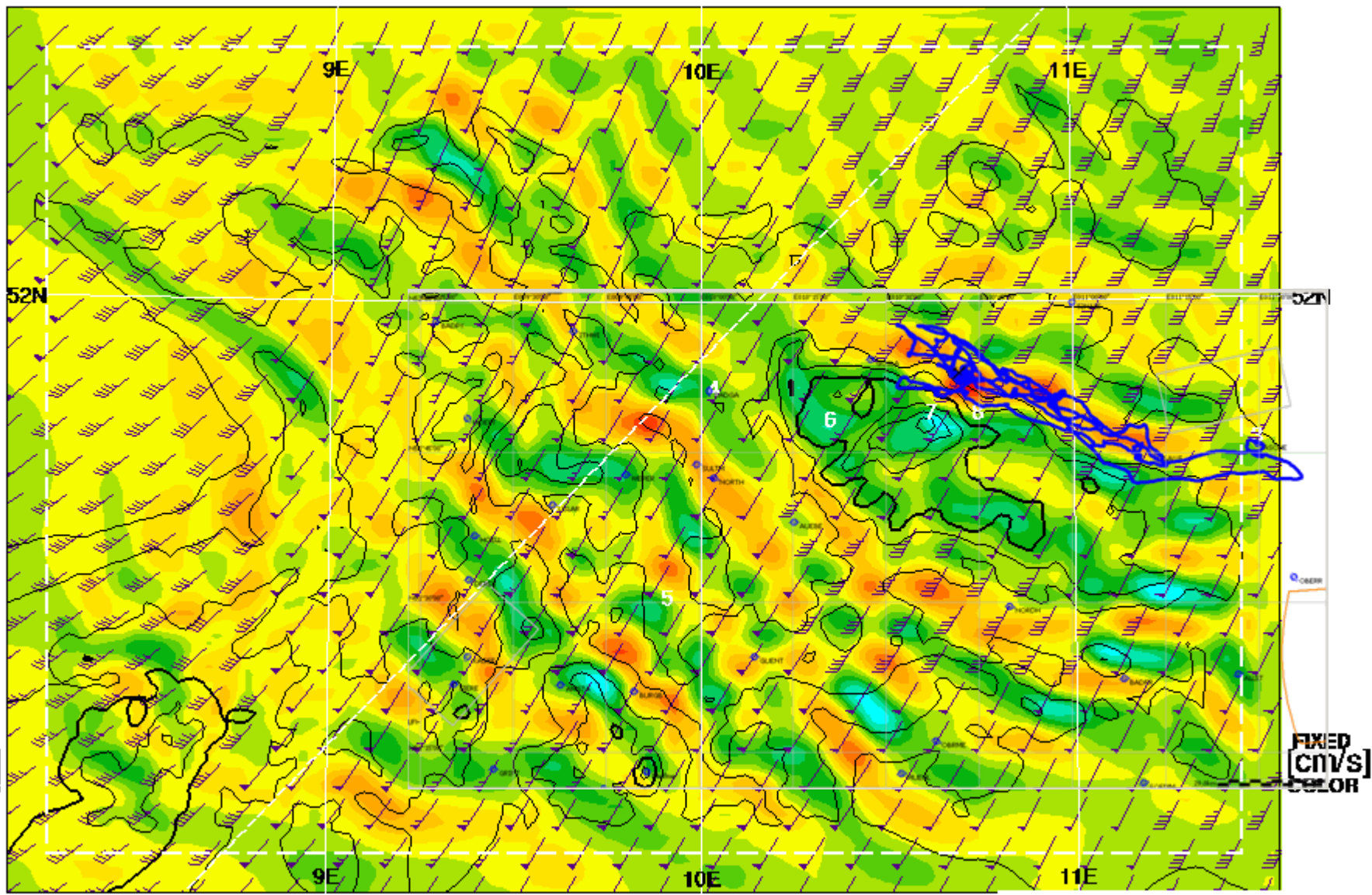


Terrain contours: 125 m



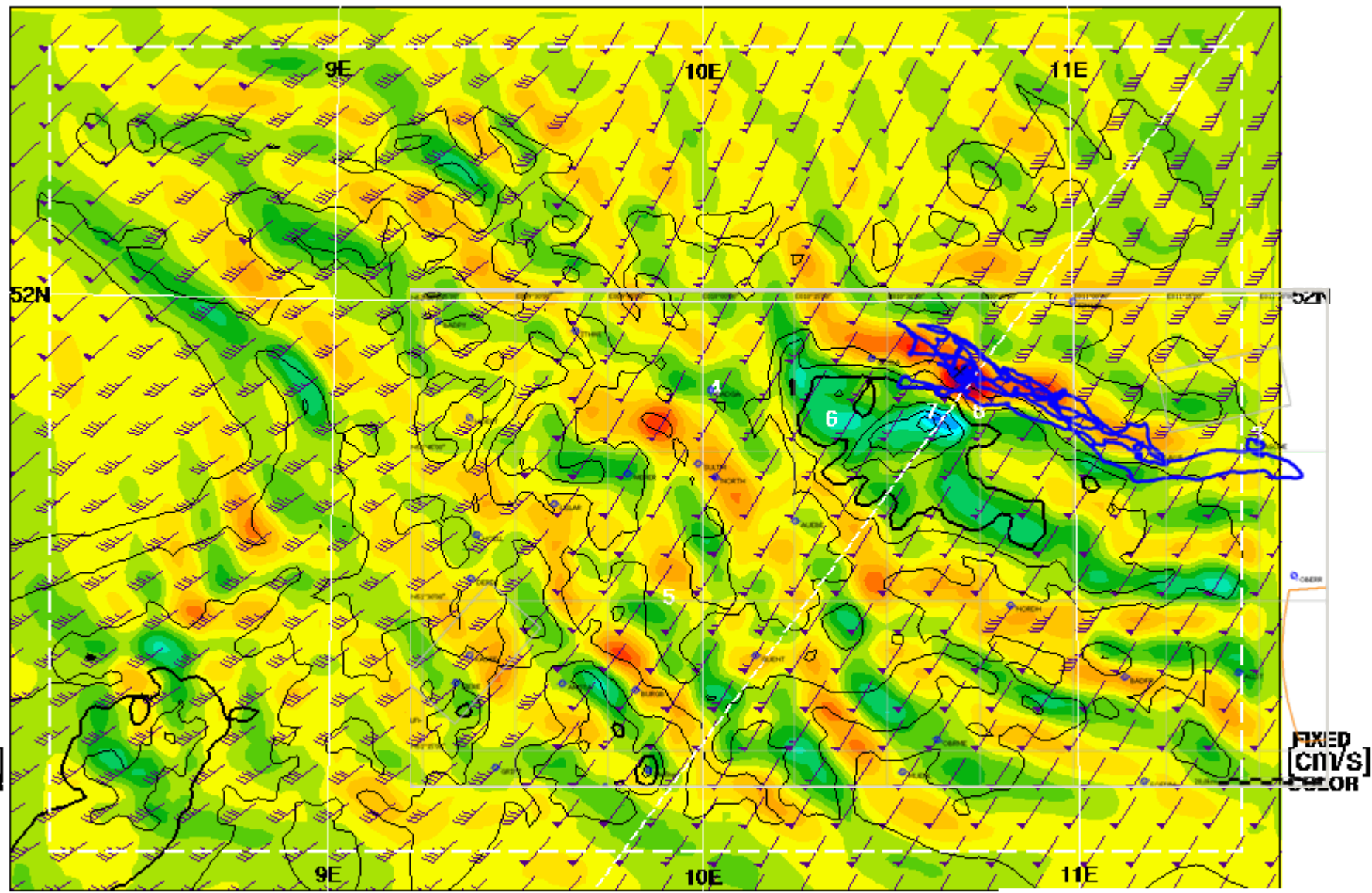
# Vertical Velocity & Wind [kt] at 700mb

Valid 1300 CET (1200Z) SAT 14 Nov 2009 [30hrFcst@1708z]  
box Wmax=126@51.80,9.84,1393m



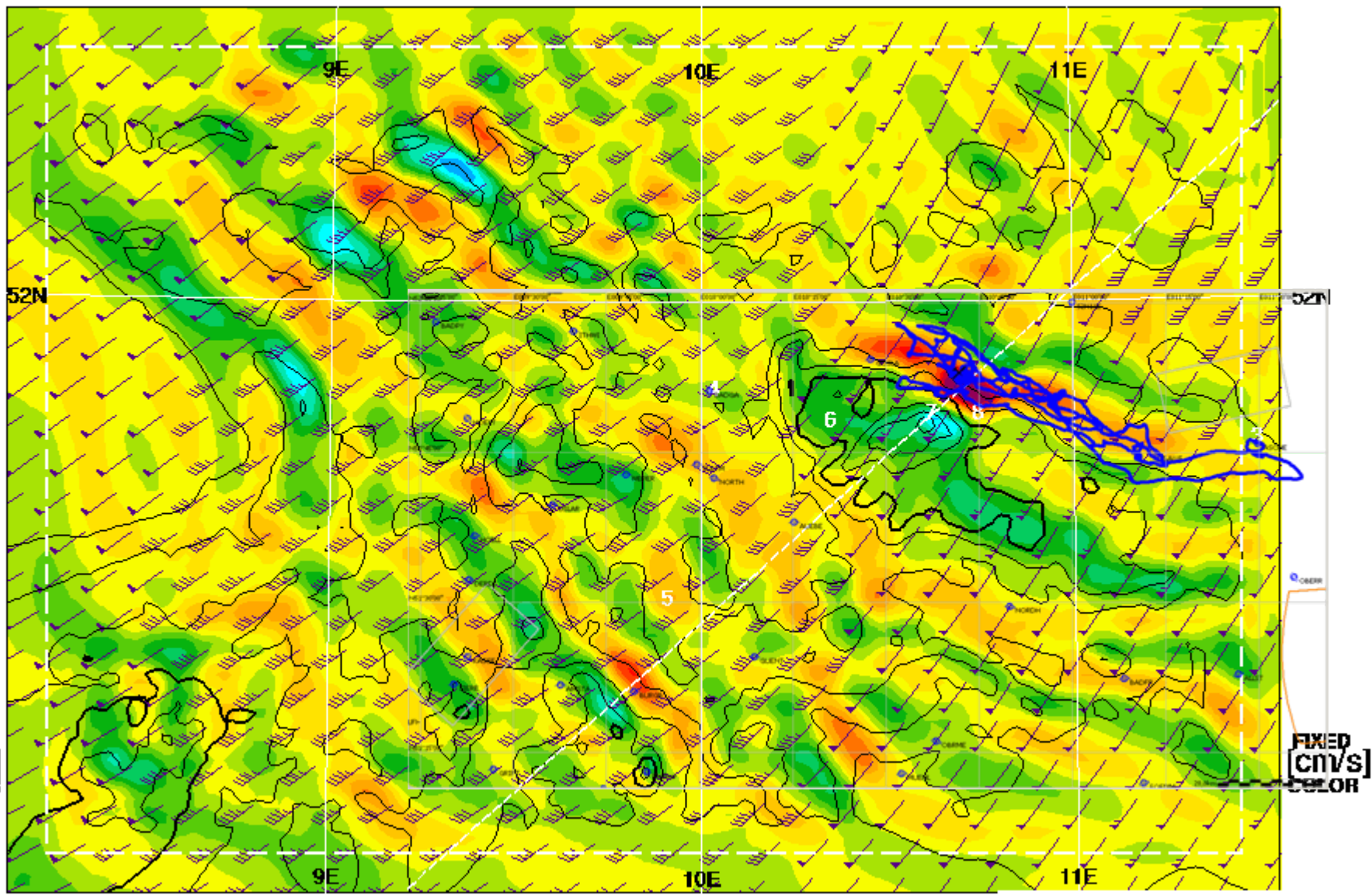
# Vertical Velocity & Wind [kt] at 700mb

Valid 1400 CET (1300Z) SAT 14 Nov 2009 [31hrFcst@1731z]  
box Wmax=155@51.87,10.72,1503m



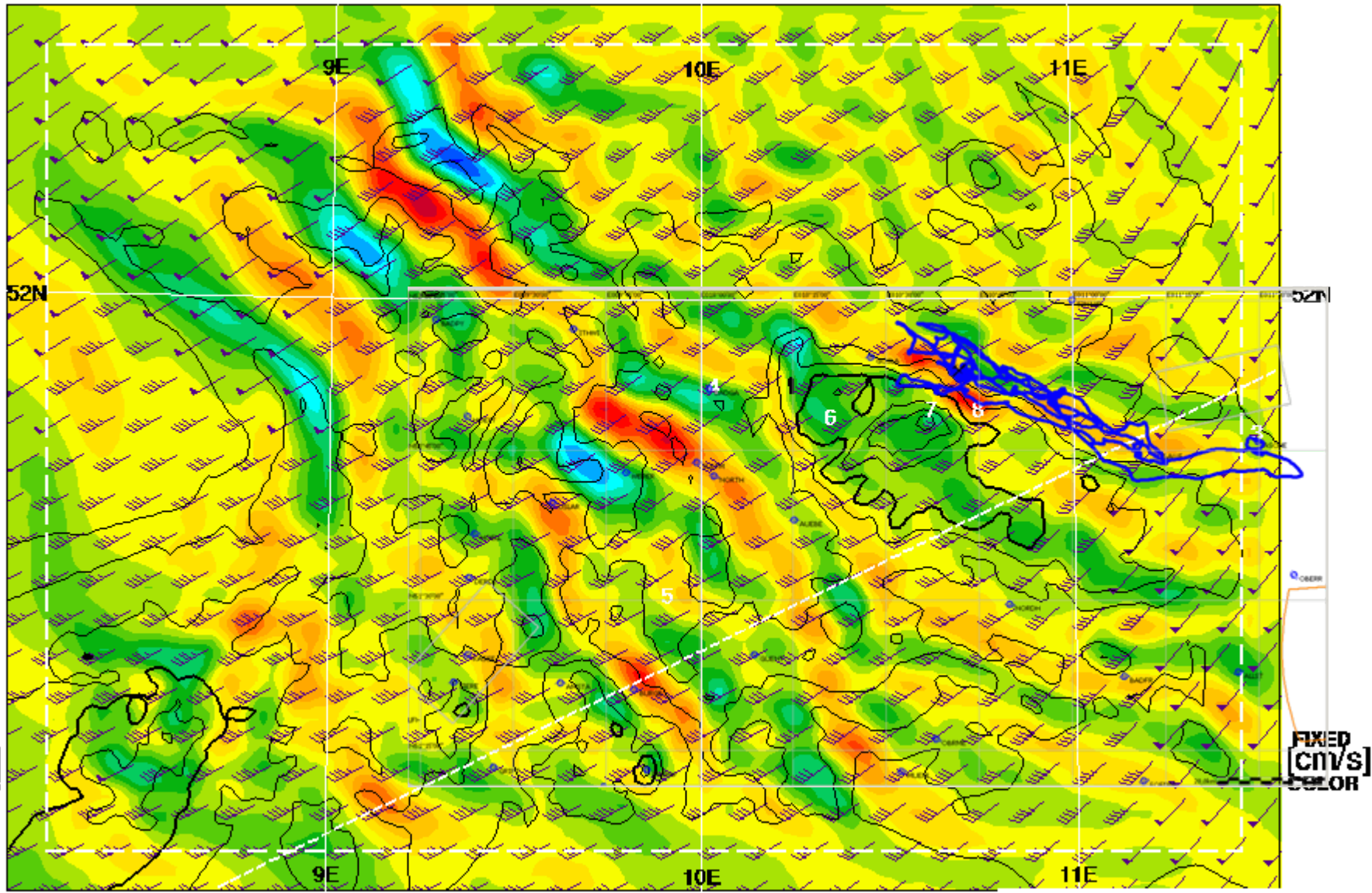
# Vertical Velocity & Wind [kt] at 700mb

Valid 1500 CET (1400Z) SAT 14 Nov 2009 [32hrFcst@1755z]  
box Wmax=203@51.85,10.70,1544m



# Vertical Velocity & Wind [kt] at 700mb

Valid 1600 CET (1500Z) SAT 14 Nov 2009 [33hrFcst@1819z]  
box Wmax=136@51.36,9.84,1541m



Terrain contours: 125 m

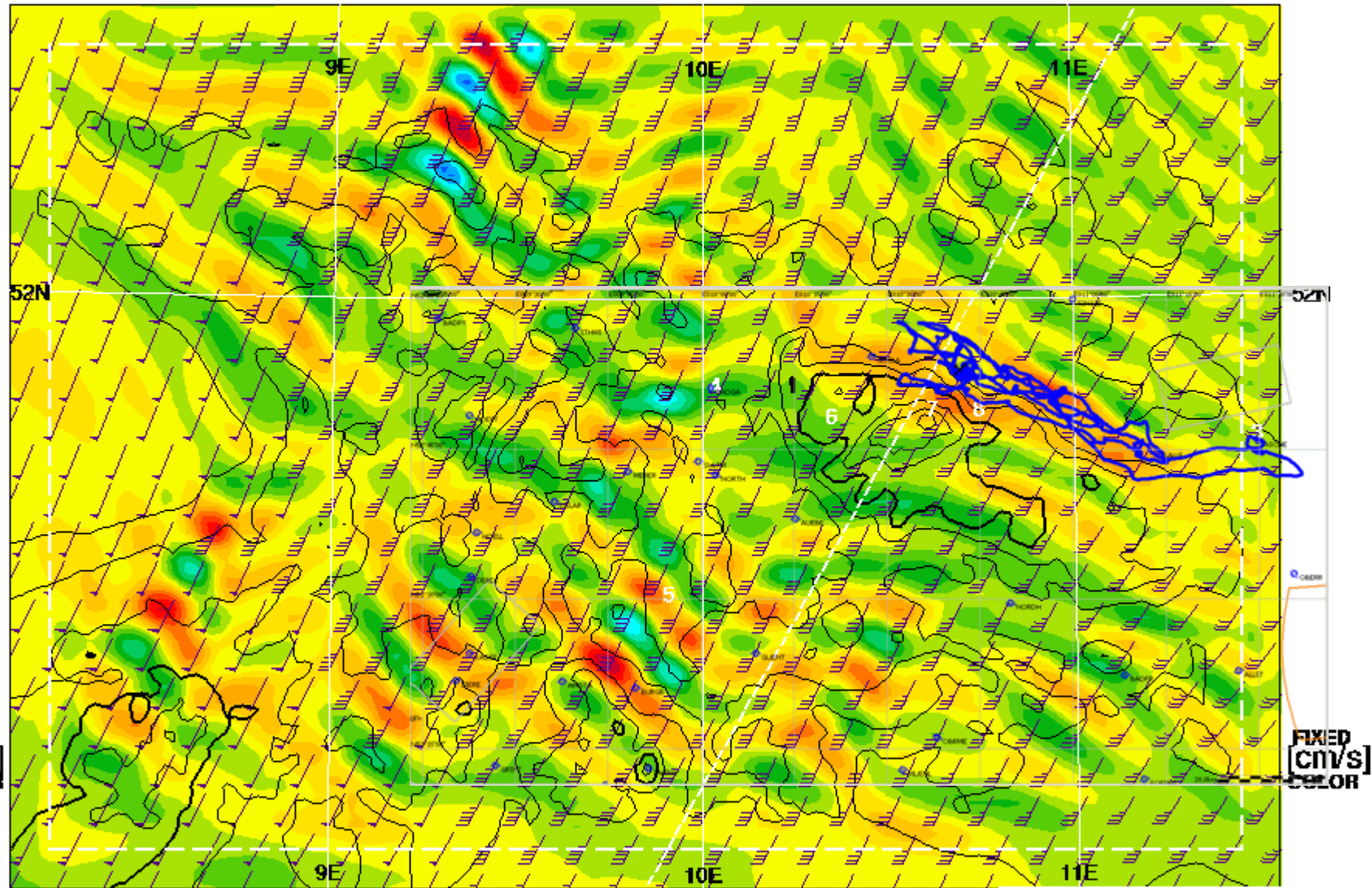


RASP  
14.11.2009  
500 mbar  
5500 m



# Vertical Velocity & Wind [kt] at 500mb

Valid 1000 CET (0900Z) SAT 14 Nov 2009 [27hrFcst@1600z]  
box Wmax=257@52.00,10.73,1518m



FIXED  
[cm/s]  
COLOR

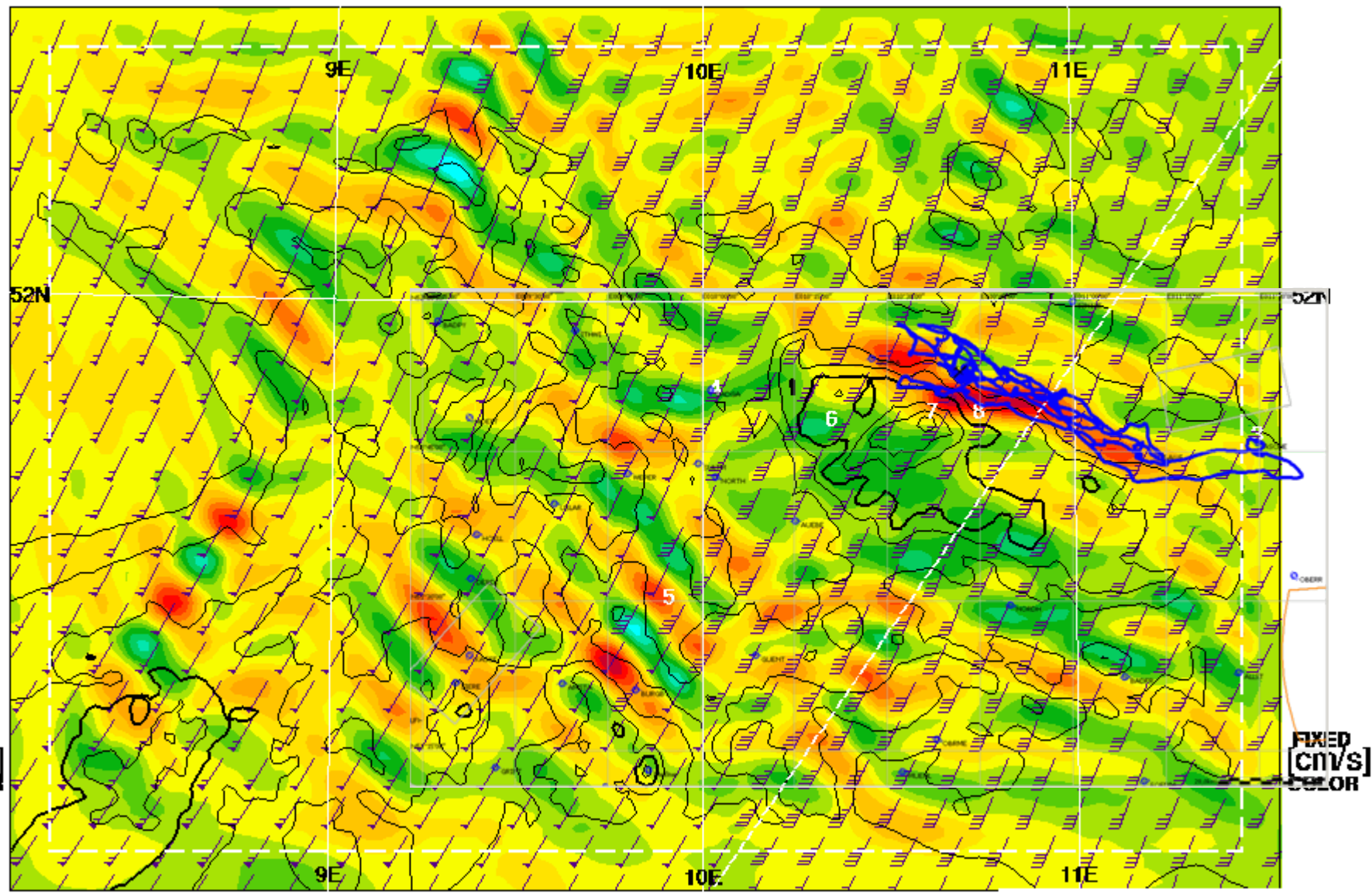
FIXED  
[cm/s]  
COLOR

Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 500mb

Valid 1100 CET (1000Z) SAT 14 Nov 2009 [28hrFcst@1623z]  
box Wmax=215@51.93,11.04,14.17m



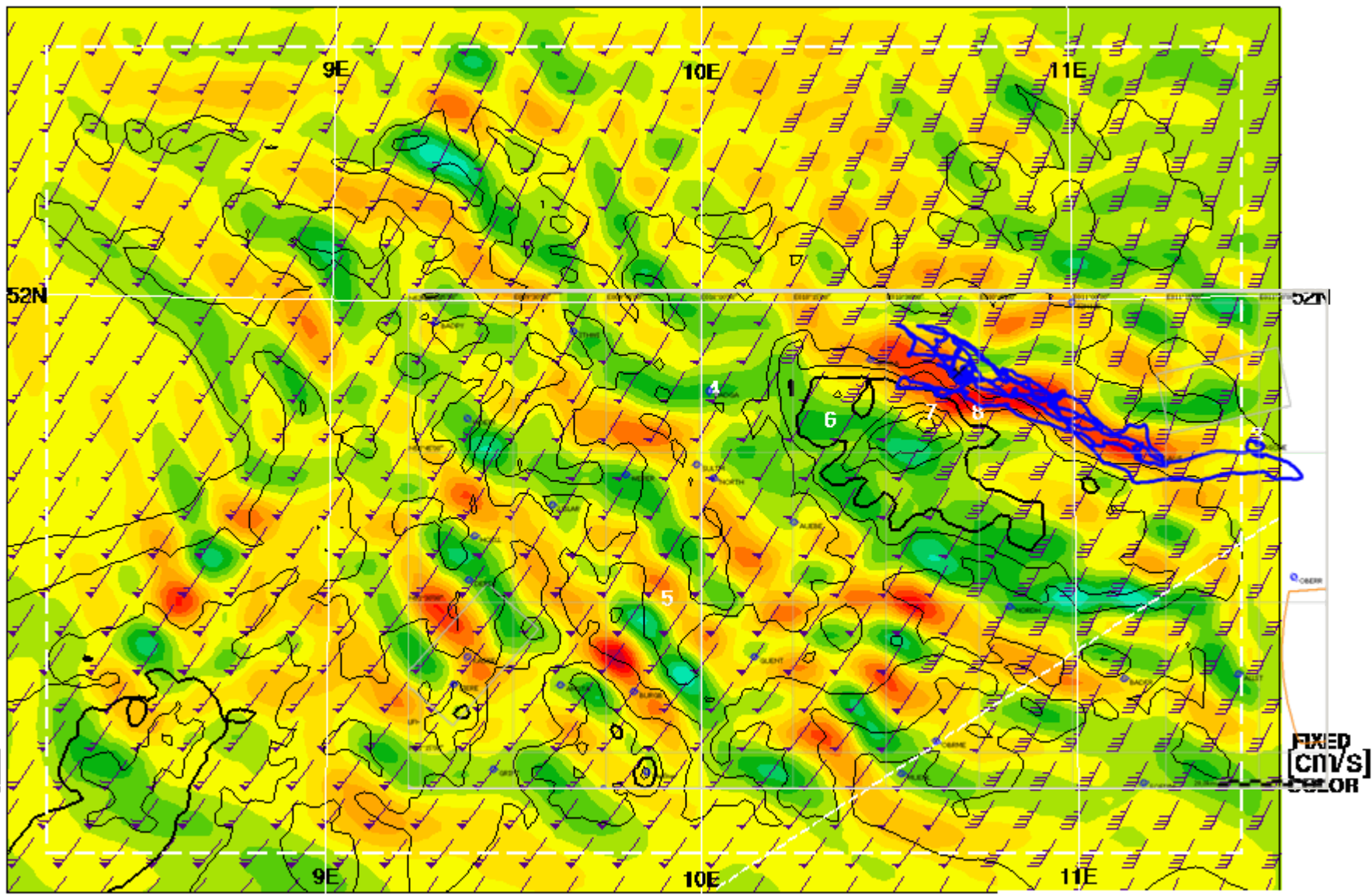
Terrain contours: 125 m





# Vertical Velocity & Wind [kt] at 500mb

Valid 1200 CET (1100Z) SAT 14 Nov 2009 [29hrFcst@1646z]  
boxWmax=185@51.46,11.13,1445m

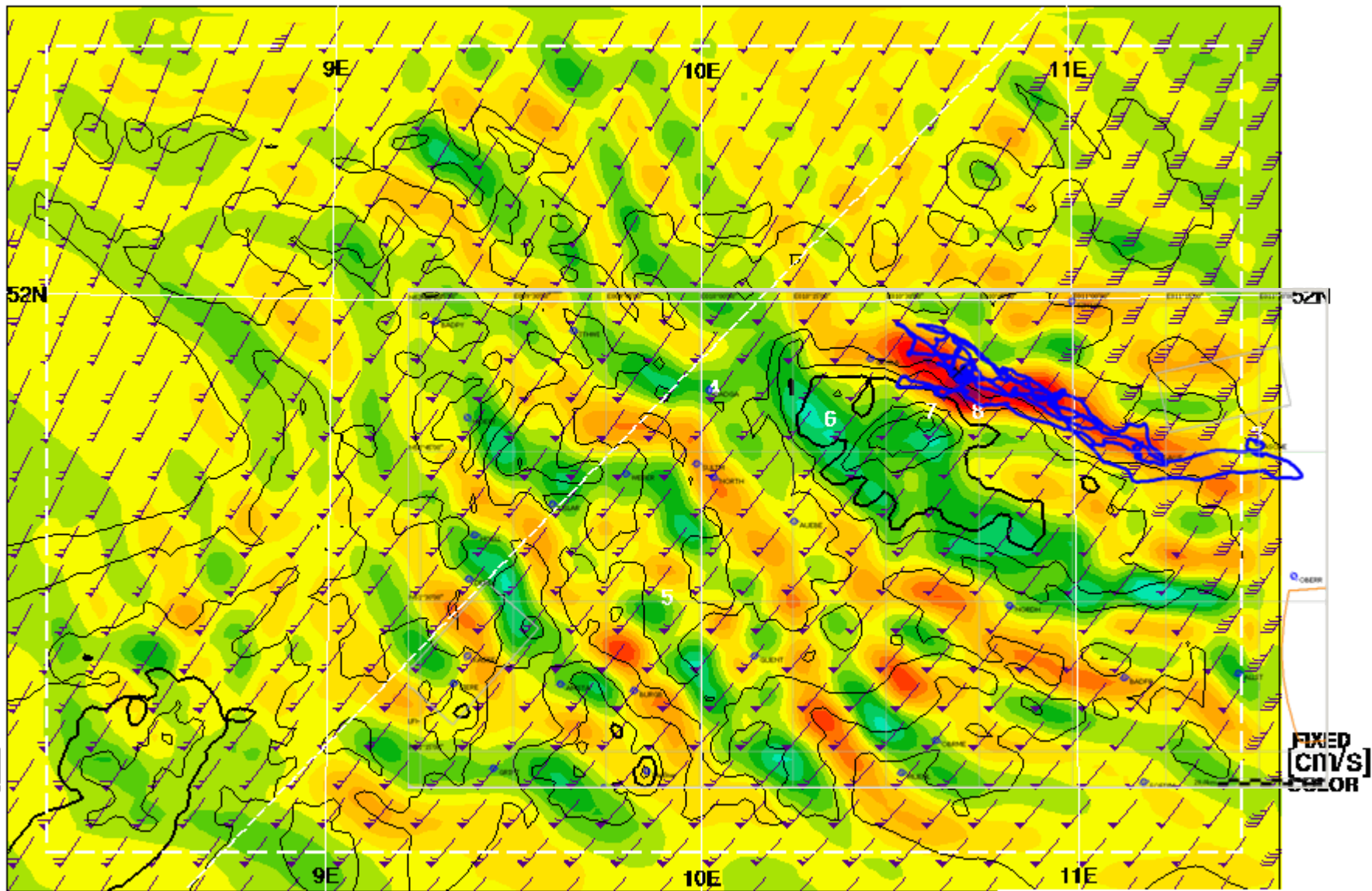


Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 500mb

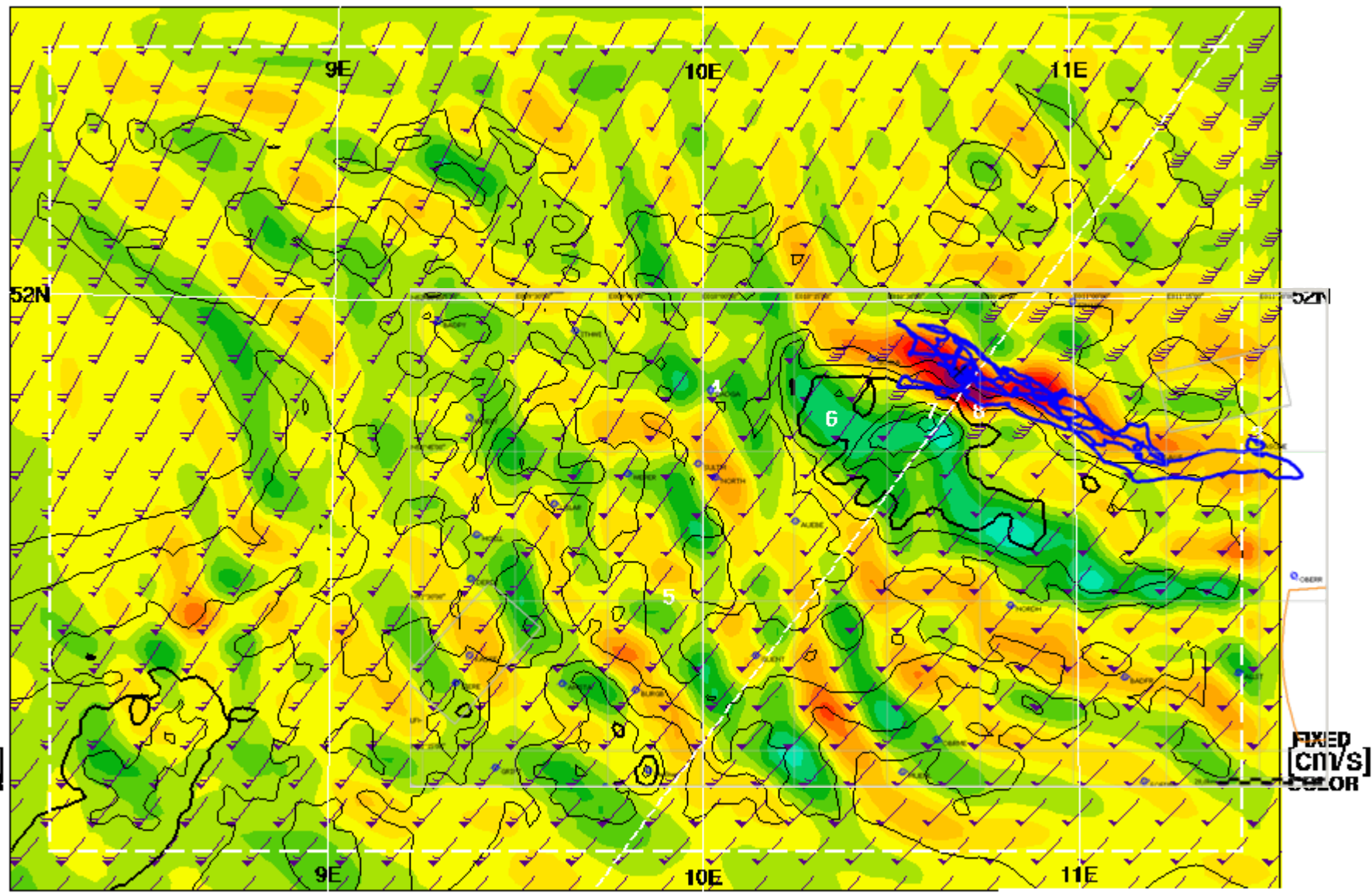
Valid 1300 CET (1200Z) SAT 14 Nov 2009 [30hrFcst@1708z]  
box Wmax=126@51.80,9.84,1393m



Terrain contours: 125 m

# Vertical Velocity & Wind [kt] at 500mb

Valid 1400 CET (1300Z) SAT 14 Nov 2009 [31hrFcst@1731z]  
box Wmax=155@51.87,10.72,1503m

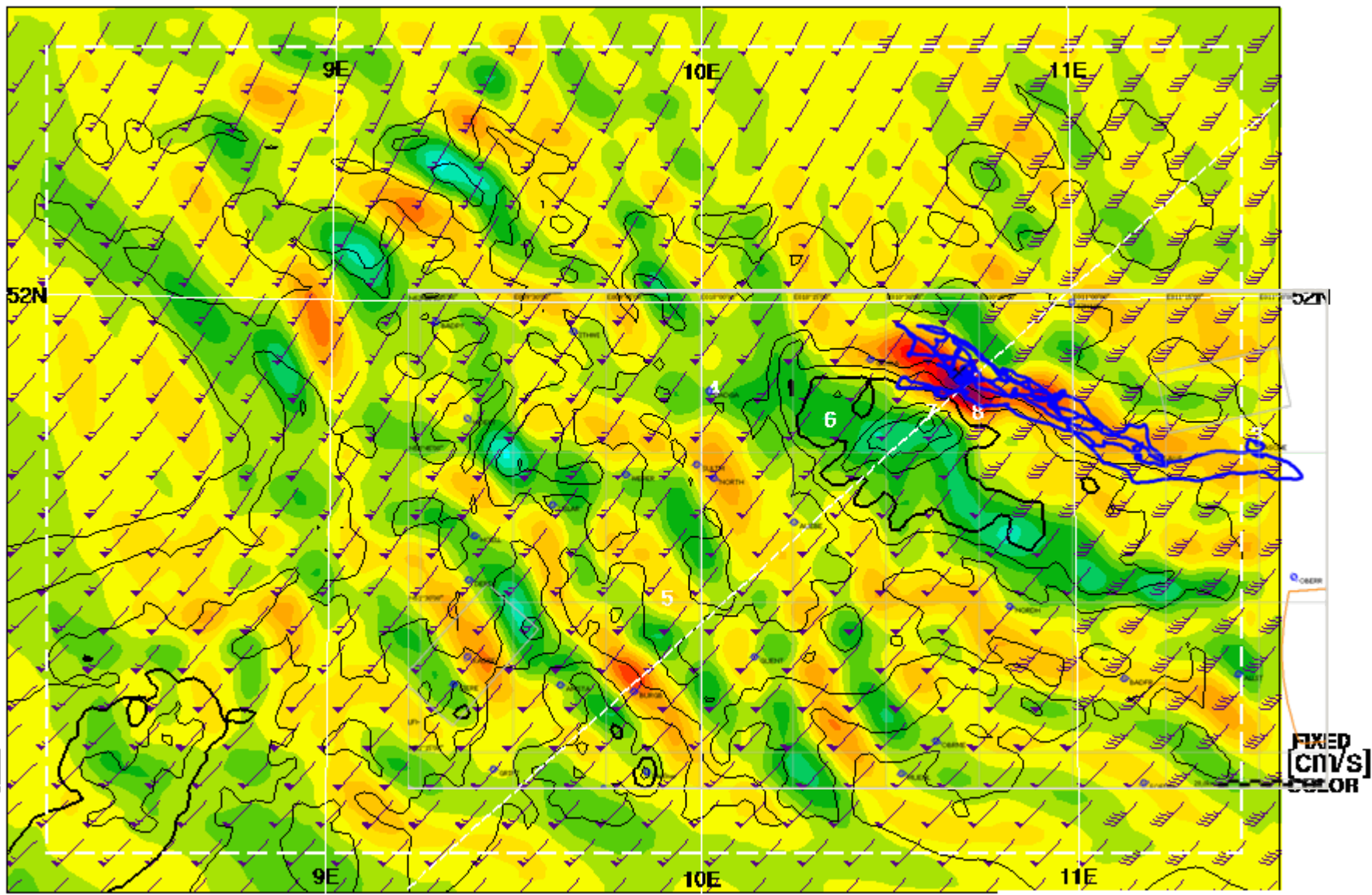


Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 500mb

Valid 1500 CET (1400Z) SAT 14 Nov 2009 [32hrFcst@1755z]  
box Wmax=203@51.85,10.70,1544m



FIXED  
[cm/s]  
COLOR

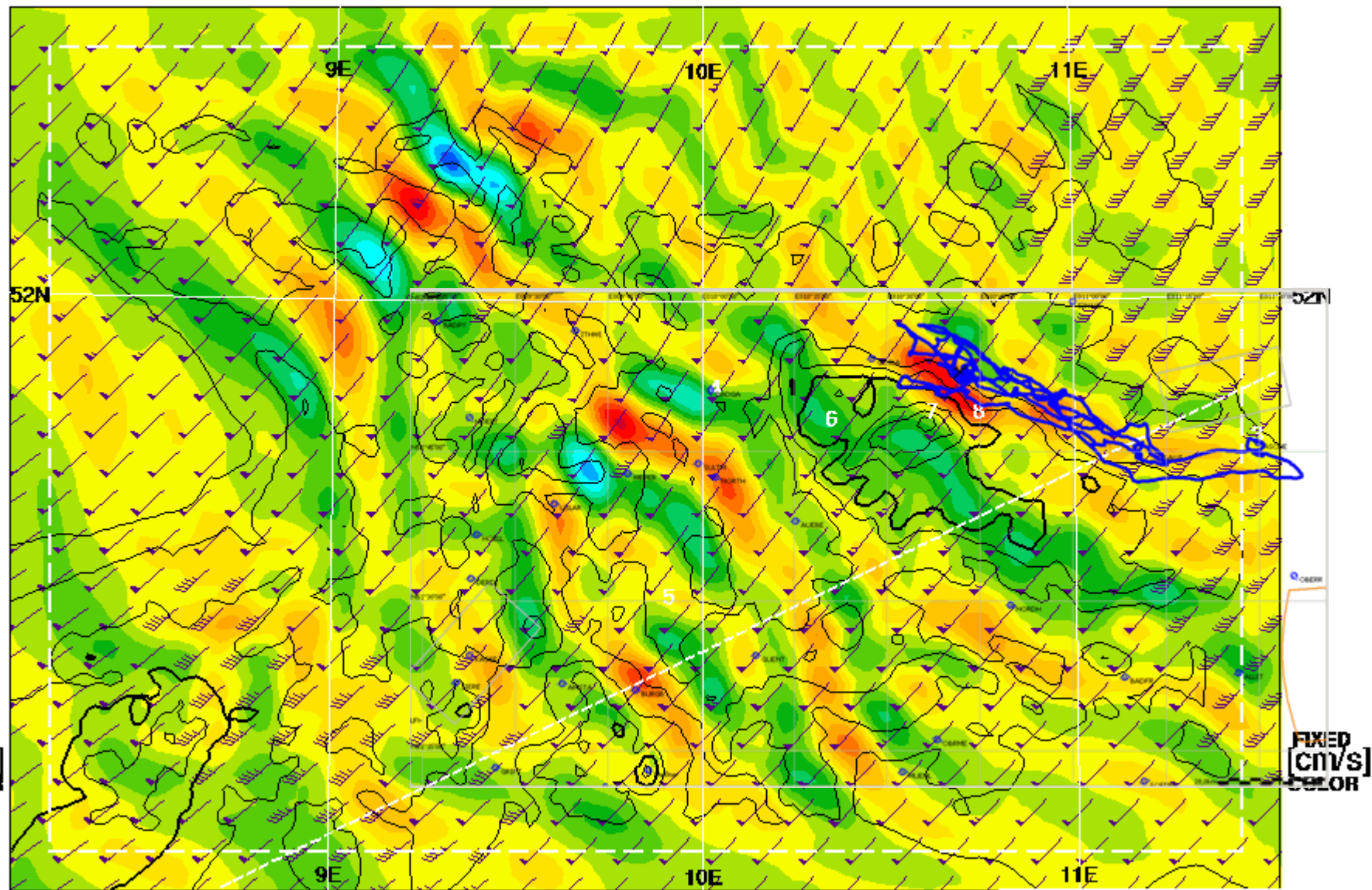
FIXED  
[cm/s]  
COLOR



Terrain contours: 125 m

# Vertical Velocity & Wind [kt] at 500mb

Valid 1600 CET (1500Z) SAT 14 Nov 2009 [33hrFcst@1819z]  
box Wmax=136@51.36,9.84,1541m



FIXED  
[cm/s]  
COLOR

FIXED  
[cm/s]  
COLOR

Terrain contours: 125 m



# RASP

14.11.2009

zeit- und höhenaufgelöst

0920 – 1030 UTC

1600 m – 2400 m

1030 – 1130 UTC

2200 m – 3800 m

1130 – 1230 UTC

3200 m – 4400 m

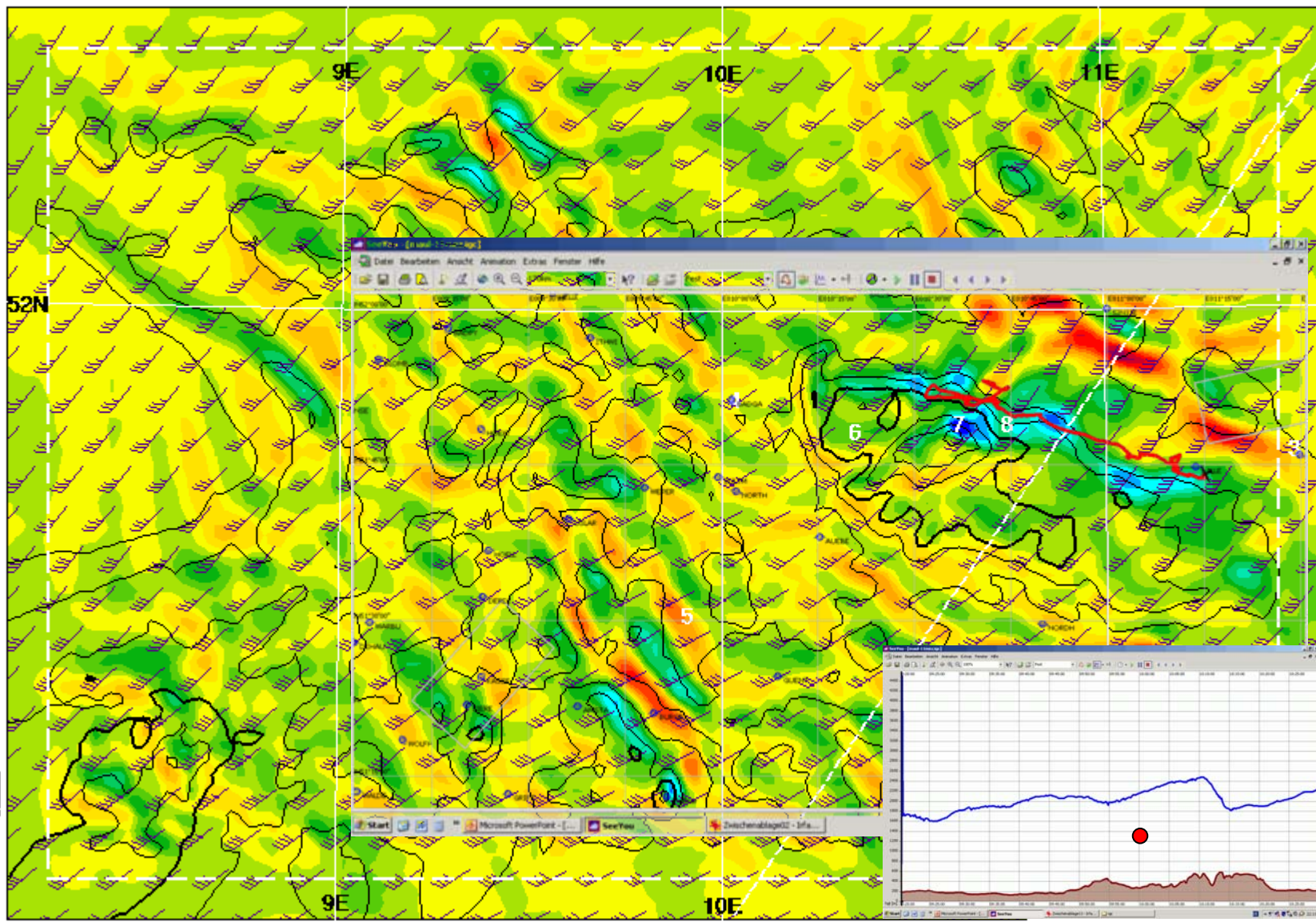
1230 – 1330 UTC

2600 m – 3400 m



# Vertical Velocity & Wind [kt] at 850mb

Valid 1100 CET (1000Z) SAT 14 Nov 2009 [28hrFcst@1623z]  
box Wmax=215@51.93,11.04,14.17m



FIXED  
[cm/s]  
COLOR

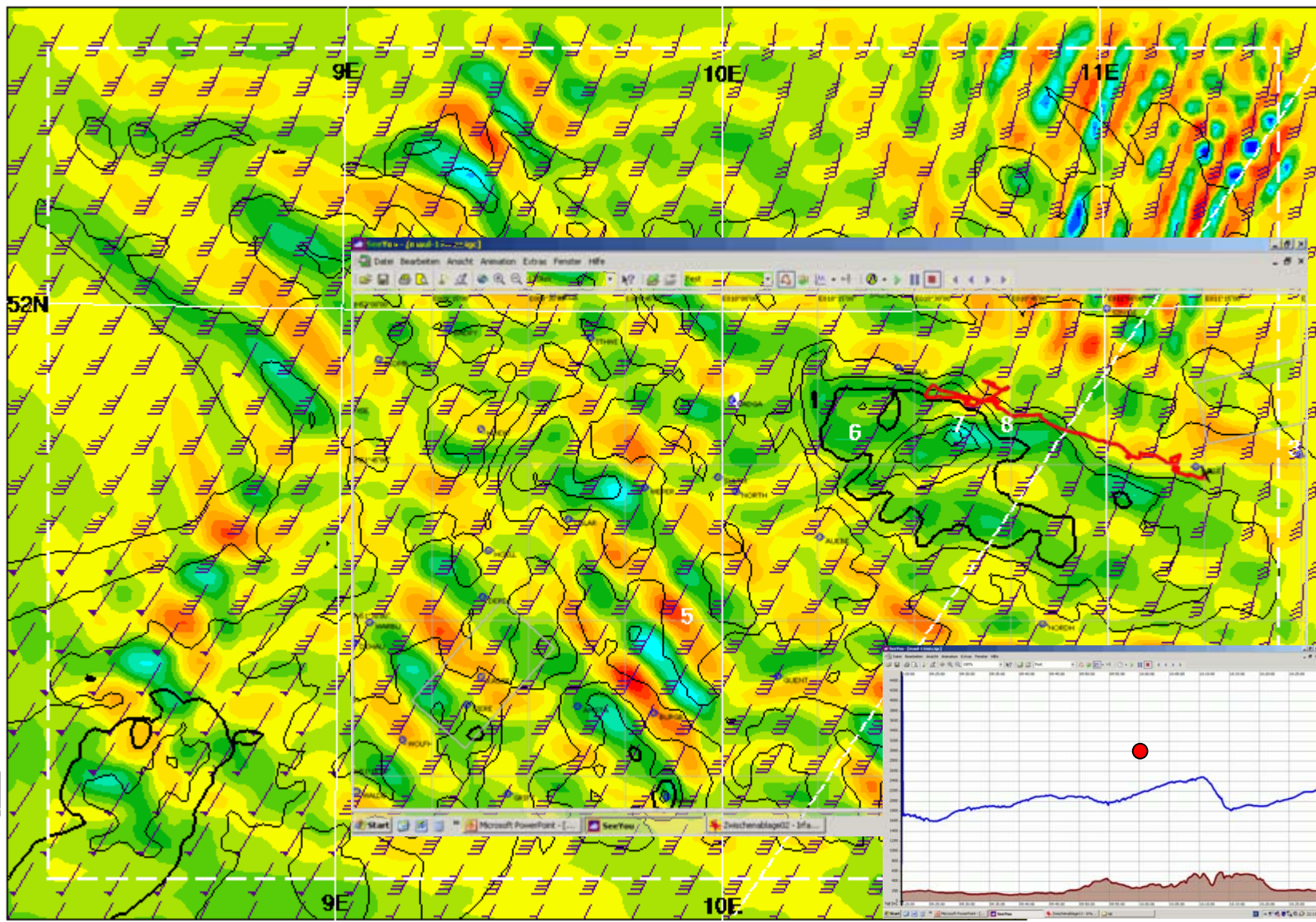
FIXED  
[cm/s]  
COLOR



Terrain contours: 125 m

# Vertical Velocity & Wind [kt] at 700mb

Valid 1100 CET (1000Z) SAT 14 Nov 2009 [28hrFcst@1623z]  
box Wmax=215@51.93,11.04,14.17m



FIXED  
[cm/s]  
COLOR

FIXED  
[cm/s]  
COLOR

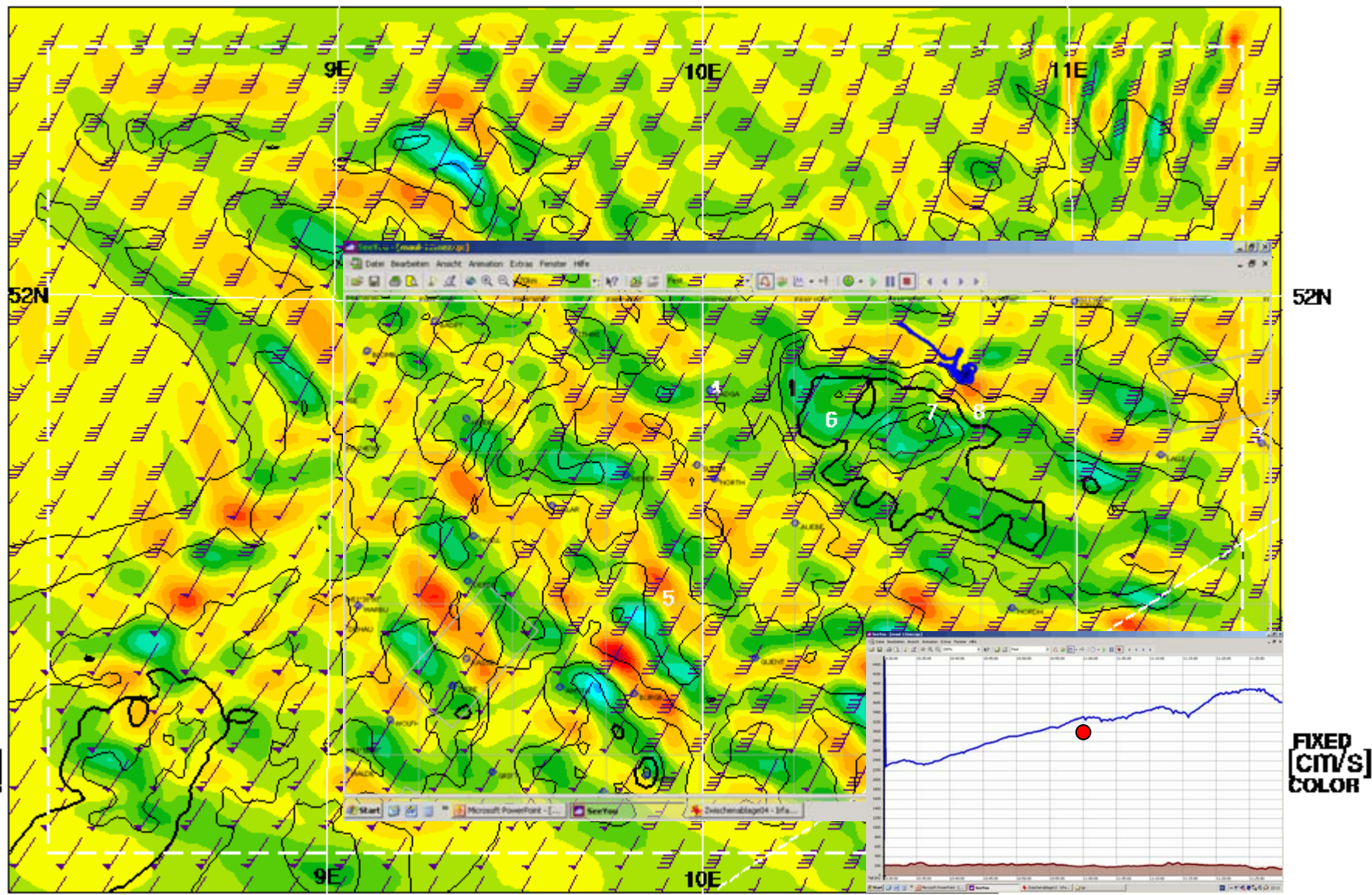


Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 700mb

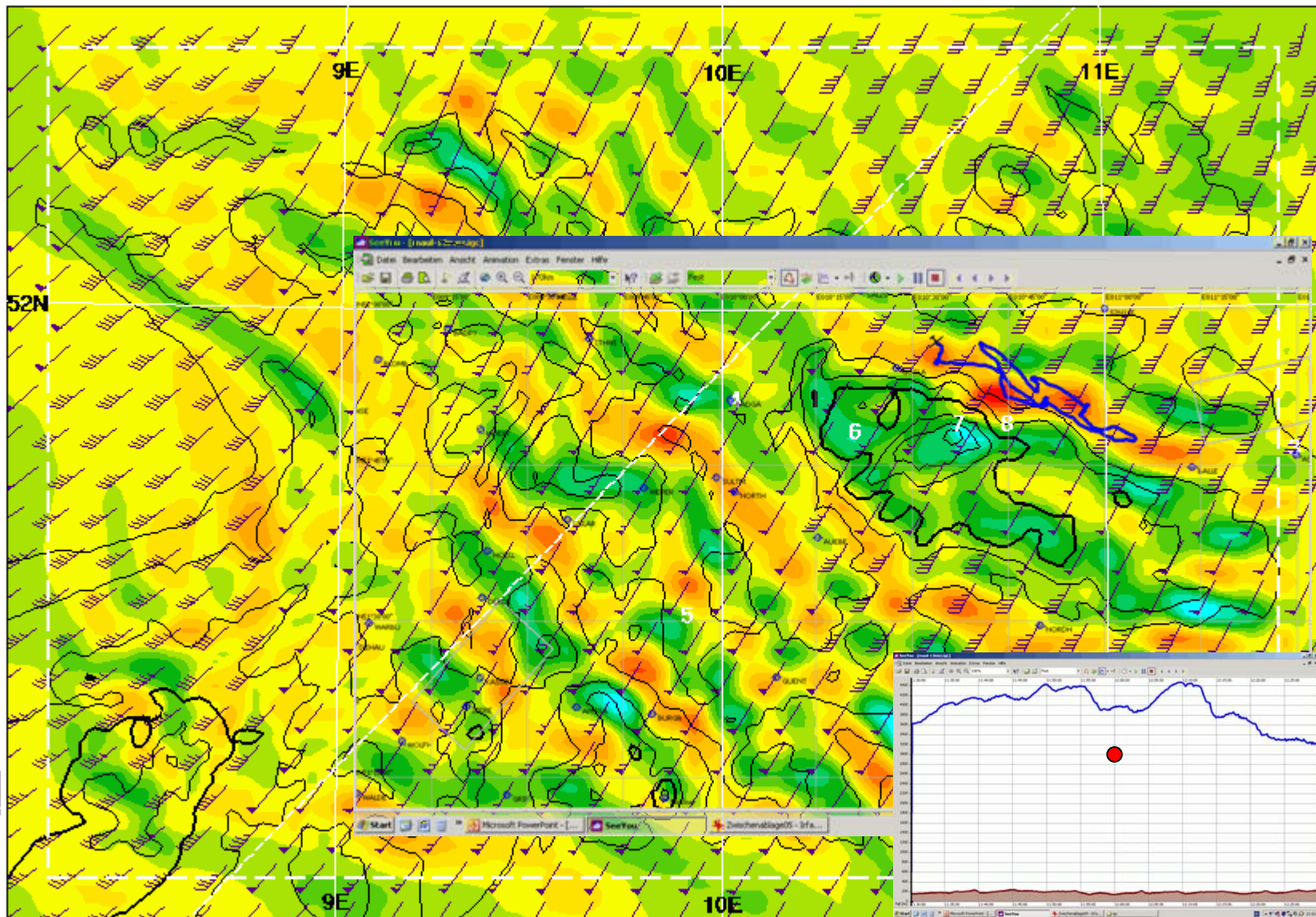
Valid 1200 CET (1100Z) SAT 14 Nov 2009 [29hrFcst@1646z]  
boxWmax=185@51.46,11.13,1445m



Terrain contours: 125 m

# Vertical Velocity & Wind [kt] at 700mb

Valid 1300 CET (1200Z) SAT 14 Nov 2009 [30hrFcst@1708z]  
box Wmax=126@51.80,9.84,1393m



FIXED  
[cm/s]  
COLOR

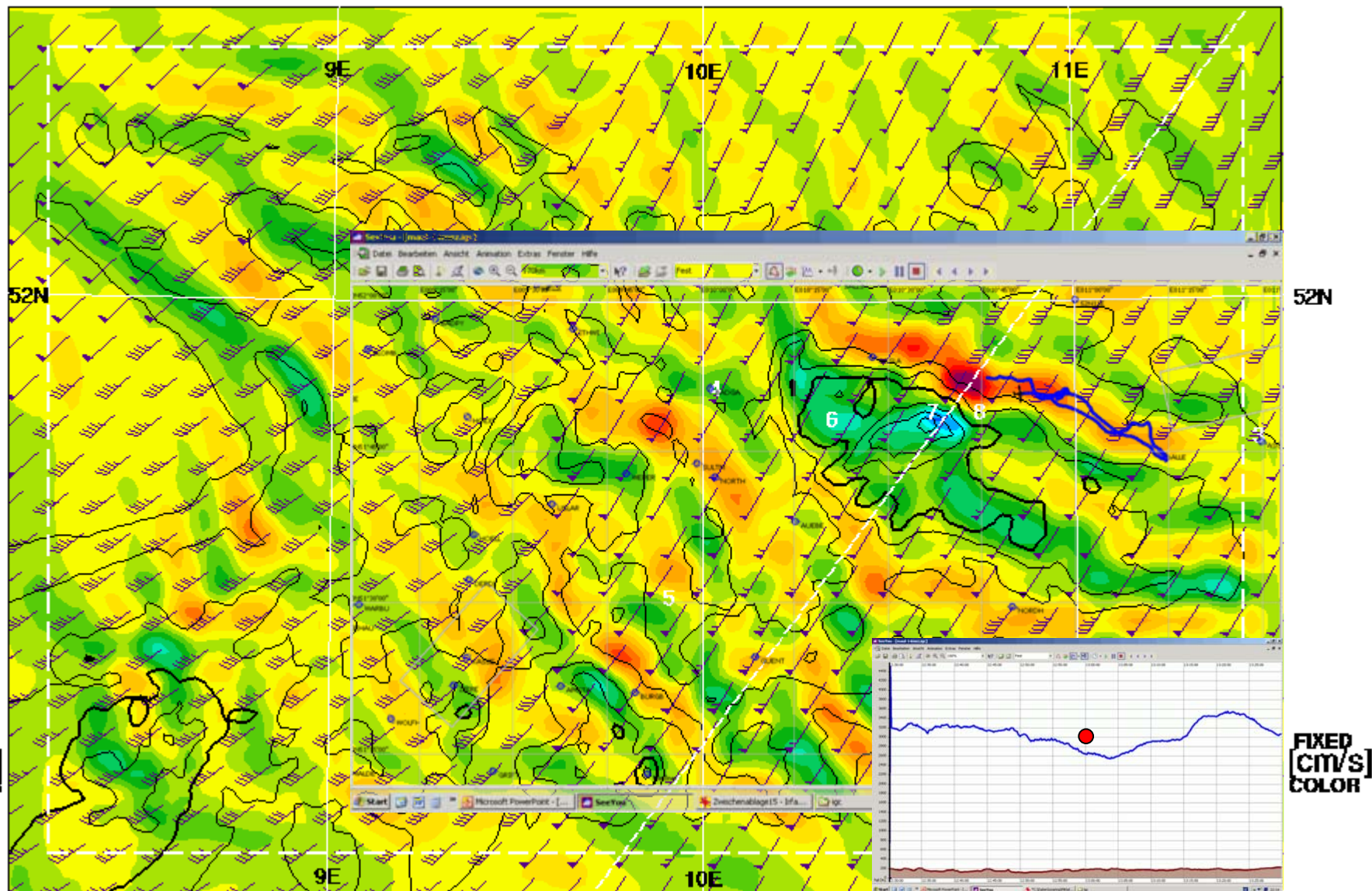
FIXED  
[cm/s]  
COLOR

Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 700mb

Valid 1400 CET (1300Z) SAT 14 Nov 2009 [31hrFcst@1731z]  
box Wmax=155@51.87,10.72,1503m



20.11.2009



Satellitenbild IR

Satellitenbild VIS

Webcam Halberstadt

RASP-Vorhersage 700 mbar

DWD-Vorhersage FL100



# RASP

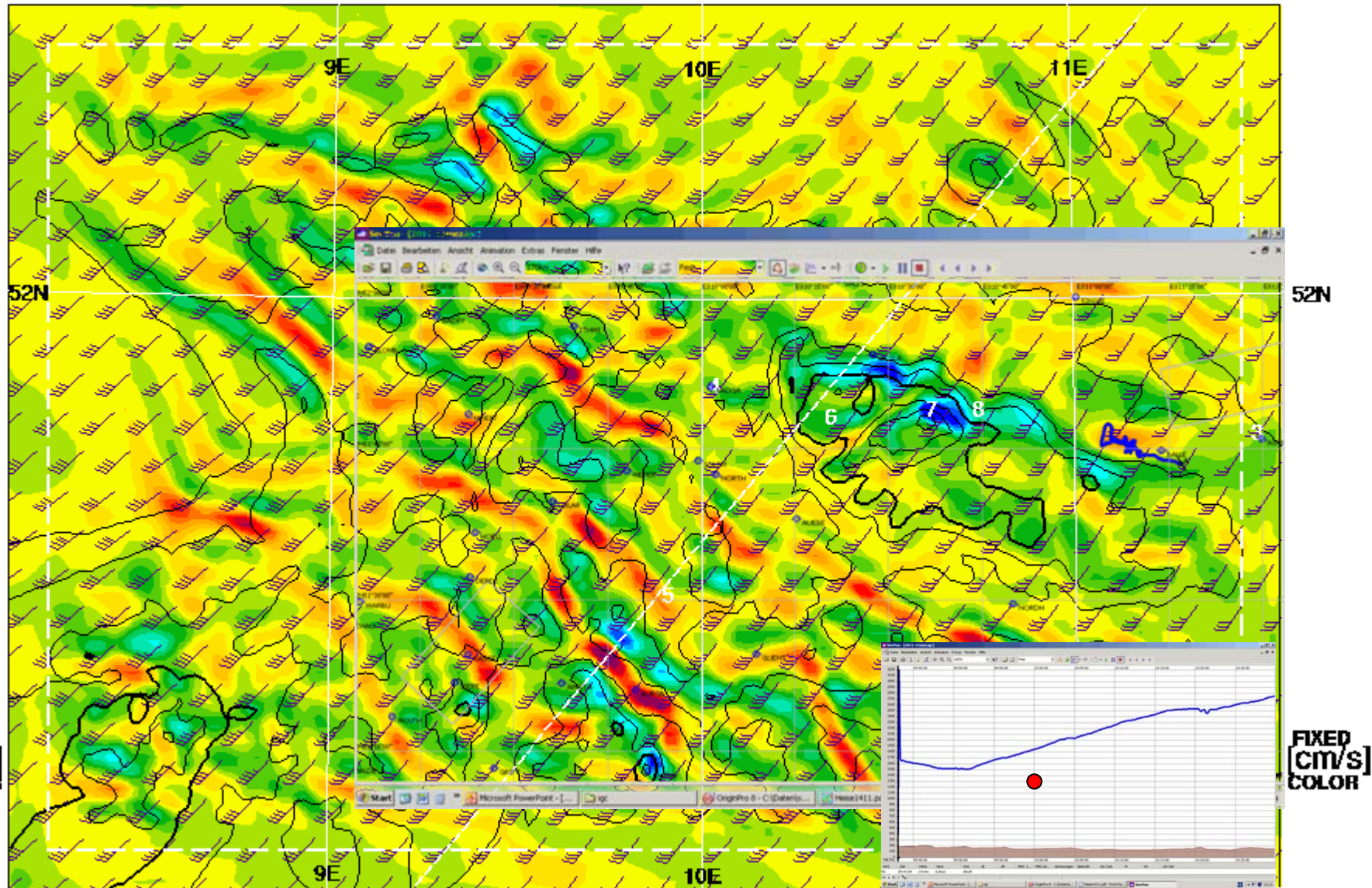
## 20.11.2009

# zeit- und höhenaufgelöst



# Vertical Velocity & Wind [kt] at 850mb

Valid 1100 CET (1000Z) FRI 20 Nov 2009 [28hrFcst@1619z]  
box Wmax=289@51.40,9.74,1486m



FIXED  
[cm/s]  
COLOR

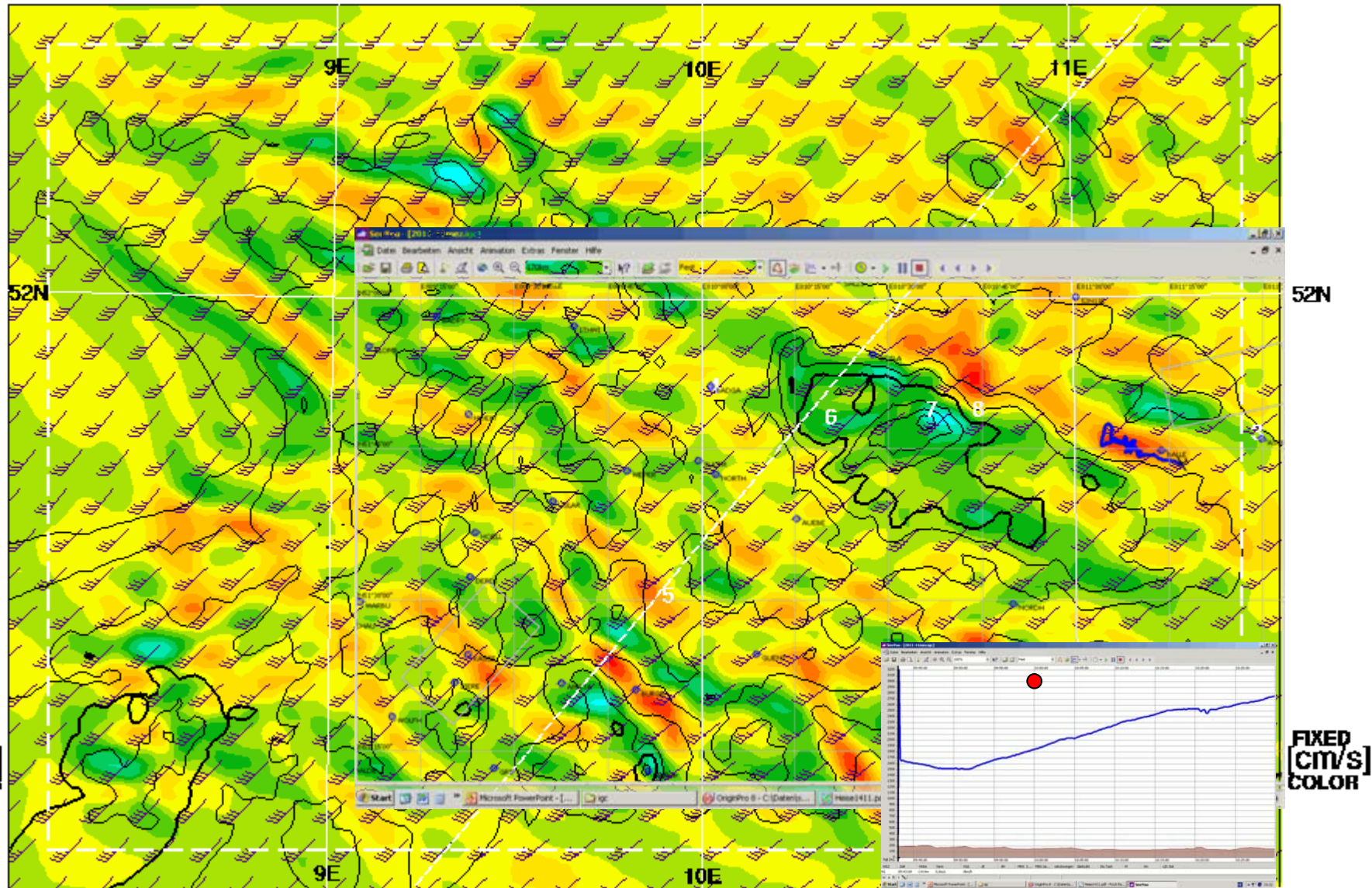
FIXED  
[cm/s]  
COLOR

Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 700mb

Valid 1100 CET (1000Z) FRI 20 Nov 2009 [28hrFcast@1619z]  
box/Wmax=289@51.40,9.74,1486m



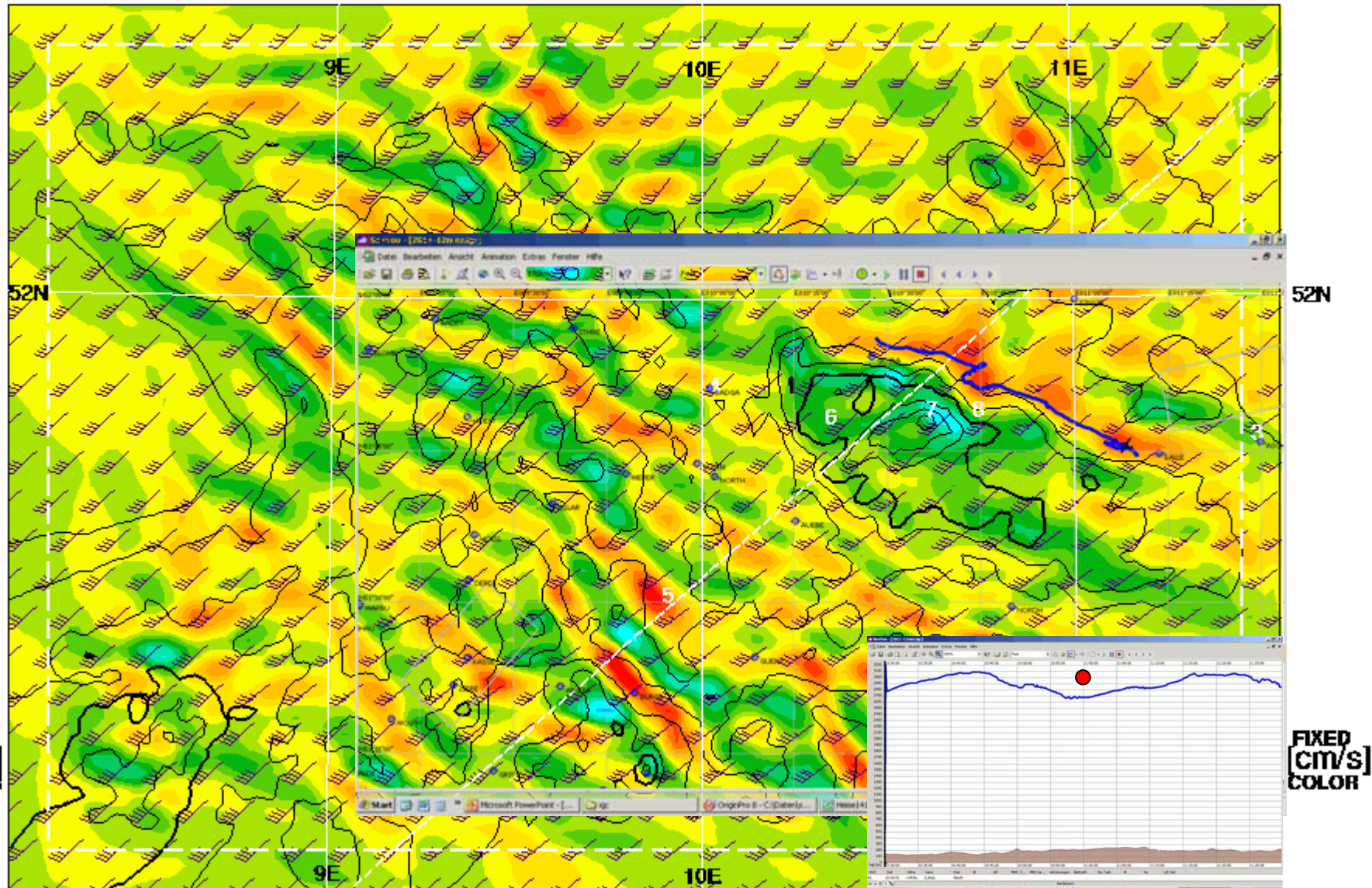
Terrain contours: 125 m





# Vertical Velocity & Wind [kt] at 700mb

Valid 1200 CET (1100Z) FRI 20 Nov 2009 [29hrFcast@1642z]  
box Wmax=294@51.40,9.76,1520m



FIXED  
[cm/s]  
COLOR

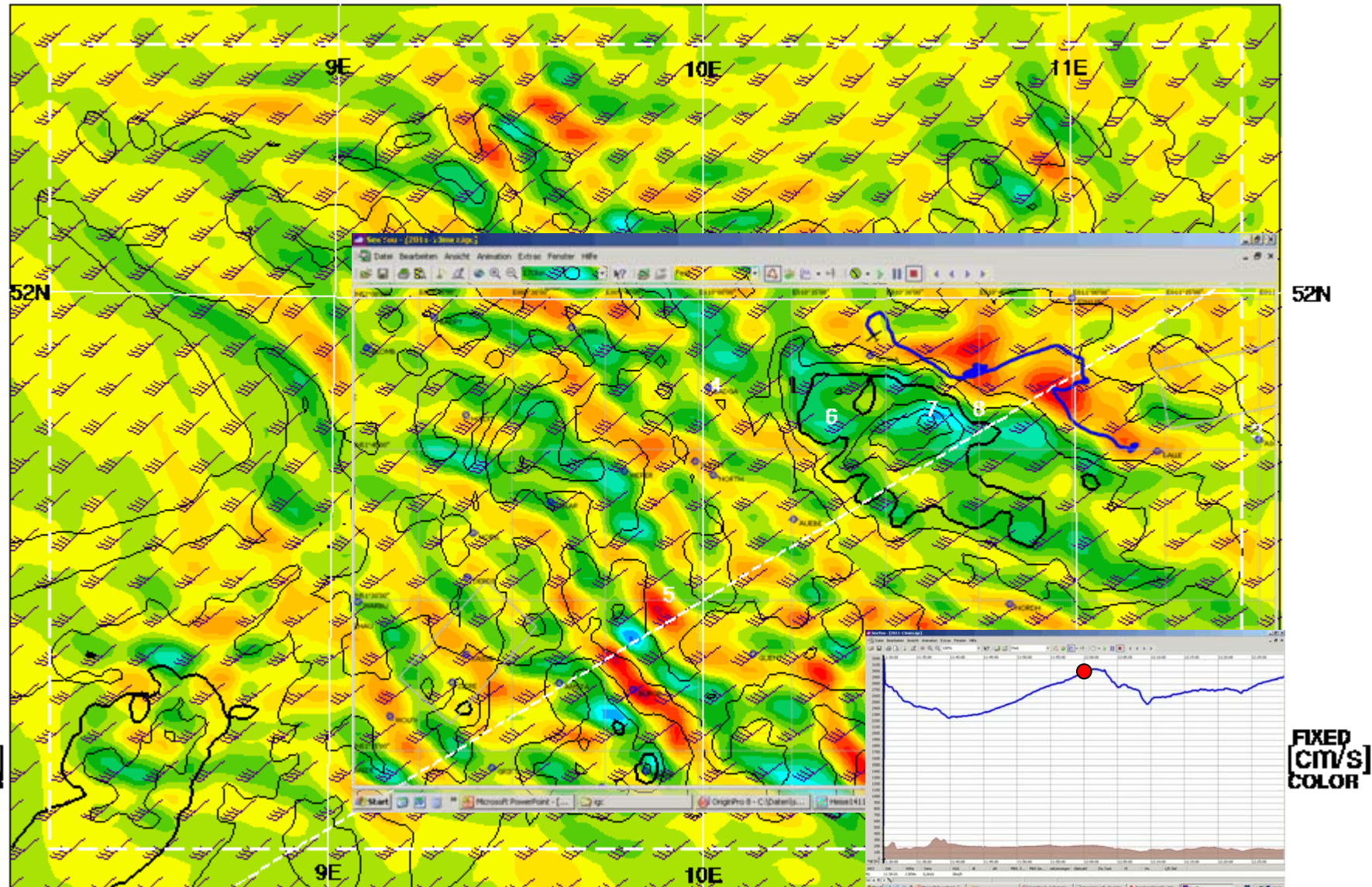
FIXED  
[cm/s]  
COLOR

Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 700mb

Valid 1300 CET (1200Z) FRI 20 Nov 2009 [30hrFcst@1706z]  
box Wmax=347@51.40,9.76,1521m



FIXED  
[cm/s]  
COLOR

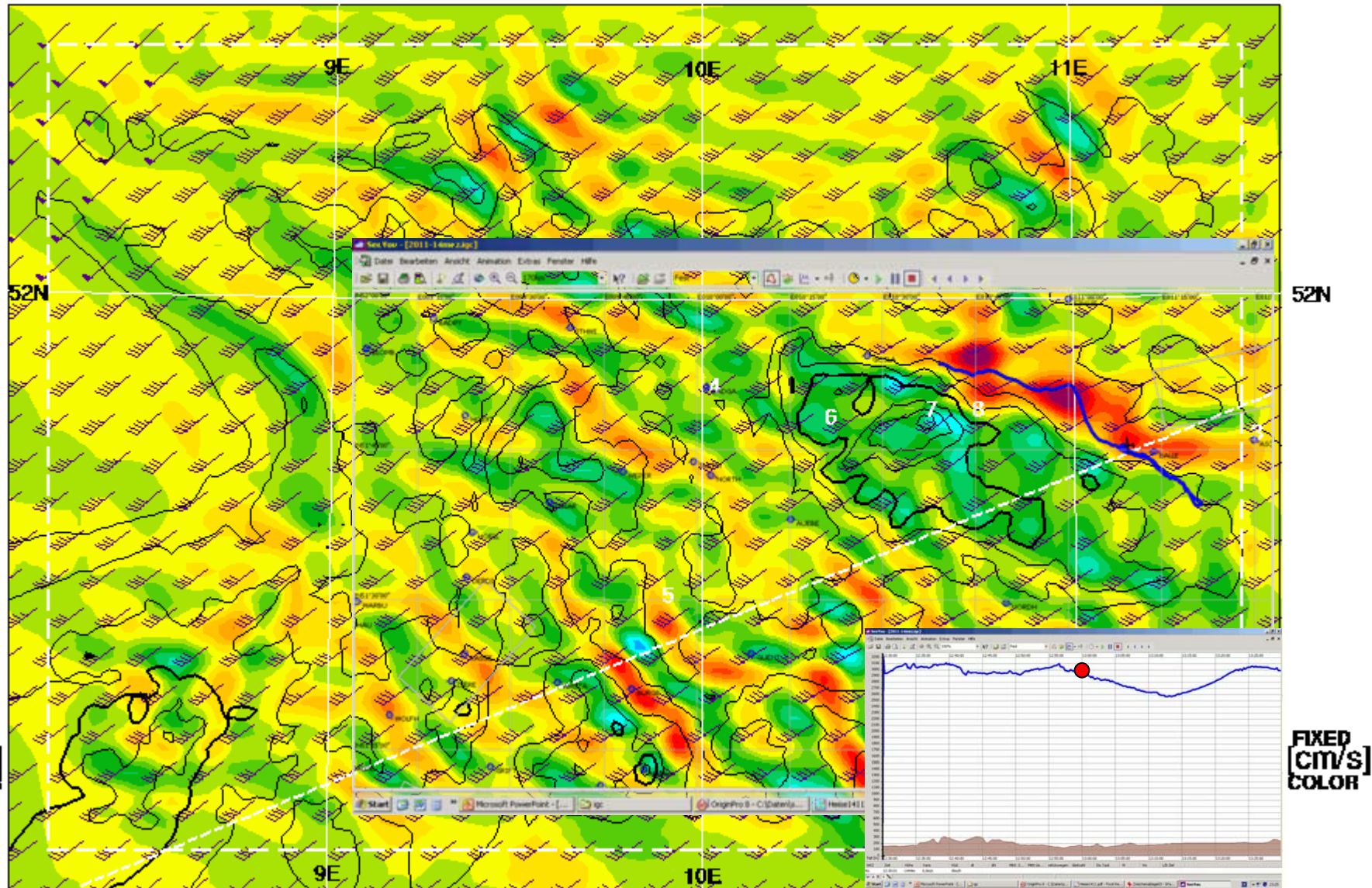
FIXED  
[cm/s]  
COLOR



Terrain contours: 125 m

# Vertical Velocity & Wind [kt] at 700mb

Valid 1400 CET (1300Z) FRI 20 Nov 2009 [31hrFcast@1725z]  
box Wmax=309@51.39,9.78,1476m



FIXED  
[cm/s]  
COLOR

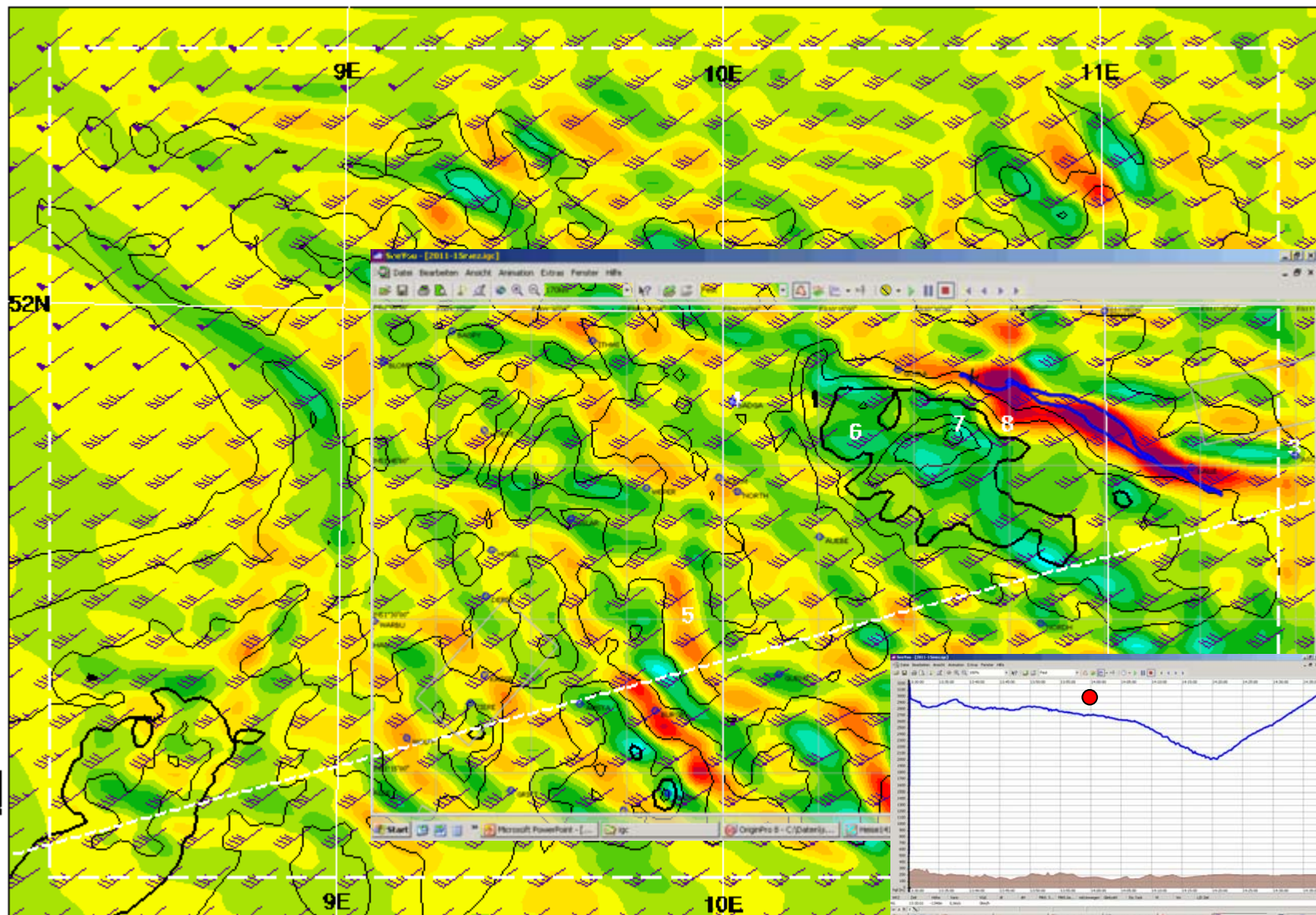
FIXED  
[cm/s]  
COLOR

Terrain contours: 125 m



# Vertical Velocity & Wind [kt] at 700mb

Valid 1500 CET (1400Z) FRI 20 Nov 2009 [32hrFcst@1748z]  
 box Wmax=284@51.39,9.78,1476m



FIXED  
[cm/s]  
COLOR

FIXED  
[cm/s]  
COLOR

Terrain contours: 125 m



Vorläufiges Fazit für 14./20.11.:

RASP-Vorhersage stimmte erstaunlich gut.  
Höhen- und Zeitabhängigkeit sind wichtig!

DWD konnte noch nicht verifiziert werden wegen Skalierungsproblemen

