

DIAMET project meeting
Manchester, UK
7 March 2013



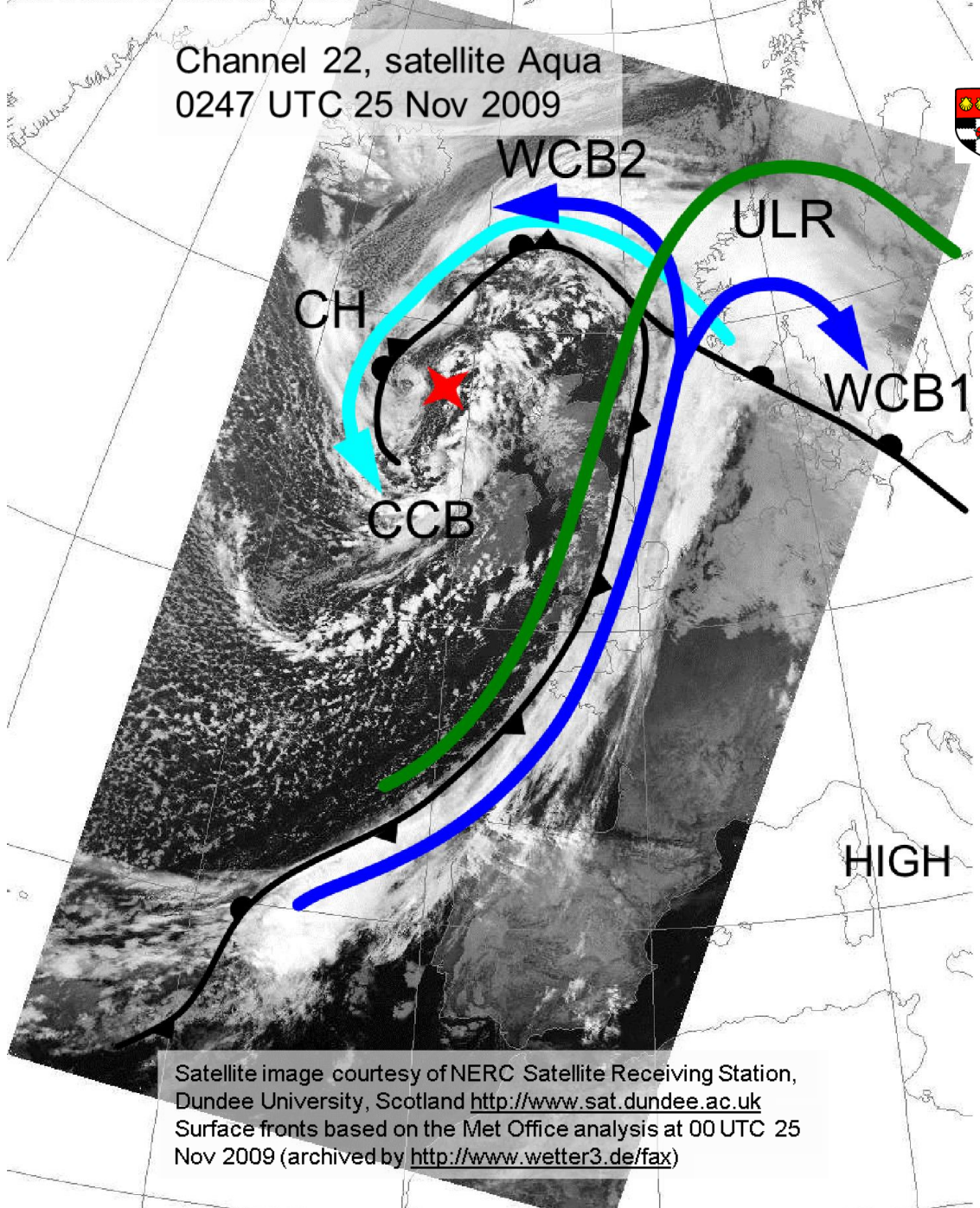
Progress on the analysis of the warm conveyor belt in the T-NAWDEX-III case 23-25 November 2009

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Channel 22, satellite Aqua
0247 UTC 25 Nov 2009

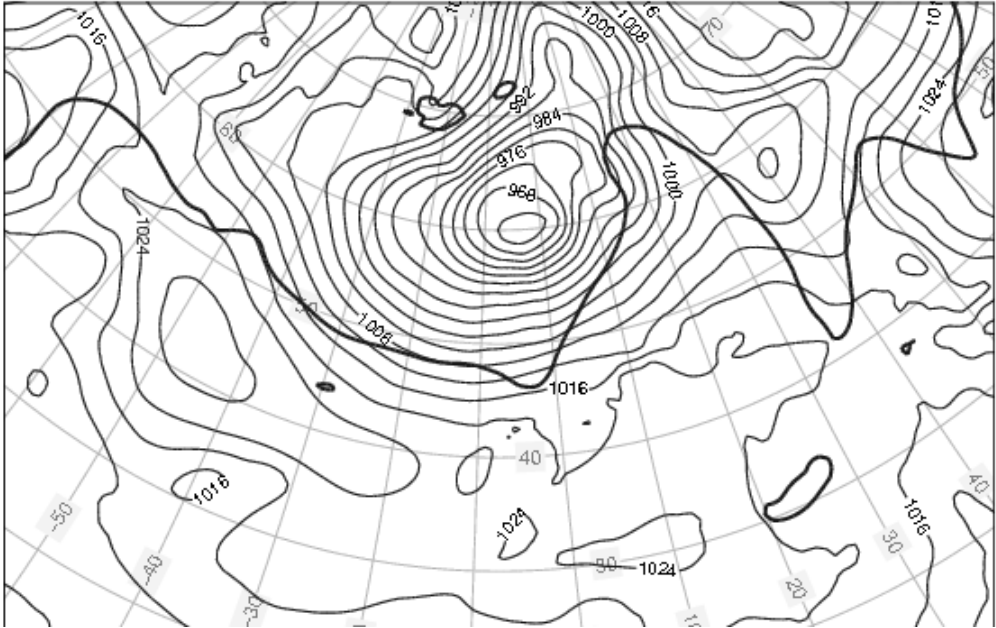
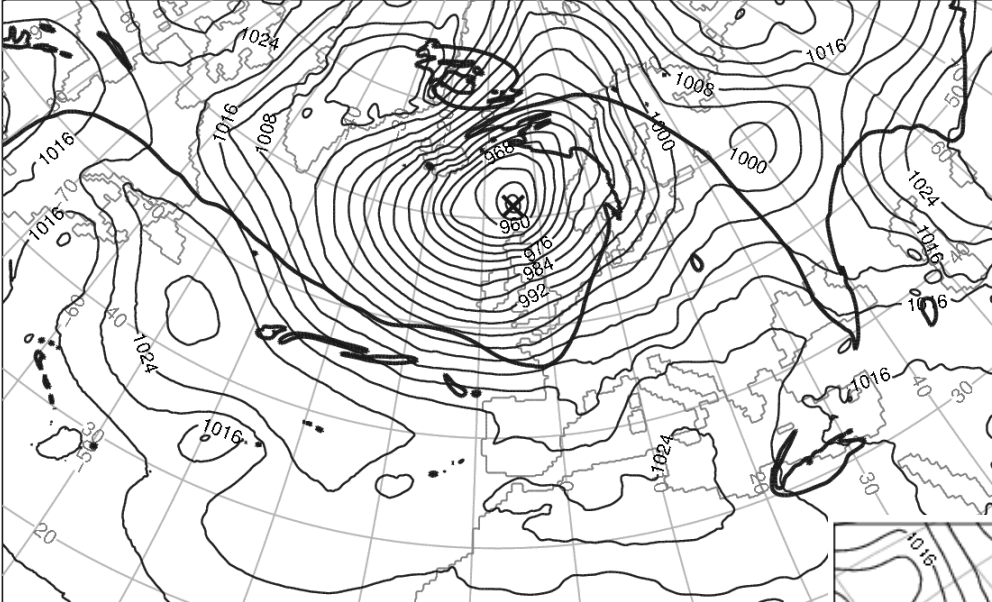


Satellite image courtesy of NERC Satellite Receiving Station,
Dundee University, Scotland <http://www.sat.dundee.ac.uk>
Surface fronts based on the Met Office analysis at 00 UTC 25
Nov 2009 (archived by <http://www.wetter3.de/fax>)

Synoptic model validation

25 November 2009 1800 UTC, theta = 315 K

Reading MetUM
simulation

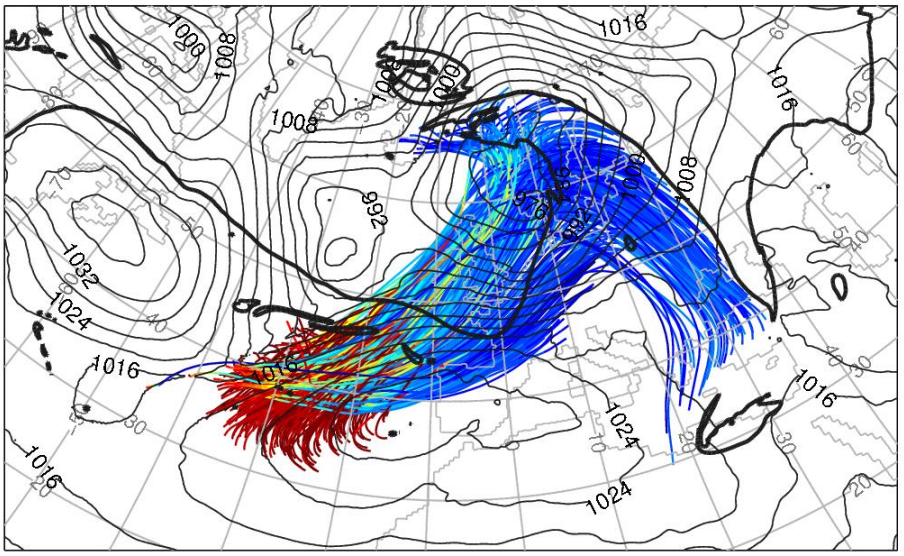


ERA-Interim

Warm conveyor belt split



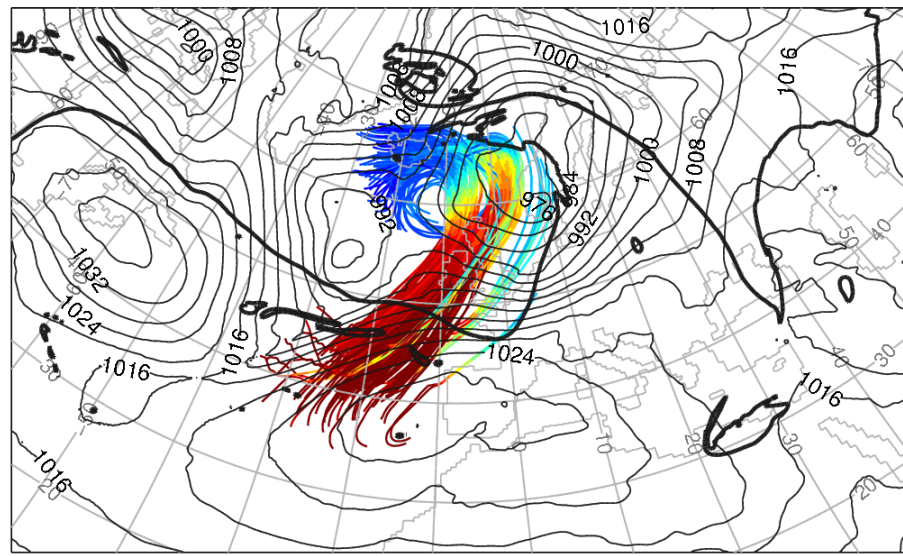
Traj start: 23 Nov 2009 1800 UTC, Traj length: 48 hrs, ascent > 600 hPa



WCB1

Pressure (hPa)

Traj start: 23 Nov 2009 1800 UTC, Traj length: 48 hrs, ascent > 600 hPa

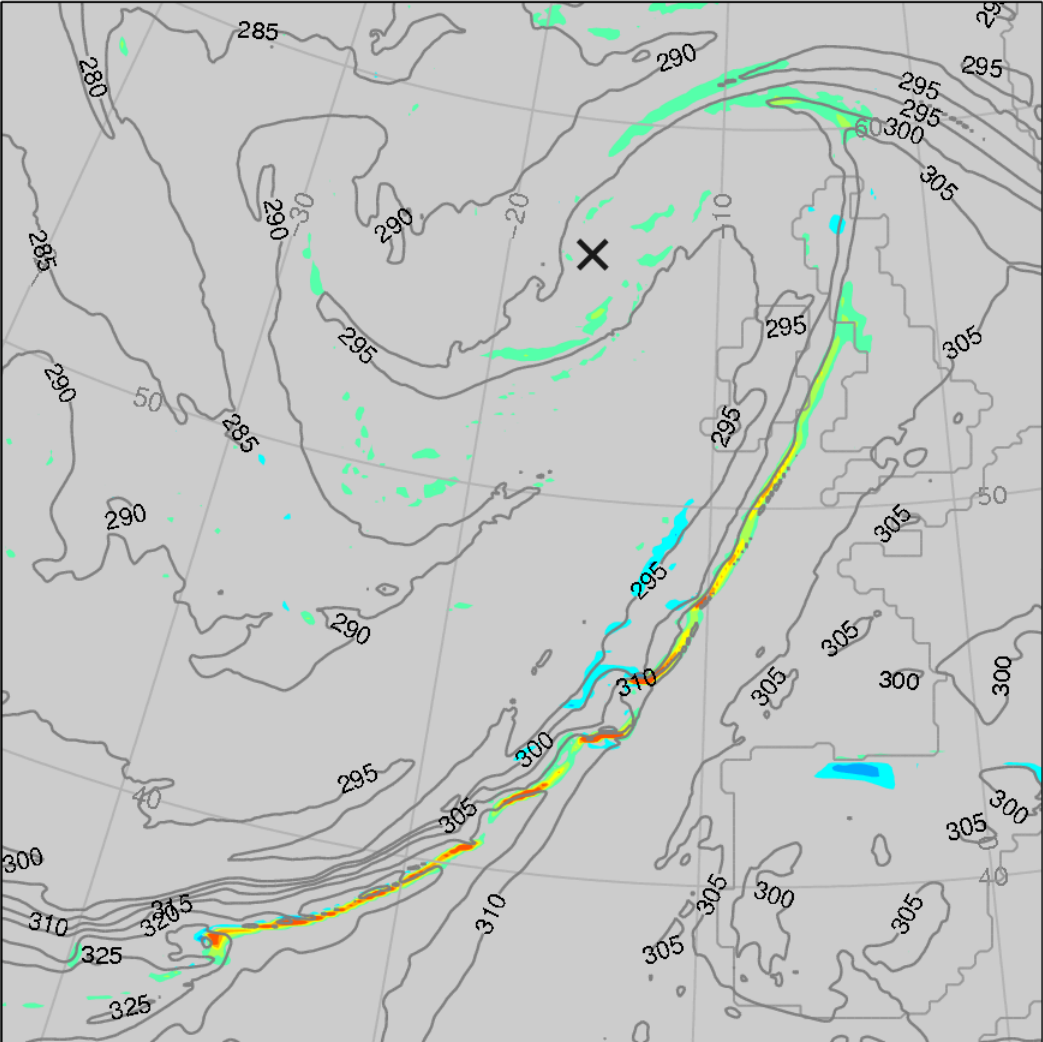


WCB2

Pressure (hPa)

Strong frontal ascent

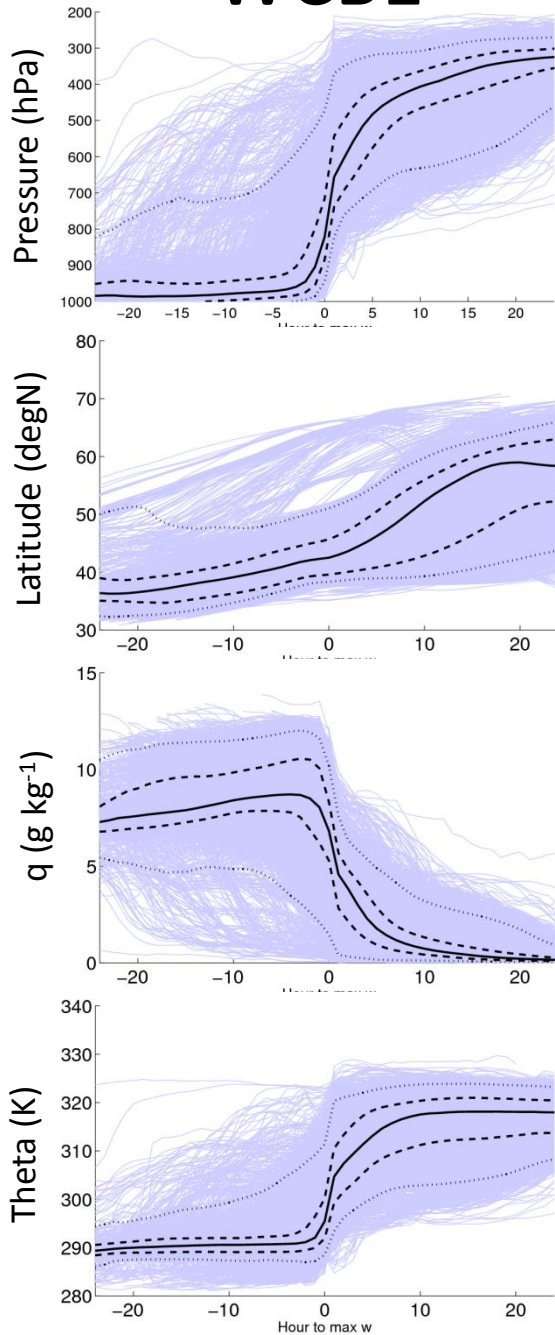
24 November 2009 1800 UTC, pressure = 850 hPa



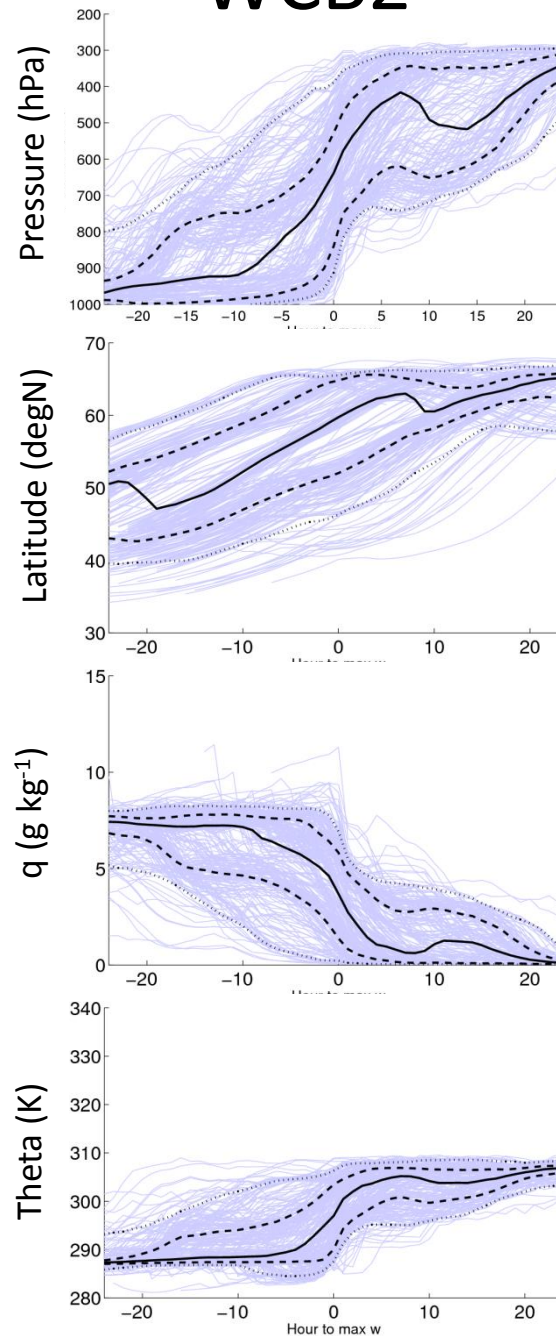
Colour shades:
Vertical wind
From **dark blue** (-1 m s^{-1}) to
red (1 m s^{-1})

Thin lines:
 θ_e (K)

WCB1



WCB2



Solid black:
trajectory-ensemble median

Dashed black:
25-th, 75-th percentiles

Dotted black:
5-th, 95th percentiles

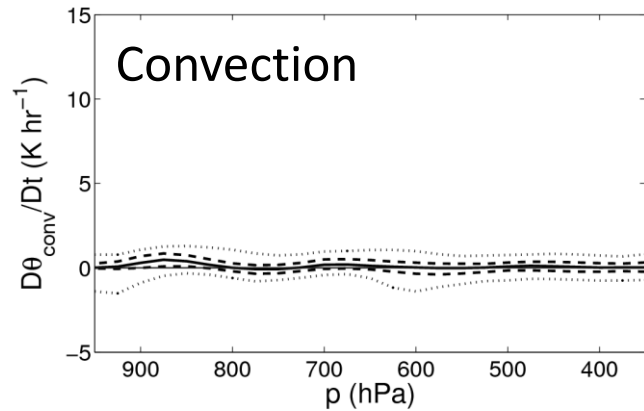
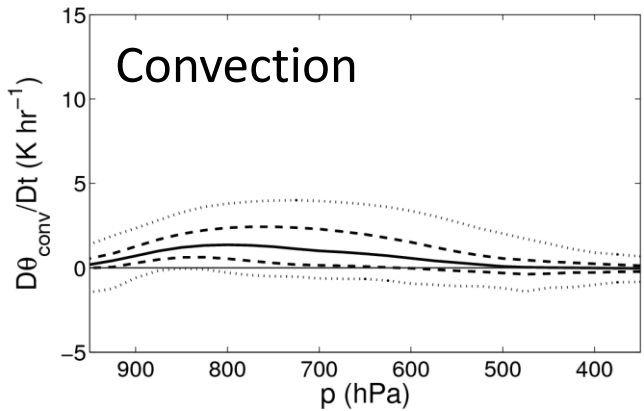
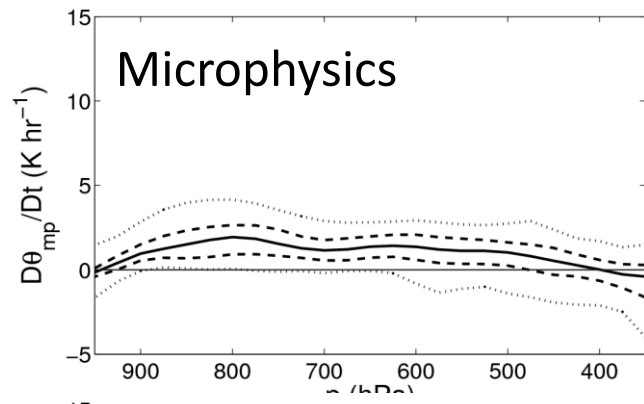
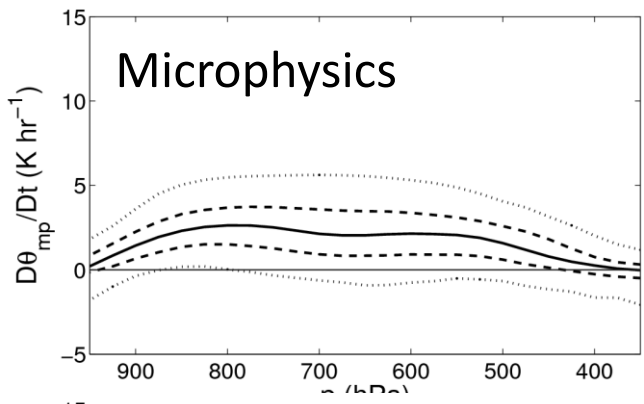
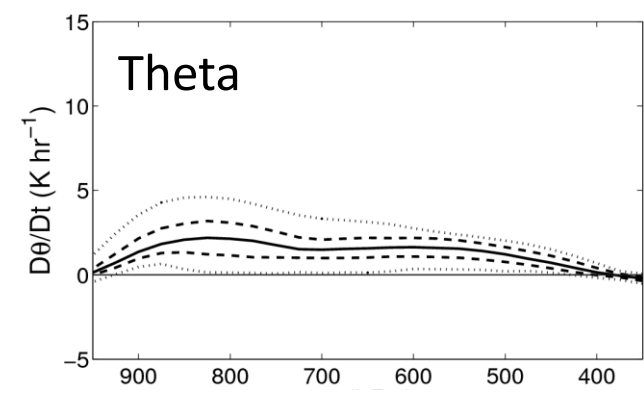
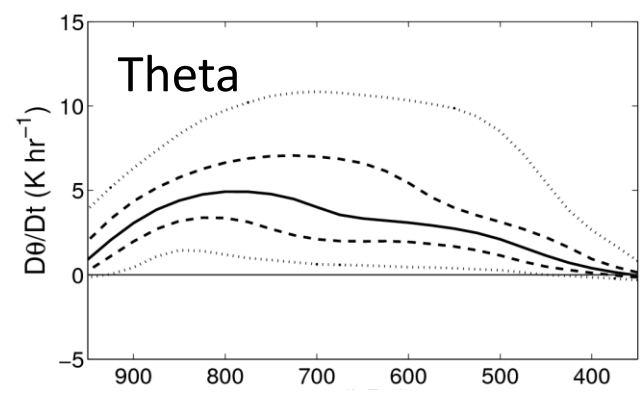
Purple/blue:
Individual trajectories (only showing 1 in 10)

Time zero:
defined as the time of maximum ascent for each trajectory

Heating rates

WCB1

WCB2



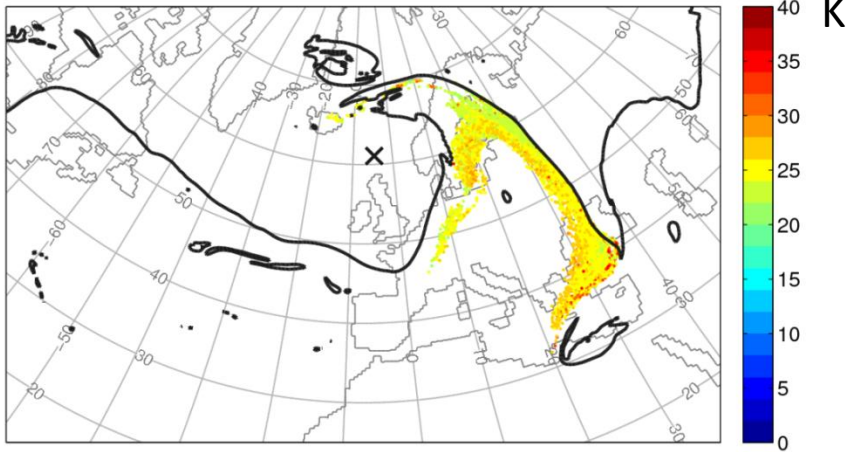
PV modification

WCB1

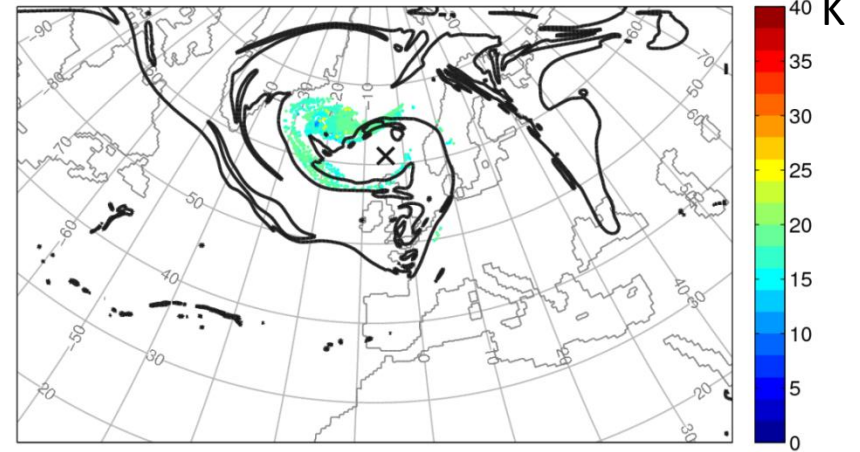
WCB2

Total change in potential temperature (after 48 hours)

25 November 2009 1800 UTC, theta = 315 K

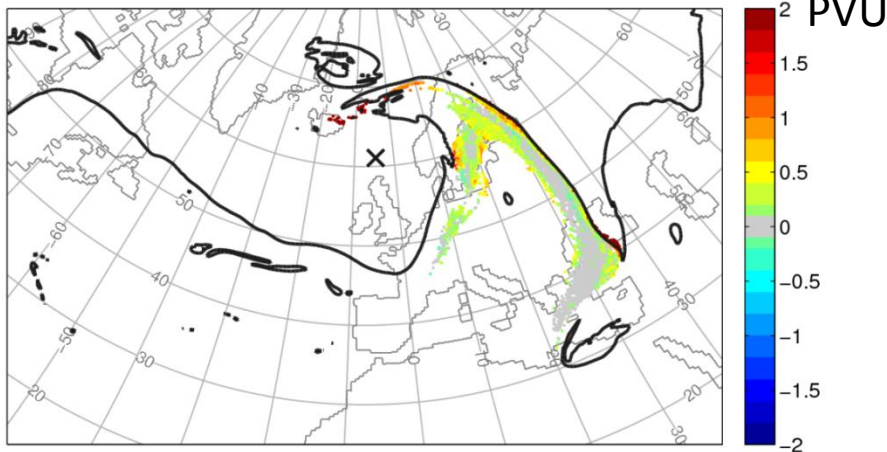


25 November 2009 1800 UTC, theta = 305 K

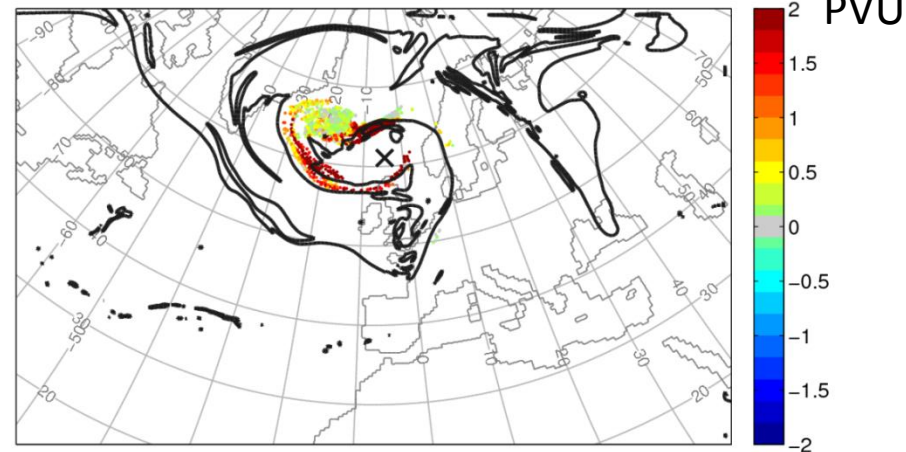


Potential vorticity

25 November 2009 1800 UTC, theta = 315 K

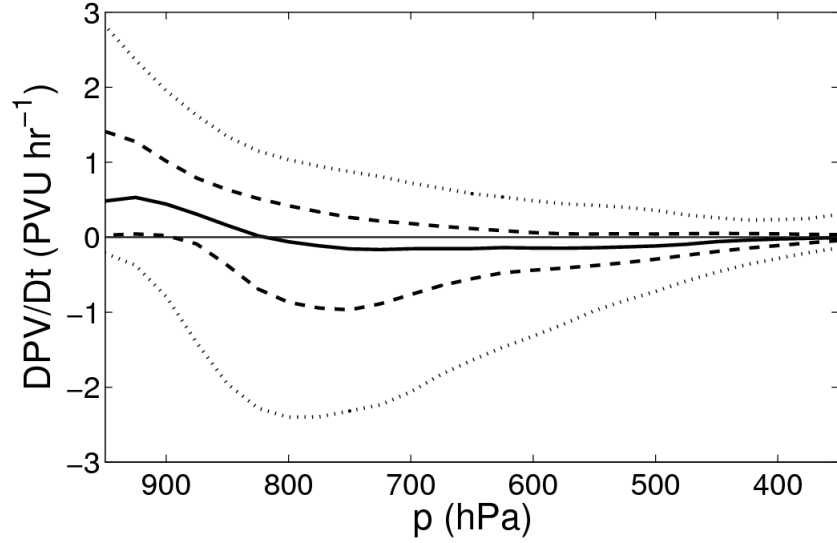


25 November 2009 1800 UTC, theta = 305 K



PV modification rates

WCB1



WCB2

