AIRMASS RGB

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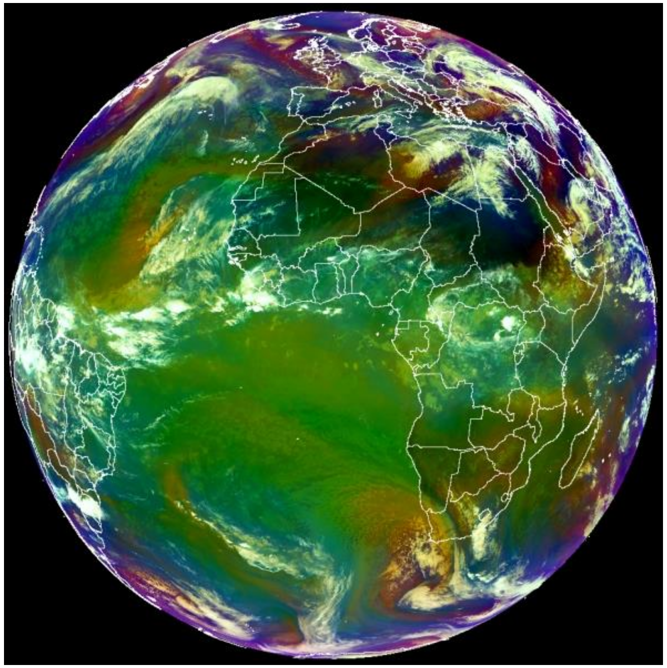
Colours...

RED = Difference WV 6.7 – WV 7.3

GREEN = Difference IR 9.7 – IR10.8

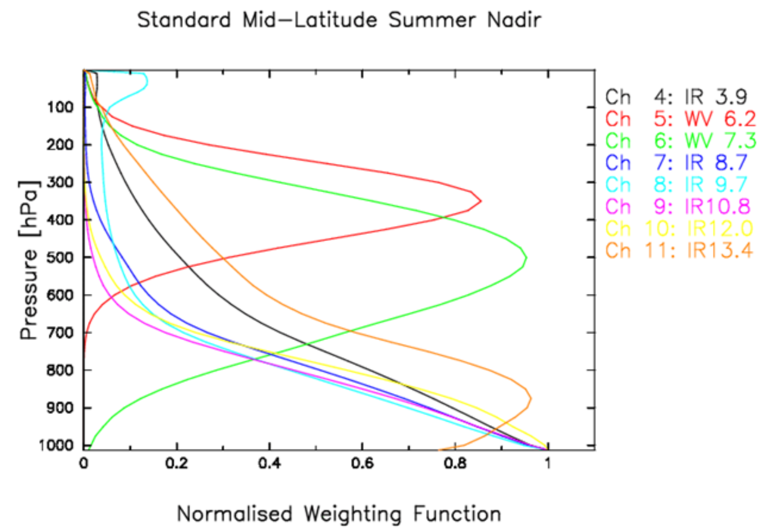
BLUE = WV 6.2 (inverted)

- available day and night
- full MSG viewing area



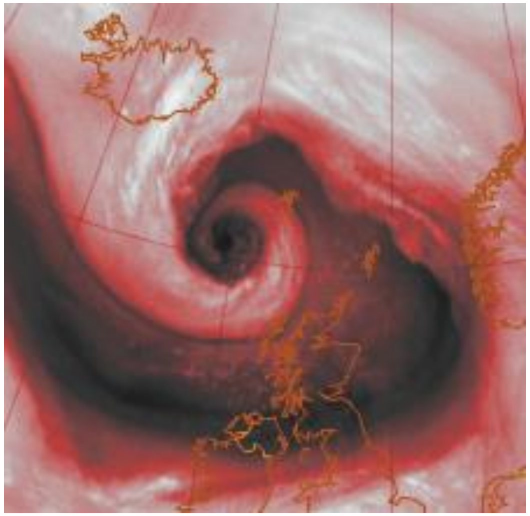
RED – BTD (WV 6.2 – WV 7.3)

1. very dry in the (upper) atmosphere
2. moist layer at 700 hPa
3. moist layer at 500 hPa
4. moist layer at 200 hPa



-25 K  0 K

RED – BTD (WV 6.2 – WV 7.3)



1. very dry in the (upper) atmosphere
2. moist layer at 700 hPa
3. moist layer at 500 hPa
4. moist layer at 200 hPa

→ Large contribution: dry conditions at high levels

→ Low contribution: moist conditions at high levels

-25 K | 3. | 4. | 2. | 1. | 0 K

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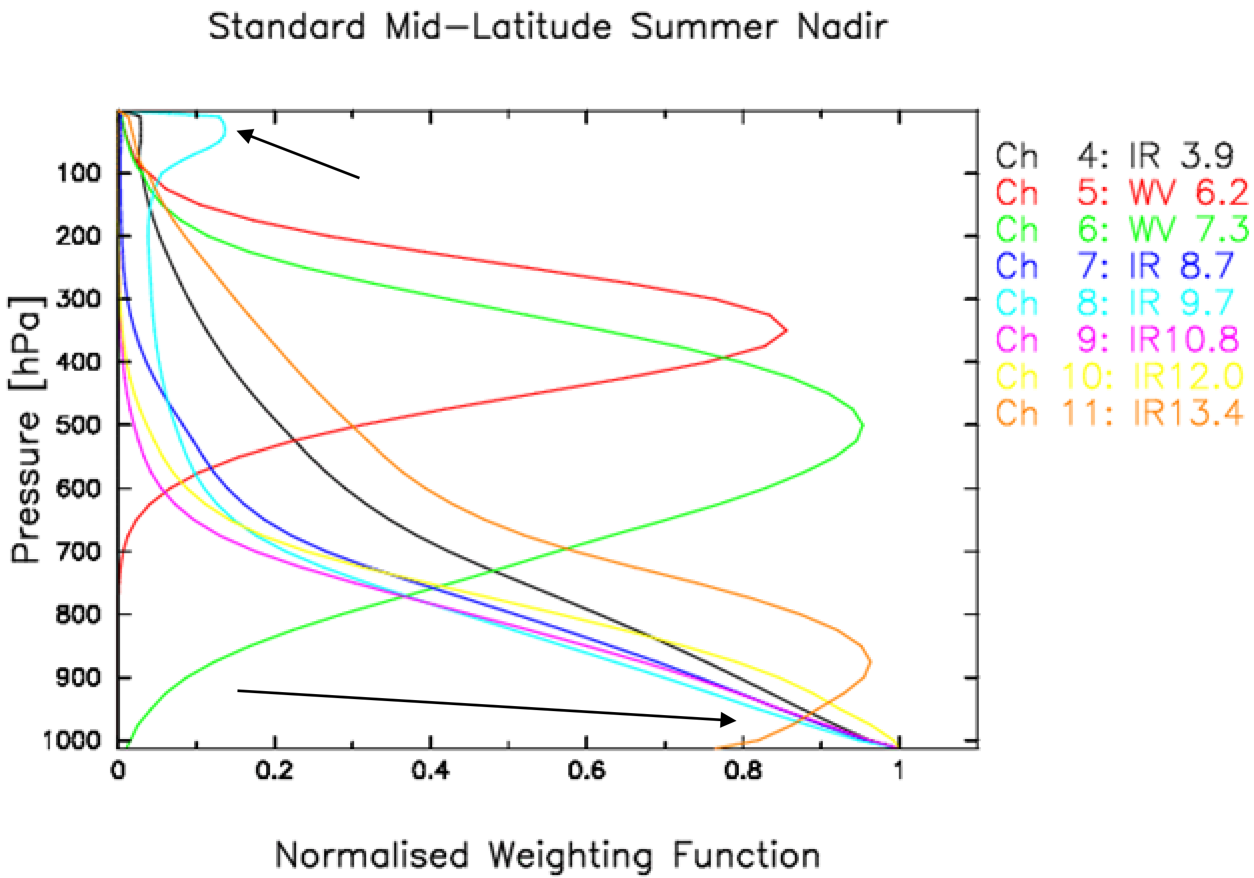
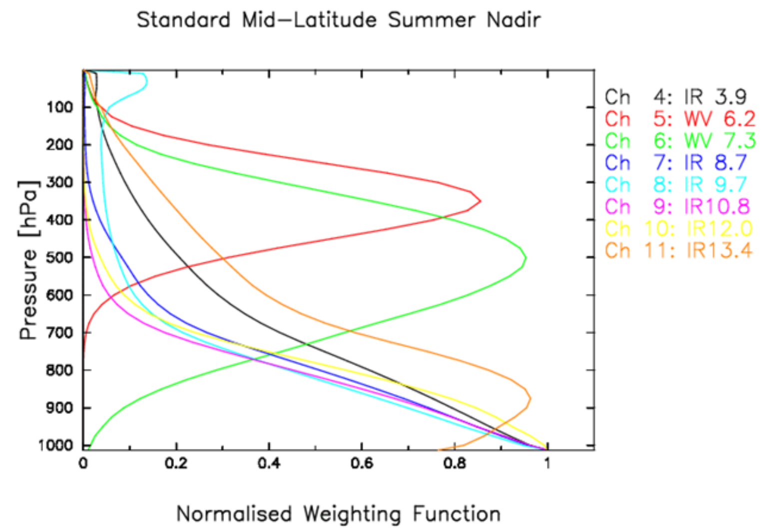
GREEN – BTD (IR 9.7 – IR 10.8)



=> BTD: estimate of tropopause height based on ozone

GREEN – BTD (IR 9.7 – IR 10.8)

1. ozone rich/polar airmass
2. ozone poor/tropical airmass
3. *very low surface temperatures*



-40 K

+5 K

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GREEN – BTD (IR 9.7 – IR 10.8)

1. ozone rich/polar airmass
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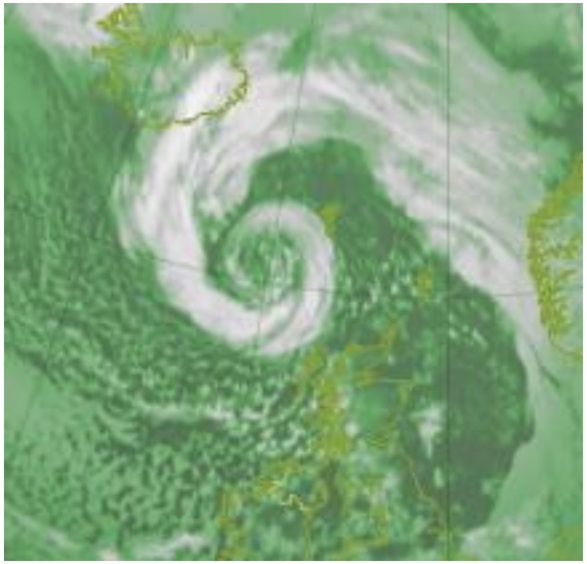
3. *very low surface temperatures*



→ large contribution: tropical airmass

→ low contribution: polar airmass

-40 K 1. 2. 3. +5 K

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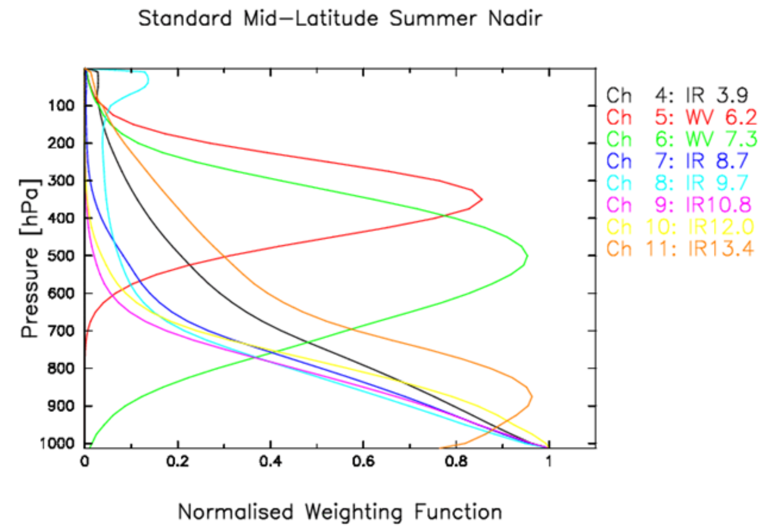
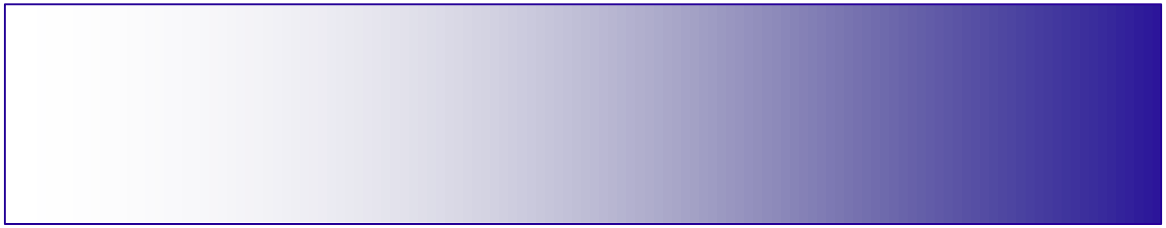
BLUE – WV 6.2 (inverted)

=> water vapour in a layer from

~ 200 to 500 hPa



- large contribution: moist at upper levels
- low contribution: dry at upper levels

243 K  208 K

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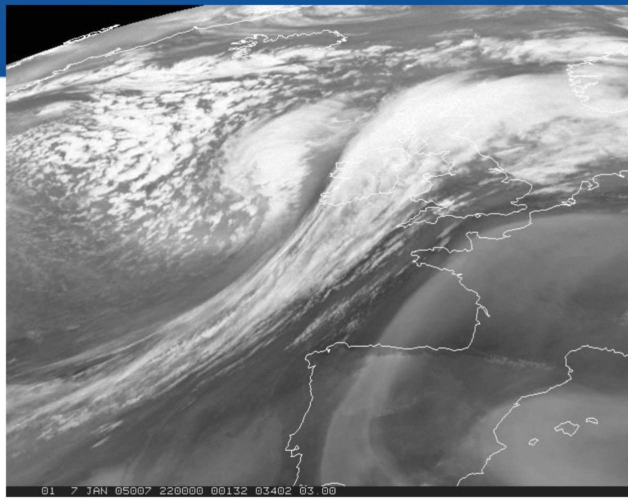
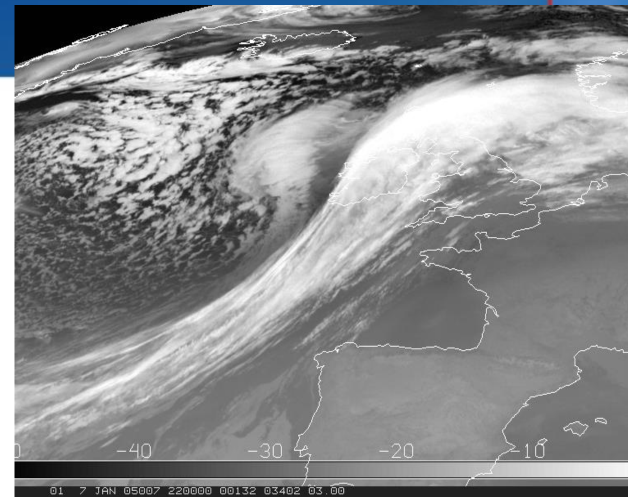
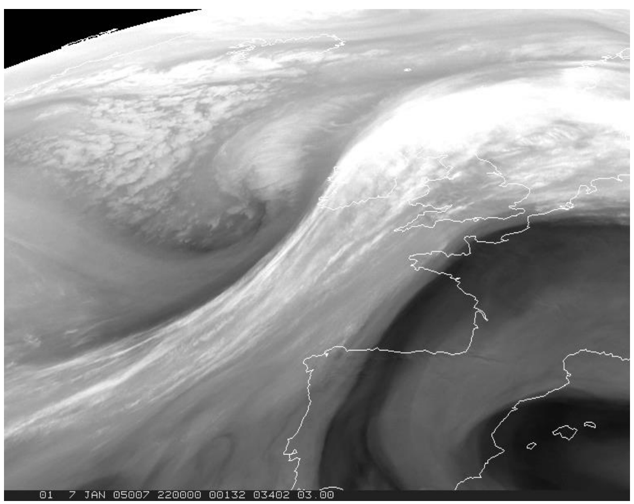


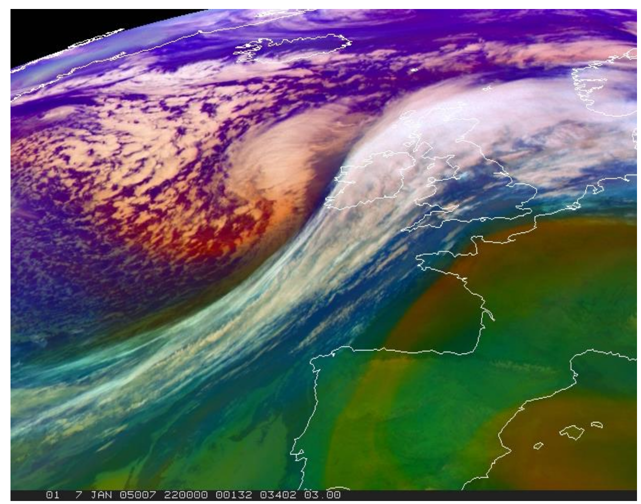
Red = WV6.2 - WV7.3



Green = IR9.7 - IR10.8



Blue = WV6.2i



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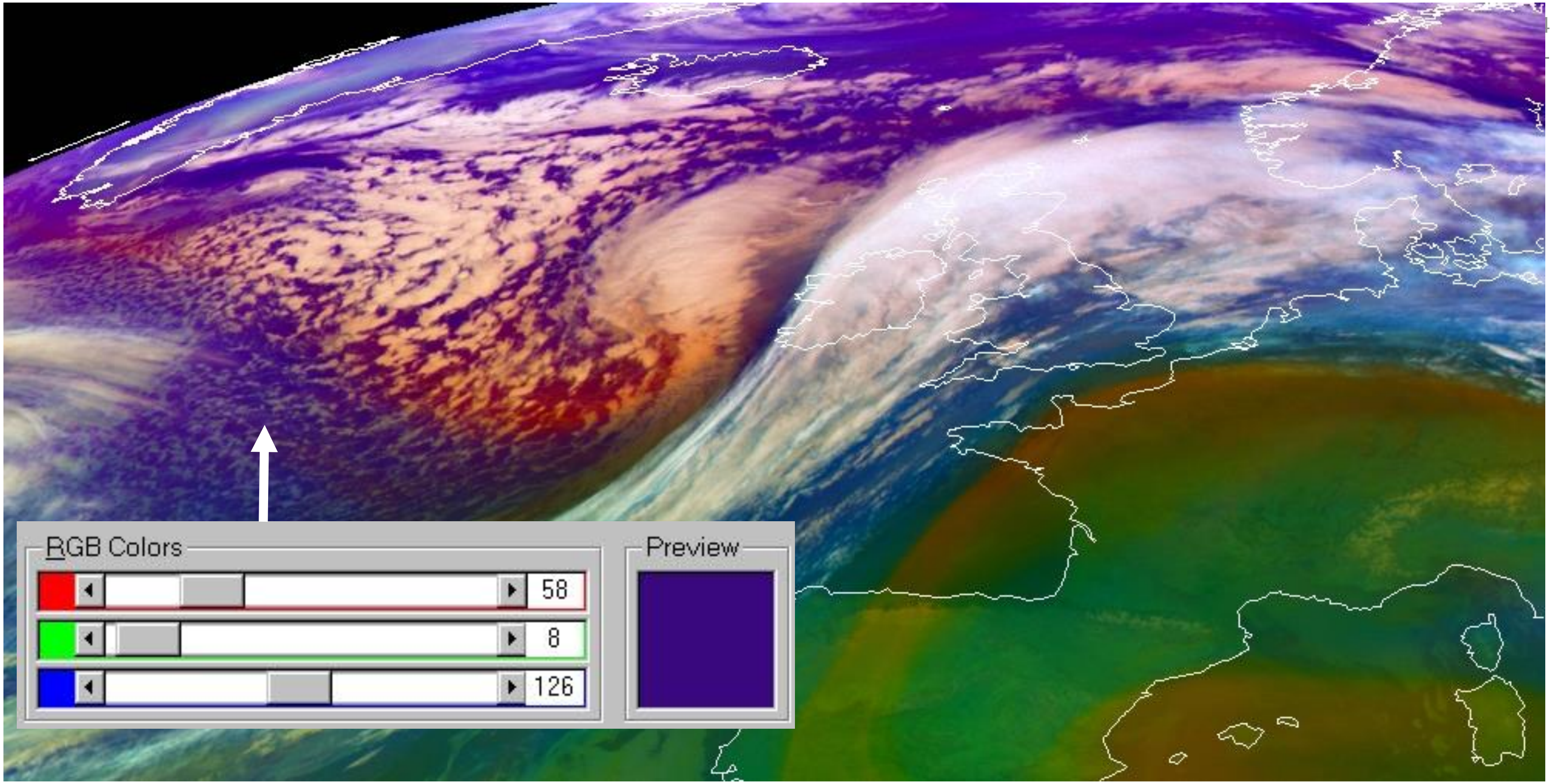
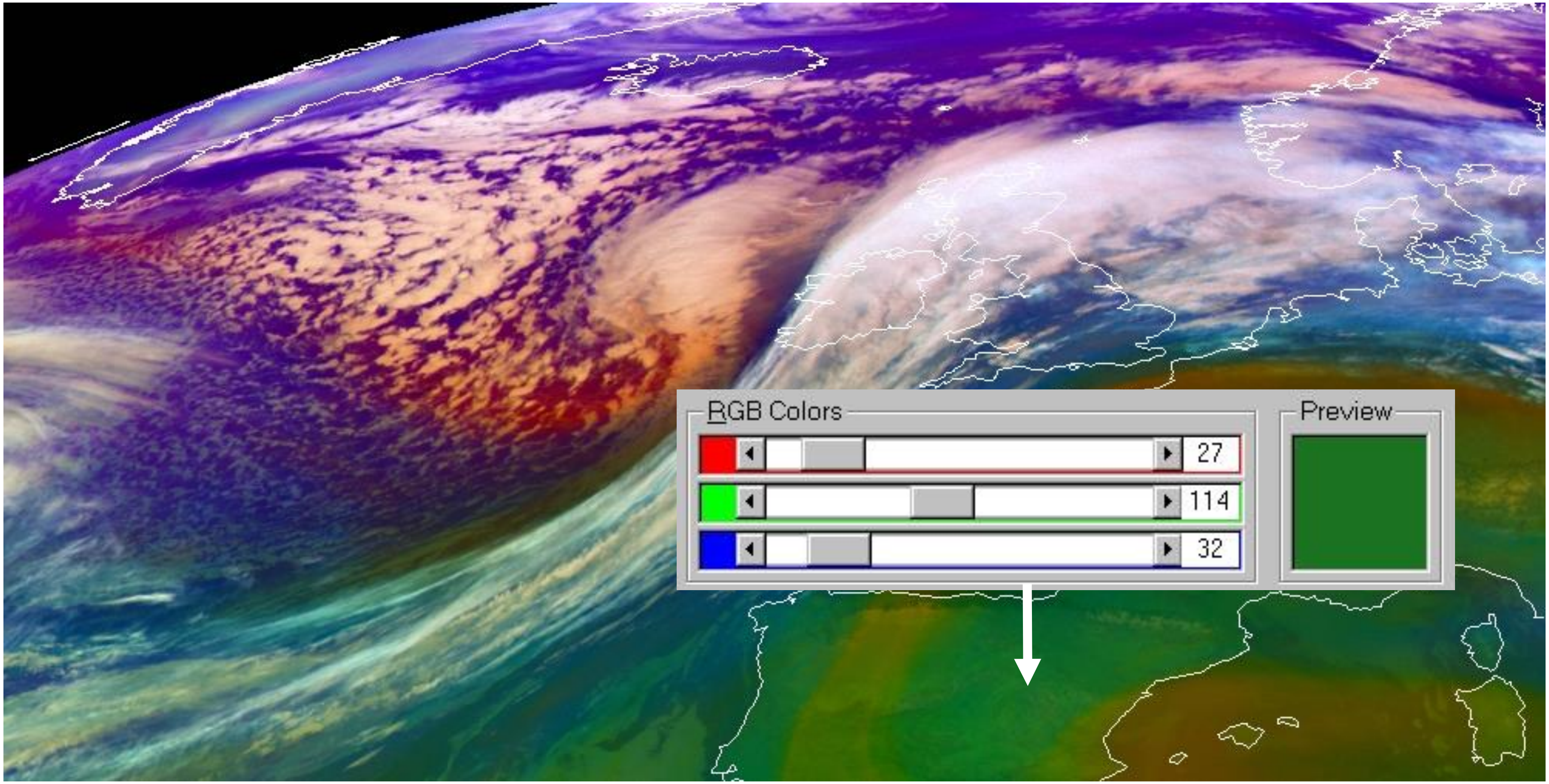
BLUE – cold airmass



MSG-1, 7 January 2005 22 UTC

GREEN – warm airmass



MSG-1, 7 January 2005 22 UTC

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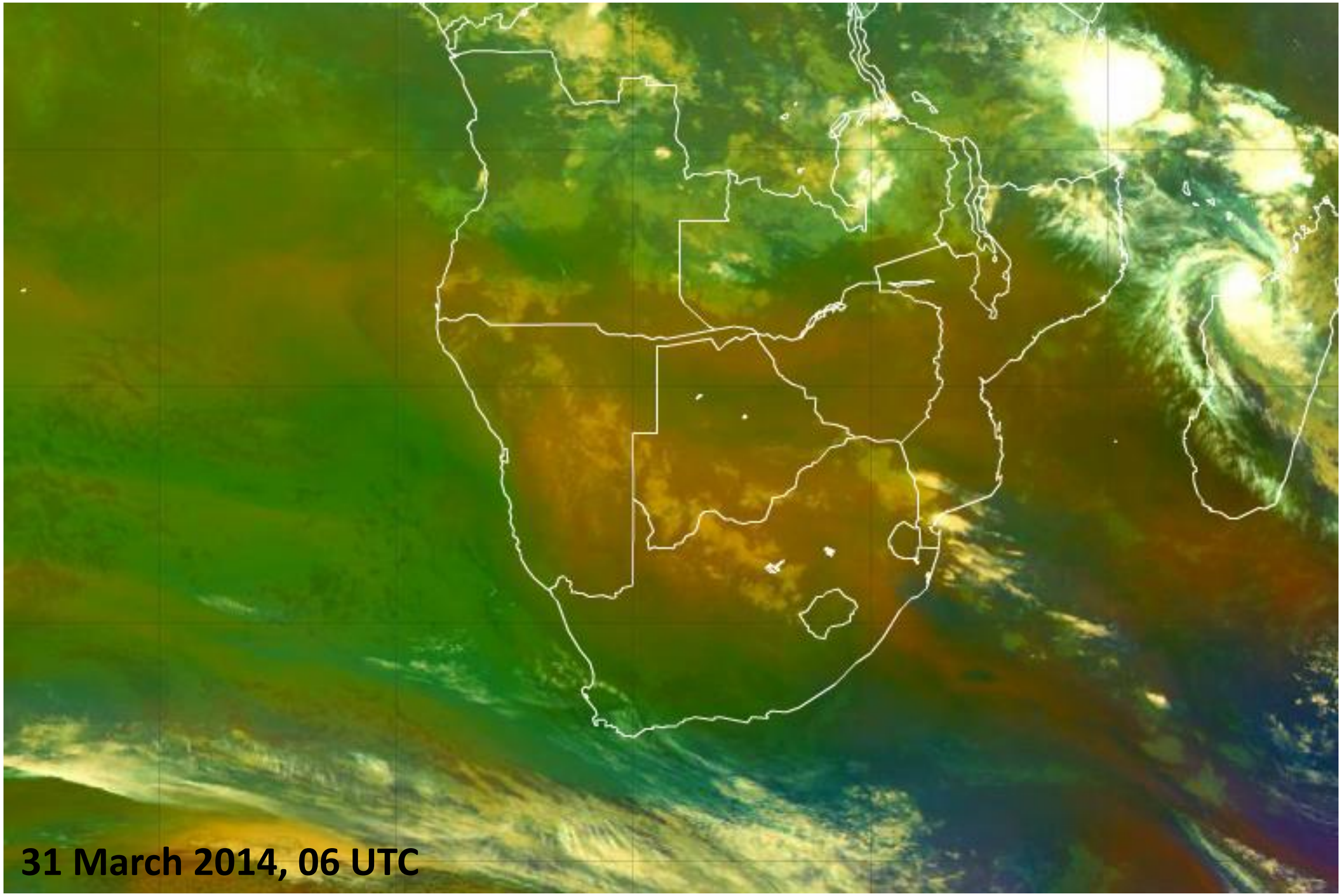
GREEN – warm airmass: high/low UTH



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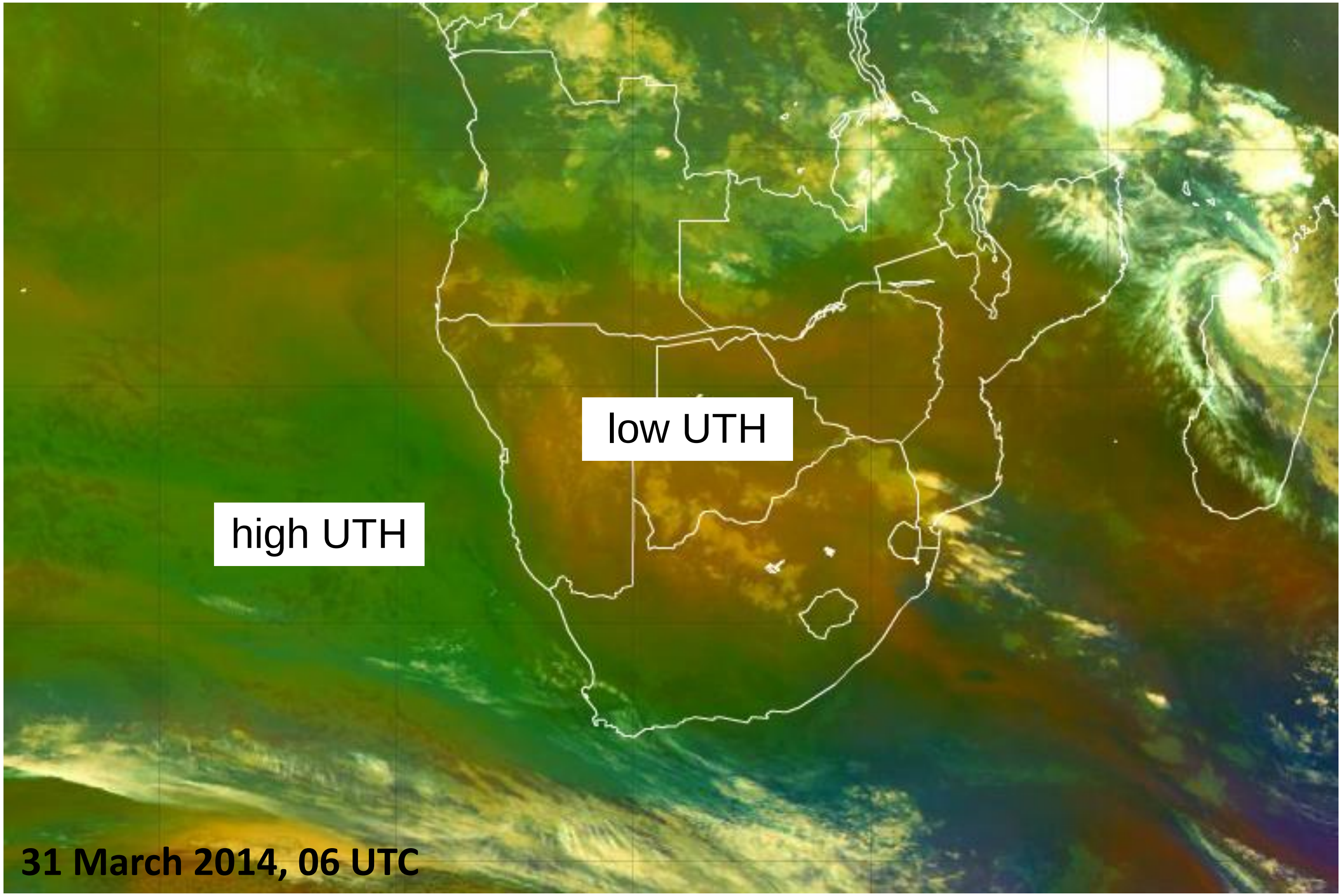
GREEN – warm airmass: high/low upper tropospheric humidity



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The concept of PV helps describing dynamic processes:

$$PV = -g(\zeta_\Theta + f) \cdot \delta\Theta/\delta p$$

absolute vorticity static stability

Air parcel moving along isentropic surfaces:

PV = const.

Dynamic tropopause: PV = 1.5 PVU

Areas of subsidence: „dynamic tropopause anomaly“ or „PV anomaly“

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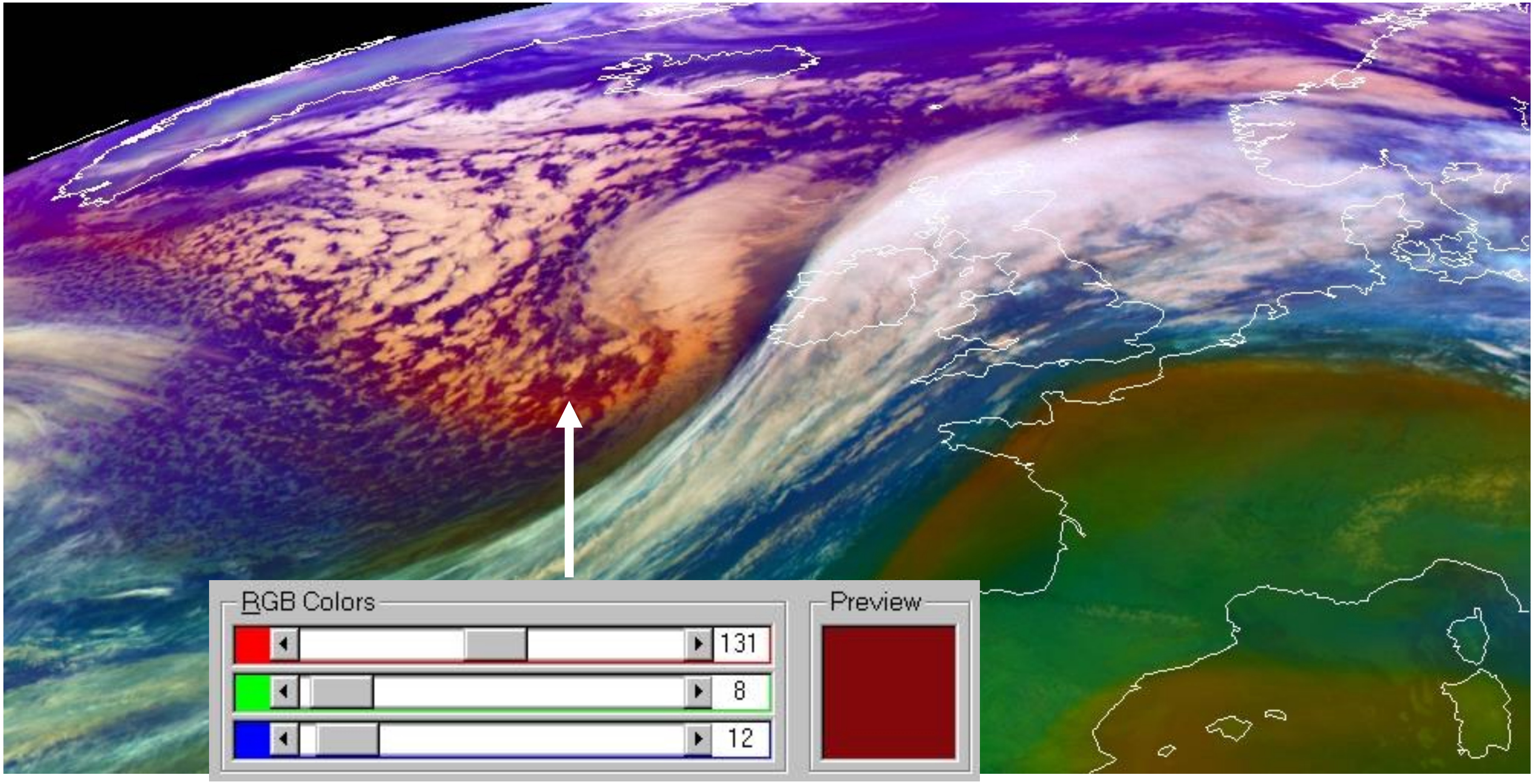
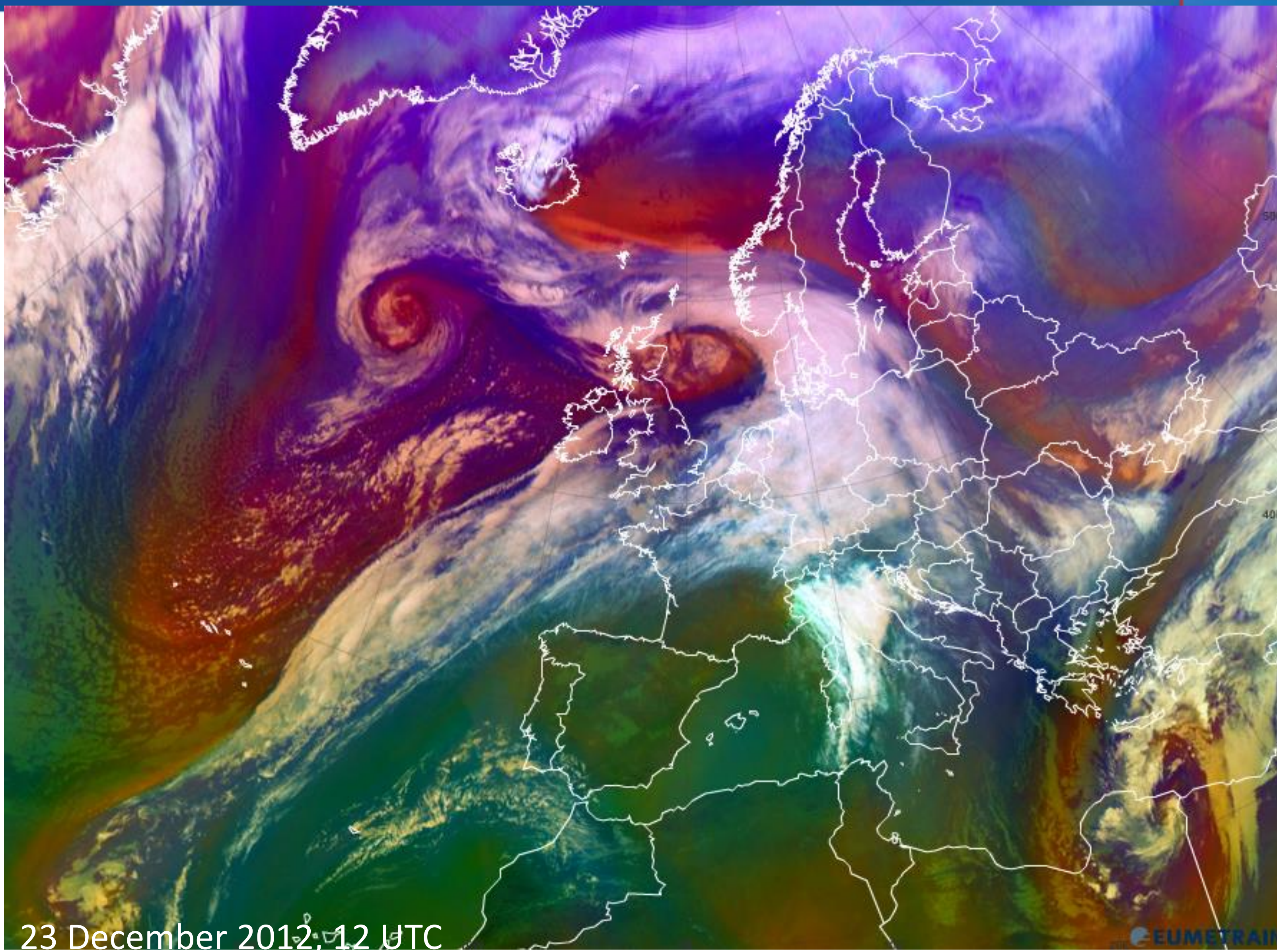
RED – dry descending stratospheric air



MSG-1, 7 January 2005 22 UTC

RED: Dry descending stratospheric air



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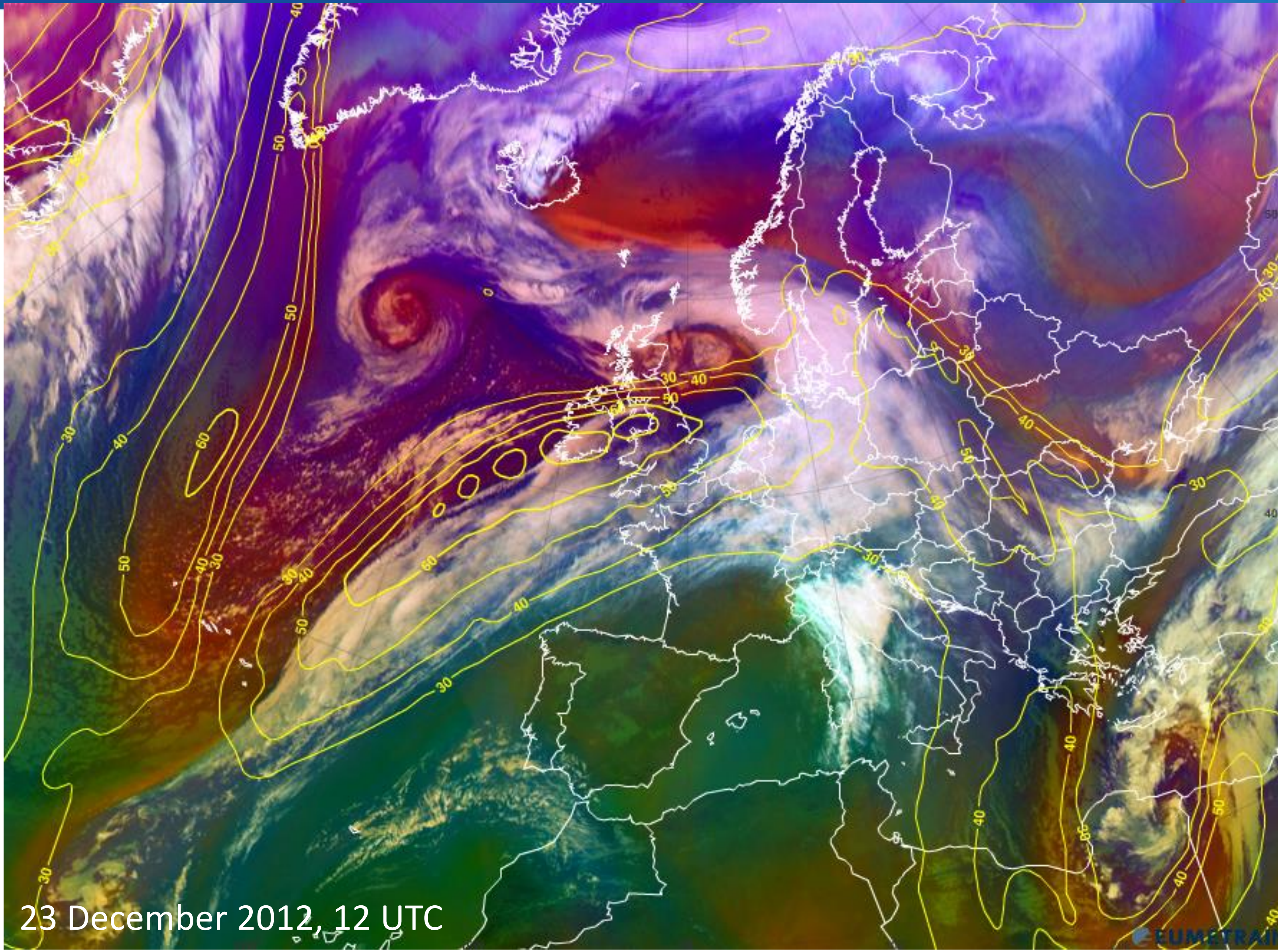
RED: Dry descending stratospheric air / isotachs 300 hPa



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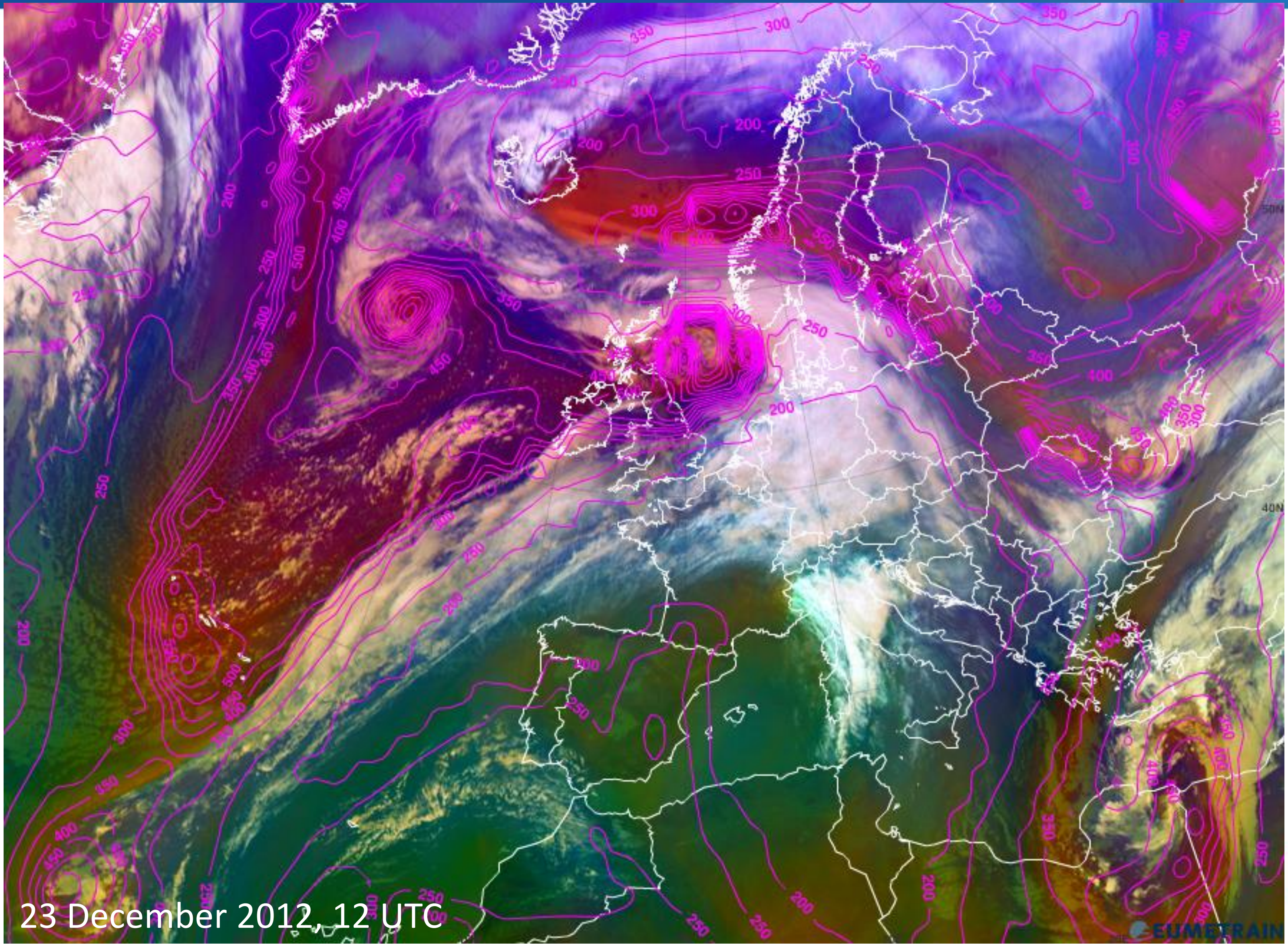
RED: Dry descending stratospheric air / Height PV = 1.5 PVU



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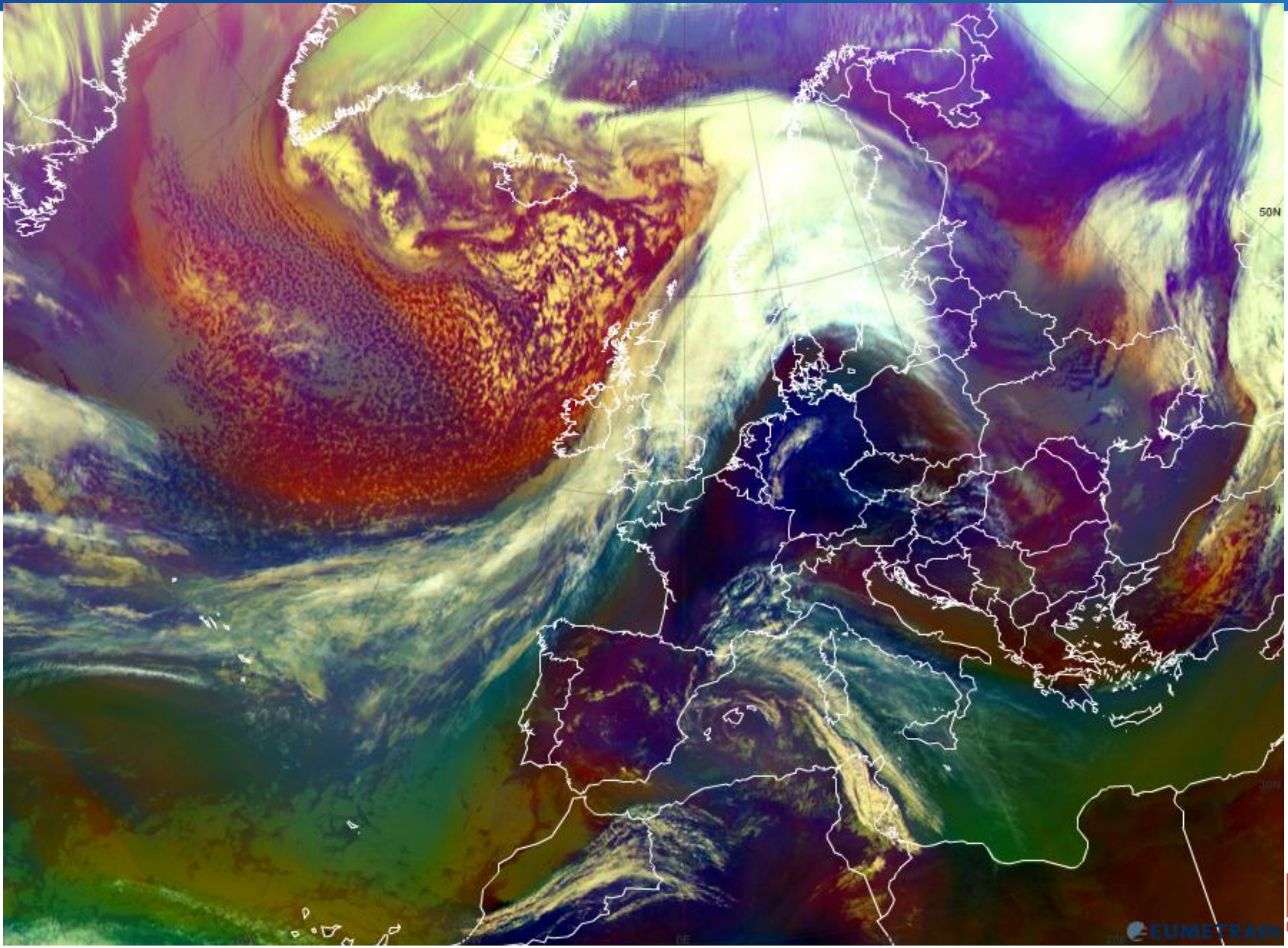
CLOUDS in the Airmass RGB



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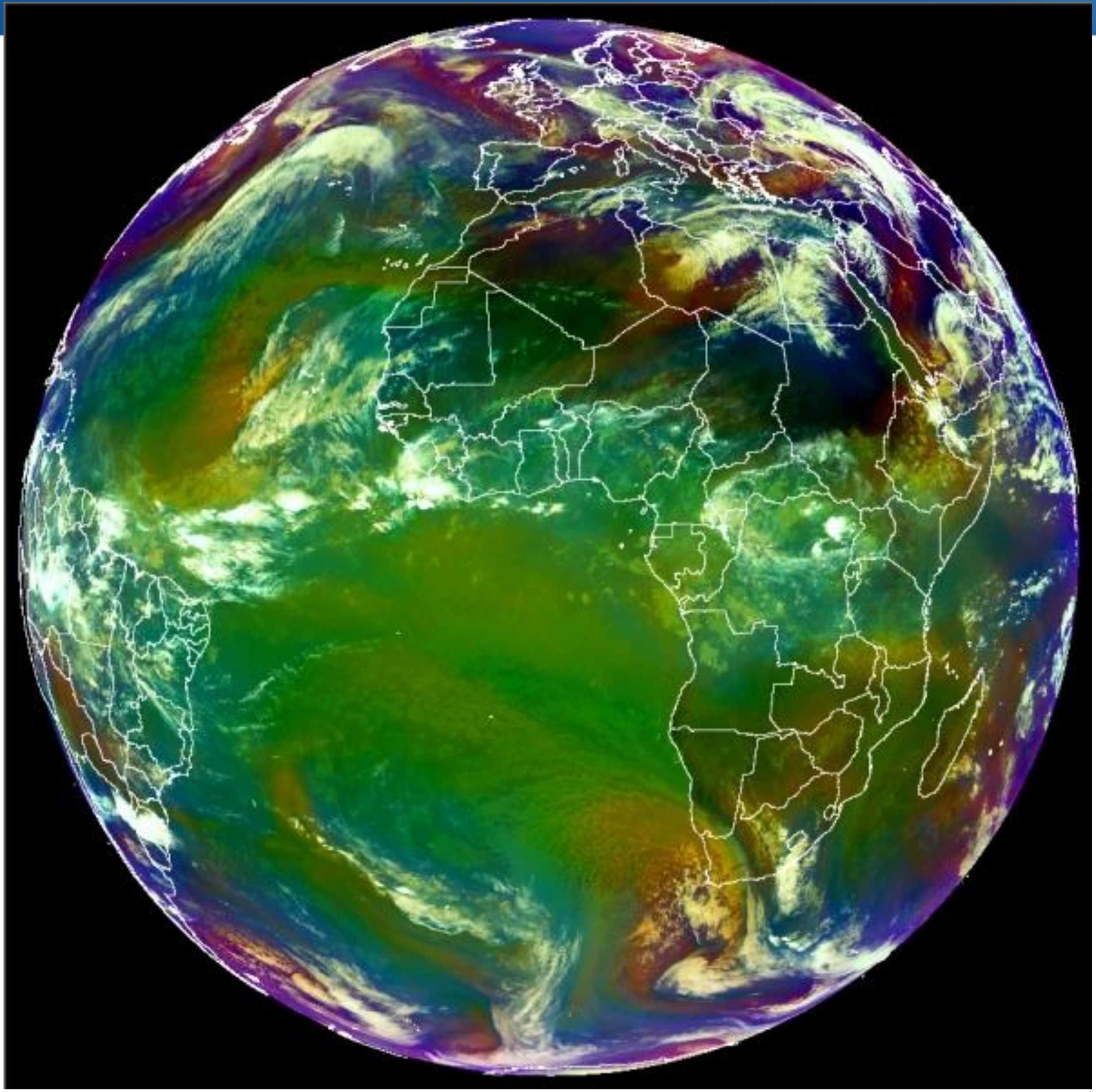
LIMB COOLING



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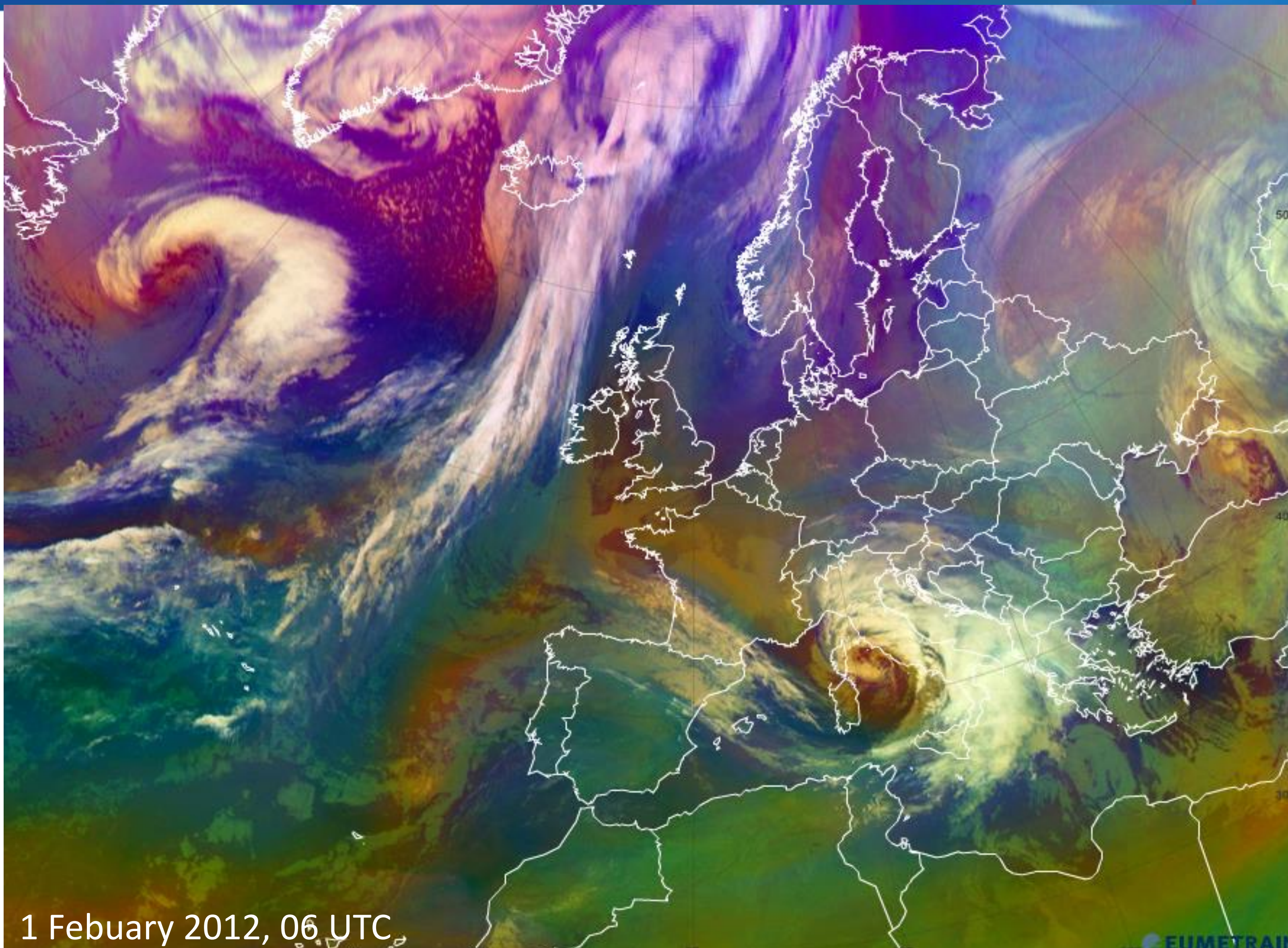
SPECIAL FEATURES....



1 Febuary 2012, 06 UTC

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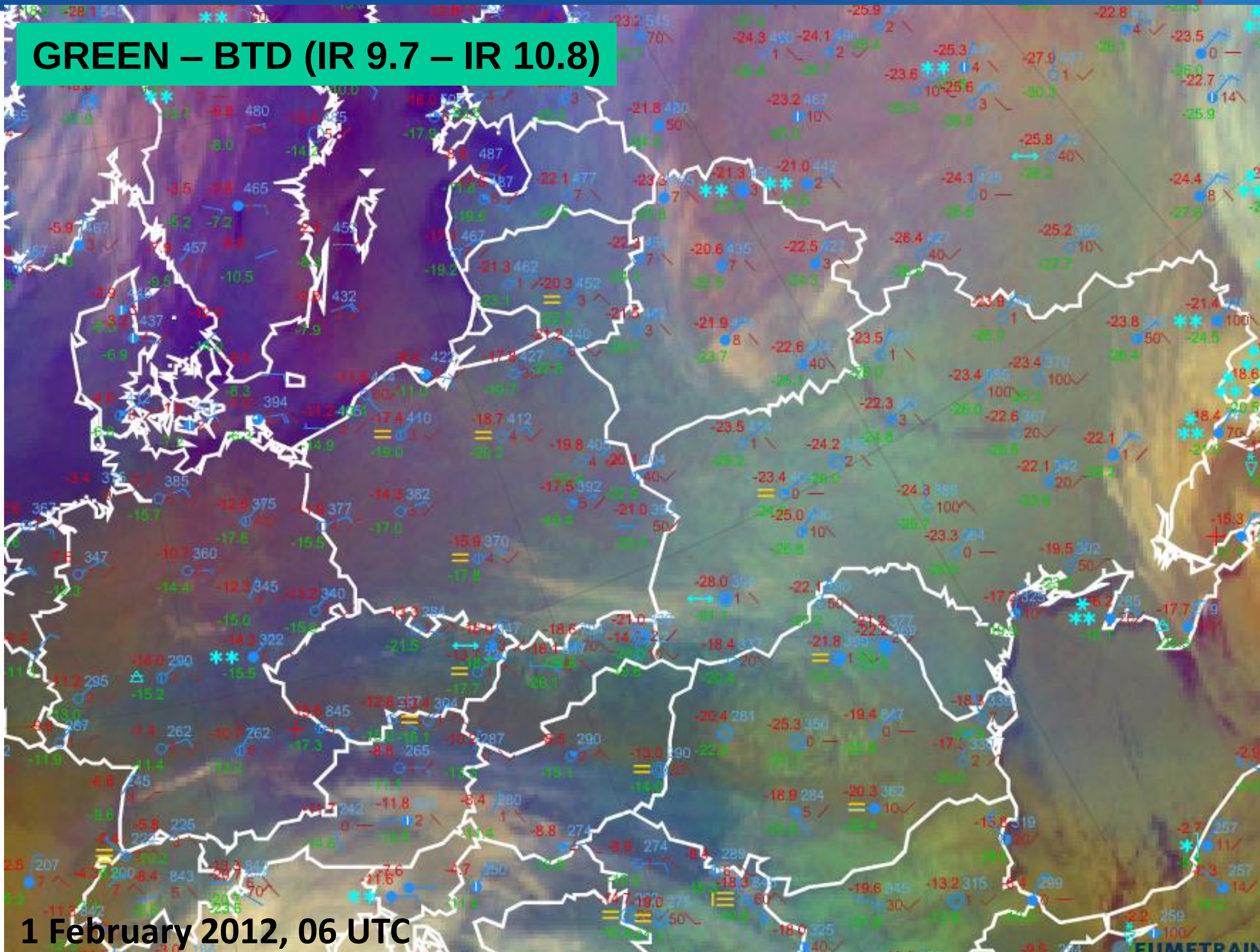
...LOW SURFACE TEMPERATURES



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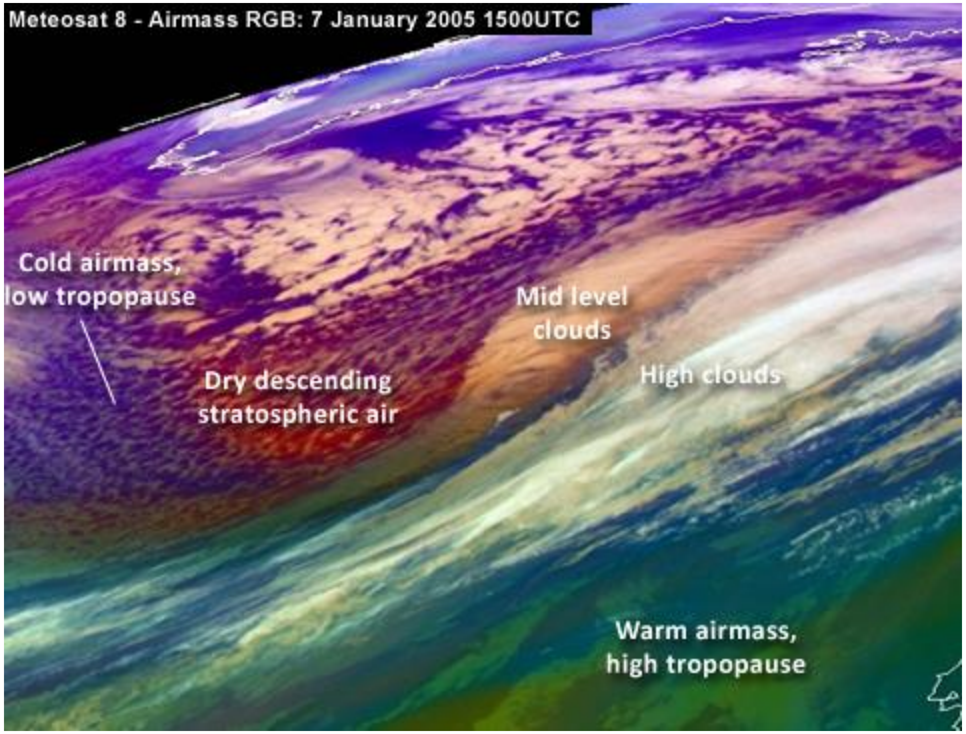
Airmass RGB

Airmass RGB is a complex but very helpful tool best used for:

- **monitoring Jet streams,**
- **PV anomalies,**
- **deformation zones**
- **and Rapic Cyclogenesis**
- **and for discriminating airmasses**

Airmass RGB



AIRMASS (and plenty of other) RGB images plus model data are available at ePort:

www.eumetrain.org/ePort

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THANK YOU FOR YOUR
ATTENTION!