

Airmass RGB

R = Difference WV6.2 - WV7.3

G = Difference IR9.7 - IR10.8

B = Channel WV6.2 (inverted)

Applications:	Rapid Cyclogenesis, Jet Stream Analysis, PV Analysis
Area:	Full MSG Viewing Area
Time:	Day and Night

Airmass RGB

Ranges and Enhancements:

Beam	Channel	Range	Gamma
Red	WV6.2 - WV7.3	-25 ... 0	1.0
Green	IR9.7 - IR10.8	-40 ... +5	1.0
Blue	WV6.2	+243 ... +208	1.0

Physical Interpretation

- Red** Moisture content at roughly 700-400 hPa and 500-200 hPa levels, approximated by BT difference of split WV window.
- Green** Total ozone concentration (tropopause height) approximated by the BT difference between $9.7\mu\text{m}$ (O_3 channel) and $10.8\mu\text{m}$. [to distinguish between ozone-rich polar and ozone-poor (sub) tropical airmasses]
- Blue** Upper level moisture content provided by the BT at $6.2\mu\text{m}$.

Interpretation of Colours



Thick, high-level clouds



Thick, mid-level clouds



Thick, low-level clouds
(warm airmass)



Thick, low-level clouds
(cold airmass)

Jet (high PV)

Cold Airmass

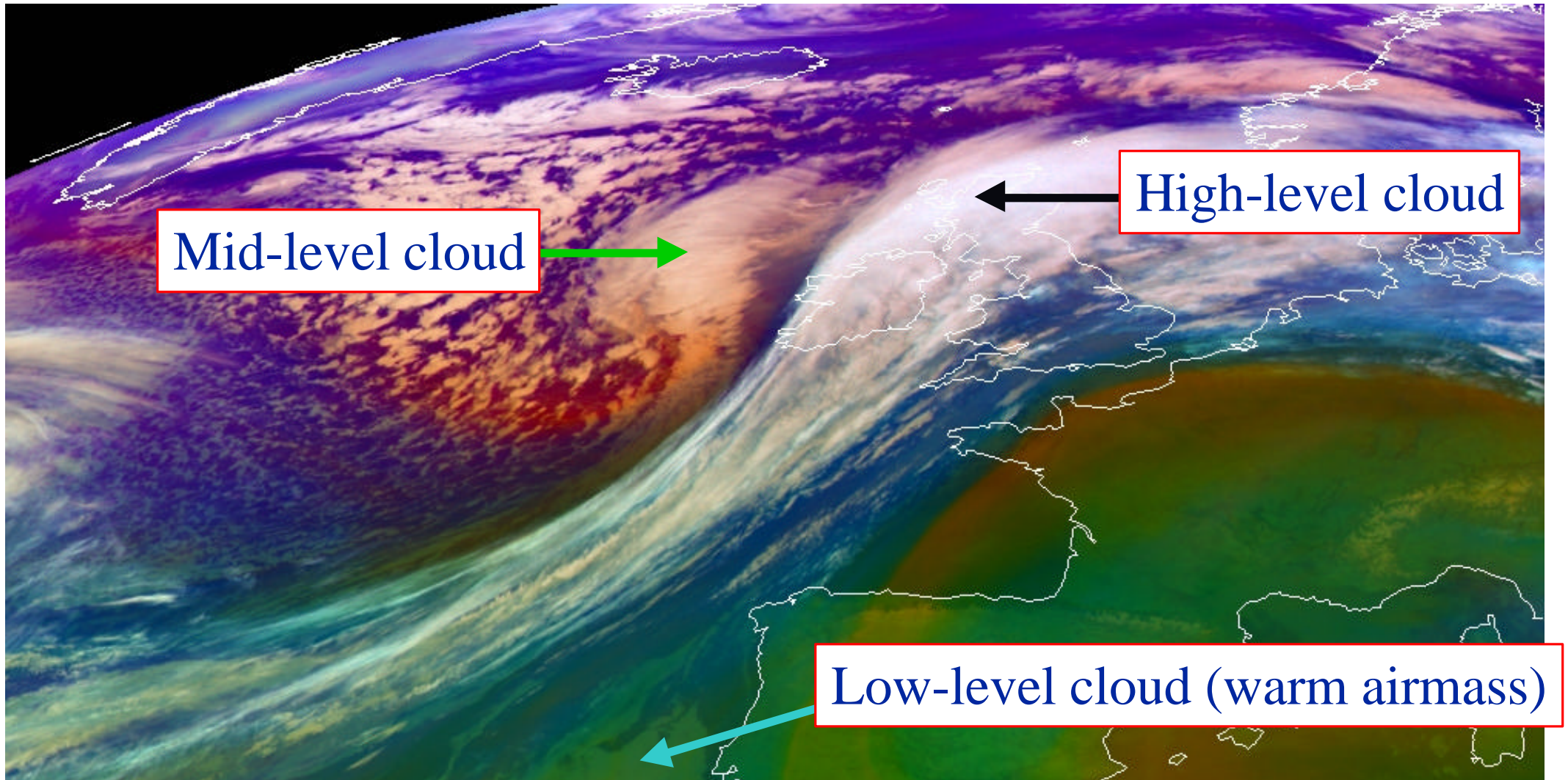
Warm Airmass

Warm Airmass

High UTH

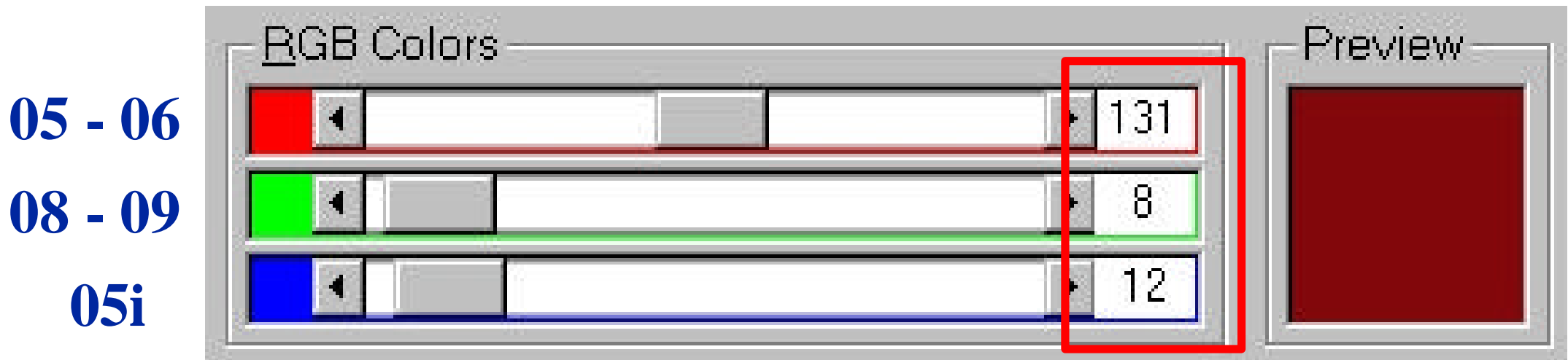
Low UTH

Example 1: Clouds



MSG-1, 7 January 2005, 22:00 UTC

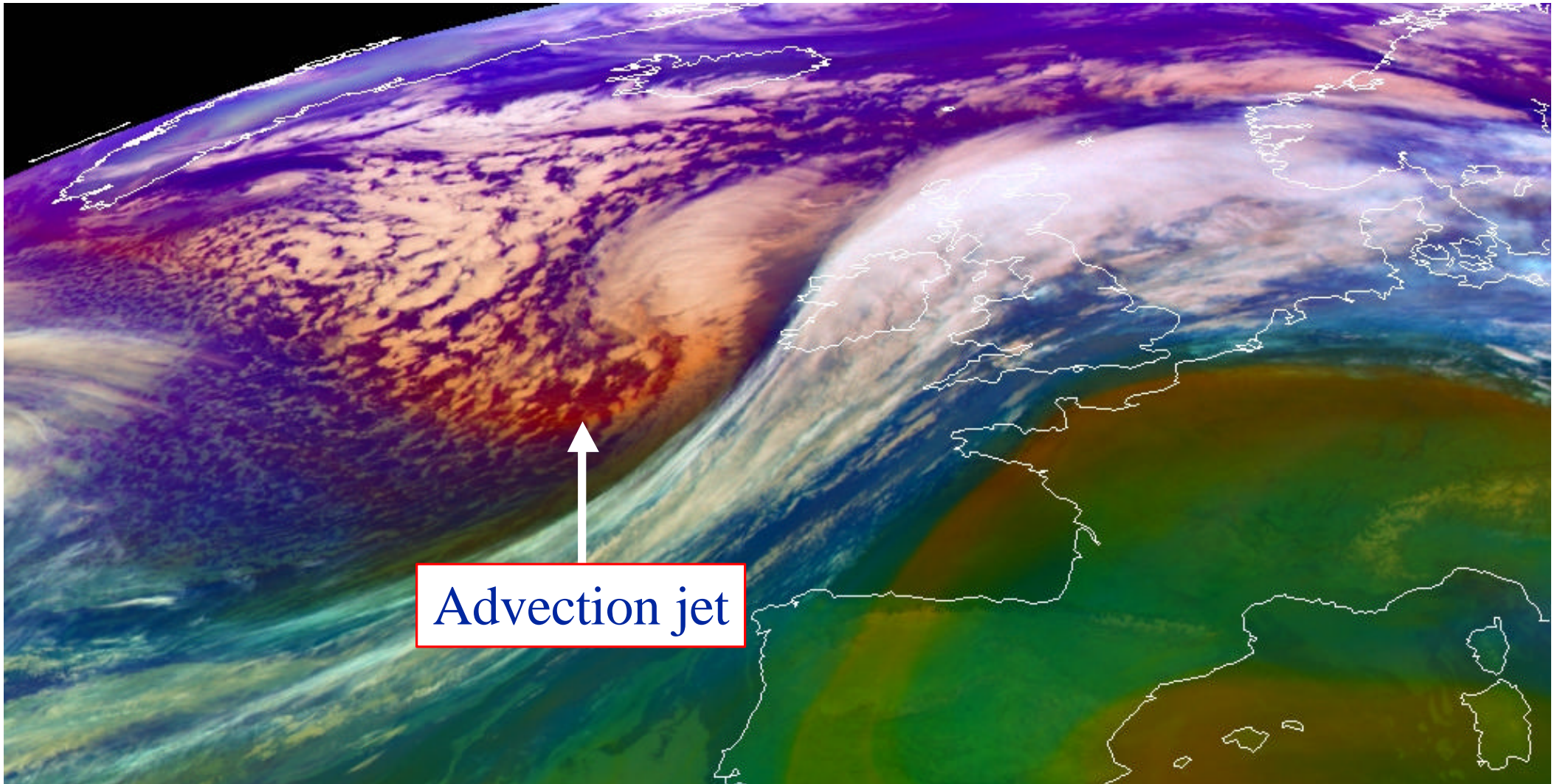
Example 2: Jet Streak



In airmass RGB images, dry descending stratospheric air related to jet streaks appears in reddish colours !

The RGB values shown above (in the red box) correspond to the location (shown by an arrow) on the next slide !

Example 2: Jet Streak



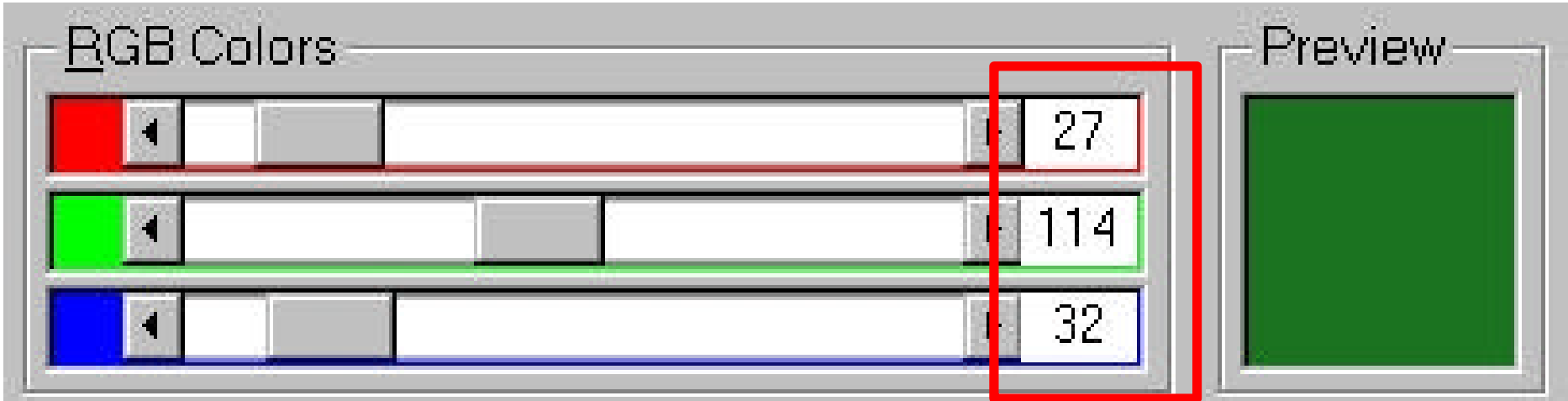
MSG-1, 7 January 2005, 22:00 UTC

Example 3: Warm Airmass

05 - 06

08 - 09

05i

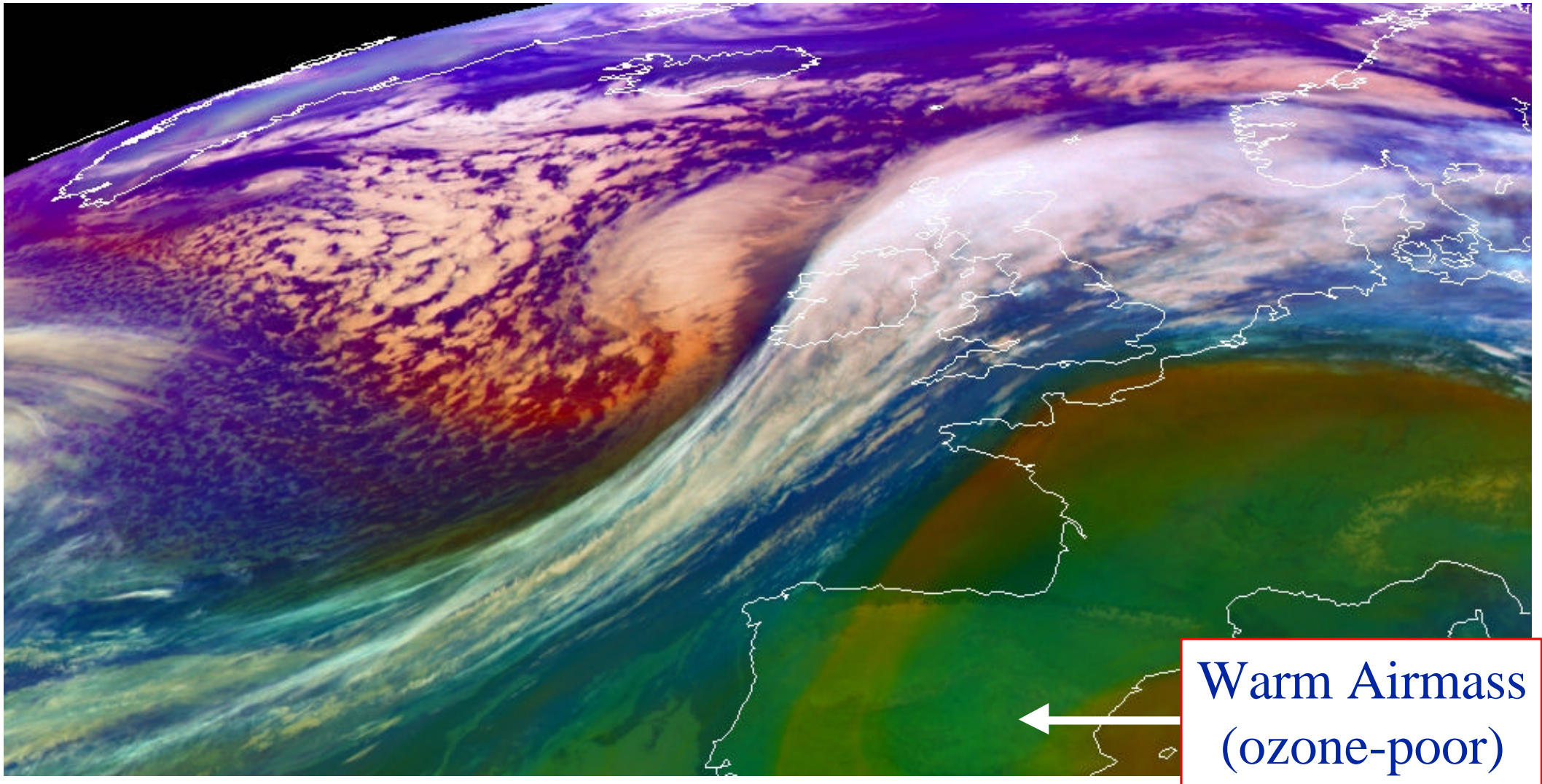


Channel	Value
Red	27
Green	114
Blue	32

In airmass RGB images, warm ozone-poor airmasses with high tropopause appear in greenish colours !

The RGB values shown above (in the red box) correspond to the location (shown by an arrow) on the next slide !

Example 3: Warm Airmass



MSG-1, 7 January 2005, 22:00 UTC

Example 4: Cold Airmass

05 - 06
08 - 09
05i

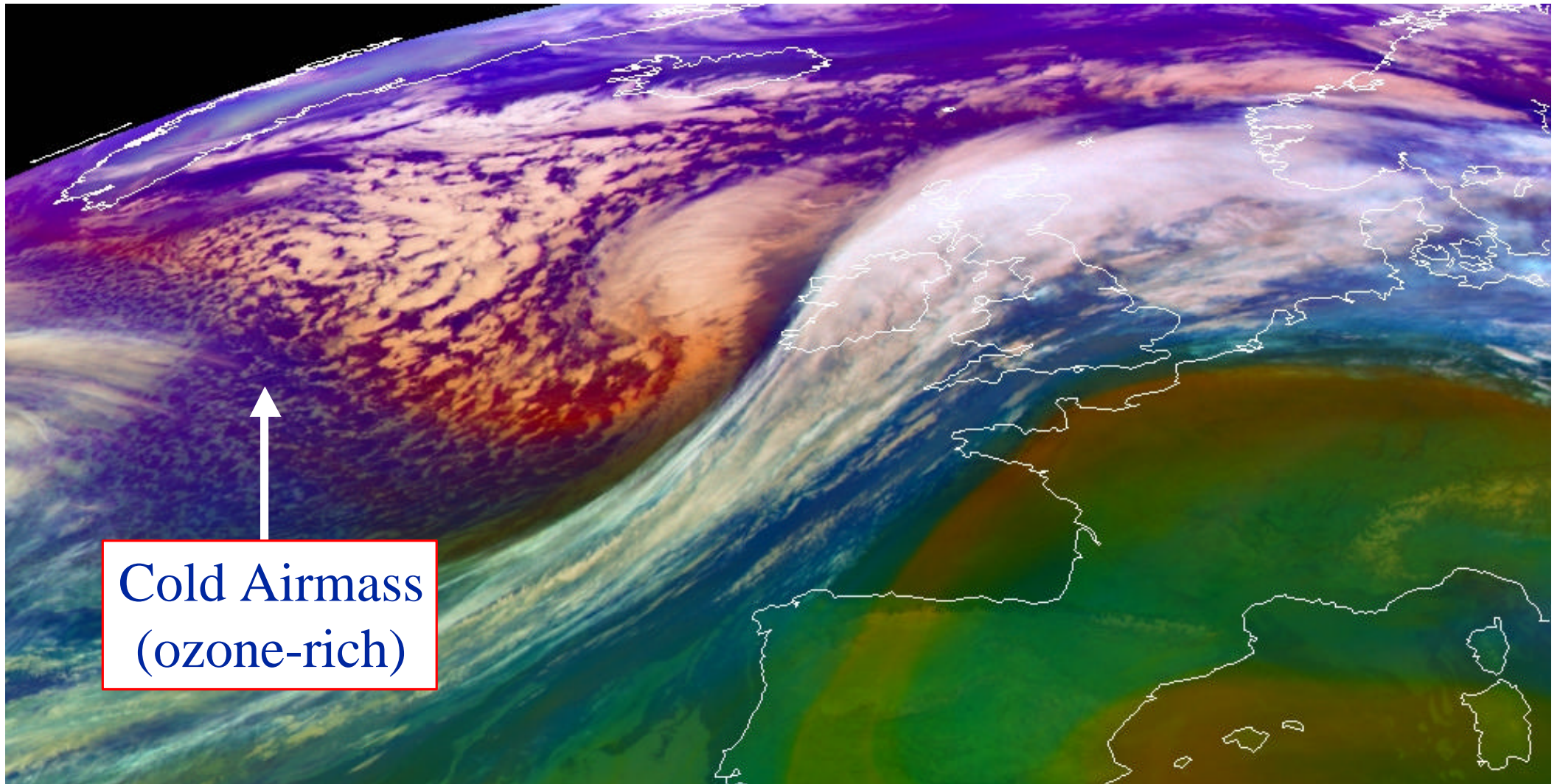
Color	Value
Red (05 - 06)	58
Green (08 - 09)	8
Blue (05i)	126

Preview

In airmass RGB images, cold airmasses with low tropopause appear in bluish colours !

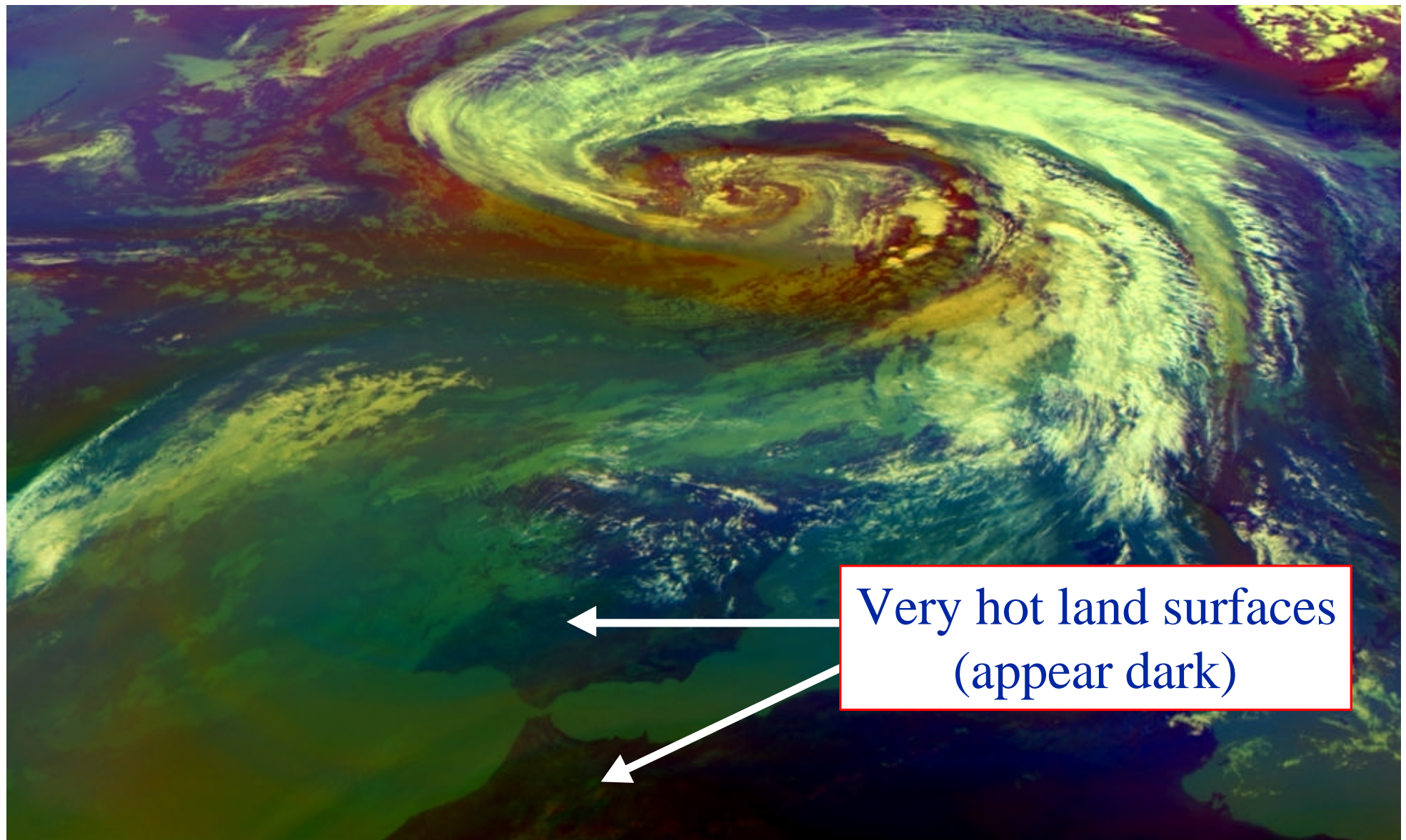
The RGB values shown above (in the red box) correspond to the location (shown by an arrow) on the next slide !

Example 4: Cold Airmass



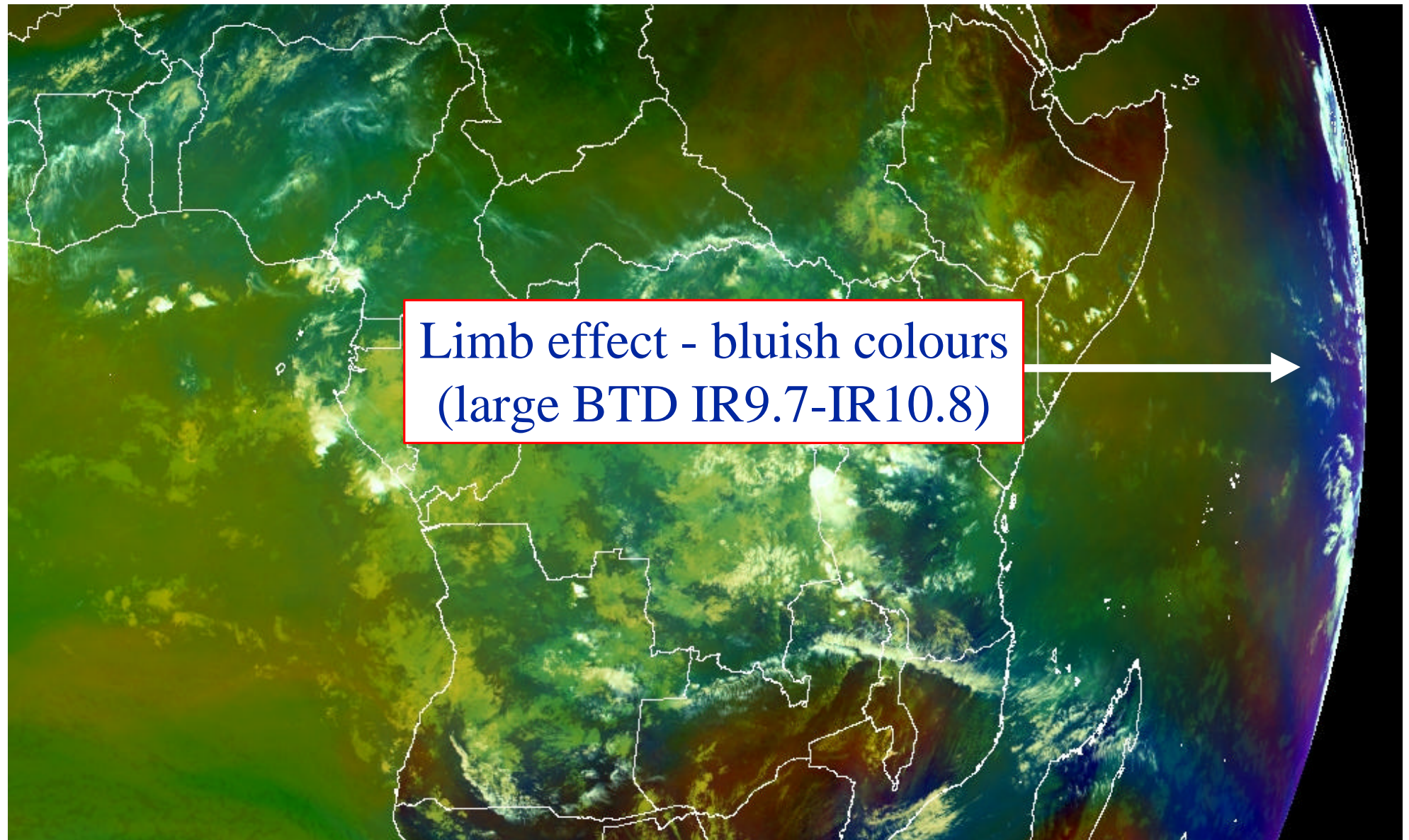
MSG-1, 7 January 2005, 22:00 UTC

Example 5: Effect of Surface Temperature

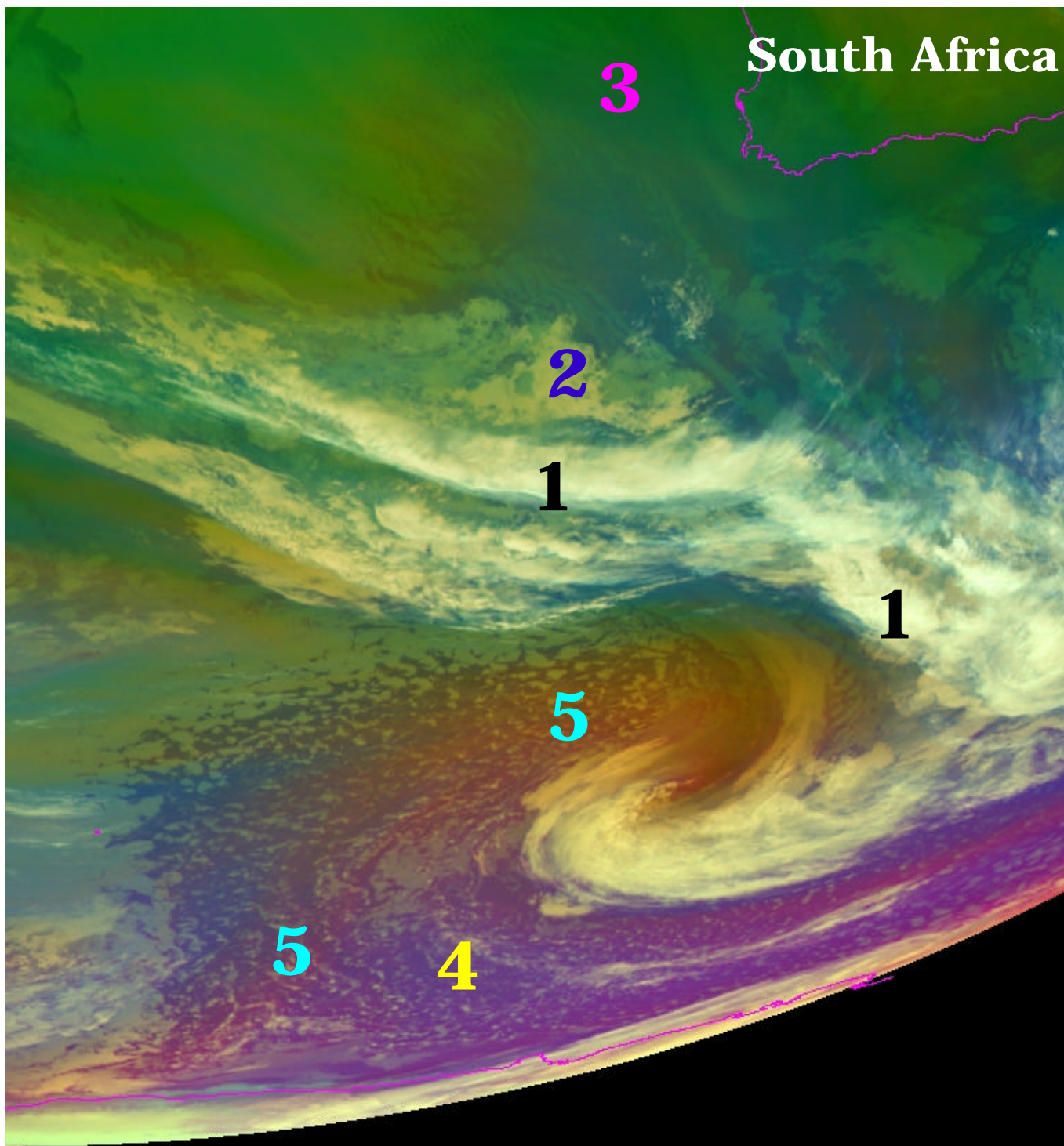


MSG-1, 23 June 2004, 12:00 UTC

Example 6: Effect of Limb Cooling



MSG-1, 04 November 2005, 10:00 UTC



South Africa

Example 7: Southern Hemisphere

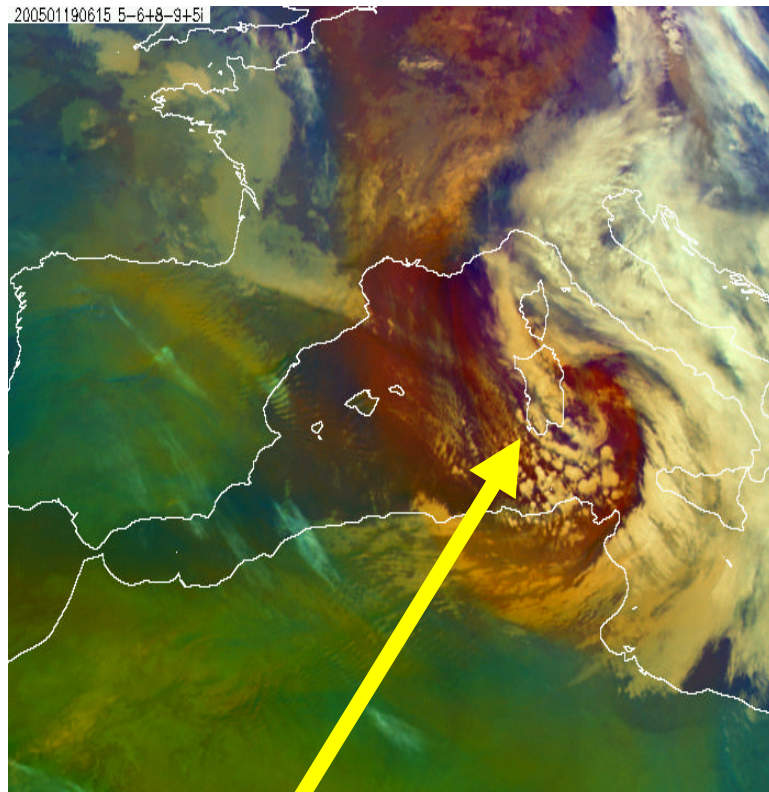
- 1 = high clouds
- 2 = mid-level clouds
- 3 = warm airmass, high tropopause
- 4 = cold airmass, low tropopause
- 5 = dry descending stratospheric air

MSG-1

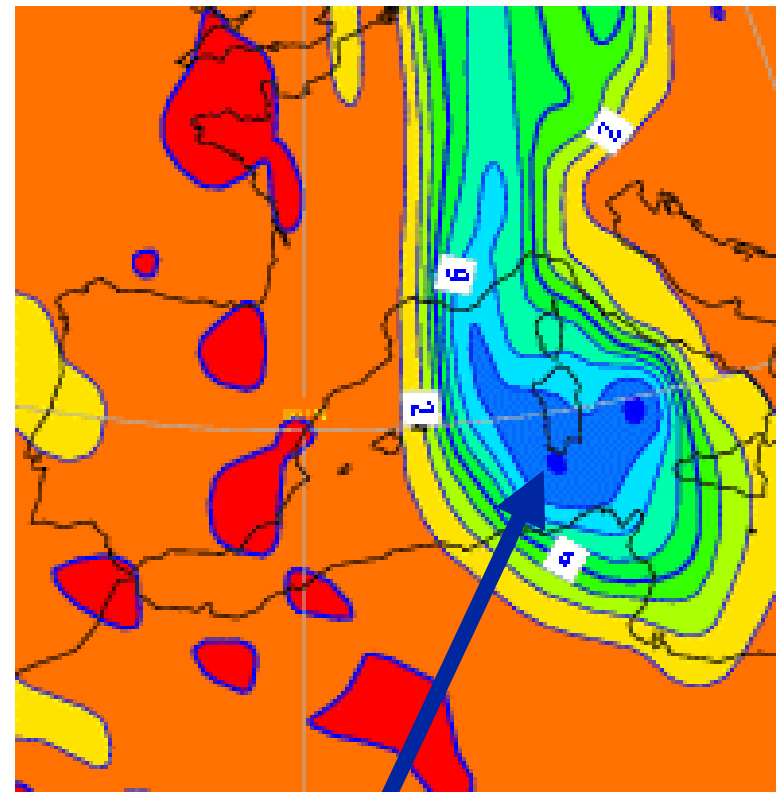
22 March 2005

05:00 UTC

Example 8: Comparison with Potential Vorticity (PV)



reddish areas

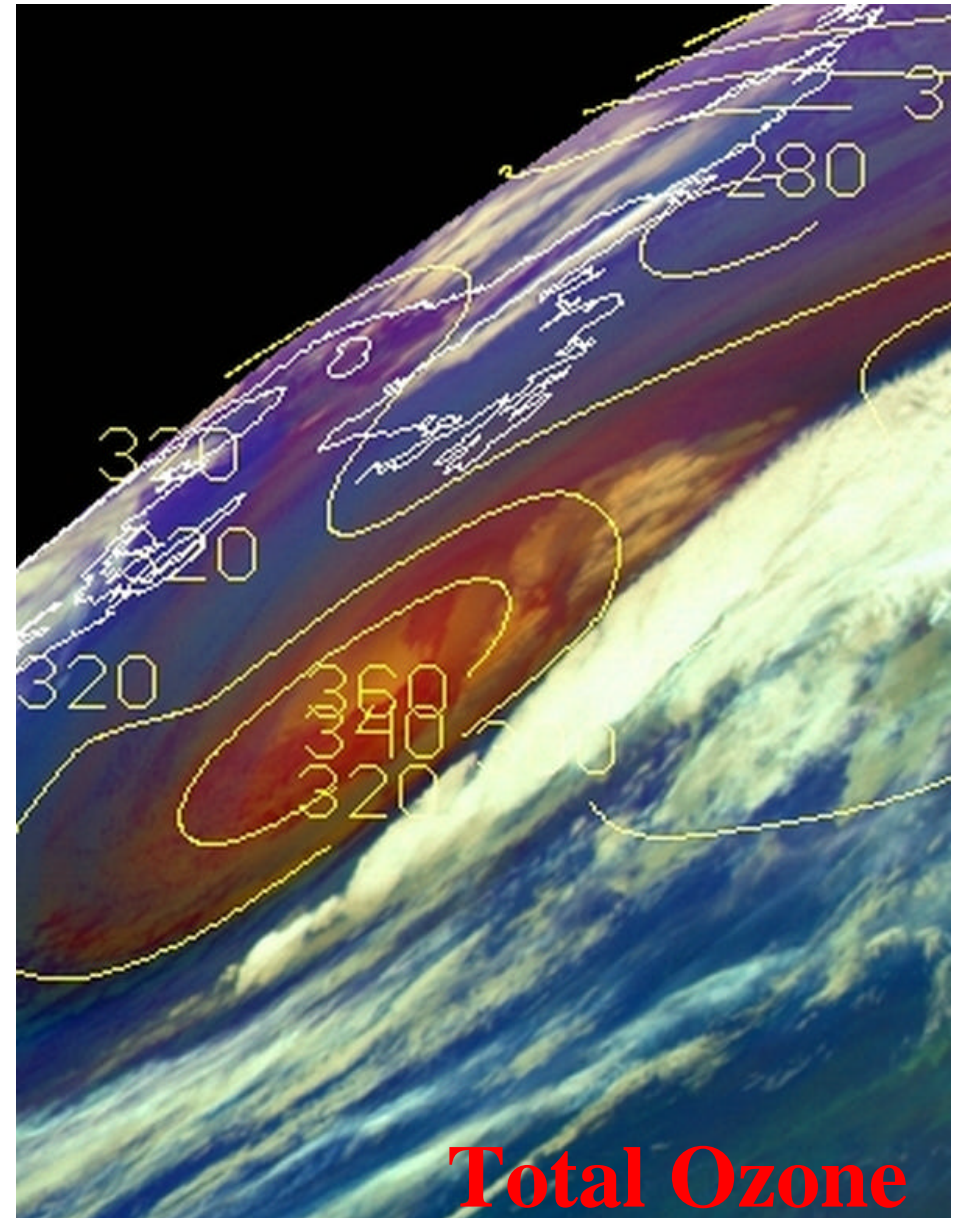
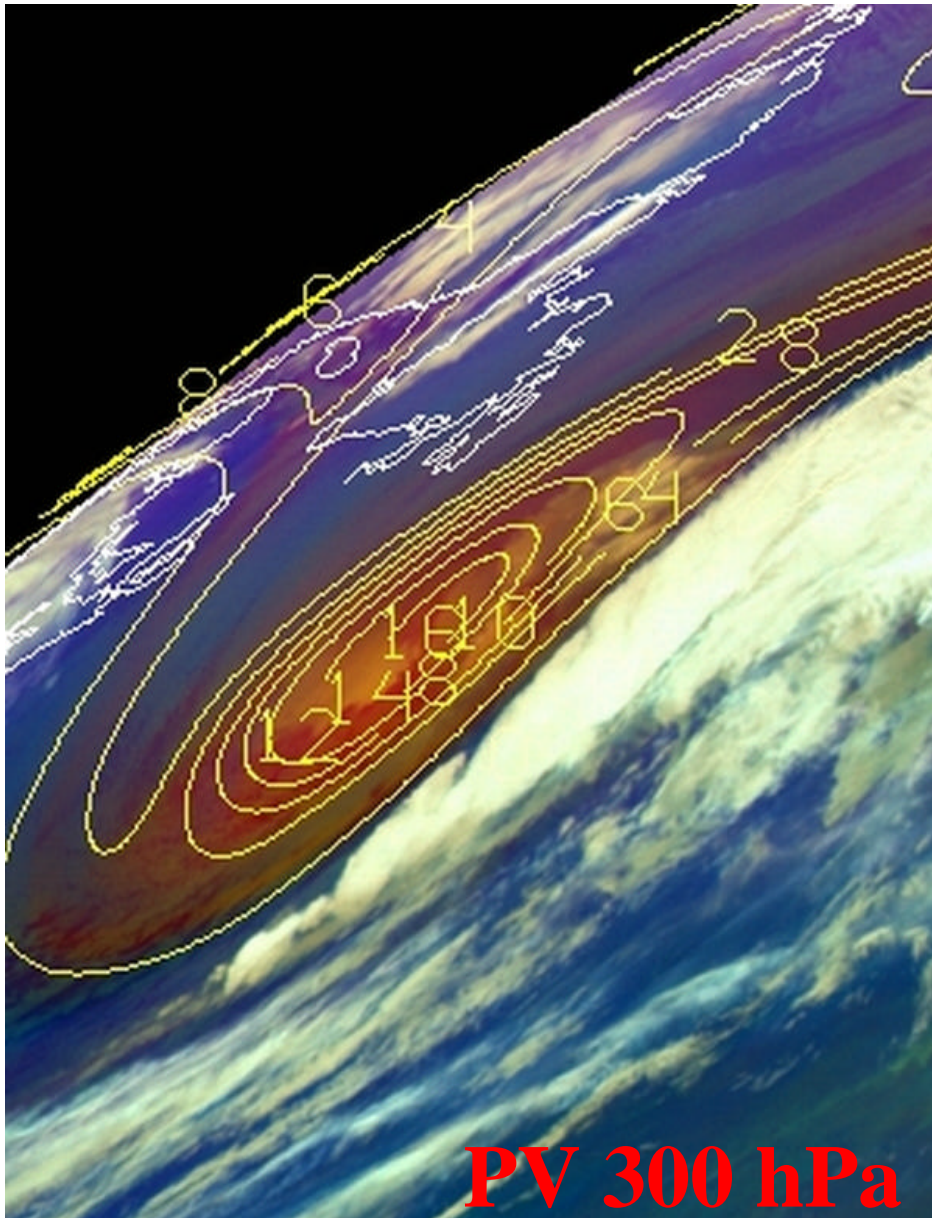


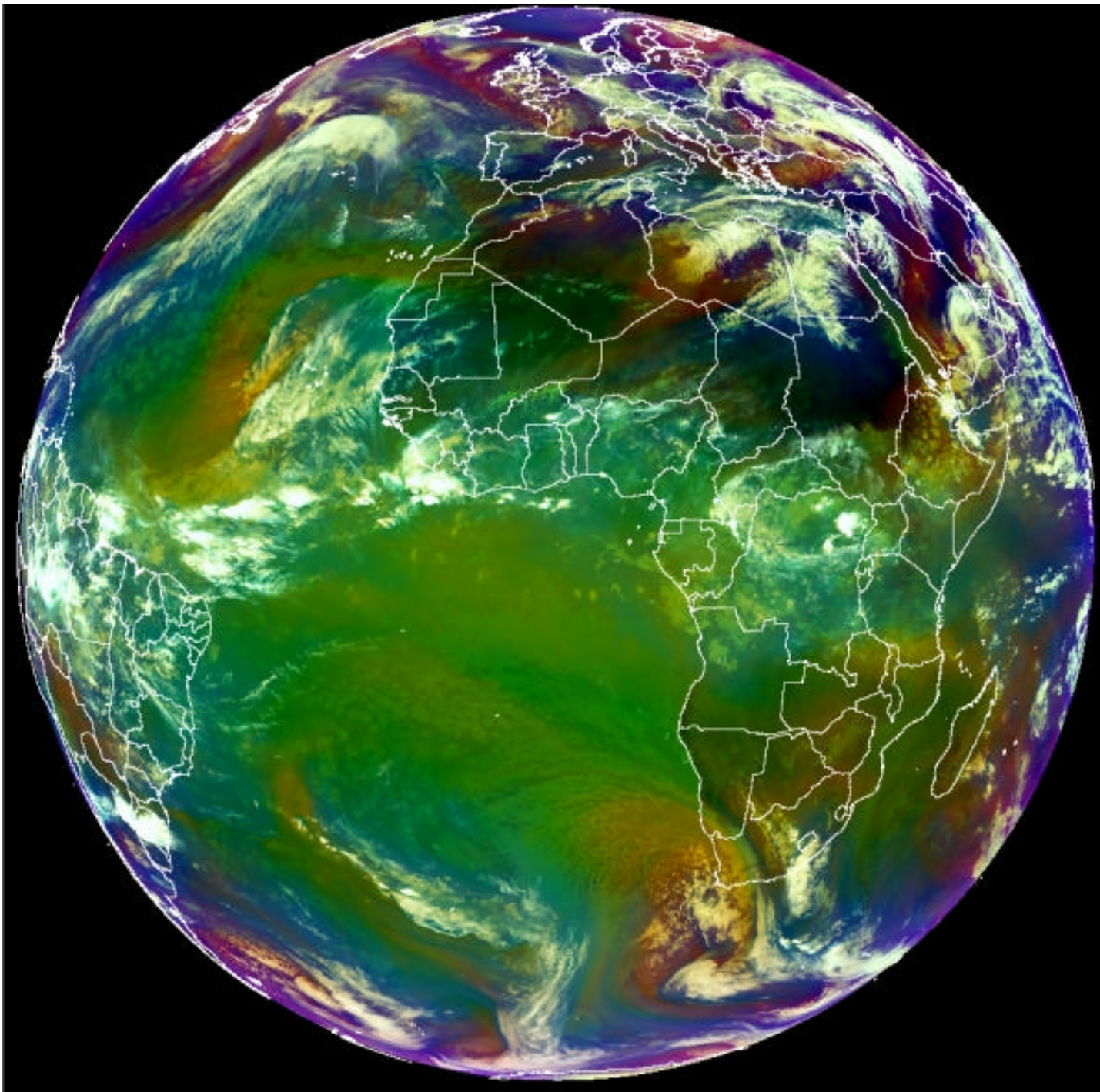
high PV values

19 January 2005, 06:15 UTC

Example 9: Comparison with PV/Ozone

MSG-1, 08 January 2005, 06:00 UTC





Global View

Note: warm airmasses seen at a high satellite viewing angle appear with a bluish colour (limb cooling effect) !

MSG-1
19 April 2005
10:00 UTC