### 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
### Ranges and Enhancements:

<table>
<thead>
<tr>
<th>Beam</th>
<th>Channel</th>
<th>Range</th>
<th>Gamma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>WV6.2 - WV7.3</td>
<td>-25 … 0</td>
<td>1.0</td>
</tr>
<tr>
<td>Green</td>
<td>IR9.7 - IR10.8</td>
<td>-40 … +5</td>
<td>1.0</td>
</tr>
<tr>
<td>Blue</td>
<td>WV6.2</td>
<td>+243 … +208</td>
<td>1.0</td>
</tr>
</tbody>
</table>
## Physical Interpretation

<table>
<thead>
<tr>
<th>Red</th>
<th>Moisture content at roughly 700-400 hPa and 500-200 hPa levels, approximated by BT difference of split WV window.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Total ozone concentration (tropopause height) approximated by the BT difference between 9.7µm ($O_3$ channel) and 10.8µm. [to distinguish between ozone-rich polar and ozone-poor (sub) tropical airmasses]</td>
</tr>
<tr>
<td>Blue</td>
<td>Upper level moisture content provided by the BT at 6.2µm.</td>
</tr>
</tbody>
</table>
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 (High UTH)
- Warm Airmass (Low UTH)
Example 1: Clouds

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

Mid-level cloud
High-level cloud
Low-level cloud (warm airmass)
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
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

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

Cold Airmass (ozone-rich)

MSG-1, 7 January 2005, 22:00 UTC
Example 5: Effect of Surface Temperature

Very hot land surfaces (appear dark)

MSG-1, 23 June 2004, 12:00 UTC
Example 6: Effect of Limb Cooling

Limb effect - bluish colours (large BTD IR9.7-IR10.8)

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

PV 300 hPa

Total Ozone
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