



**Instytut Meteorologii i Gospodarki Wodnej**  
Państwowy Instytut Badawczy

# **Interpretacja obrazów satelitarnych pod kątem wykorzystania do planowania lotów i oceny możliwości ich wykonania**

Łukasz Kiełt

Centralne Biuro Prognoz Meteorologicznych IMGW-PIB  
w Krakowie

# Moja perspektywa...



**EUMETSAT** MONITORING WEATHER AND CLIMATE FROM SPACE

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## REAL-TIME IMAGES

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REAL-TIME IMAGES  
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IMAGE GLOSSARY

**The latest, openly available data from the EUMETSAT satellites, plus the previous 100 files.**

To access older data and imagery you must order it from our archive, the [EUMETSAT Data Centre](#), via our [Earth Observation Portal](#) (registration necessary).



**METEOSAT 0 DEGREE NEAR REAL-TIME IMAGERY**

Meteosat's SEVIRI observes the full disk of the Earth with a repeat cycle of 15 minutes.

**METEOSAT IODC NEAR REAL-TIME IMAGERY**

Imagery from Meteosat-7, from all three MVIRI spectral channels IR11.5, VIS0.7 and WV6.4.

**METEOSAT 0 DEGREE VISUALISED PRODUCTS**

Products available from the Meteorological Products Extraction Facility (MPEF).

**METEOSAT IODC VISUALISED PRODUCTS**

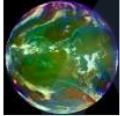

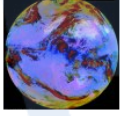
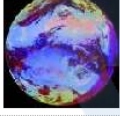

Visualised products from Meteosat-7 for MPE (Multi-Sensor Precipitation Estimate).

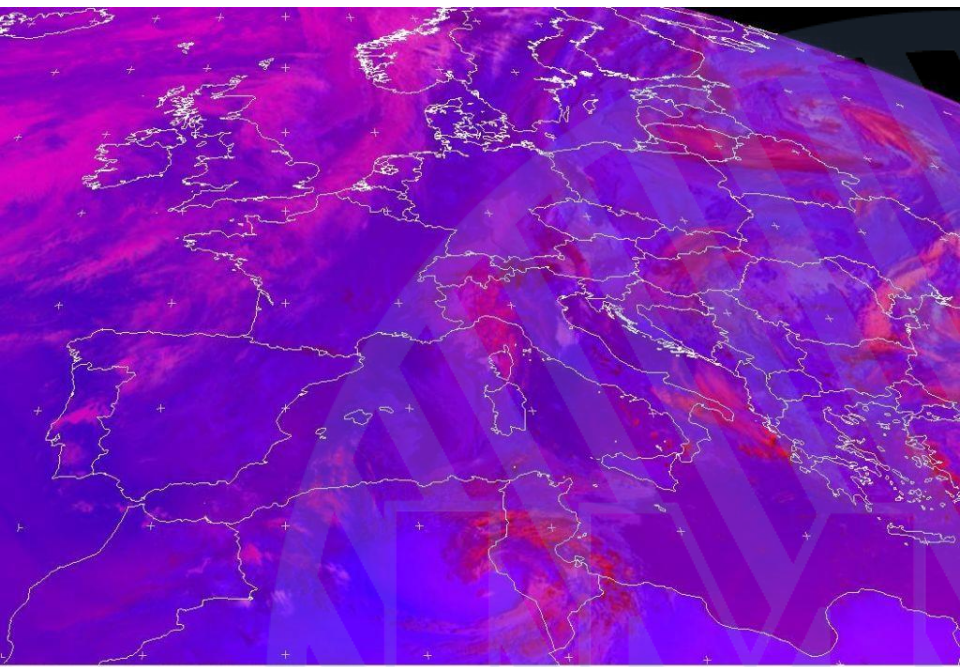


## Meteosat 0 degree RGB Composites

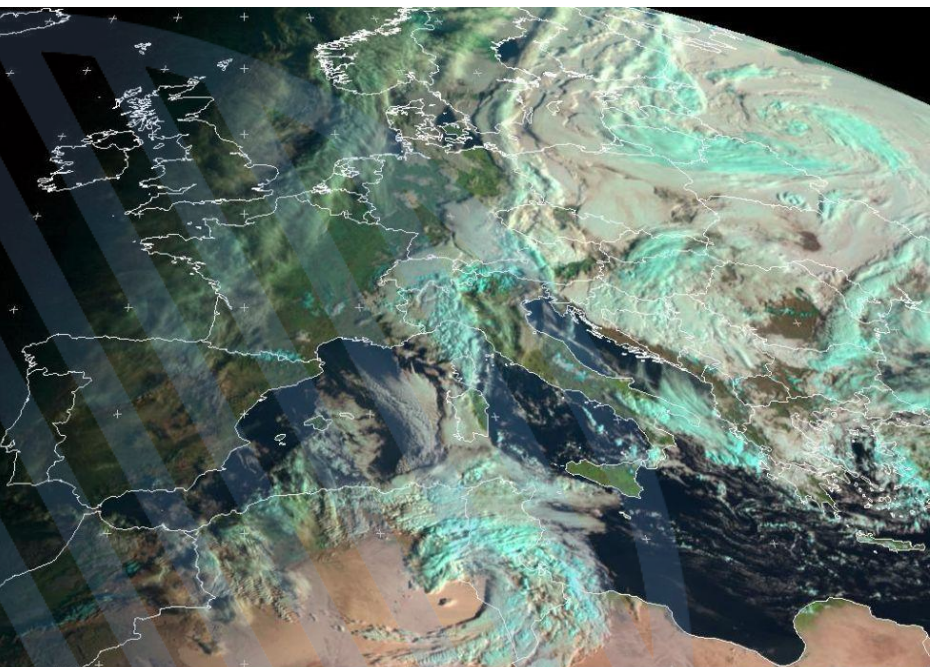
- IMAGE GALLERY
  - Real-Time Imagery
    - Meteosat IODC
    - Meteosat 0 degree
      - Imagery
      - Visualised Products
      - RGB Composites**
        - Airmass
        - Ash
        - Convection
        - Dust
        - Eview
        - Fog
        - Microphysics
        - Natural color
        - Snow
- Latest Images
- Data Centre
  - Data Policy

### Available Near Real-time Products

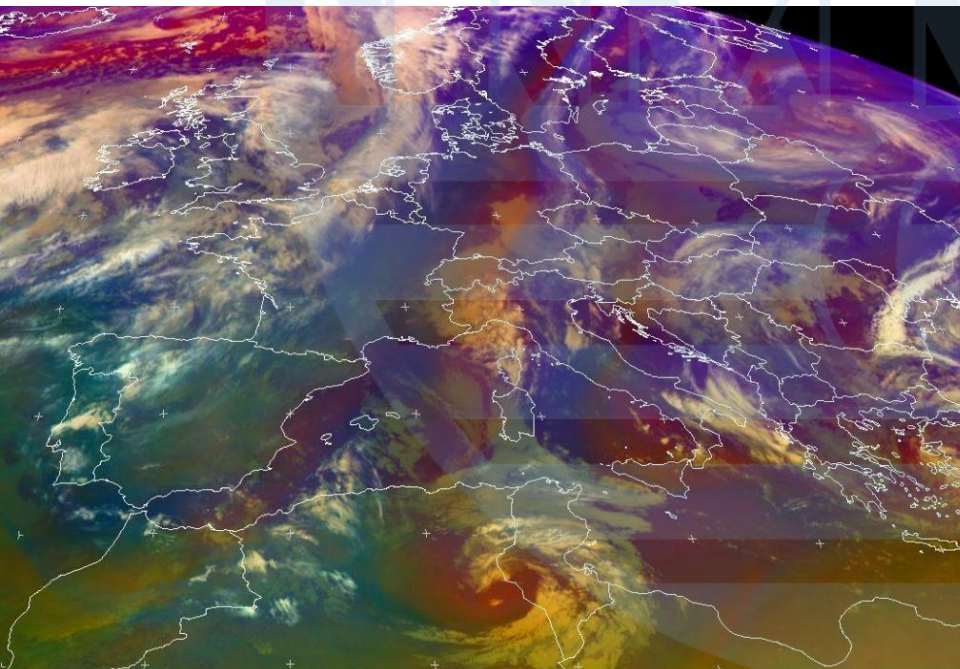
| Link  | Description   |
|---|---|
|    | Airmass is an RGB composite based upon data from infrared and water vapour channels from Meteosat Second Generation. It is designed and tuned to monitor the evolution of cyclones, in particular rapid cyclogenesis, jet streaks and PV (potential vorticity) anomalies. Due to the incorporation of the water vapour and ozone channels, its usage at high satellite viewing angles is limited. The Airmass RGB is composed from data from a combination of the SEVIRI WV6.2, WV7.3, IR9.7 and IR10.8 channels  |
|    | Ash is an RGB composite based upon infrared channel data from the Meteosat Second Generation satellite. It is designed to detect ash and sulphur dioxide (SO <sub>2</sub> ) from volcanic eruptions which can be used for the provision of warnings to aviation authorities. The Ash RGB is composed from data from a combination of the SEVIRI IR8.7, IR10.8 and IR12.0 channels.  |
|    | The Convection RGB combines the brightness temperature difference (BTD) between the WV6.2 and WV7.3 channels (on red), the BTD between the IR3.9 and IR10.8 channels (on green) and the reflectance difference between the NIR1.6 and the VIS0.6 channels (on blue). Severe convective storms appear bright yellow in this color scheme because of the near zero BTD WV6.2-WV7.3 of overshooting Cb clouds (high red). The strong updrafts in these clouds produce small ice particles at cloud tops due to homogeneous freezing of cloud drops, resulting with large BTD IR3.9-IR10.8 (high green). Finally, large negative values of NIR1.6-VIS0.6 because of the large absorption at NIR1.6 by ice particles keeps the blue very low. Please note that small ice crystals of Cirrus clouds should not be confused with vigorous convection. Inferred small ice crystals that are not associated with anvils of Cb clouds must form by elevated strong updrafts, such as in high altitude orographic wave clouds. |
|    | E-View is an RGB composite based upon data from the Meteosat Second Generation satellite. It is dedicated to detailed cloud monitoring of the European region. It is based on data from the SEVIRI High Resolution Visible channel combined with data from the IR10.8 channel.  |
|    | Dust is an RGB composite based upon infrared channel data from the Meteosat Second Generation satellite. It is designed to monitor the evolution of dust storms during both day and night. The Dust RGB is composed from data from a combination of the SEVIRI IR8.7, IR10.8 and IR12.0 channels  |
|   | Fog / Low Clouds is an RGB composite based upon infrared channel data from the Meteosat Second Generation satellite. It is designed and tuned to monitor the evolution of night-time fog / low stratus. Other (secondary) applications are the detection of fires, low-level moisture boundaries and cloud classification in general. It should be noted that as the product is tuned for night-time conditions, its use during day-time is very limited. The Fog / Low Clouds RGB is composed from data from a combination of the SEVIRI IR3.9, IR10.8 and IR12.0 channels   |
|  | The Day Microphysics RGB was inherited from Rosenfeld and Lensky (1998): the VIS0.8 reflectance in red approximates the cloud optical depth and amount of cloud water and ice; the IR3.9 solar reflectance in green is a qualitative measure for cloud particle size and phase, and the IR10.8 brightness temperature modulates the blue. This color scheme is useful for cloud analysis, convection, fog, snow, and fires. In this colour scheme water clouds that do not precipitate appear white because cloud drops are small, whereas large drops that are typical to precipitating clouds appear pink, because of the low reflectance at IR3.9 manifested as low green. Supercooled water clouds appear more yellow, because the lower temperature that modulate the blue component. Cold and thick clouds with tops composed of large ice particles, e.g., Cb tops, appear red. Optically thick clouds with small ice particles near their tops appear orange.   |
|  | The Natural Color RGB makes use of three solar channels: VIS0.6, VIS0.8 and NIR1.6. In this color scheme vegetation appears greenish because of its large reflectance in the VIS0.8 channel (the green beam) compared to  |



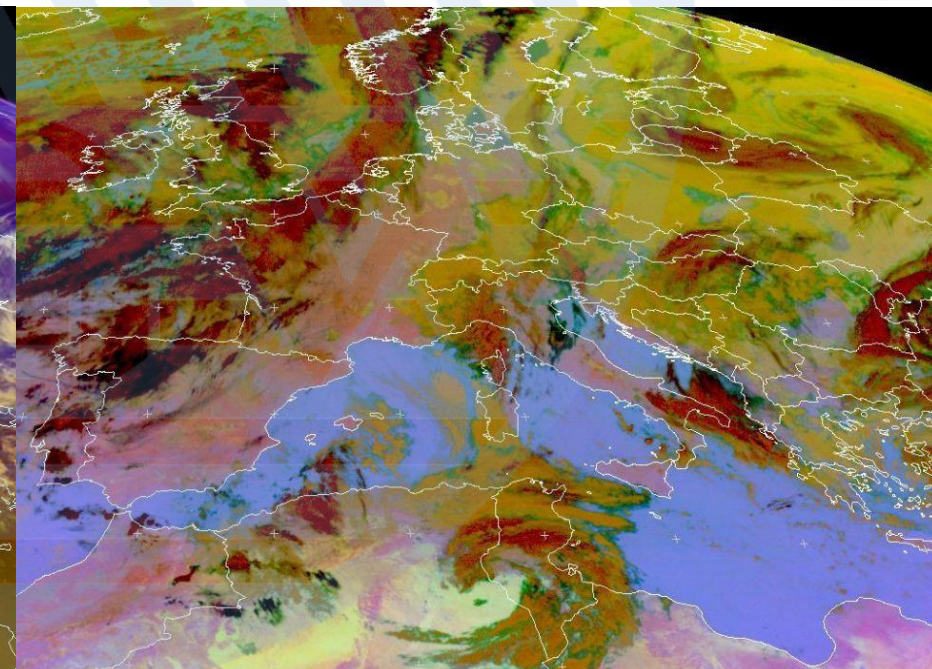
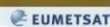
MET10 RGB-convection 2015-02-28 07:00 UTC



RGB-3-2-1 2015-02-28 07:00 UTC

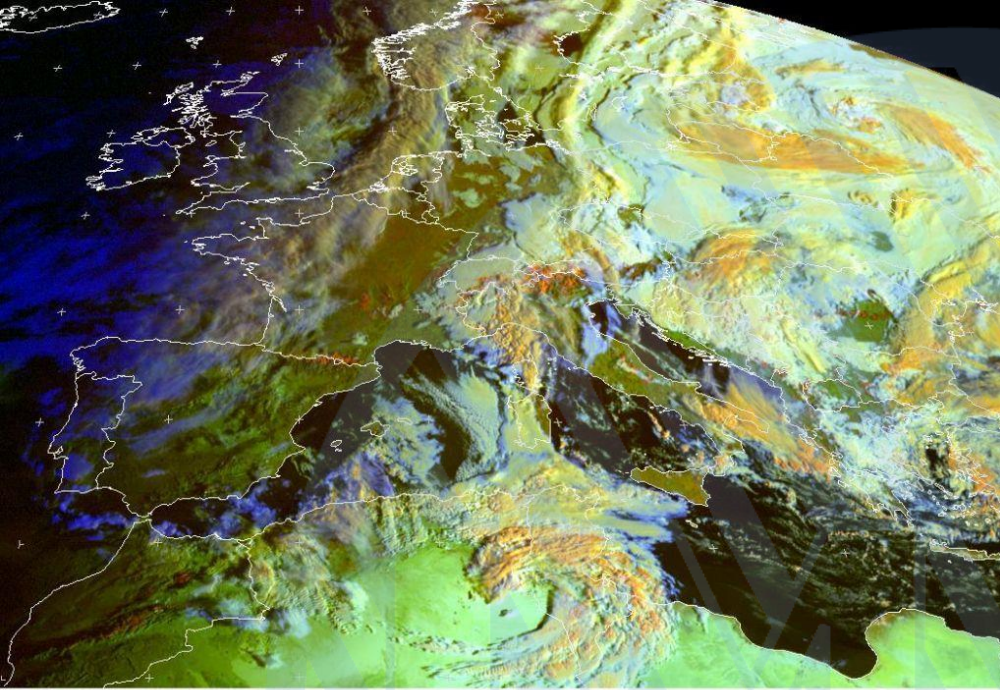


MET10 RGB-Airmass 2015-02-28 07:00 UTC



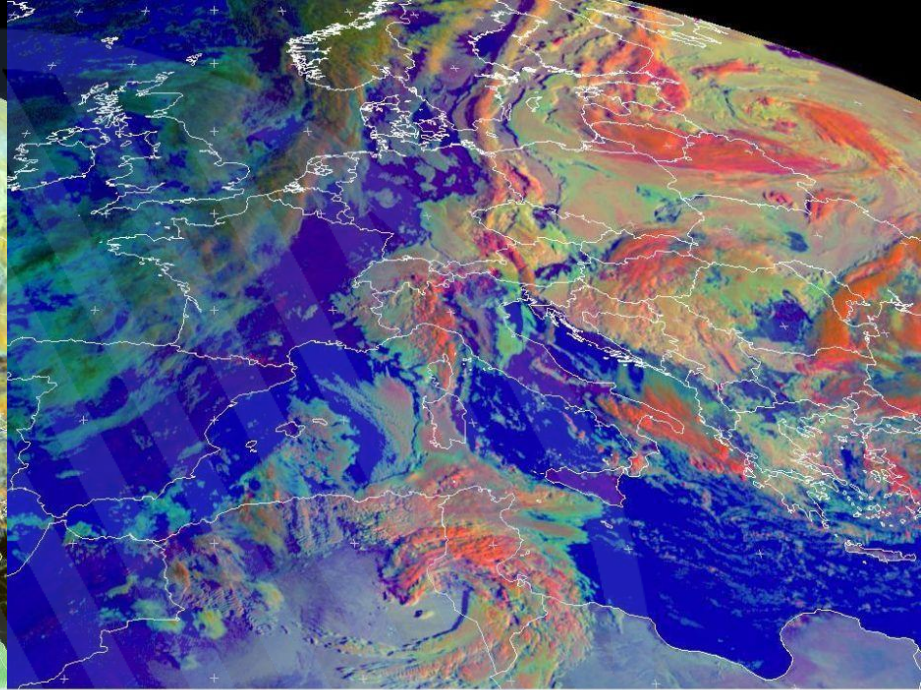
RGB-Dust 2015-02-28 07:00 UTC



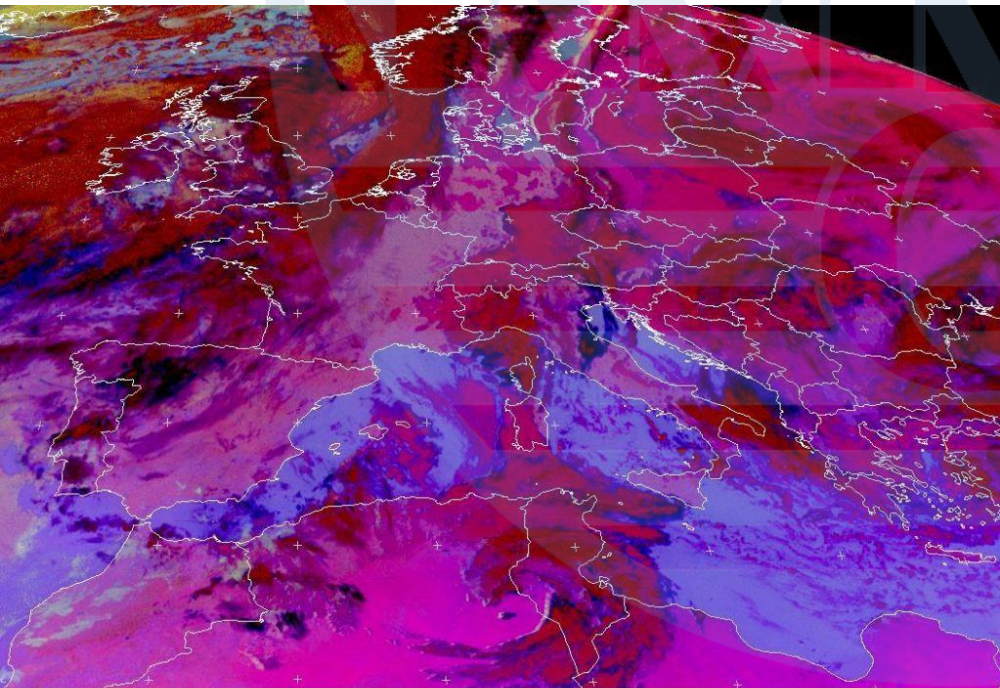


MET10 RGB-SolarDay 2015-02-28 07:00 UTC

EUMETSAT MicroDaySummer 2015-02-28 07:00 UTC



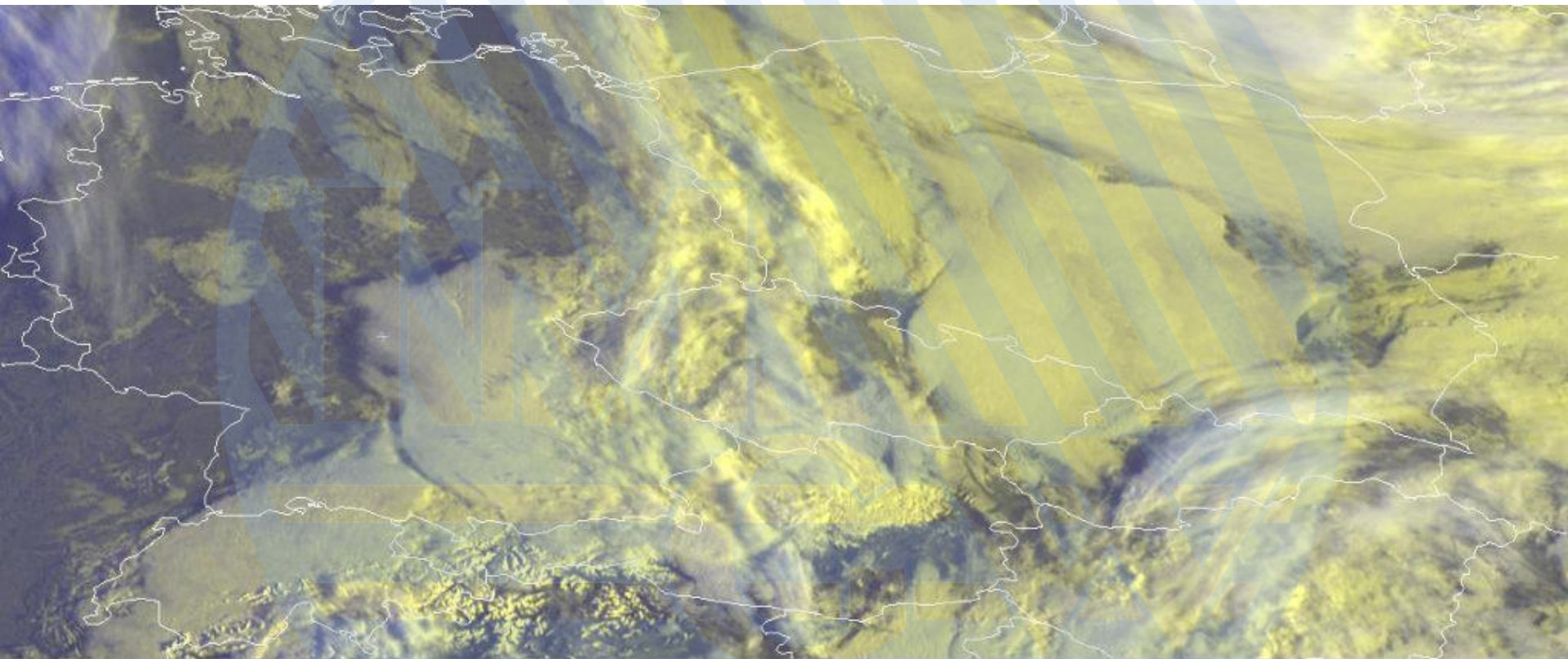
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MET10 RGB-Fog-n 2015-02-28 07:00 UTC

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MET10 RGB-12-12-91 2015-02-28 07:00 UTC

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The image shows a satellite weather map of Europe. A large, semi-transparent watermark with the letters 'WAT' is overlaid on the map. The map displays cloud cover and lightning strikes (yellow lines). A control panel is visible in the bottom right corner, and a video player interface is at the bottom.

**Pokaż:**

- Miasta
- Błyskawica
- Moja lokalizacja

Skonfiguruj moją lokalizację

Sat24.com - 08:00 CET / 07:00 UTC

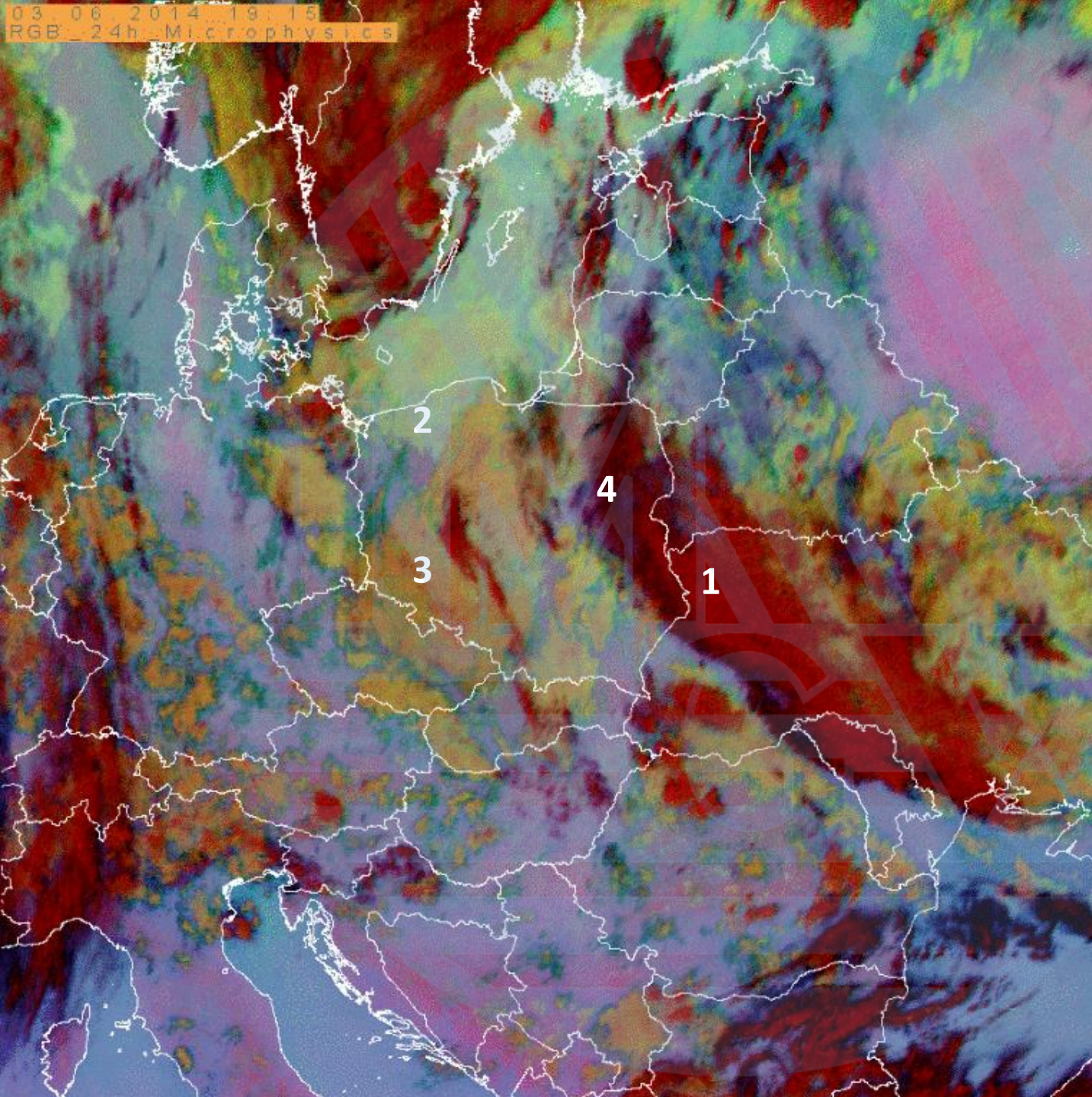
08:00

(C) Sat24.com

Visual Podczerven

1x



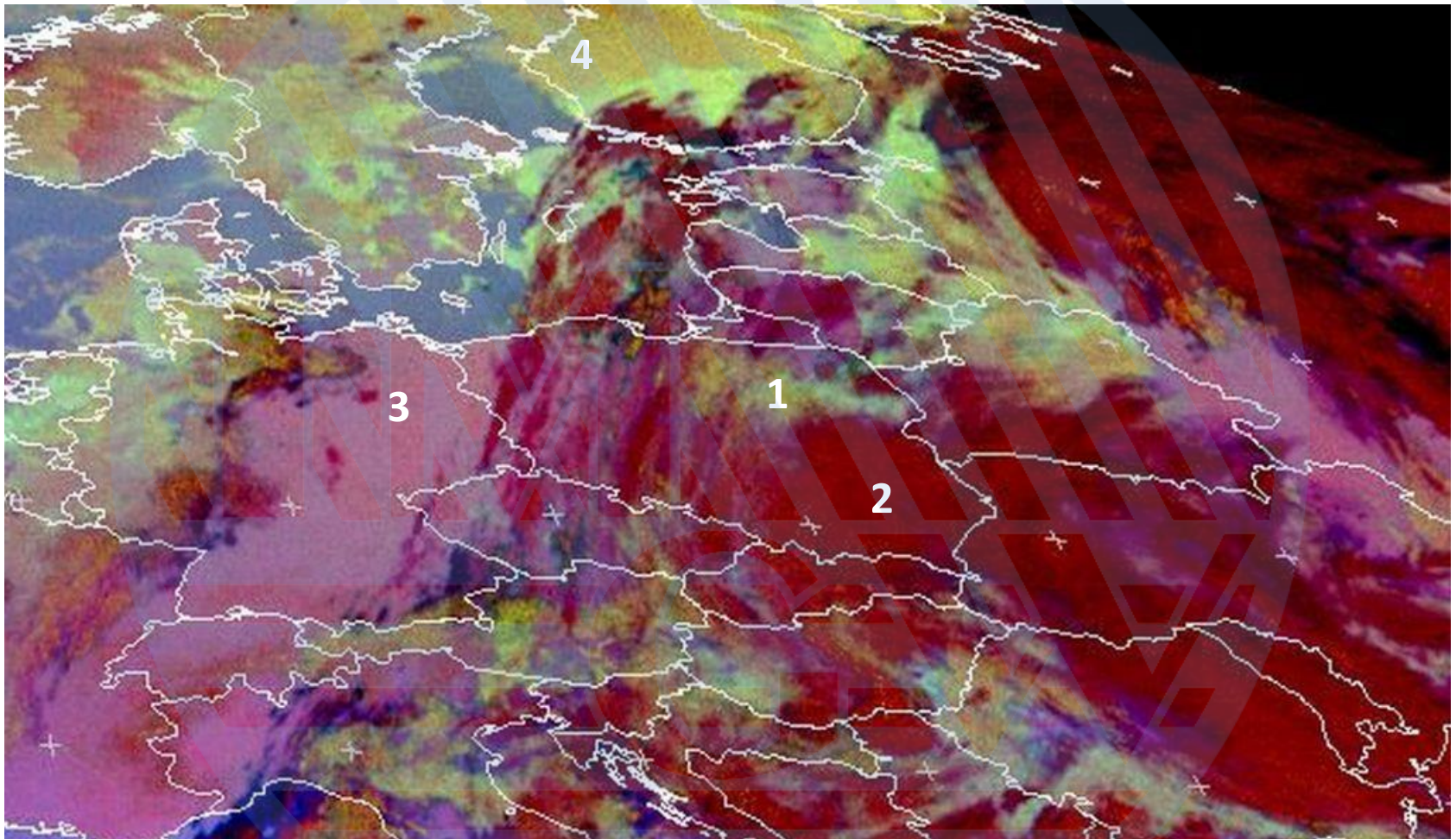


# WYSOKOŚĆ WIERZCHOŁKÓW CHMUR

USZEREKUJ OD  
NAJNIŻSZYCH DO  
NAJWYŻSZYCH:

- 2 - STRATUS/MGŁA?
- 3 - ALTOSTRATUS
- 1 - CIRRUS
- 4 - CIRRUS

# WYSOKOŚĆ WIERZCHOŁKÓW CHMUR USZEREGUJ OD NAJNIŻSZYCH DO NAJWYŻSZYCH:

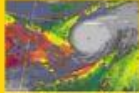


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3 – brak chmur; 1 – St/FG, Sc; 4 – Ac, As; 2 – Ci, Cs, Cc;

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[NWC SAF 2015 Users Workshop Second Announcement 19/12/2014](#)

[SUSE Binary distribution added to PPS v2014 14/11/2014](#)

**MSG**

**MSG Cloud Products**

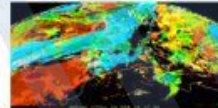
[Cloud Mask \(Description\)](#)



[Cloud Type \(Description\)](#)



[Cloud Top Temperature and Height \(Description\)](#)



**MSG Precipitation Products**

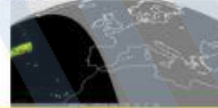
[Precipitating Clouds \(Description\)](#)



[Convective Rainfall Rate \(Description\)](#)

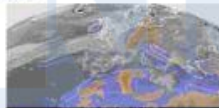


[Prec. Prod. Cloud Physical Properties \(Description\)](#)

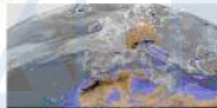


**MSG Clear Air Products Physical Retrieval**

[Total Precipitable Water \(Description\)](#)



[Layer Precipitable Water \(Description\)](#)

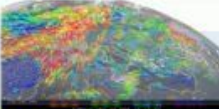


[Stability Analysis Imagery \(Description\)](#)

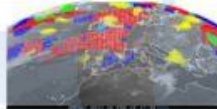


**MSG Winds, Conceptual Model and Convection Products**

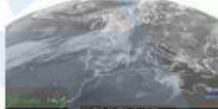
[High Resolution Winds \(Description\)](#)



[Automatic Satellite Image Interpretation \(Description\)](#)



[Rapid Development Thunderstorms \(Description\)](#)



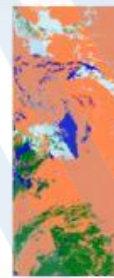
**PGEs Execution Time**

- The general input data for running NWC SAF software are :
  - MSG package: MSG SEVIRI data and NWP (in some of them).
  - PPS package: AVHRR/3 data and NWP (in some of them).
- The user should be aware that using old NWP data might reduce the quality of the product.
- The processing area could be any rectangular area inside MSG full disk for the MSG package.
- The quality of the products is not guaranteed out of MSG N area (Europe, North Africa and adjacent seas).
- For the PPS package the coverage area is North of the 50N parallel - depending on local radio horizon.
- The product quality cannot be guaranteed below 50N, but the algorithm will work anywhere.

**DISCLAIMER:** All intellectual property rights of the NWC SAF products belong to EUMETSAT. The use of these products is granted to every interested user, free of charge. If you wish to use these products, EUMETSAT's copyright credits must be shown by displaying the words "copyright (year) EUMETSAT" on each of the products used.

**PPS**

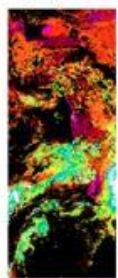
[Cloud Mask \(Description\)](#)



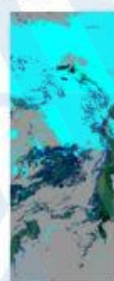
[Cloud Type \(Description\)](#)



[Cloud Top Temperature and Height \(Description\)](#)



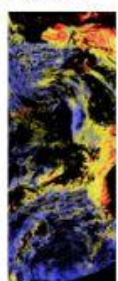
[Precipitating Clouds \(Description\)](#)

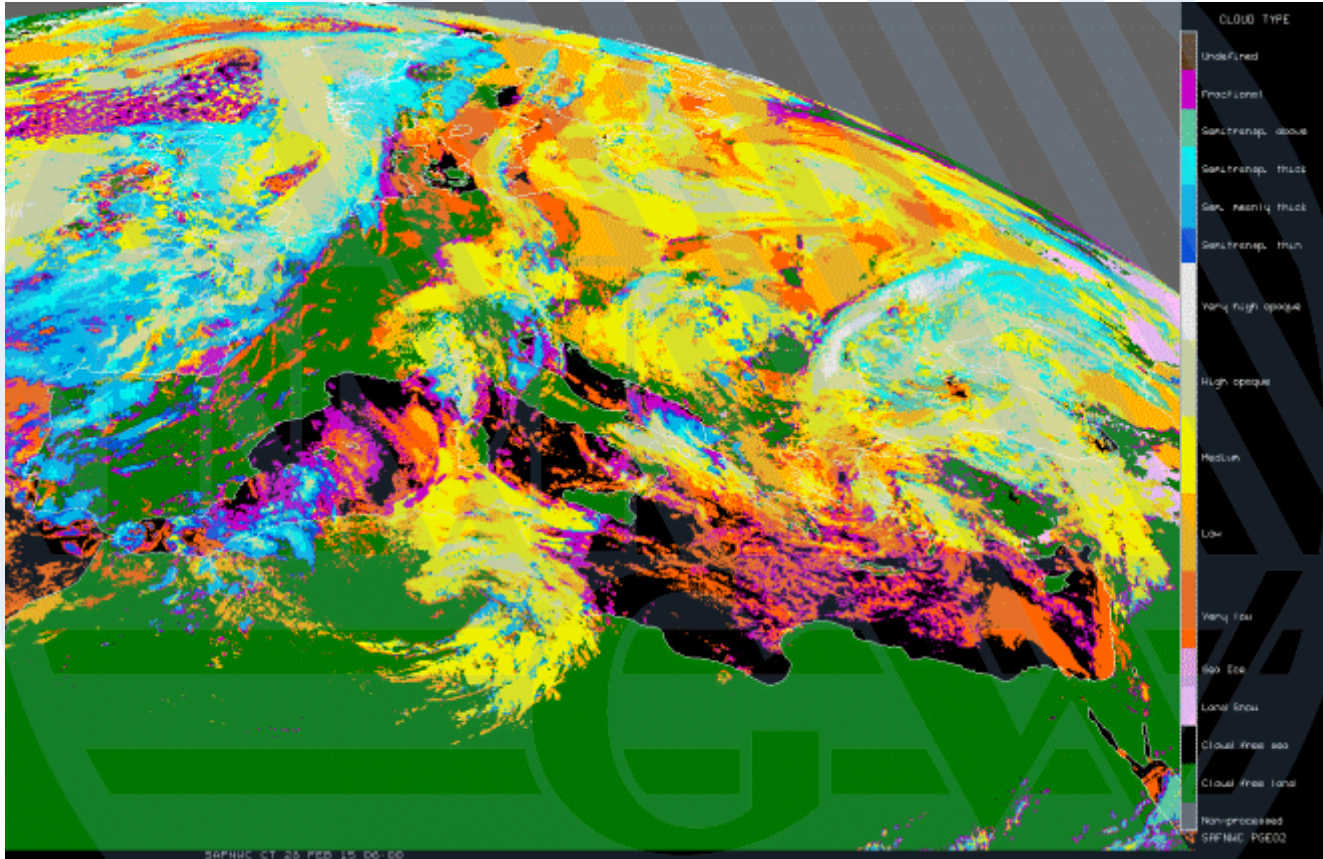


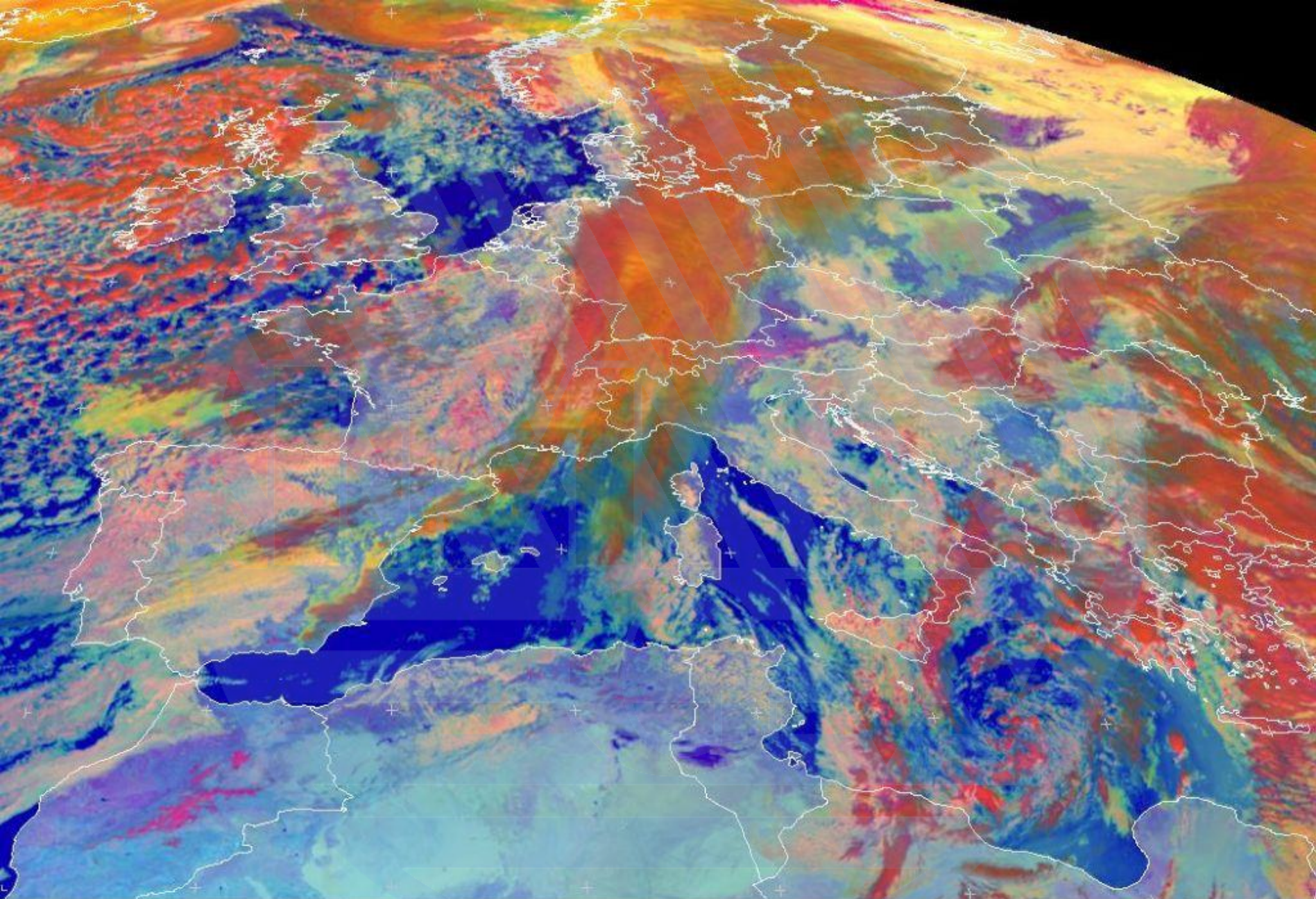
[Cloud Physical Properties \(CPh\) \(Description\)](#)



[Cloud Physical Properties \(LWP\) \(Description\)](#)





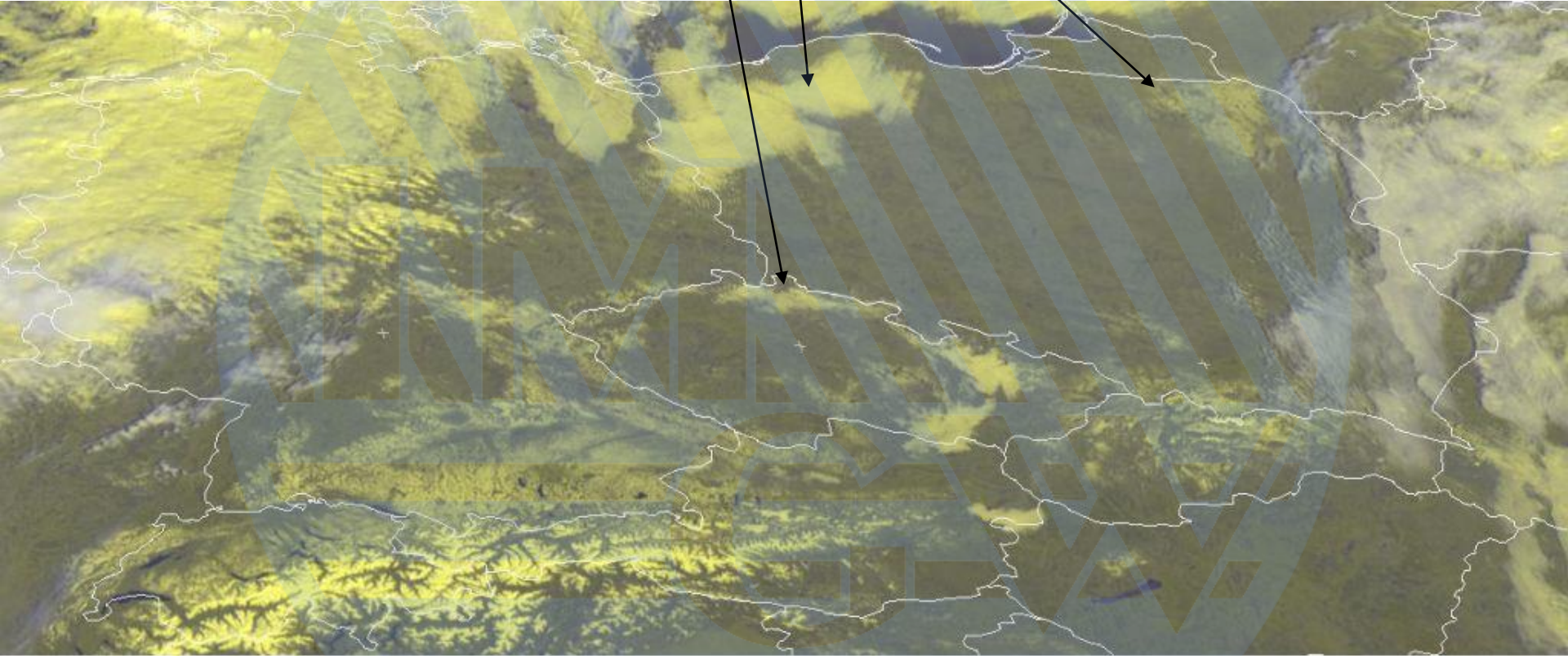


MET10 RGB-MicroDaySummer 2015-02-23 12:00 UTC

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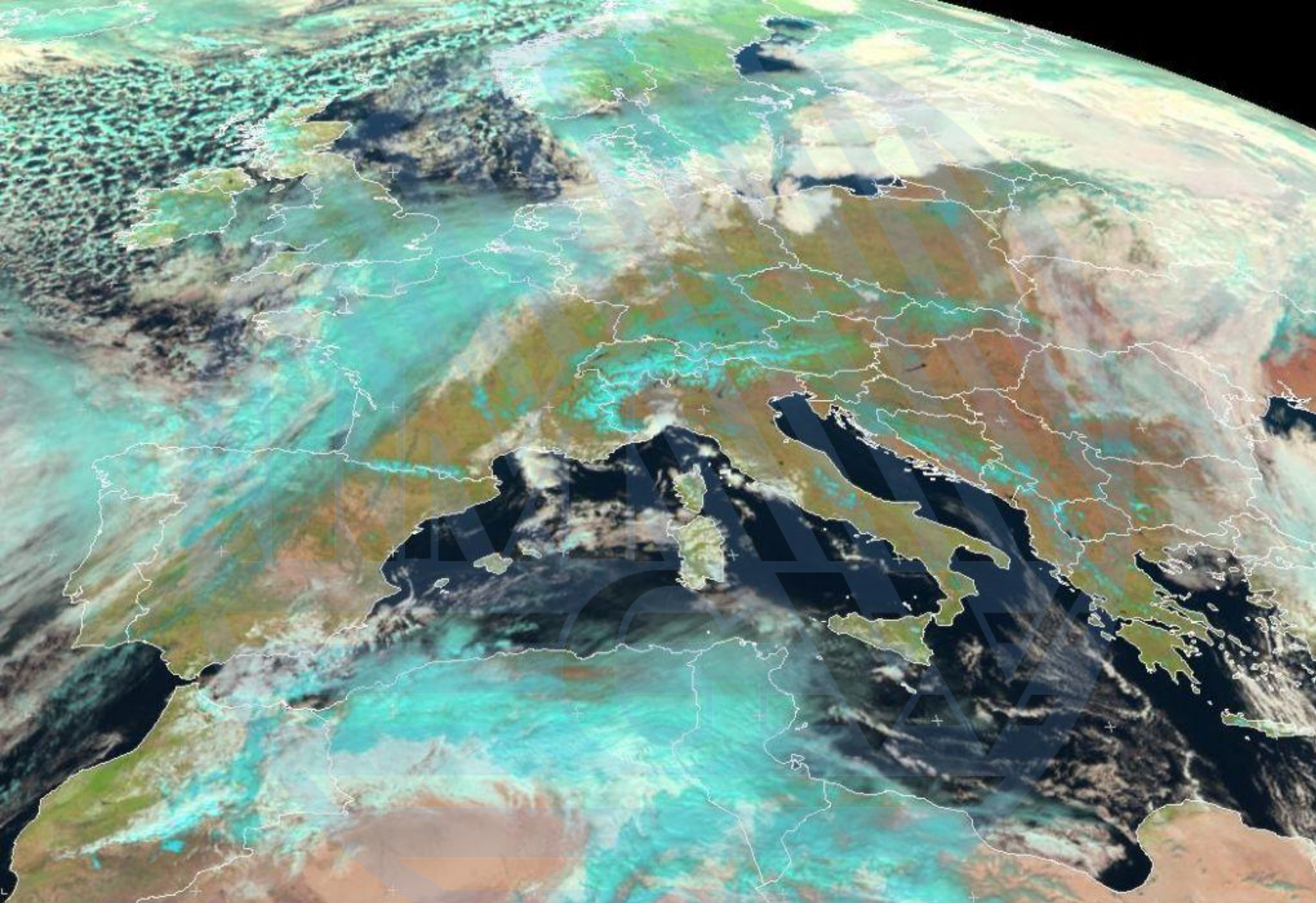
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Chmury czy śnieg?



MET10 RGB-12-12-91 2015-02-20 11:00 UTC

EUMETSAT



MET10 RGB-3-2-1 2015-02-20 12:00 UTC

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# Głęboka konwekcja

Day Microphysics

Dust

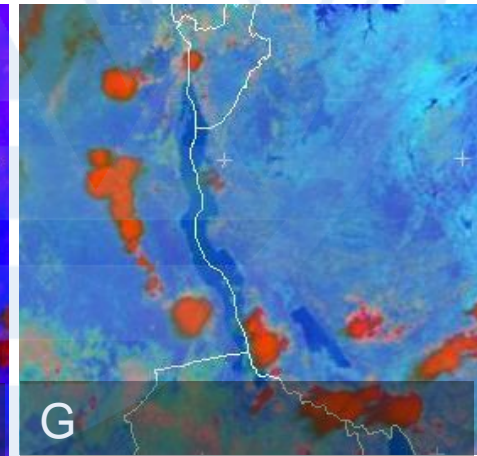
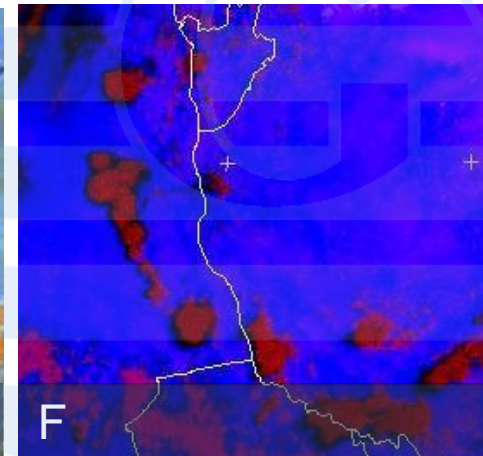
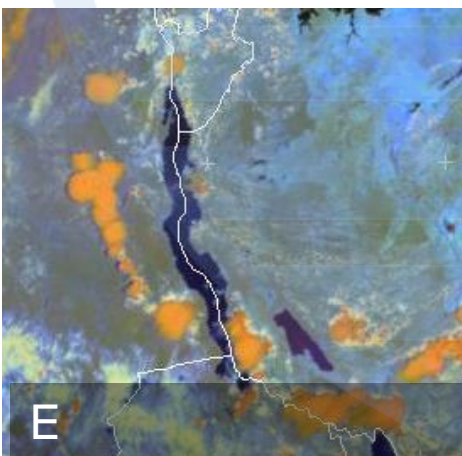
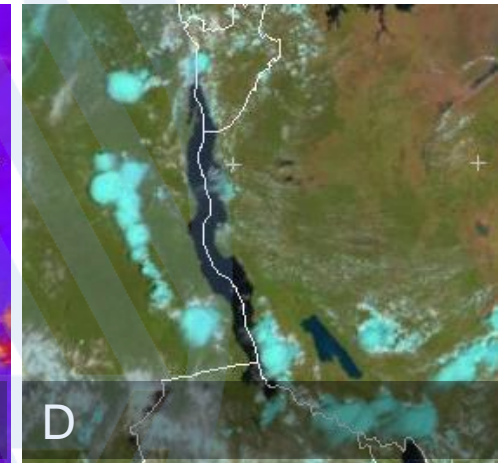
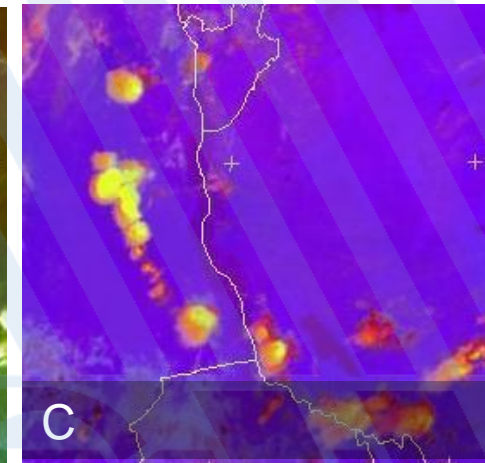
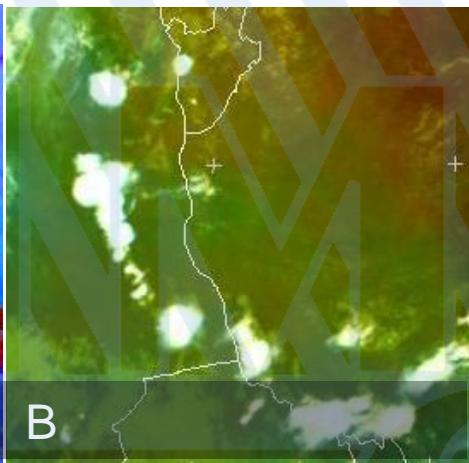
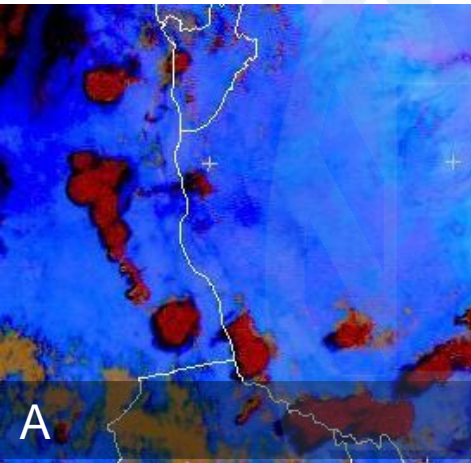
Fog

Airmass

Convection

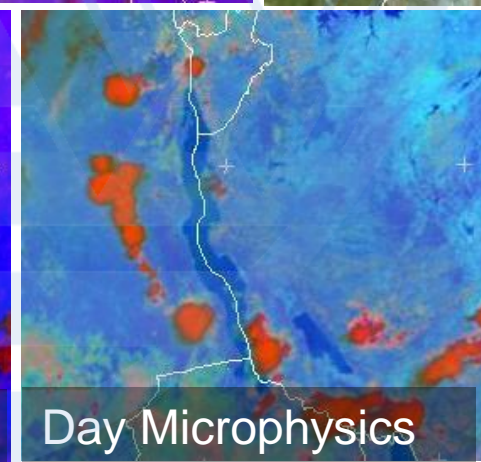
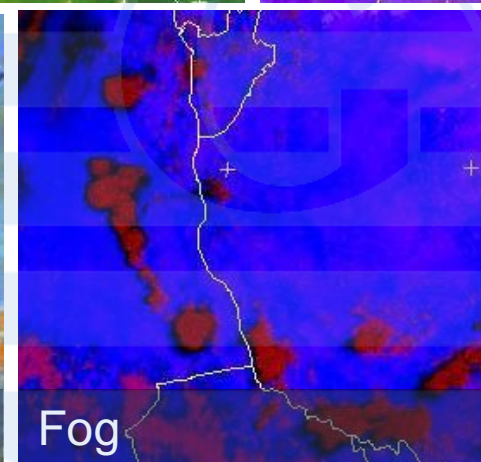
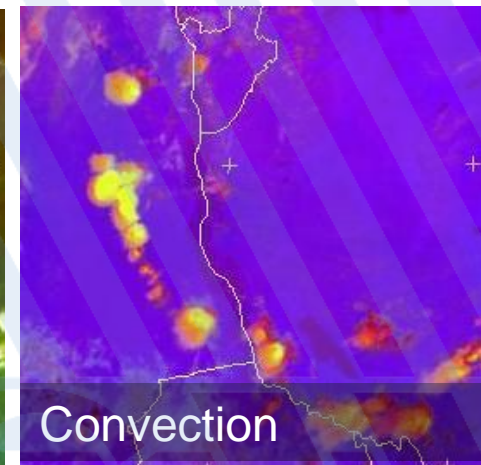
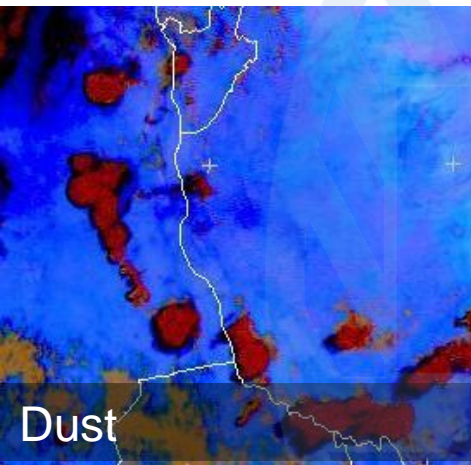
Natural Colors

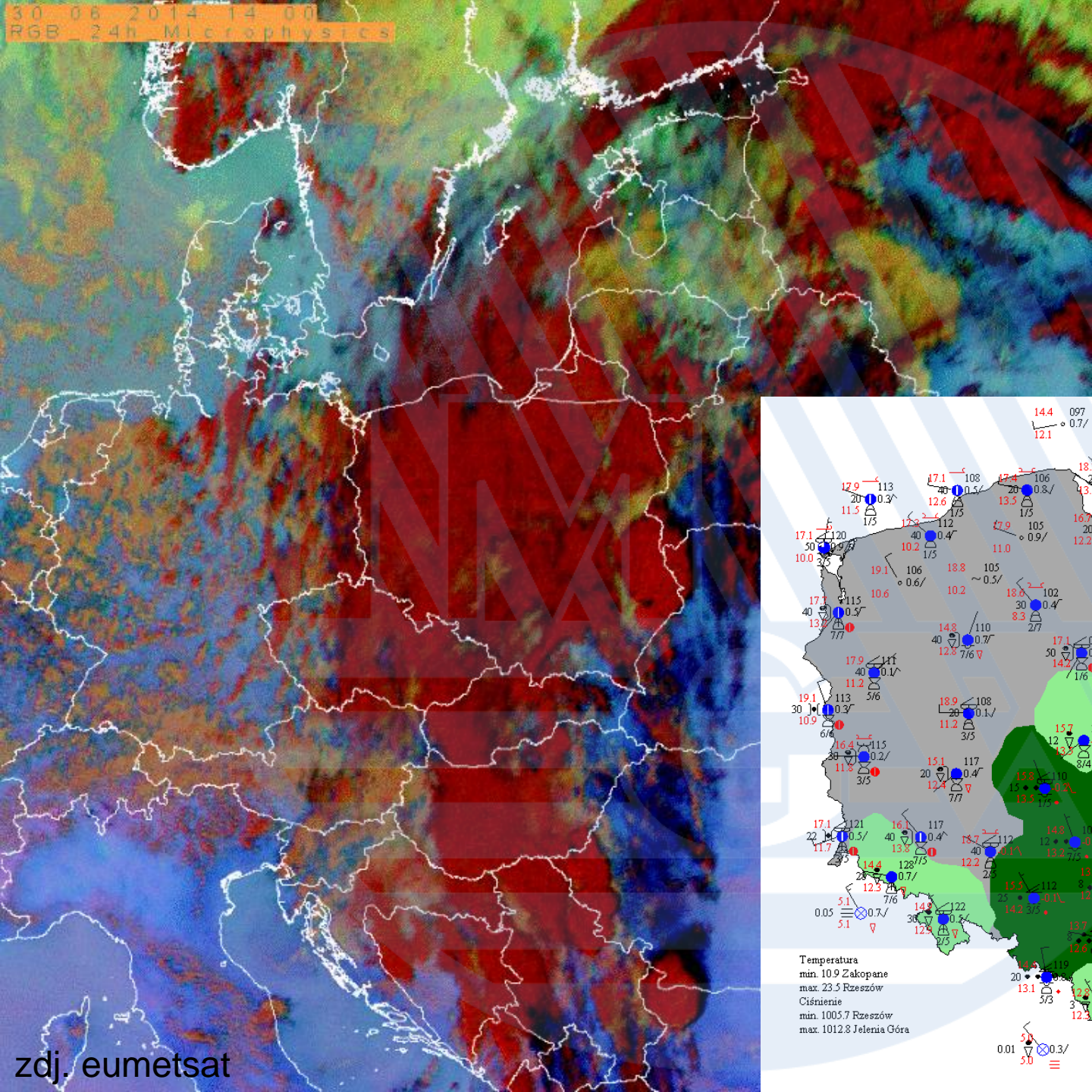
Snow



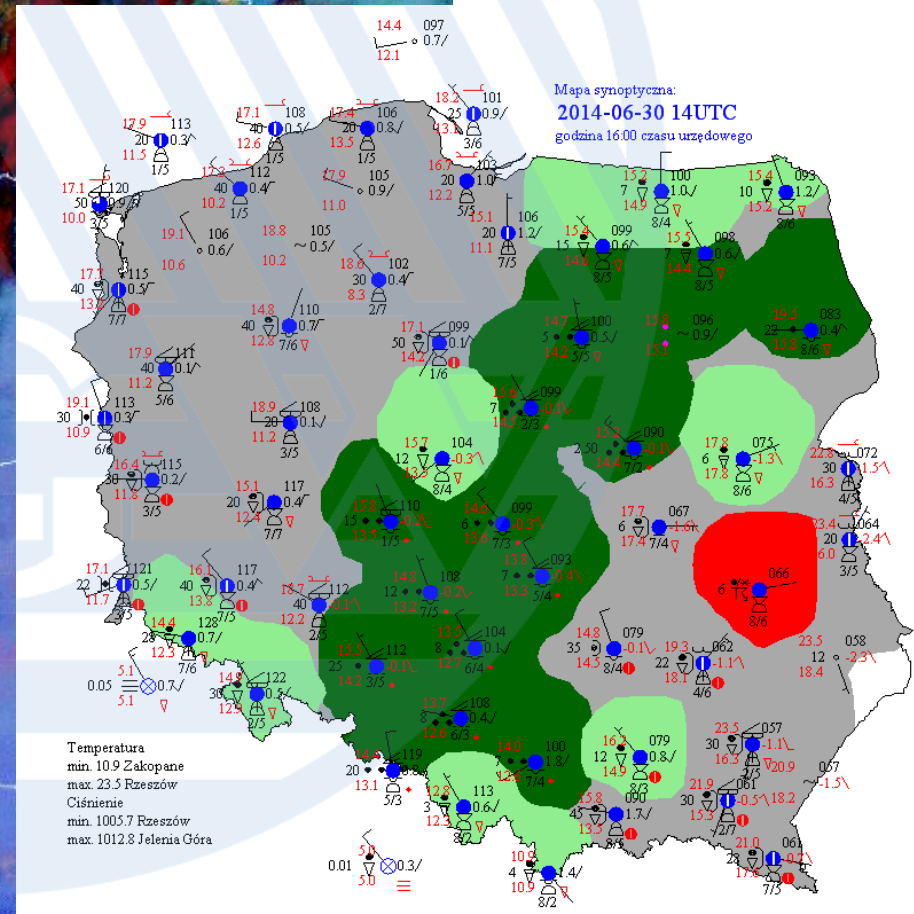


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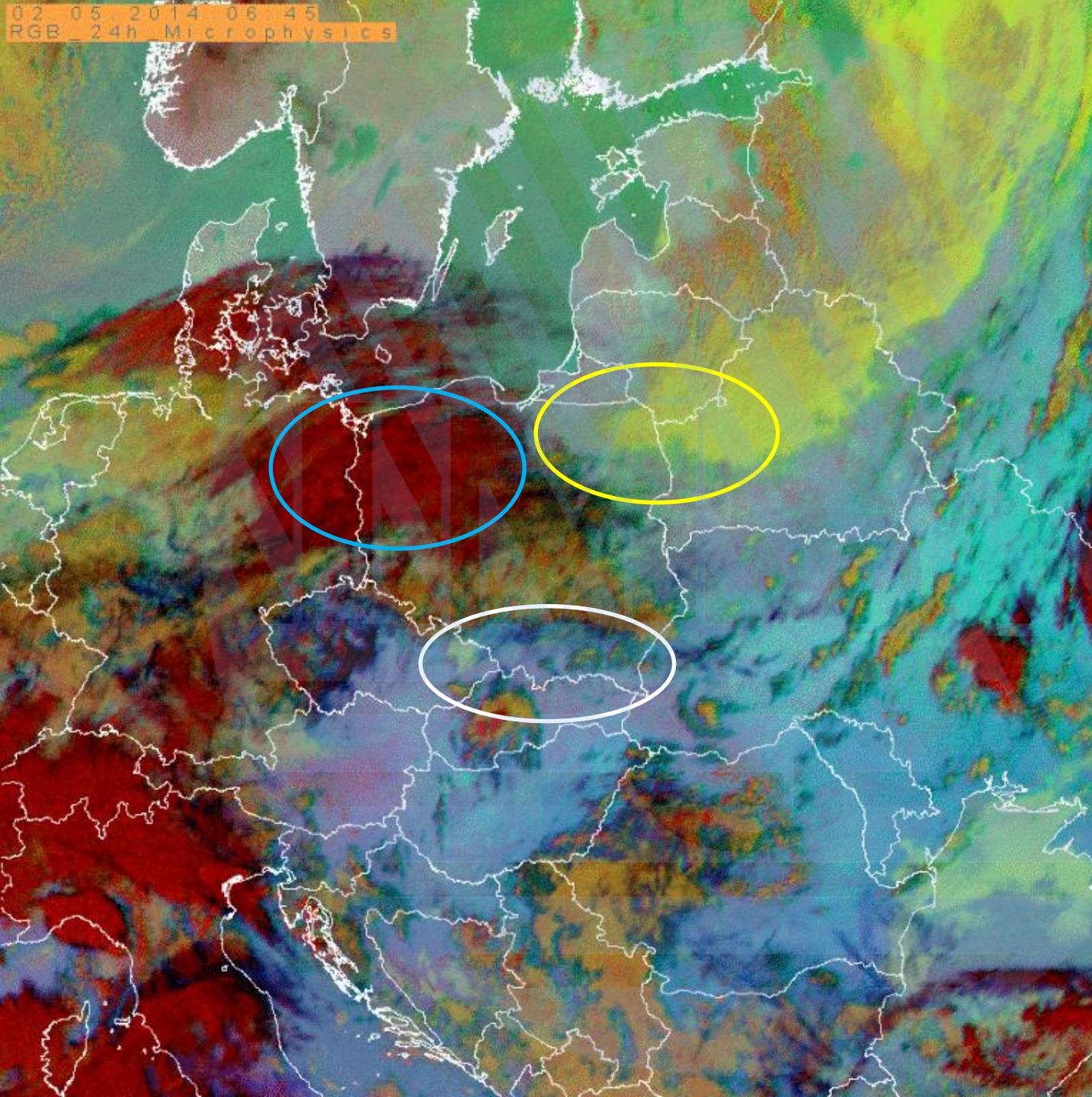




Znajdź burze



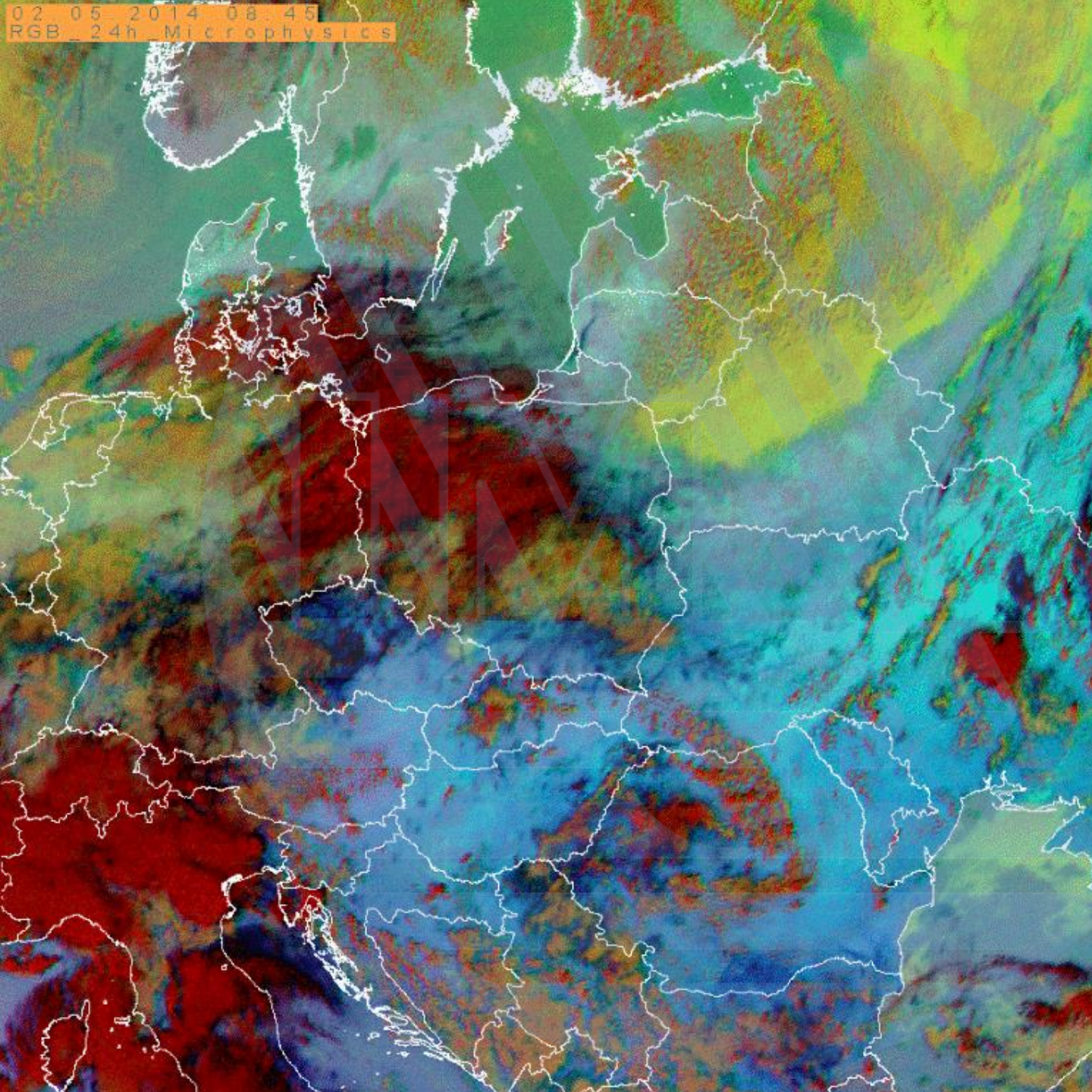
02 05 2014 06:45  
RGB\_24h\_Microphysics



Gdzie rozwiną się  
burze?

zdj. eumetsat

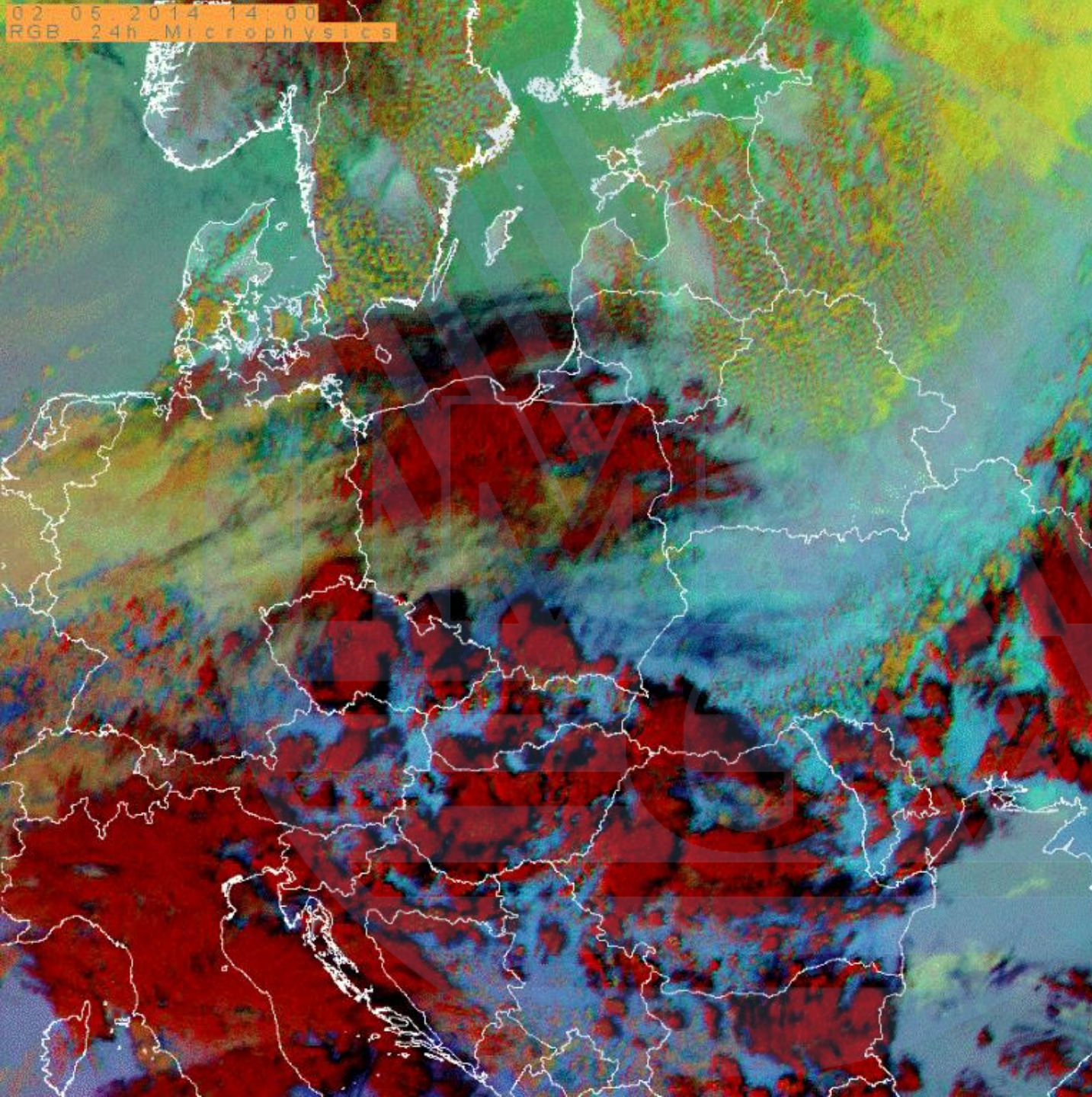
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RGB\_24h\_Microphysics



Gdzie rozwiną się  
burze?

zdj. eumetsat

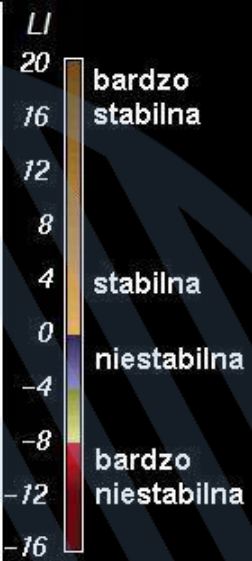
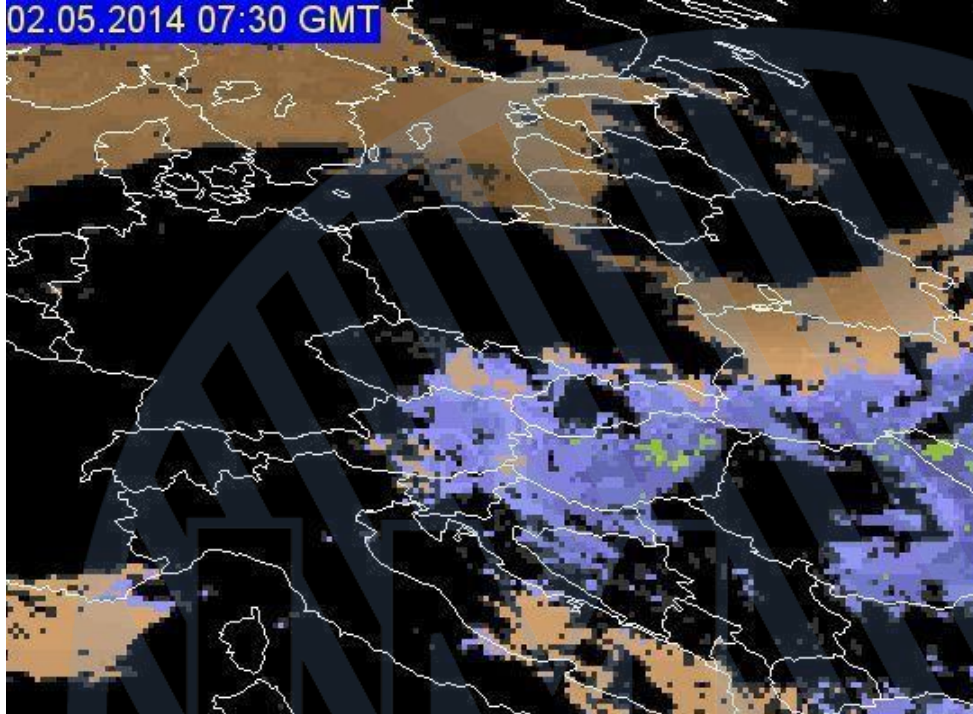
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RGB\_24h\_Microphysics



Gdzie rozwiną się  
burze?

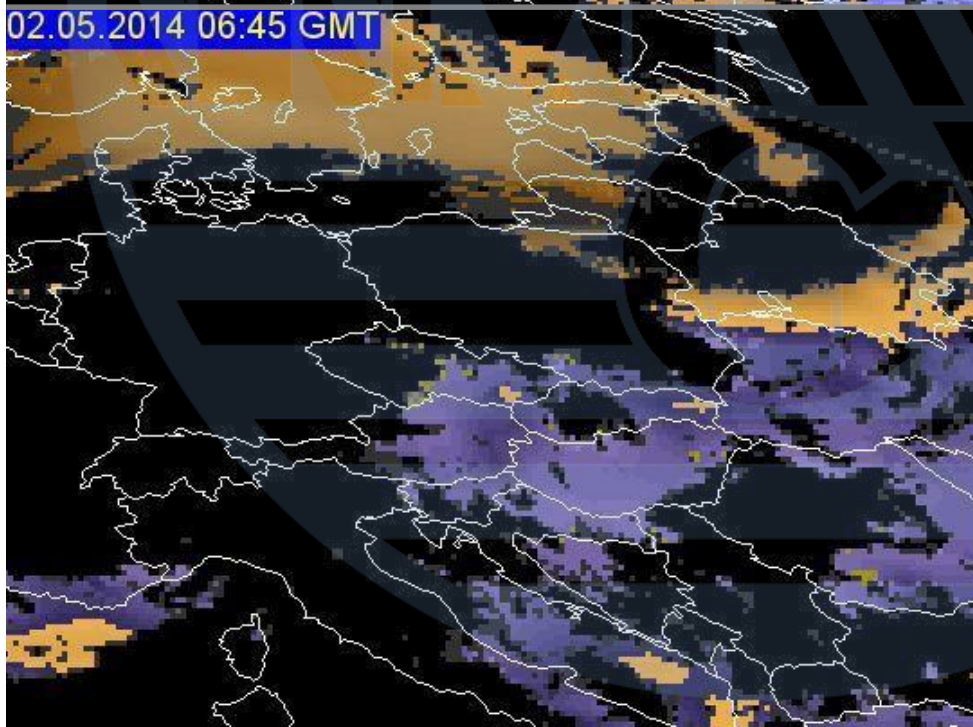
zdj. eumetsat

02.05.2014 07:30 GMT



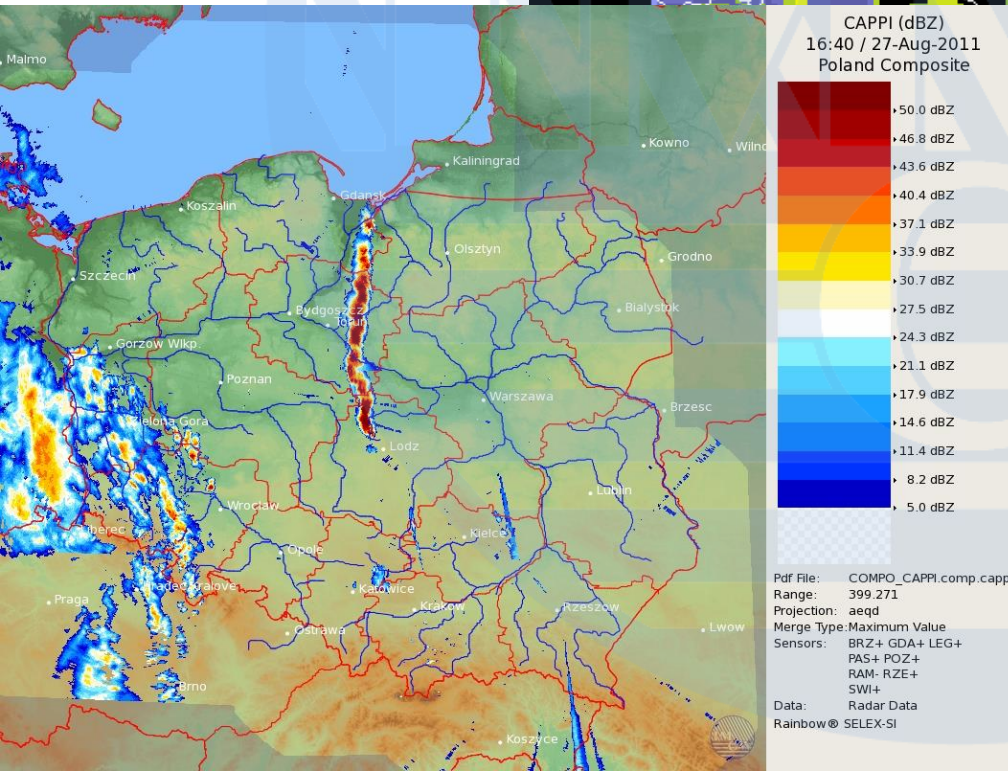
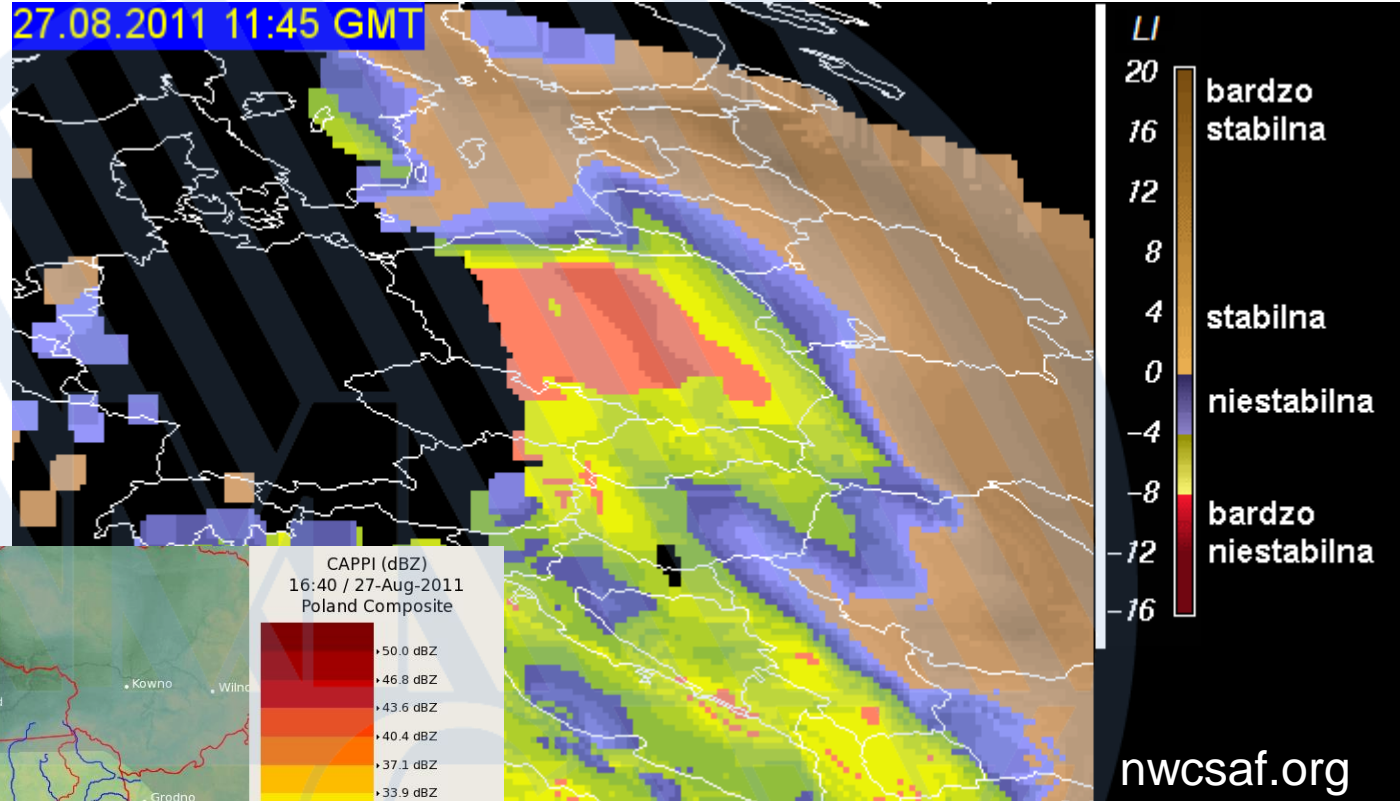
Lifted Index

02.05.2014 06:45 GMT

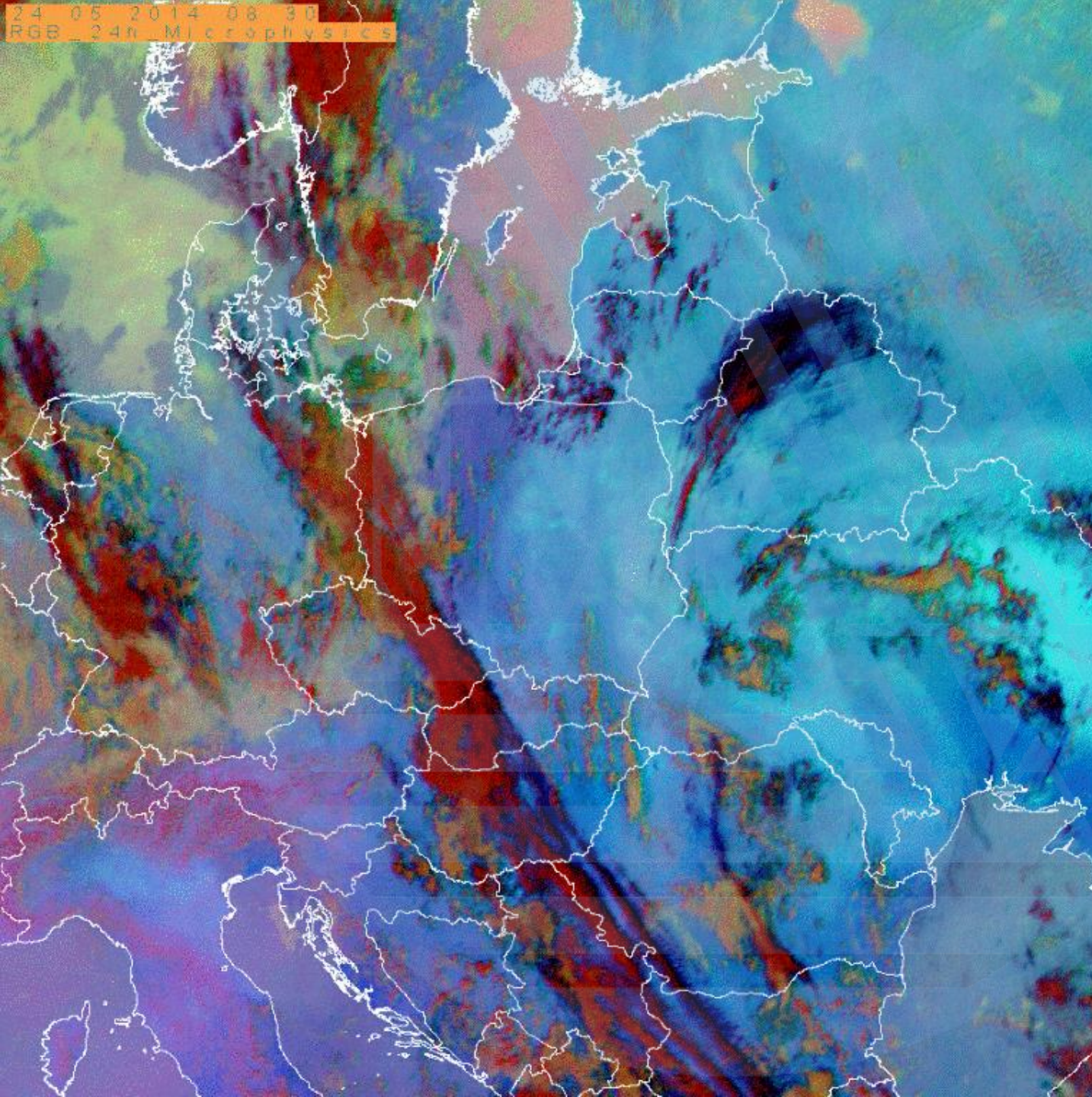


K Index

# Wykorzystanie produktów LI i KI



24 05 2014 08 30  
RGB 24h Microphysics

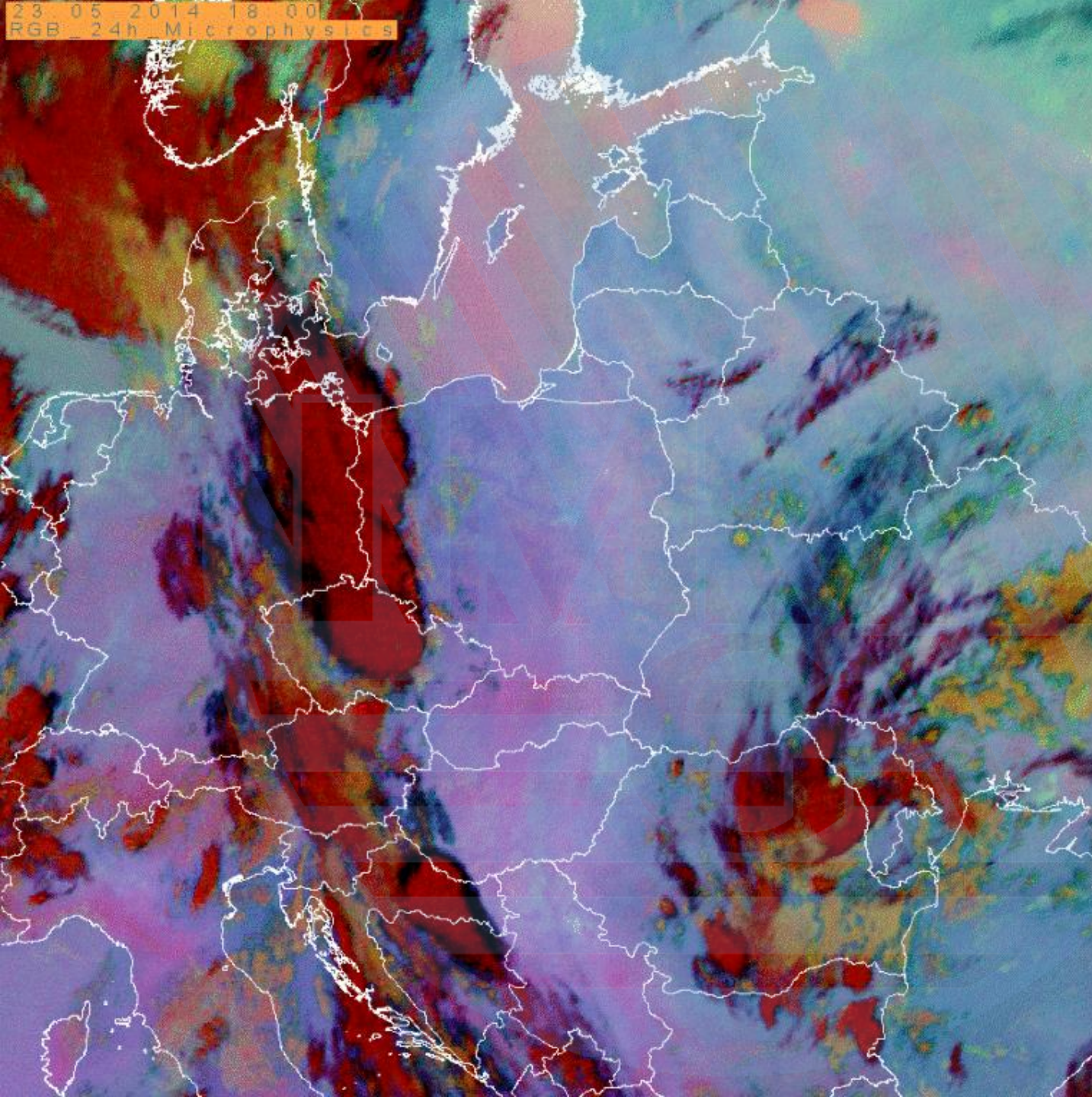


Front  
atmosferyczny

zdj. eumetsat



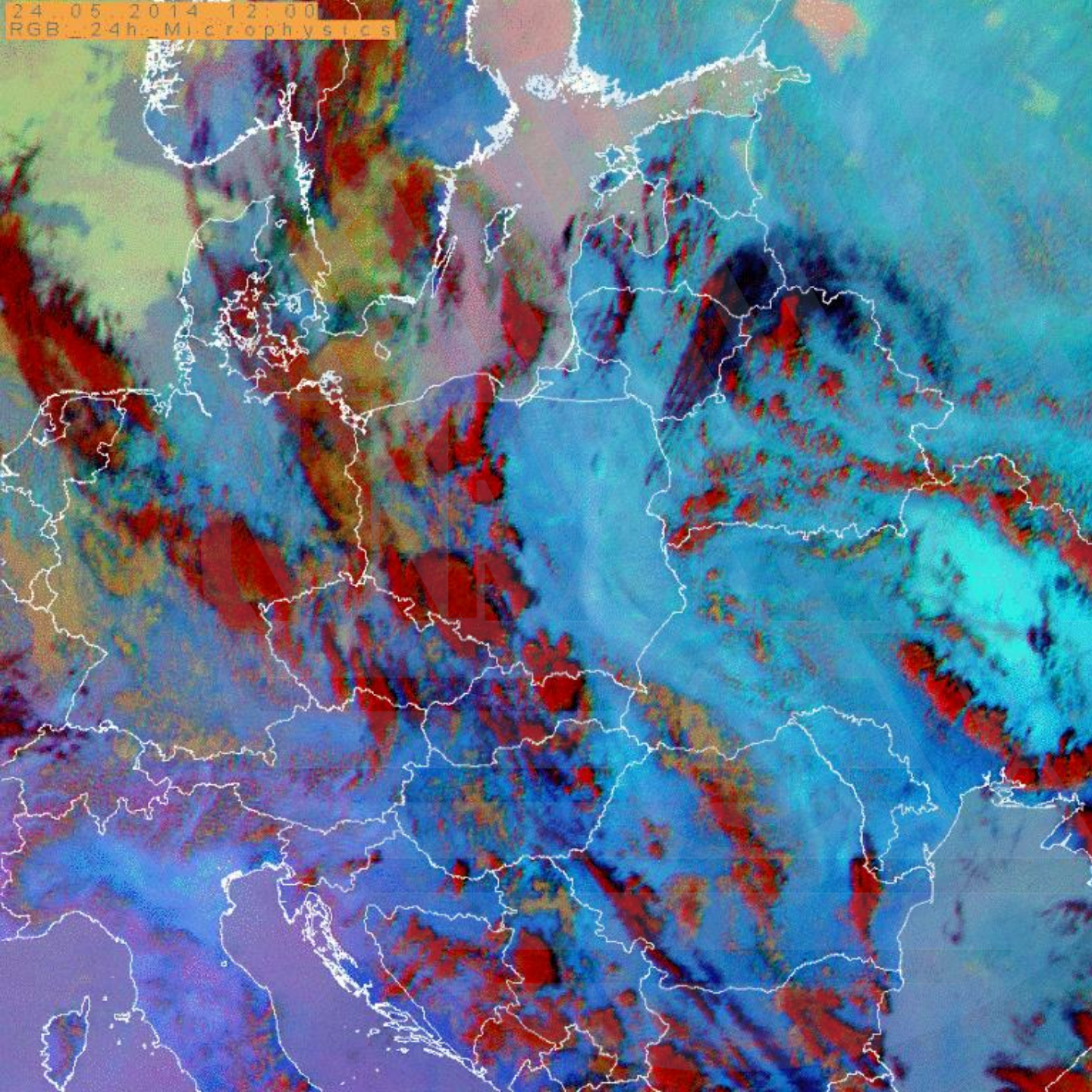
23 05 2014 18 00  
RGB 24h Microphysics



Sprawdzamy  
pogodę z dnia  
wcześniejszego

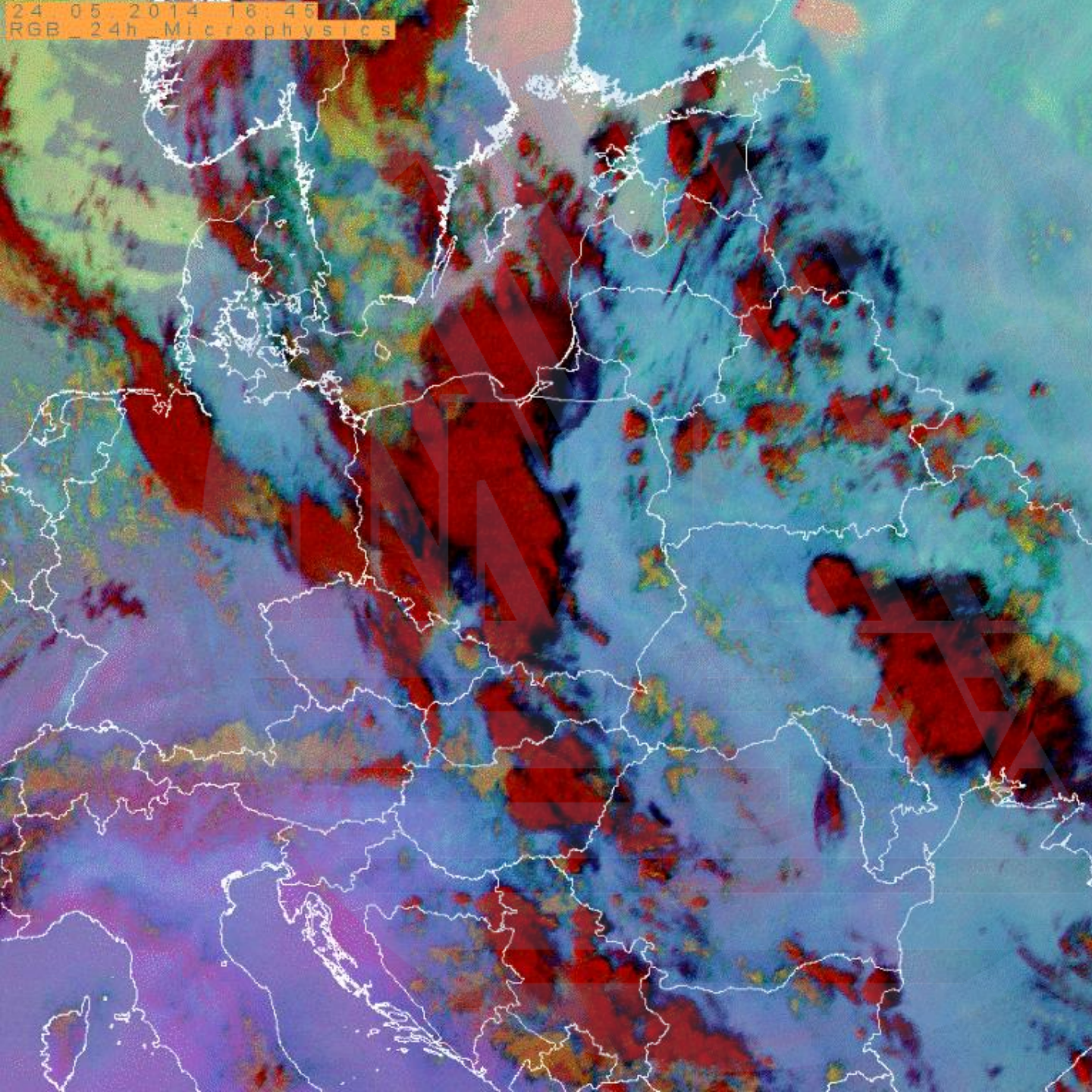
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RGB - 24h - Microphysics



zdj. eumetsat

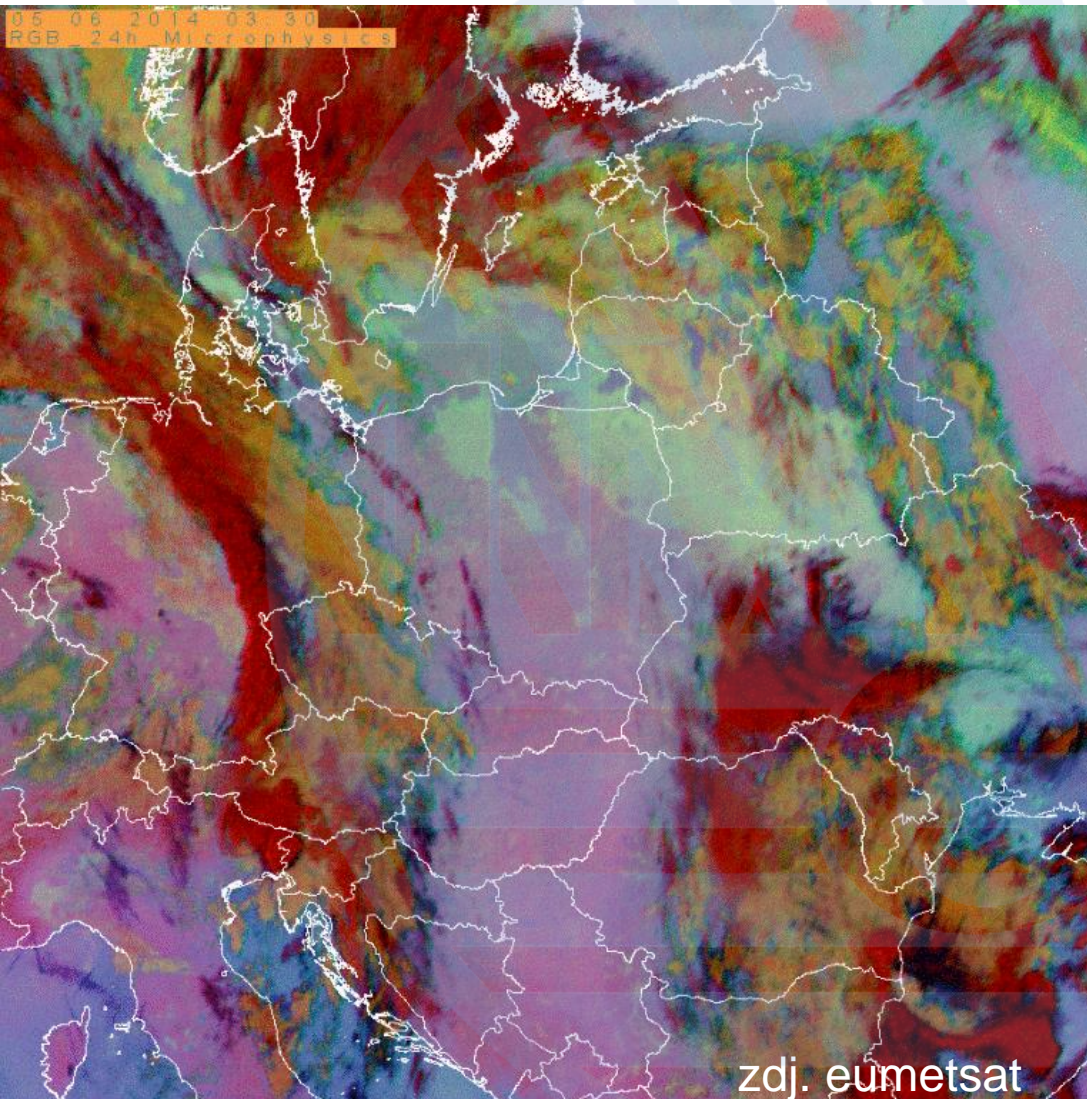
24 05 2014 16:45  
RGB 24h Microphysics



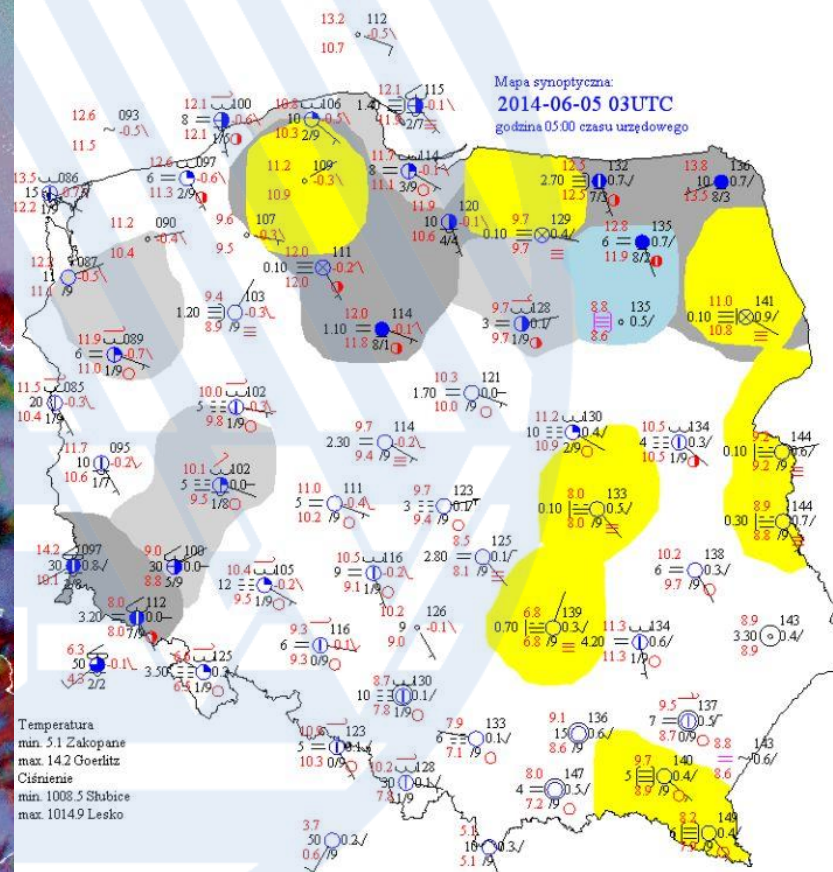
zdj. eumetsat

# Mgła/Stratus

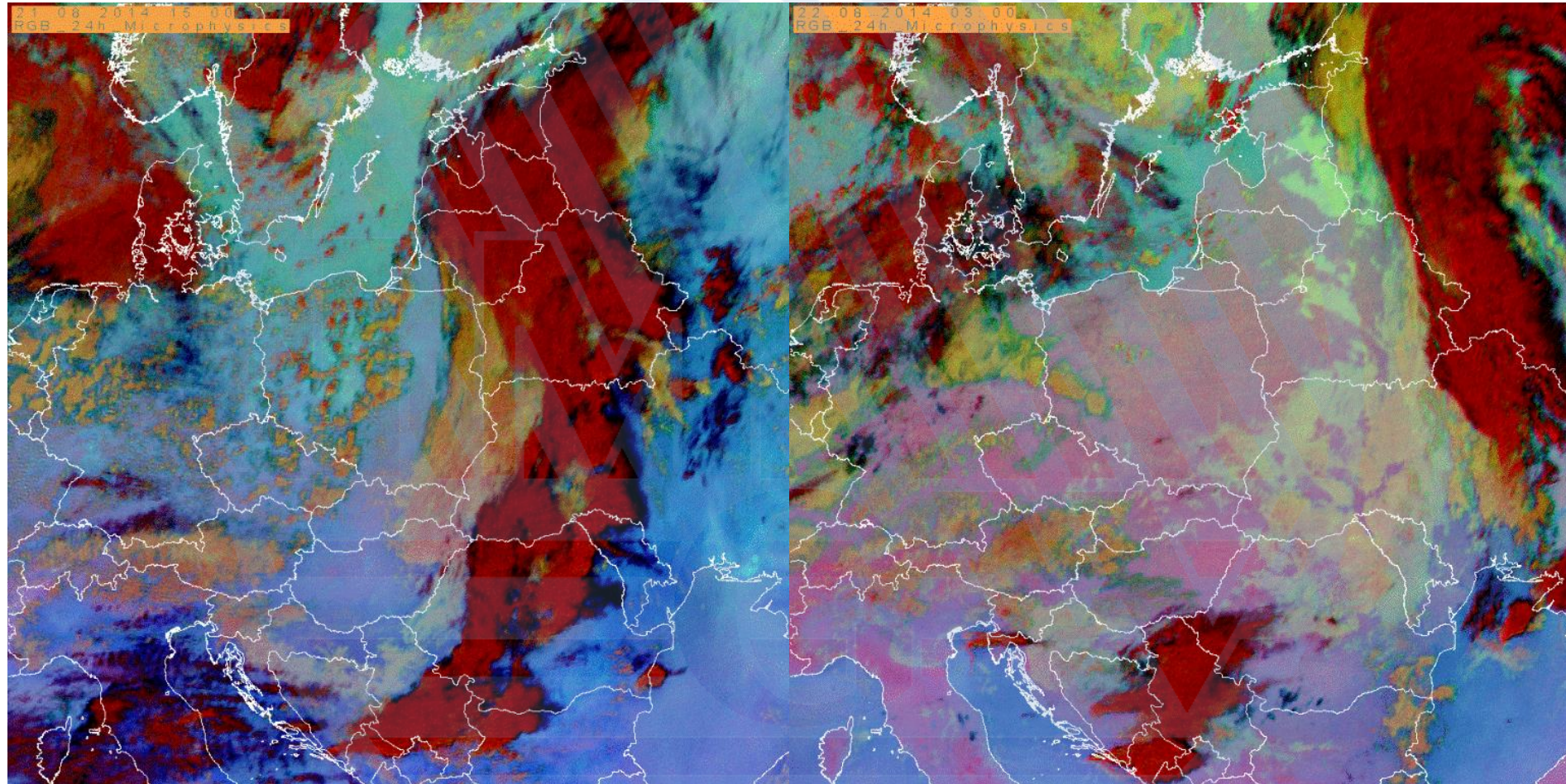
05 06 2014 03 30  
RGB\_24h\_Microphys\_c



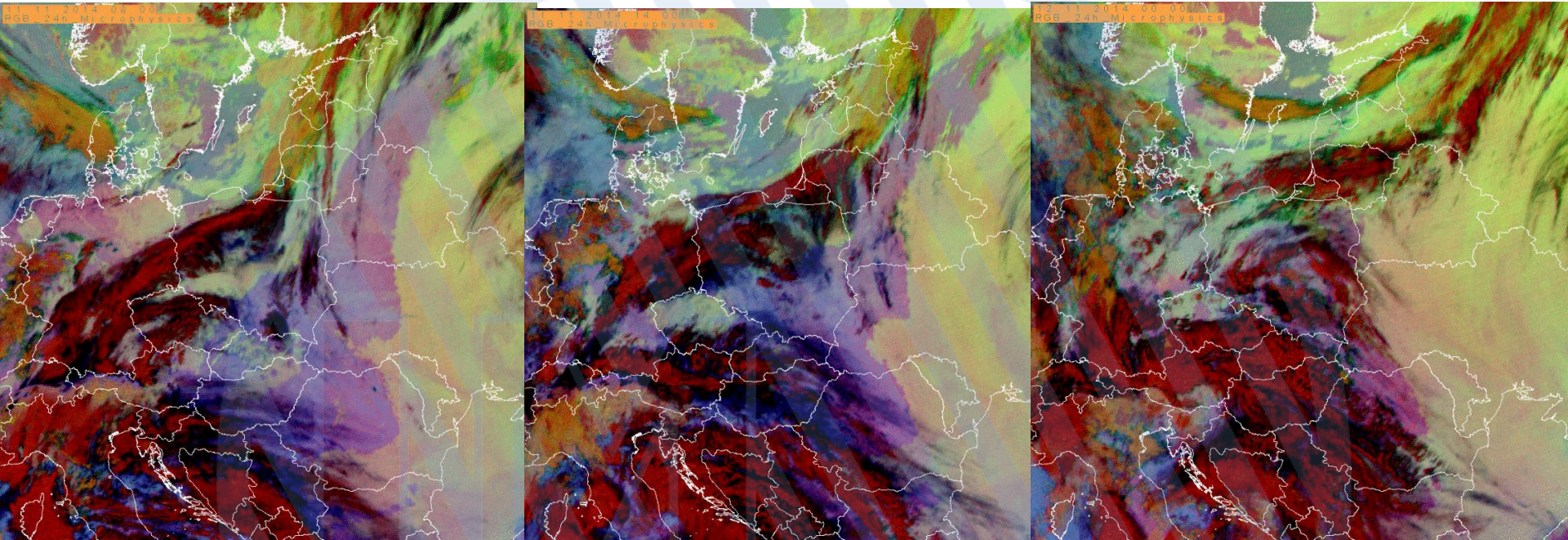
zdj. eumetsat



# Mgła za frontem



# Stratus/Mgła



METAR EPRZ 112100Z 09006KT CAVOK 08/07 Q1016=  
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0100 FG?

CAVOK?

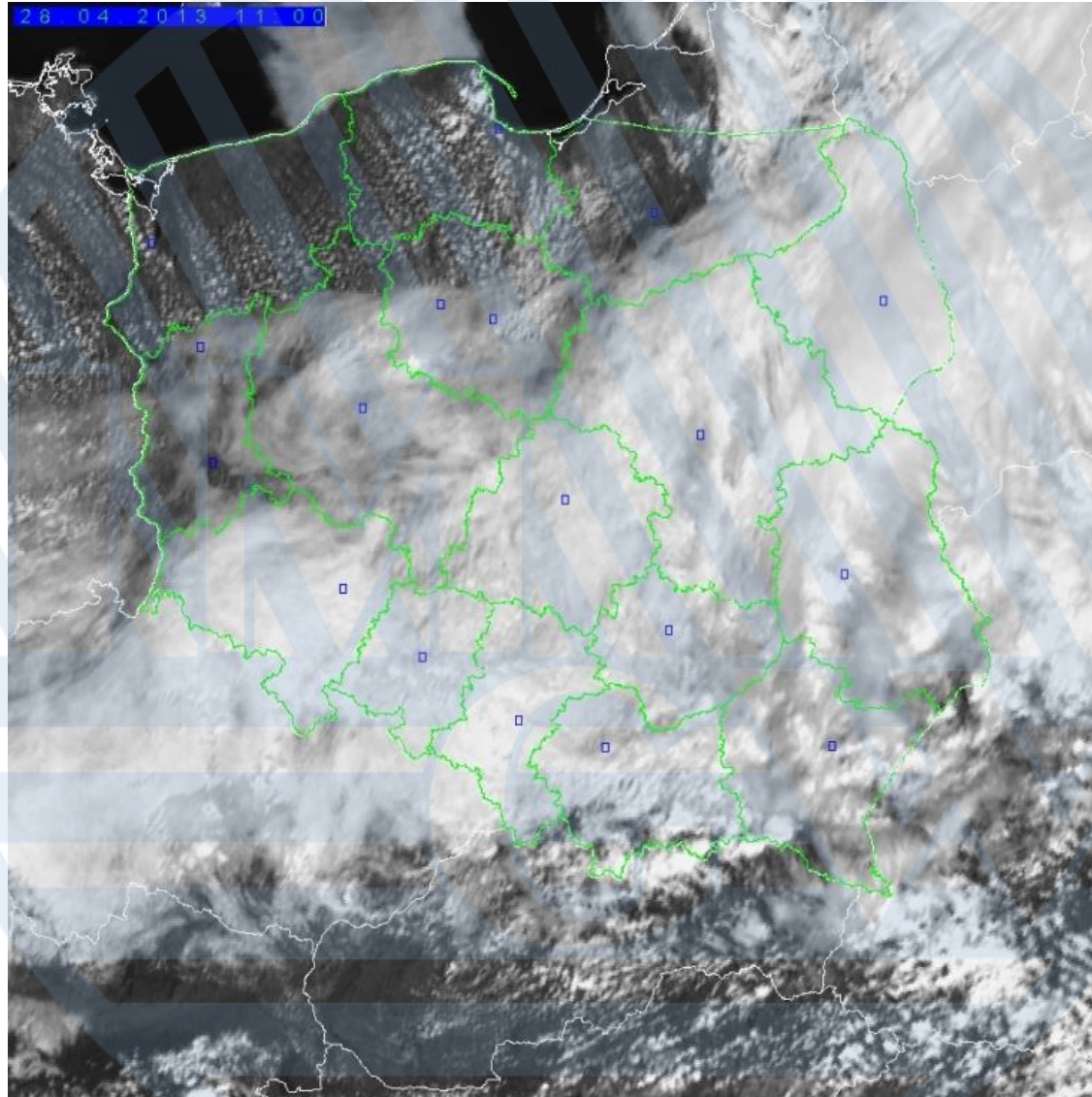
OVC005?

OVC001?

Wlew stratusa z Dniestru na EPRZ.

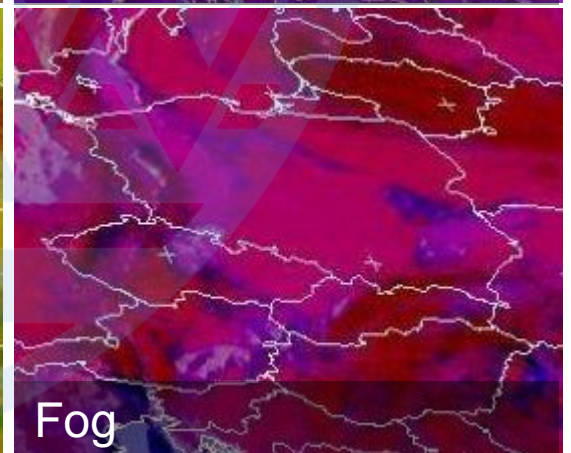
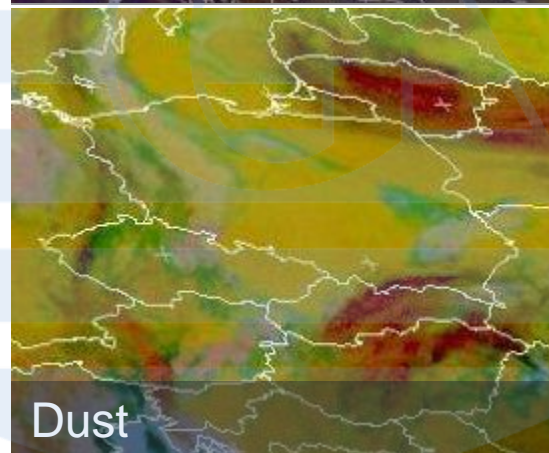
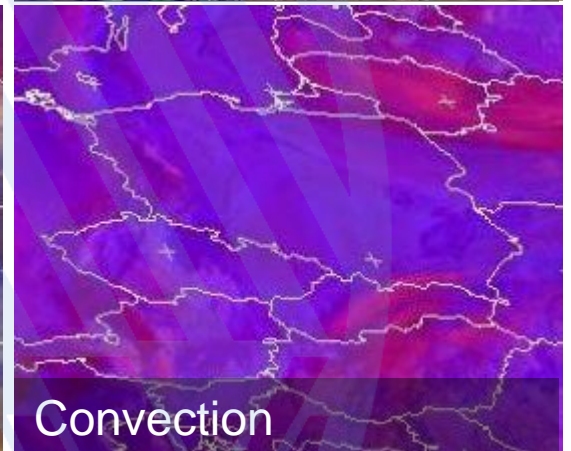
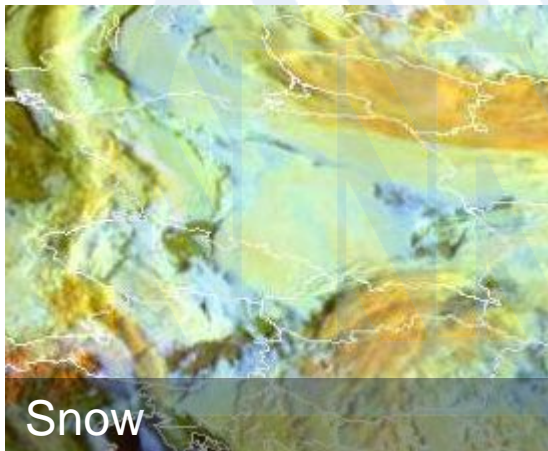
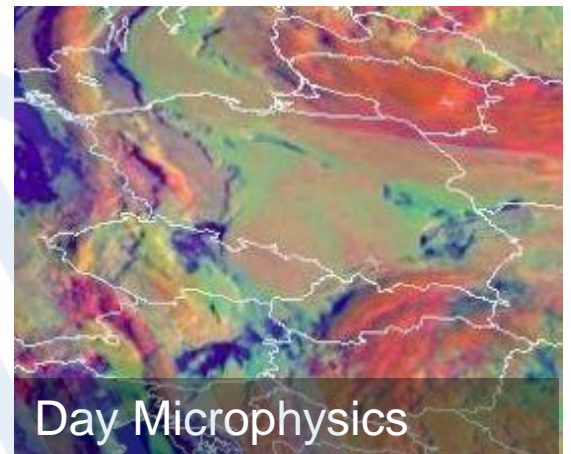
zdj. eumetsat

# Stratus/Mgła



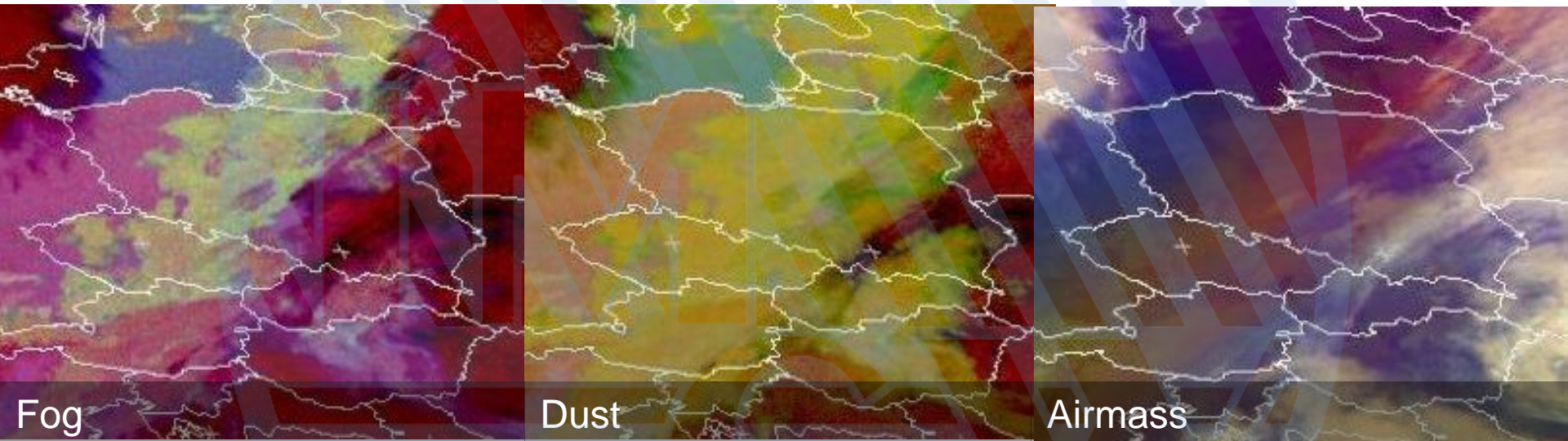
Stratus nad morzem.

# Niskie chmury w dzień

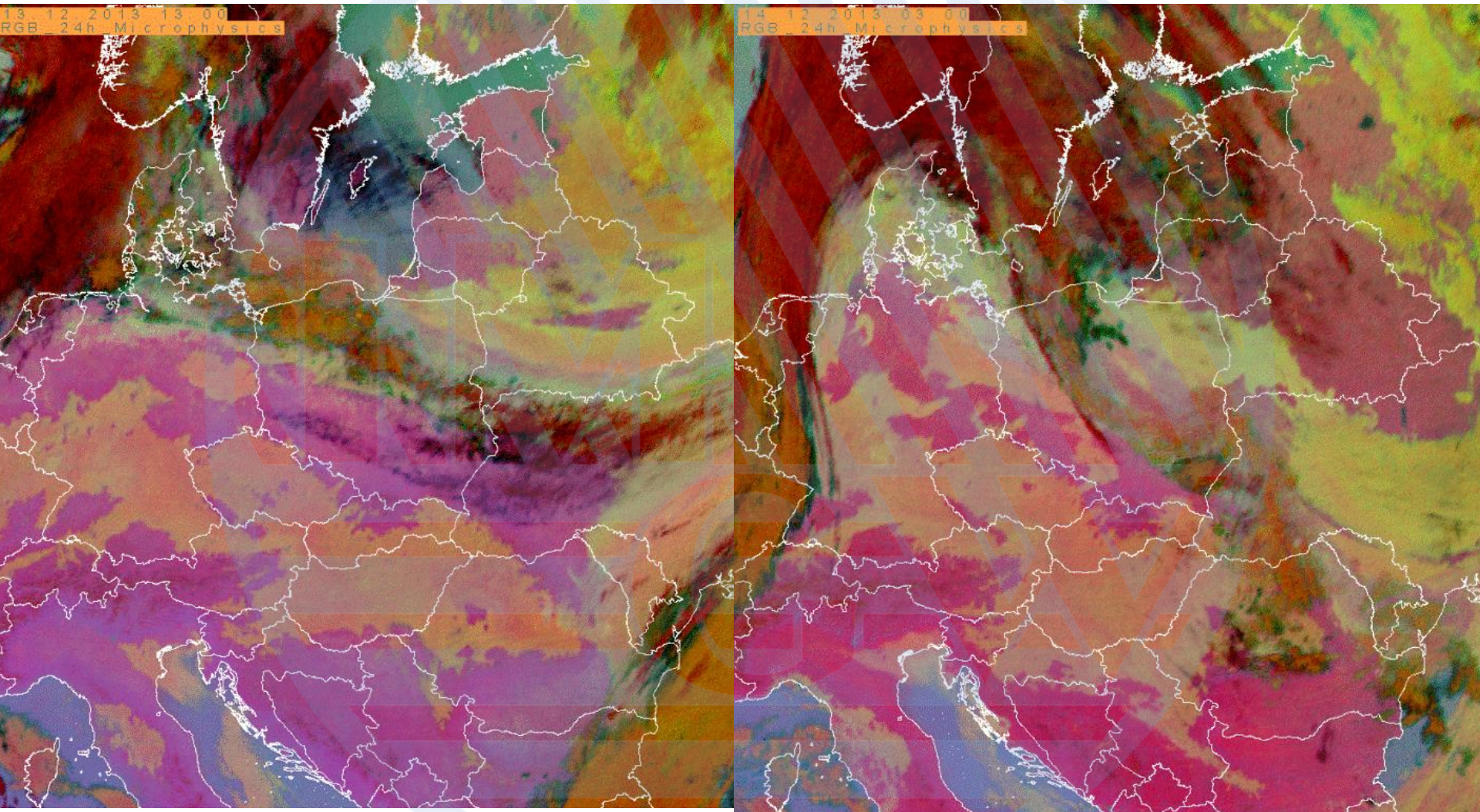




# Niskie chmury w nocy

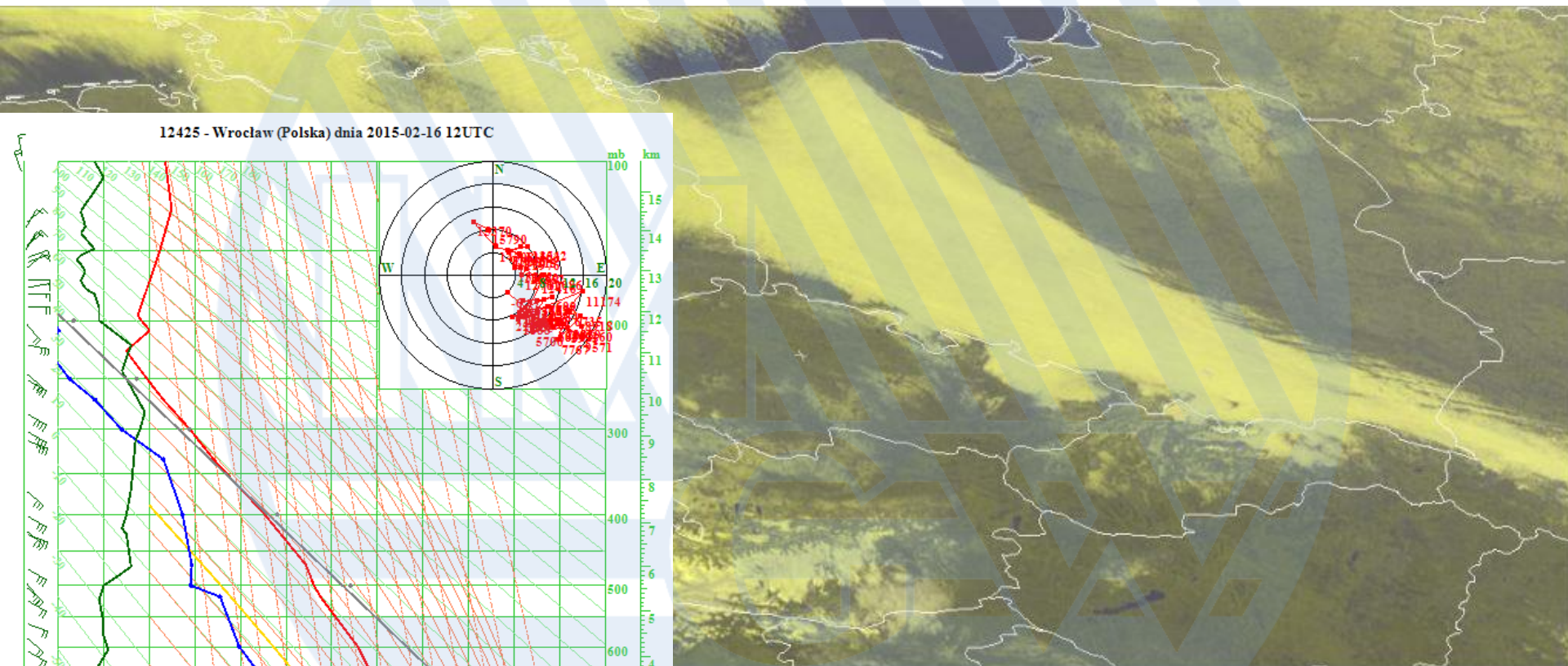


# Stratus



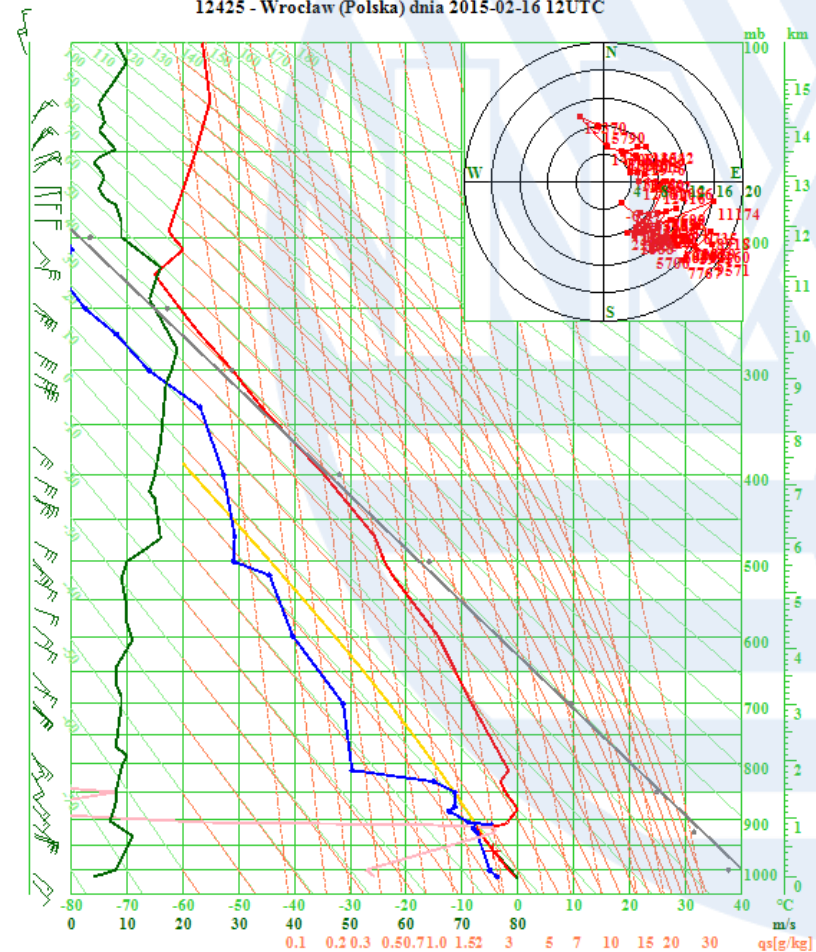
Wlew stratusa Bramą Morawską z Czech na Śląsk.

# Góry ponad chmury

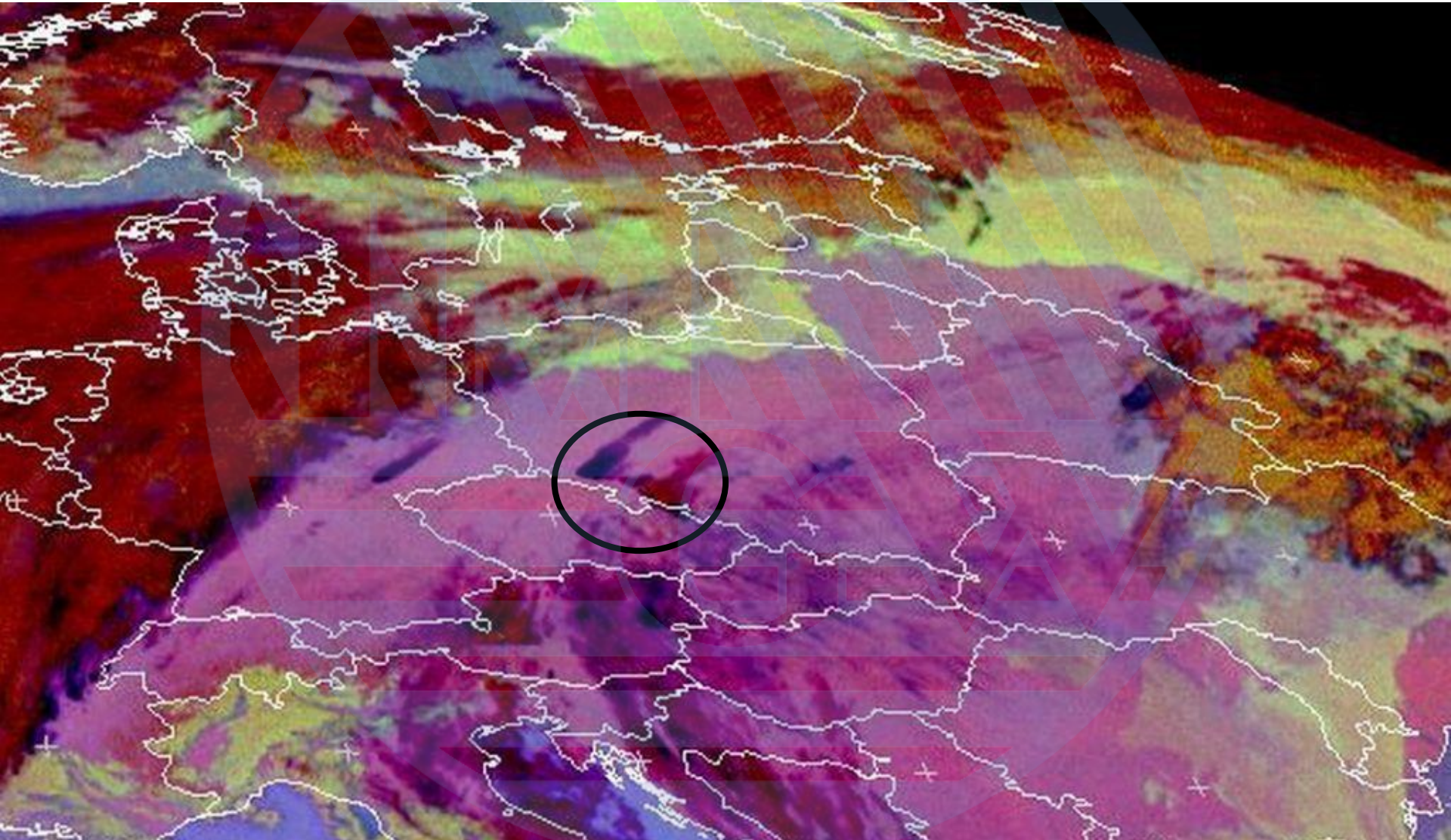


EUMETSAT

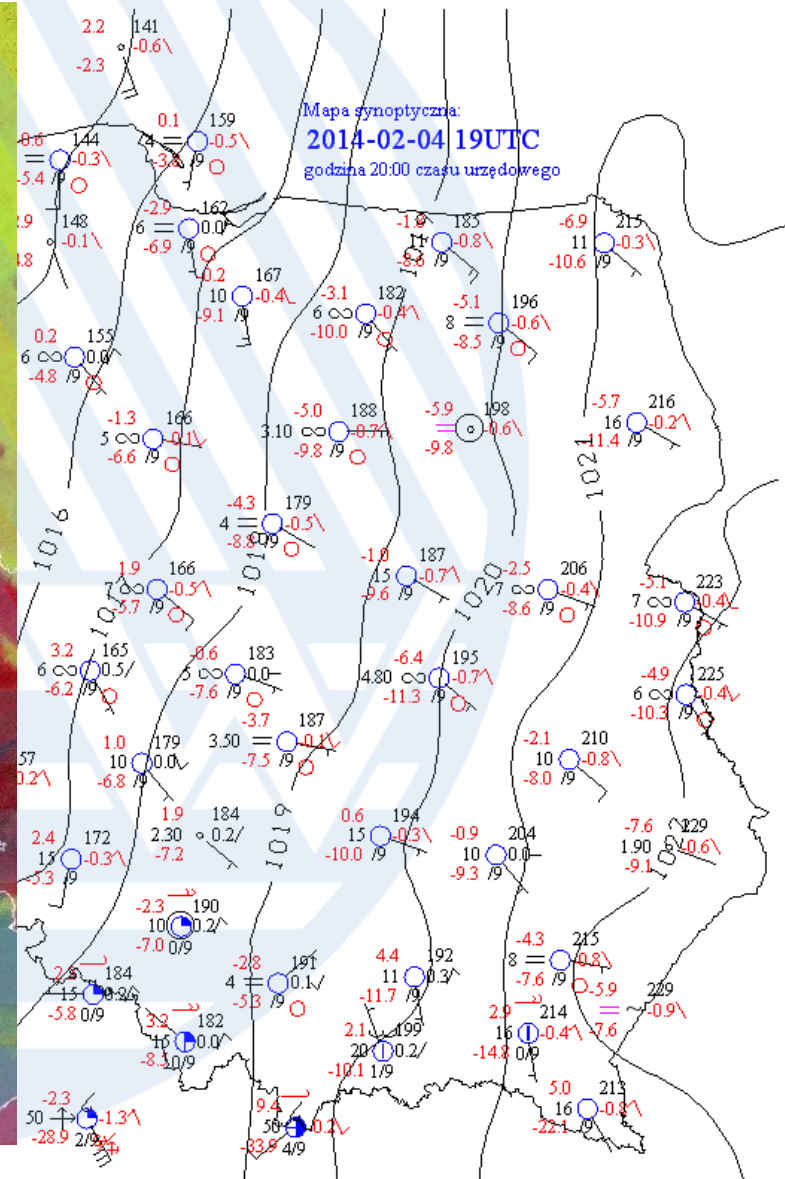
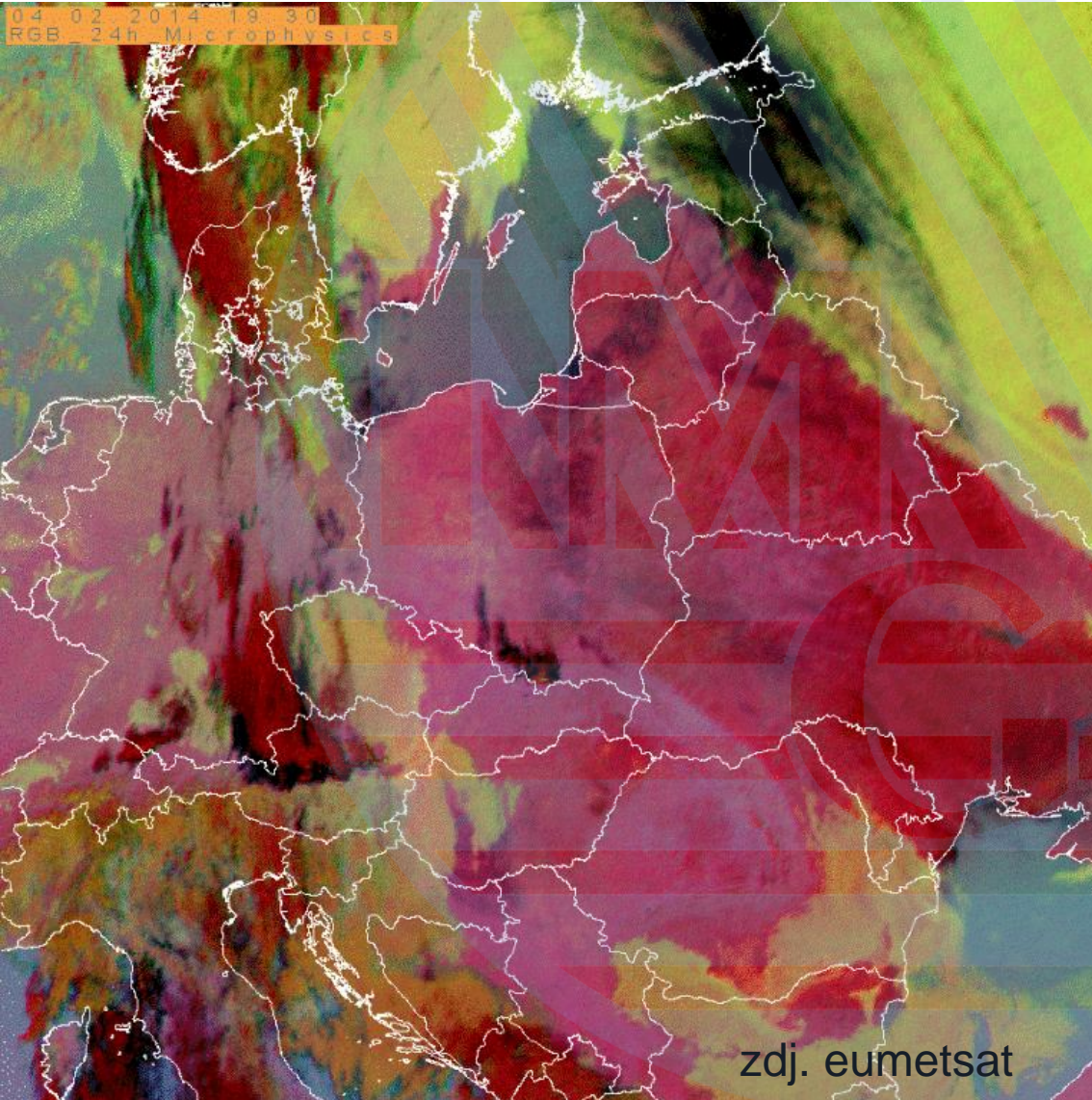
12425 - Wroclaw (Polska) dnia 2015-02-16 12UTC



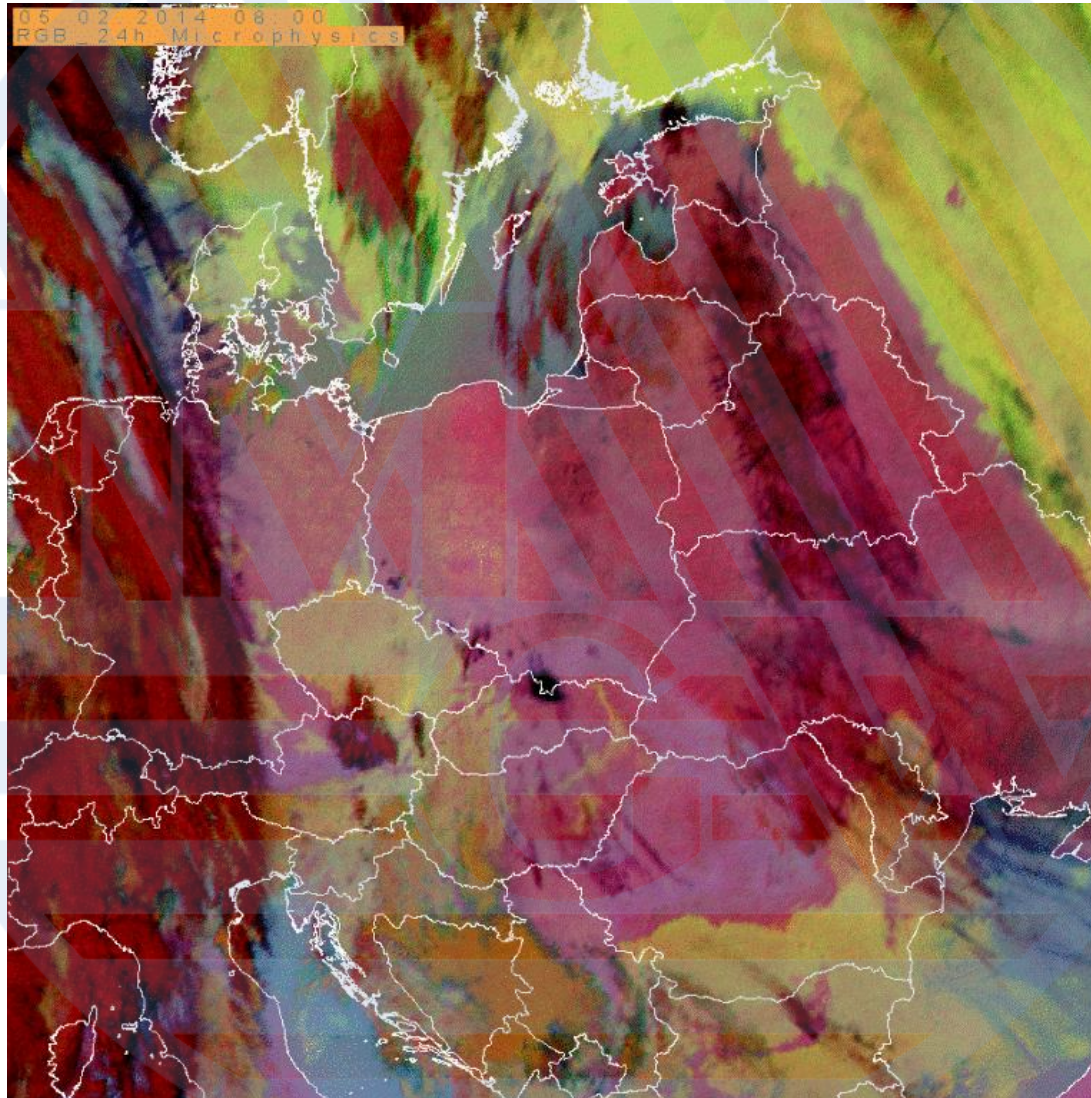
Co to za zjawisko?



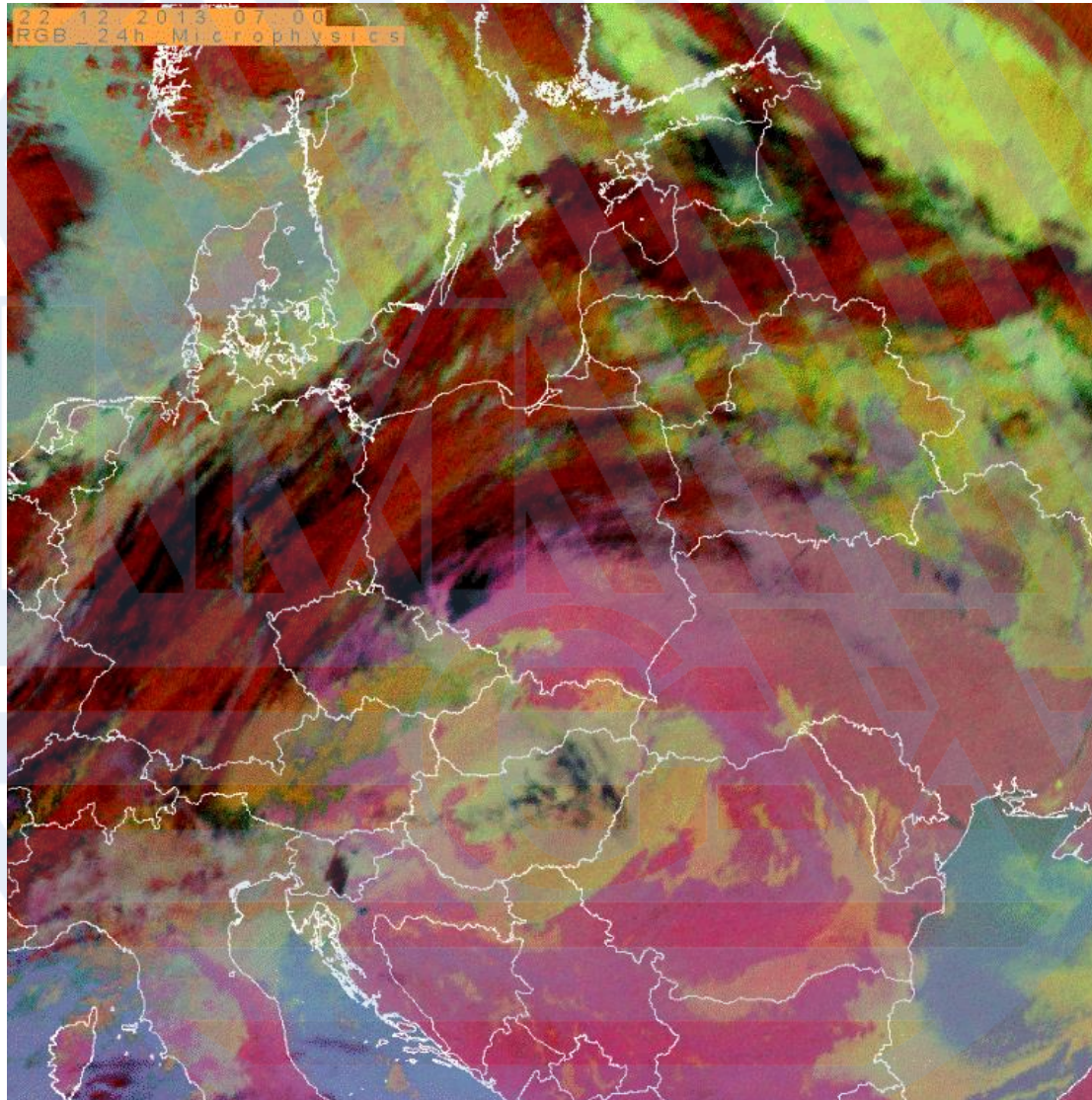
# Fala górska



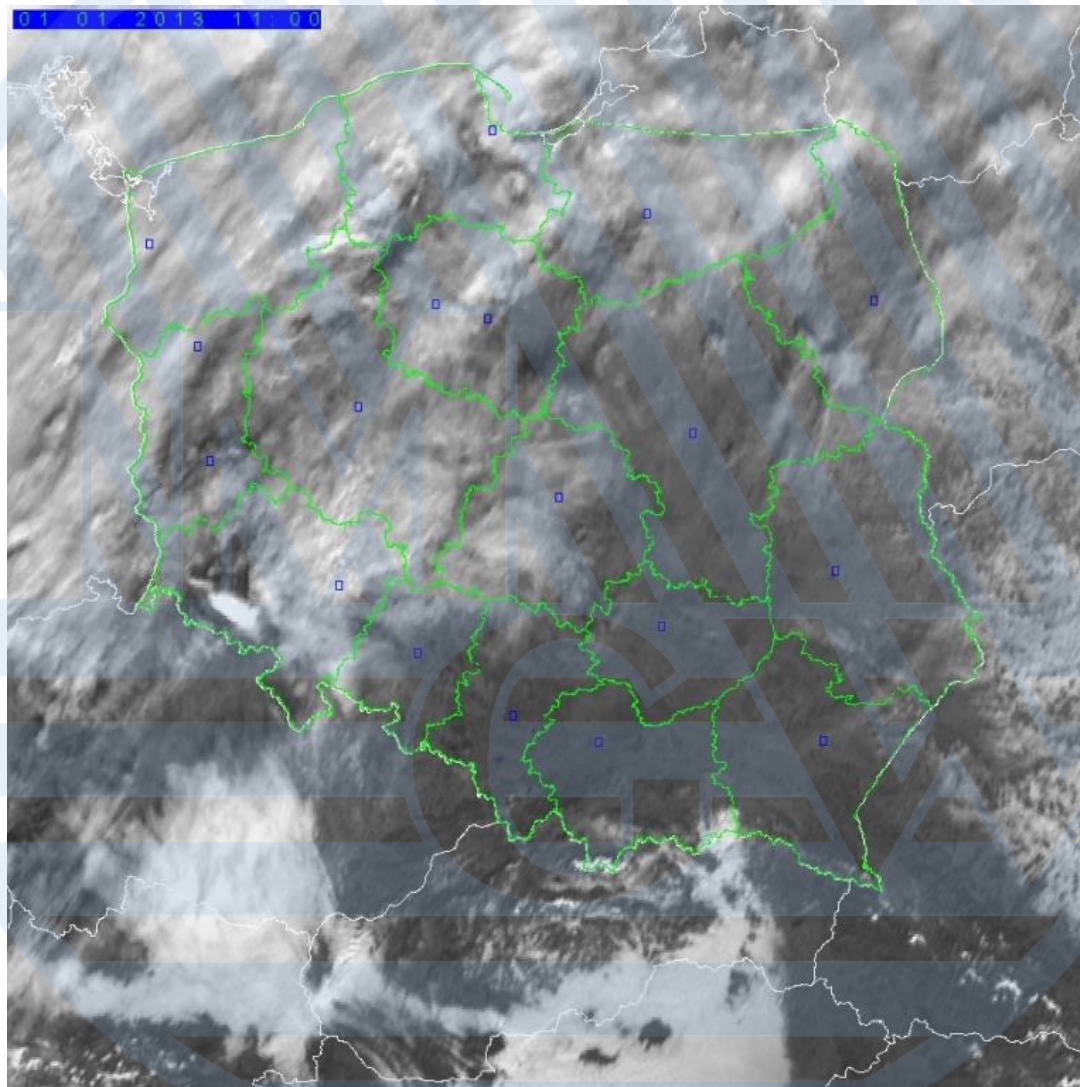
# Fala górska



# Fala górska

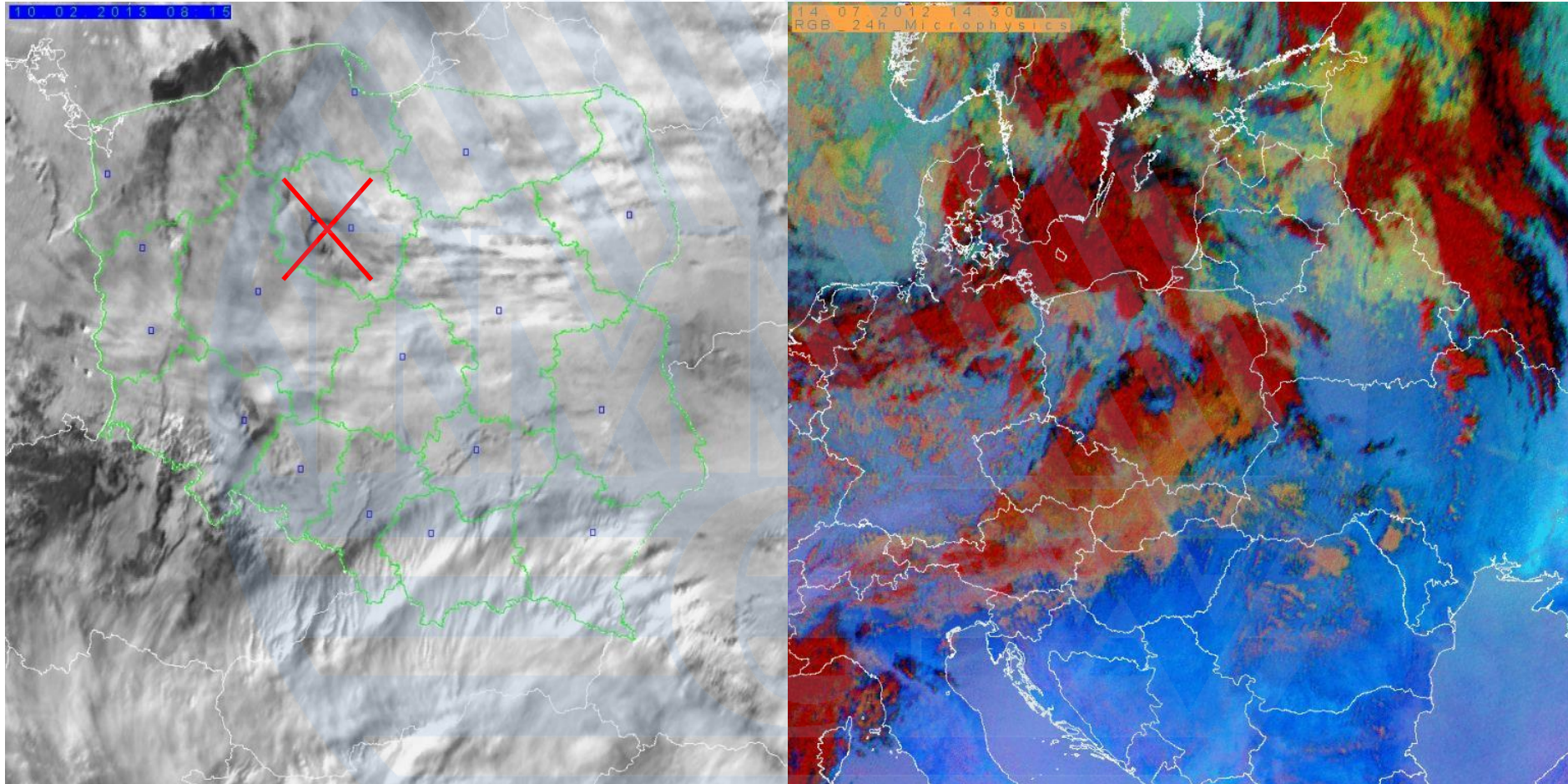


# Fala górska

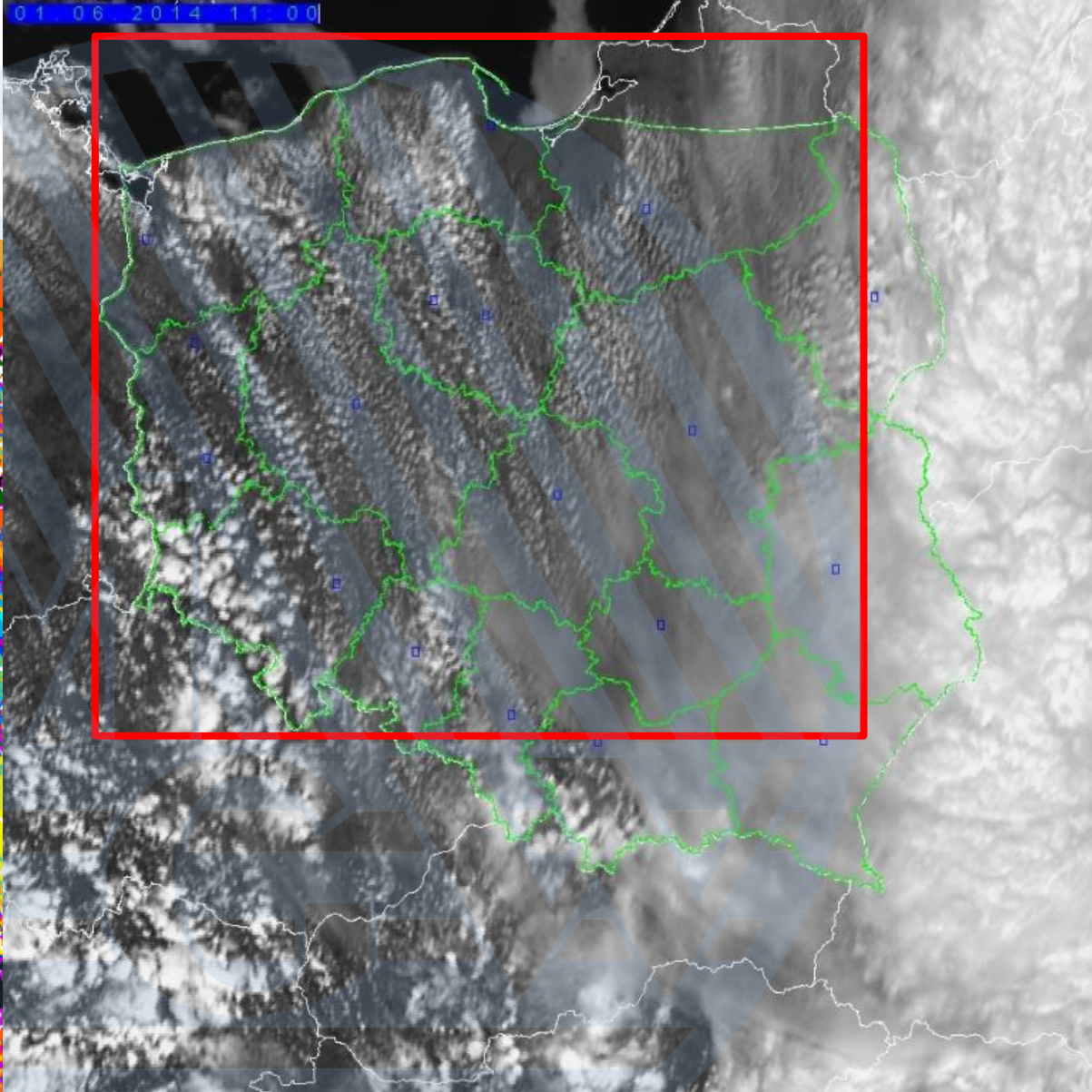
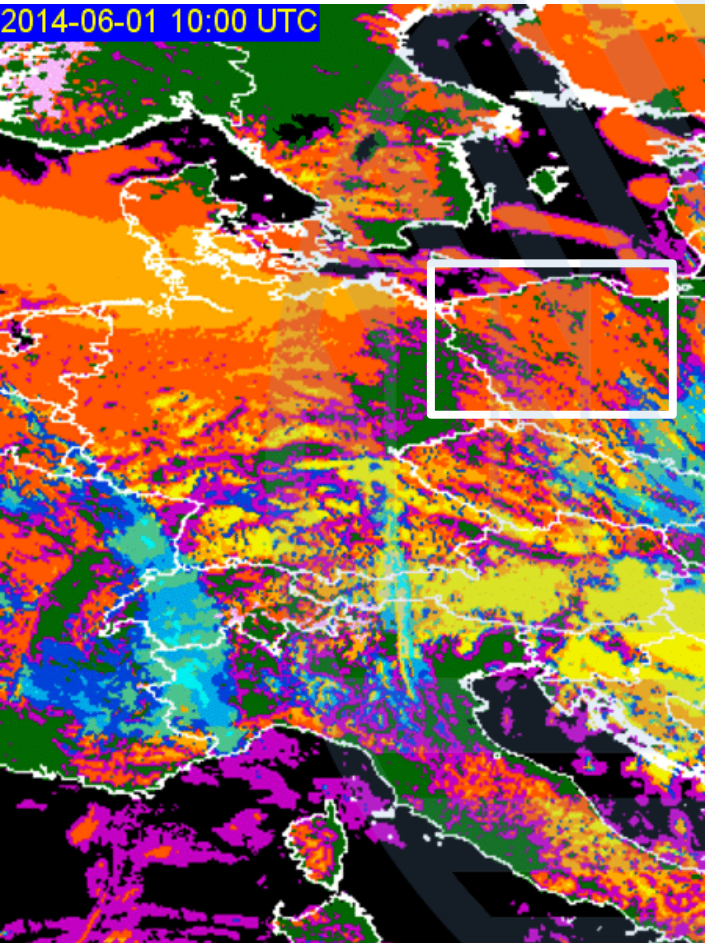




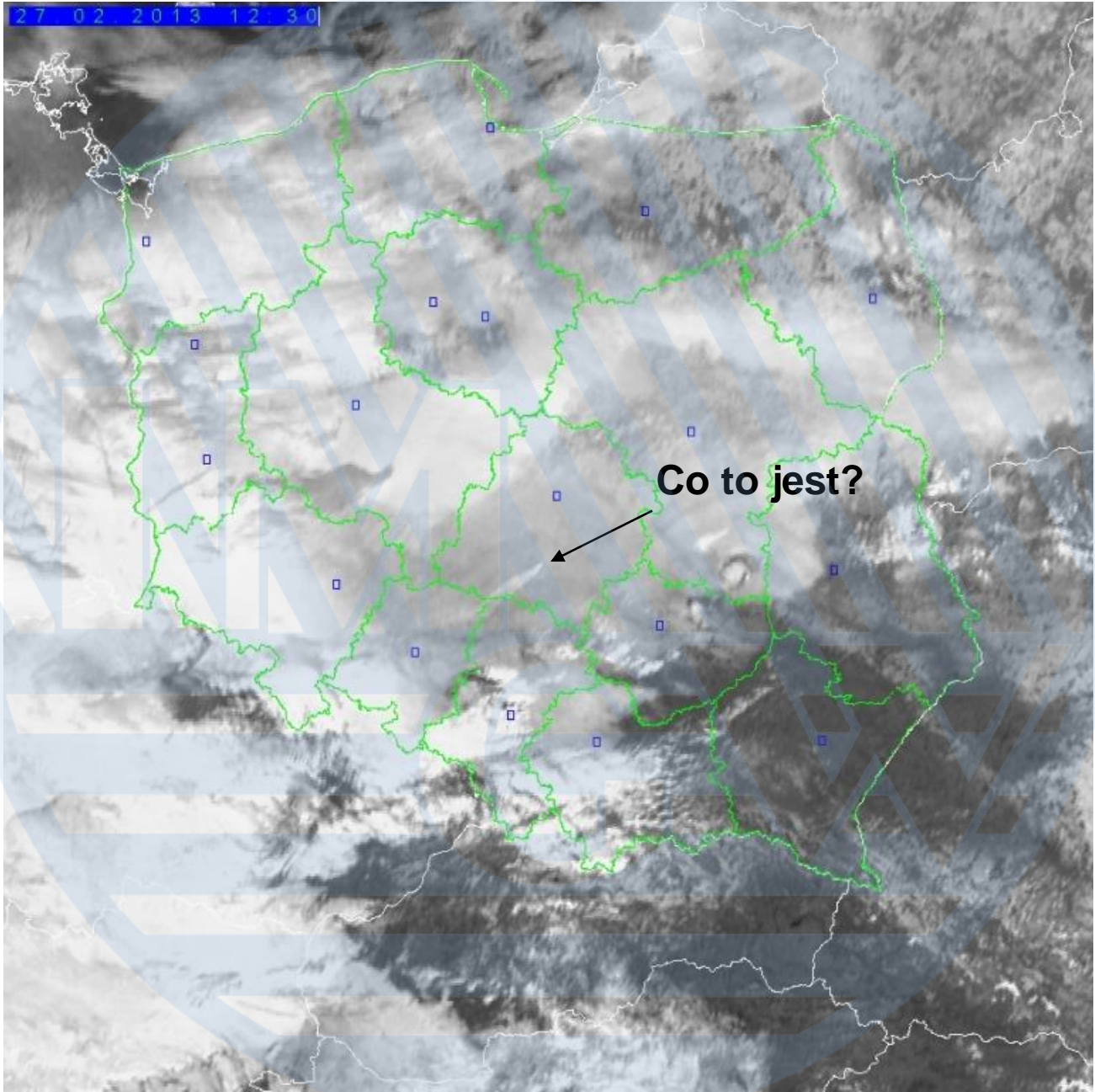
# Trąba powietrzna



# Typ zachmurzenia



27 02 2013 12:30



Co to jest?



**Instytut Meteorologii i Gospodarki Wodnej**  
Państwowy Instytut Badawczy

Łukasz Kieft

Centralne Biuro Prognoz Meteorologicznych  
IMGW-PIB w Krakowie

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