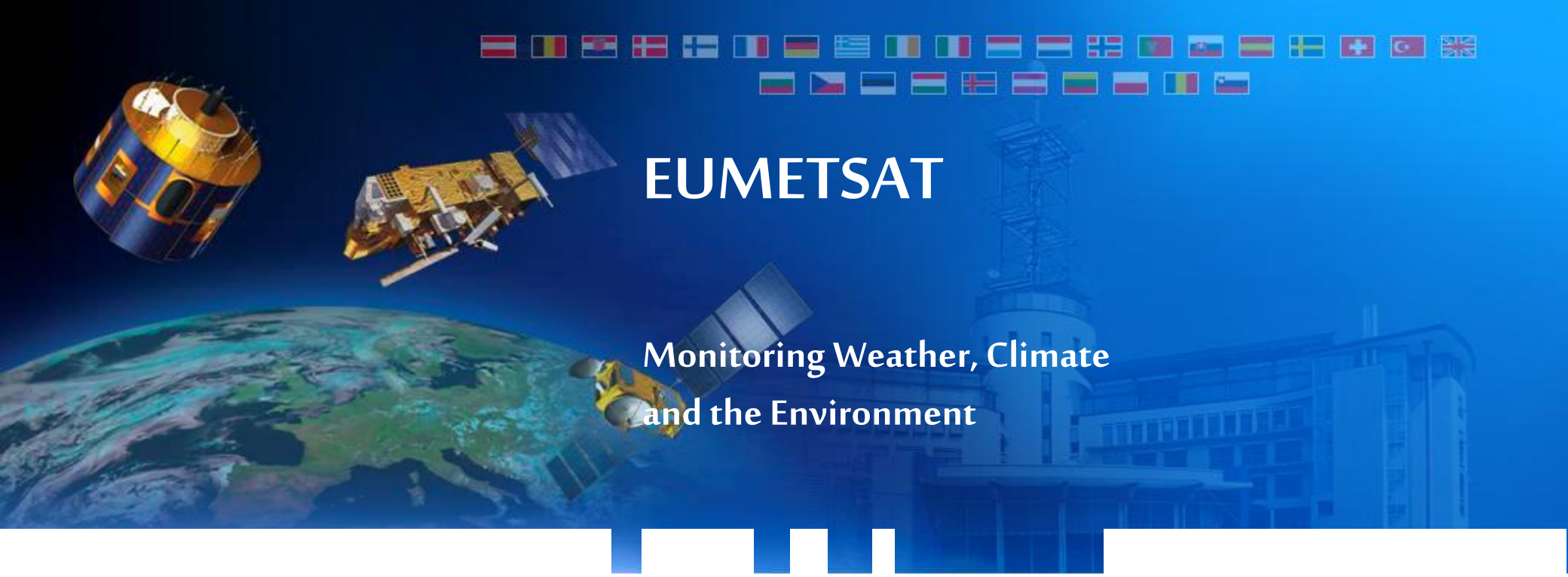


IODC Data & Products

Jochen.kerkmann@eumetsat.int

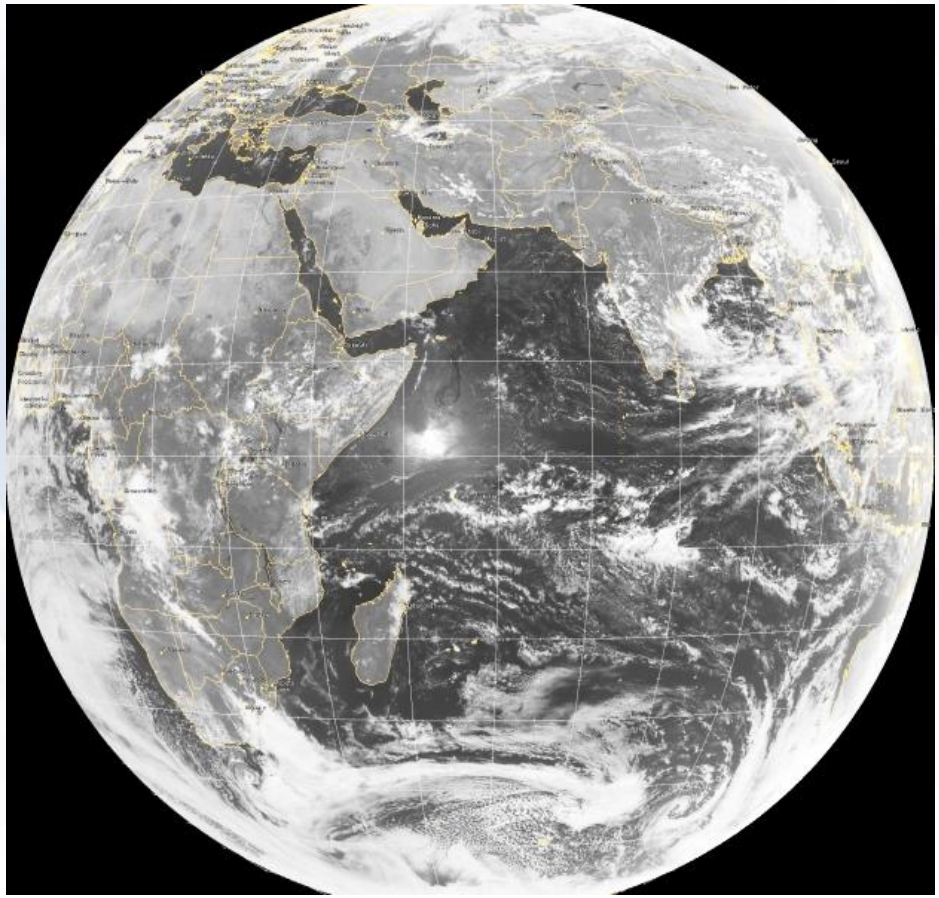
EUMETSAT

EUMETSAT's current satellites

EUMETSAT

Geostationary satellites

Meteosat First Generation (Meteosat-7)



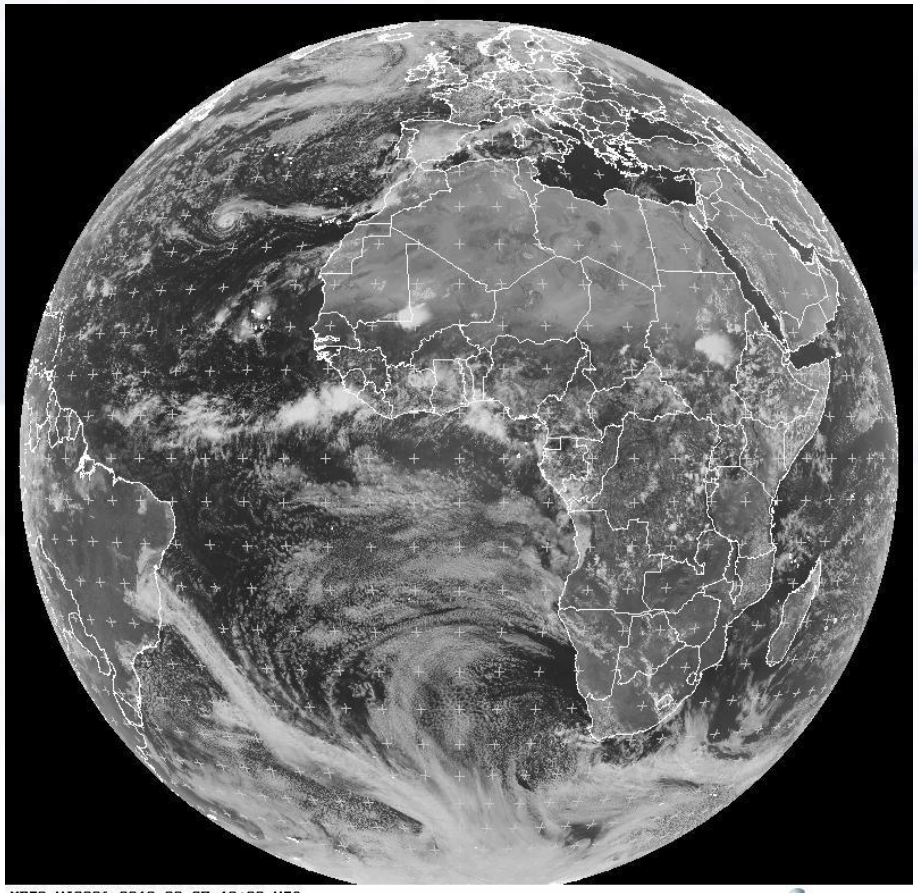
- Positioned over the Indian Ocean: 57.5°E
- 3 Spectral Channels (VIS, WV, IR)
- Sampling: 5 km (IR, WV), 2.5 km (VIS)
- Images every 30 Minutes
- Lifetime 1997-2016

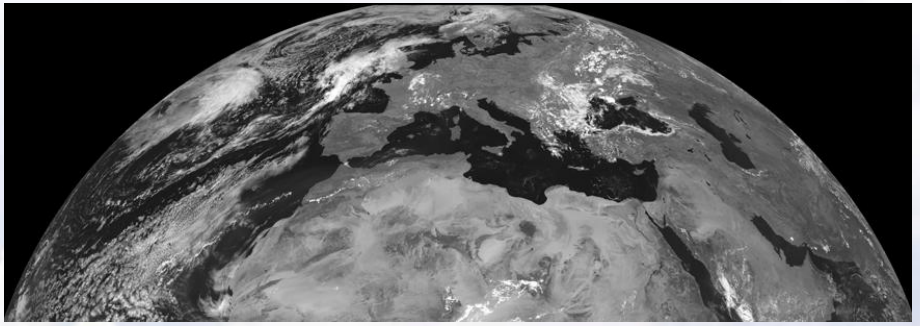
EUMETSAT

Geostationary satellites

Meteosat Second Generation (MSG) (Meteosat-8, Meteosat-9, Meteosat-10)

- 12 spectral bands, 3 km horizontal sampling, HRV channel 1 km



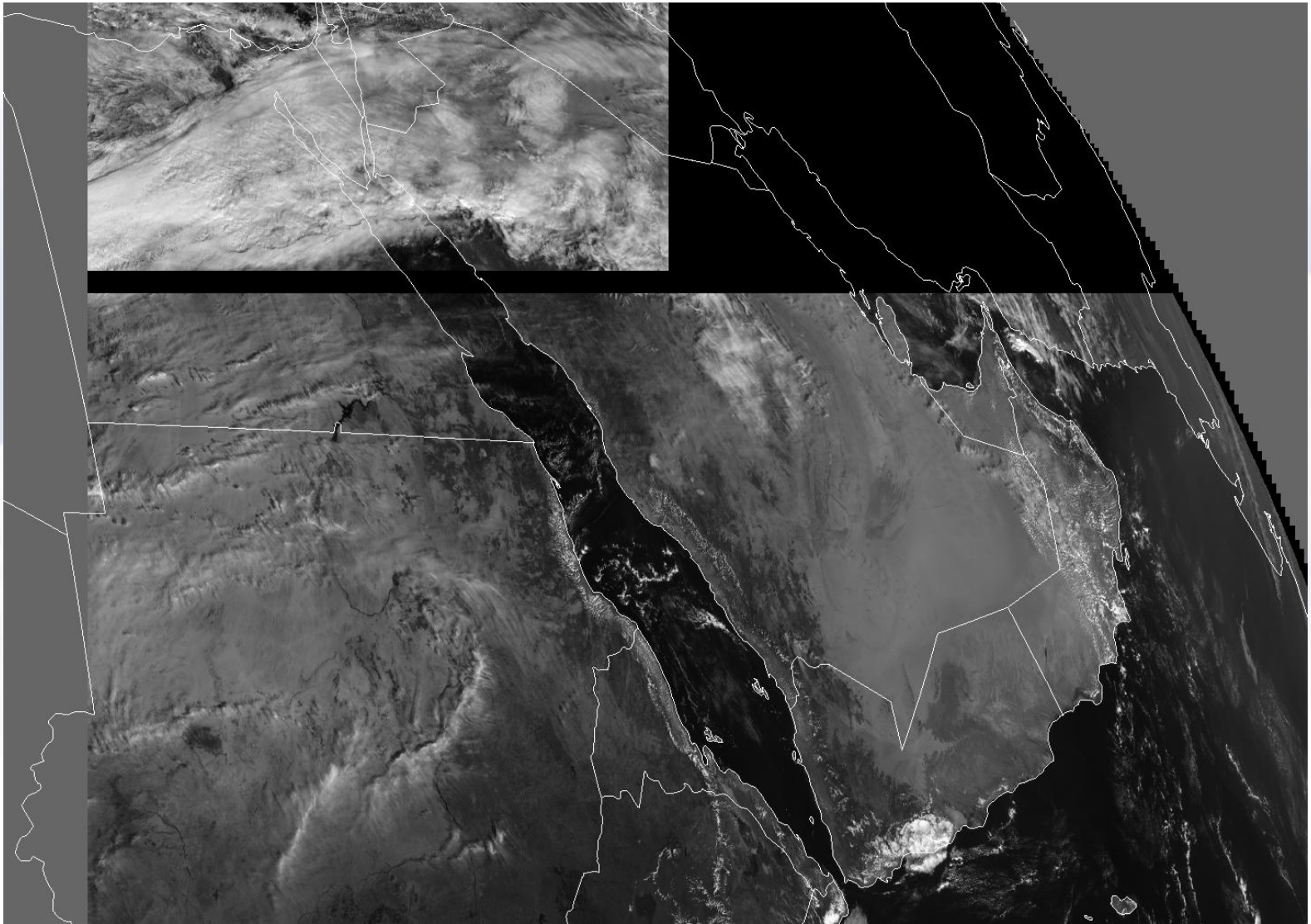


- Meteosat-8
- Positioned over 9.5°E
- Images every 5 minutes (Rapid Scan Service)

- Meteosat-10, (Meteosat-9)
- Positioned over 0°E
- Images every 15 minutes

EUMETSAT

Met-10 HRV Coverage (9:00 UTC)

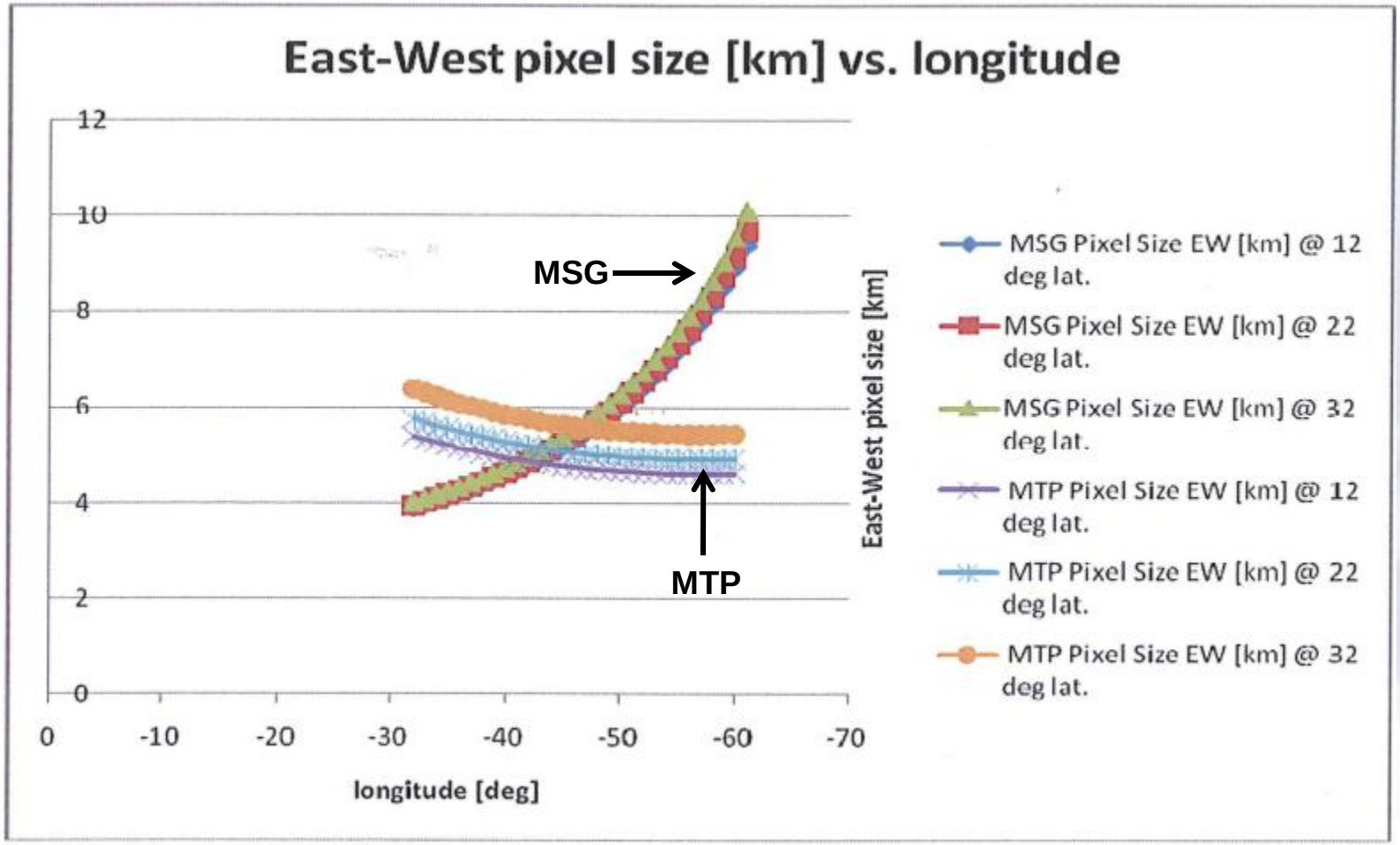


HRV Scan pattern

CLICK HERE

EUMETSAT

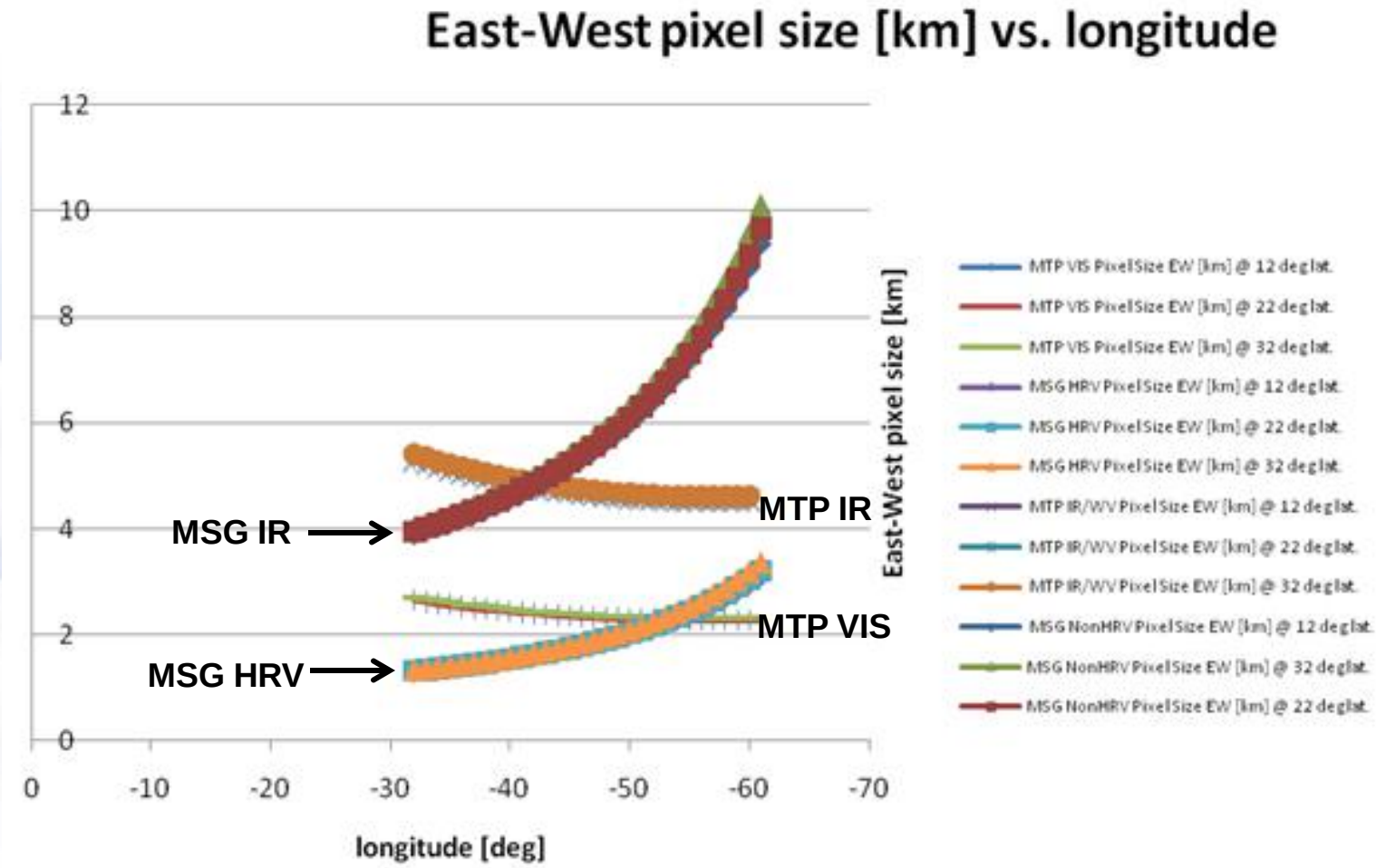
Comparison of pixel sizes
Met-7 (IODC) versus Met-10 (MSG)



IR and WV channels

EUMETSAT

Comparison of pixel sizes
Met-7 (IODC) versus Met-10 (MSG)



EUMETSAT

MSG-3 (Meteosat-10) Launch on 5 July 2012

Usage after 9 April 2013:

Met-10 : launched 5 July 2012 and located at 0°. It supports SEVIRI HRIT, Met Products, SEVIRI LRIT, GERB and DCP.

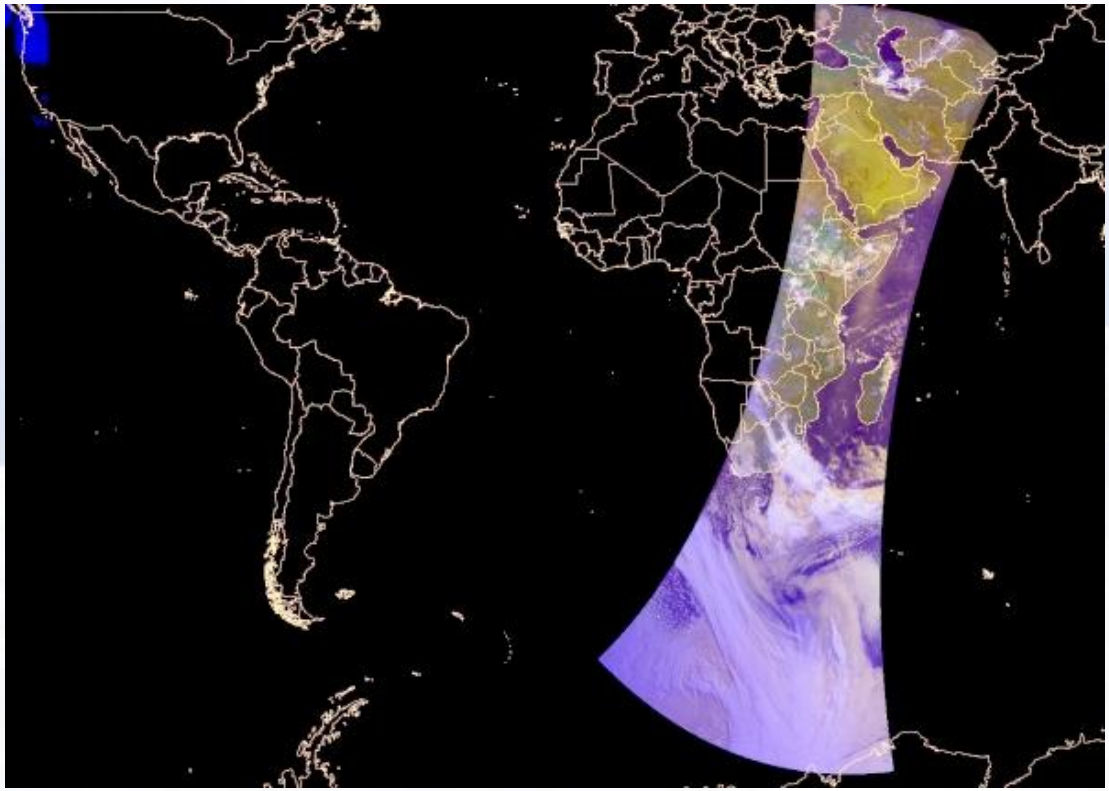
Met-9 : launched 21 Dec 2005 and located at 9.5°E. It supports RSS.

Met-8 : launched 28 Aug 2002 and located at 3.5°East. It is imaging but not disseminating and it is an operational backup for Met-10 and Met-9.

EUMETSAT

Polar-orbiting satellites

EUMETSAT Polar System (EPS)



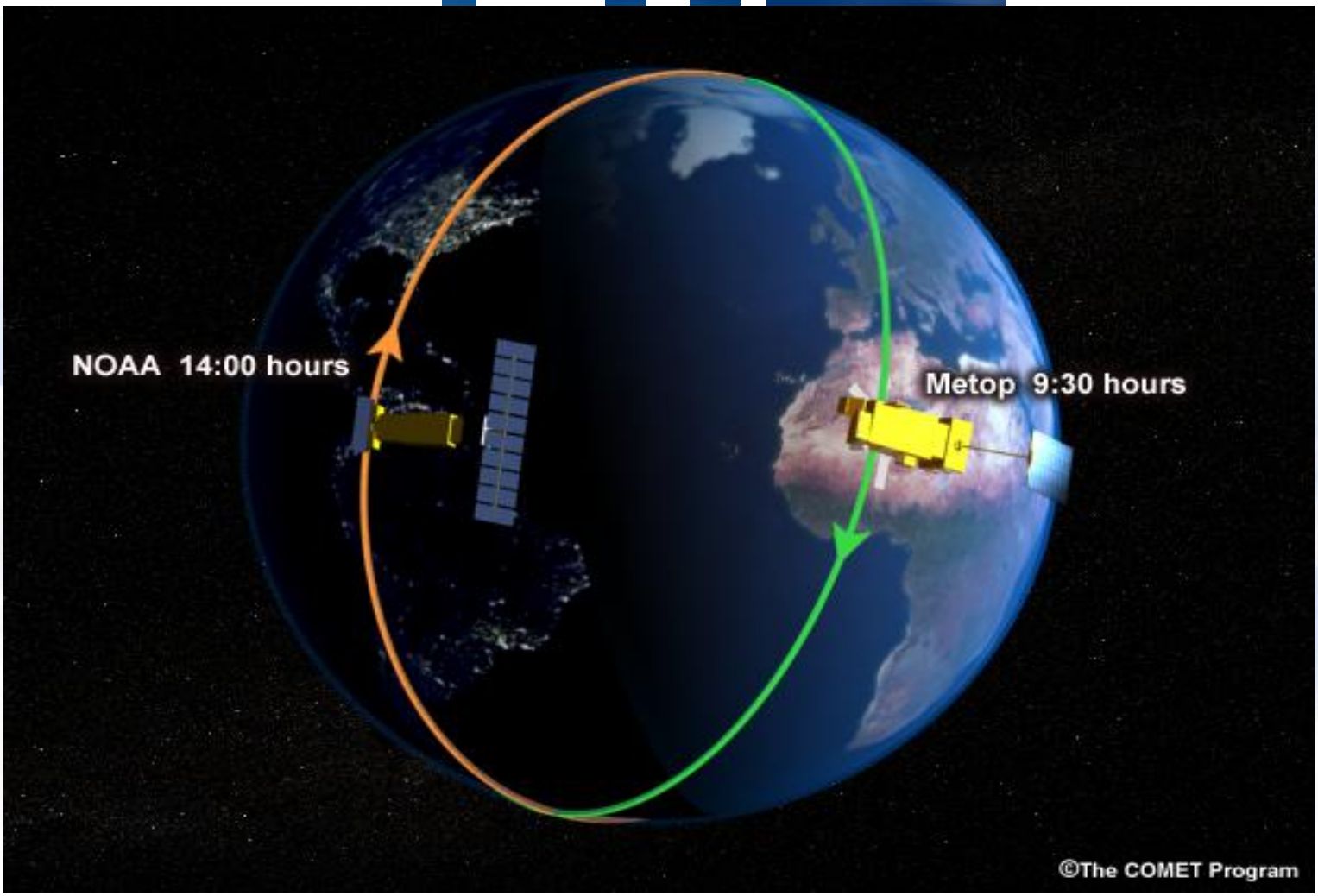
Metop-A (in operation since 2007)

- carries imaging and sounding instruments
- direct broadcasting and data collection capabilities

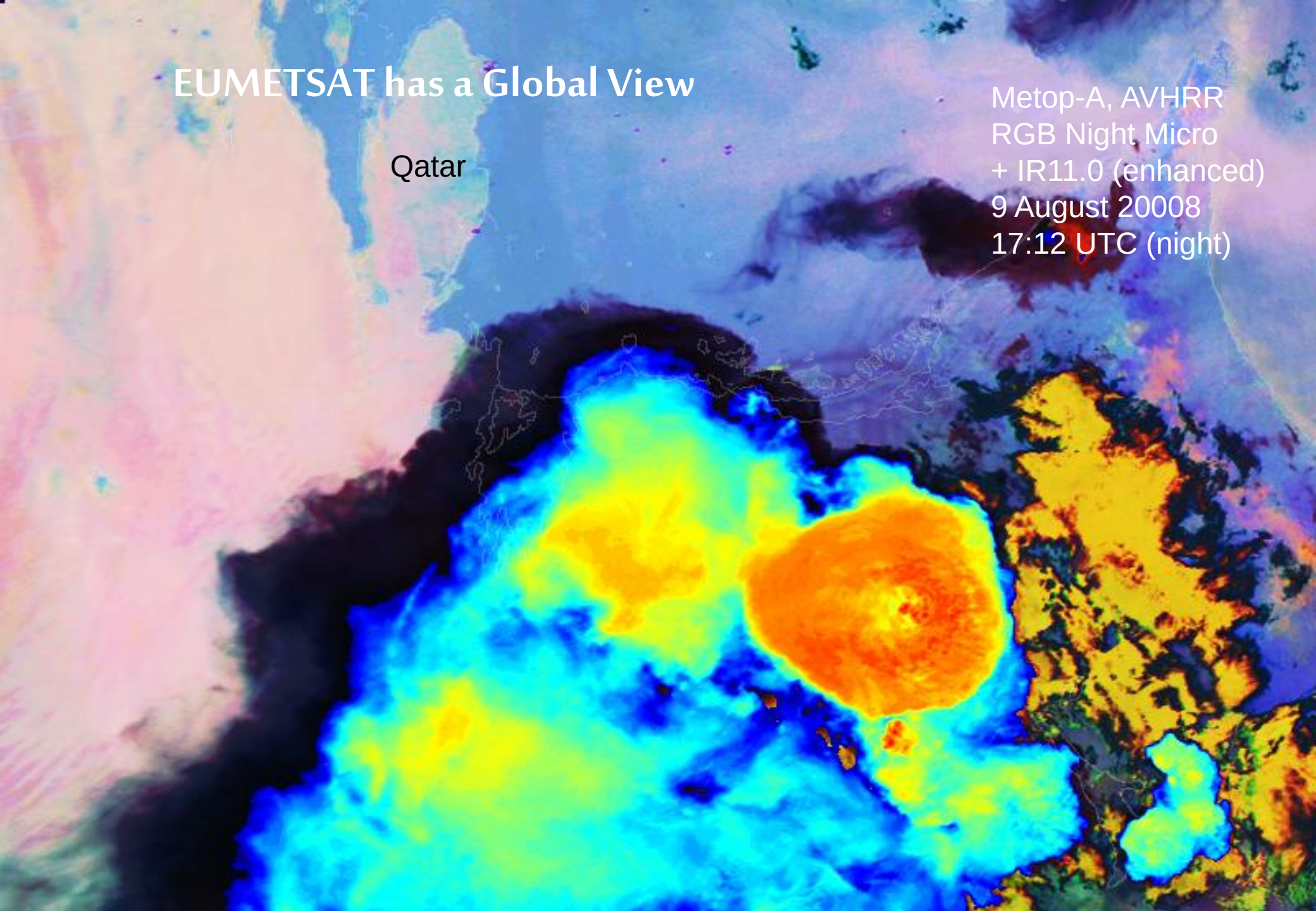
Partners:

EUMETSAT

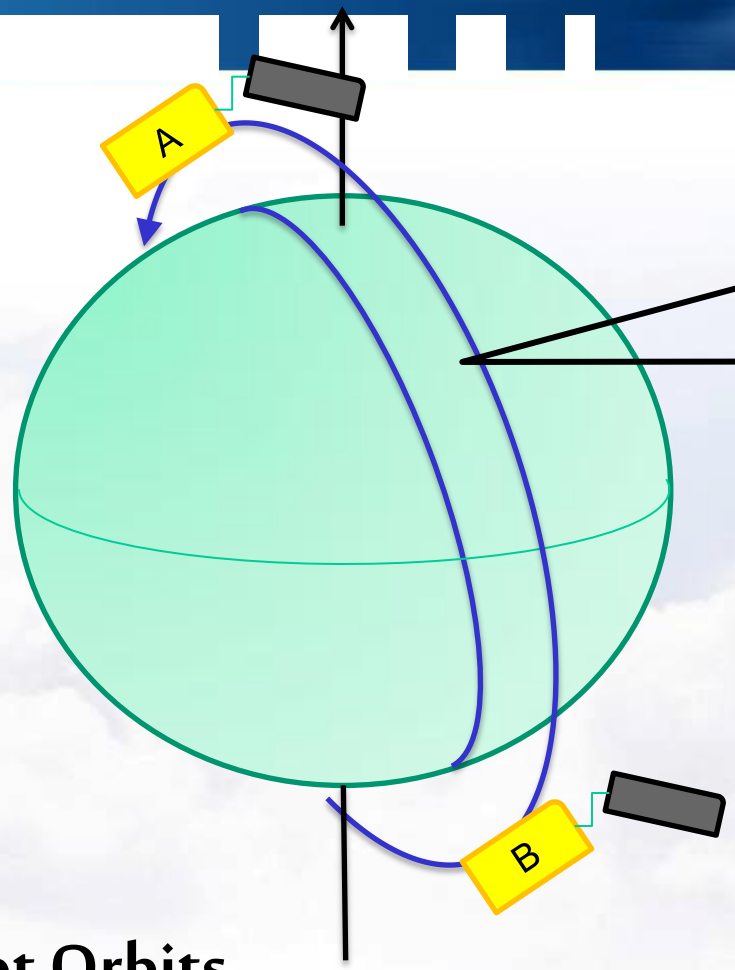
Metop Orbit



EUMETSAT


EUMETSAT has a Global View
Qatar
Metop-A, AVHRR
RGB Night Micro
+ IR11.0 (enhanced)
9 August 20008
17:12 UTC (night)

Metop-B Launch on 17 September 2012



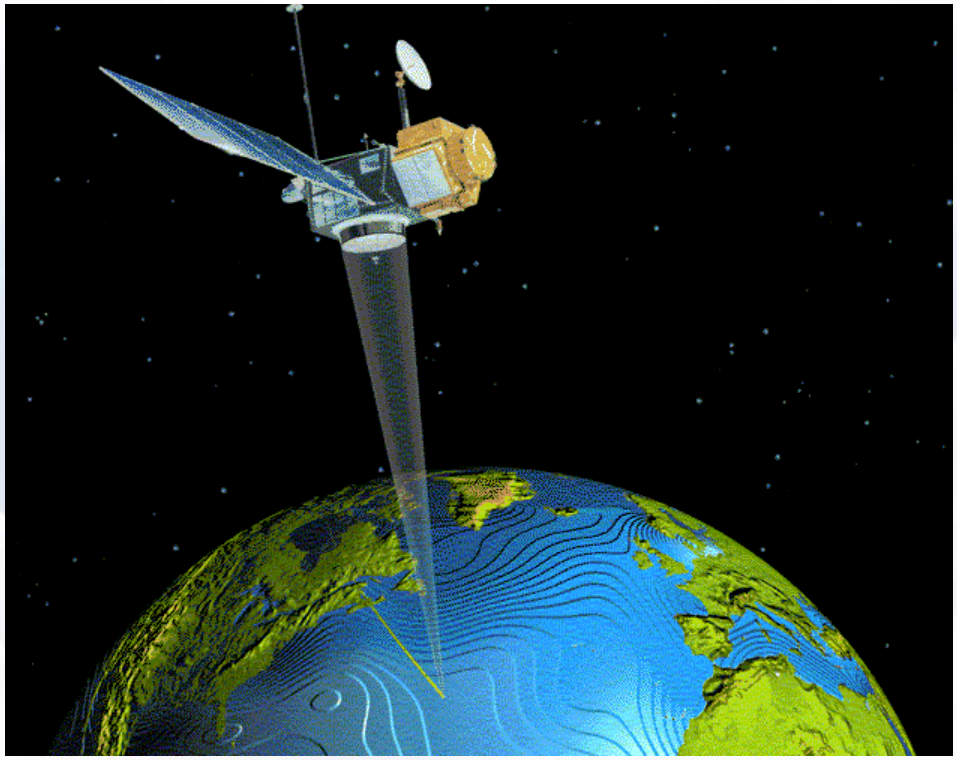
Metops will be co-planar, 180 degrees apart

Metop-A/B Target Orbits

EUMETSAT

Monitoring the oceans

Jason-2



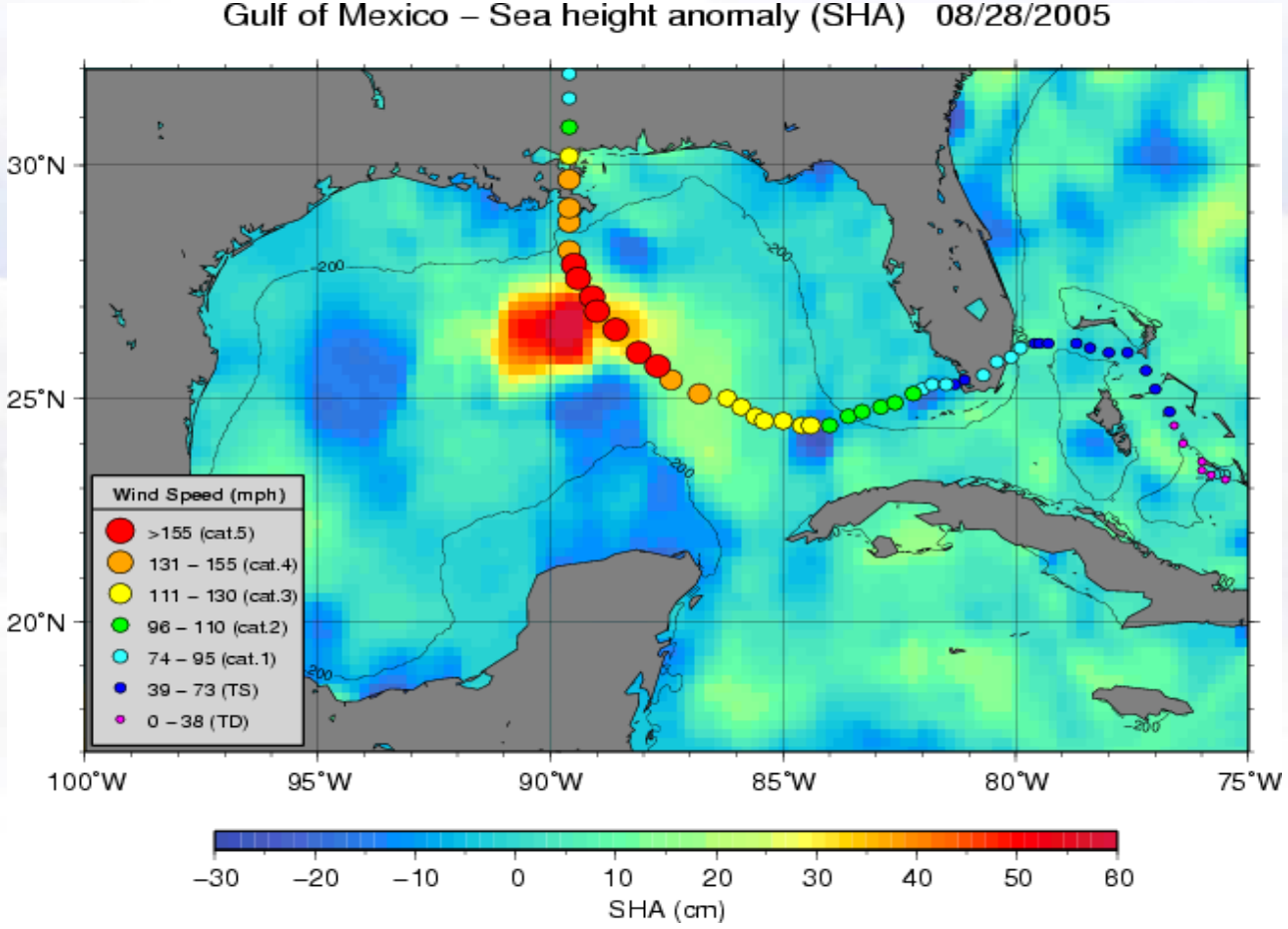
Partners:

- launched in June 2008 from Vandenberg, California
- EUMETSAT's first optional programme on ocean altimetry

EUMETSAT

Hurricane Katrina as seen through altimetry measurements

(Gustavo Goni, NOAA/AOML, gustavo.goni@noaa.gov)



EUMETSAT

IODC: Important Considerations

- IODC covers the Indian Ocean (aviation, shipping, ...)
- IODC has better viewing angle and thus gives a better position of cloud systems (less parallax) over the Arabian Peninsula
- IODC has better spatial resolution than MSG east of about 50°E
- IODC has better visible coverage than MSG (no gaps, in particular in The Gulf area)

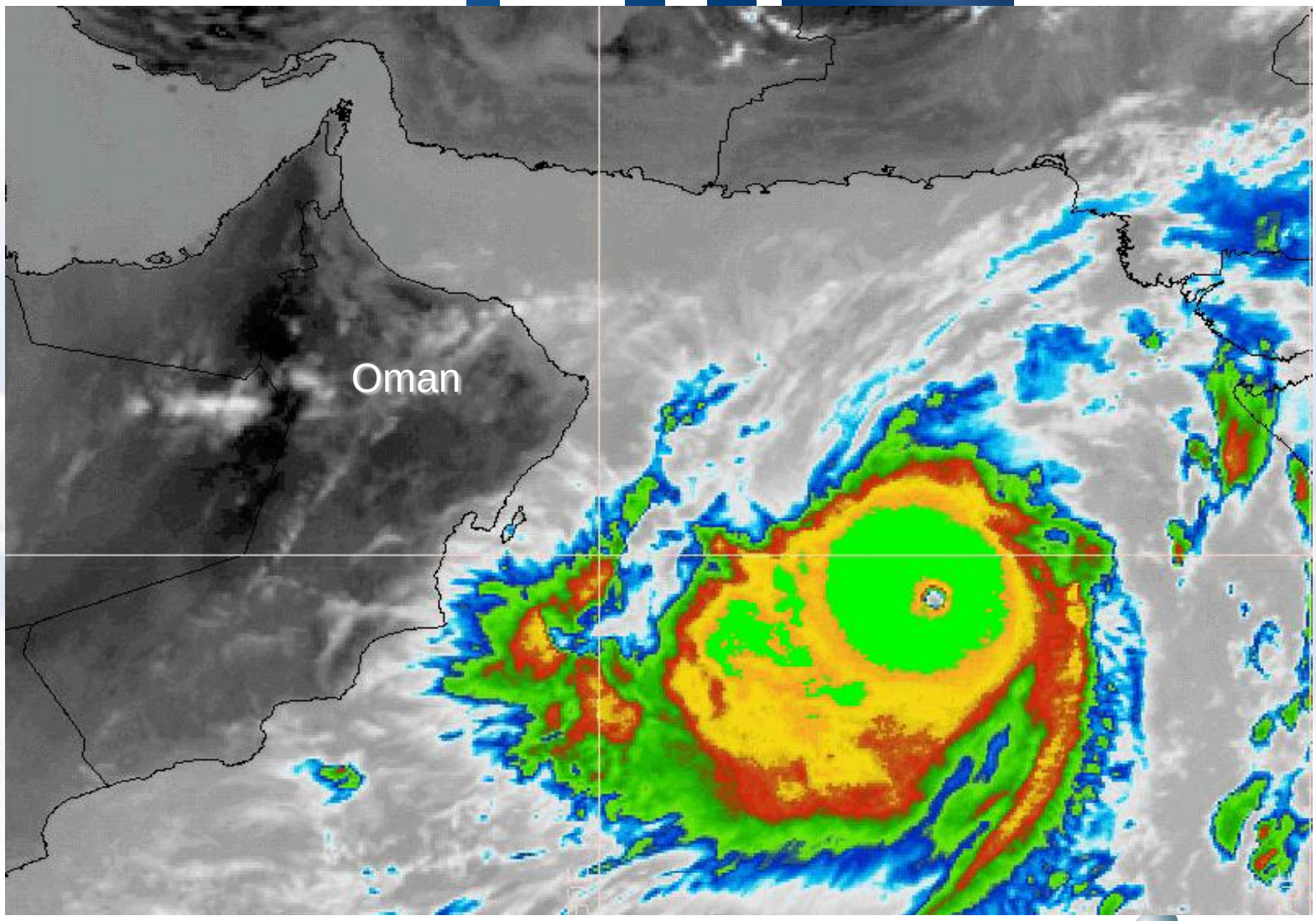
- DCS of IODC is integral part of tsunami warning system

Met-7 (IODC) Application Examples

EUMETSAT

Tropical Cyclone Gonu (Met-7 IODC)

4 June 2007



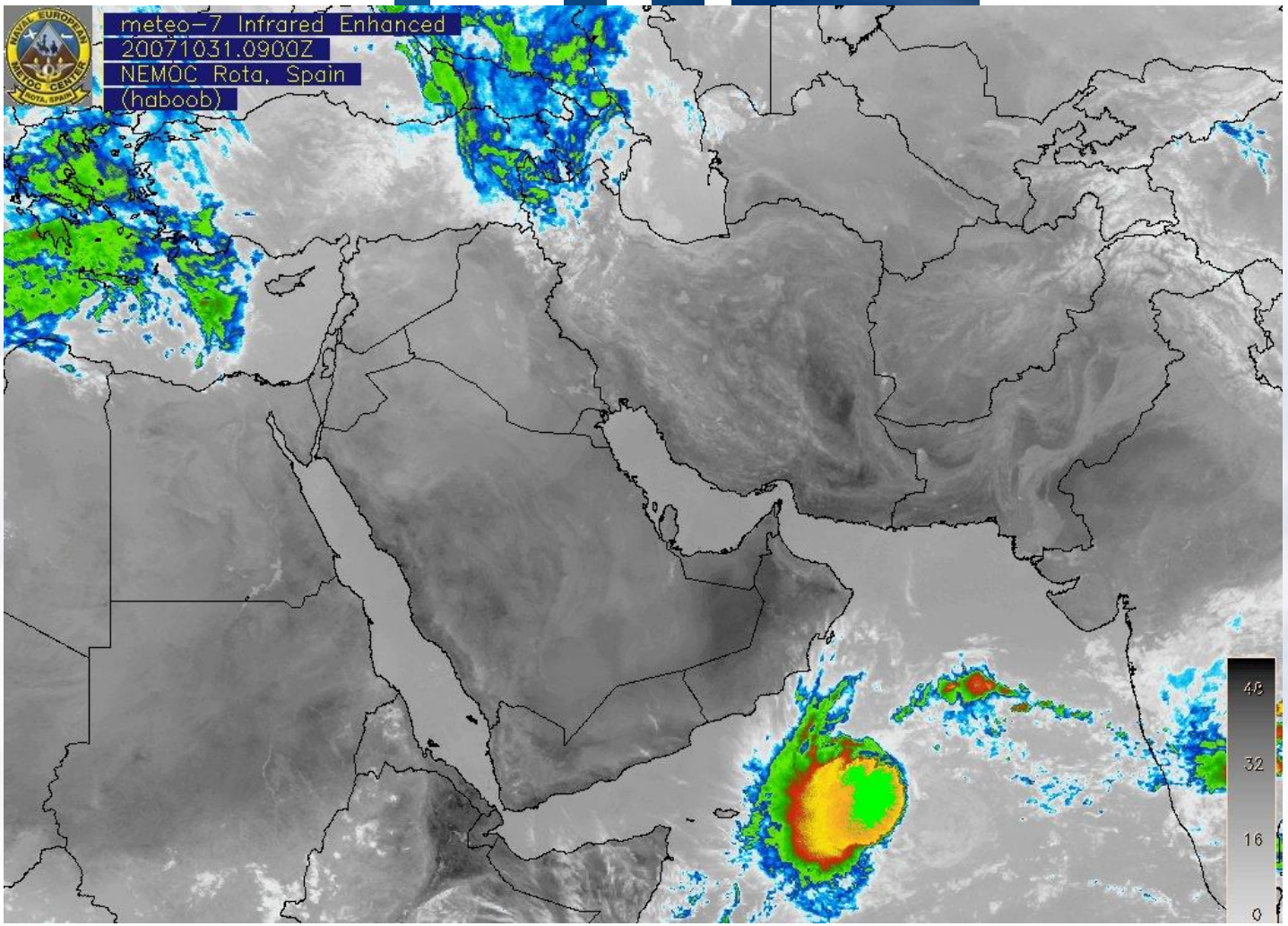
Meteosat-7, IR Channel

CLICK HERE

EUMETSAT

Tropical Cyclone 05A (Met-7 IODC)

31 October 2007, 09:00 UTC

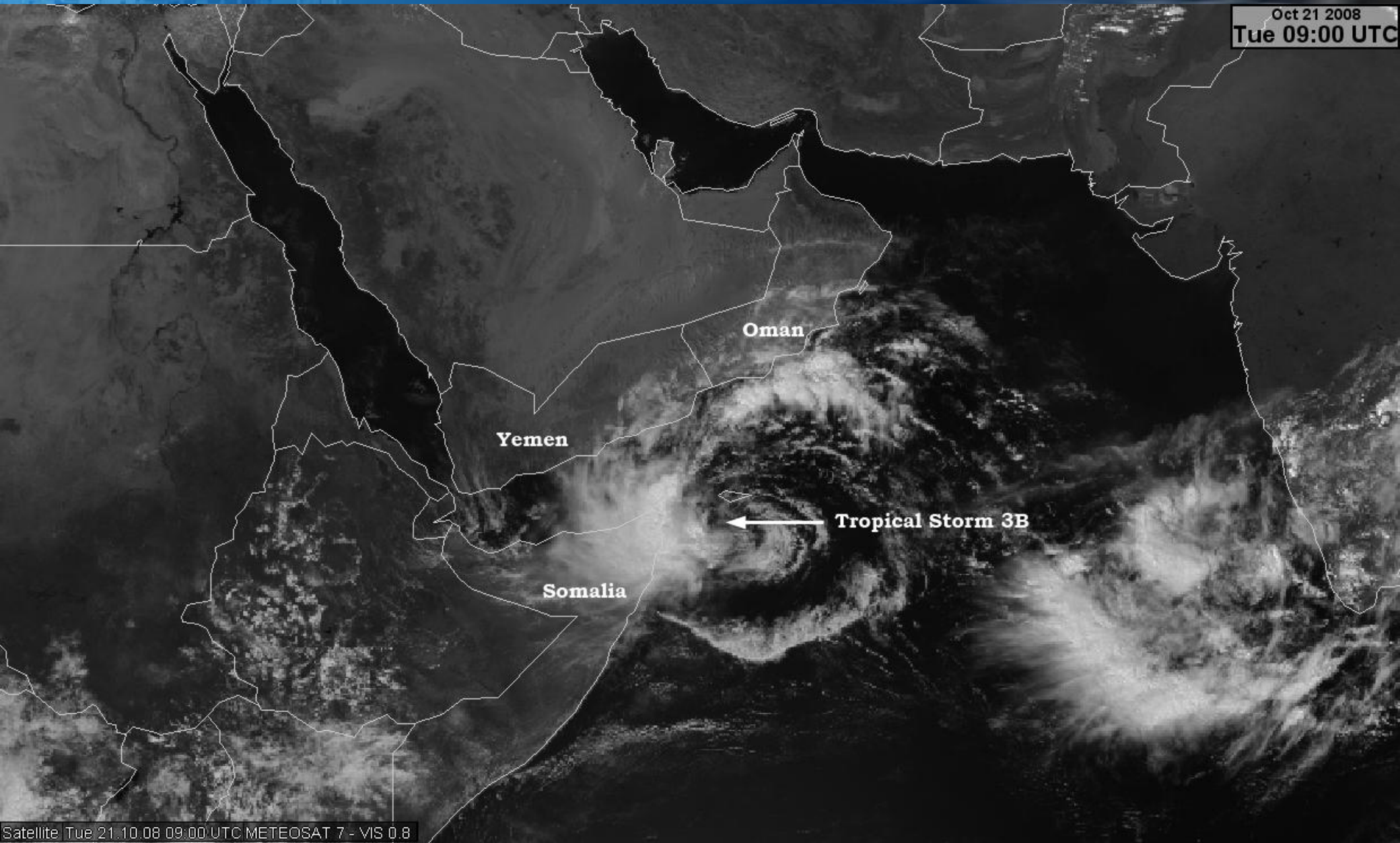


Meteosat-7, IR Channel

EUMETSAT

Tropical Depression 03B (Met-7 IODC)

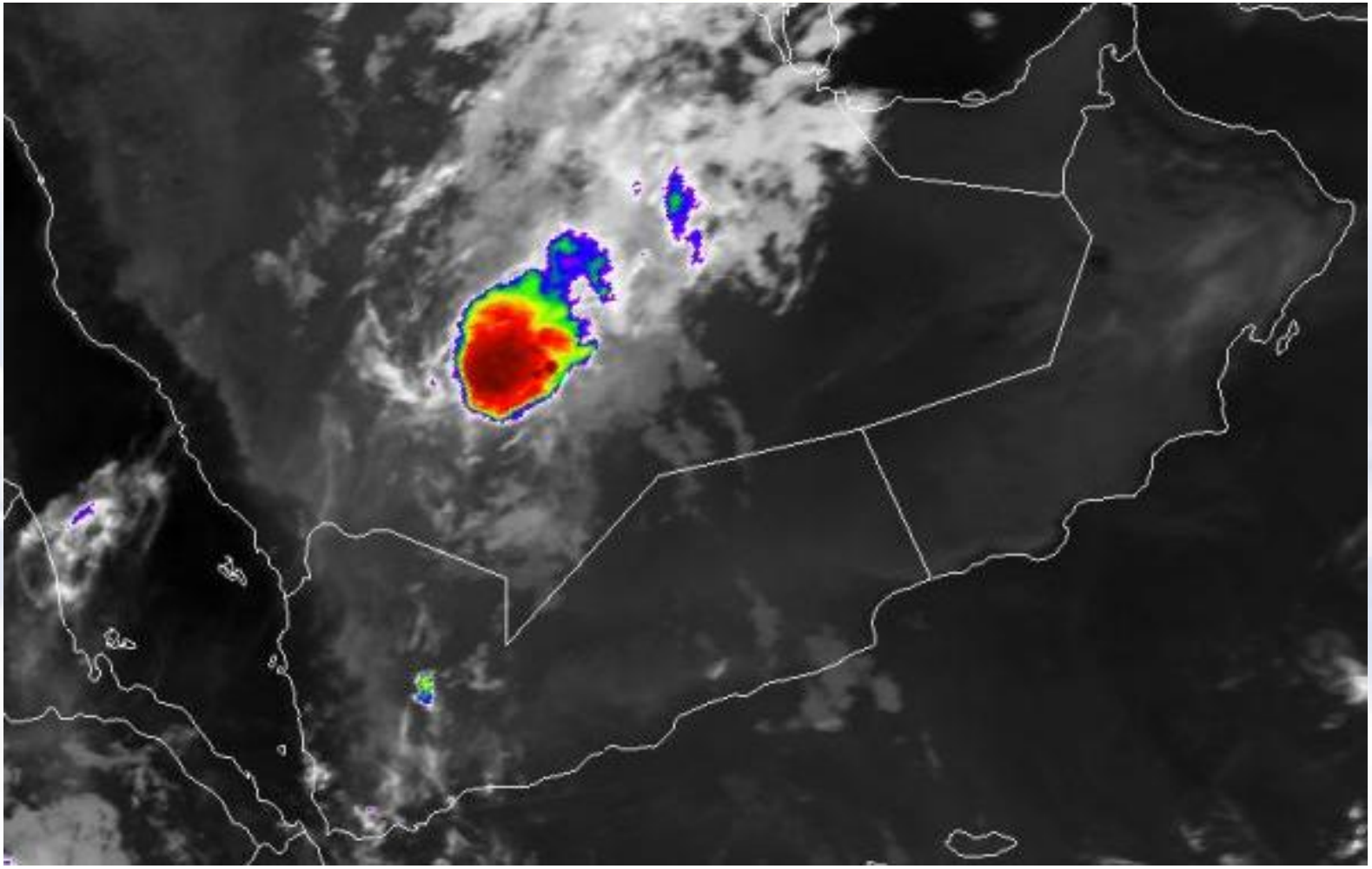
21 October 208, 09:00 UTC



Tropical Depression 03B (Met-7 IODC)

25 October 2008, 21:00 UTC

case study

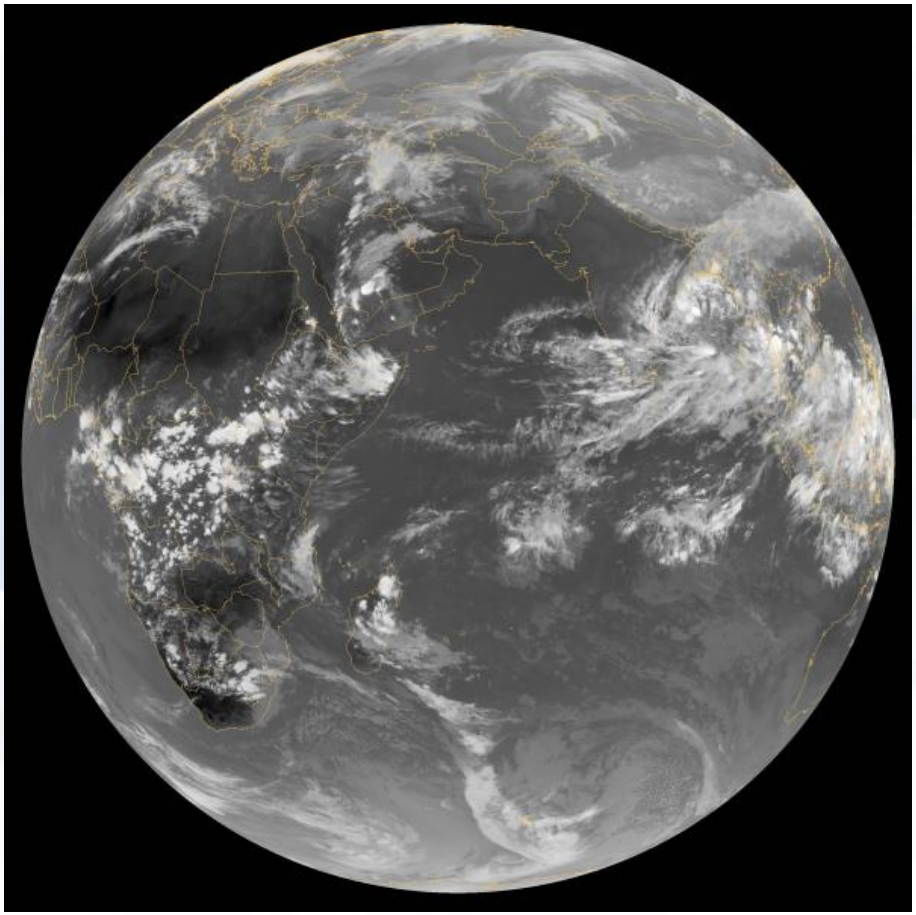


Meteosat-9, IR10.8 Channel

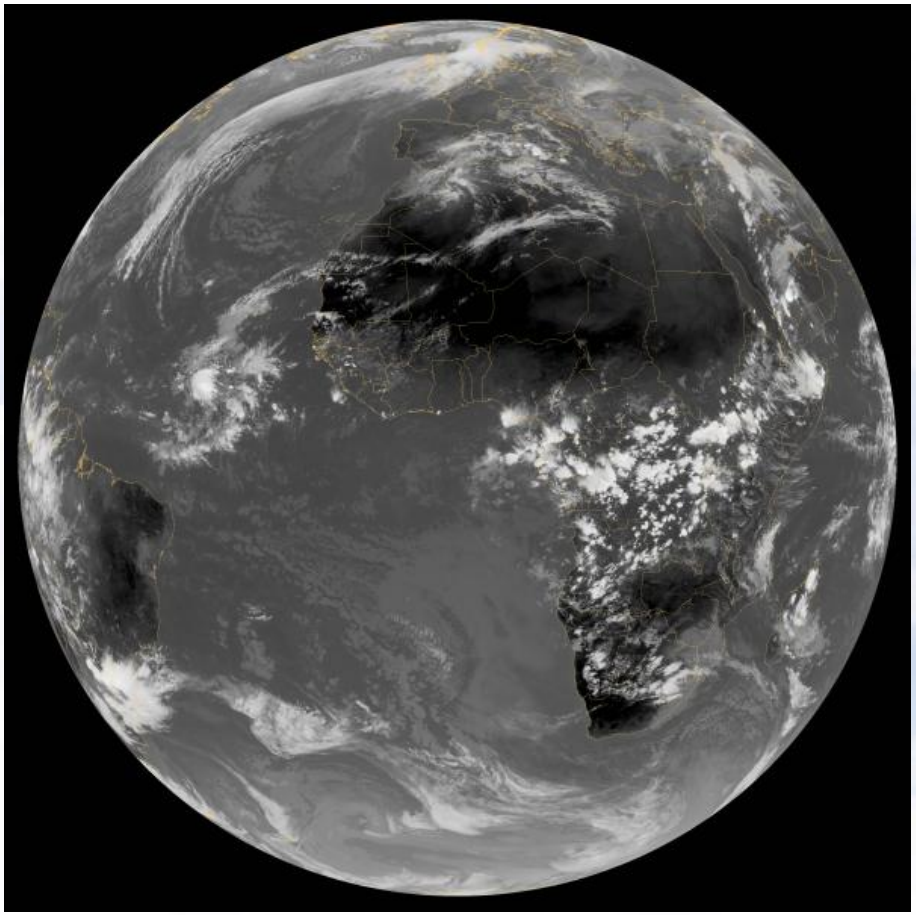
EUMETSAT

Tropical Depression 03B (Met-7 IODC)

25 October 208, 14:00 UTC



Met-7 IR

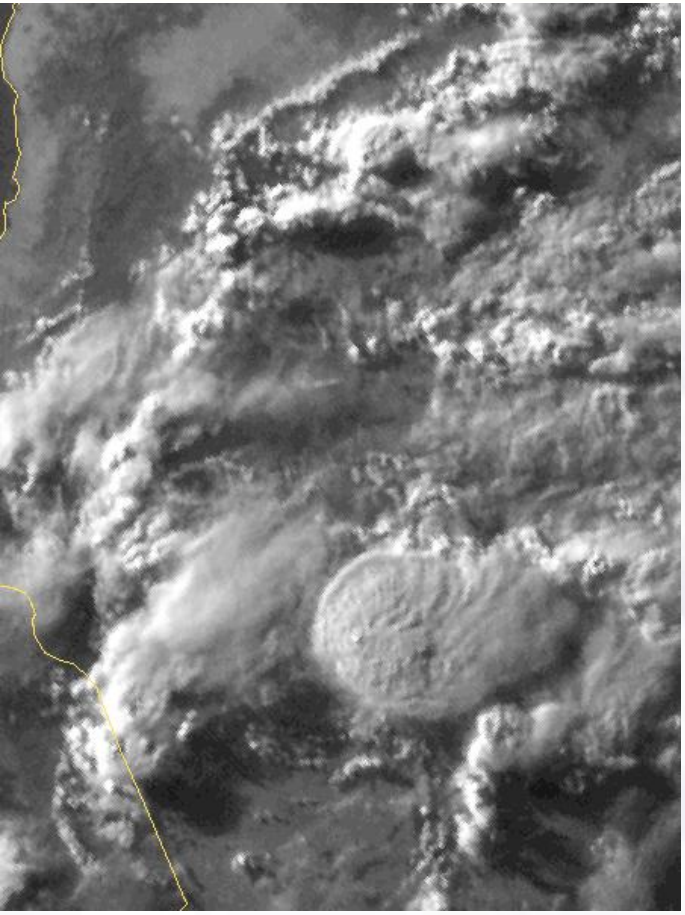


Met-9 IR10.8

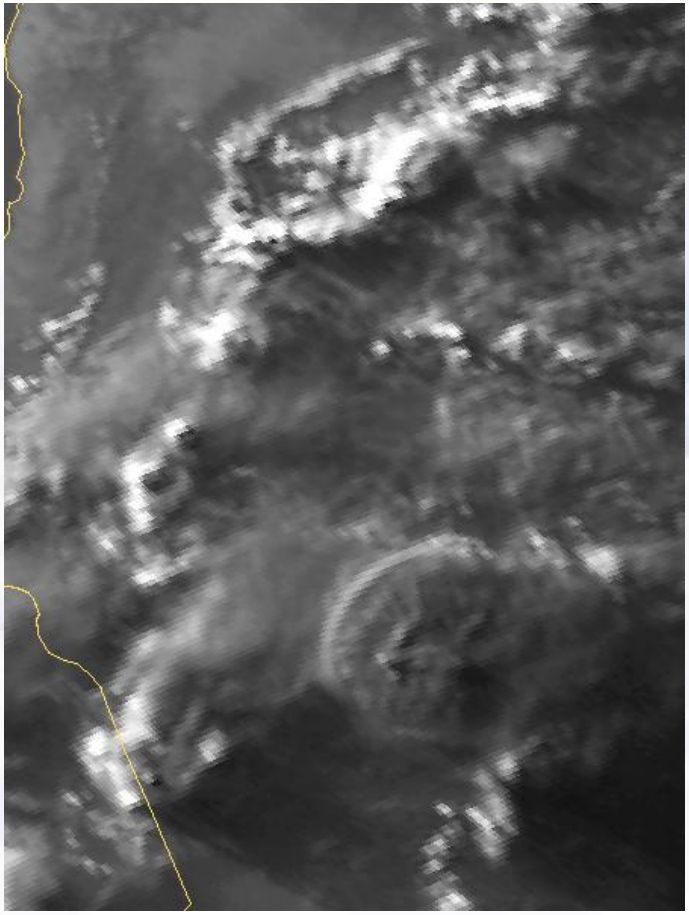
EUMETSAT

Tropical Depression 03B (Met-7 IODC)

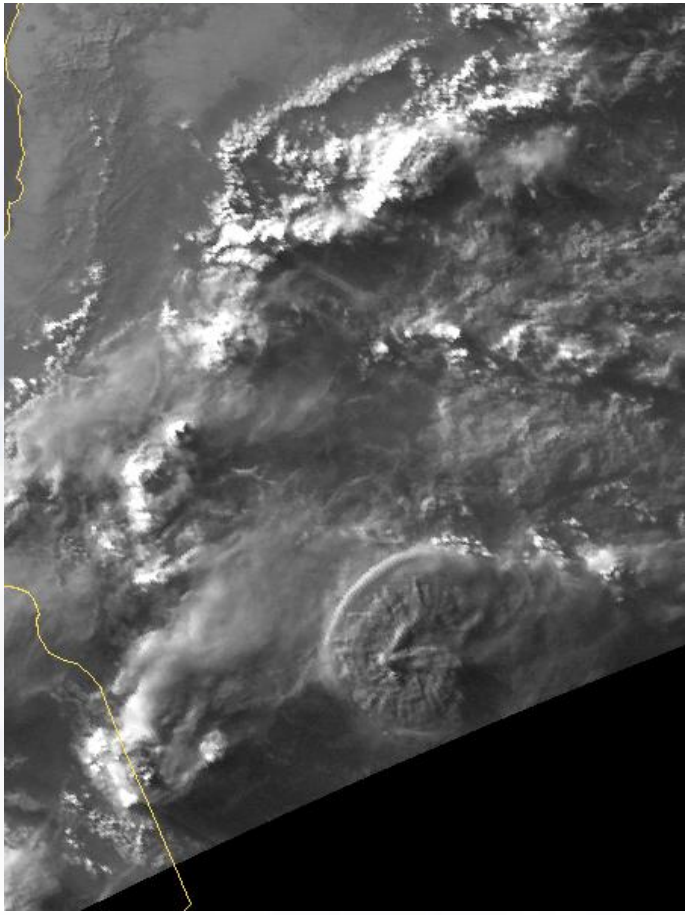
25 October 208, 14:00 UTC



Met-7 VIS



Met-9 VIS0.6

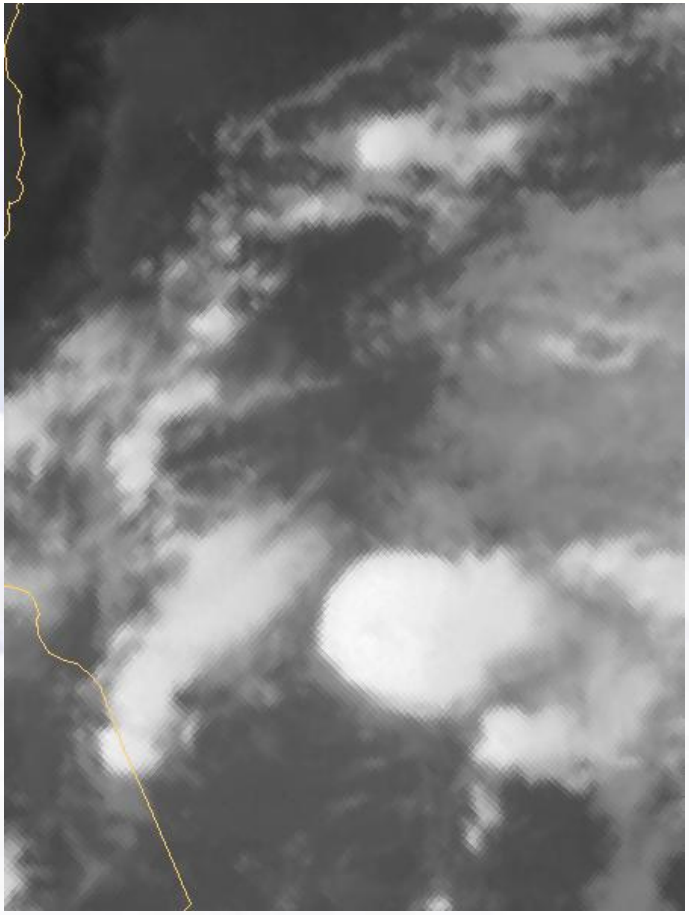


Met-9 HRV

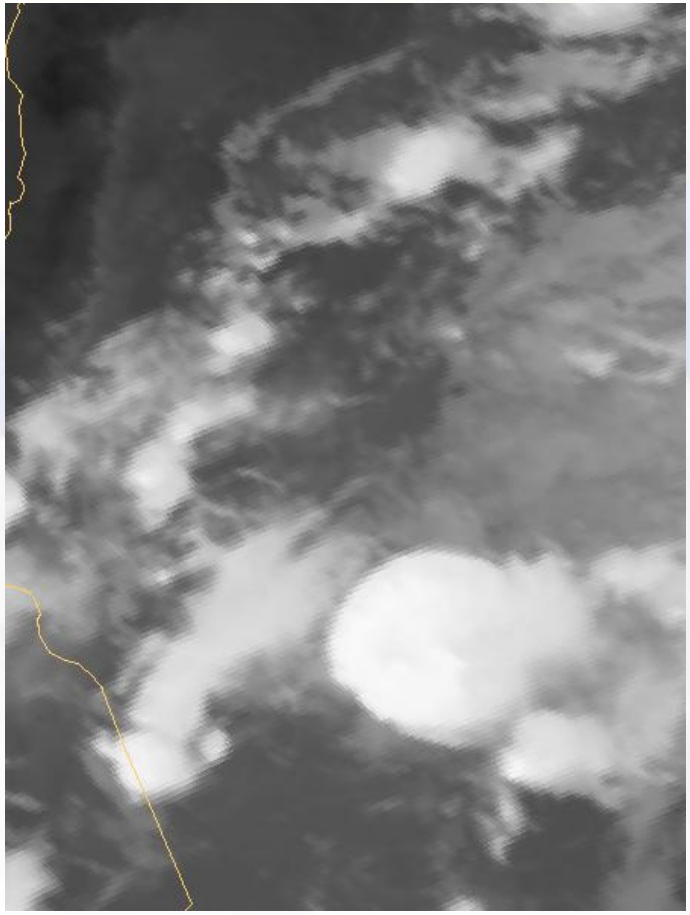
EUMETSAT

Tropical Depression 03B (Met-7 IODC)

25 October 208, 14:00 UTC

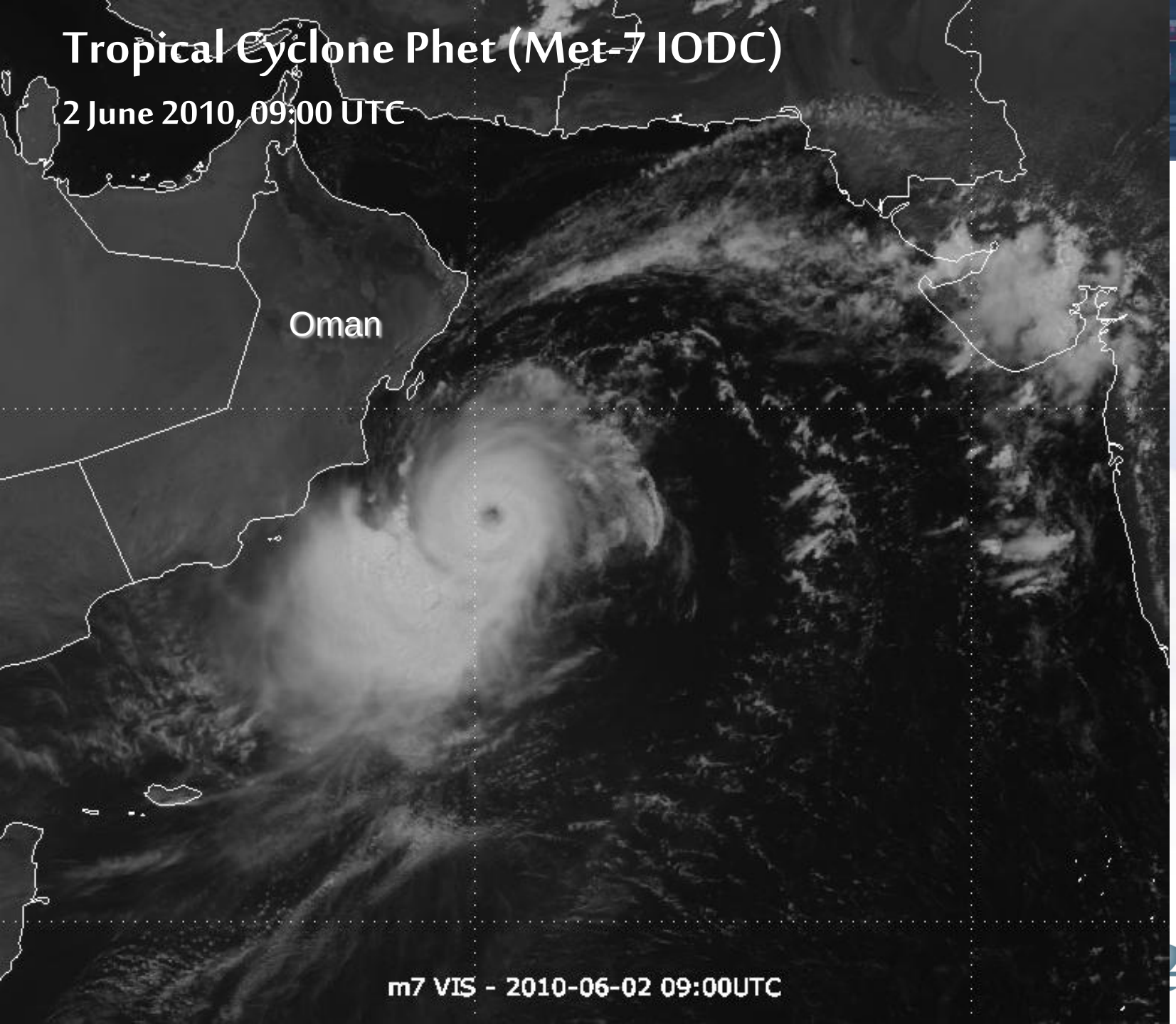


Met-7 IR



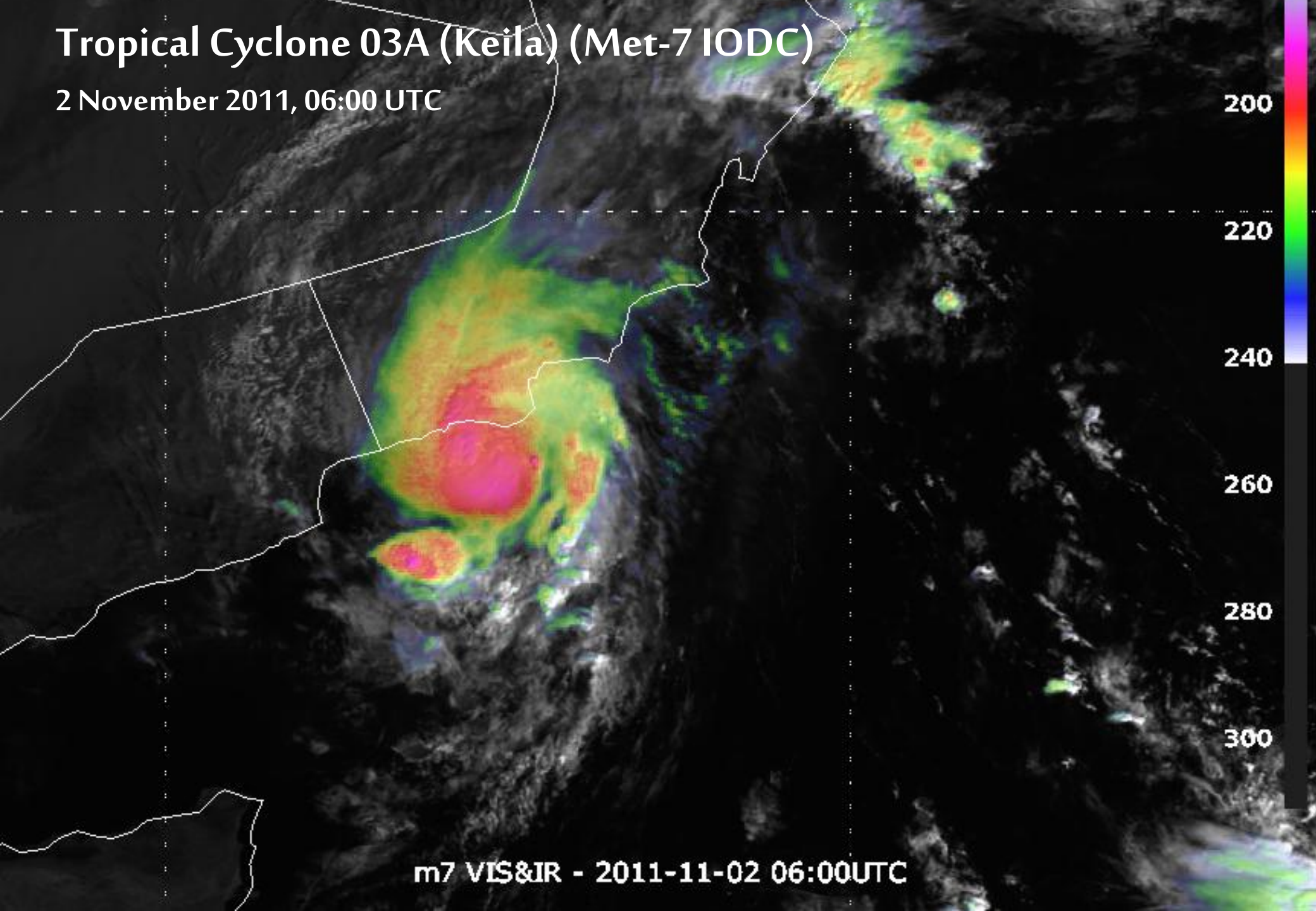
Met-9 IR10.8

EUMETSAT

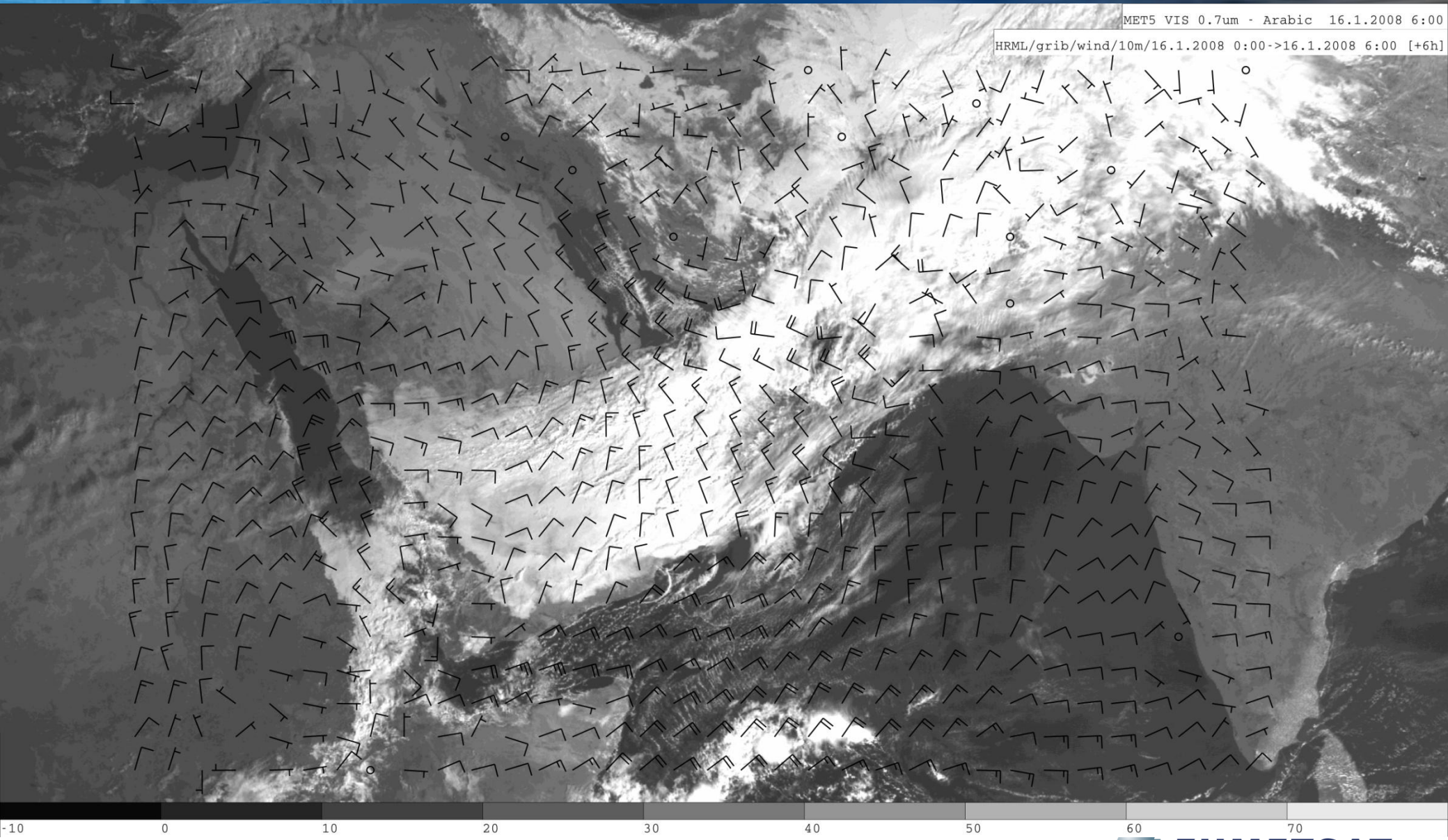


CLICK HERE

EUMETSAT


Tropical Cyclone 03A (Keila) (Met-7 IODC)
2 November 2011, 06:00 UTC
200
220
240
260
280
300
m7 VIS&IR - 2011-11-02 06:00UTC

Cloud Streets over The Gulf (Met-7 IODC)

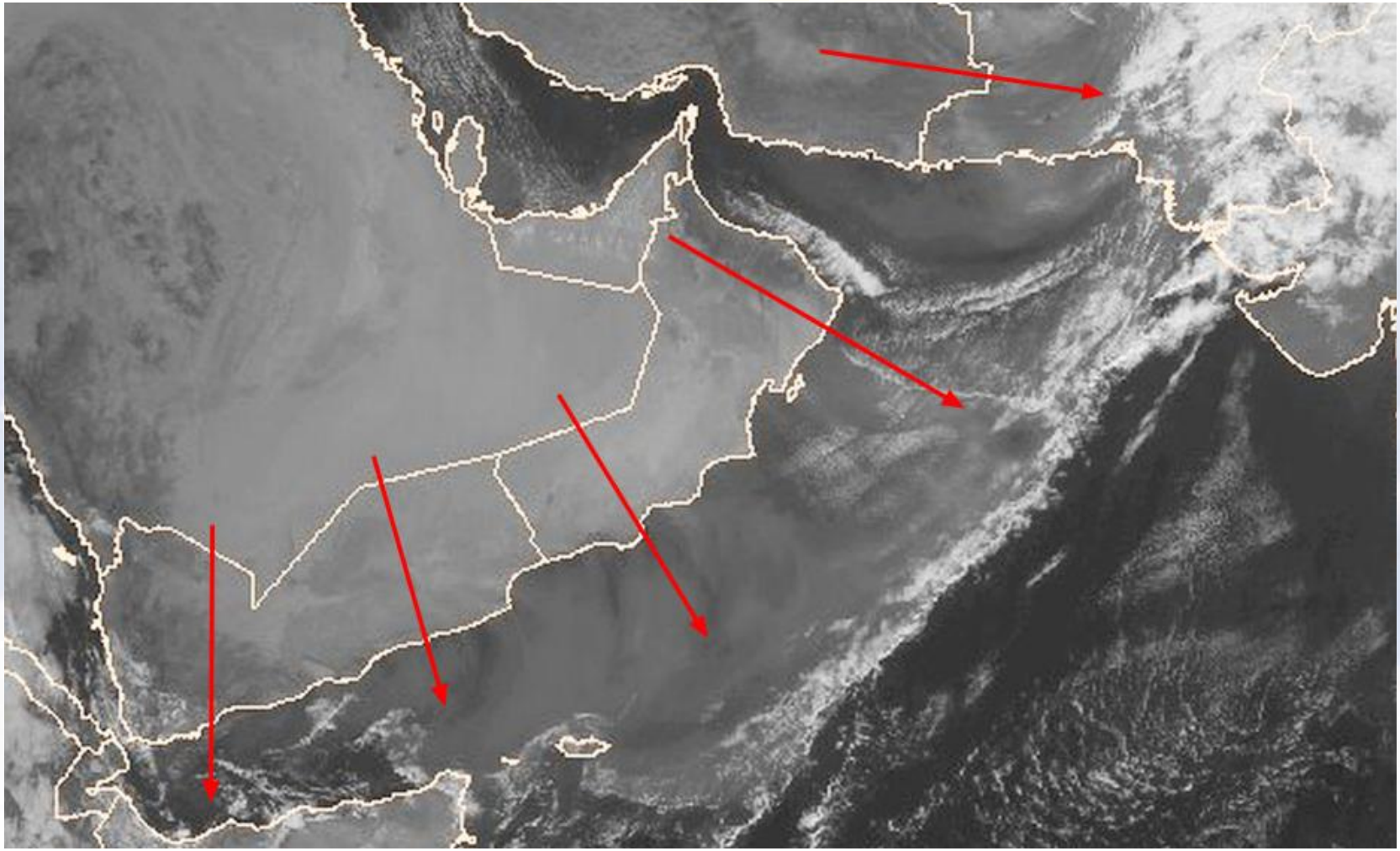


Meteosat-5, 16 January 2008, 06:00 UTC

EUMETSAT

Dust crossing the Gulf of Aden (Met-7 IODC)

2 February 2008, 06:00 UTC

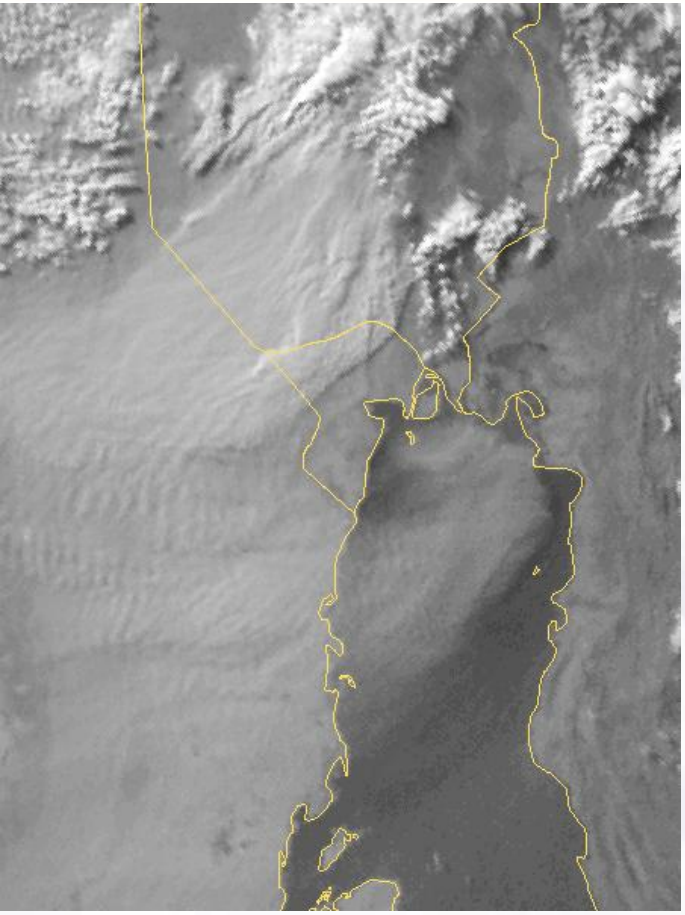


Meteosat-7, VIS Channel

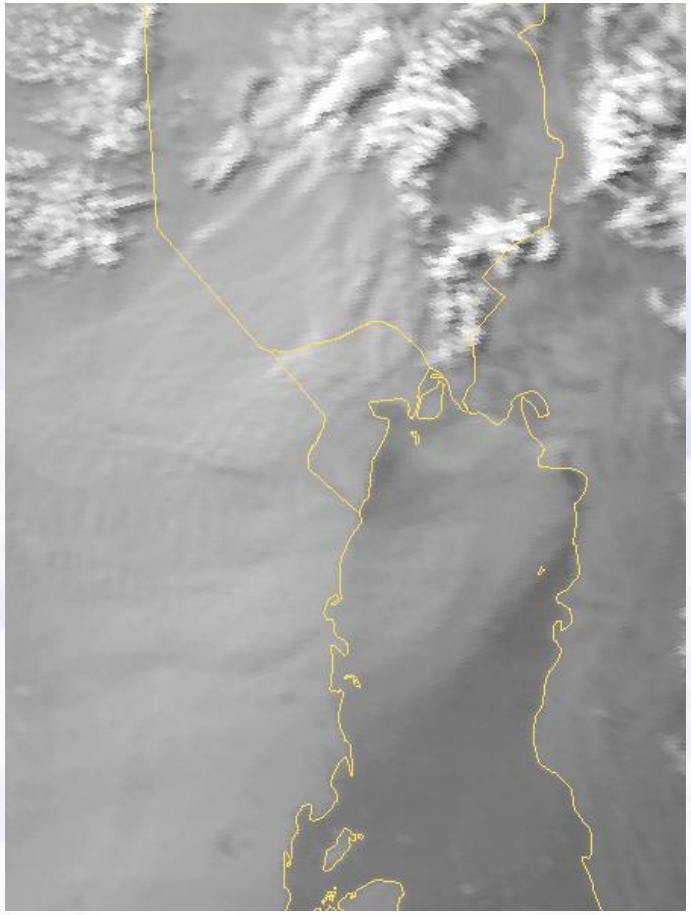
EUMETSAT

Dust storm hitting Kuwait (Met-7 IODC)

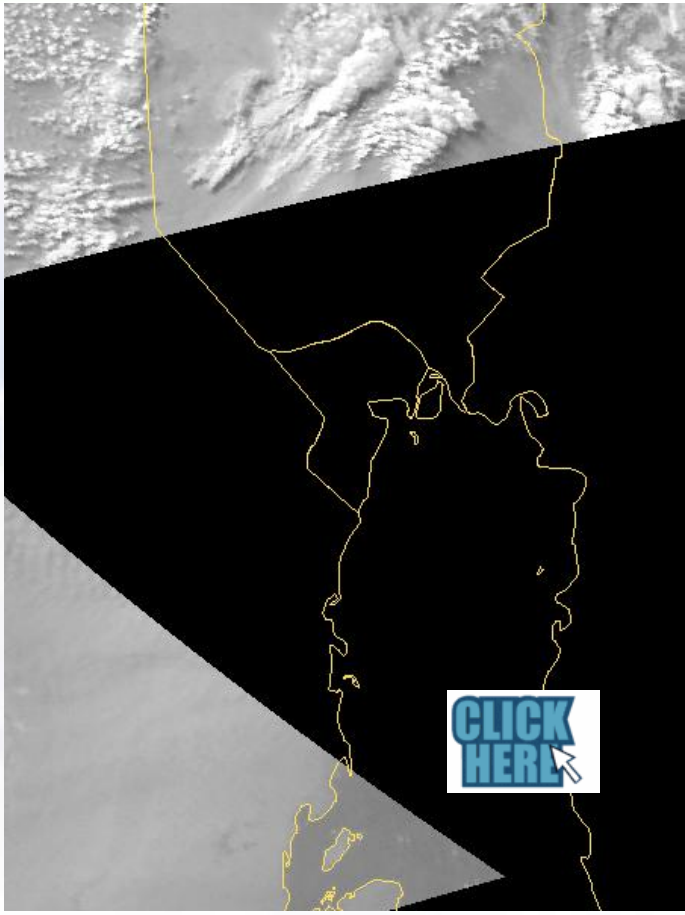
25 March 2011, 14:00 UTC



Met-7 VIS



Met-9 VIS0.6

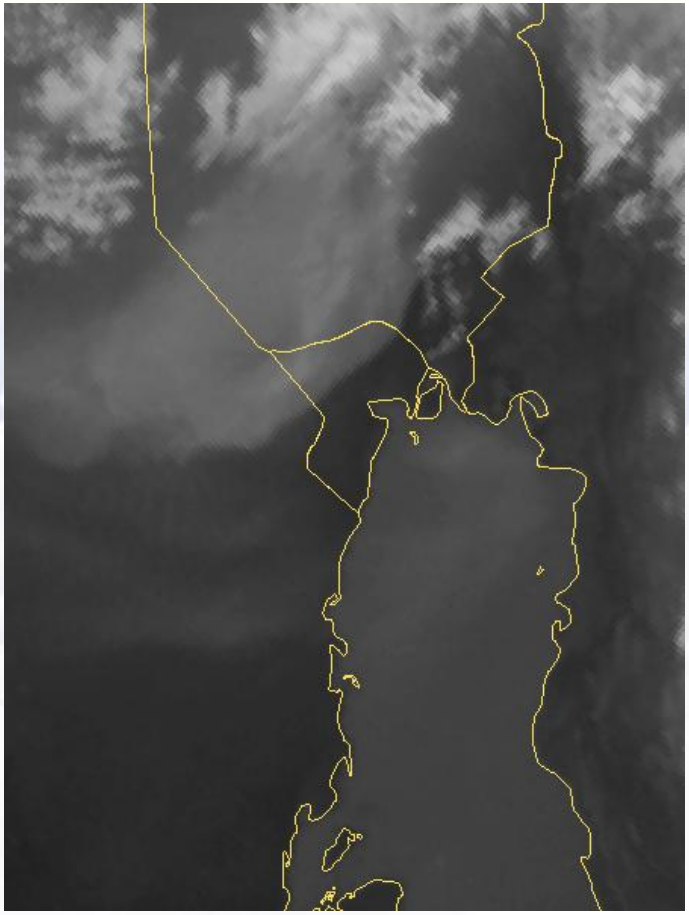


Met-9 HRV

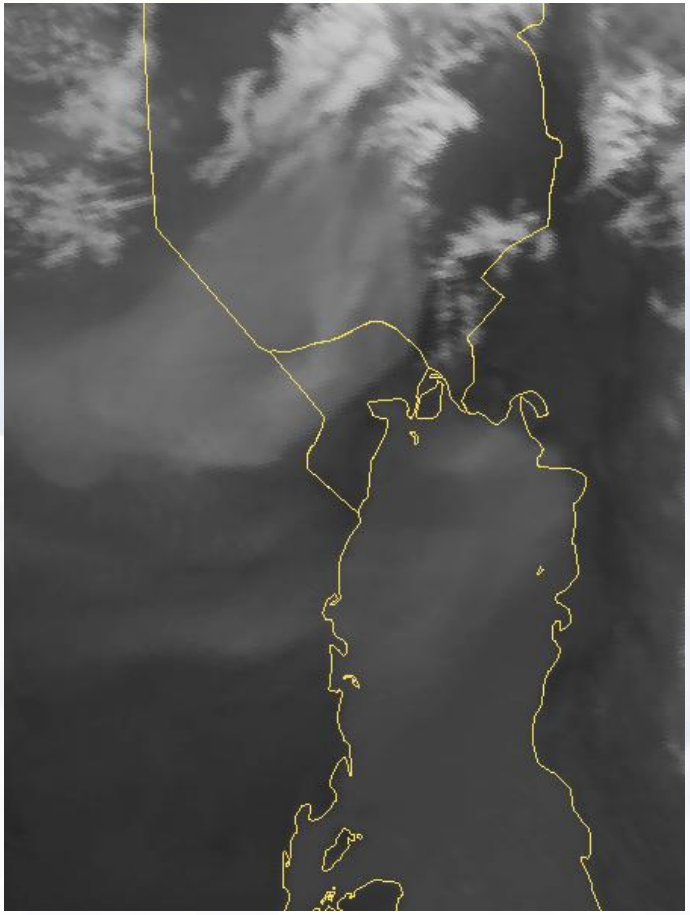
EUMETSAT

Dust storm hitting Kuwait (Met-7 IODC)

25 March 2011, 14:00 UTC



Met-7 IR

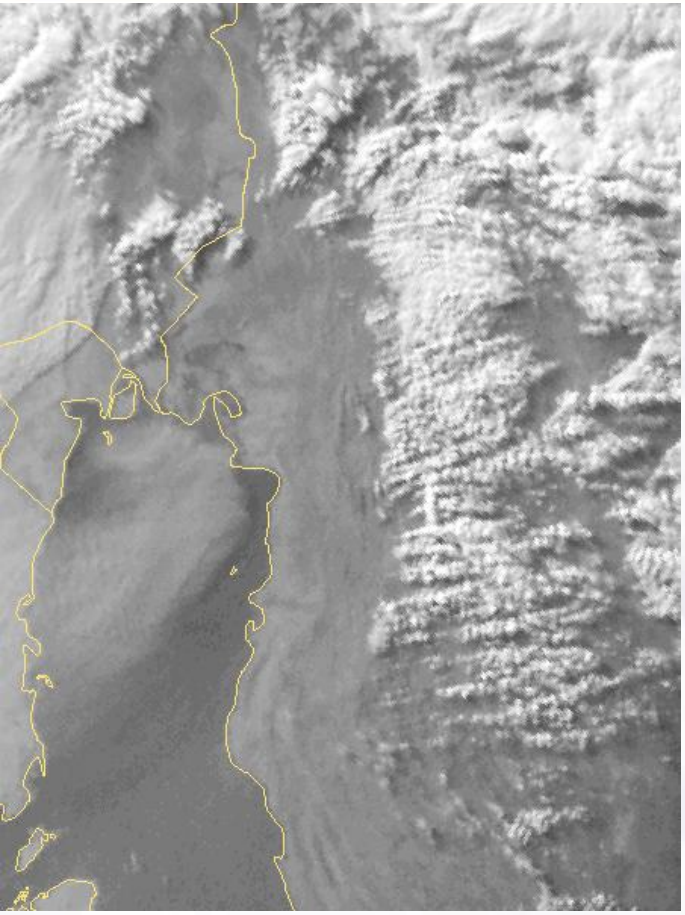


Met-9 IR10.8

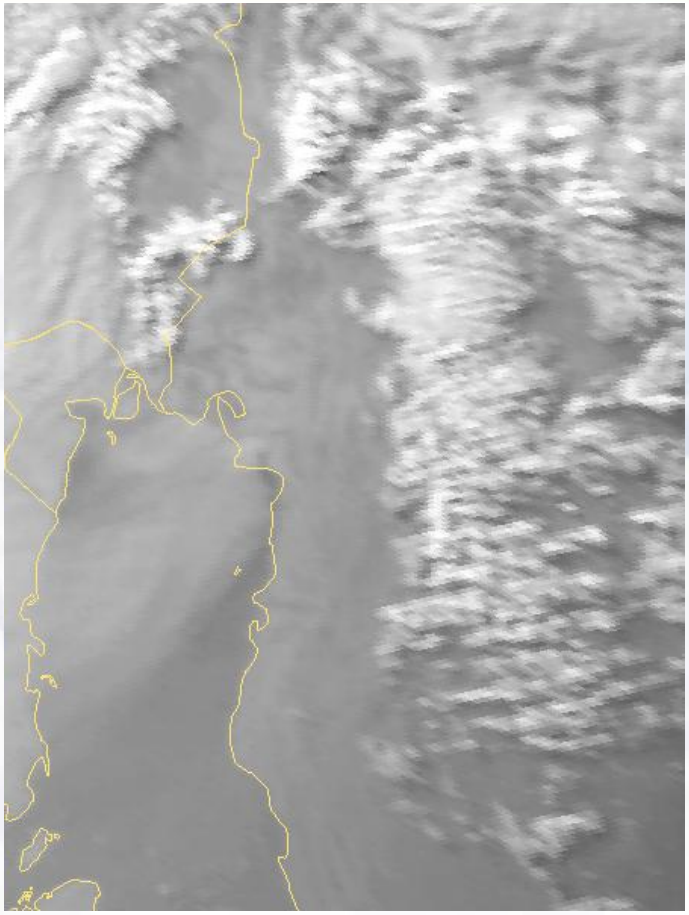
EUMETSAT

Cumulus clouds Iran (Met-7 IODC)

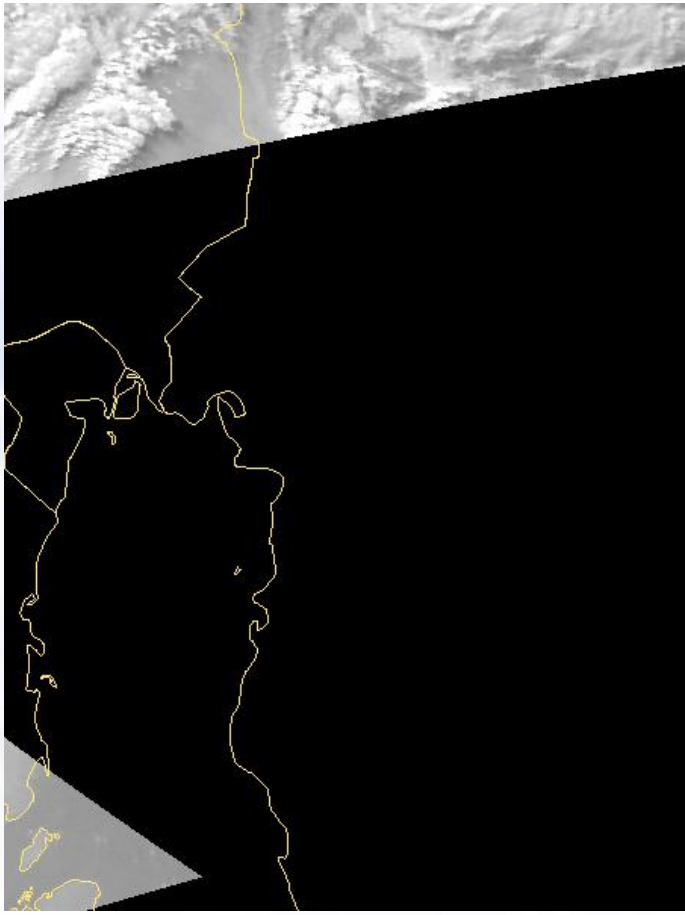
25 March 2011, 14:00 UTC



Met-7 VIS



Met-9 VIS0.6

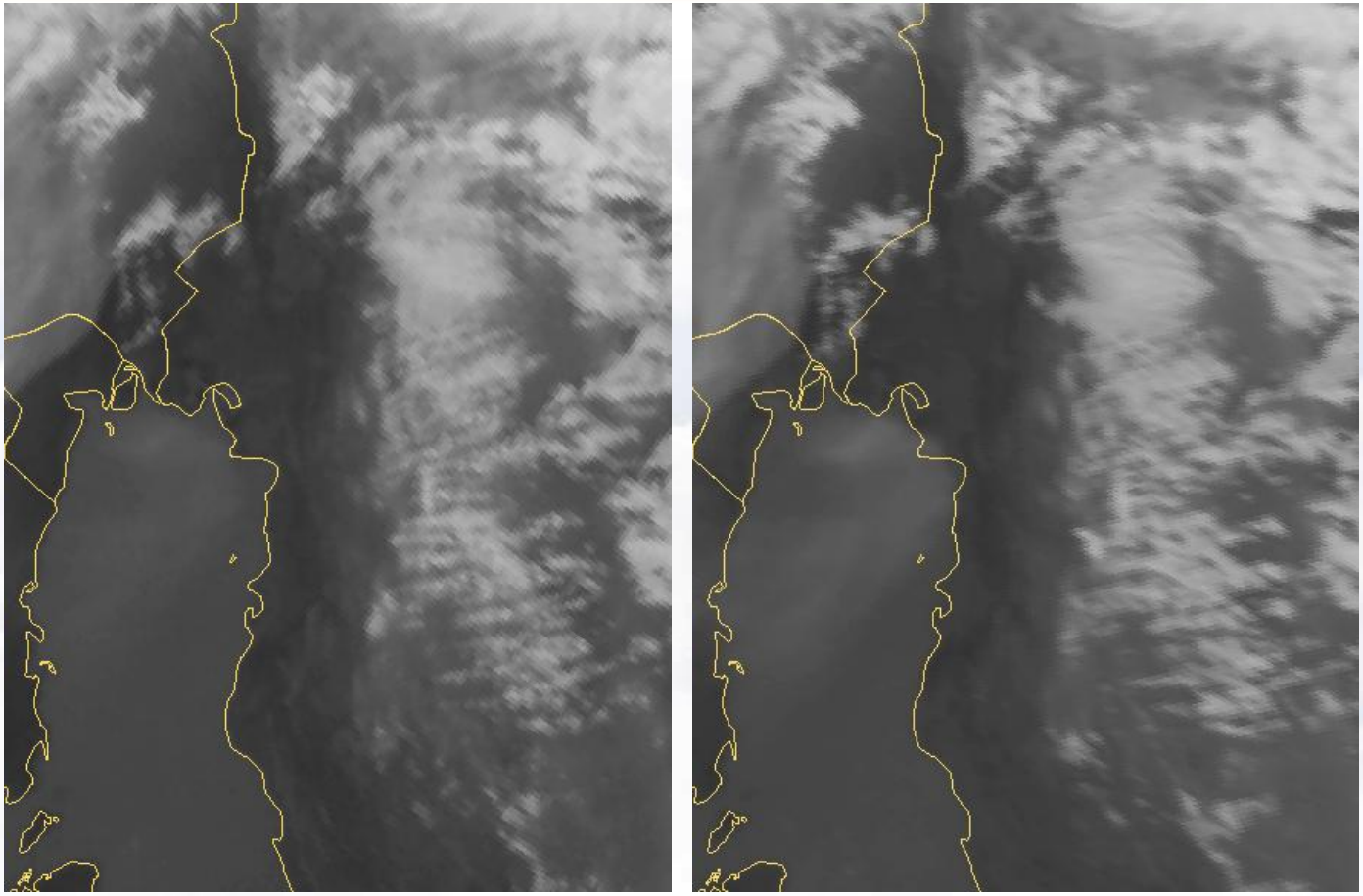


Met-9 HRV

EUMETSAT

Cumulus clouds Iran (Met-7 IODC)

25 March 2011, 14:00 UTC



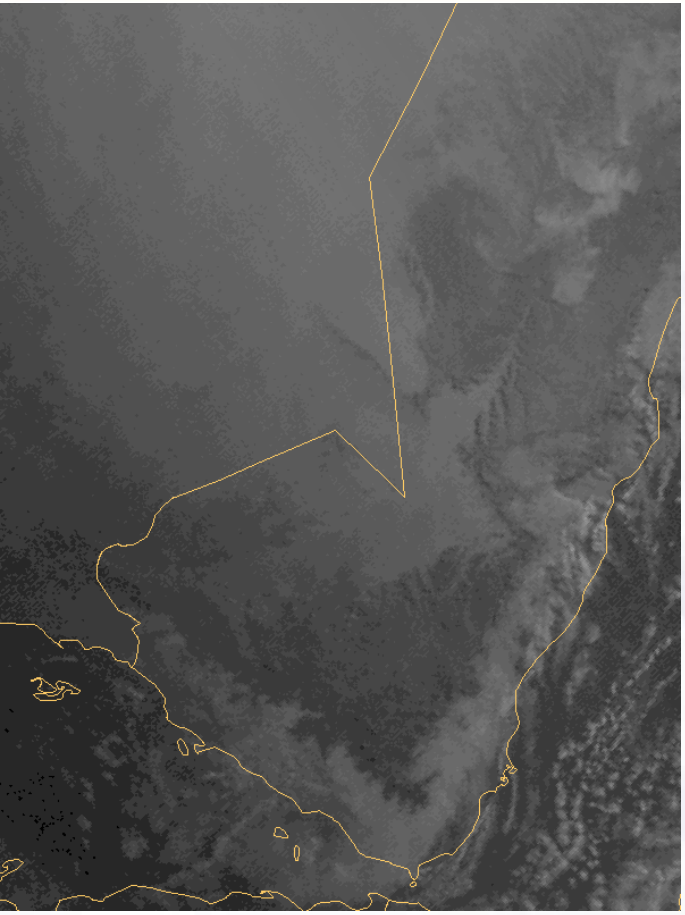
Met-7 IR

Met-9 IR10.8

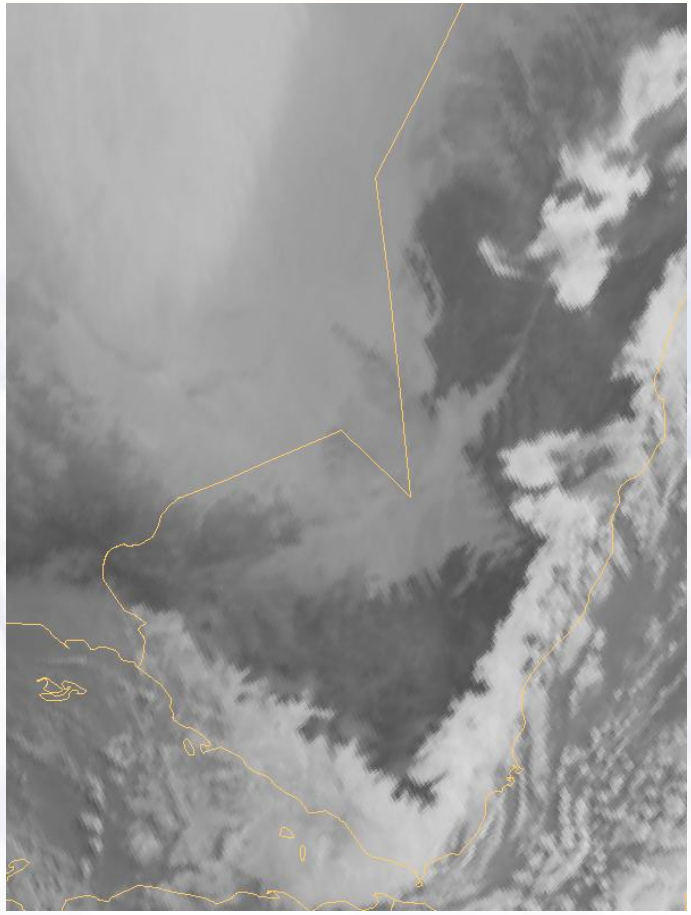
EUMETSAT

Low clouds Yemen / Dust Arabia (Met-7 IODC)

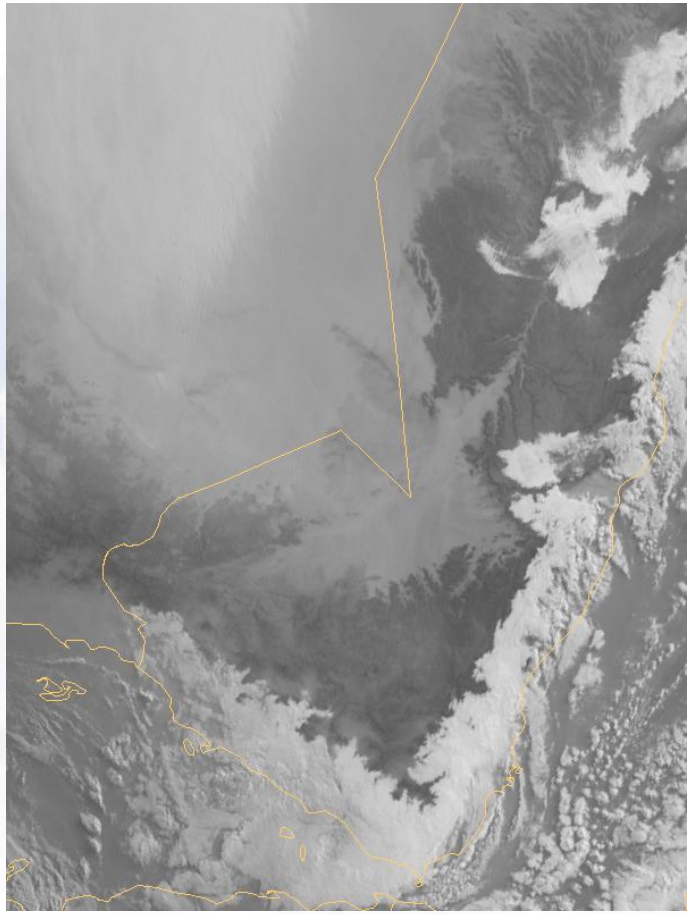
19 February 2012, 04:00 UTC



Met-7 VIS



Met-9 VIS0.6

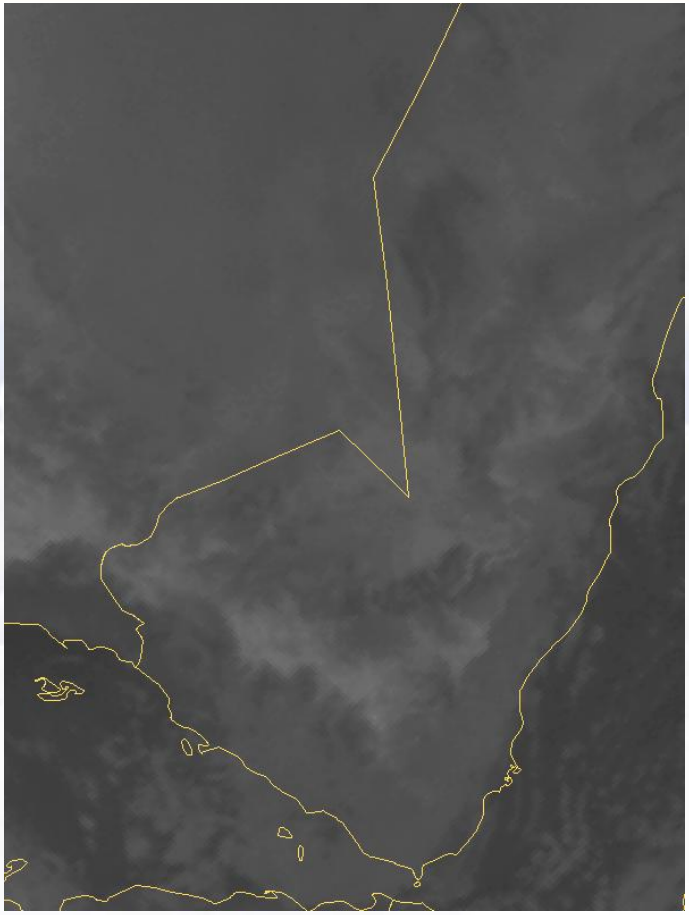


Met-9 HRV

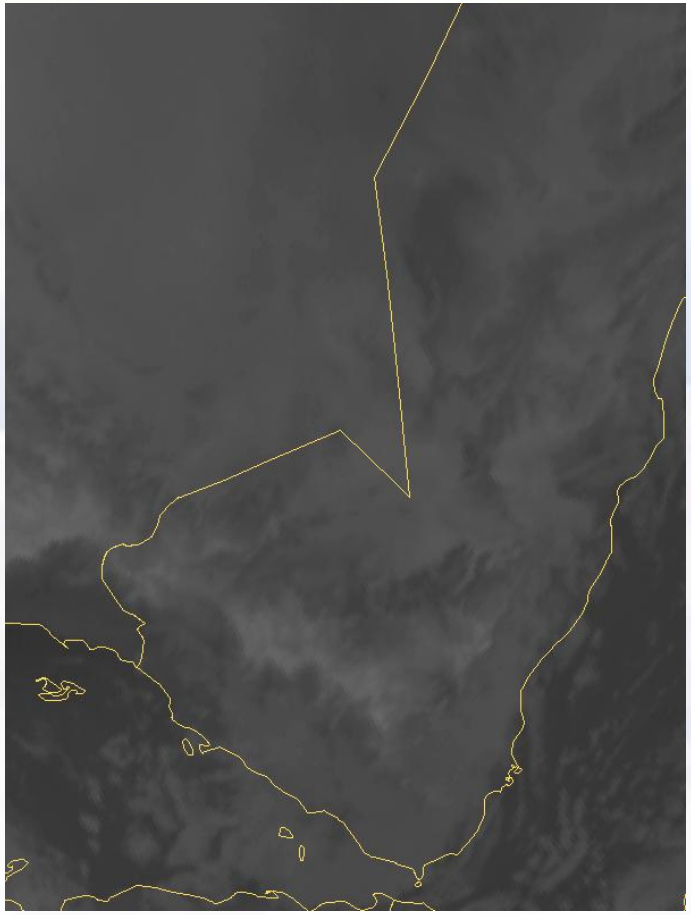
EUMETSAT

Low clouds Yemen / Dust Arabia (Met-7 IODC)

19 February 2012, 04:00 UTC



Met-7 IR

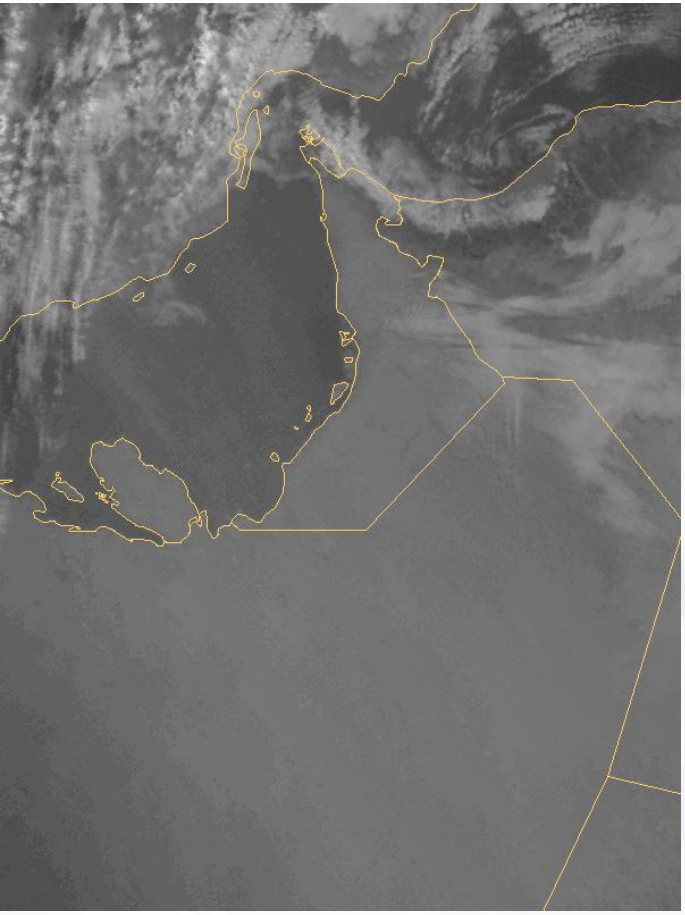


Met-9 IR10.8

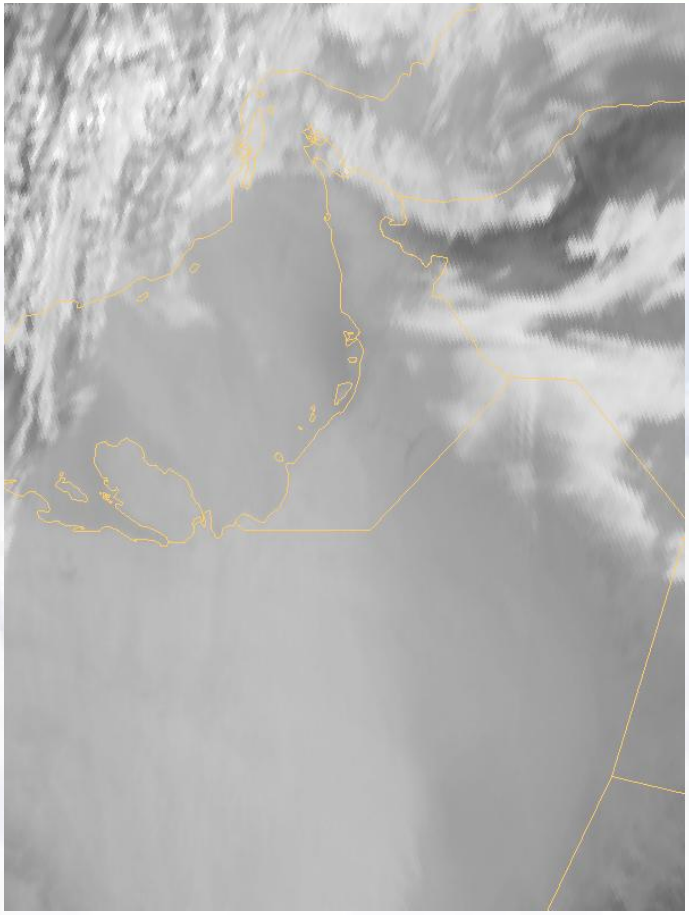
EUMETSAT

Dust Arabia / Low Clouds UAE (Met-7 IODC)

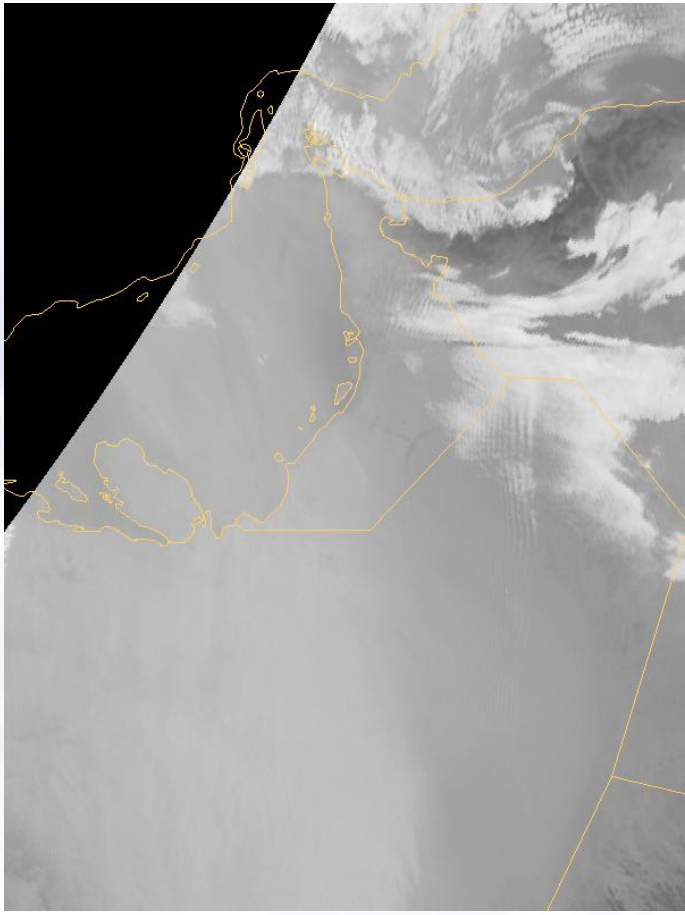
19 February 2012, 04:00 UTC



Met-7 VIS



Met-9 VIS0.6

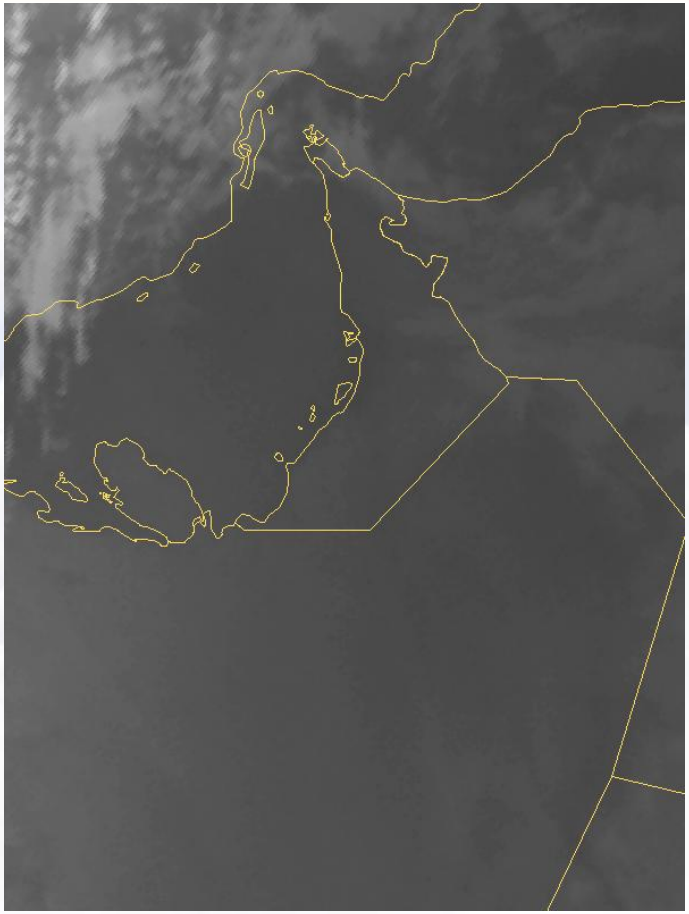


Met-9 HRV

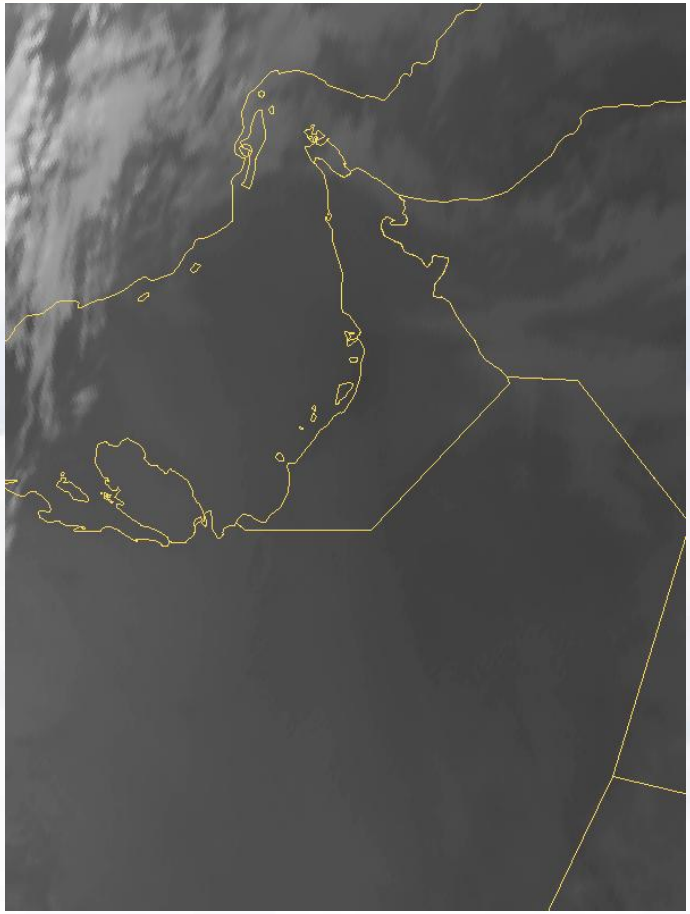
EUMETSAT

Dust Arabia / Low Clouds UAE (Met-7 IODC)

19 February 2012, 04:00 UTC



Met-7 IR

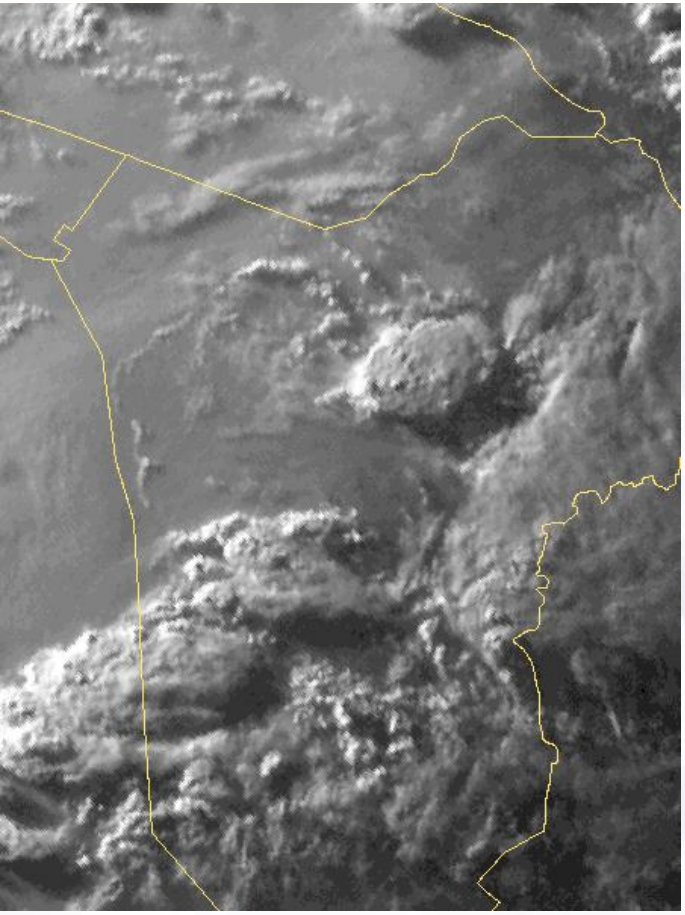


Met-9 IR10.8

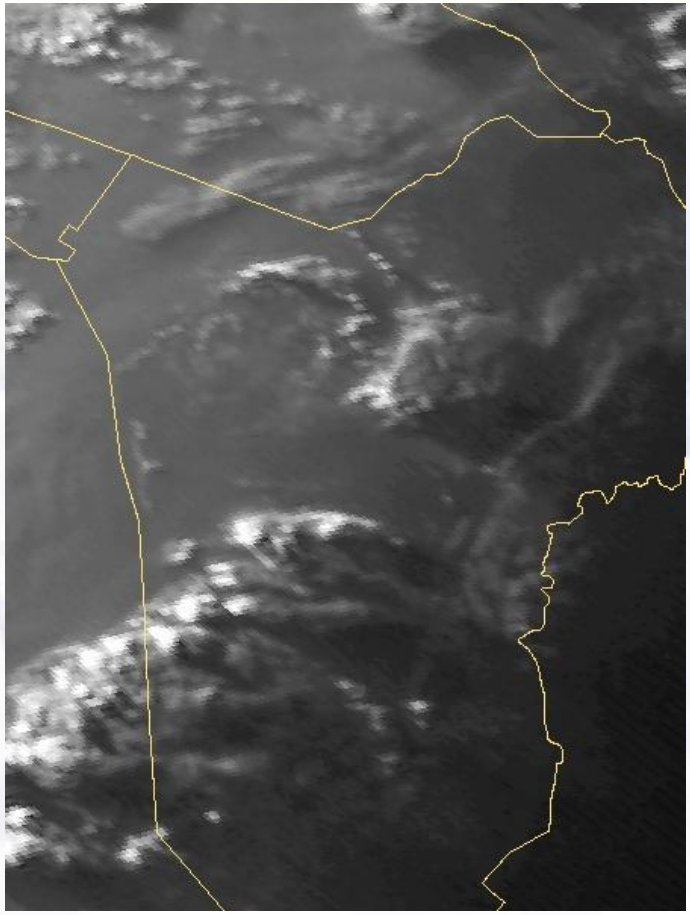
EUMETSAT

Convection Iraq (Met-7 IODC)

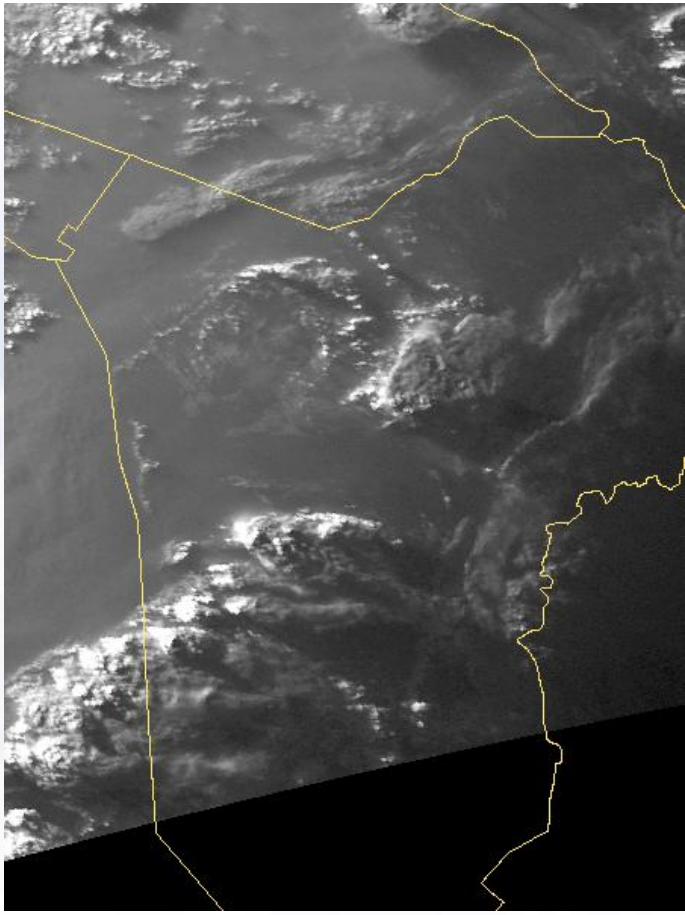
25 October 2008, 14:00 UTC



Met-7 VIS



Met-9 VIS0.6

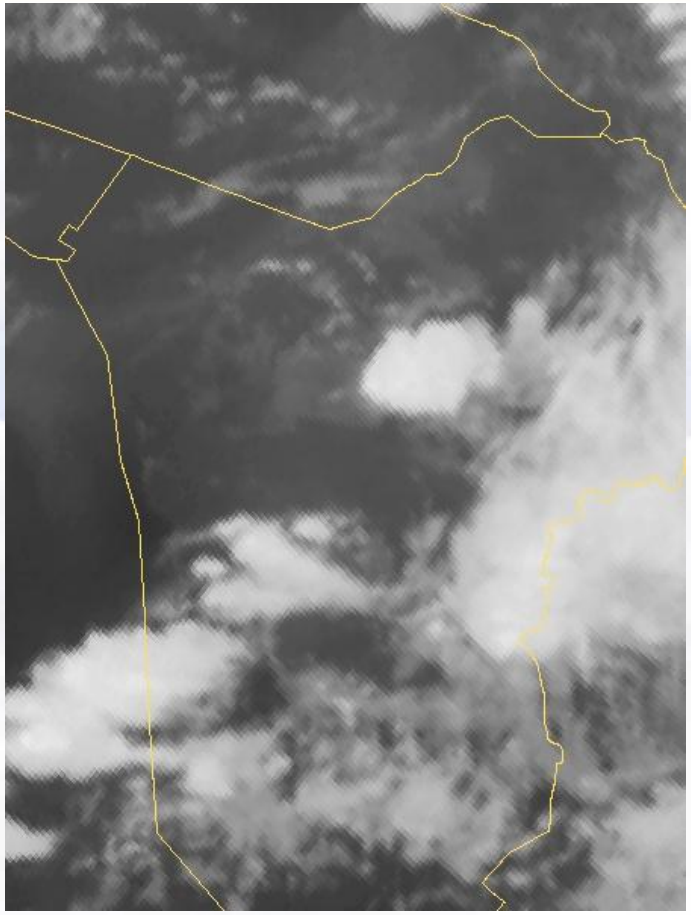


Met-9 HRV

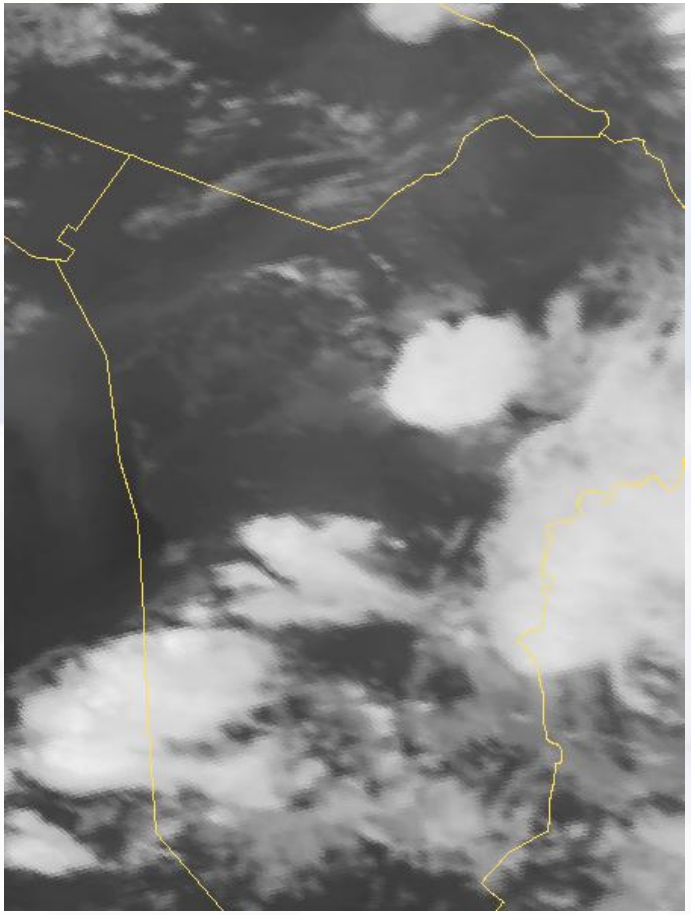
EUMETSAT

Convection Iraq (Met-7 IODC)

25 October 2008, 14:00 UTC



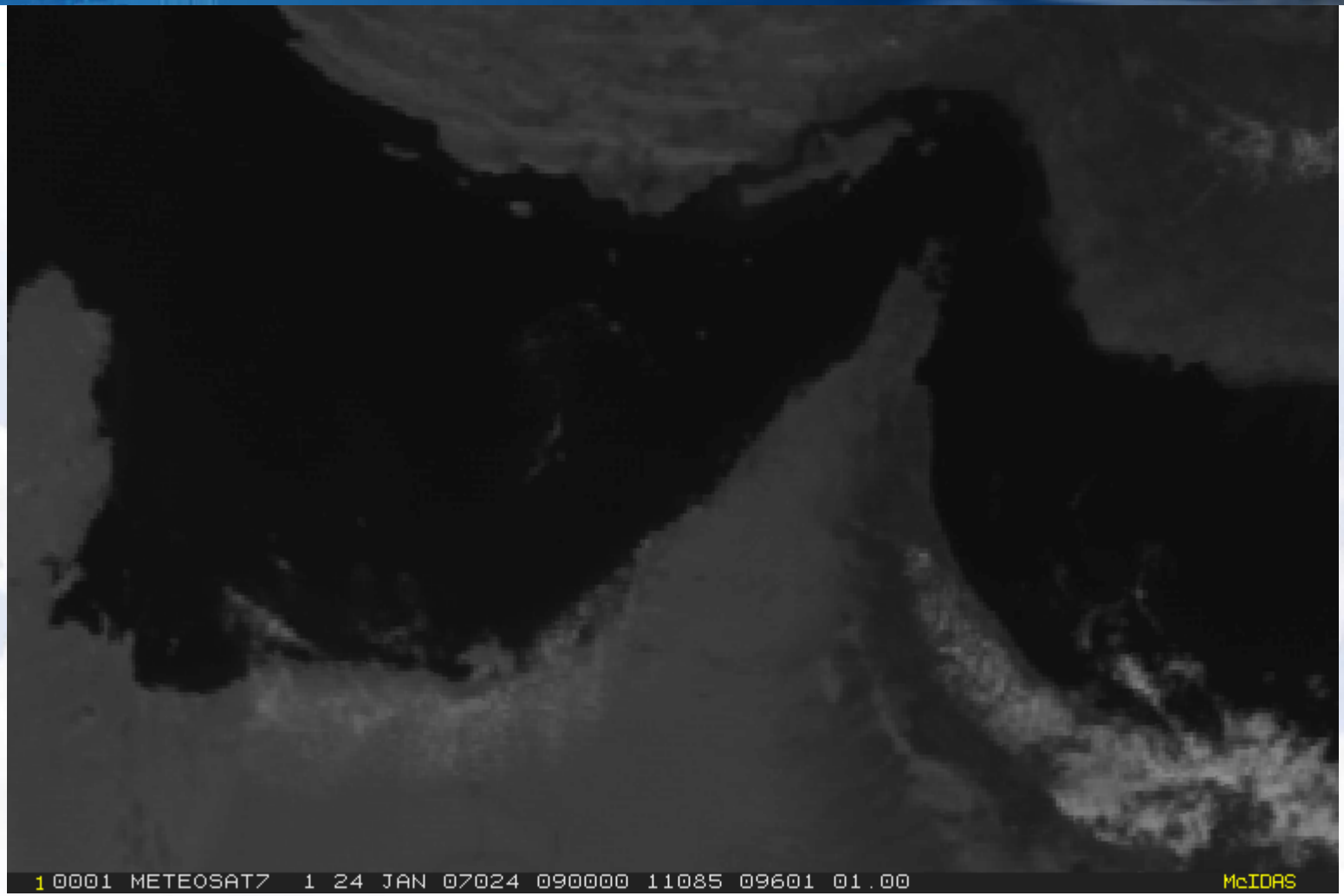
Met-7 IR



Met-9 IR10.8

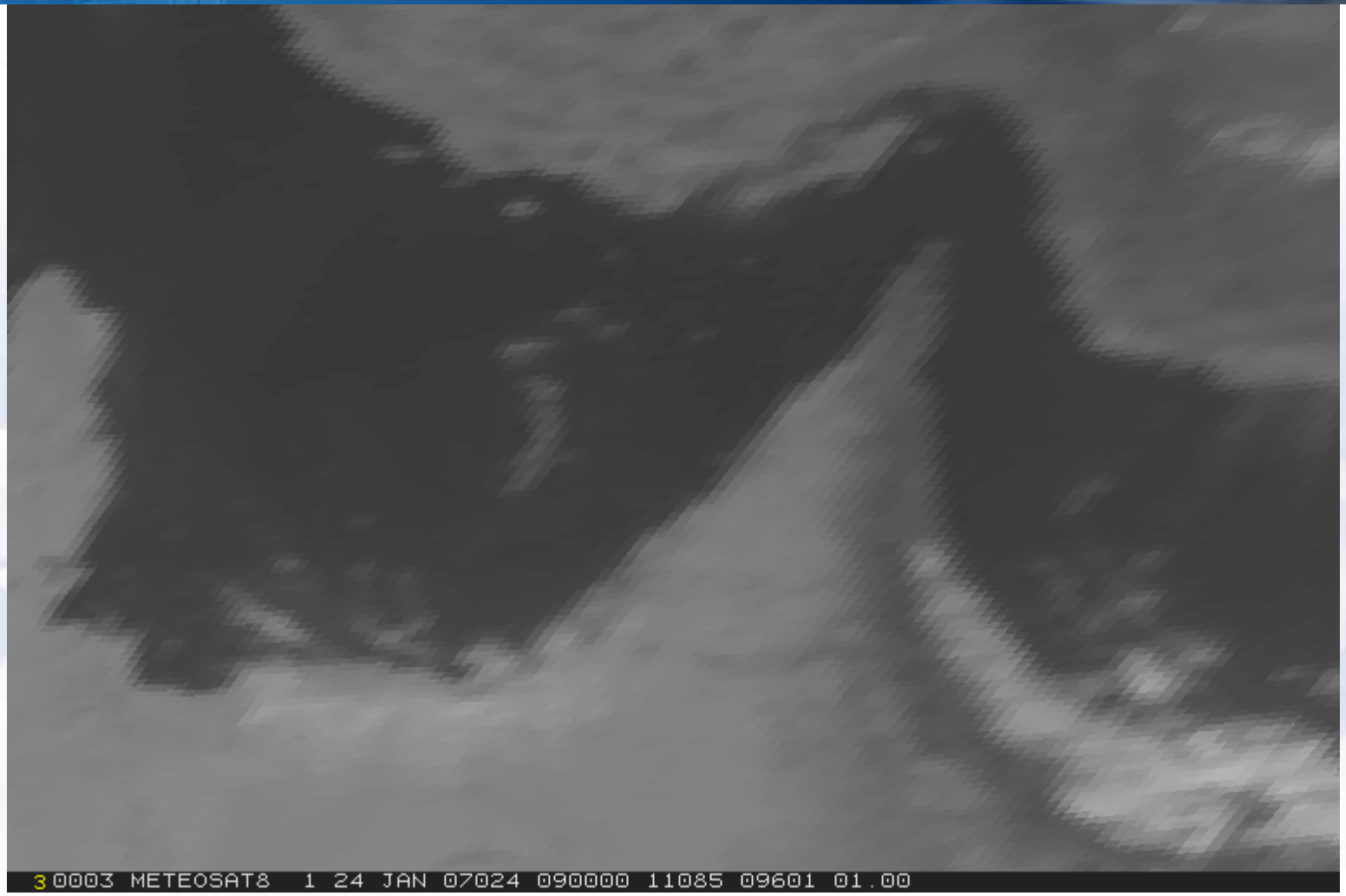
EUMETSAT

Meteosat-7 VIS



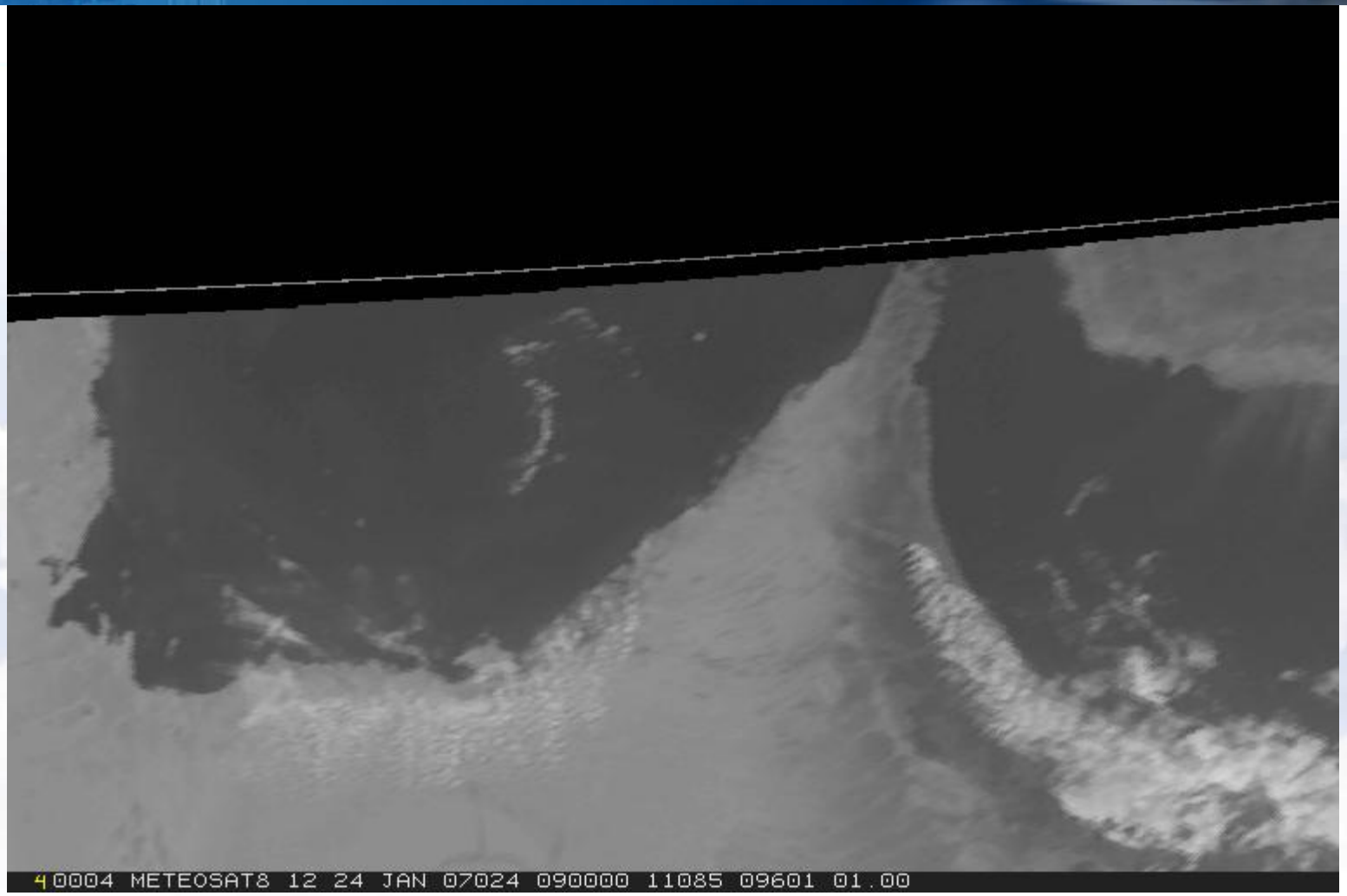
EUMETSAT

Meteosat-8 VIS0.6



EUMETSAT

Meteosat-8 HRV

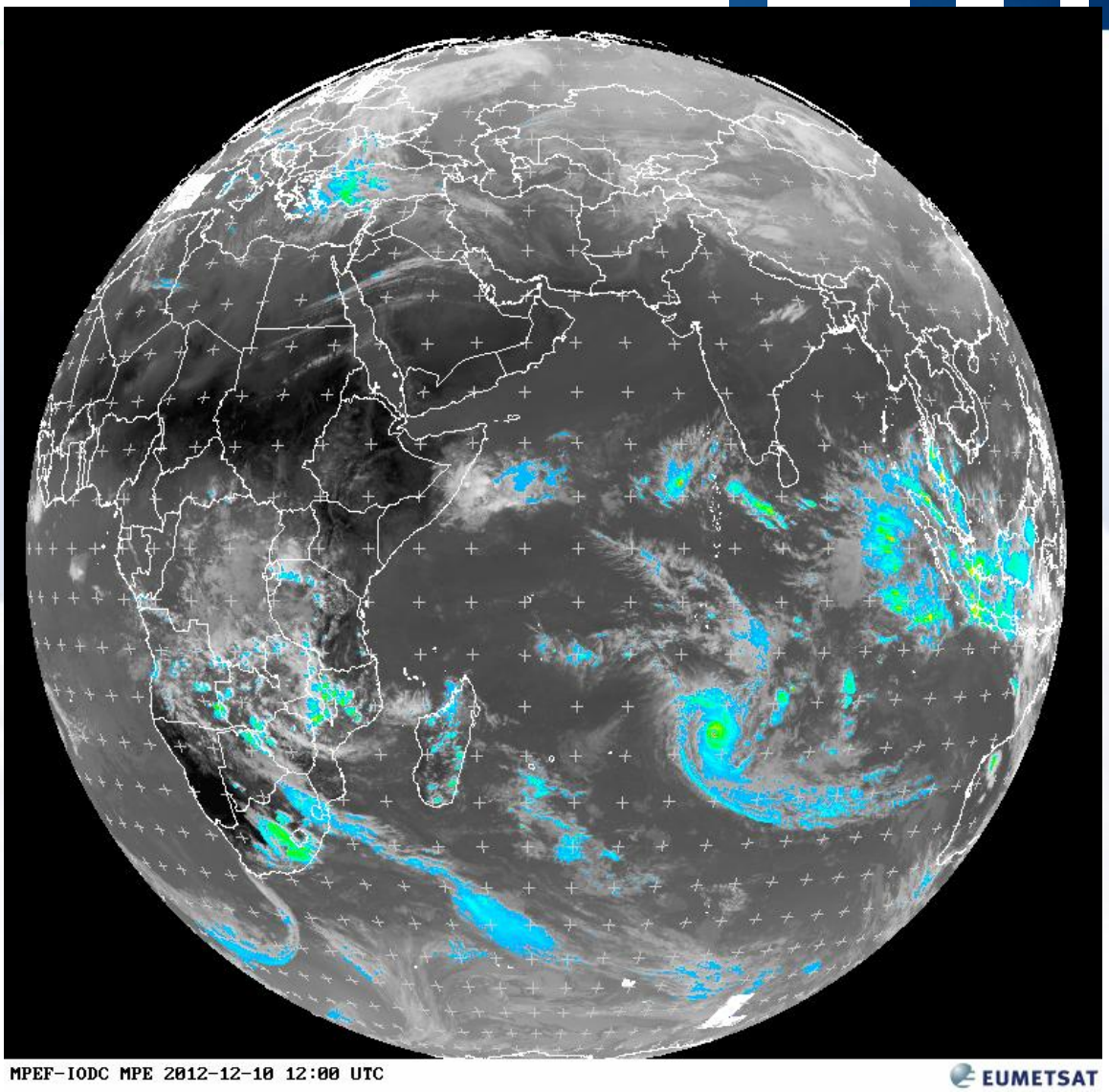


EUMETSAT

Operational Met-7 (IODC) MPEF Products

- CDS - Climate Data Set,
- CLA - Cloud Analysis,
- CMW - Cloud Motion Winds,
- CSR - Clear-sky Radiance,
- HRV - High resolution visible winds,
- WVW - Water-vapour winds
- HWW - High resolution water-vapour winds
- MPE - Multi-sensor Precipitation Estimate
- SST - Sea Surface Temperature
- UTH - Upper-Tropospheric Humidity
- CM – Cloud Mask (new in 2013)

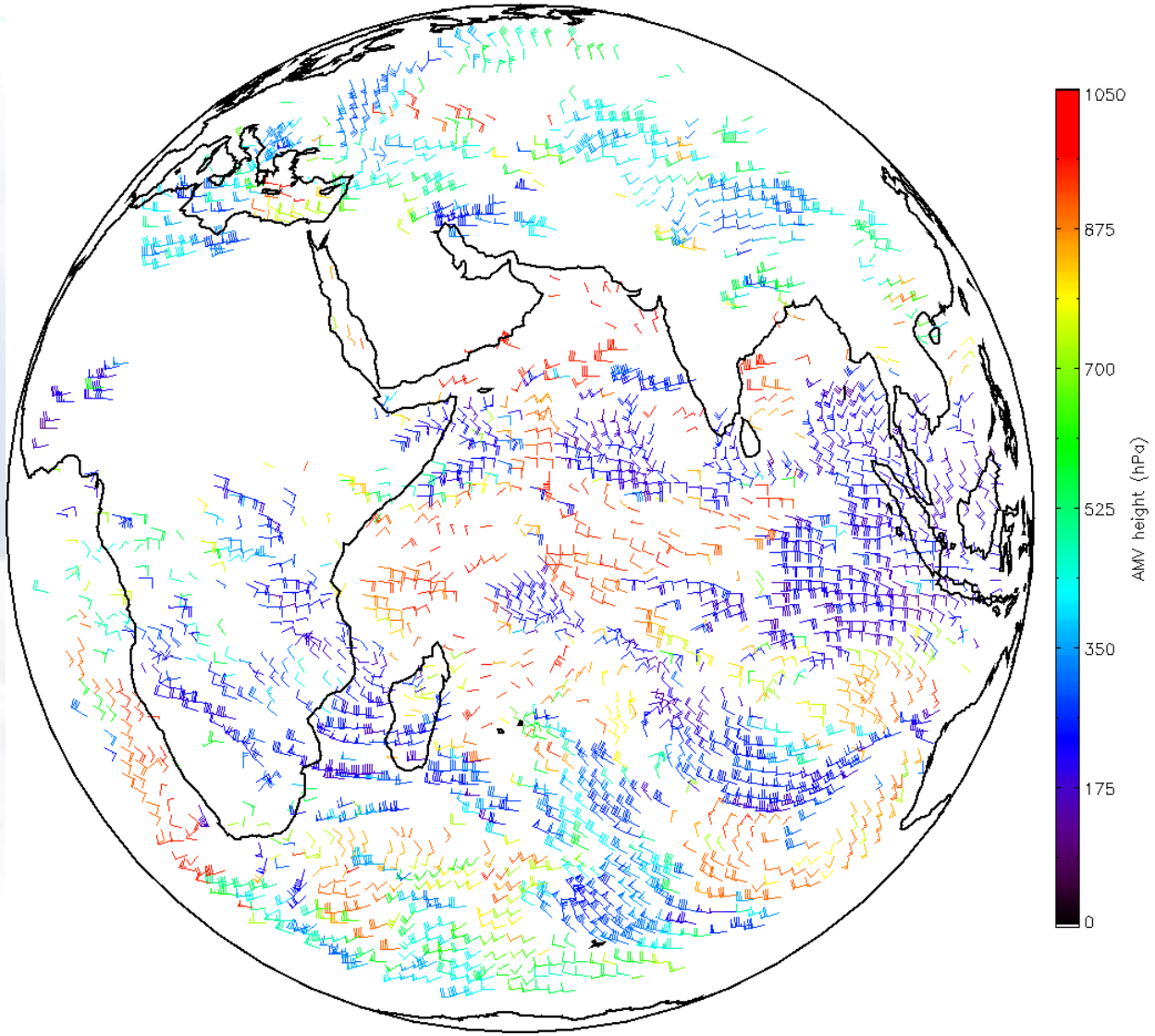
Multi-sensor Precipitation Estimate (MPE)



Met-7
10 December 2002
12:00 UTC

EUMETSAT

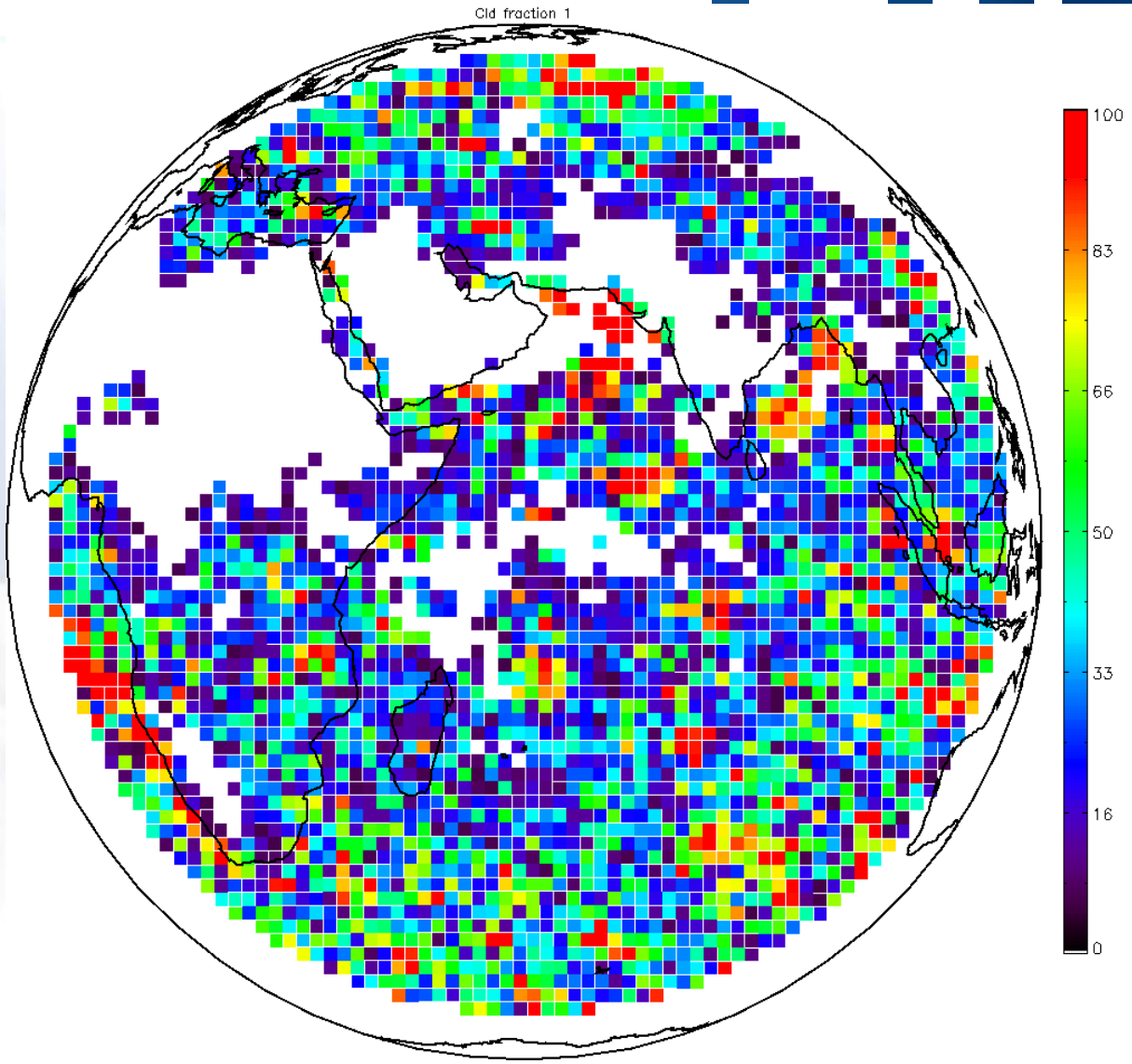
Cloud Motion Winds (CMW)



Met-7
11 December 2012
07:30 UTC

EUMETSAT

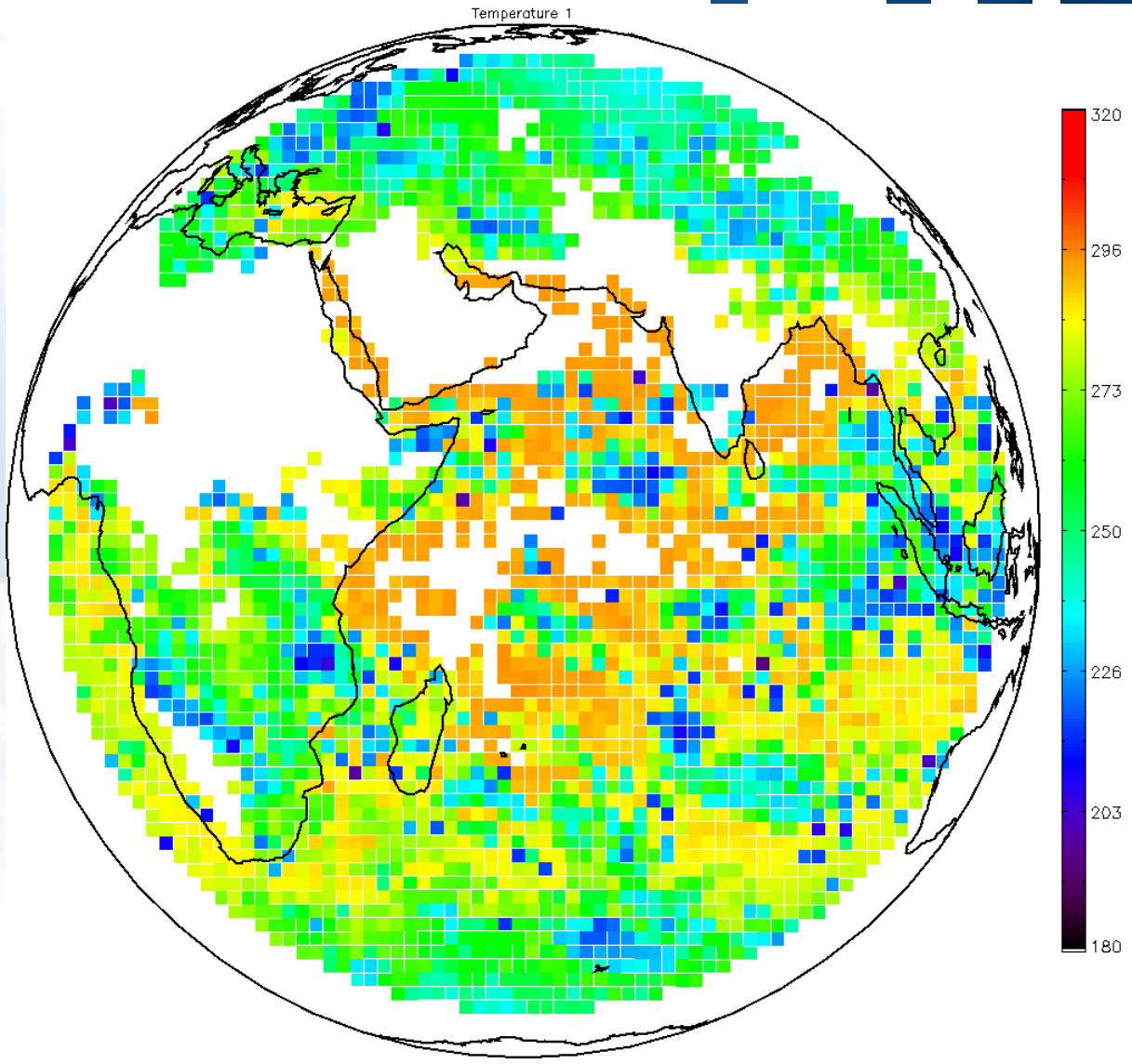
Cloud Analysis (CLA): Cloud Fraction



Met-7
11 December 2012
07:30 UTC

EUMETSAT

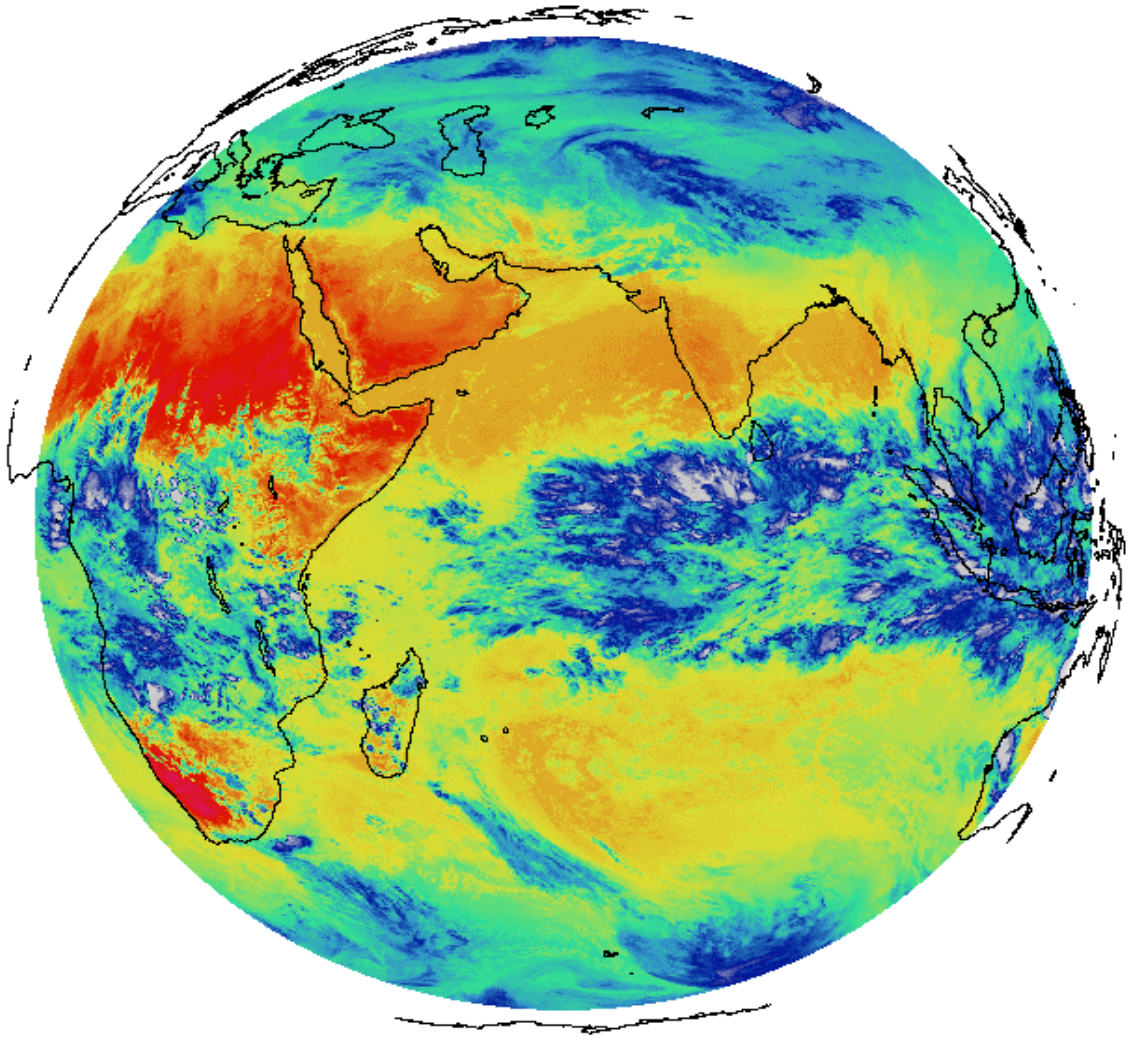
Cloud Analysis (CLA): Cloud Top Temperature



Met-7
11 December 2012
07:30 UTC

EUMETSAT

Outgoing Longwave Radiation (OLR)



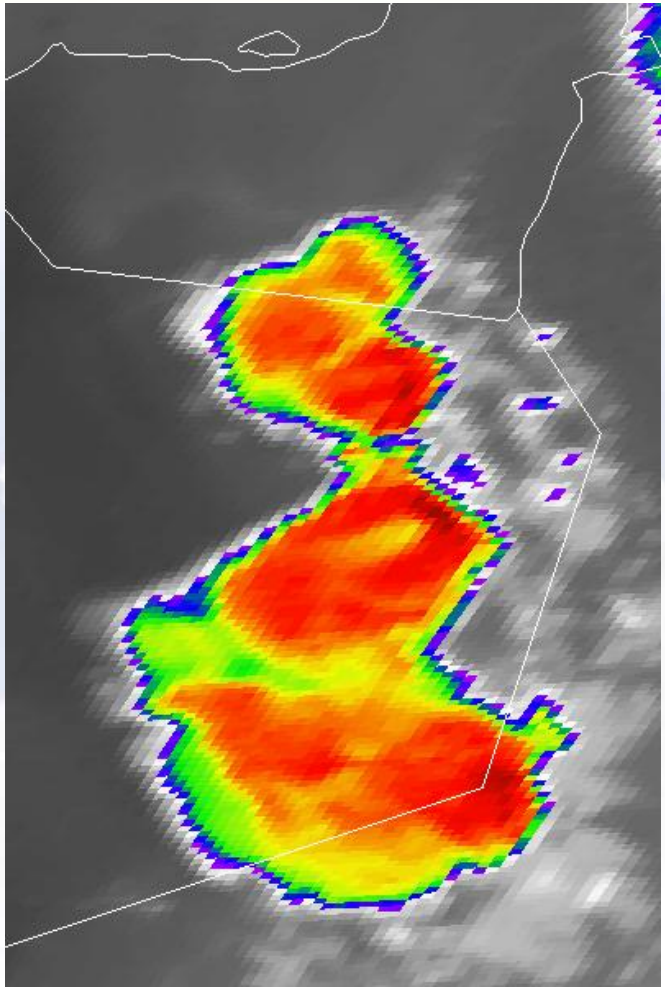
Met-5
10 January 2002
09:00 UTC

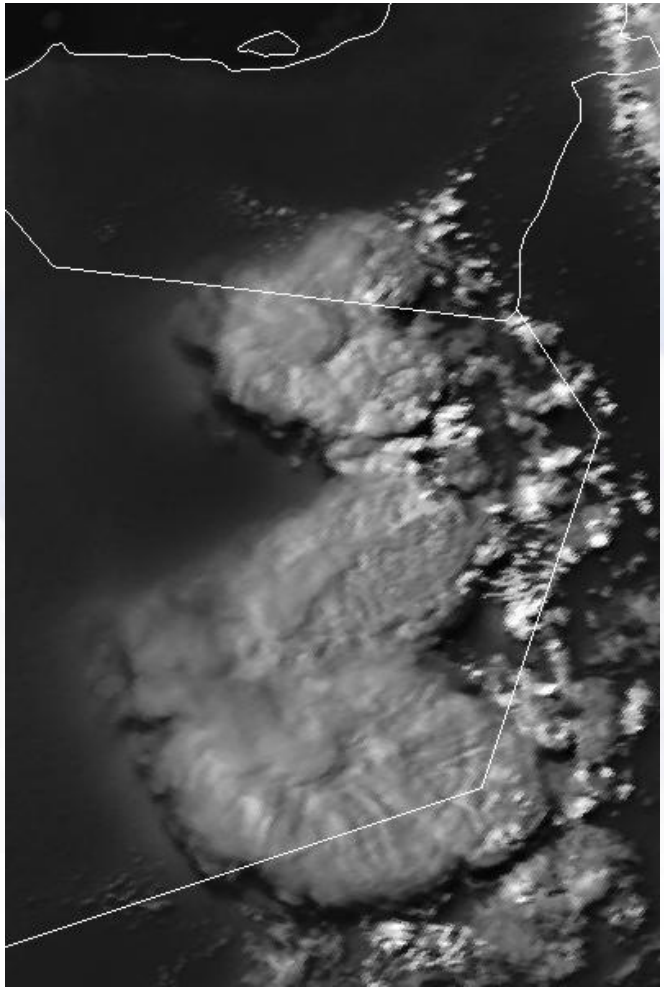
EUMETSAT

Met-8/9 (MSG) Application Examples

EUMETSAT

Ring-shape convective storms over the south-eastern part of Rub al Khali





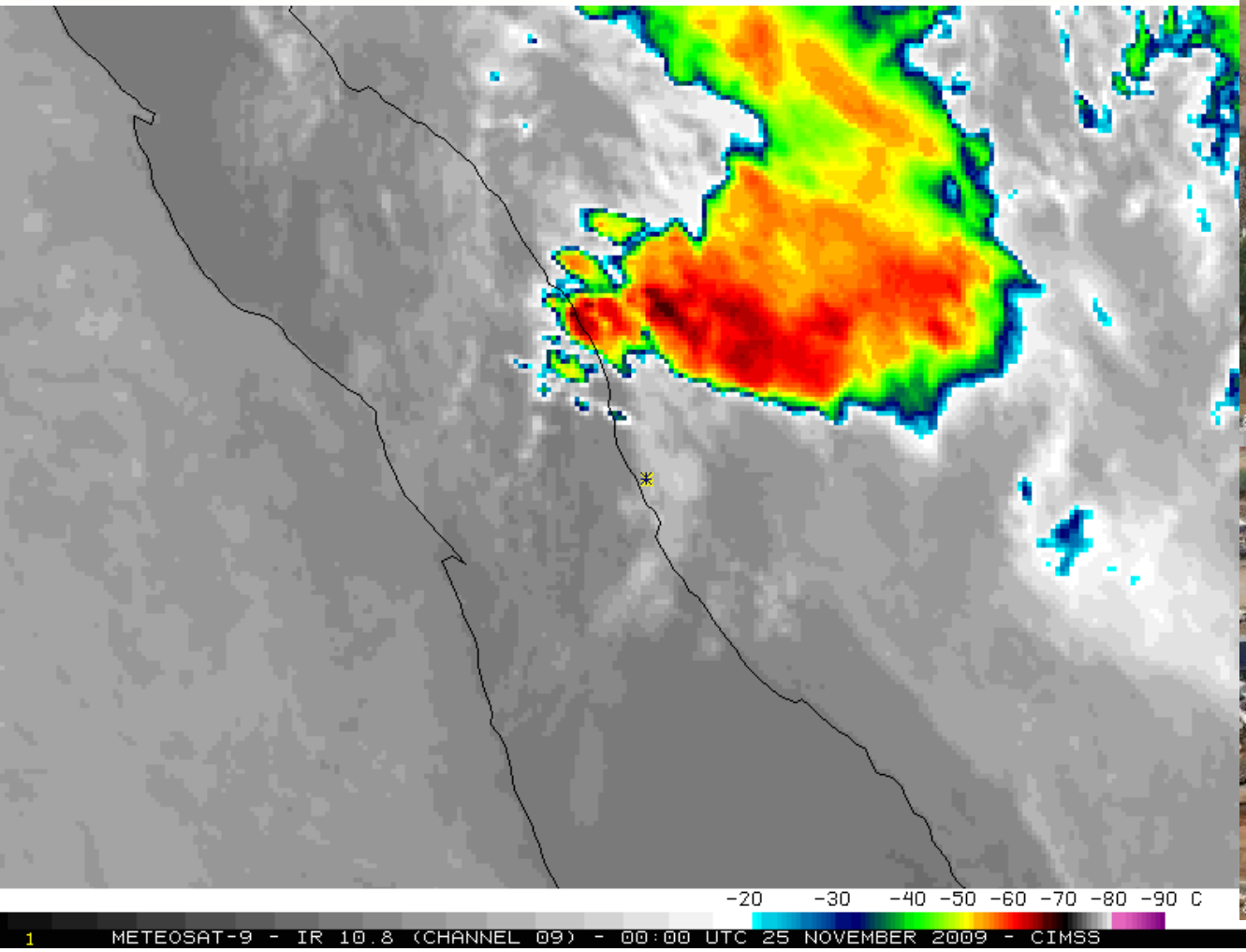
IR Loop

CLICK HERE

9 August 2008, 13:00 UTC

EUMETSAT

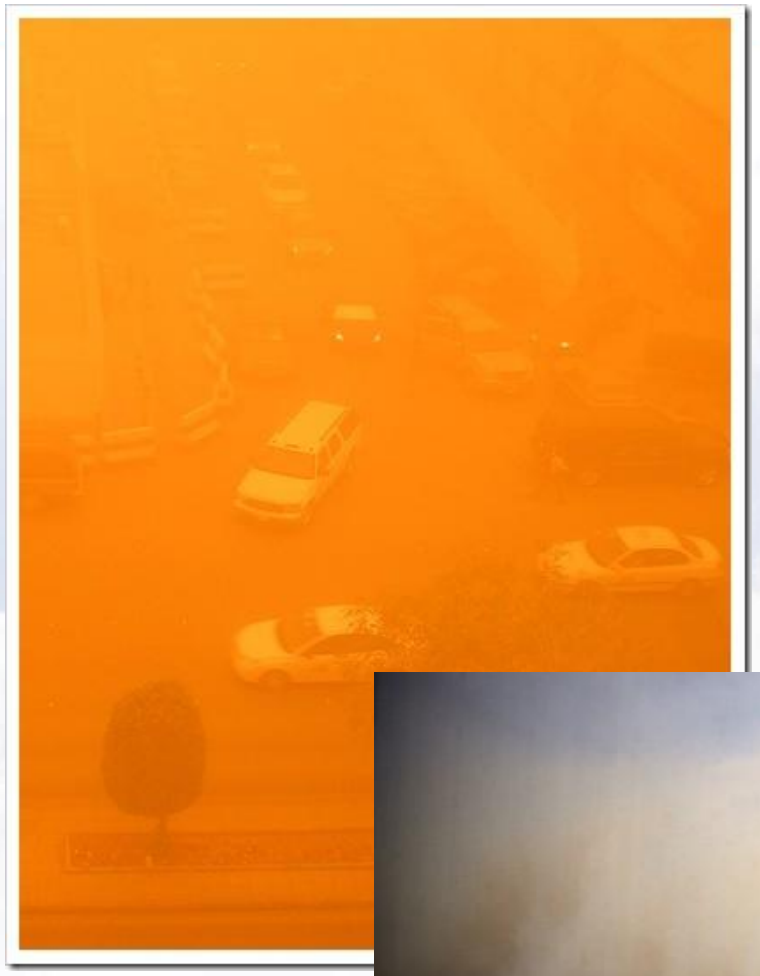
Flash Flood Jeddah

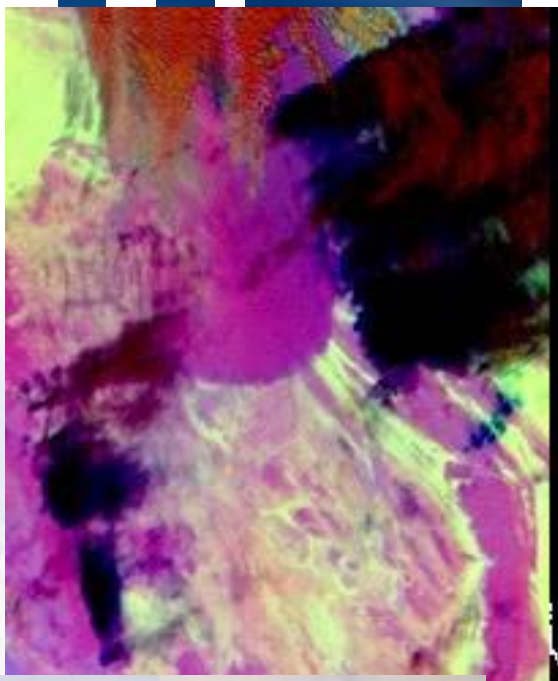


25 November 2009

EUMETSAT

Dust Outbreak hits Riyadh

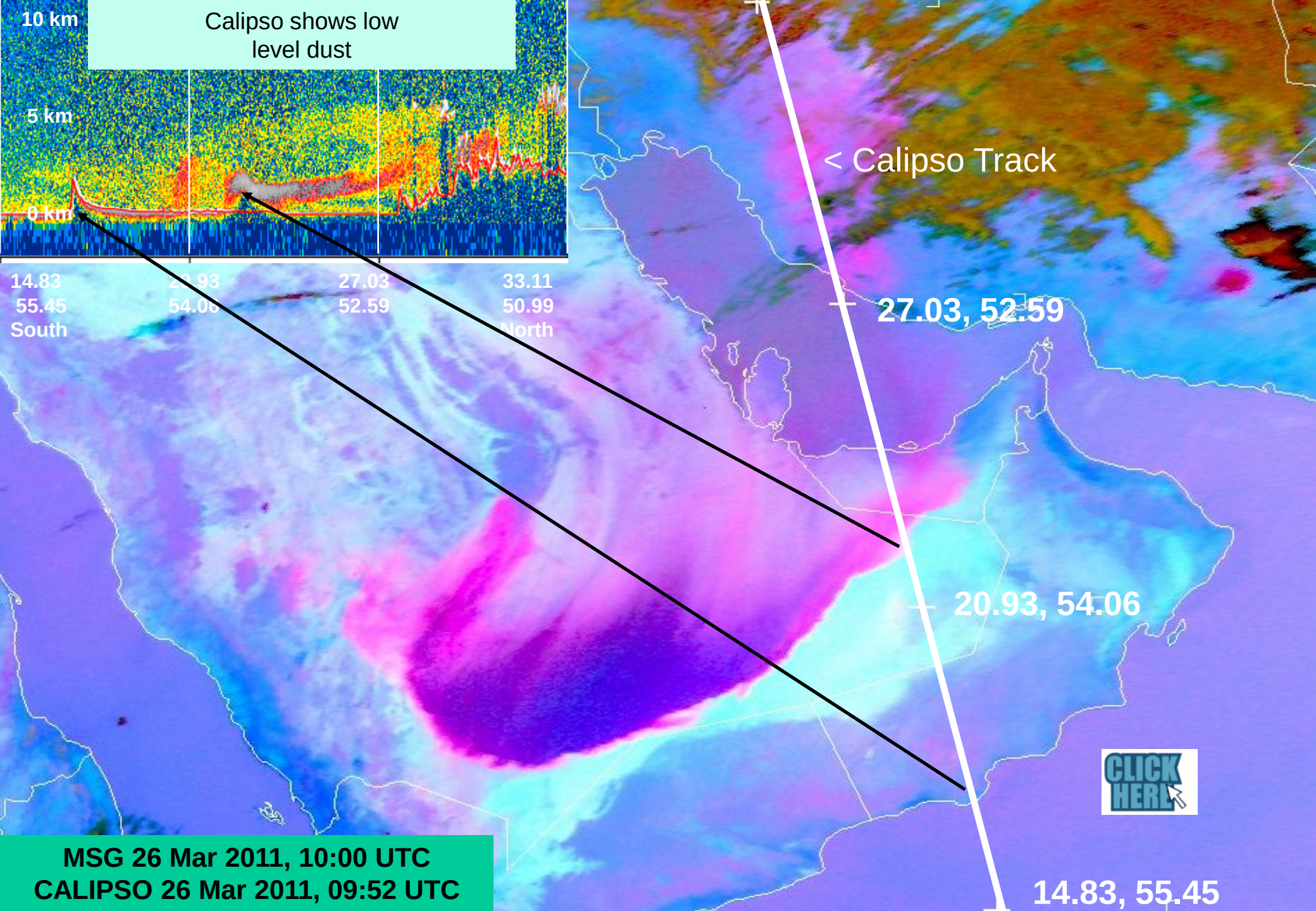




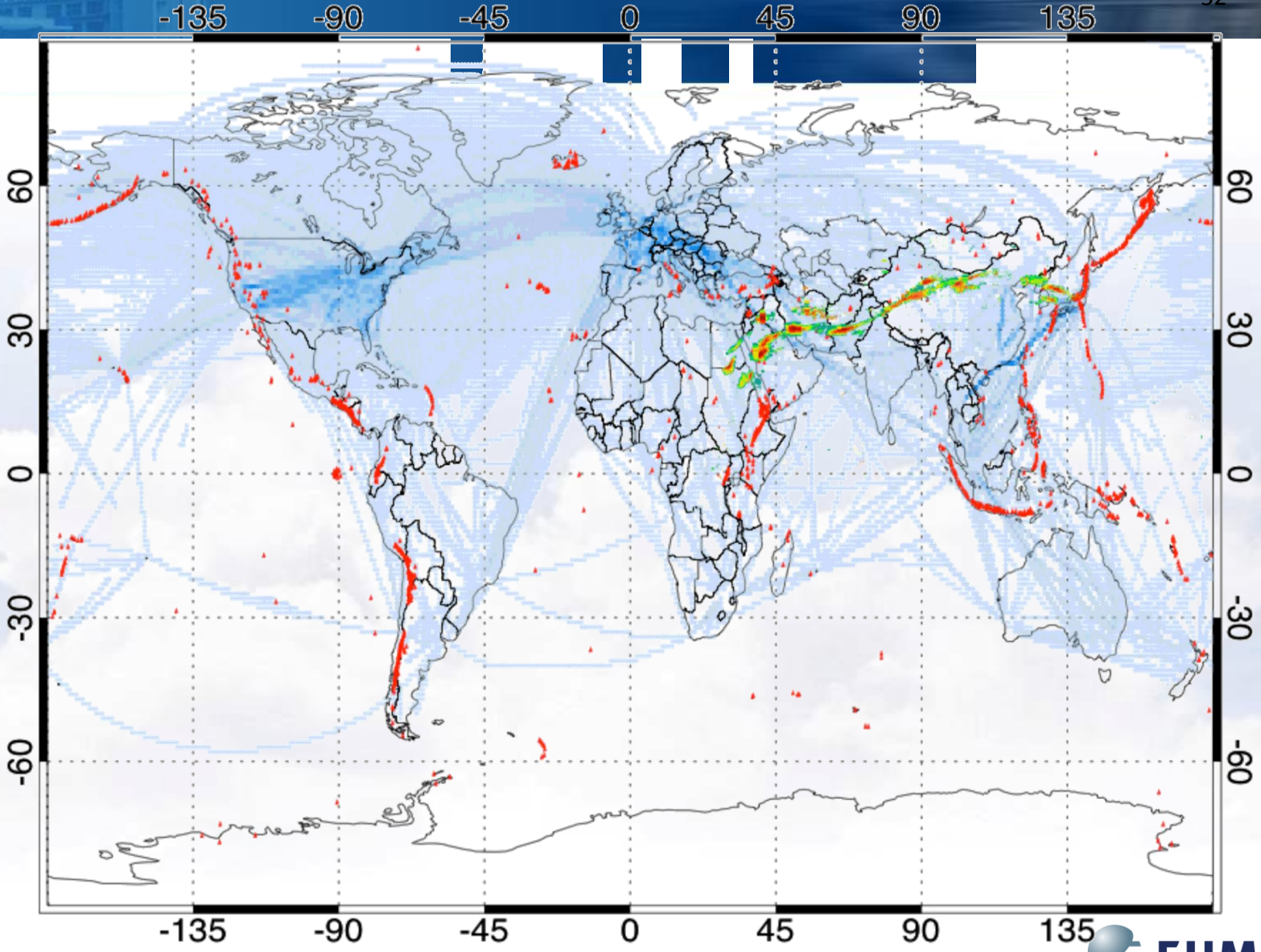
CLICK HERE

Meteosat-8
10 March 2009
(rapid scans)

EUMETSAT


Calipso shows low level dust
10 km
5 km
0 km
14.83
55.45
South
27.03
52.59
33.11
50.99
North
< Calipso Track
27.03, 52.59
20.93, 54.06
14.83, 55.45
CLICK HERE
MSG 26 Mar 2011, 10:00 UTC
CALIPSO 26 Mar 2011, 09:52 UTC

Global aviation threat

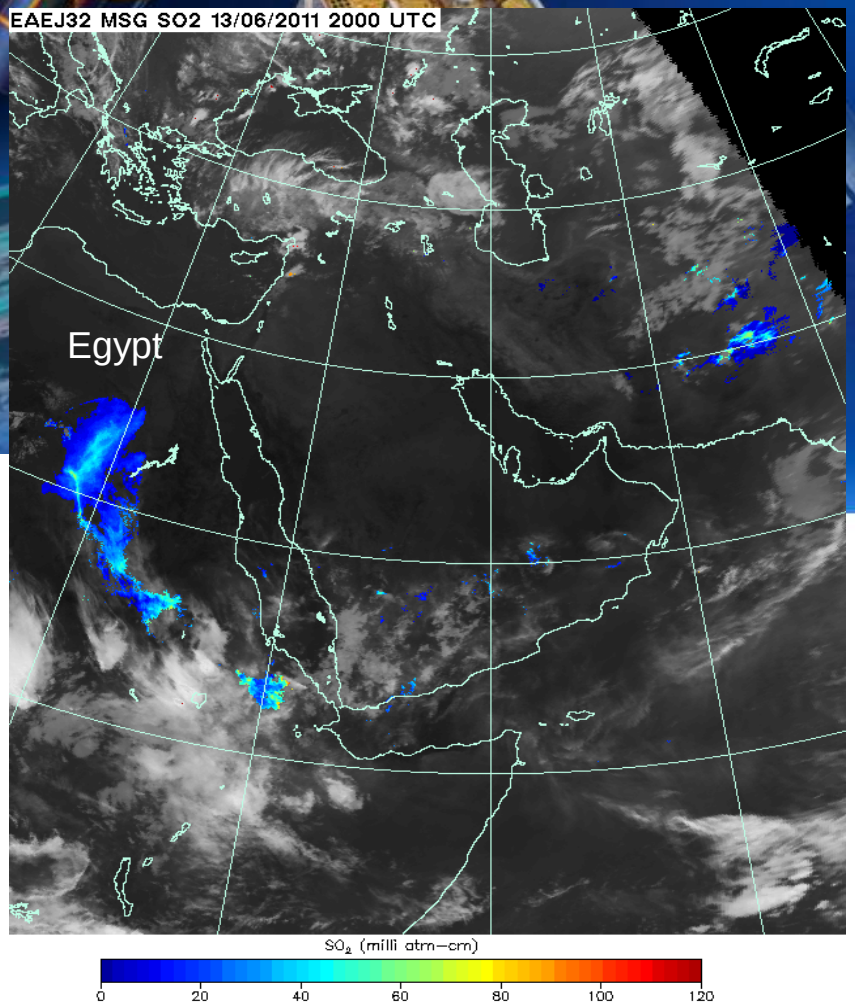


EUMETSAT

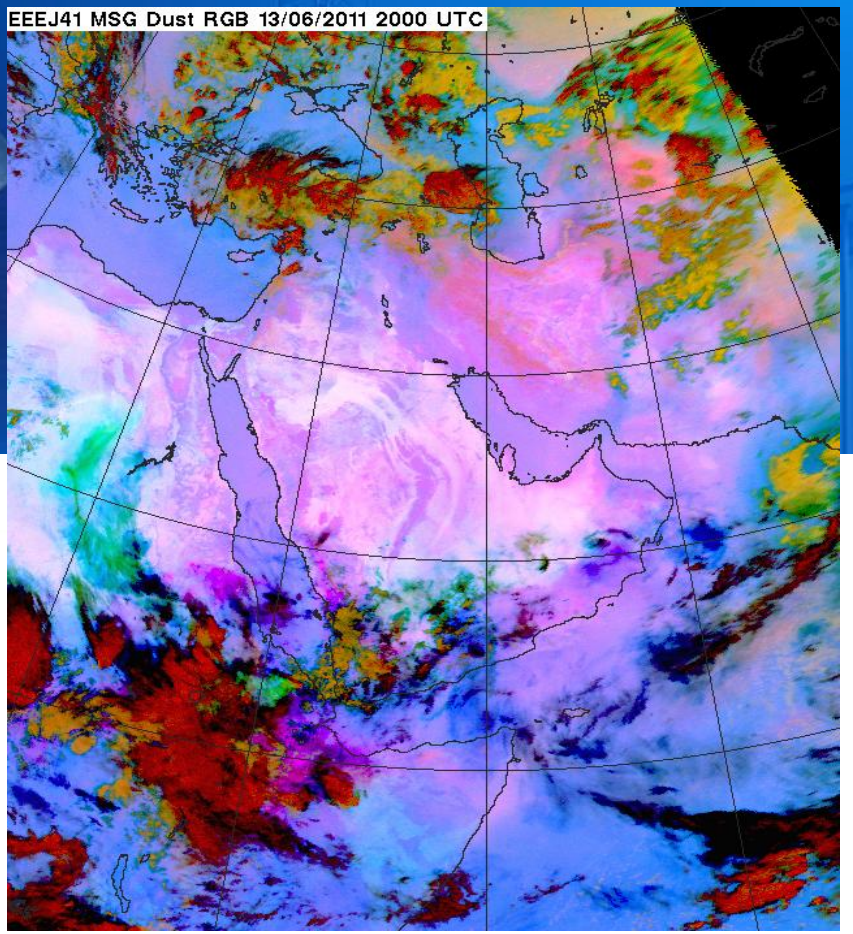
Eruption Nabro
June 2011

SO2 Clouds

SEVIRI SO_2 product



Dust RGB



13 June 2011, 20:00 UTC, Nabro, Eritrea

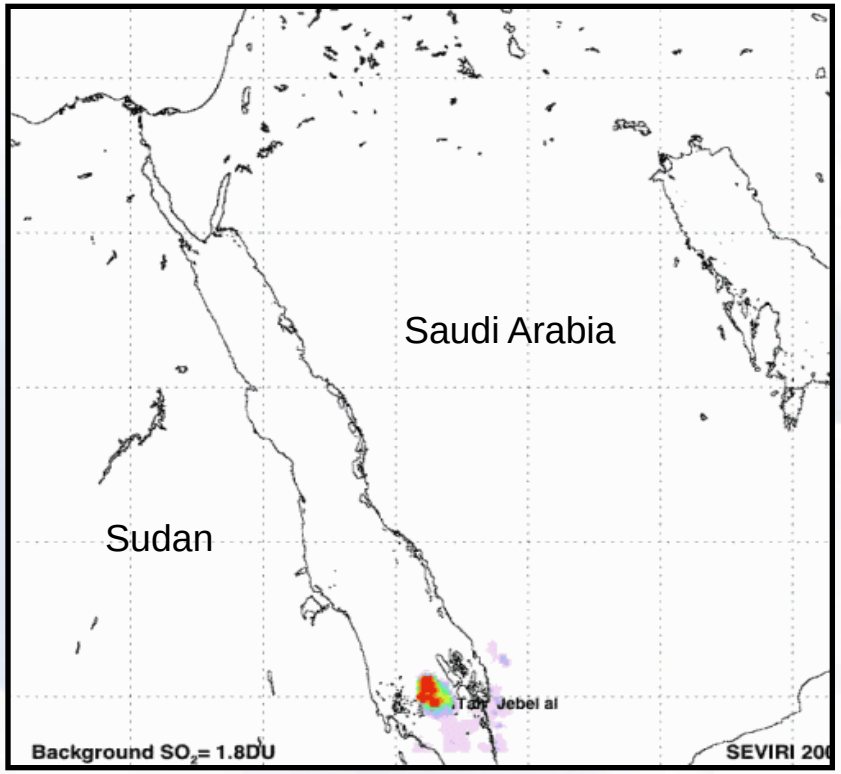
© Crown copyright Met Office (source: P. Francis)

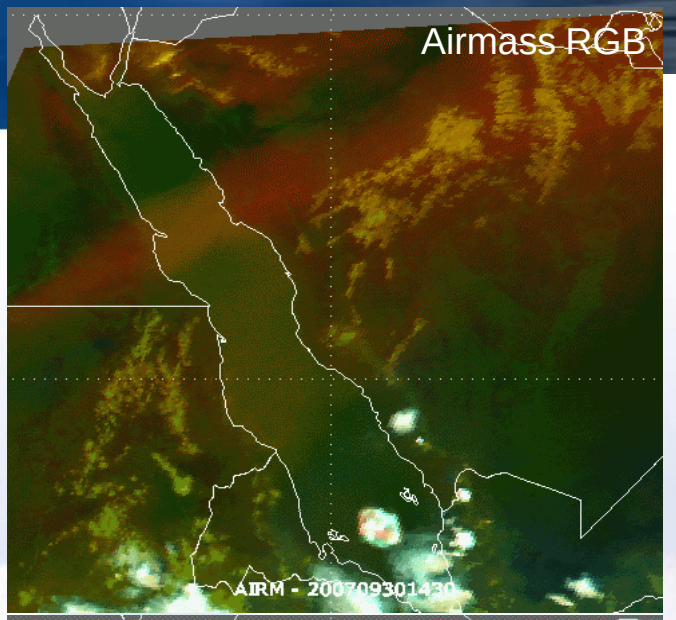
EUMETSAT

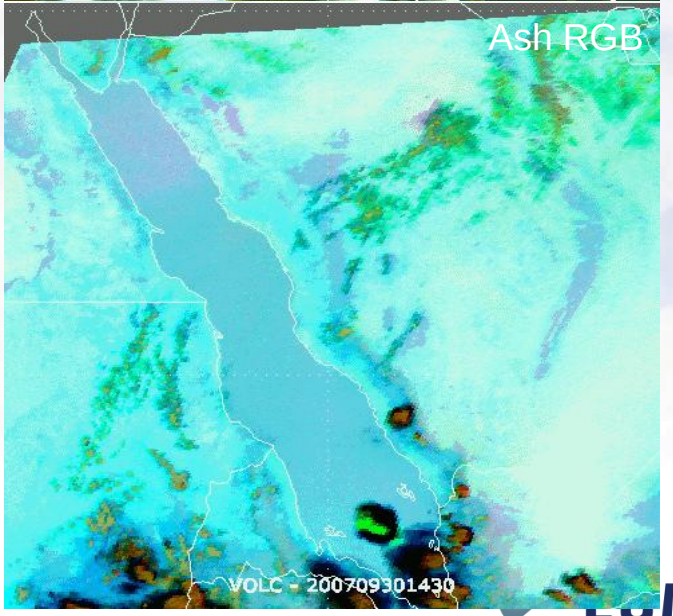
Eruption Jebel-al-Tair
September 2007

SO2 Clouds

SEVIRI SO_2 product







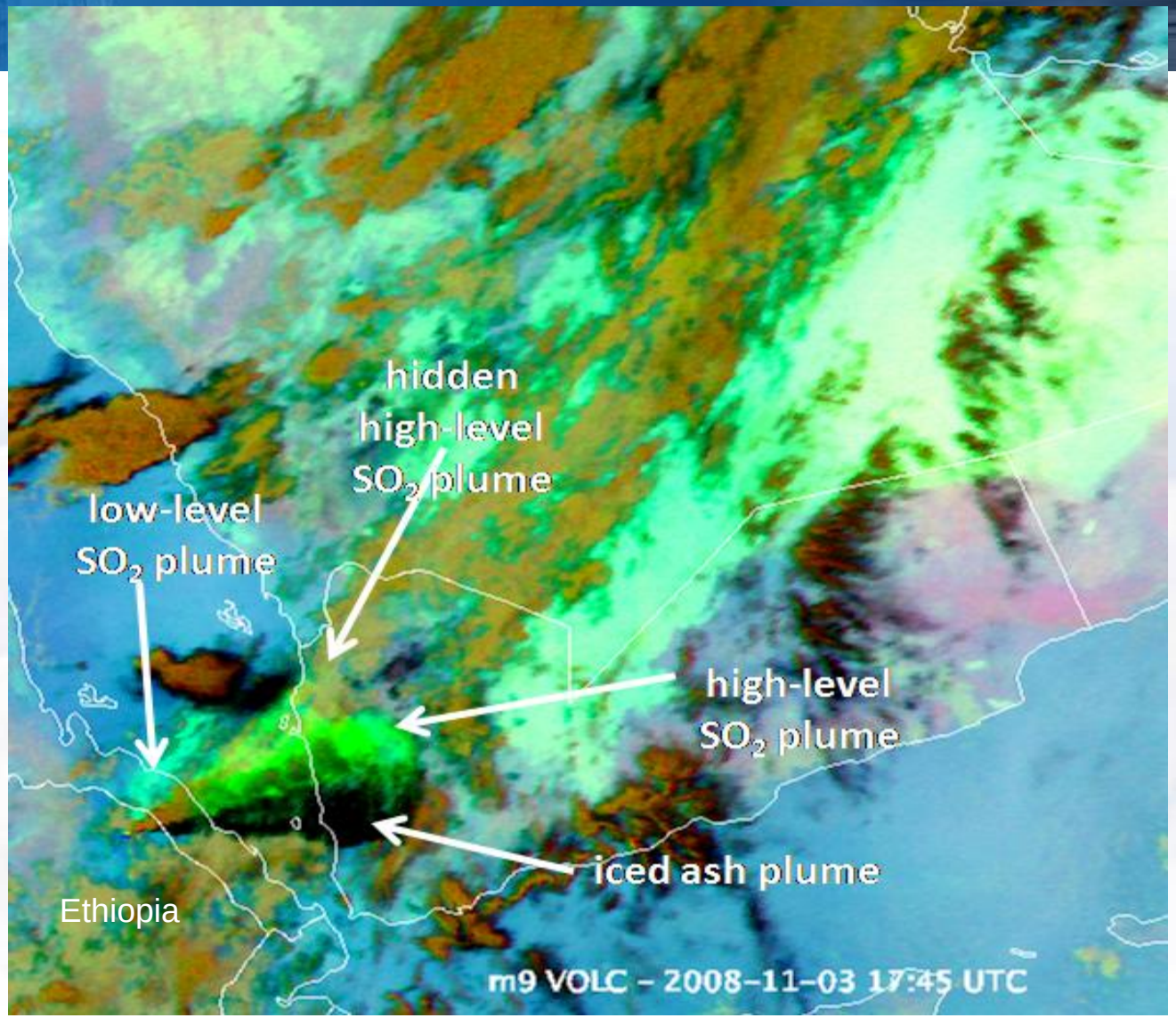
Source: F. Prata

2007, 30 Sep 14:30 – 1 Oct 21:30

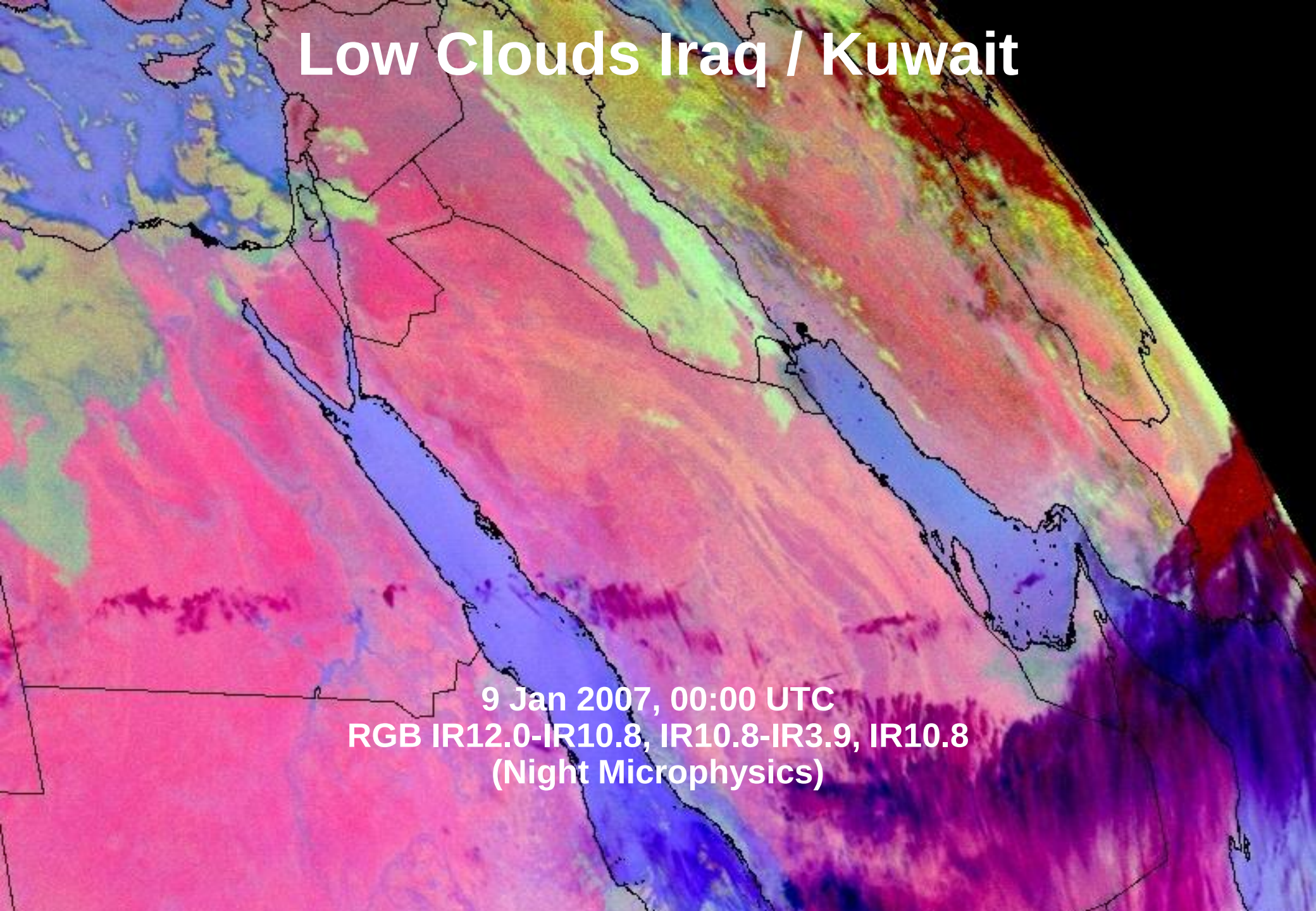
EUMETSAT

Eruption Erta Ale
November 2008

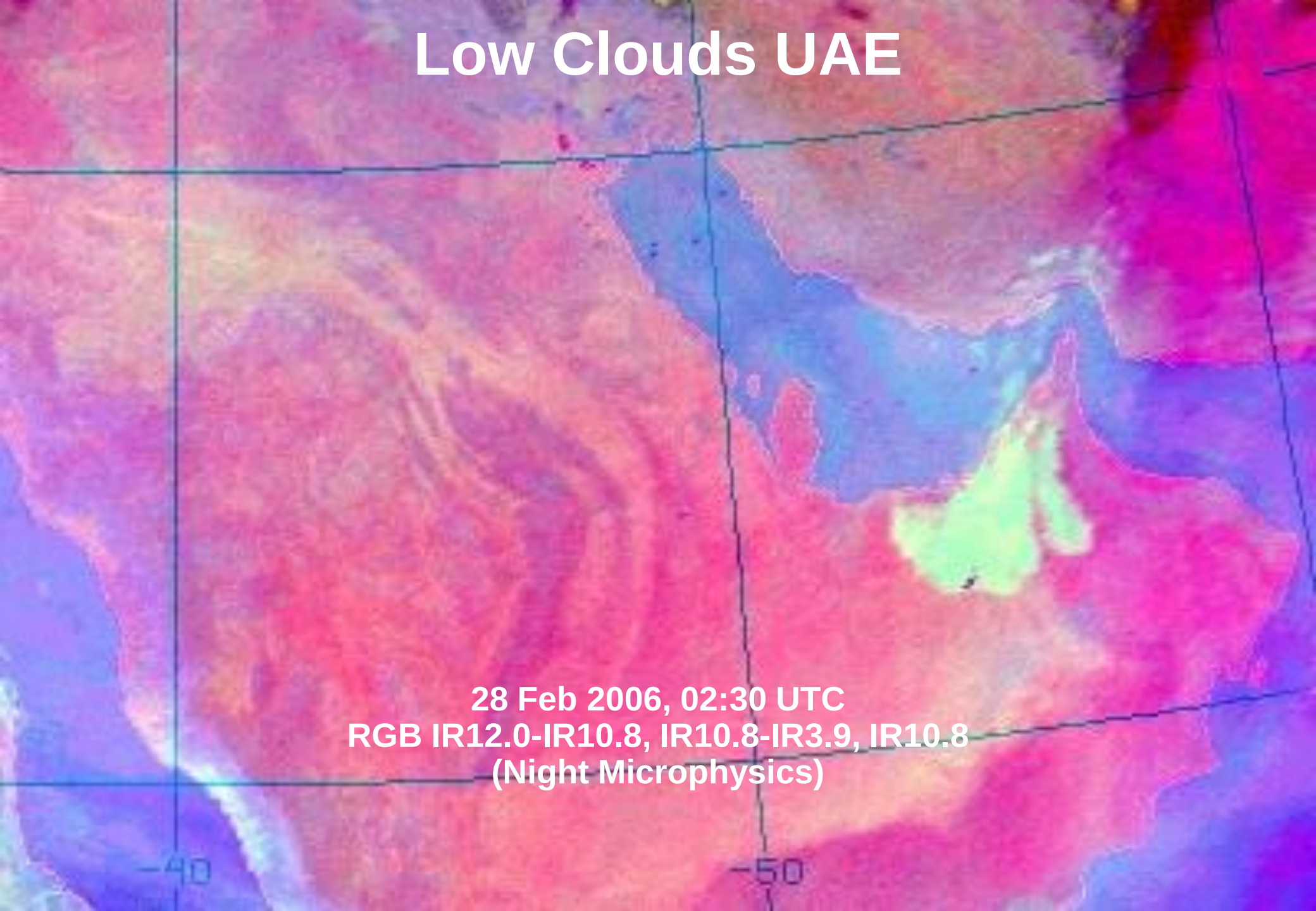
SO2 Clouds



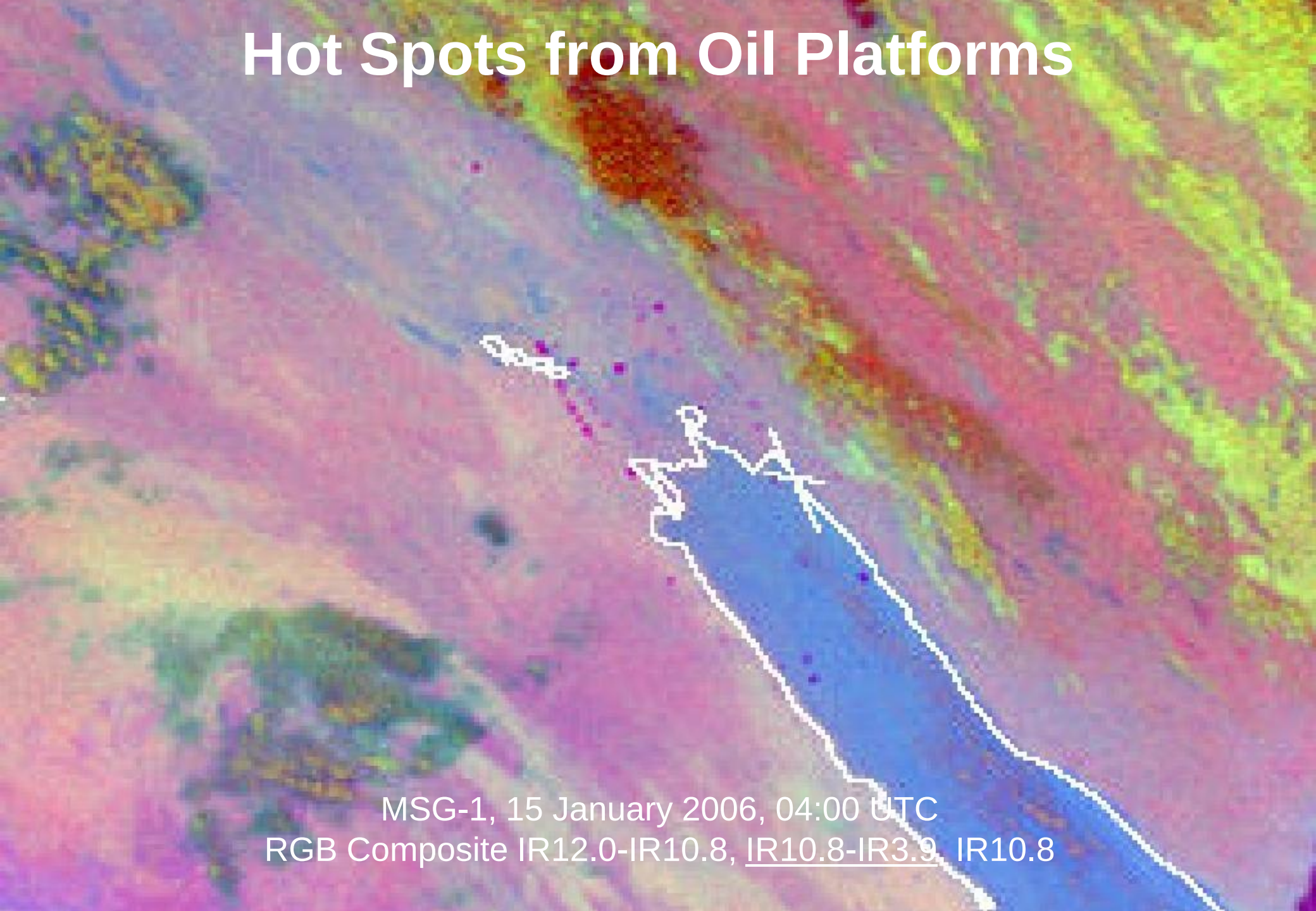
EUMETSAT


Low Clouds Iraq / Kuwait
9 Jan 2007, 00:00 UTC
RGB IR12.0-IR10.8, IR10.8-IR3.9, IR10.8
(Night Microphysics)

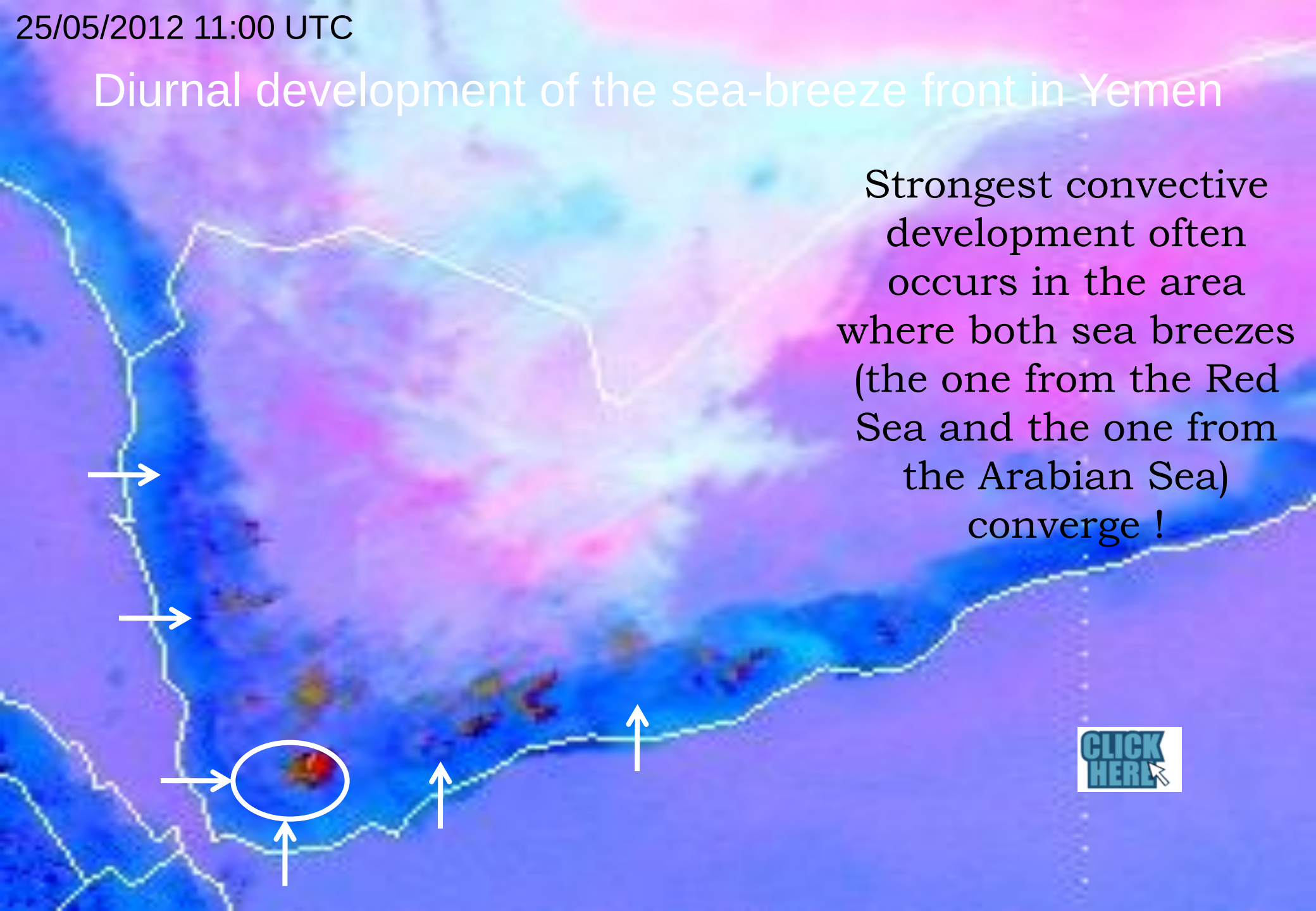
Low Clouds UAE



Hot Spots from Oil Platforms



MSG-1, 15 January 2006, 04:00 UTC
RGB Composite IR12.0-IR10.8, IR10.8-IR3.9, IR10.8


25/05/2012 11:00 UTC
Diurnal development of the sea-breeze front in Yemen
Strongest convective development often occurs in the area where both sea breezes (the one from the Red Sea and the one from the Arabian Sea) converge !
CLICK HERE