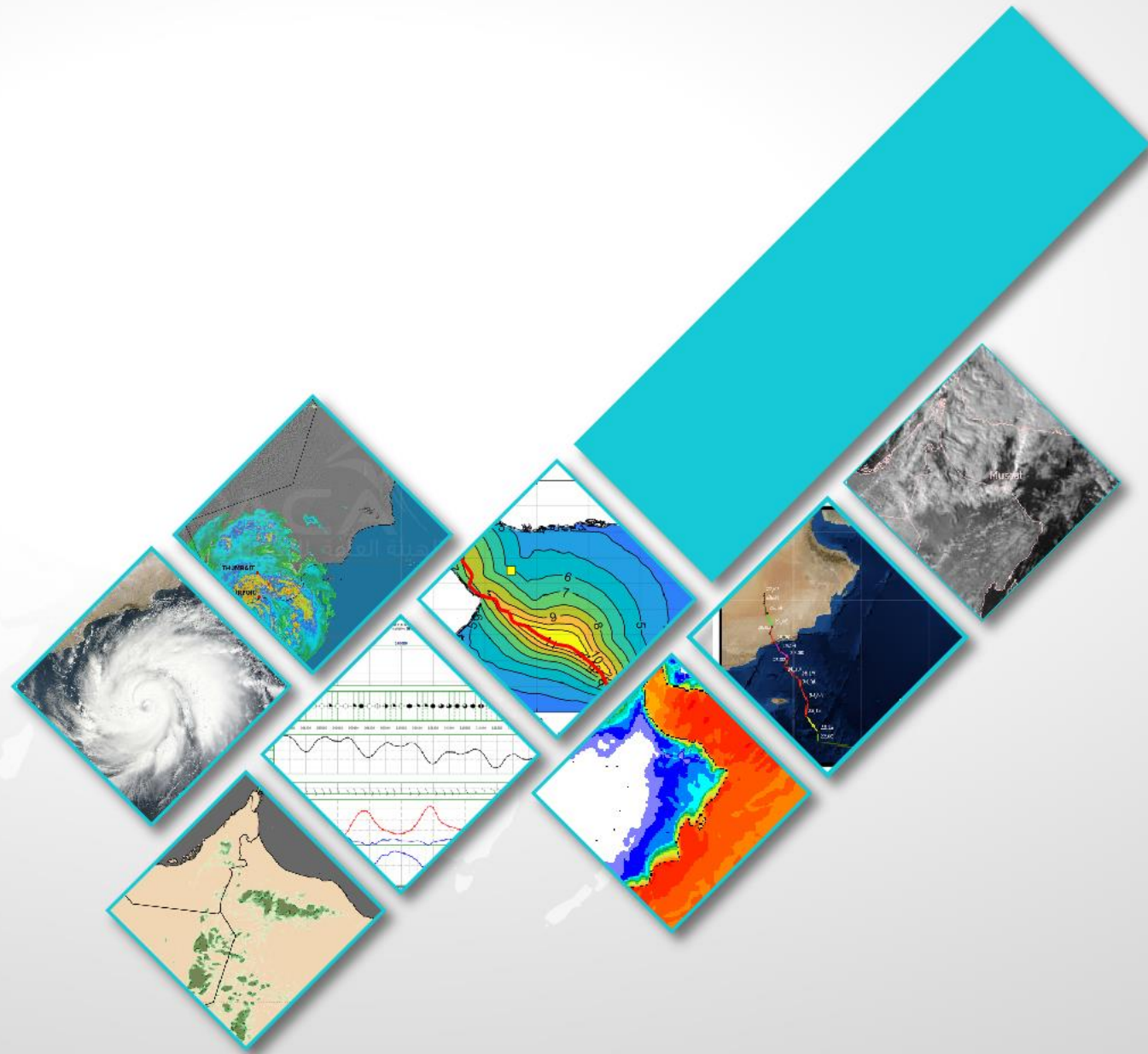




Satellite weather Application

Contact creator: [Shima Alyazidi](#)

Lecturer: [Shima Alyazidi](#)

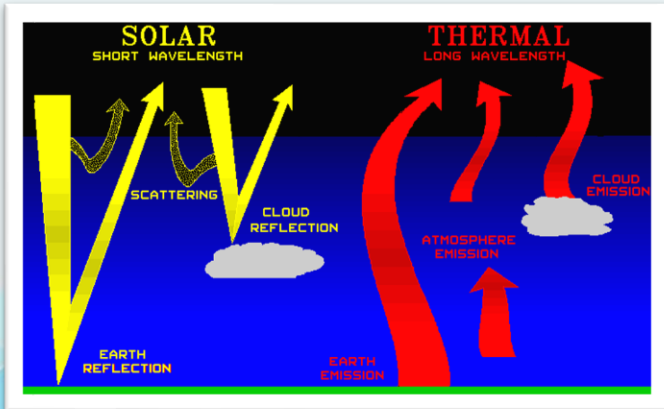


Content

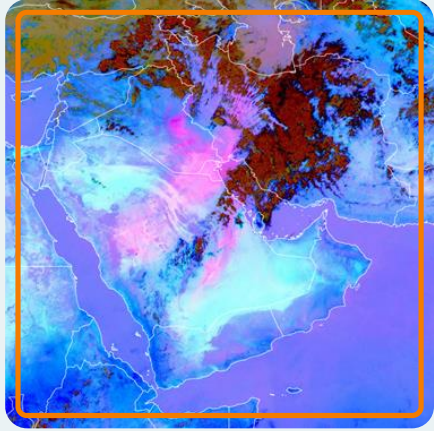
- Natural color RGB
- Dust RGB
- Night cloud Microphysics
- Airmass RGB
- Day microphysics

Calibration

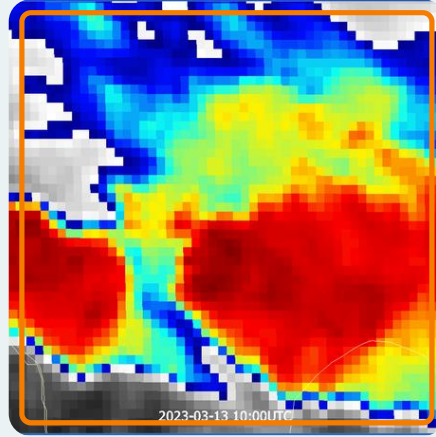
p -



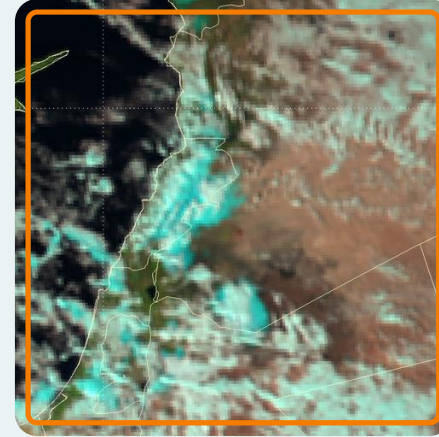
Some satellite channels and products used for weather application



Dust RGB



IR image



Natural
colour RGB

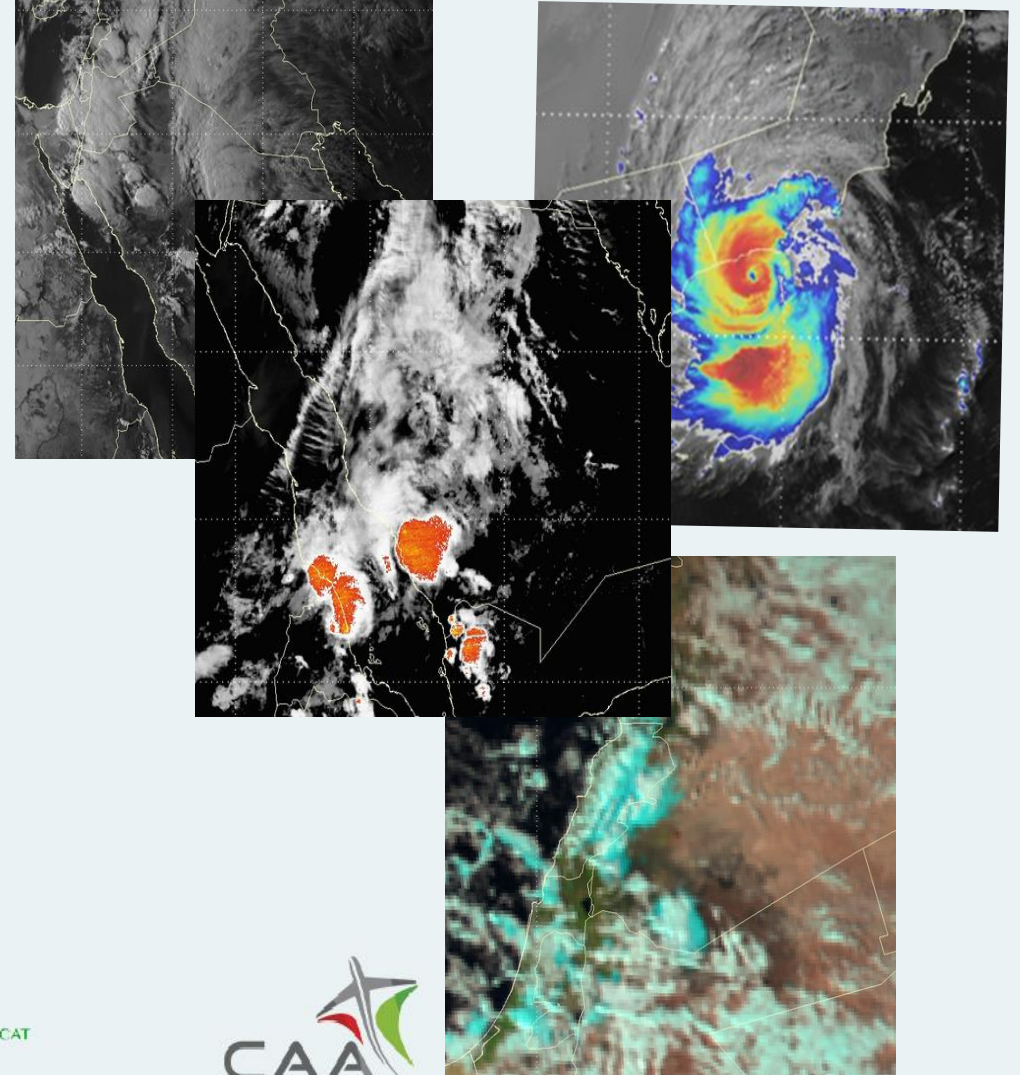


Severe
convection



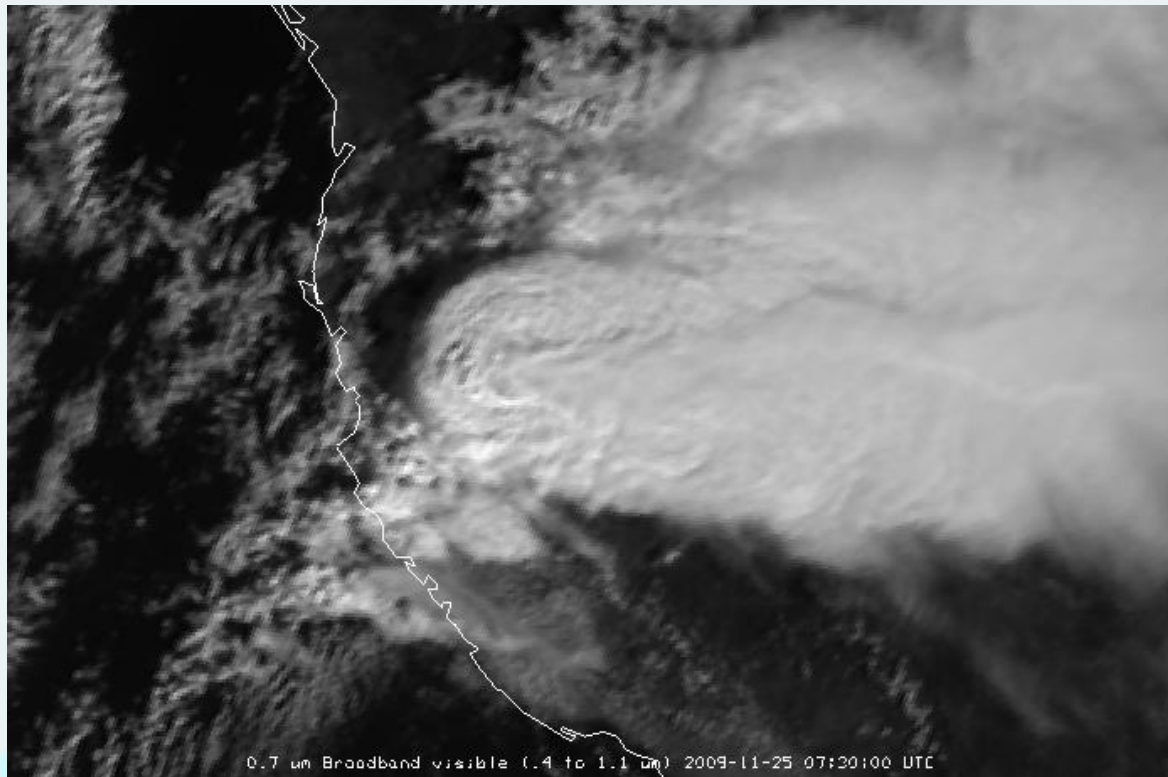
Visualizing satellite data

- Single channel
- Channel differences
- Sandwich products
- RGB products

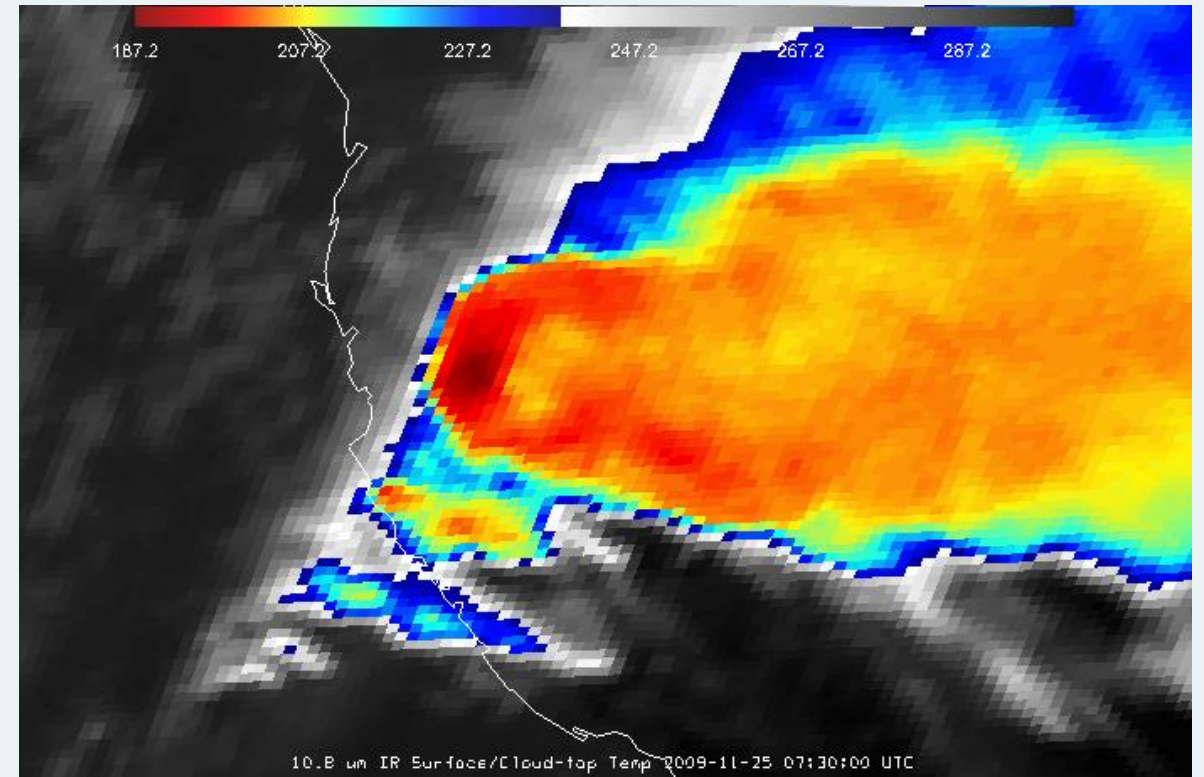


Single Channels

What features do you see in the HRV and in the IR image?



HRV



IR10.8

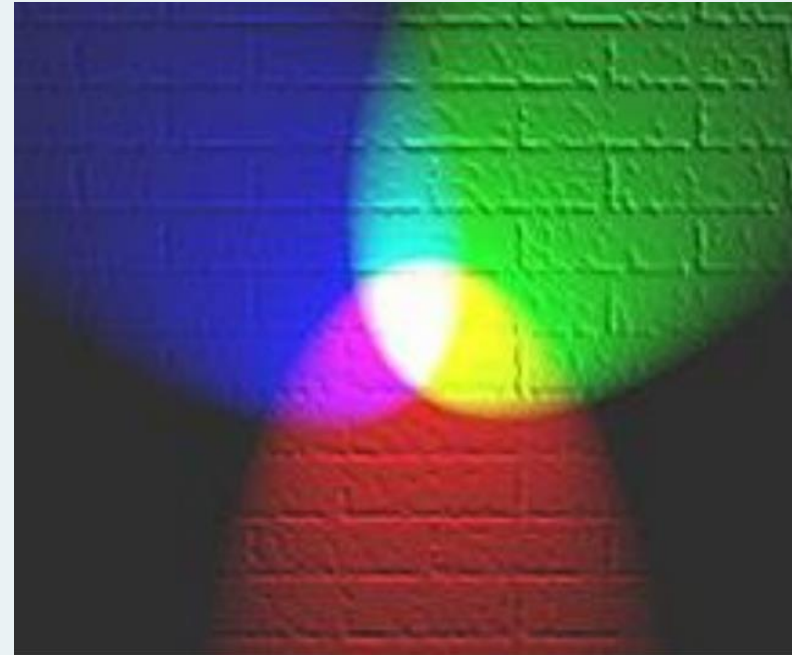


RGB composites

- Every spectral channel (or combination) is assigned to one of the RGB components
- All colours are a result of mixing of 3 basic colours:

- Red
- Green
- Blue

- Allows analysis of 3 (or more) spectral characteristics in one image!



RGB composites

White

Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

Black

Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

Magenta

Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

Cyan

Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

Gray

Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

Orange

Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

Yellow

Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

Pink

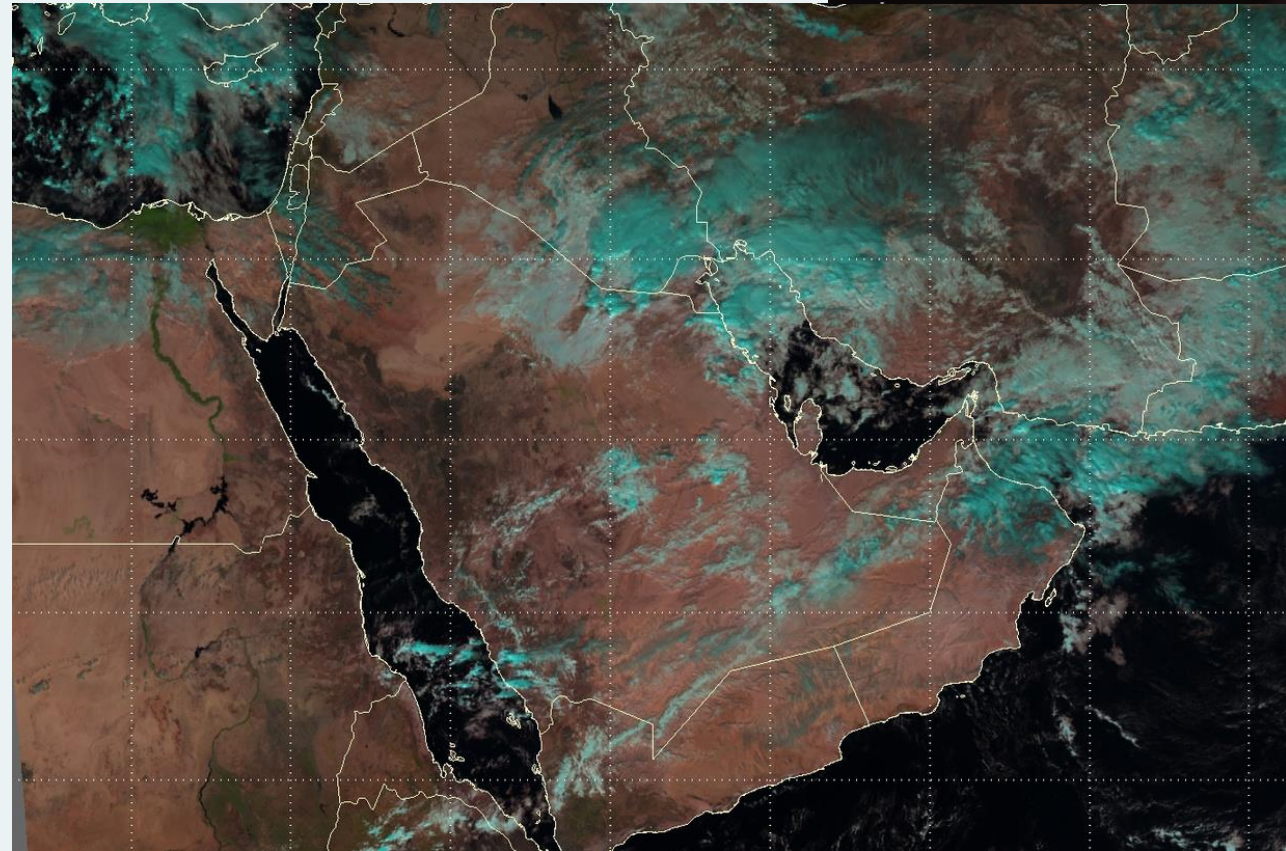
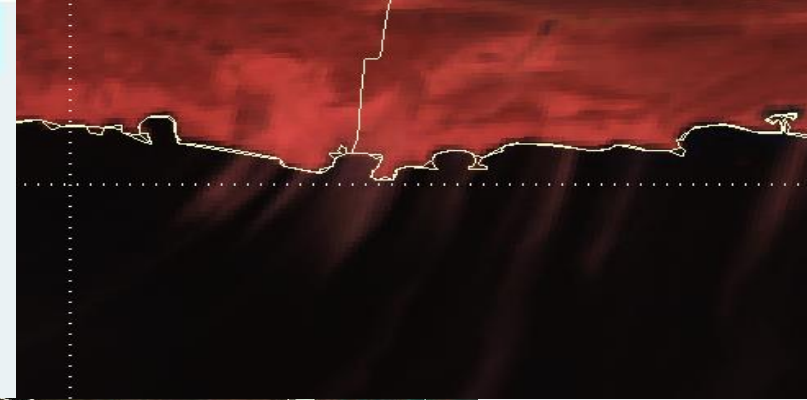
Red	Green	Blue
0	0	0
128	128	128
255	255	255

Continue

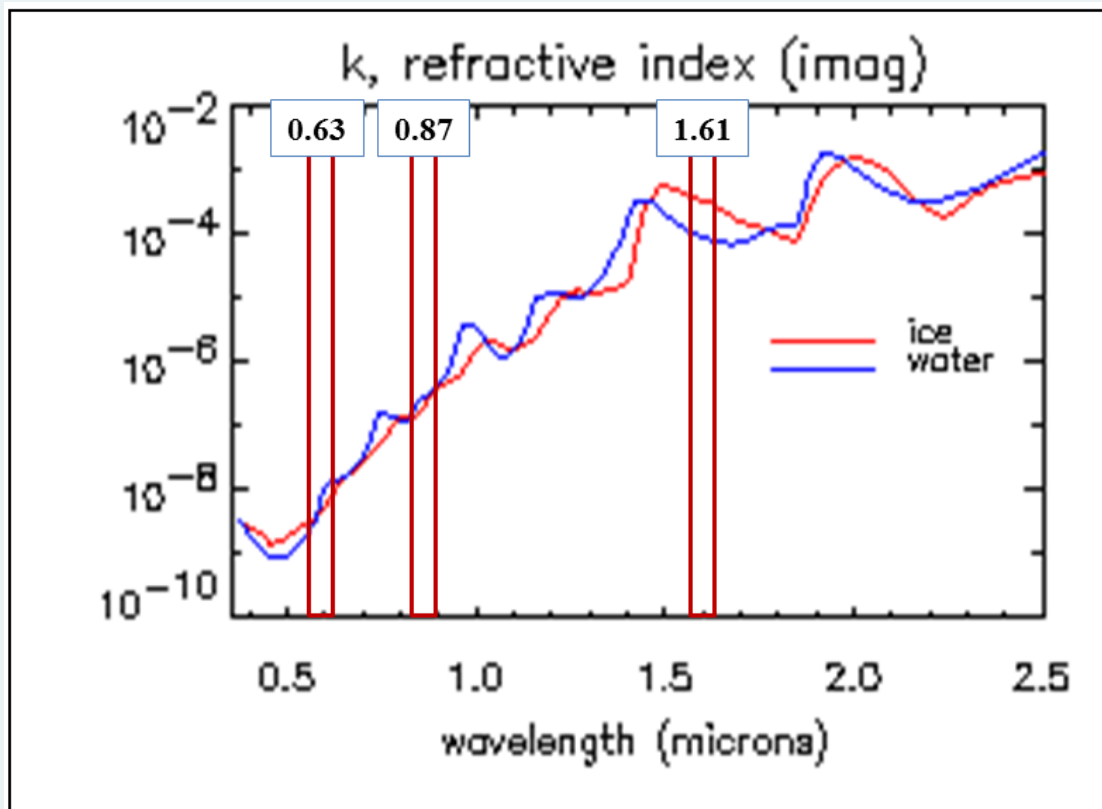


Natural Colour RGB

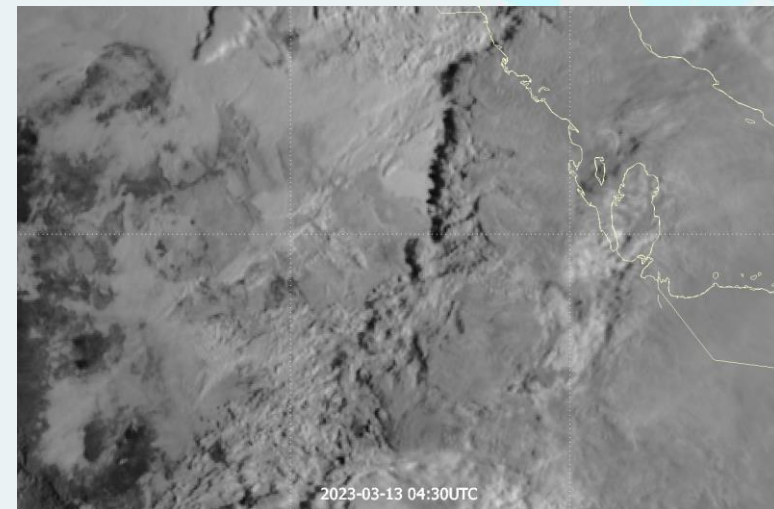
Usage:
cloud phase,
vegetation,
dust,
smoke,
snow,
fires



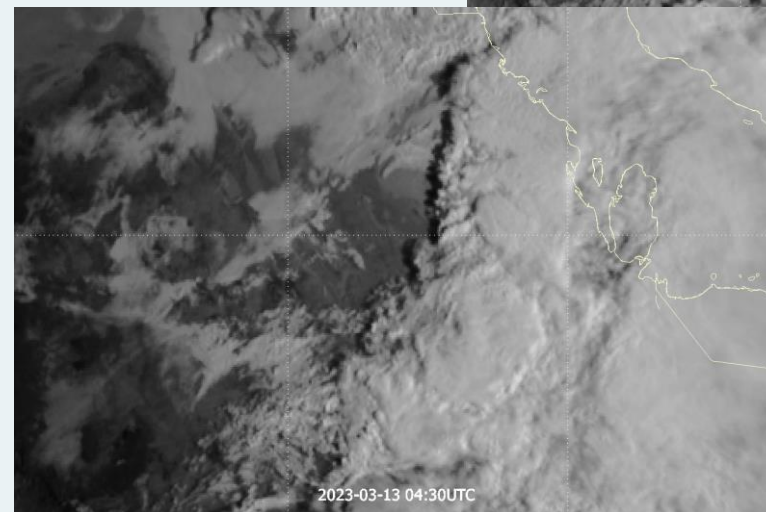
Water cloud vs ice cloud and snow

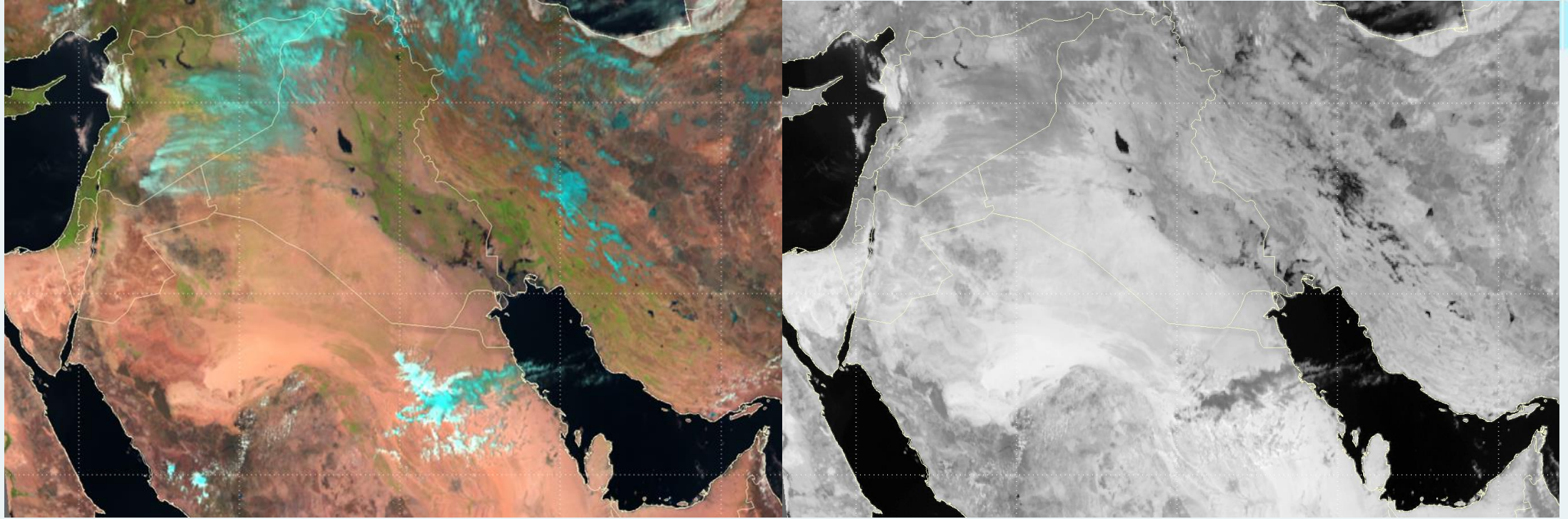


1.6 um



0.6 um





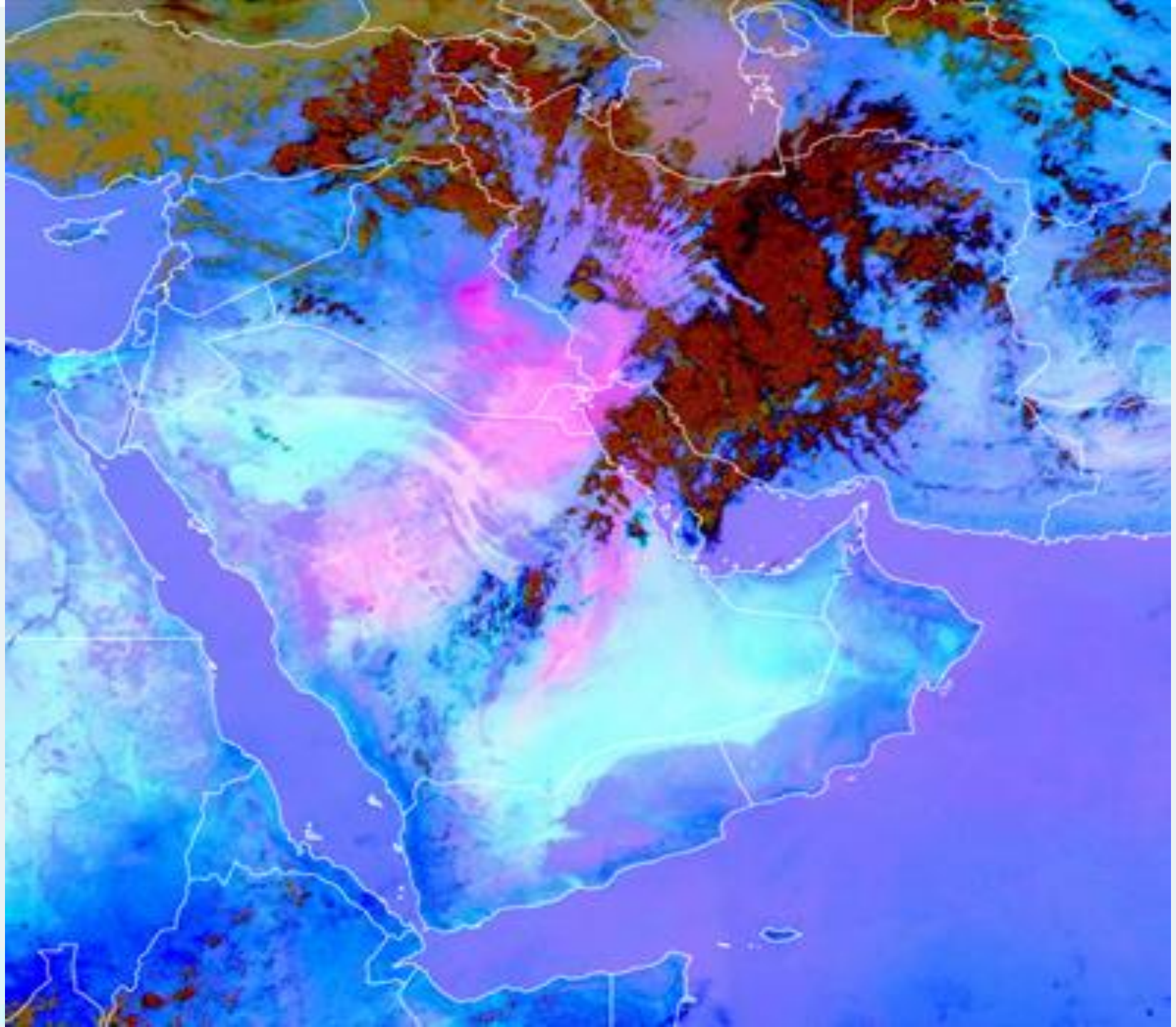
Ice crystals strongly absorb solar radiation at 1.6 micrometer

تمتص البلورات الجليدية الطاقة الشمسية الواقعة على 1.6 ميكرومتر من الطيف



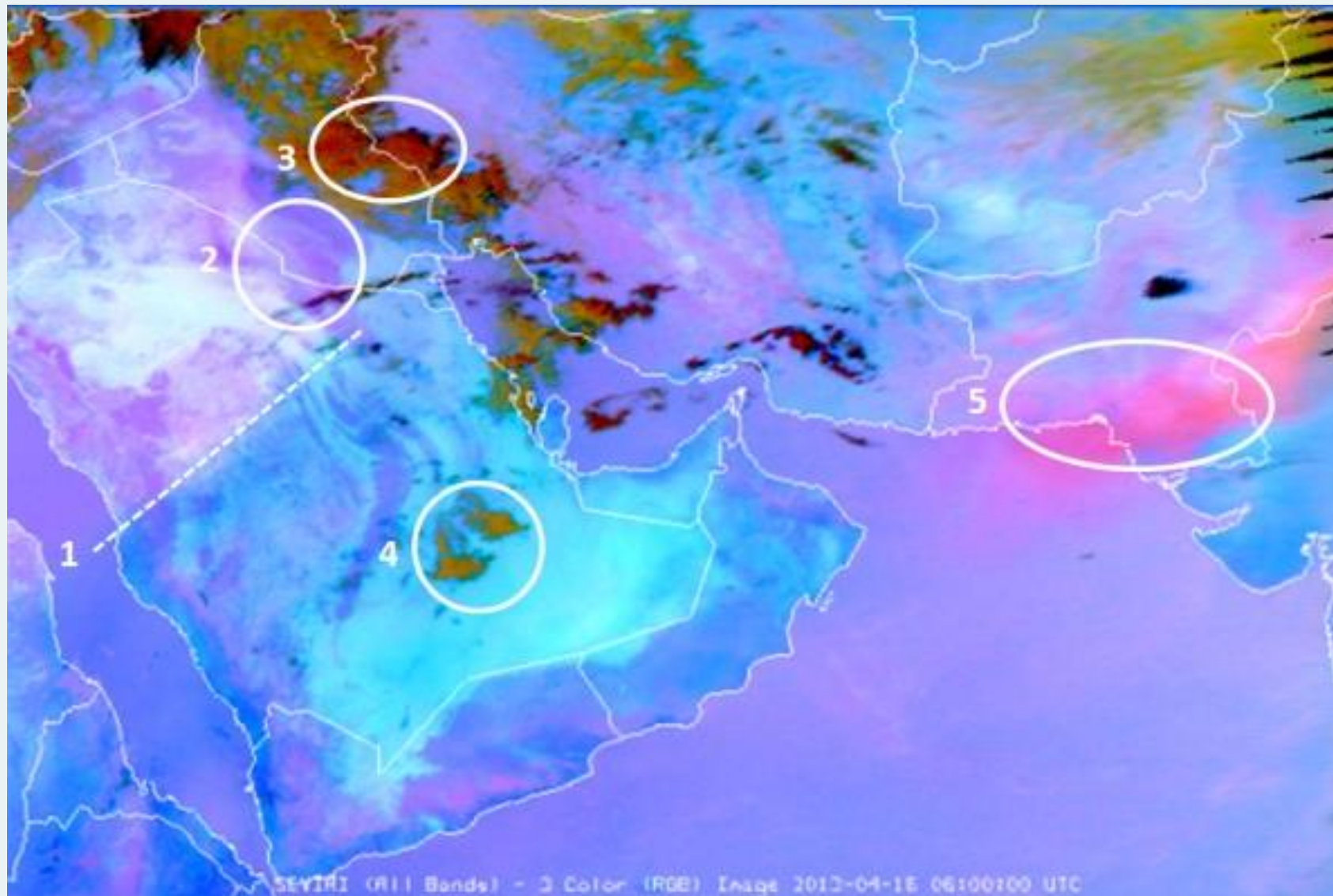
Dust RGB

- Day and night
- cloud analysis
- Dust
- low-level moisture



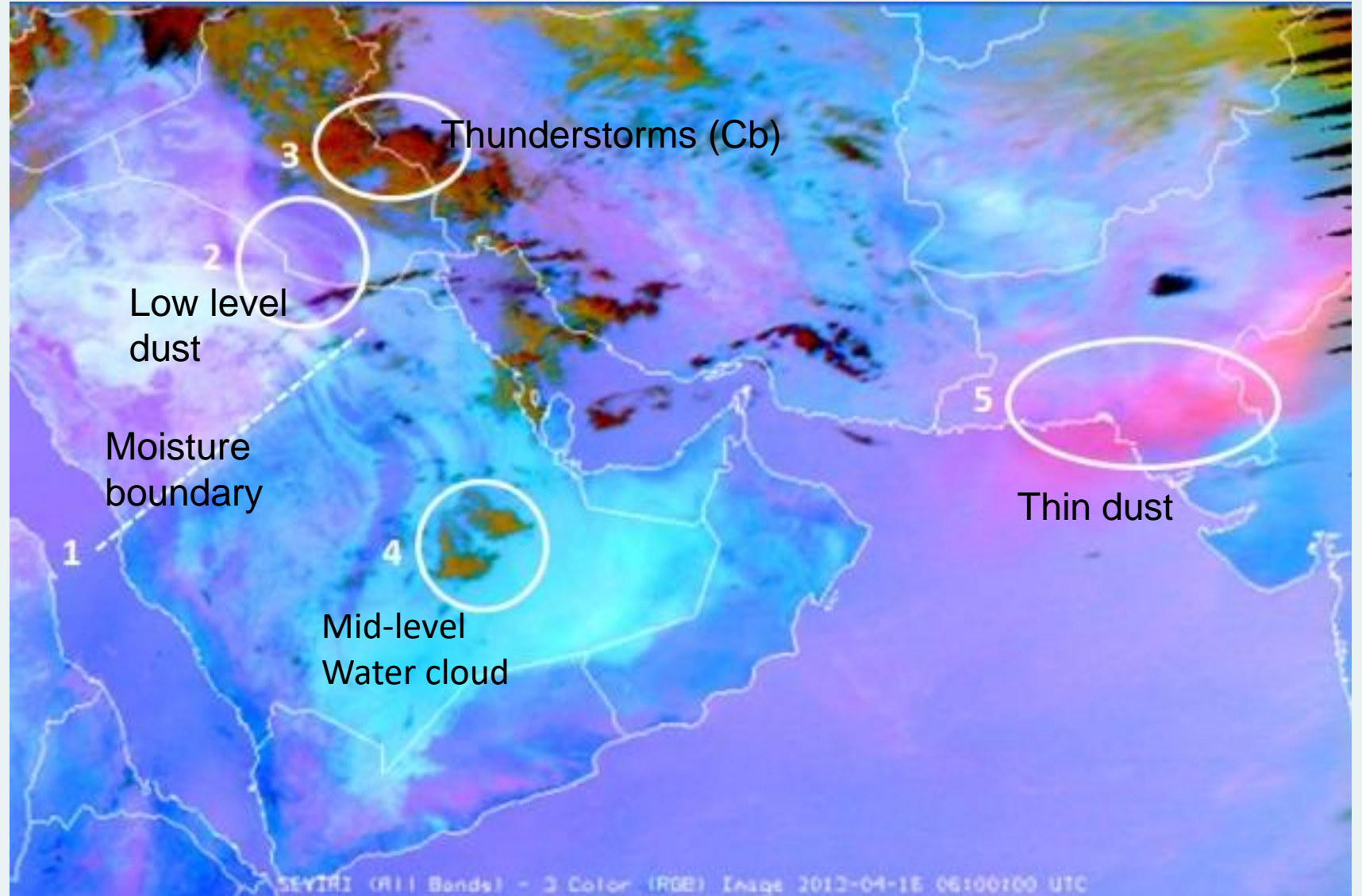
Dust RGB

Can you identify the features 1 to 5?

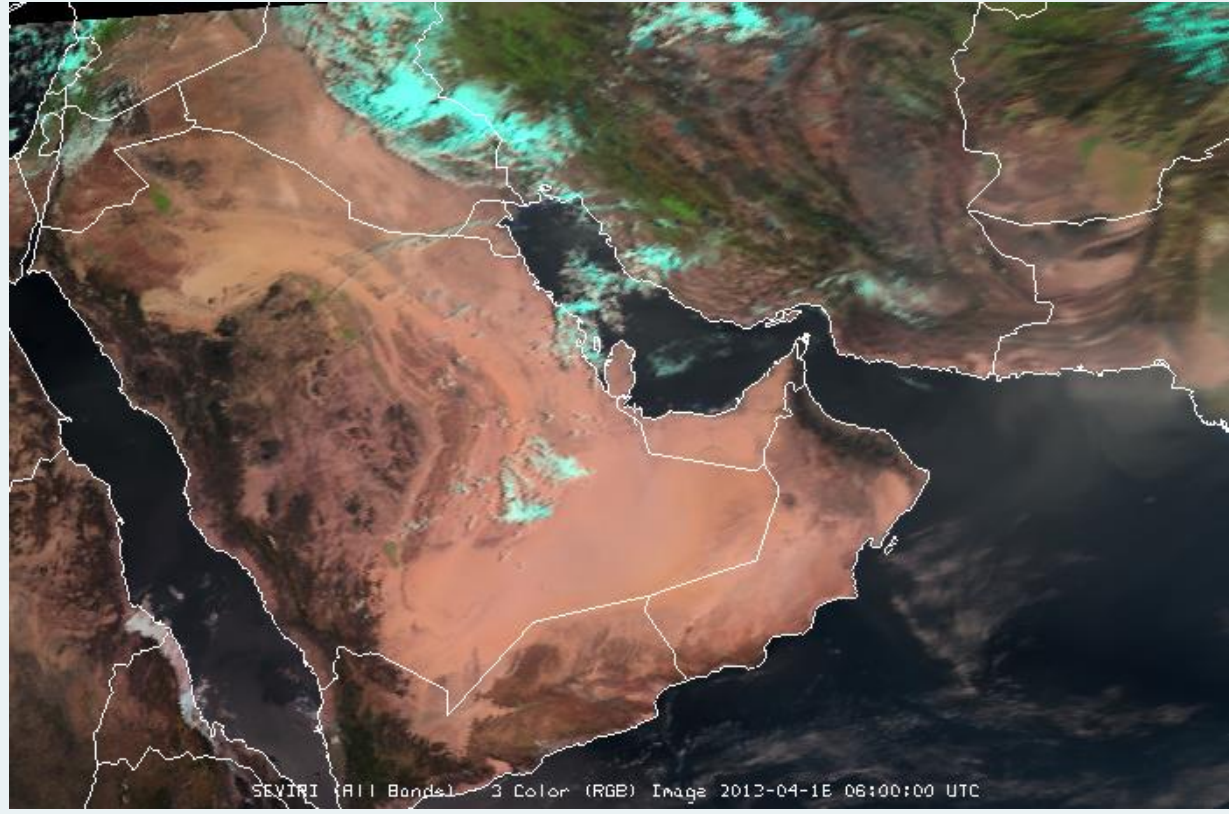
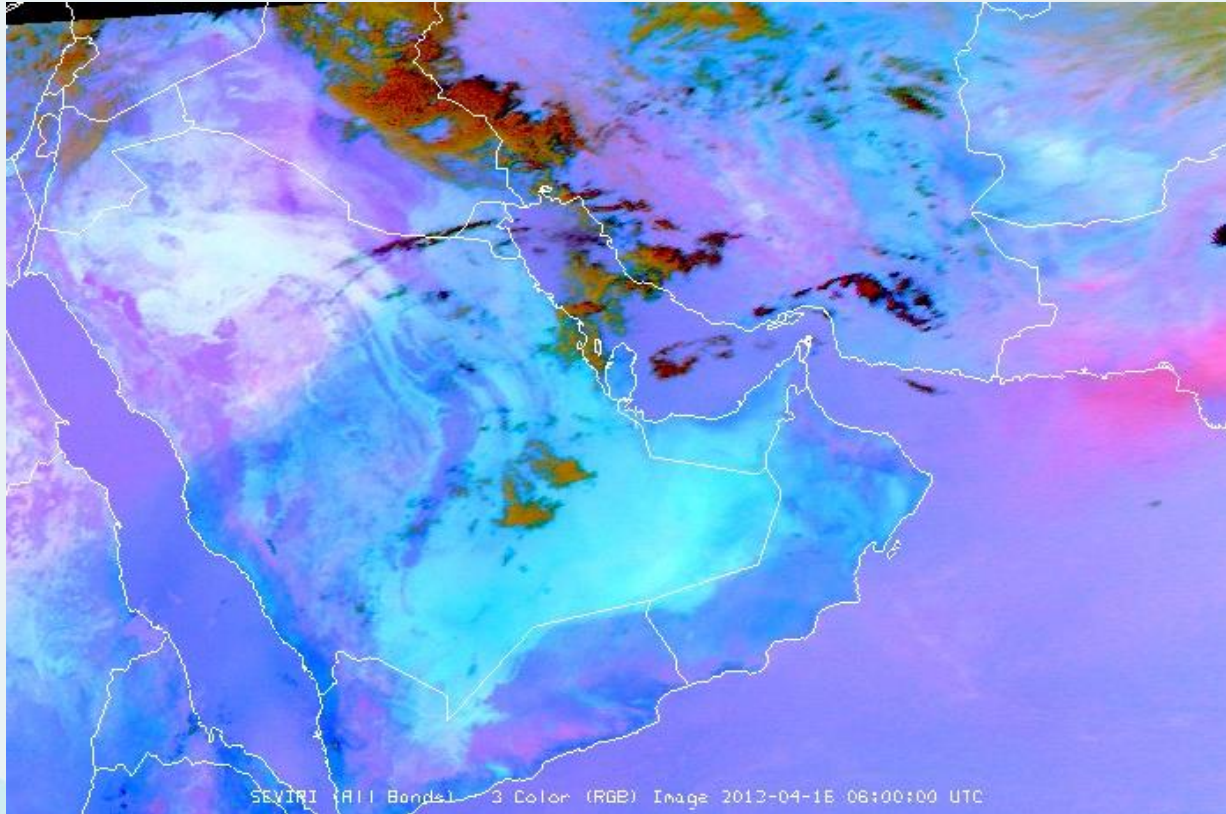


Dust RGB

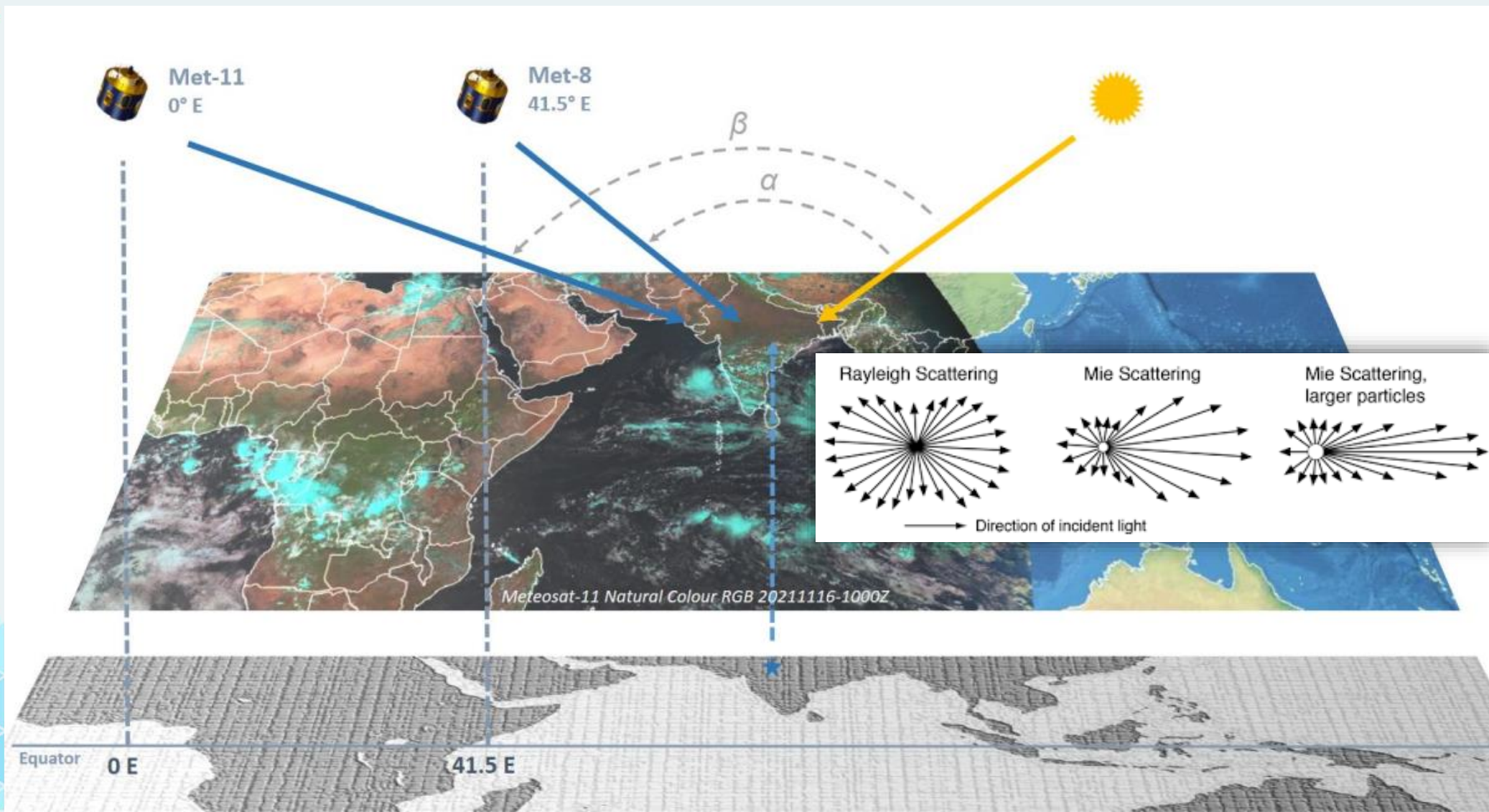
Can you identify the features 1 to 5?

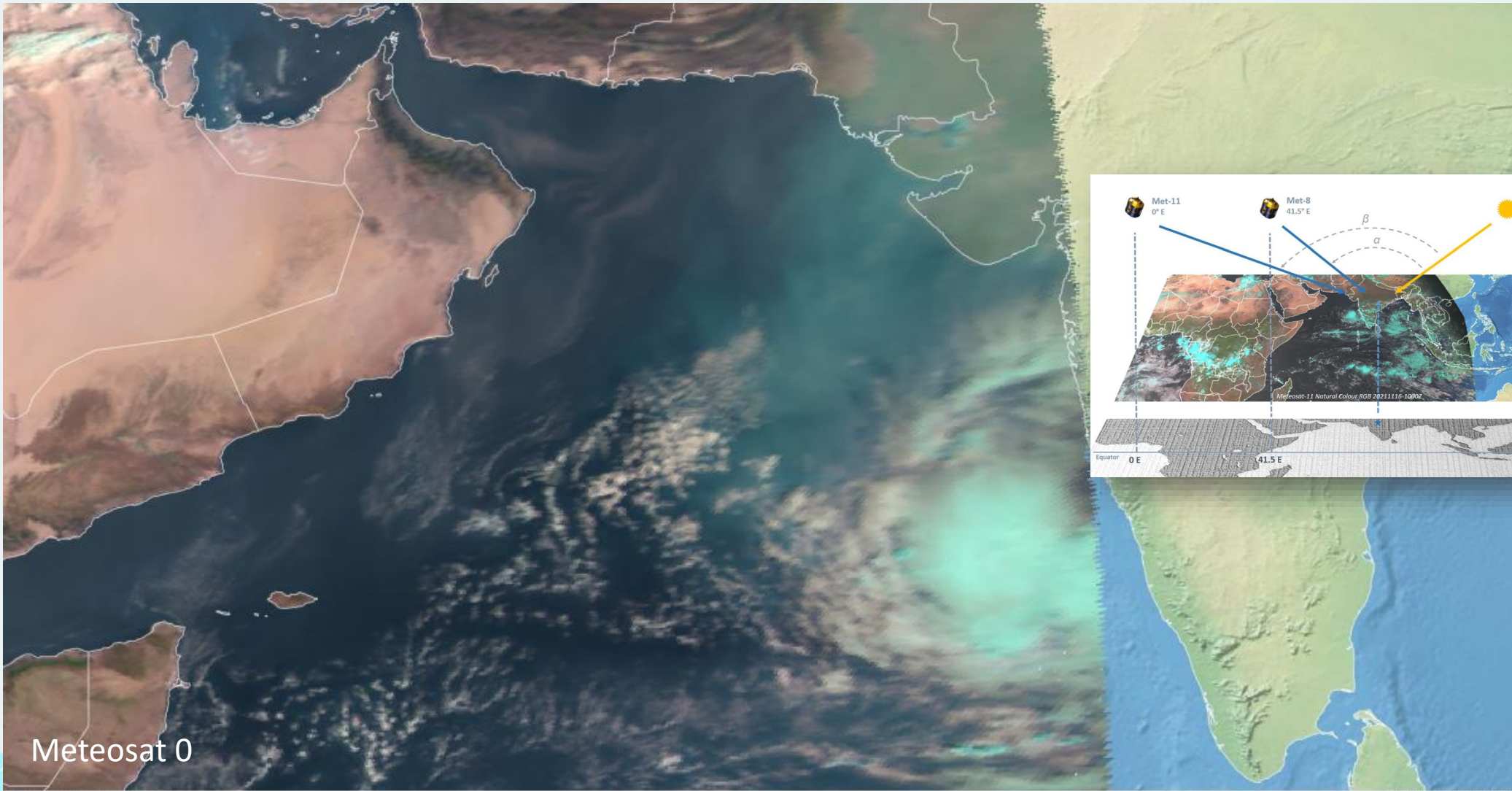


Question: Are all 5 features visible in the Dust RGB also visible in the Natural Colour RGB?



Aerosol detection – angle dependency (Solar)



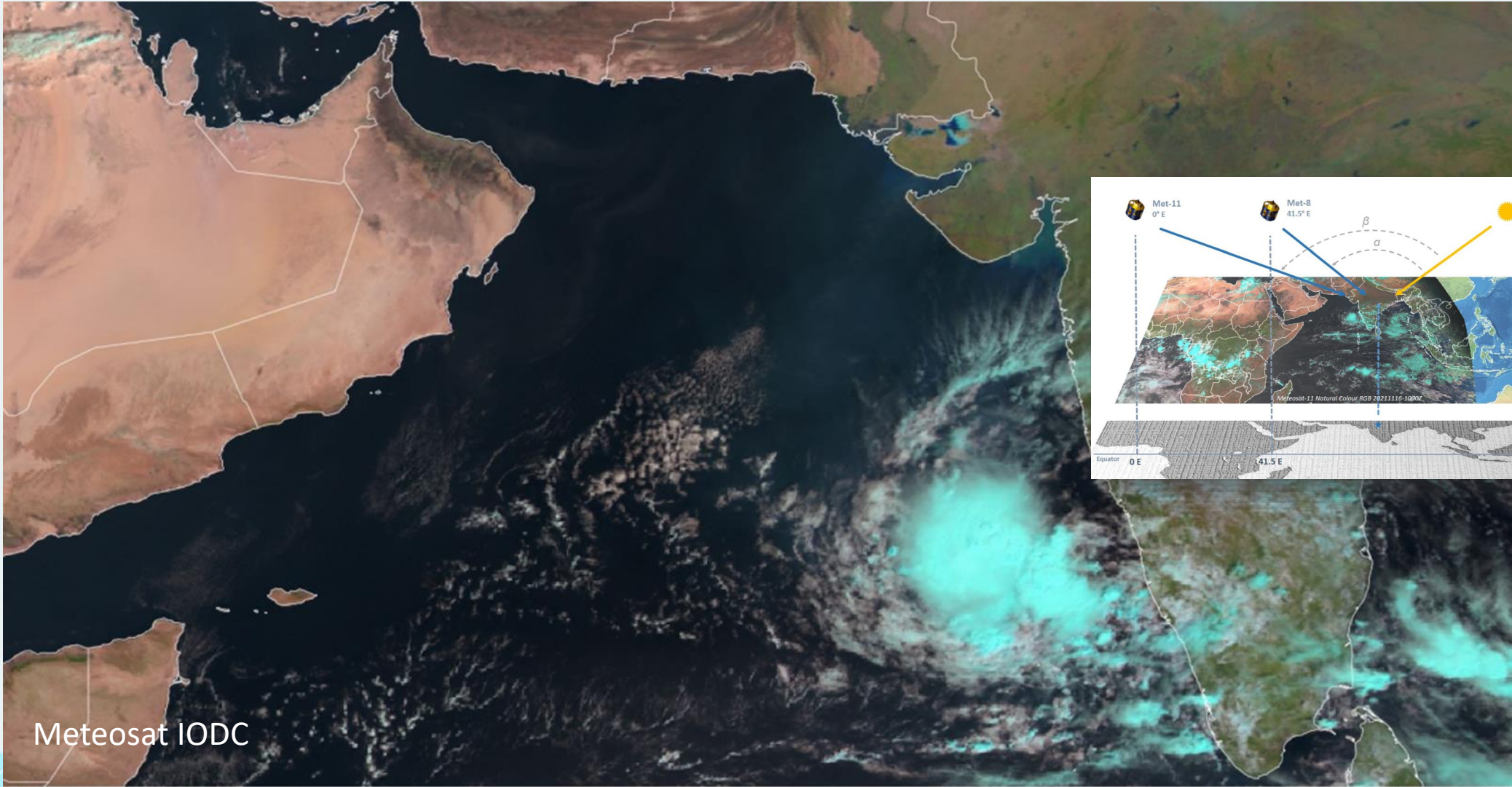


Meteosat 0

EUMETSAT

2021-11-16 05:00:00



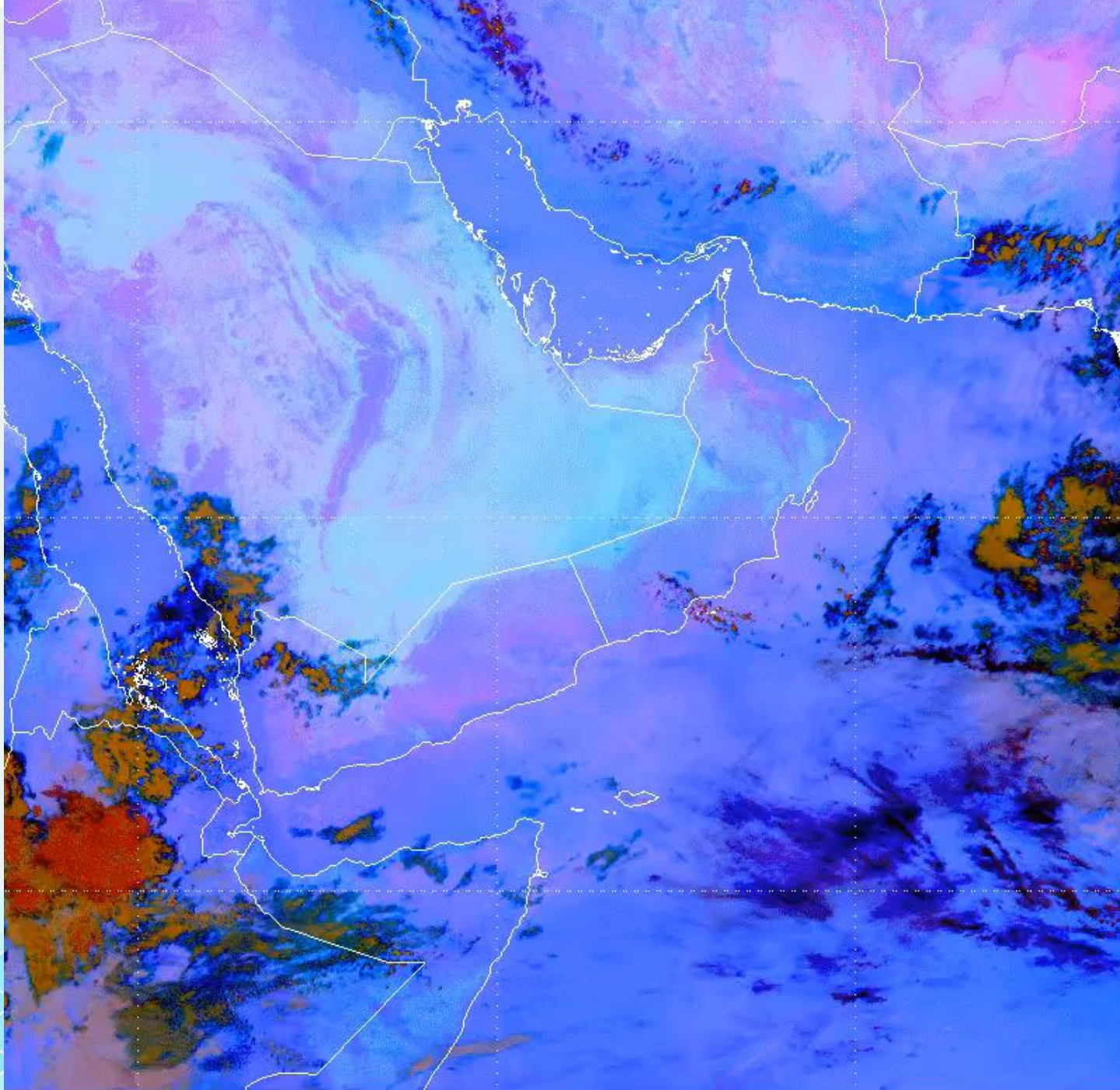


Meteosat IODC

EUMETSAT

2021-11-16 05:00:00



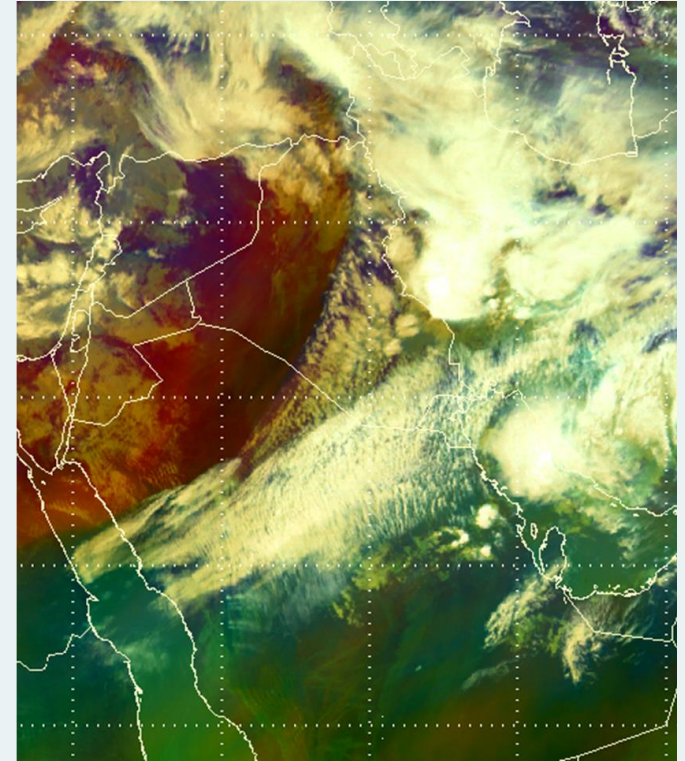
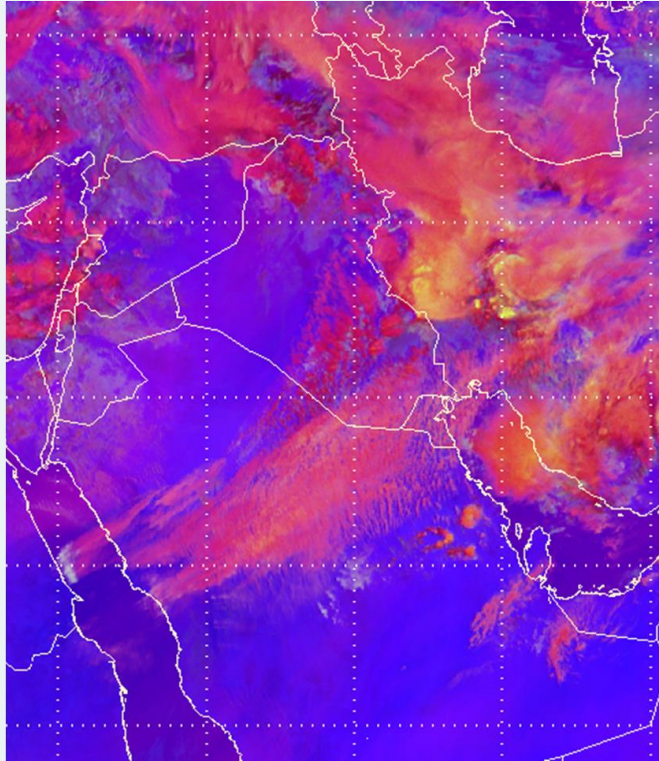
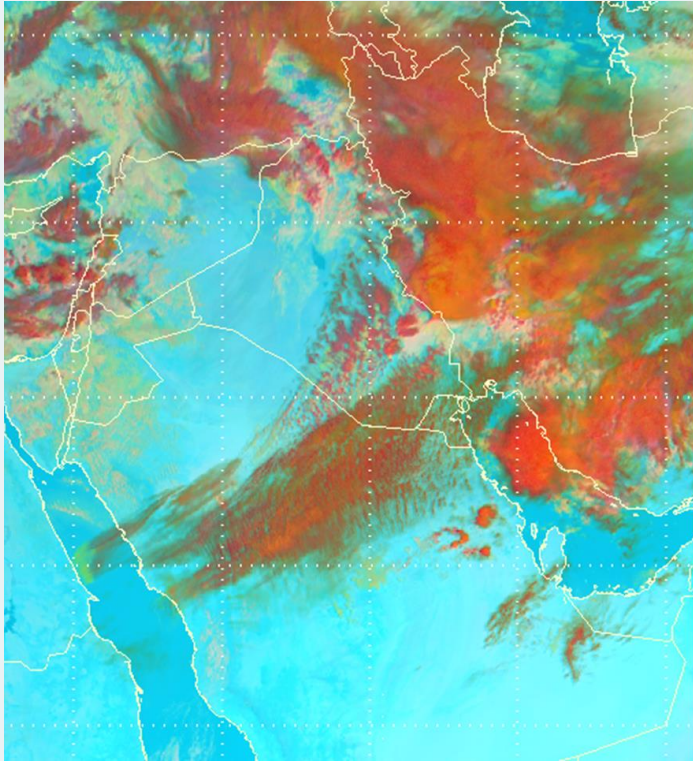


m08 DUST 2018-07-26 04:00UTC



<https://user.eumetsat.int/resources/case-studies/dense-dust-outbreak-across-arabian-peninsula>

Cloud Microphysics

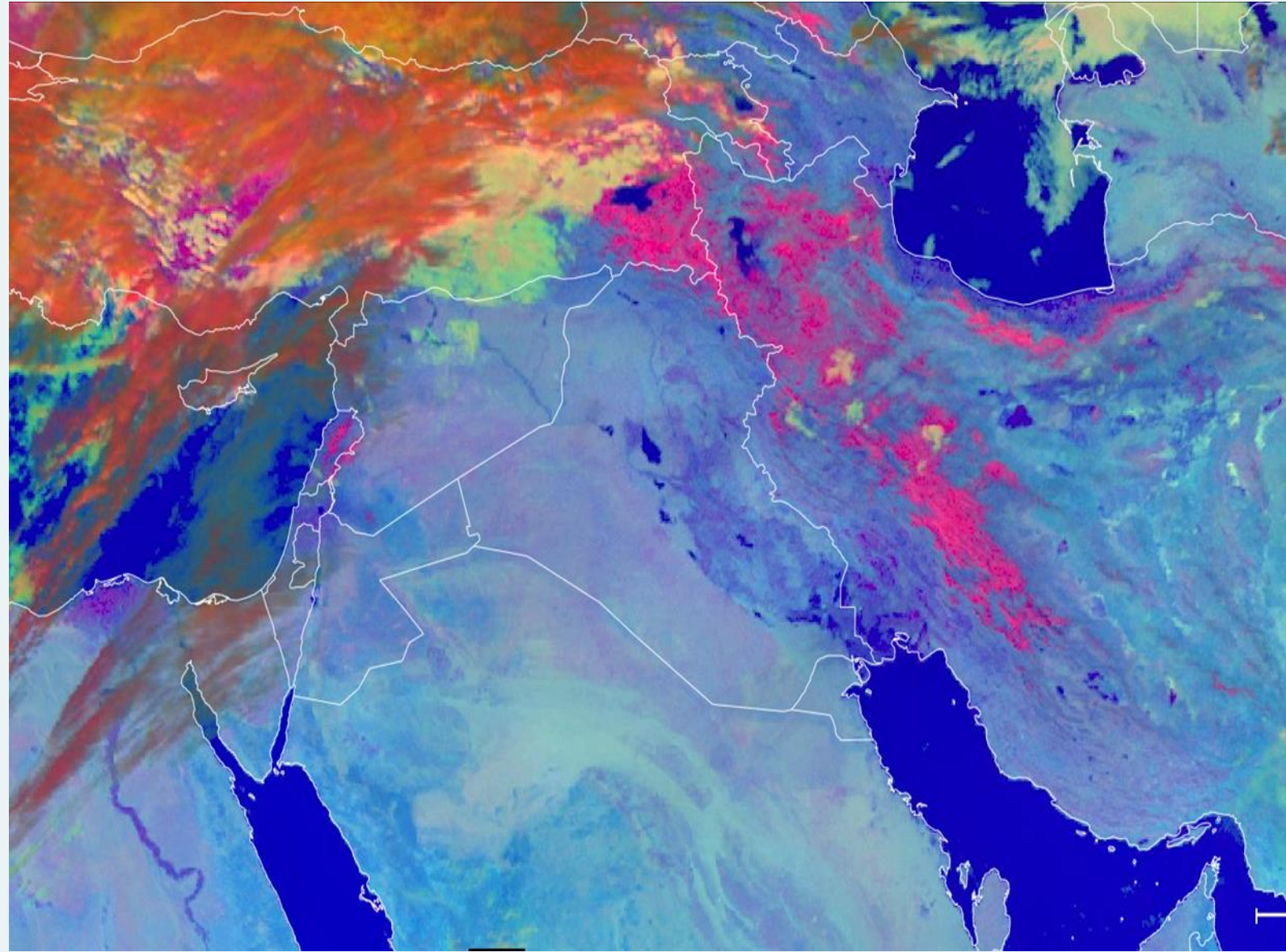


31 March 2019, 0700 UTC



Day Microphysics RGB

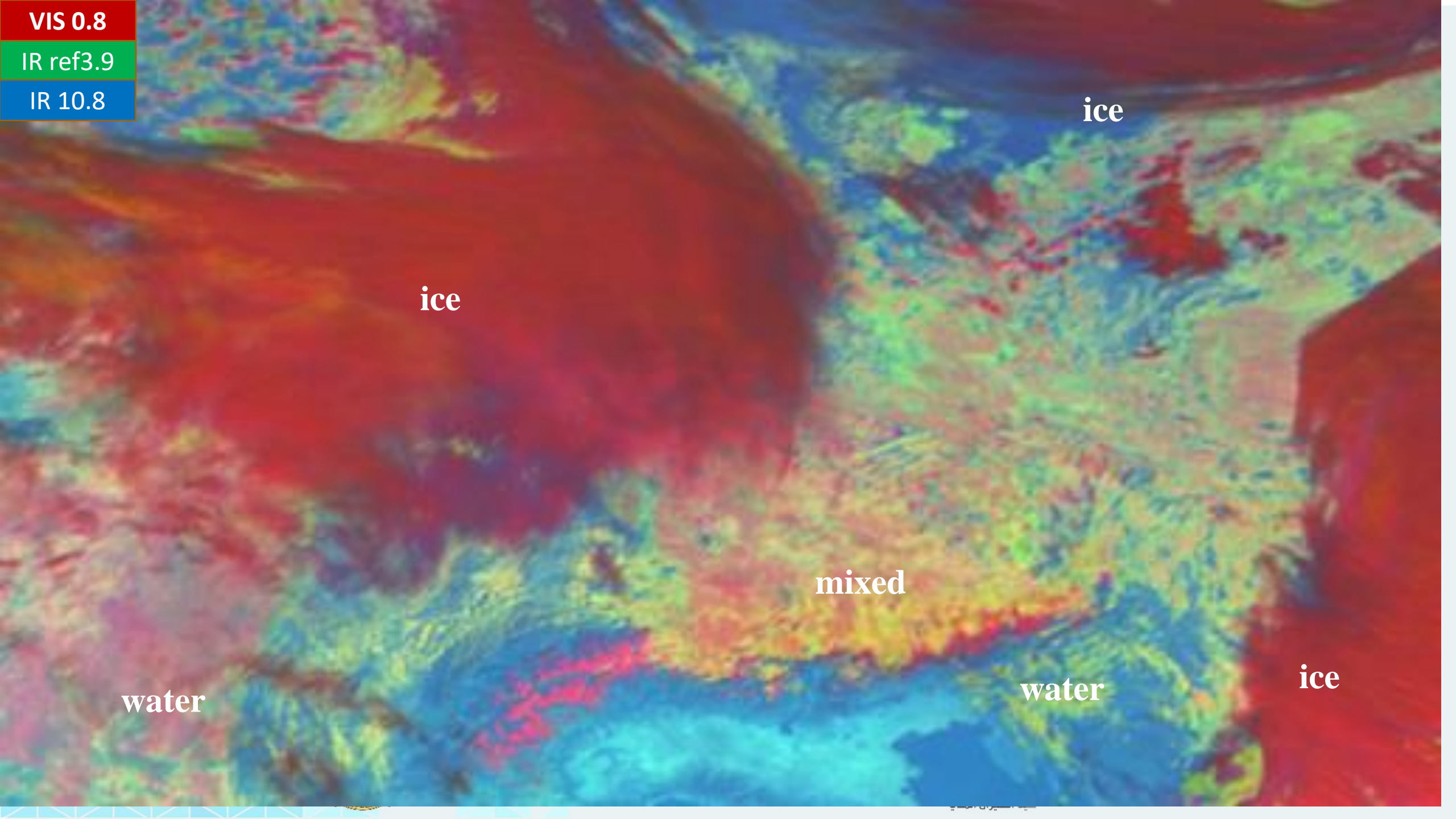
- Day-time cloud analysis,
- Convective cloud with
- strong updrafts,
- Vegetation,
- Fire (hot spot)
- Snow detection



VIS 0.8

IR ref3.9

IR 10.8



ice

ice

mixed

water

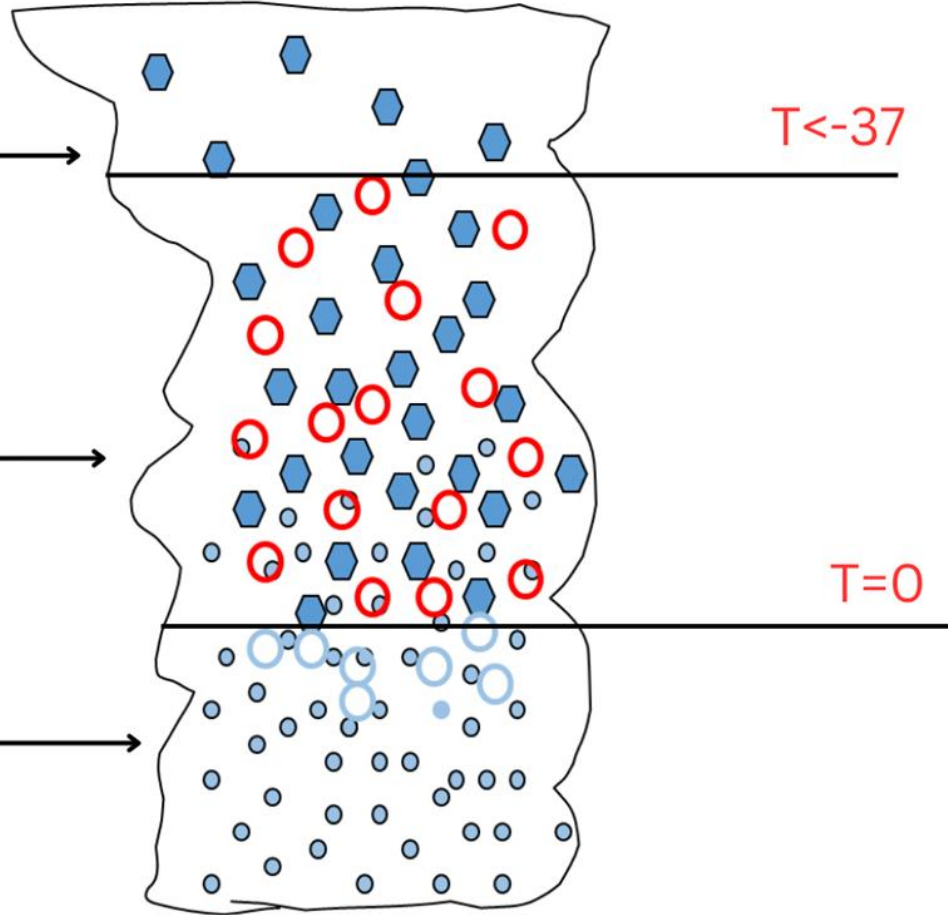
water

ice

مرحلة التبلور
الجليدي

مرحلة مختلطة

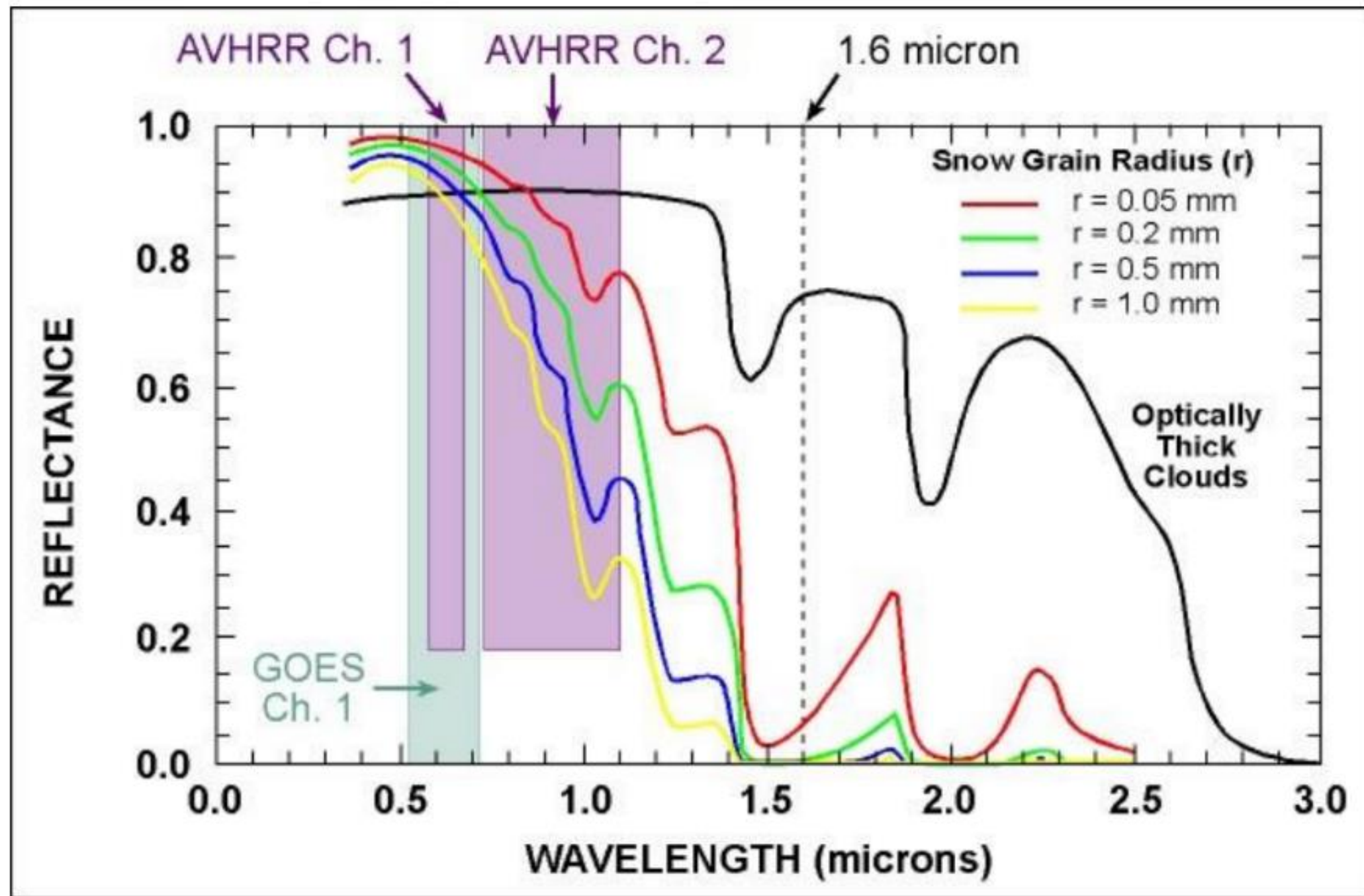
مرحلة قطيرات
الماء



- Cloud drop
- Rain drop
- Ice crystal
- Ice precipitation

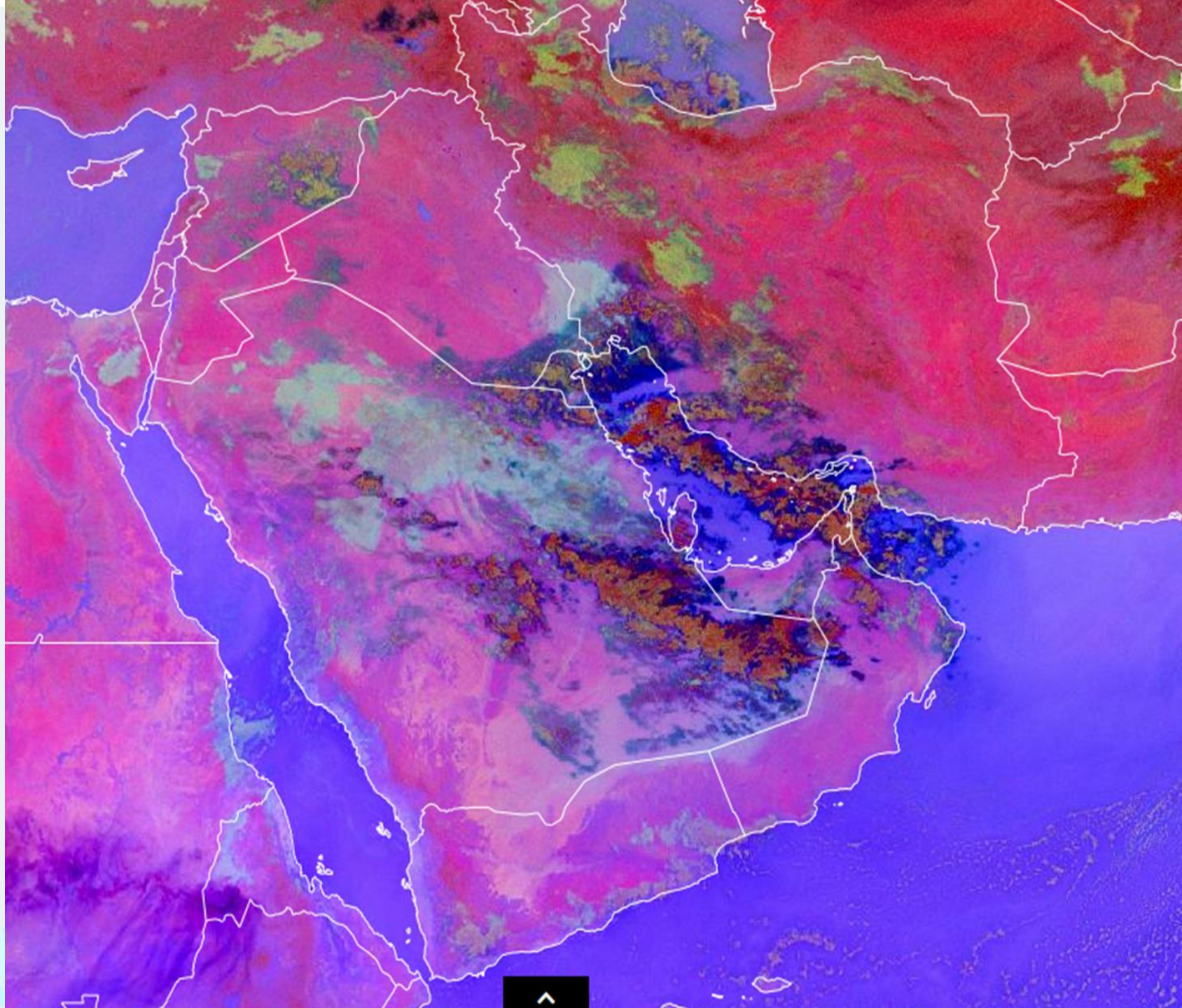
أطوار السحابة الركامية

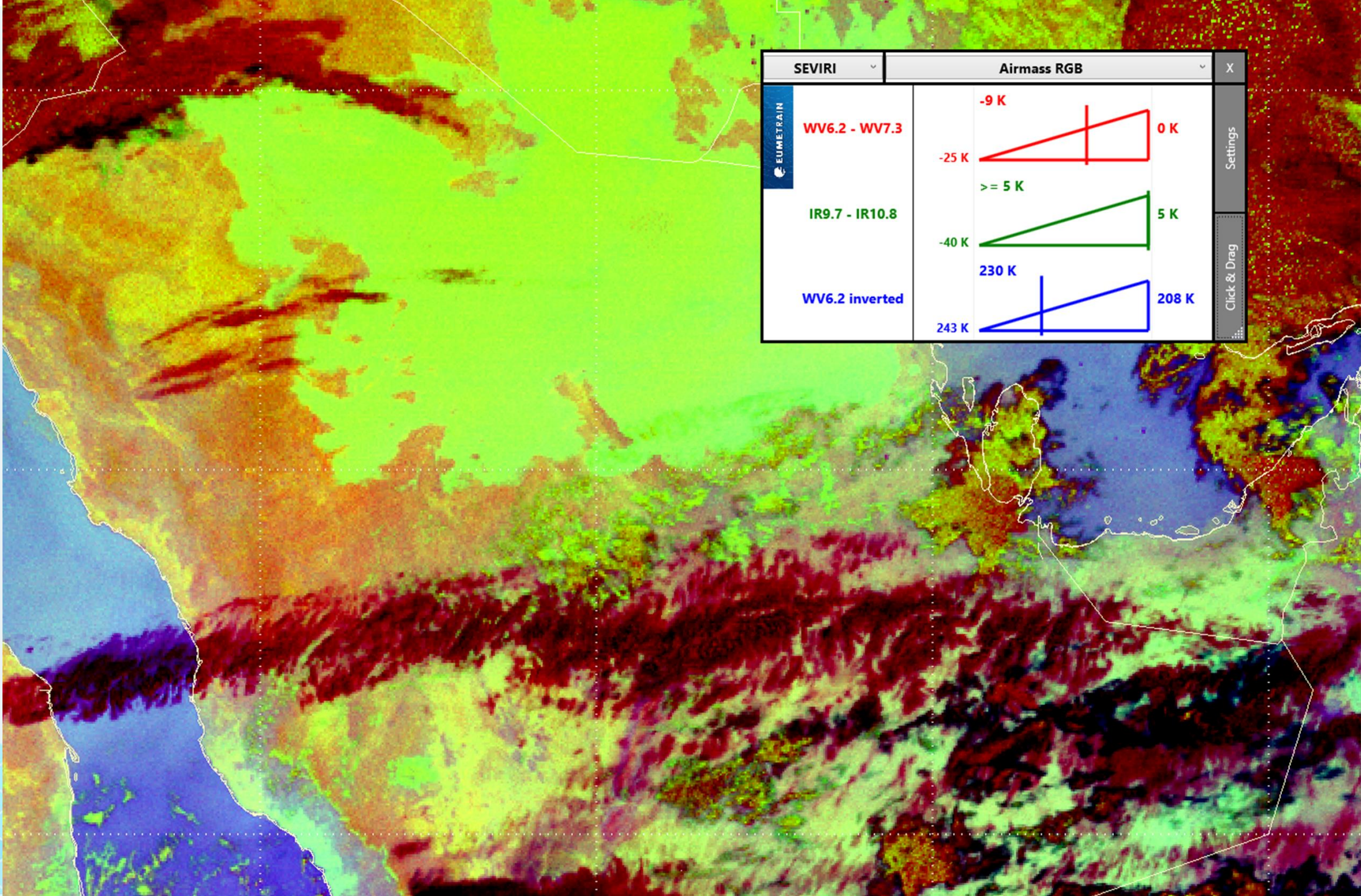








Night fog RGB

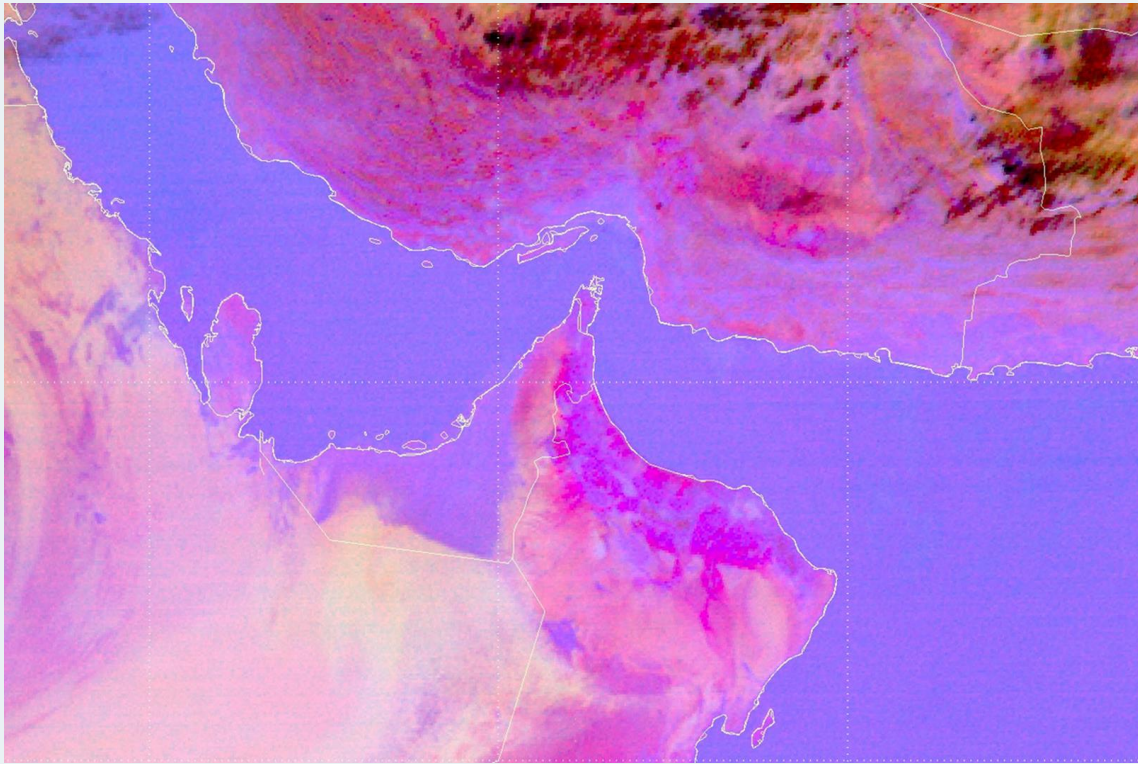
night-time cloud
analysis,
Fog/low cloud
distinction for
night-time



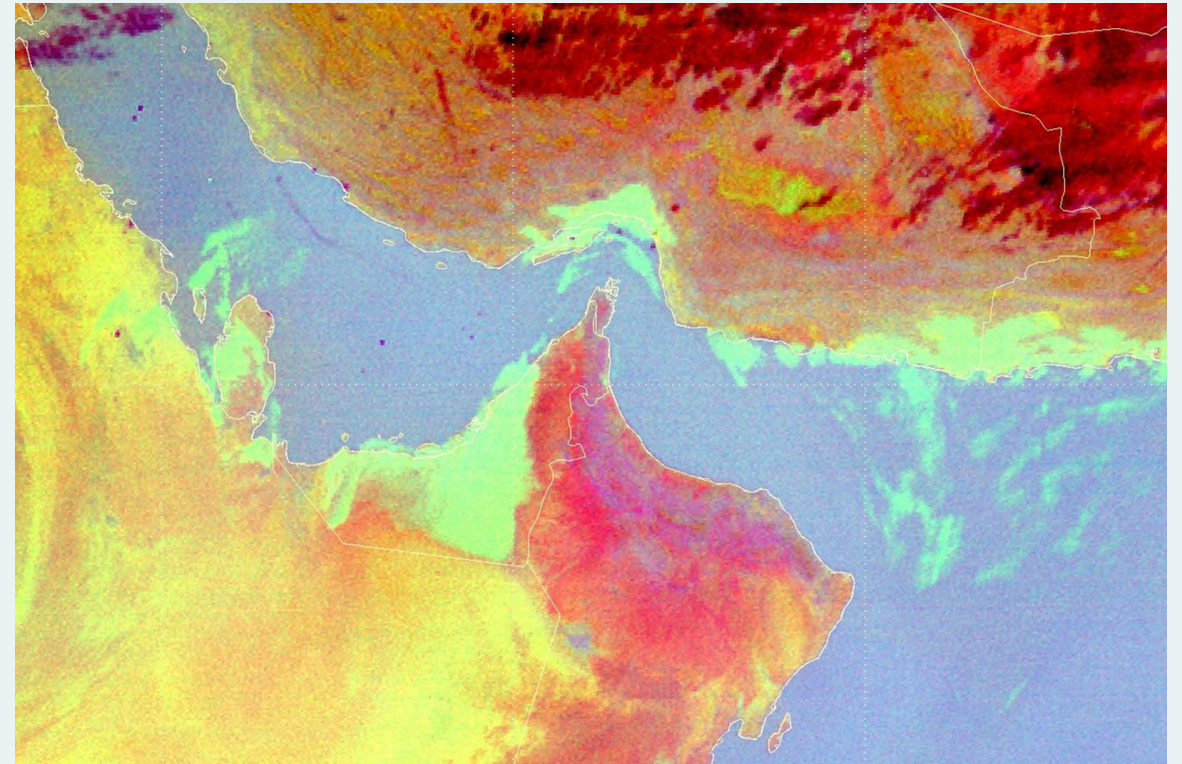


SEVIRI	Airmass RGB	X
 WV6.2 - WV7.3		Settings
IR9.7 - IR10.8		Click & Drag
WV6.2 inverted		

Where fog is more distinct

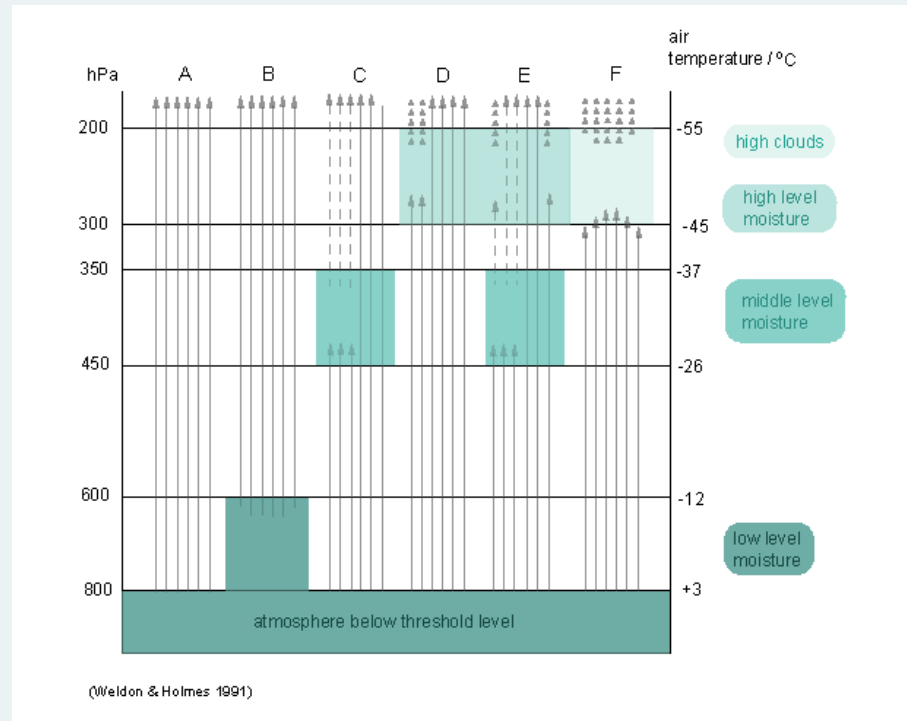
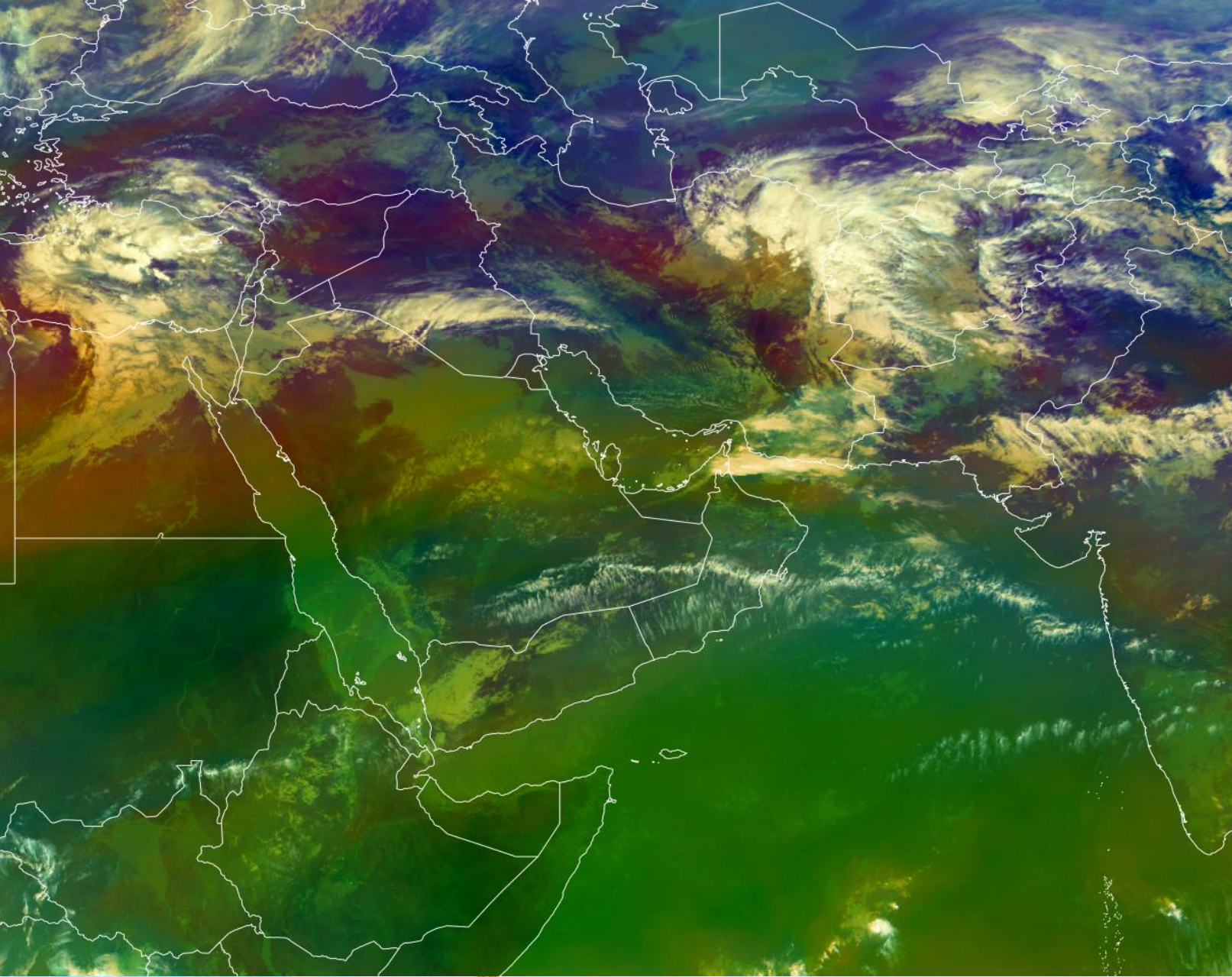


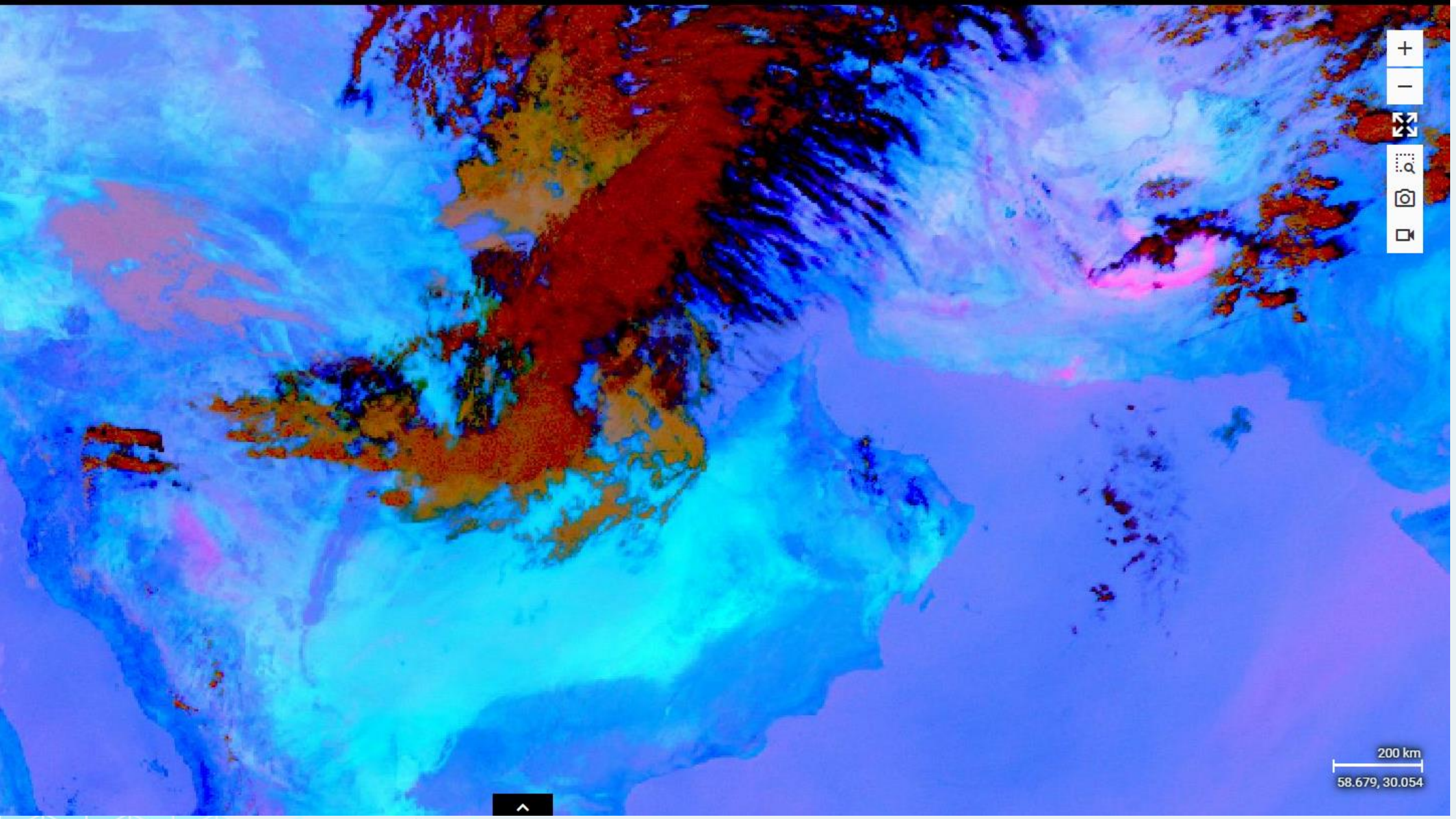
DUST

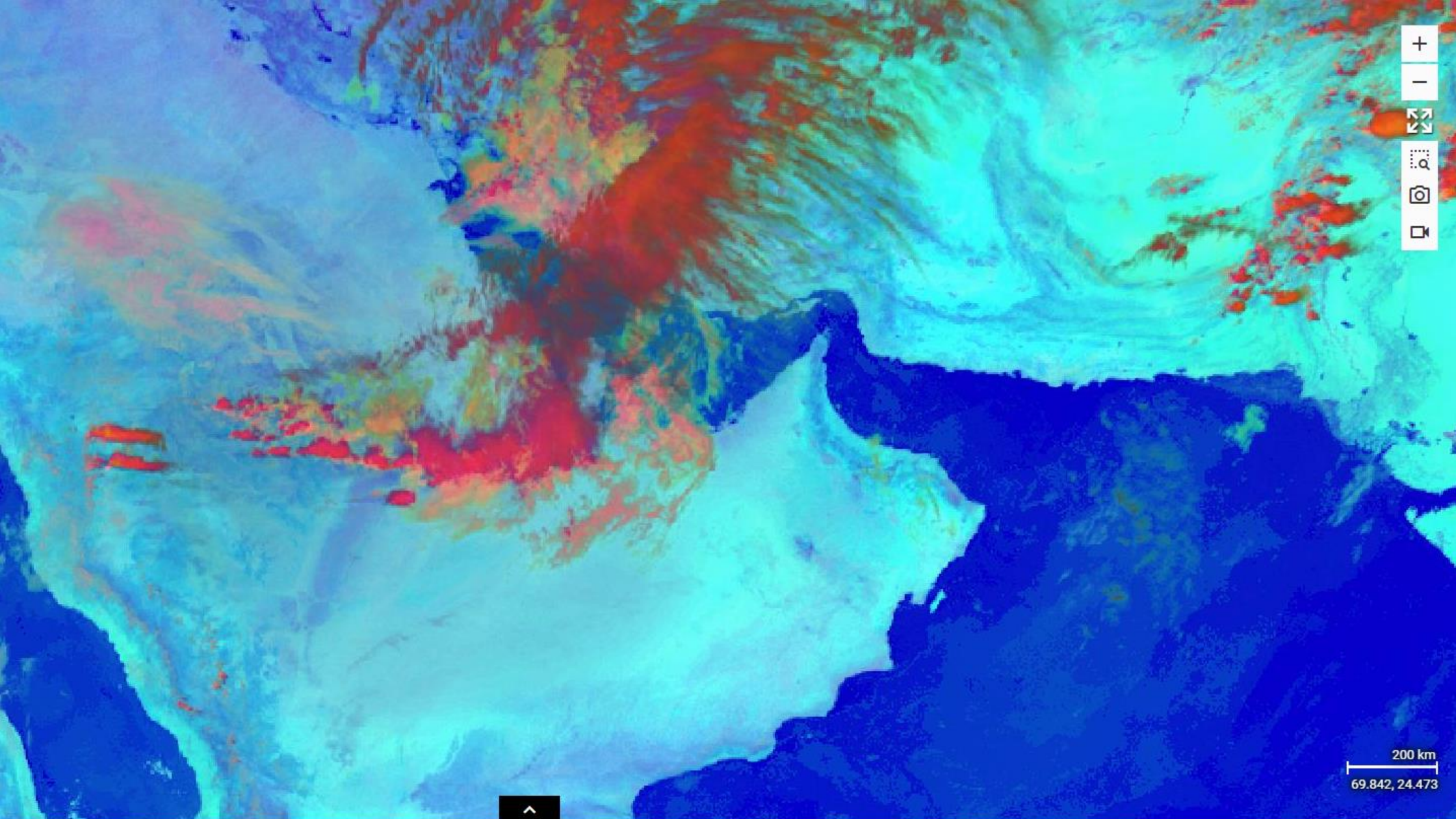


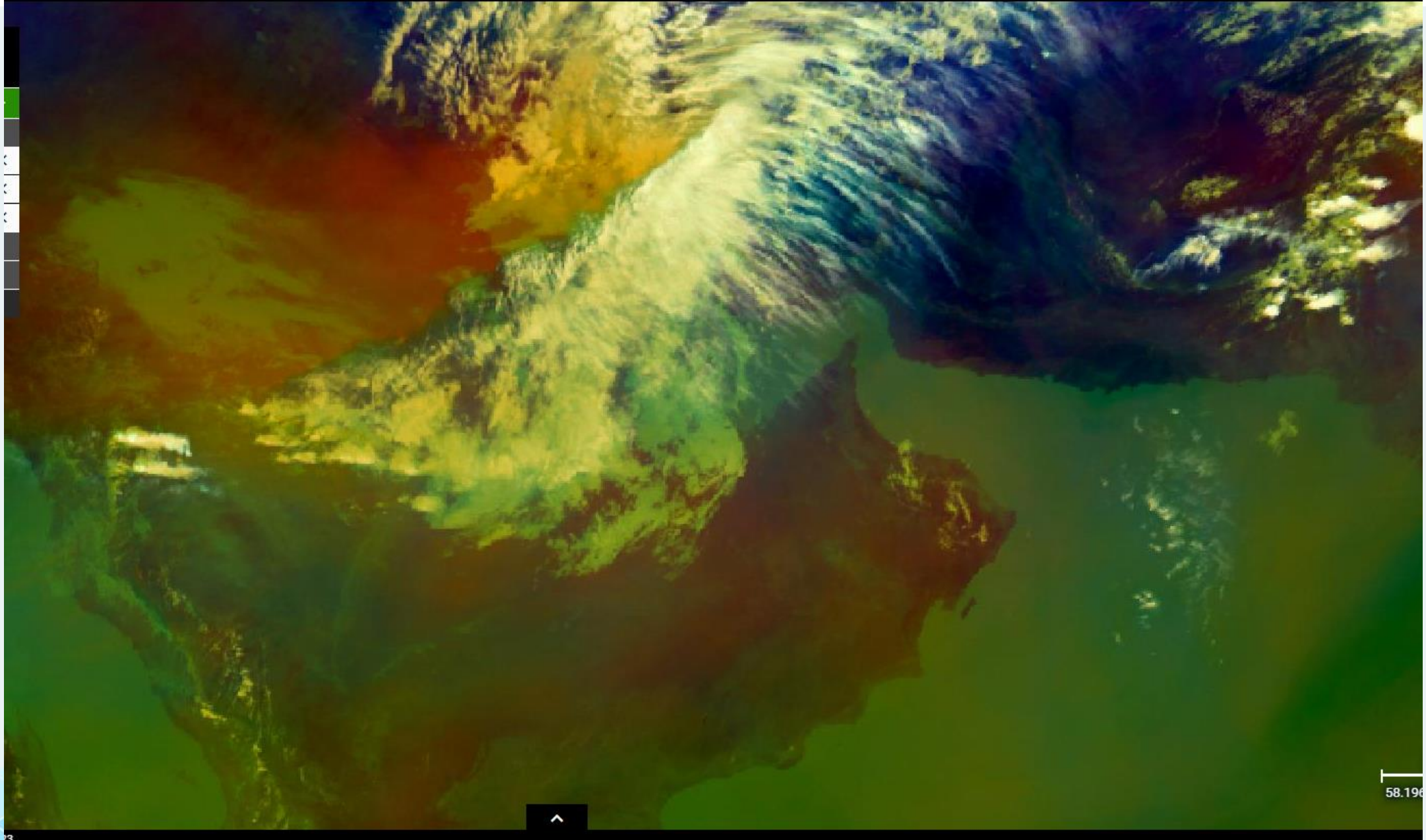
Night microphysics













Thank you

Kindly scan this "QR code"
to evaluate this lectutre

