Using McIDAS-V to process data of EUMETSAT satellites for training and reach-out
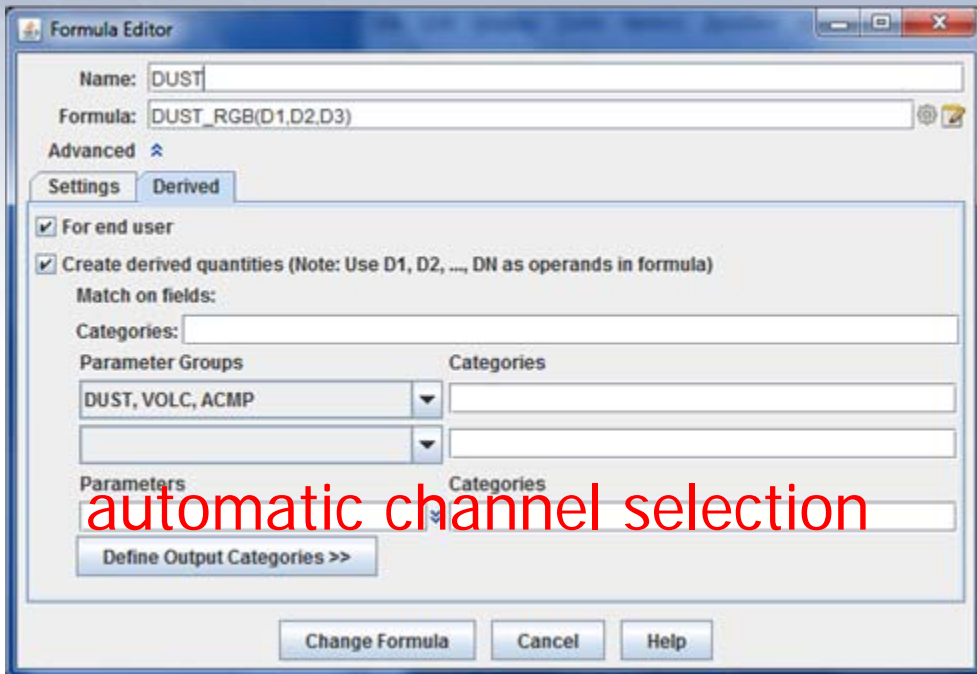
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Plug-in for many MSG/SEVIRI RGB schemes

automatic channel selection

Dust
units: K
#R: 10-09   -4K..2K
#G: 09-07   0K..15K gamma=2.5
#B: 09   261K..289K
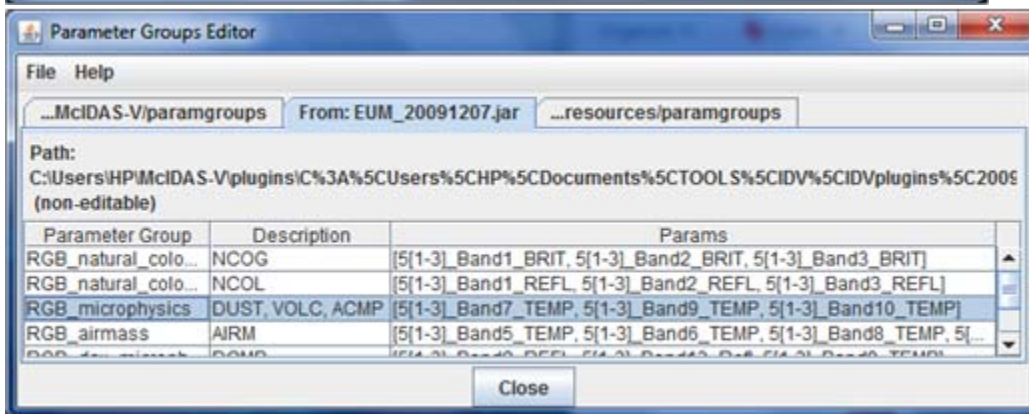
```
def DUST_RGB(ch07,ch09,ch10):
 img1 = 255*max_data(min_data((ch10-ch09+4)/6,1),0)
 img2 = 255*max_data(min_data((ch09-ch07)/15,1),0)**(1/2.5)
 img3 = 255*max_data(min_data((ch10-261)/28,1),0)
 return combineRGB(img1,img2,img3)
```
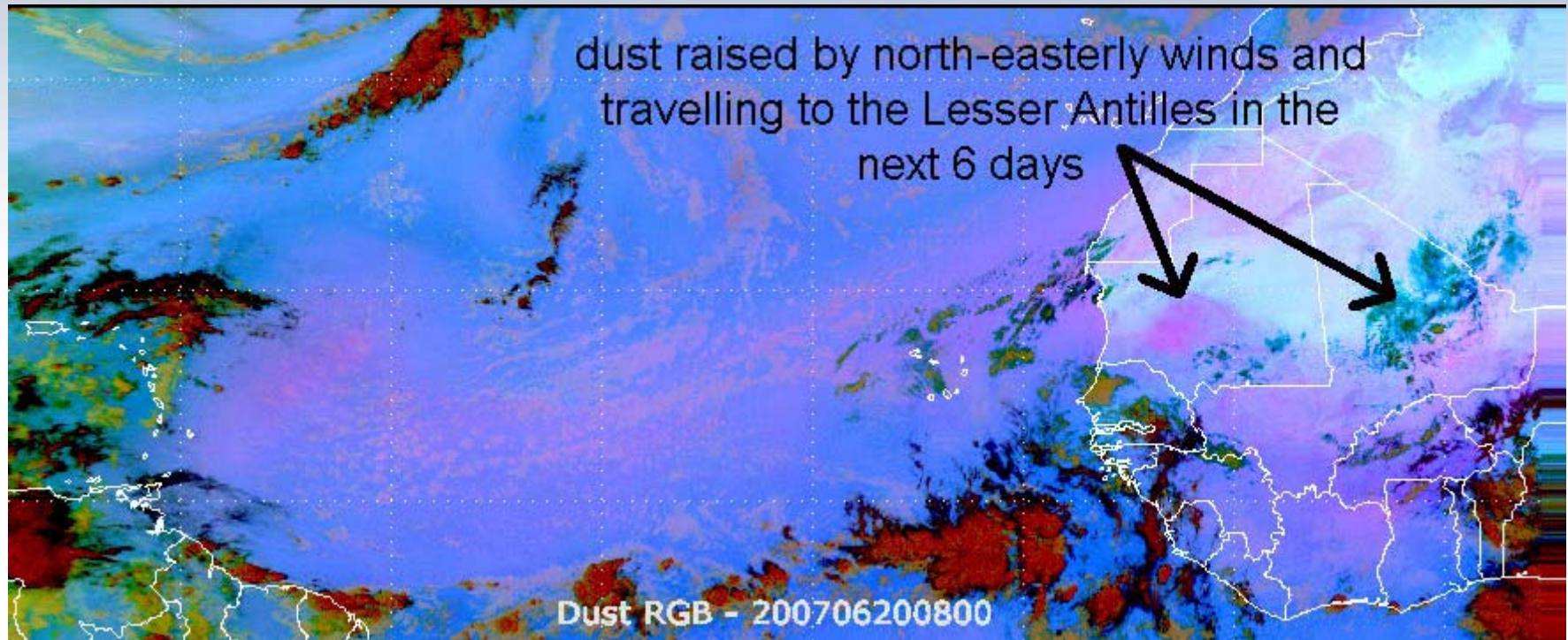
2010 McIDAS Users' Group Meeting
Madison Wisc., 25-28 October 2010

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Dust RGB showing Saharan dust transport

dust raised by north-easterly winds and travelling to the Lesser Antilles in the next 6 days

Dust RGB – 200706200800

dust in pink

Remark:
- Only image sequences produced by McIDAS-V – movies always done with freeware tools
- Cannot be done conveniently in McIDAS-V – map bundle inherits width/height from current display window (and not from bundle) → IDV
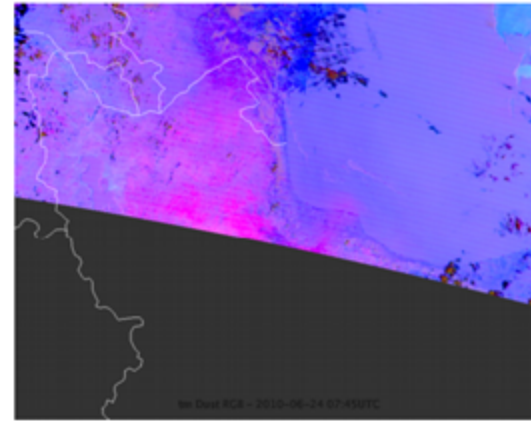
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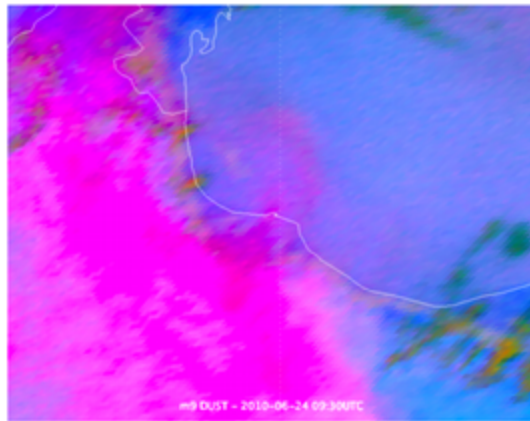
Dust RGB applied to MODIS channels

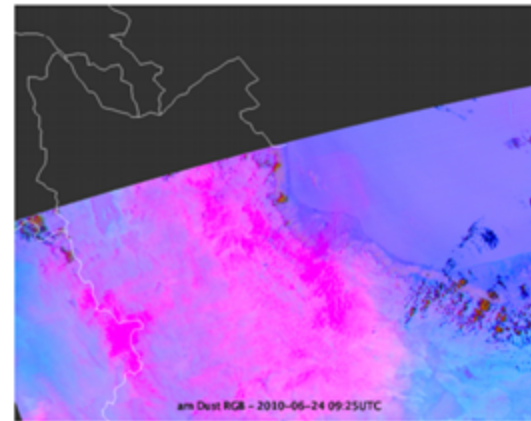Dust-RGB comparison SEVIRI-MODIS (both using SEVIRI tuning)
24 June 2010
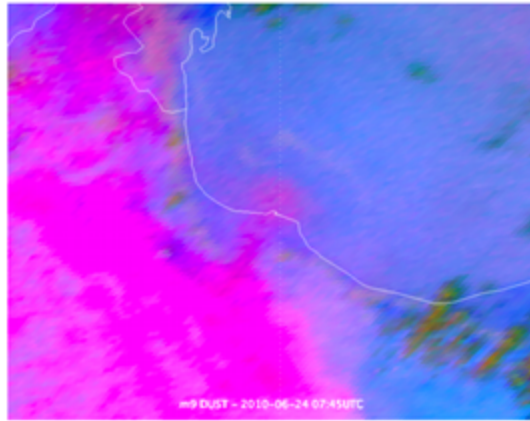
SEVIRI 07:45UTC — MODIS 07:45UTC
SEVIRI 09:30UTC — MODIS 09:30UTC

dust in pink

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# Mining many features – semi-transparent split-window difference over Airmass RGB

Input through

- local ADDE server (LOCAL-DATA):
  - MSG HRIT FD
 - MSG HRIT HRV
- remote ADDE servers

Airmass RGB
- 3D-cloud map
- Bluish hues map polar air
- Greenish hues map sub/tropical air
- Reddish hues map dry upper troposphere (stratospheric intrusions, PV maxima)

Split-window difference
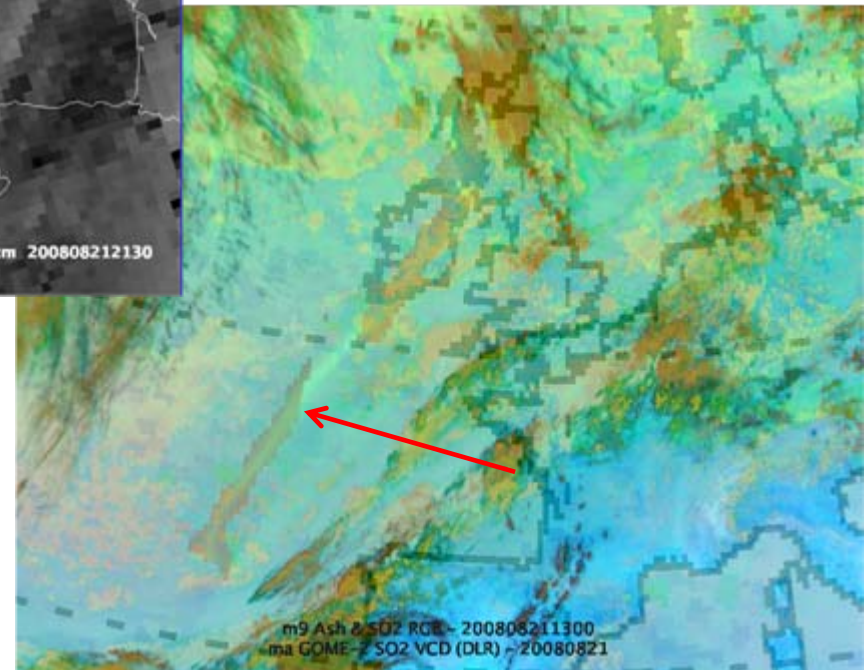- Ash from Eyjafjalla eruption as tracer of a deformation zone

AIRM - 2010-05-07 00:00UTC
Split-window ash - 2010-05-07 00:00UTC

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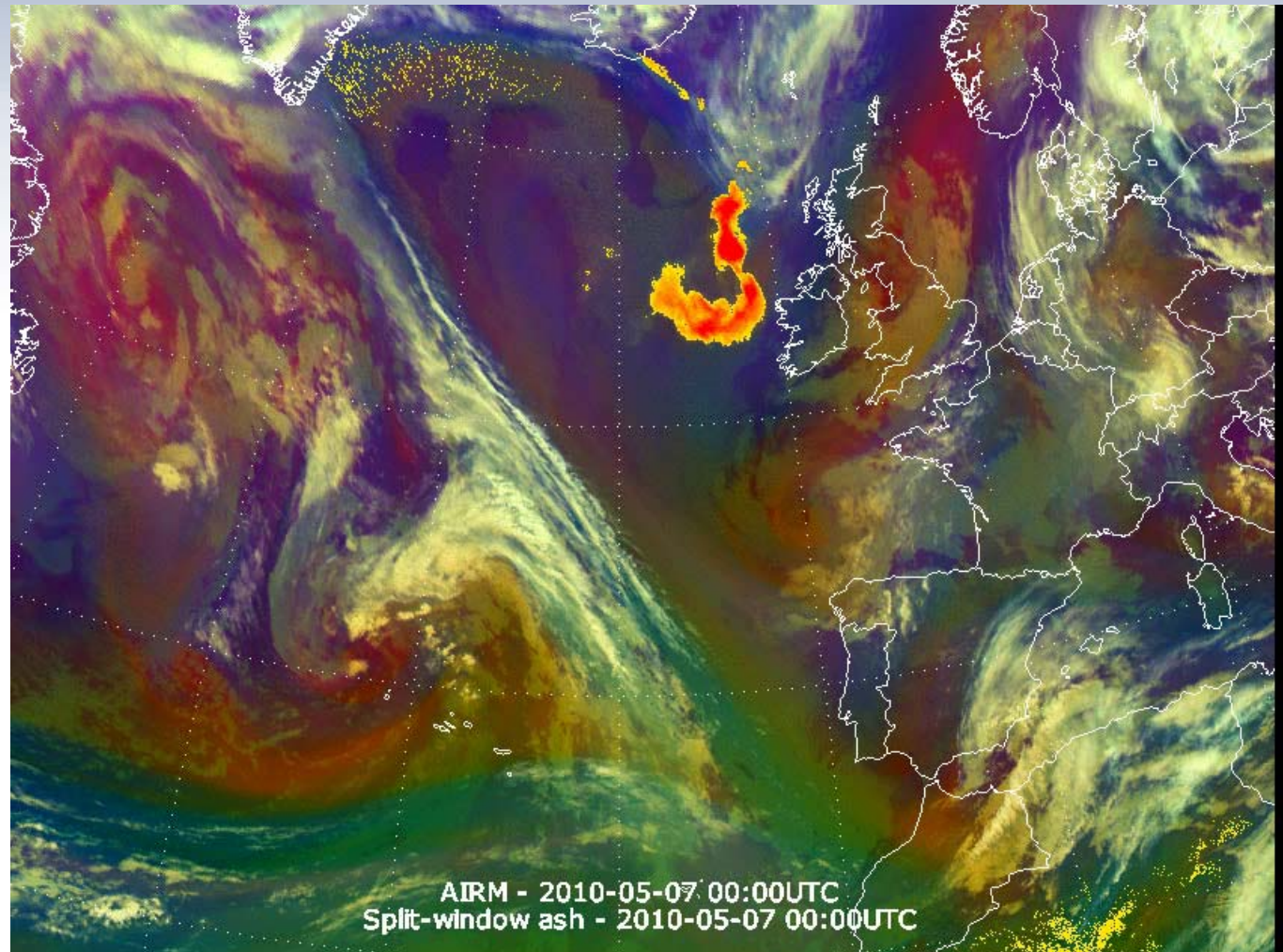
Match-up of volcanic ash & SO$_2$ RGB and Metop-A instruments
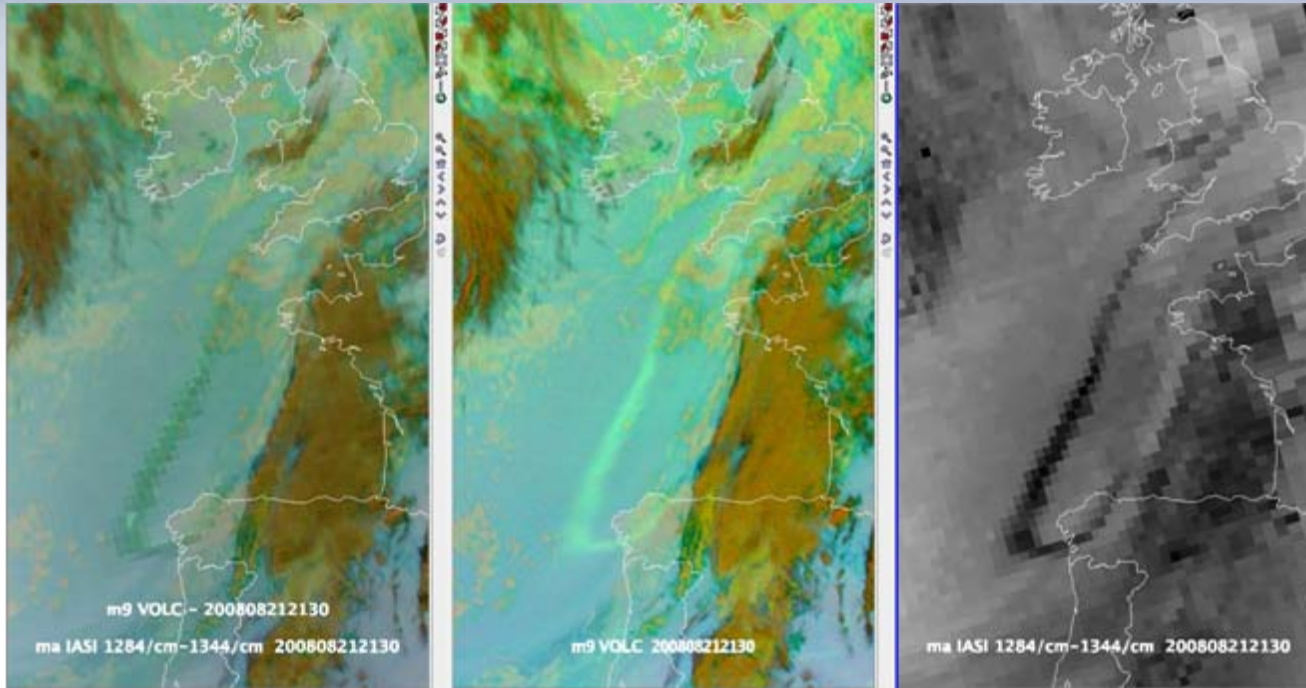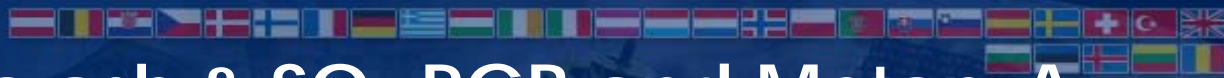
GOME-2

- Input of SO$_2$ maps in equirectangular latlon projection ("World")

IASI

- Input and display with HYDRA functionalities
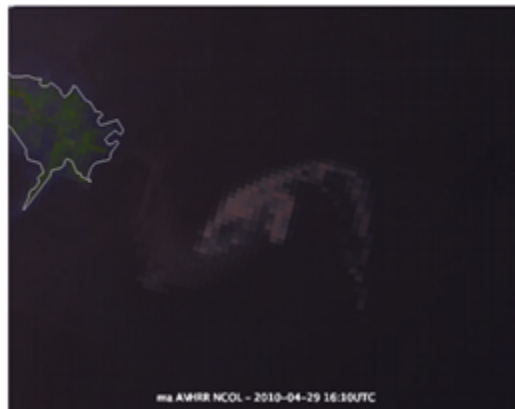- B/W image of a channel difference sensitive to SO$_2$

SO2 in greenish hues on RGBs

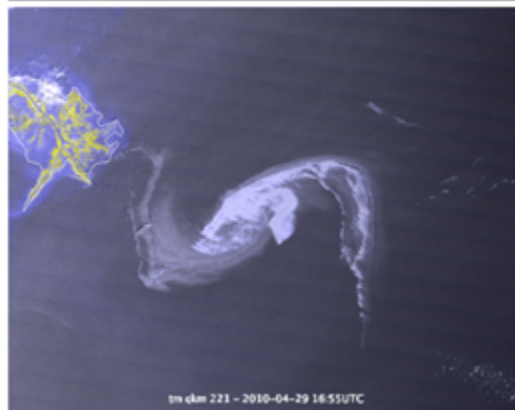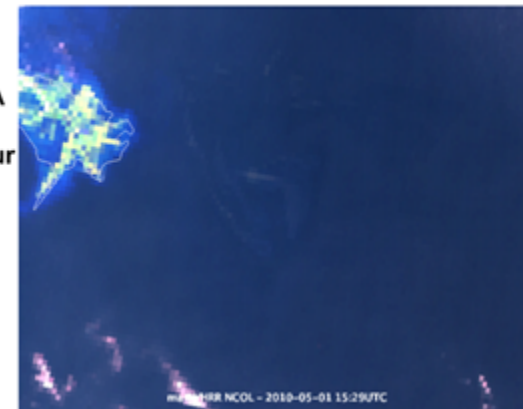**EUMETSAT**

Sensitivity comparison AVHRR/MODIS

Input through local ADDE servers (LOCAL-DATA):
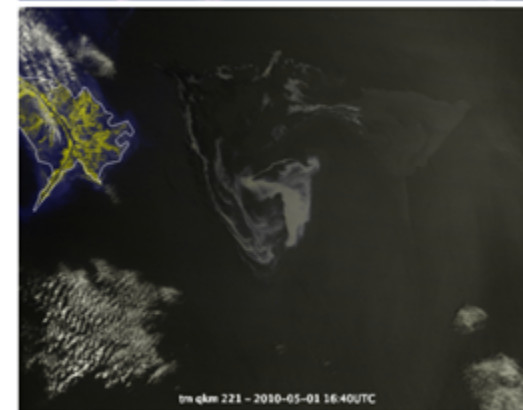
- Metop AVHRR 1b
- MODIS MOD 02 ...

bp Oil Spill, Gulf of Mexico
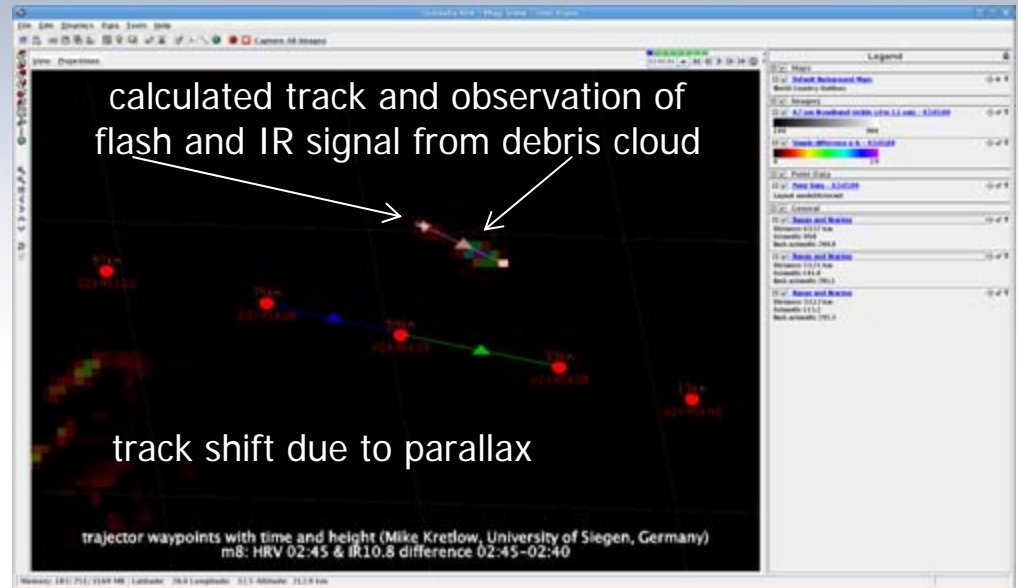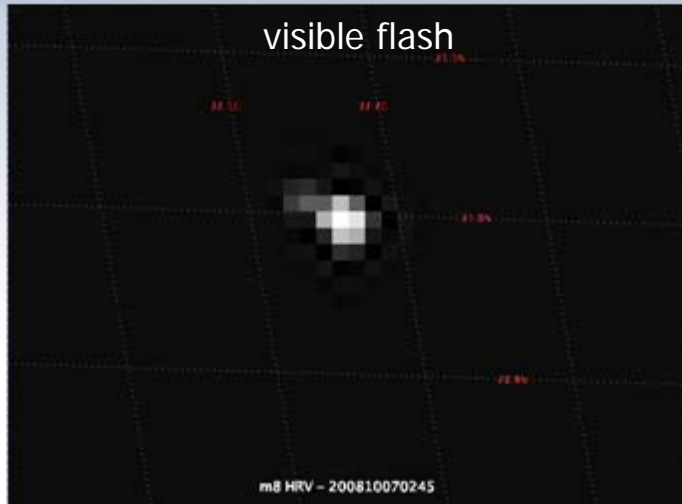comparison: 29 April – 1st May 2010 / AVHRR – MODIS

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Exotic event – SEVIRI documents asteroid impact

visible flash

m8 HRV – 200810070245

calculated track and observation of flash and IR signal from debris cloud

track shift due to parallax

trajector waypoints with time and height (Mike Kretlow, University of Siegen, Germany)
m8: HRV 02:45 & IR10.8 difference 02:45–02:40

m8 HRV – 200810070245
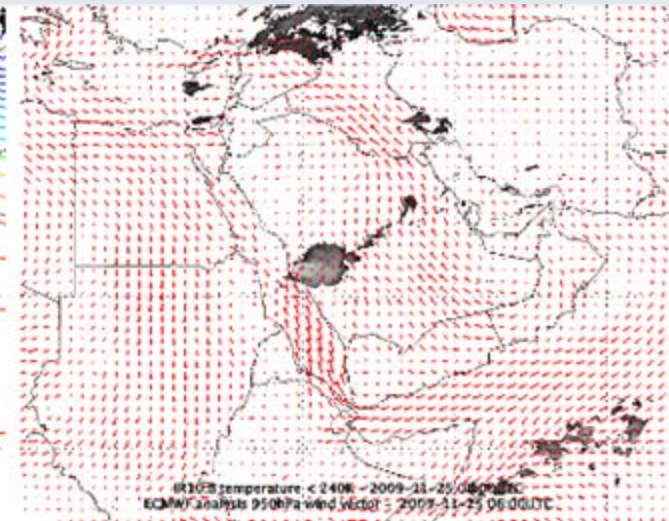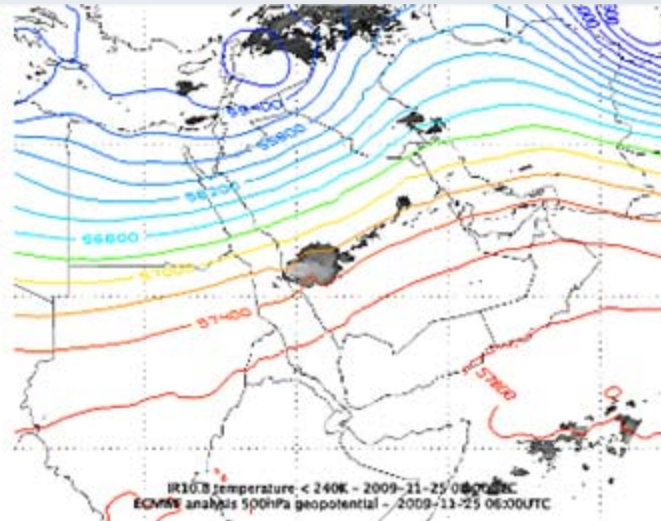m8 IR10.8 temperature – 200810070245

- Initial flash and debris cloud after sunrise in red
- Debris cloud before sunrise in black to cyan

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NWP fields and cold cloud tops – Hajj storm
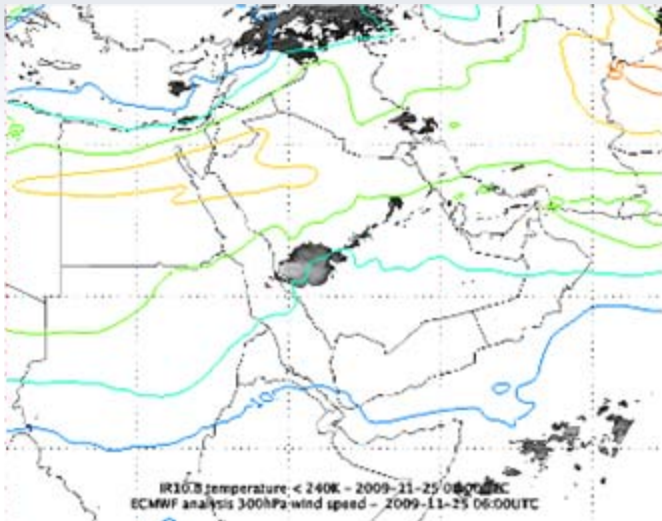
no particular forcing middle/upper troposphere   low-level jet over Red Sea

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Image averaging – detecting persistent cloud

HRV average 2007: 0609-0915 @ 0745UTC
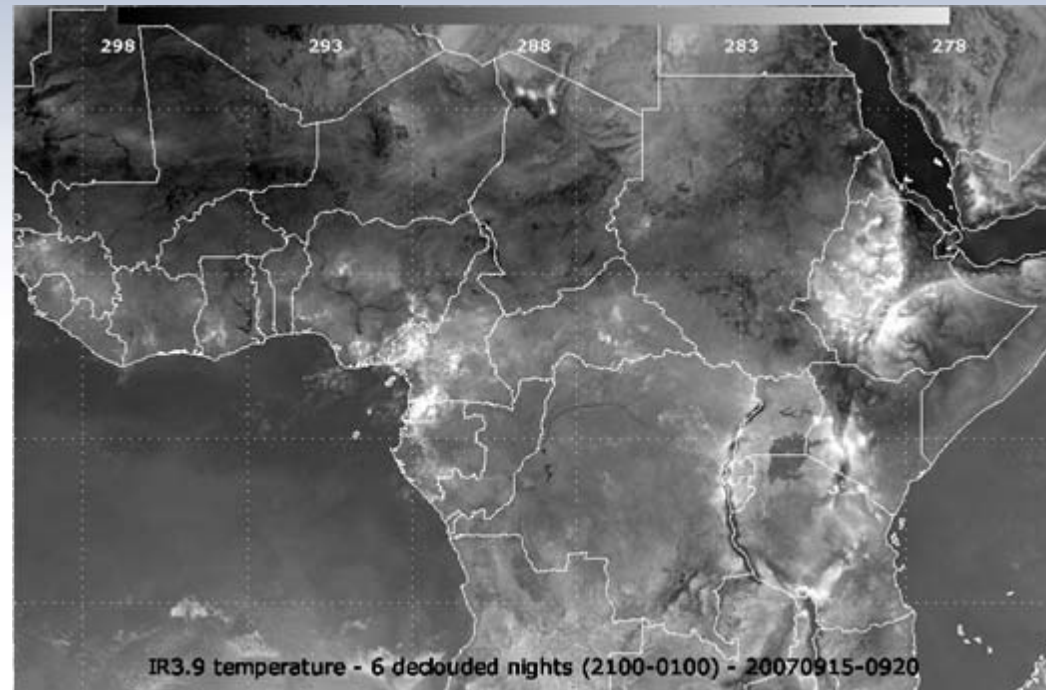

Natural Colours RGB - 200709170745

- 100-day average of local-noon images reveals a persistent low cloud deck along the southern coast of the Arabian Peninsula during the monsoon season over the Arabian Sea

- Phenomenon is known as the welcome Al Khareef season in the seaport of Salalah

- … and land turns green

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Temperature maximum – simple de-clouding

maximum IR3.9 temperature - nights of 2009-07-19.:21
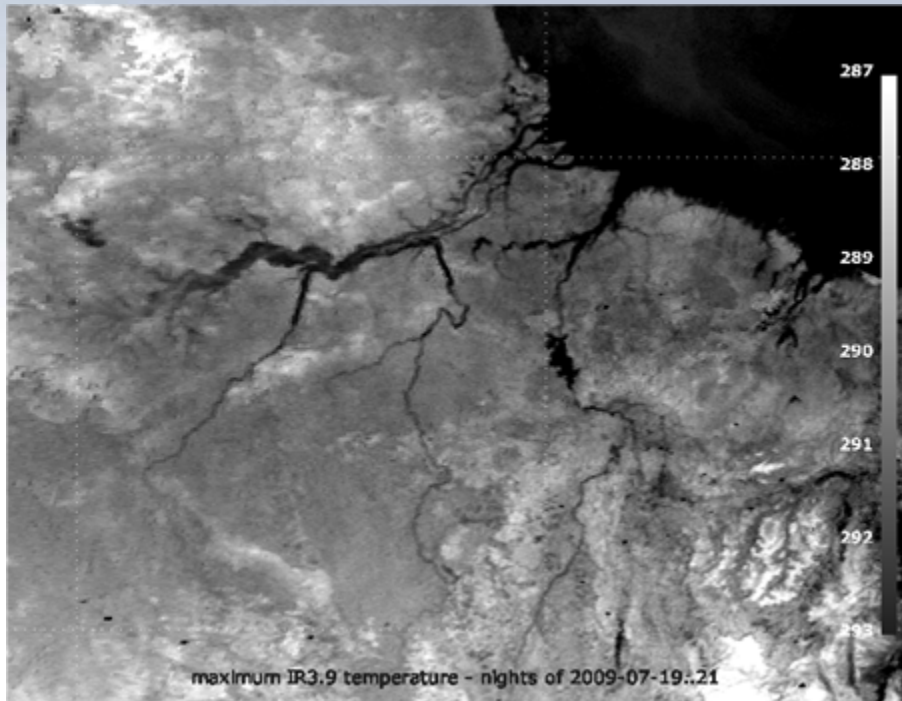
after 3 night over the Amazonas basin

IR3.9 temperature - 6 declouded nights (2100-0100) - 20070915-0920

after 6 night over Africa

Extracting the maximum temperature from nightly IR
time series de-clouds the scene revealing land features
like water bodies or temporarily flooded areas

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Monitoring weather and climate from space

THANK YOU