



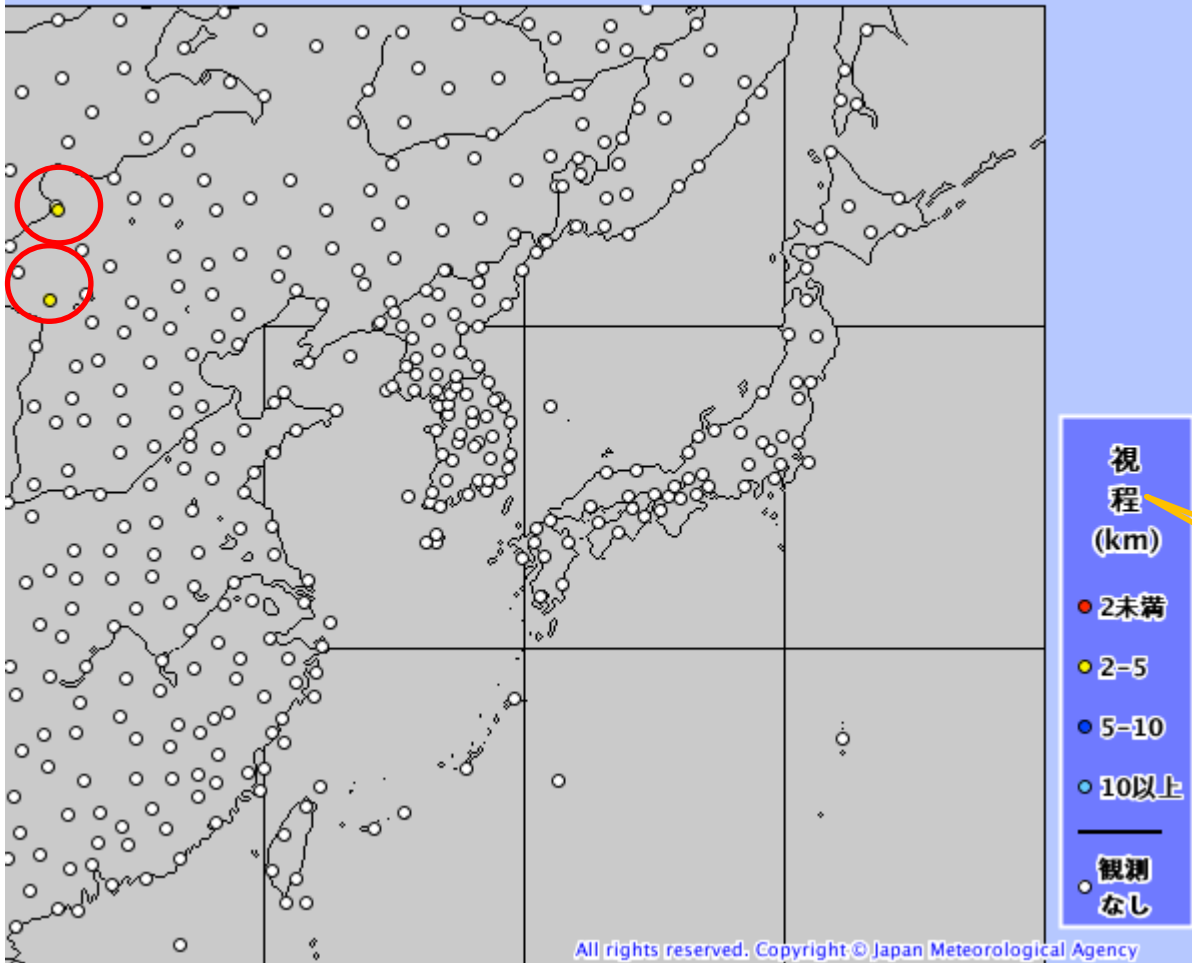
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Dust RGB

Detection of Yellow Sand (Asian Dust)

Meteorological Satellite Center, JMA

平成27年02月15日 黄砂観測地点と視程



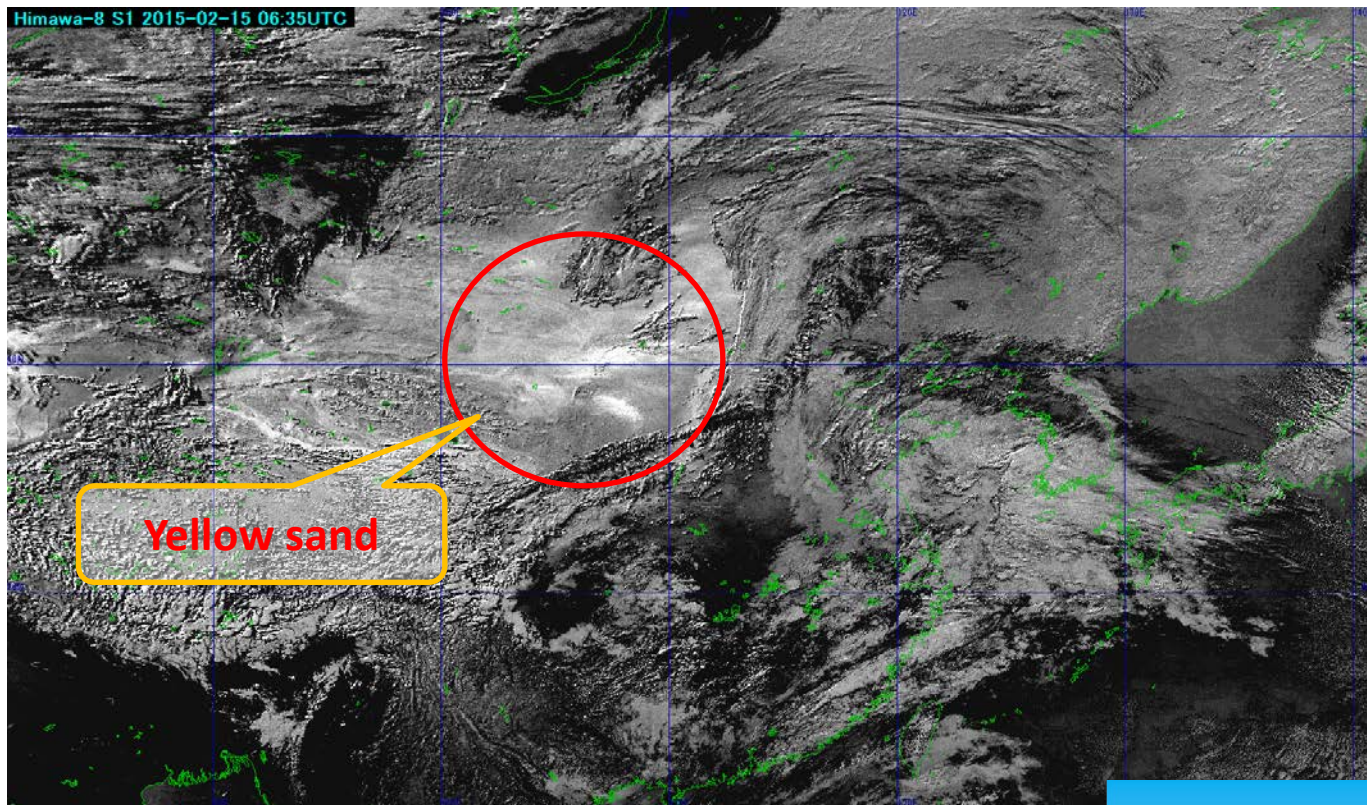
The yellow sand (Asian dust), observed at inland of Asian continent, caused visibility degradation around there.

Observation Chart of Yellow Sand
15 February 2015

JMA website:

<http://www.jma.go.jp/jp/kosa/>

Detection by Difference Image

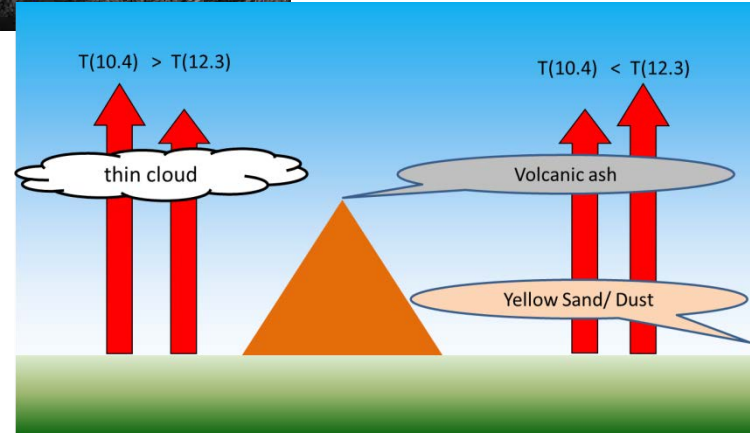


B13 (10.4 microns) and B15 (12.3 microns) have opposite characteristics of absorption and scattering for water or quartz particles.

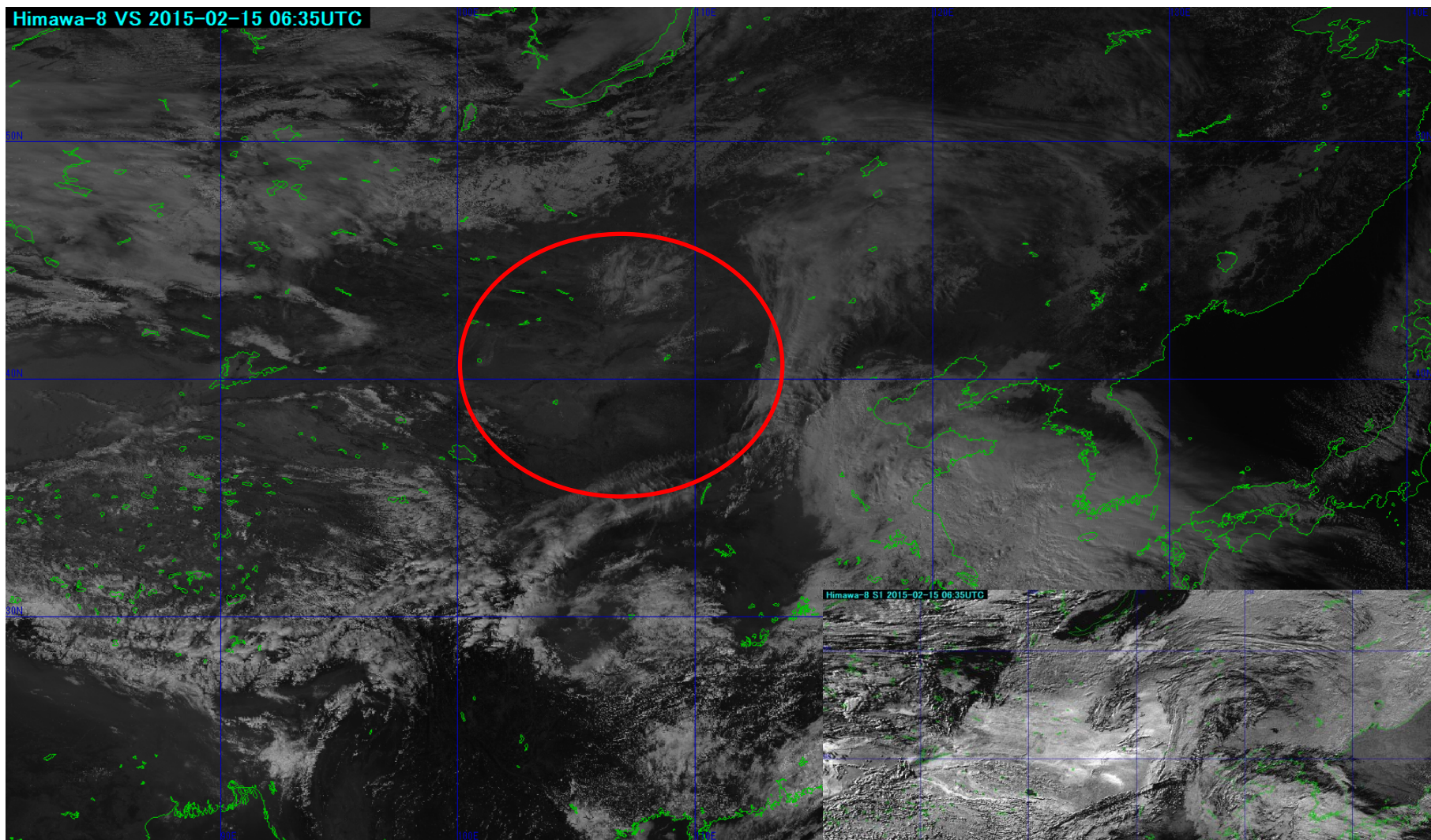
If the difference between B13 and B15 is positive, it would correspond to clouds, which consist of the droplets or ice particles, and if the difference is negative, it would correspond to the particles of quartz.

This characteristics make it possible to detect the dust and volcanic ash.

Himawari-8 S1(B15-B13) 2015-02-15 06:35UTC



Detection by single visible image



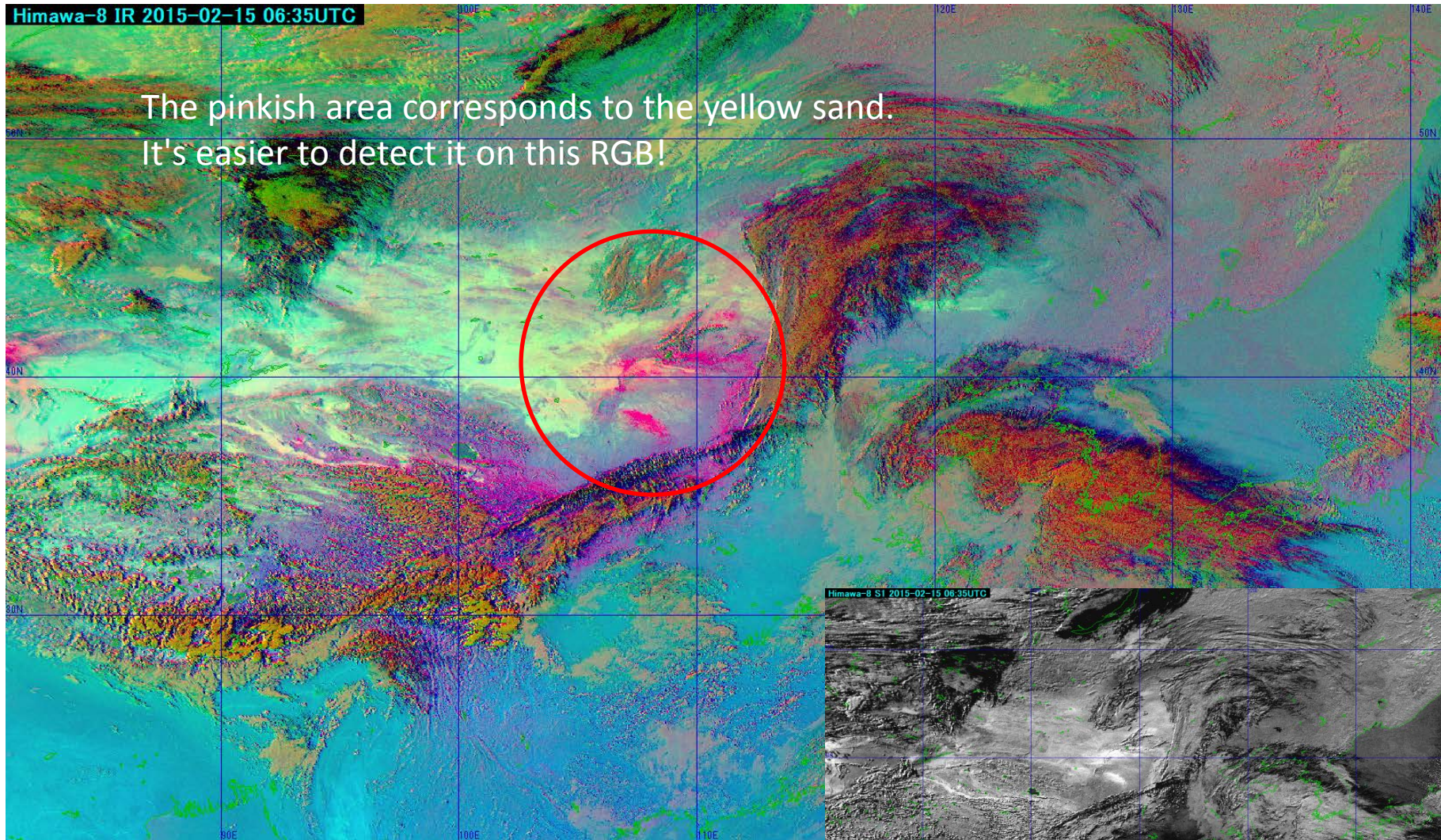
Himawari-8 VS 2015-02-15 06:35UTC

Difference image can detect the yellow sand clearer than single visible image.

Detection by Dust RGB image

DUST

(RGB:B15-B13/B13-B11/B13)



The pinkish area corresponds to the yellow sand.
It's easier to detect it on this RGB!

Himawari-8 Dust 2015-02-15 06:35UTC

The dust generating places appear in bright greenish color which correspond to desert area

Interpretation of Colors for “Dust”

Cold, thick, high-level clouds

Thin Cirrus clouds
Contrails

Thick, mid-level cloud

Thin, mid-level cloud

Low-level cloud
(cold atmosphere,
High latitude)

Low-level cloud
(warm atmosphere,
Low latitude)

Dust/Yellow sand

Ocean

Warm Desert

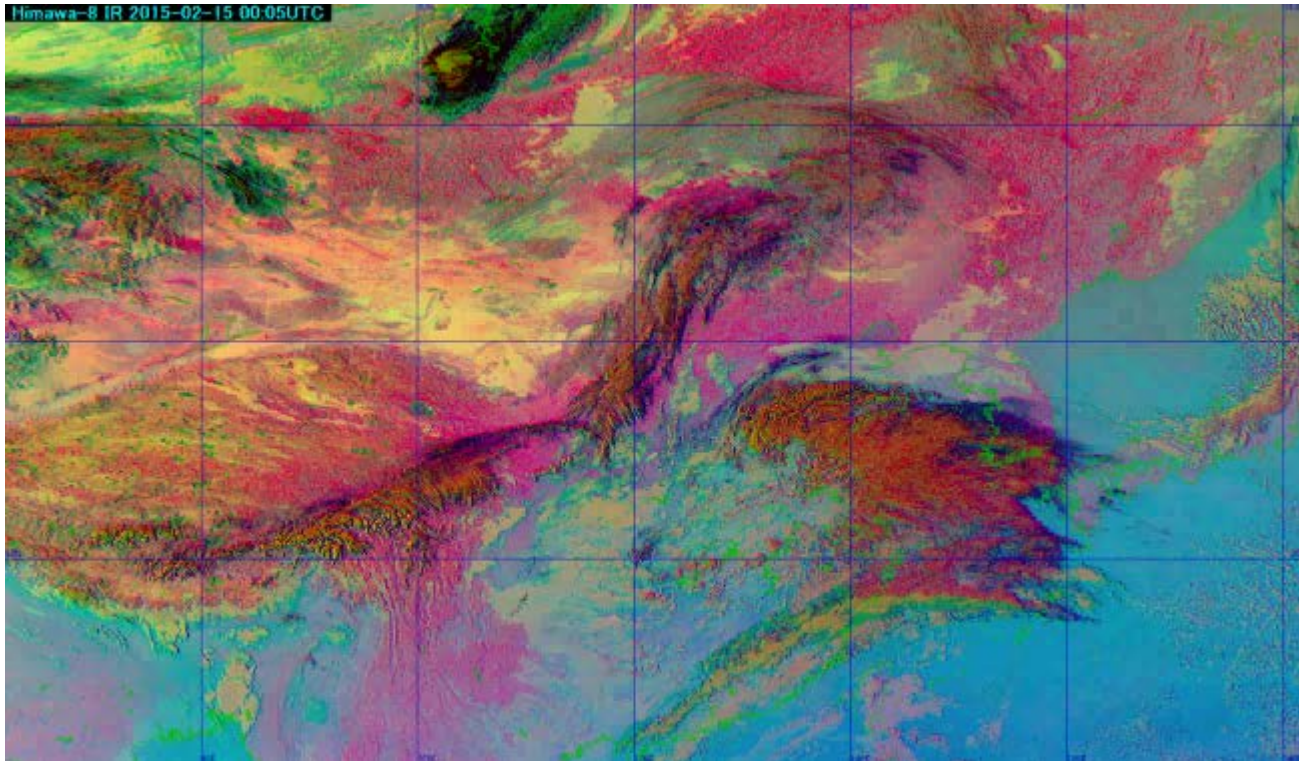
Cold Desert

Warm Land

Cold Land

Example of Dust RGB

Dust Detection by Animation



DUST

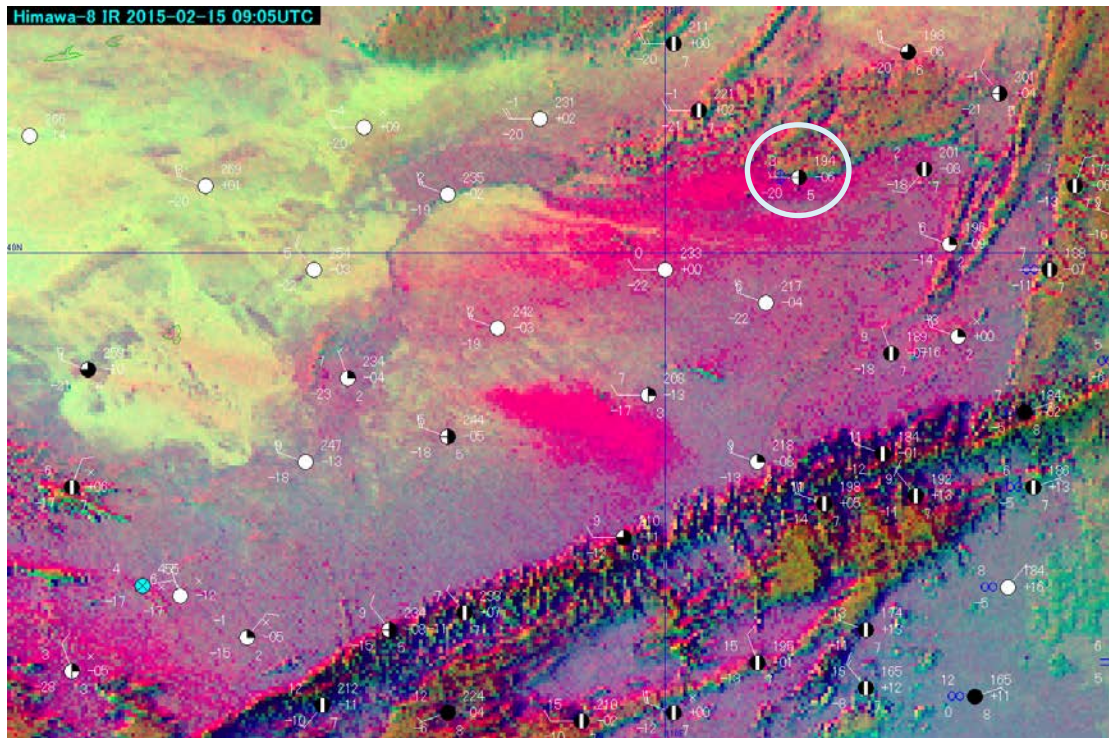
(RGB:B15-B13/B13-B11/B13)

Himawari-8 Dust 2015-02-15 00:05-23:35UTC

The yellow sand and low clouds are similar “pinkish” color.
By animation display, it will be easy to distinguish them!

Example of Dust RGB Correspondence with Observation

Himawa-8 IR 2015-02-15 09:05UTC



53463 HOHHOT
 Location: 40.90N 111.60E
 Height above sea-level :1154 m

2015-02-15 09UTC
 Sea-level pressure: 1019.4 hPa Trend of pressure: -0.6 hPa
 Wind speed: W 6 kt Horizontal visibility: 3.2 km
 Temp.: 3.1 degrees Celsius Dew-point temp. : -19.6 degrees Celsius
 Total cloud amount: 5/8
 Cloud type: XXX Low cloud amount: 5/8
 Current weather: 07 Past weather: 00

DUST

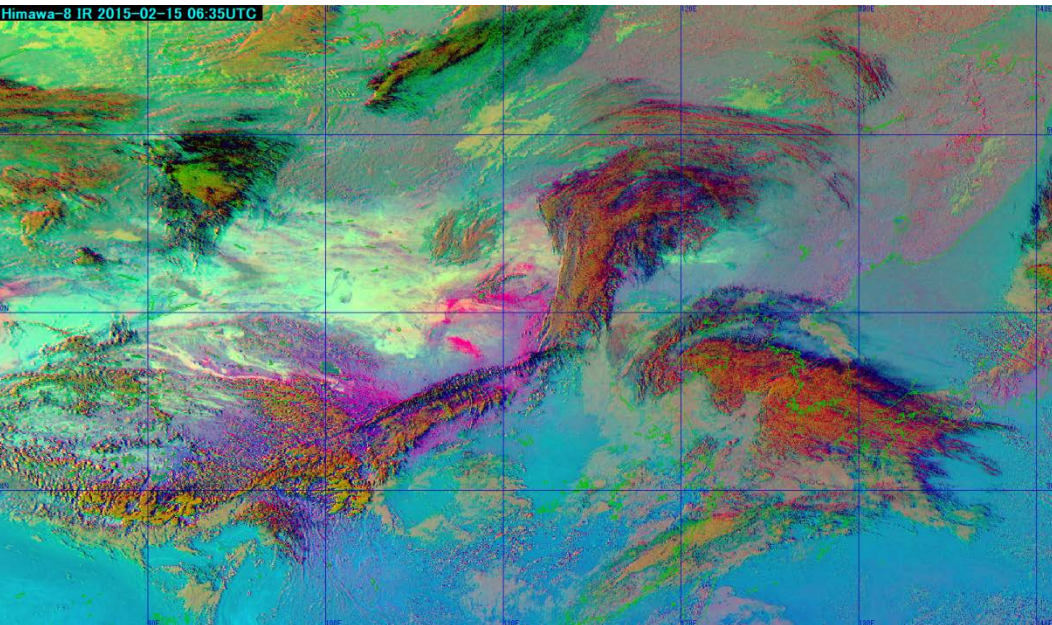
(RGB:B15-B13/B13-B11/B13)

Himawari-8 Dust 2015-02-15 09:05 UTC



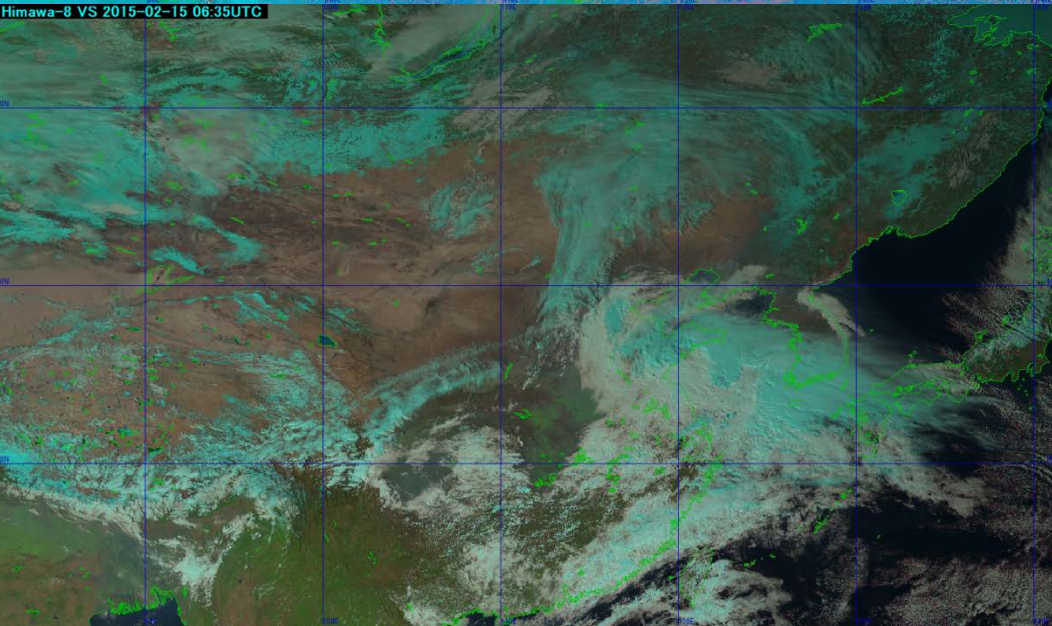
Dust was observed at Hohhot (Inner Mongolia Autonomous Region, China), where visibility was around 3 km and was dry. Actually, Hohhot is covered by pinkish area on the RGB image.

RGB Composites: Dust and Day Natural Colors



Himawari-8 Dust 2015-02-15 06:35 UTC

The scene of the time when yellow sand is being generated and spreading.



DUST

(RGB:B15-B13/B13-B11/B13)

When focusing on the dust generated places in lower RGB image, Day natural colors”, they correspond to the brownish, no vegetation “desert” or “bare ground”.

In “Dust” RGB image, they appear in bright greenish areas.

Day Natural Colors

(RGB:B05/B04/B03)

※ This RGB is tuned all gamma values to “1.5” for easiness to view.

Dust

Detection of Yellow Sand (Asian Dust)

Summary

- ✓ Useful to distinguish and pursue dust storm or yellow sand, in addition to traditional visible and difference images
- ✓ But, as yellow sand and low clouds appear in similar “pinkish” color, the RGB animation is helpful to distinguish them
- ✓ Available for day and night