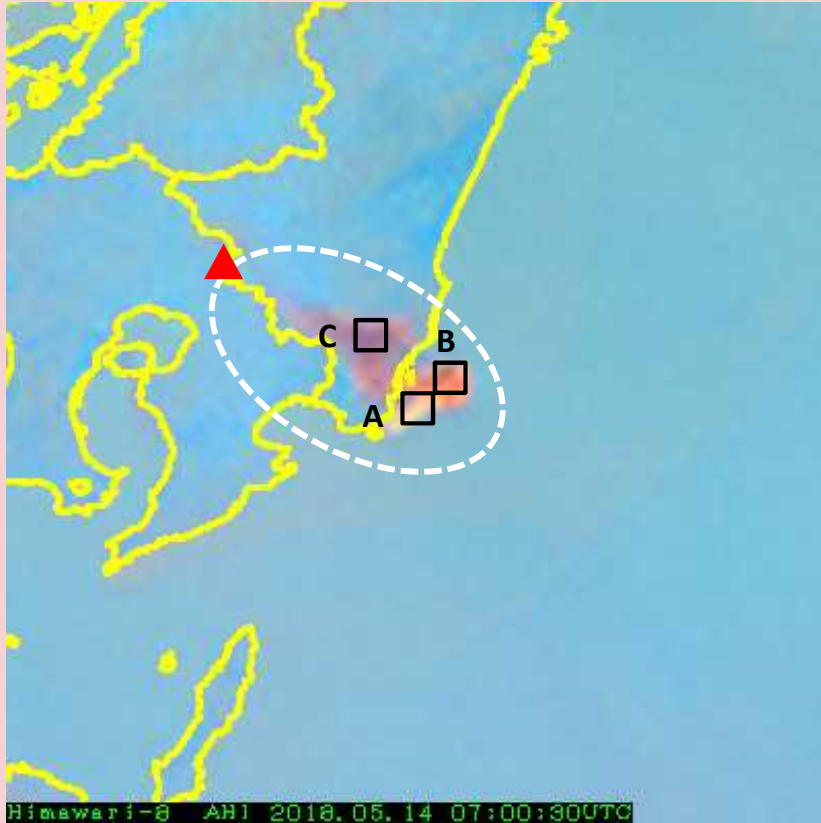
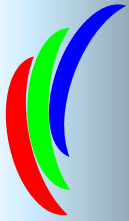


Himawari Ash RGB Quick Guide



Eruption of Kirishimayama (Mt. Kirishima), Japan (07:00 UTC, 14 May 2018). The reddish area inside the white dashed line indicates a volcanic plume. The red triangle indicates the volcano.

- A ■ : volcanic ash with SO₂ gas
- B ■ : volcanic ash
- C ■ ■ : volcanic ash with ice crystals

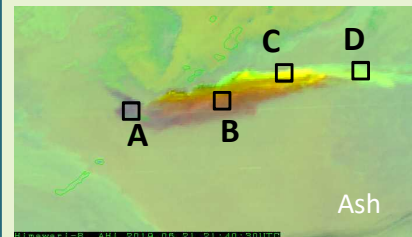
Main applications: Daytime/nighttime detection of volcanic ash and SO₂

Benefits:

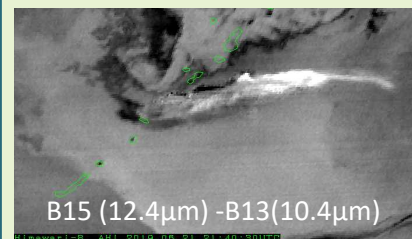
- Daytime/nighttime applicability thanks to infrared image composition
- Support for all-day monitoring of volcanic ash and SO₂ with high temporal resolution

Limitations:

- Inability to estimate volcanic plume height and concentration from Ash RGB data alone
- Difficulty of identifying very thin or lower-level volcanic plumes
- Disturbance from high-level clouds over volcanic plumes
- High dependence of shading on the satellite viewing angle (i.e., volcanic plumes with lower viewing angles will have better color contrast)



Volcanic plumes containing ash appear bright in difference imagery (bottom). Volcanic ash, gas and ice crystals (probably originating from water vapor in the plume) can also be seen in Ash RGB (top). Lighter gas brought by upper winds precedes the plume.

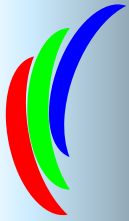


- A ■ ■ : ash and ice crystals
- B ■ : ash
- C ■ : SO₂ and ash
- D ■ : SO₂

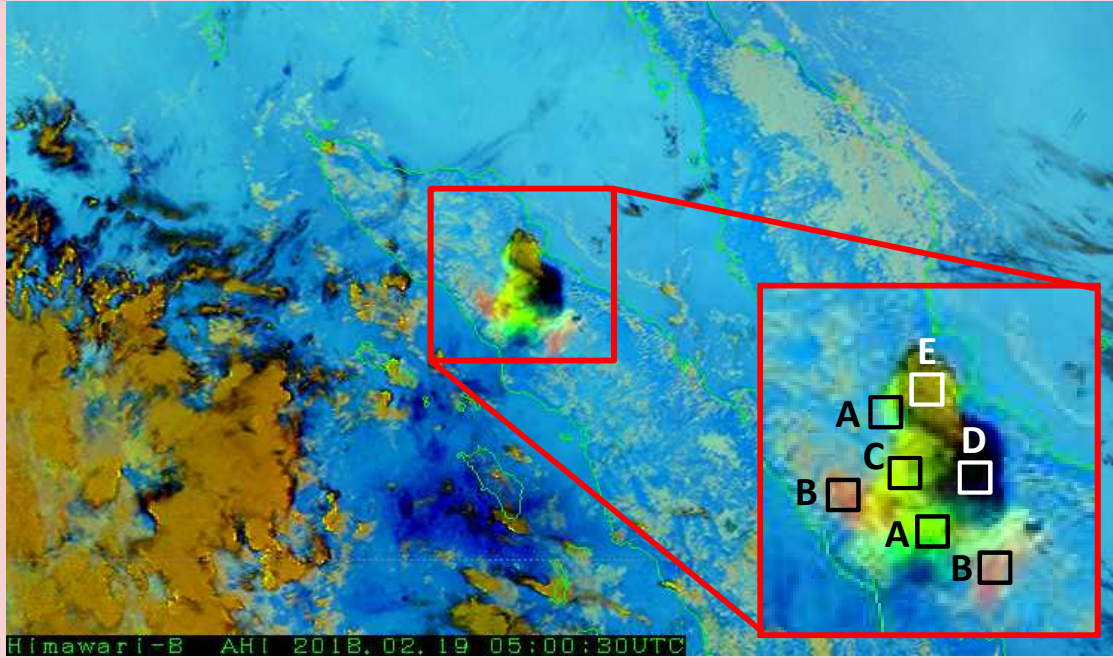
Eruption of Mt. Raikoke in the Kuril Islands (21:40 UTC, 21 June 2019)

RGB composition with recommended thresholds and related specifications for Ash RGB

Color	AHI bands	Central wave length [μm]	Min [K]	Max [K]	Gamma	Physical relation to	Smaller contribution to signal of	Larger contribution to signal of
Red	B13-B15	10.4-12.4	-3.0K	7.5K	1.0	Cloud optical thickness Volcanic ash	Thin ice clouds	Thick clouds Volcanic ash
Green	B11-B13 /B11-B14	8.6-10.4 /8.6-11.2	-1.6K -5.9K	4.9K 5.1K	1.2 0.85	Cloud phase	Thin ice clouds Volcanic ash	Water clouds SO ₂ gas plume
Blue	B13 (inverse)	10.4	243.6K	303.2K	1.0	Cloud top temperature Surface temperature	Cold clouds Cold surface	Warm clouds Warm surface



Himawari Ash RGB Quick Guide



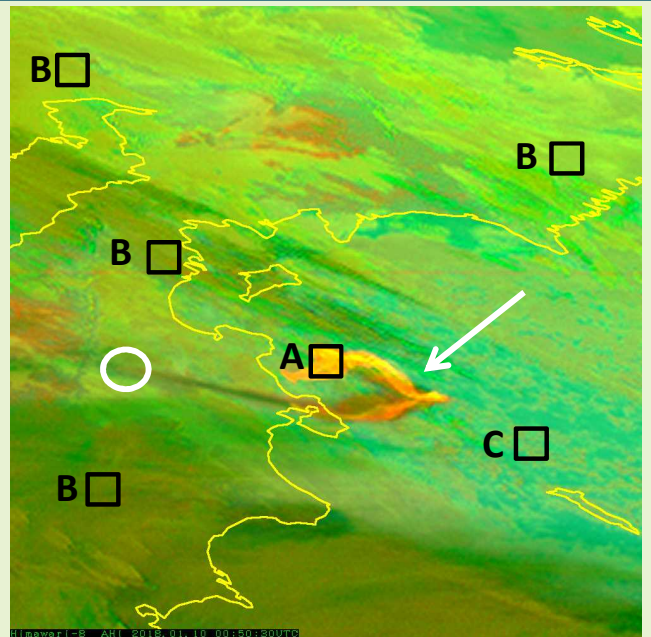
Eruption of Mt. Sinabung, Indonesia (05:00 UTC, 19 February 2018)

- A ■ : SO₂
- B ■ : ash
- C ■ : ash and SO₂
- D ■ : ice crystals
- E ■ ■ : ice crystals, ash and SO₂

Eruption of Mt. Shiveluch, Russia (00:50 UTC, 10 January 2018). The white circle and arrow indicate Mt. Shiveluch and the related volcanic plume, respectively.

The greenish shading represents colder conditions (i.e., latitude and diurnal/seasonal variations).

- A ■ : ash and SO₂
- B ■ ■ : thick mid-/high-level clouds
- C ■ : mid-/low-level clouds



Color interpretation for Ash RGB

Color	Interpretation
■	Cold, thick, high-level clouds
■	Thin Cirrus clouds Contrails
■	SO ₂ gas plume (bright green shading based on concentration)
■	Volcanic ash (red shading based on concentration)
■	Mixed volcanic ash and SO ₂ gas plume