AOMSUC-12

11 - 18 November 2022

Online, Hosted by Japan Meteorological Agency

12th Asia - Oceania Meteorological Satellite Users' Conference

Cloud Phase
Distinction RGB

For convective Initiation

On Tropical Region

BMKG

Developed By JMA

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Background

- Limitation to observe the atmosphere especially on East Indonesia region
- The lack on radar and surface observation system
- Many small islands with local characteristic that can impact to the weather
- Forecaster needs the signal of convective initiation and storm growth. This useful for make early warning

Eastern Indonesia

About the RGB Product

Cloud Phase Distinction

Main application: Analysis of **thickness**, cloud **top height** and cloud **phases**.

Limitations: *Daytime* only.

Advantages: Facilitation of determination between high-level **ice clouds** and **low-level water**, and detail to describe of cloud phases.

Source: JMA

The recipe | Developed by JMA

Cloud Phase Distinction RGB

Color	AHI bands	Min (K)	Max (K)	Gamma	Physical Relation to	Smaller contribution to signal of	Larger contribution to signal of
Red	B13(IR-10.4)	219.619	280.6707	1.0	Cloud top temperature	Warm clouds	Cold Clouds
Green	B03(VS-0.64)	-0.0346	0.7792	1.0	Cloud optical thickness	Thin clouds	Thick clouds snow-covered land sea ice
Blue	B05(N2-1.6)	0.0119	0.5932	1.0	Cloud phase snow and ice	Ice clouds	Water clouds

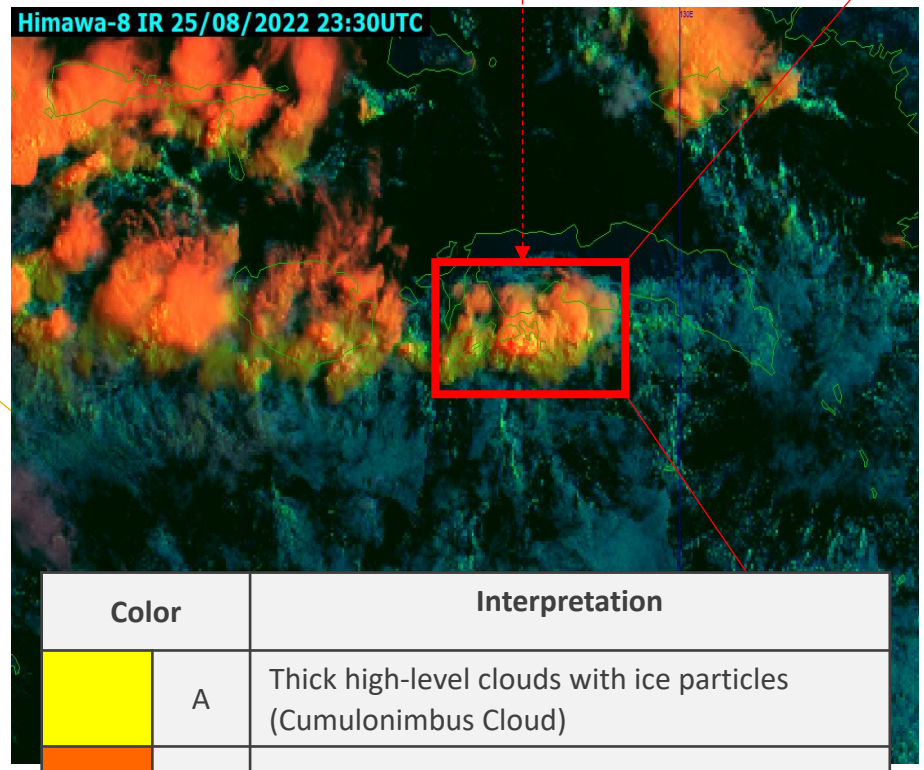
Color interpretation for Cloud Phase Distinction RGB

Color	Interpretation
	Thick high-level clouds with ice particles (Cumulonimbus Cloud)
	Thin high-level clouds with ice particles
	Thick low-level ice clouds
	Thick low-level water clouds

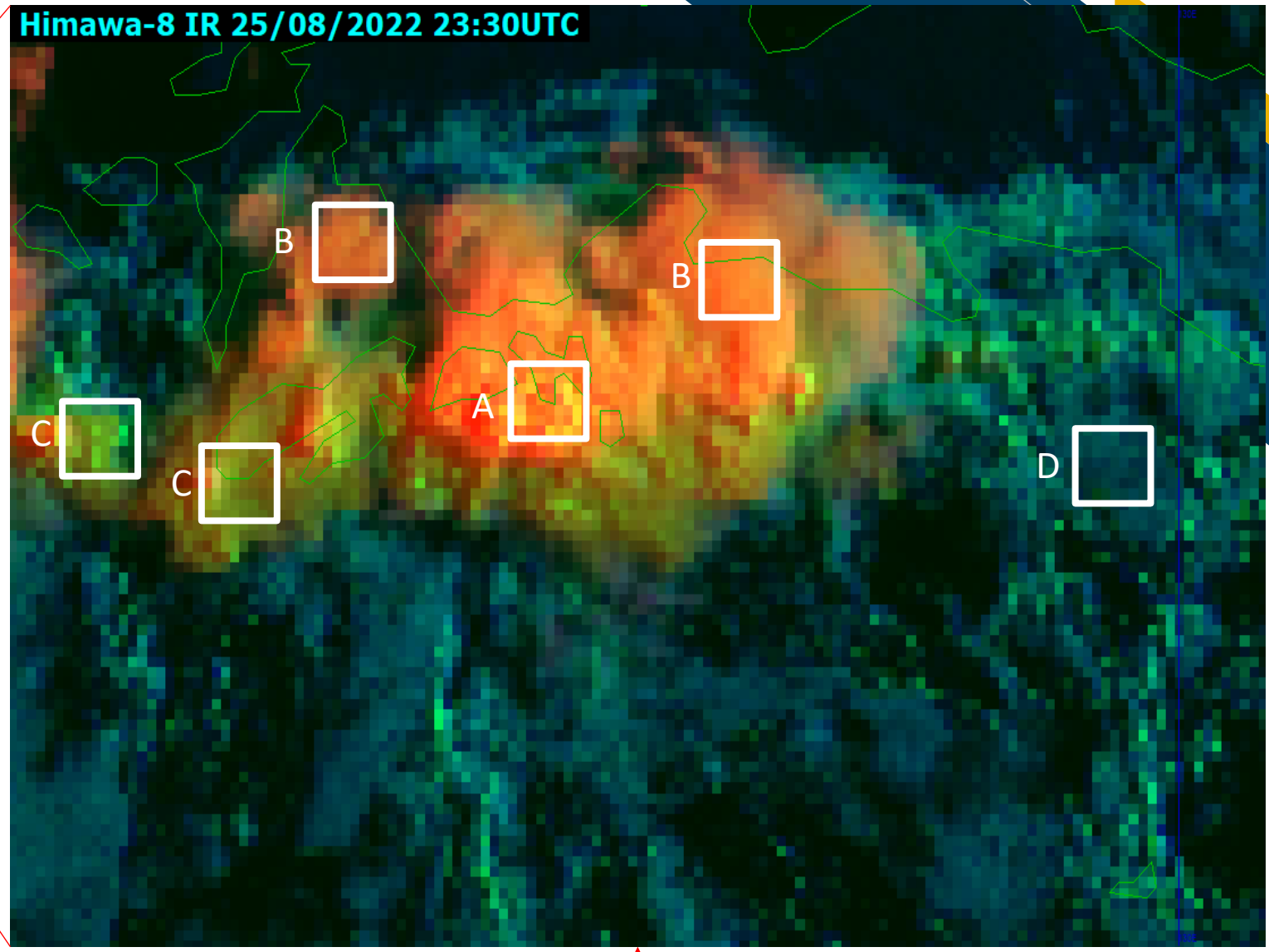
Source: JMA

RGB Analysis

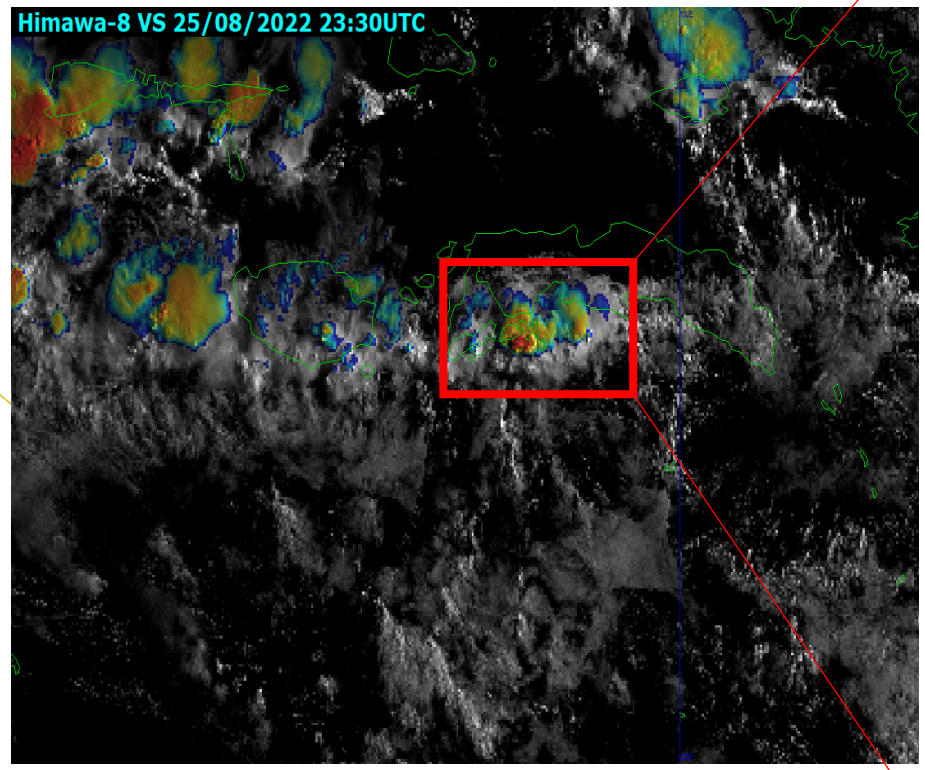
Flash flood & Landslides
In the Haruku Islands

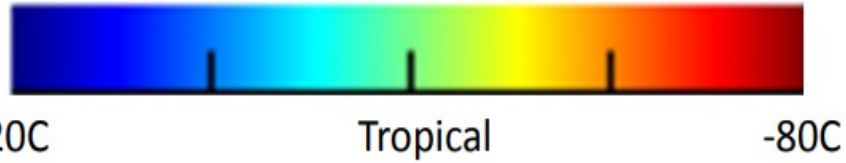


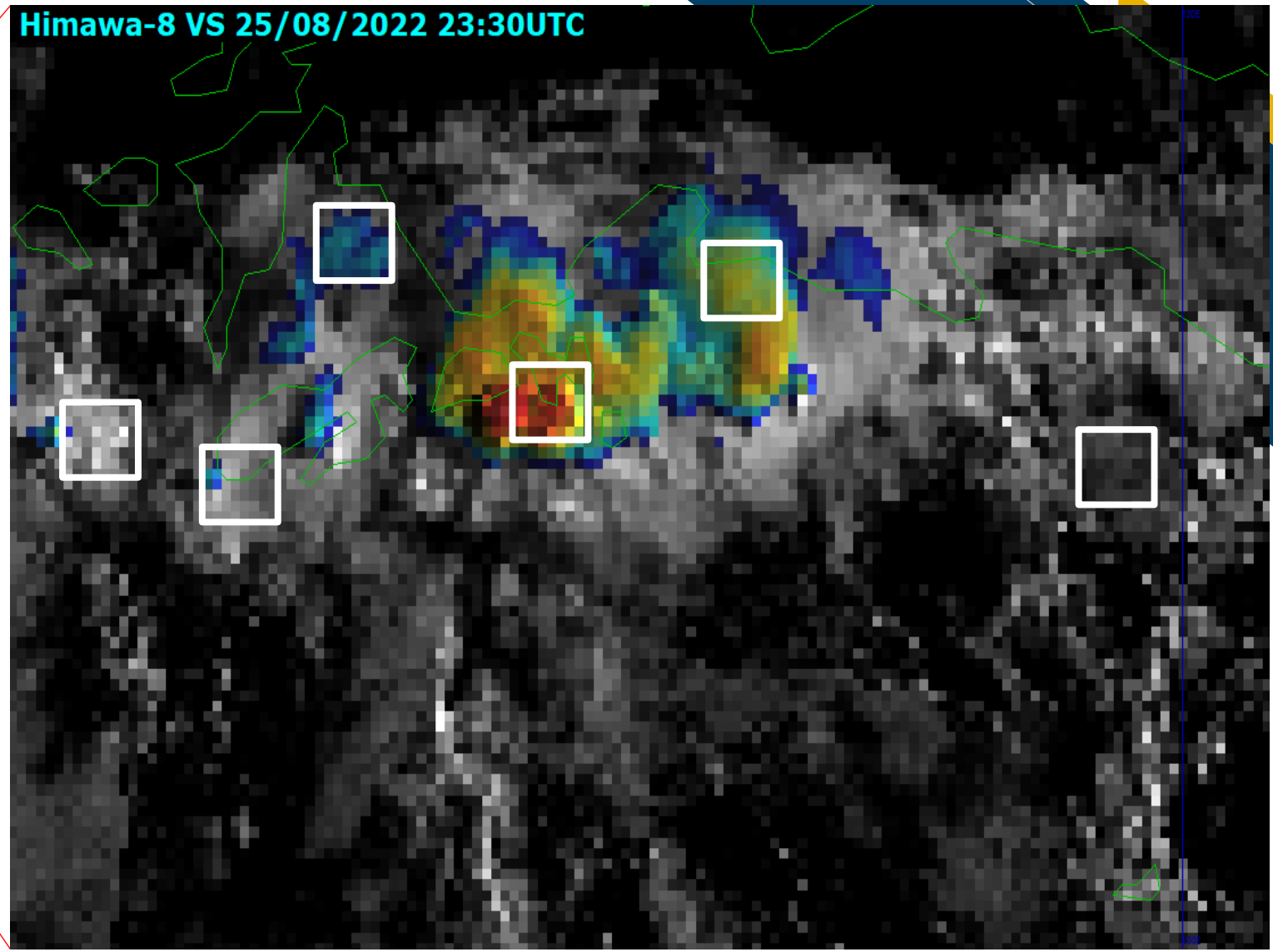
Color		Interpretation
	A	Thick high-level clouds with ice particles (Cumulonimbus Cloud)
	B	Thin high-level clouds with ice particles
	C	Thick low-level ice clouds
	D	Thick low-level water clouds



Sandwich Product
Comparing

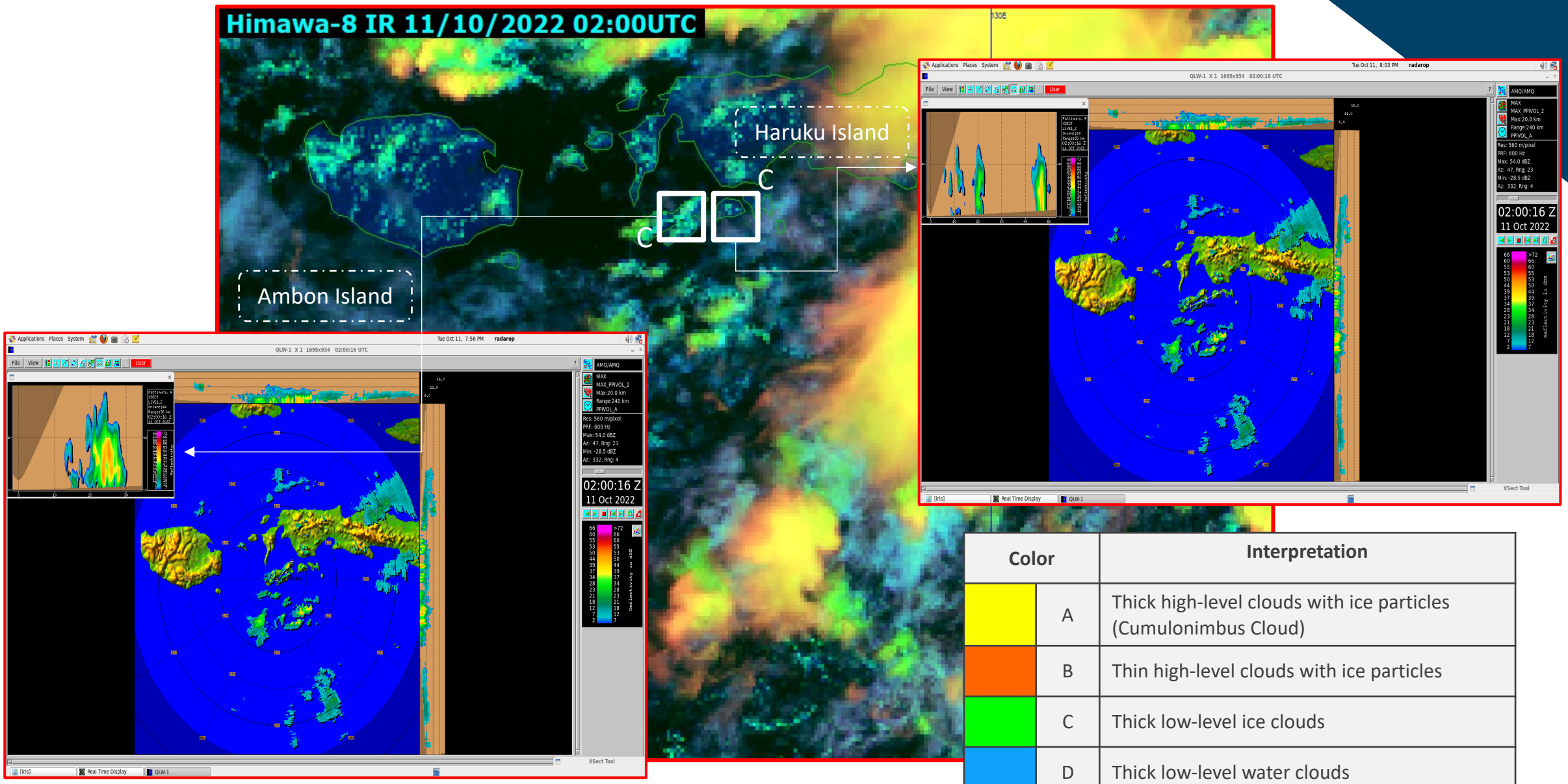






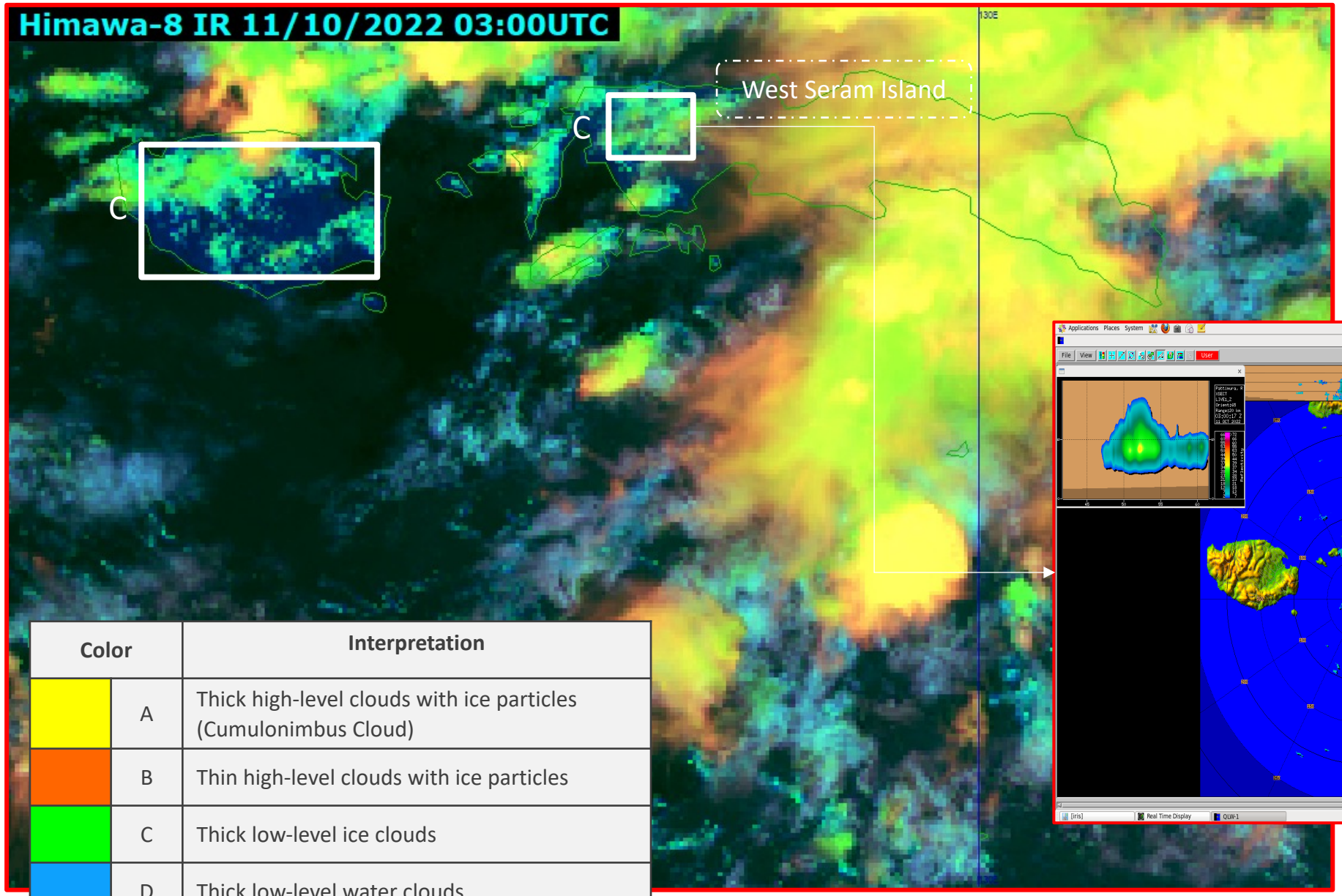
RGB **Analysis** & **Weather** *Radar* (X-section tool)

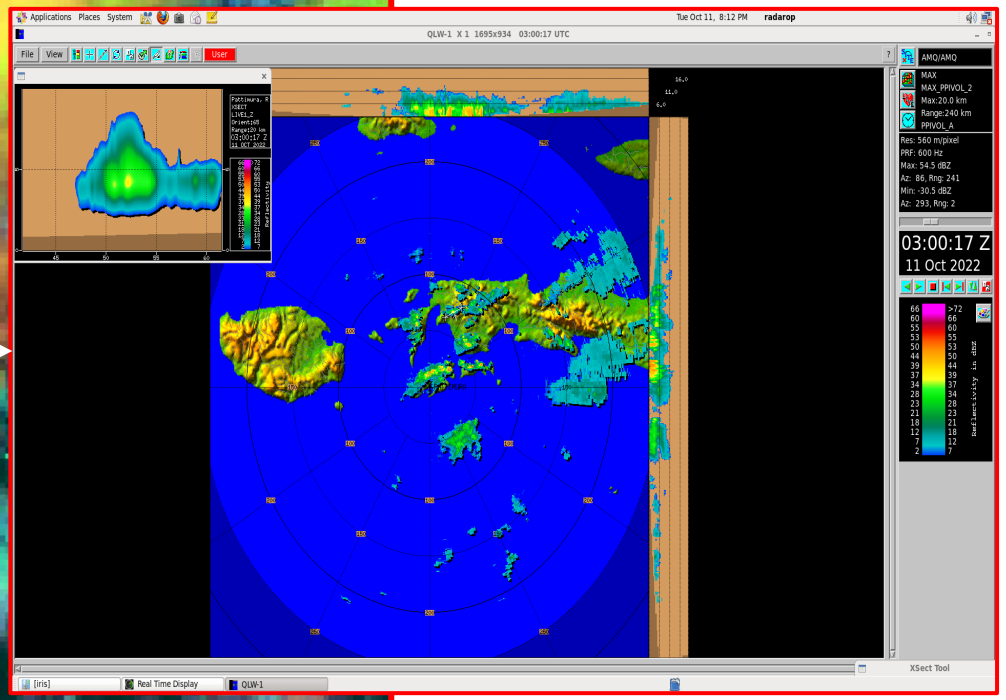
***Convective Initiation,* 02.00 UTC** | *Case study*: 11 October 2022



Color		Interpretation
	A	Thick high-level clouds with ice particles (Cumulonimbus Cloud)
	B	Thin high-level clouds with ice particles
	C	Thick low-level ice clouds
	D	Thick low-level water clouds

***Convective Initiation,* 03.00 UTC** | *Case study*: 11 October 2022





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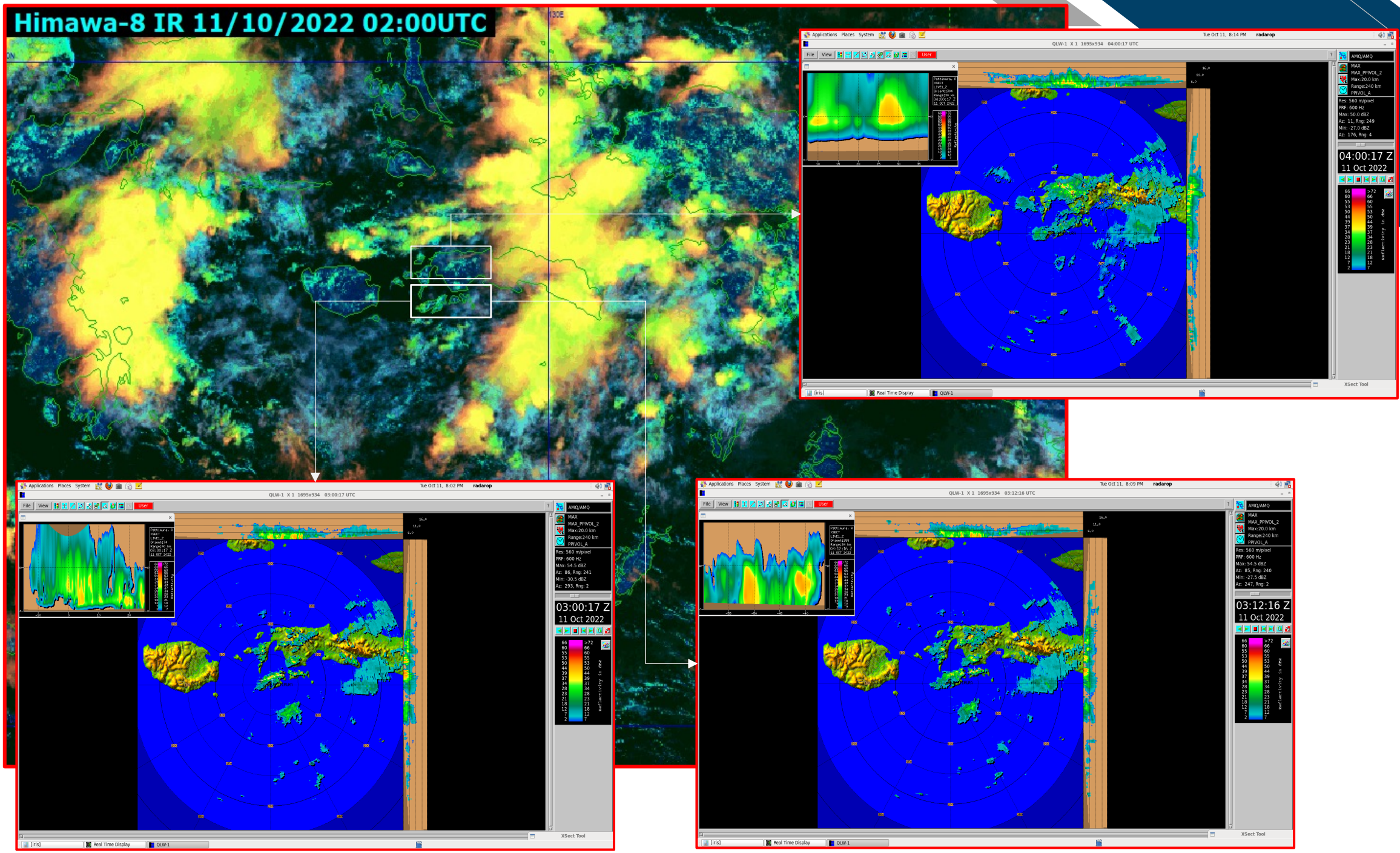
Himawa-8 IR 11/10/2022 02:00UTC
04:00:17 Z
11 Oct 2022
03:00:17 Z
11 Oct 2022
03:12:16 Z
11 Oct 2022

Conclusion

- The Cloud Phase Distinction RBG that develop by JMA can be useful on tropical region especially Eastern Part Indonesia (Maluku, Papua and Sulawesi) without change to tropical recipe.
- The result after compared with weather radar shows that the RGB work good for detection signal from thick low-level ice clouds.
- It helps a forecaster to make decision for early warning and nowcasting.
- For the future analysis with using the spatial analysis the product can support Impact-based Warning Forecast (IBWF) in Indonesia.

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Thank You

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BMKG

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