DETECTION OF SHORT-LIVED CONVECTIVE CLOUDS USING GEOSTATIONARY SATELLITE IMAGES

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Outline

1. Importance of satellite product analysis in early warning information
2. Products: Enhanced Water Vapor, Rainfall Potential, and RDCA
3. Study case in East Sumba-NTT
1. Importance of satellite product analysis in early warning information

For regions where are uncovered by radar observations
2. Products:
Enhanced – Water Vapor, Rainfall Potential, and RDCA
Enhanced-Water Vapor Product

WV Band-08
Himawari-8 (6.2 µm)
Identify mid-level moisture

Cover Indonesia Area and 5 divided regions

Available in every 10 minutes interval

Enhanced Color
Blue-white for wet, black-brown for dry

Temporal Resolution
Rainfall Potential Product

IR Band-13 Himawari-8 (10.8 µm)
Cloud imagery, information of cloud top
Cover Indonesia Area and divided into 5 regions

4 color categories
Blue for slight, green for moderate, yellow for heavy, and red for very heavy

Available in every 10 minutes interval
Temporal Resolution
RDCA Product

IR Band-13 Himawari-8 (10.8 µm)
Cloud imagery, information of cloud top

Cover Indonesia Area and divided into 5 regions

Regions

1 color category
Red point indicates rapidly developing cumulus area

Available in every 10 minutes interval
Temporal Resolution

RDCA
3. Study Case in NTT Area – East Sumba

February 11\textsuperscript{th} 2021 and August 12\textsuperscript{th} 2022
Case 1 – February 11th 2021

- Light rain reported at 06.00 UTC
- Measured rainfall of 0.3 mm
- Significant pattern observed at 05.40 UTC and continue growing to 06.50 UTC
  - Enhanced-WV: Small burst with dark color inside and steep colour gradient around
  - RP: slight rain observed
  - RDCA: red point emerged at the same time
Case 1 – February 11th 2021

Enhanced-WV: Small burst with dark color inside and steep colour gradient around lasted for 70 min.

RP: slight rain observed

RDCA: red point emerged at the same time
Case 2 – August 12th 2022

» Light rain reported at 00.00-02.00 UTC
» Measured rainfall of 5 mm
» Significant pattern observed at August 11th 23.30 UTC and continue growing to 02.20 UTC
  » Small burst with dark color inside and steep color gradient around
  » RP : slight rain observed
  » RDCA : red point emerged 10 minutes earlier
Case 2 – August 12th 2022

Enhanced-WV: Small burst with dark color inside and steep color gradient around.

RP: slight rain observed.

RDCA: red point emerged 10 minutes earlier than WV and RP.
Case 2 – August 12th 2022

Enhanced-WV: Small burst with dark color inside and steep color gradient around lasted for 2 hrs.

RP: Slight rain observed.

RDCA: Red point emerged 10 minutes earlier than WV and RP.
Conclusion

» The significant characteristics of these convective clouds are:
  ◇ Local scale convection
  ◇ Have 1-2 hours lifetime
  ◇ Isolated system

» RDCA can present much better and faster diagnosis in issuing potential early warning.