BMKG

DETECTION OF SHORT-LIVED CONVECTIVE CLOUDS USING GEOSTATIONARY SATELLITE IMAGES

Team :

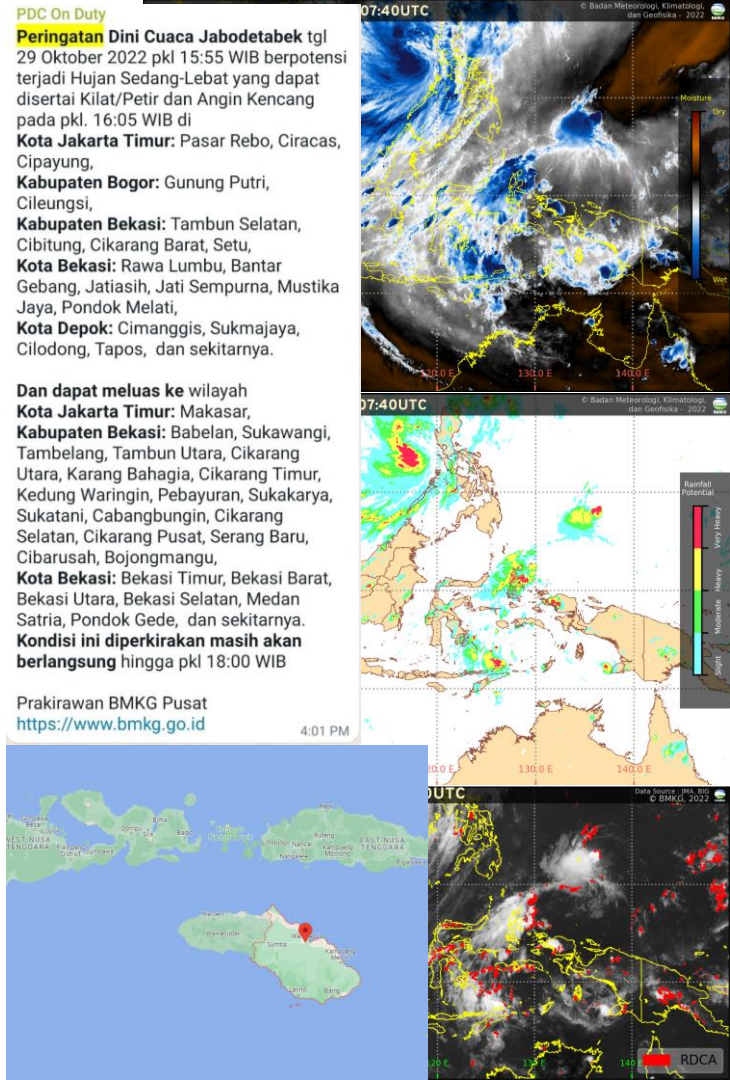
Adinda Dara Vahada

Mentari Ika Damayanti

Muhammad Rezza Feerdiansyah

Outline

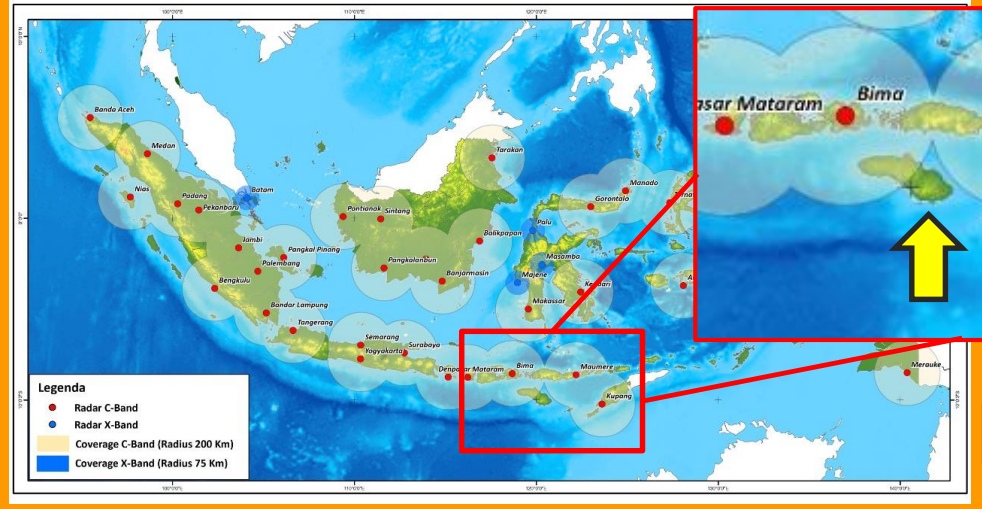
1. Importance of satellite product analysis in early warning information
2. Products : Enhanced-Water Vapor, Rainfall Potential, and RDCA
3. Study case in East Sumba-NTT



1.

Importance of satellite product analysis in early warning information

For regions where are uncovered by radar observations



PDC On Duty

Peringatan Dini Cuaca Jabodetabek tgl 29 Oktober 2022 pkl 15:55 WIB berpotensi terjadi Hujan Sedang-Lebat yang dapat disertai Kilat/Petir dan Angin Kencang pada pkl. 16:05 WIB di

Kota Jakarta Timur: Pasar Rebo, Ciracas, Cipayung,
Kabupaten Bogor: Gunung Putri, Cileungsi,
Kabupaten Bekasi: Tambun Selatan, Cibitung, Cikarang Barat, Setu,
Kota Bekasi: Rawa Lumbu, Bantar Gebang, Jatiasih, Jati Sempurna, Mustika Jaya, Pondok Melati,
Kota Depok: Cimanggis, Sukmajaya, Cilodong, Tapos, dan sekitarnya.

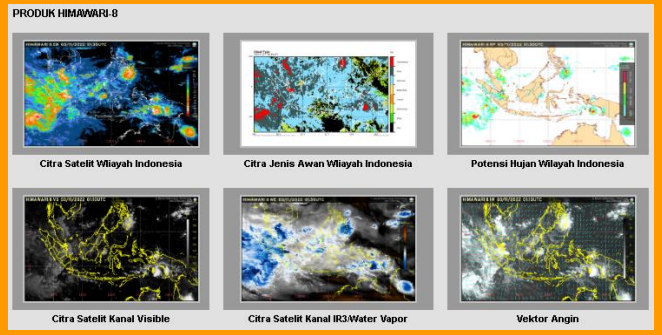
Dan dapat meluas ke wilayah
Kota Jakarta Timur: Makasar,
Kabupaten Bekasi: Babelan, Sukawangi, Tambelang, Tambun Utara, Cikarang Utara, Karang Bahagia, Cikarang Timur, Kedung Waringin, Pebayuran, Sukakarya, Sukatani, Cabangbungin, Cikarang Selatan, Cikarang Pusat, Serang Baru, Cibarusah, Bojongmangu,
Kota Bekasi: Bekasi Timur, Bekasi Barat, Bekasi Utara, Bekasi Selatan, Medan Satria, Pondok Gede, dan sekitarnya.

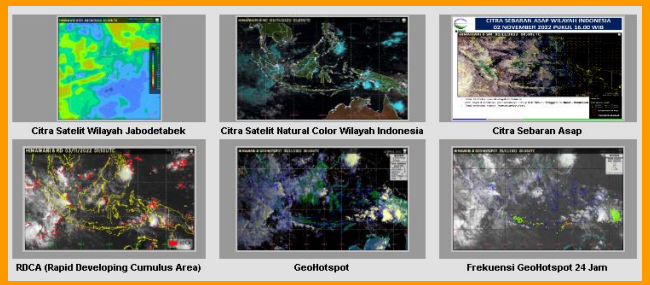
Kondisi ini diperkirakan masih akan berlangsung hingga pkl 18:00 WIB

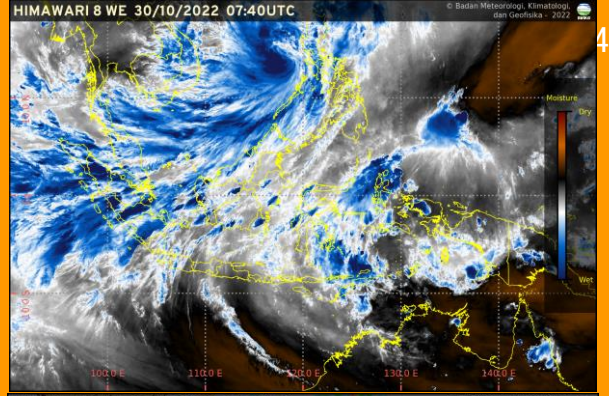
Prakirawan BMKG Pusat
https://www.bmkg.go.id
4:01 PM

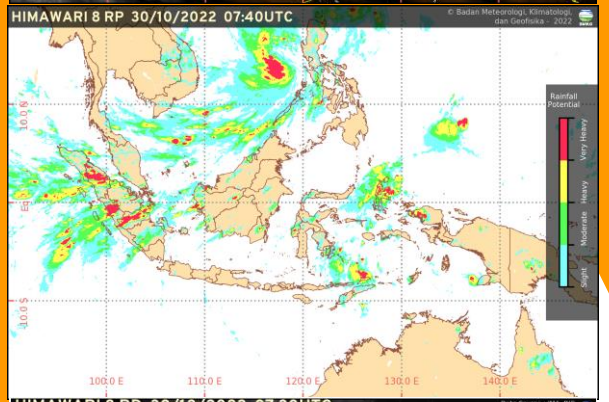
2.

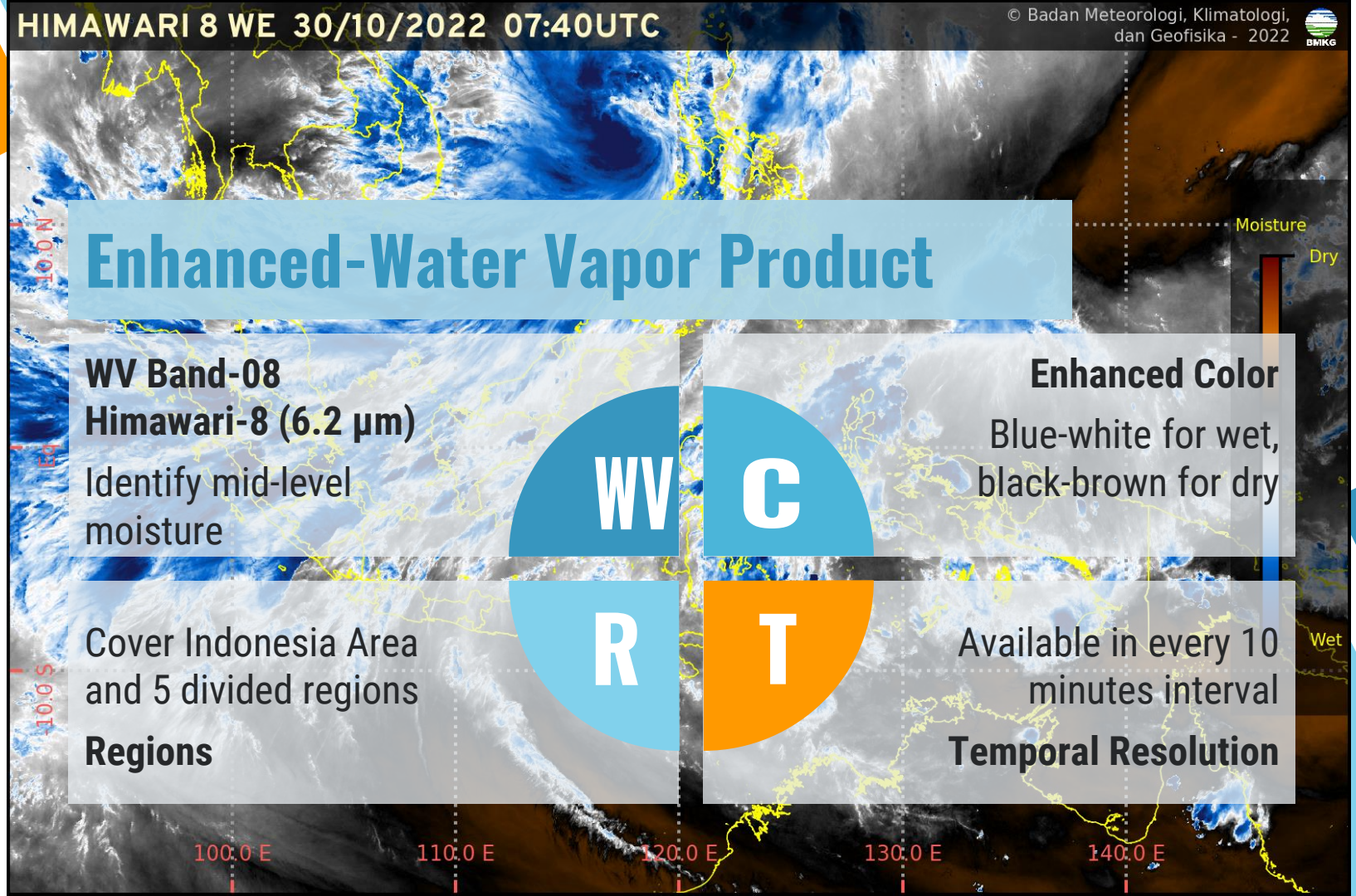
Products : Enhanced – Water Vapor, Rainfall Potential, and RDCA











Enhanced-Water Vapor Product

WV Band-08
Himawari-8 (6.2 µm)

Identify mid-level moisture

WV

C

Enhanced Color

Blue-white for wet, black-brown for dry

R

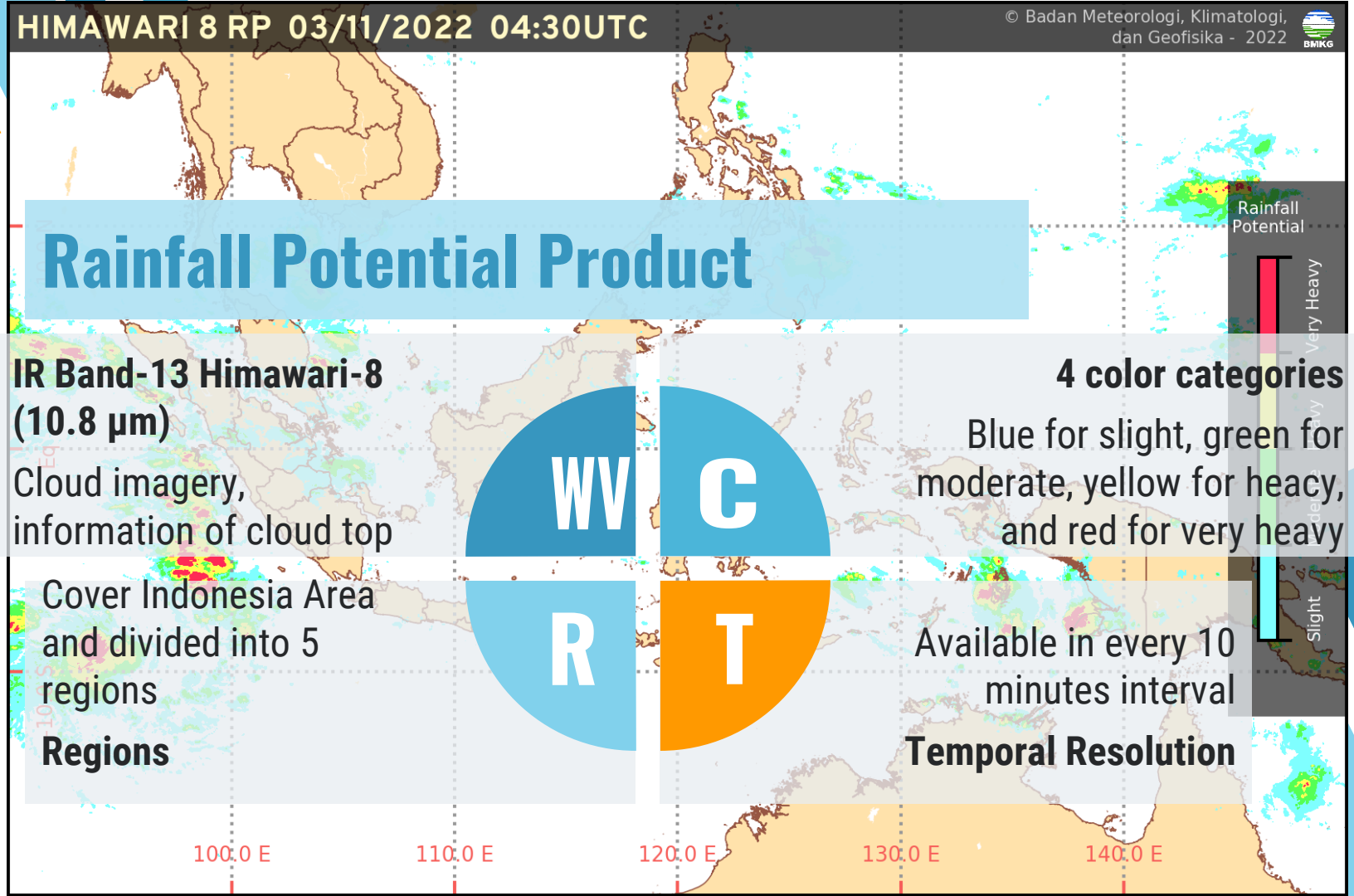
T

Cover Indonesia Area and 5 divided regions

Regions

Available in every 10 minutes interval

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

Regions

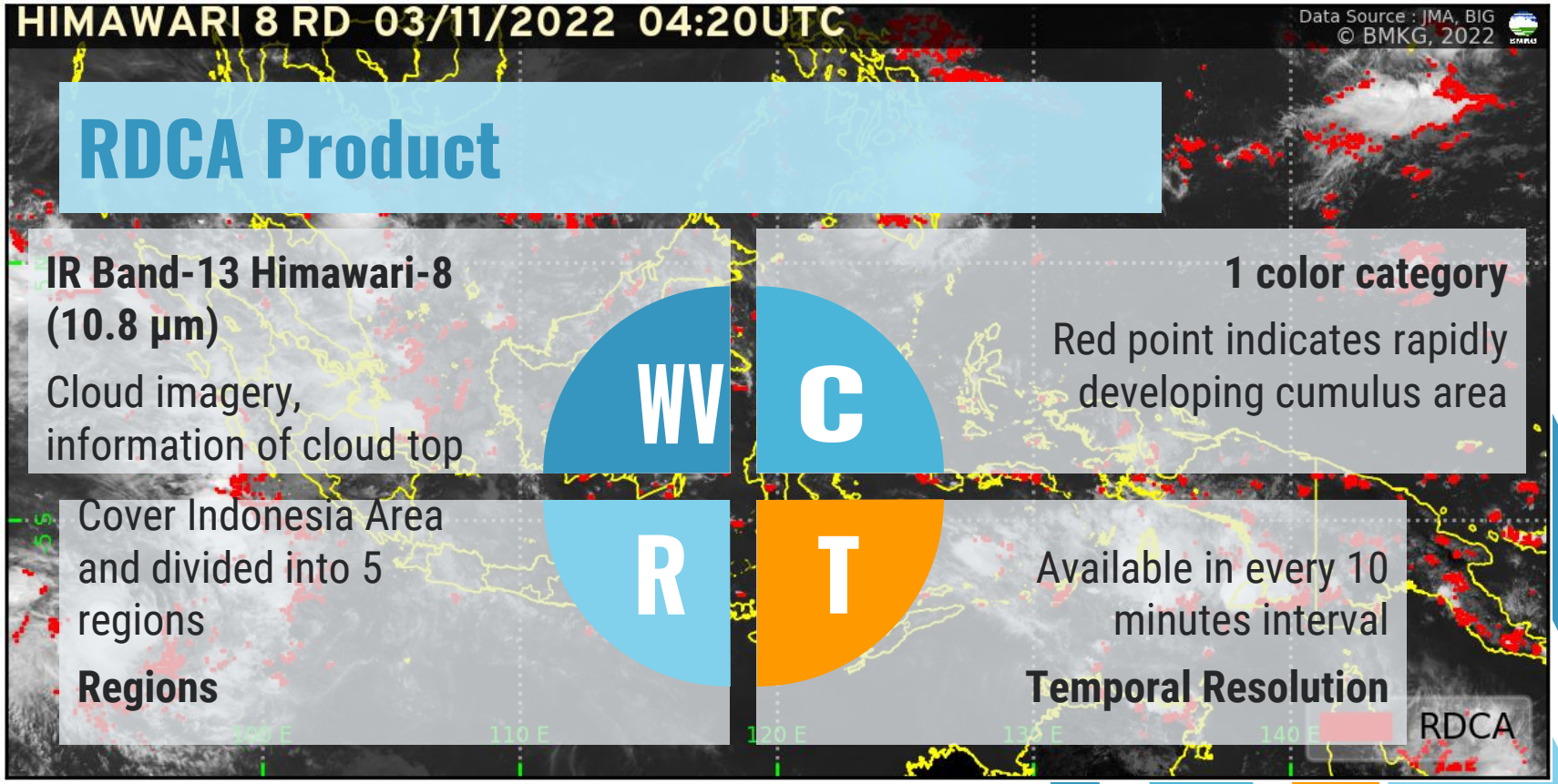
WV C R T

4 color categories

Blue for slight, green for moderate, yellow for heacy, 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

WV

C

1 color category

Red point indicates rapidly developing cumulus area

Cover Indonesia Area and divided into 5 regions

Regions

R

T

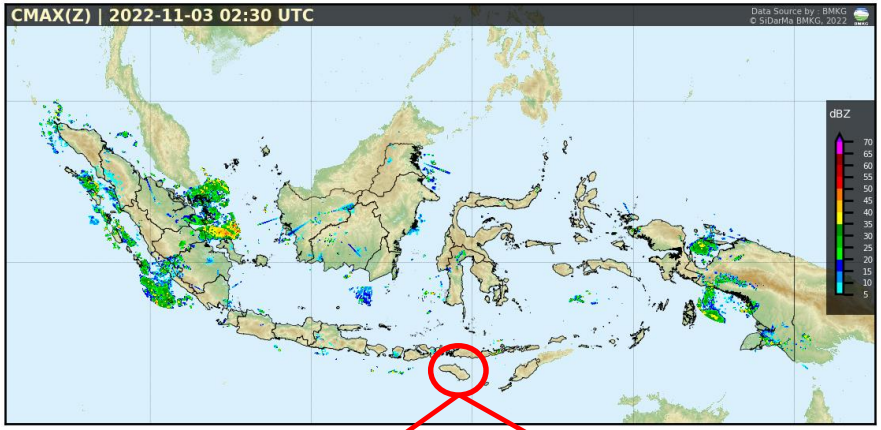
Available in every 10 minutes interval

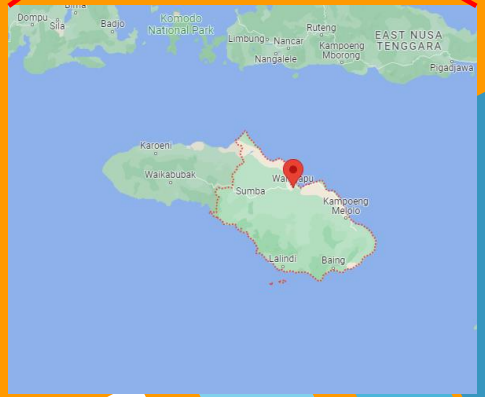
Temporal Resolution

3.

Study Case in NTT Area – East Sumba

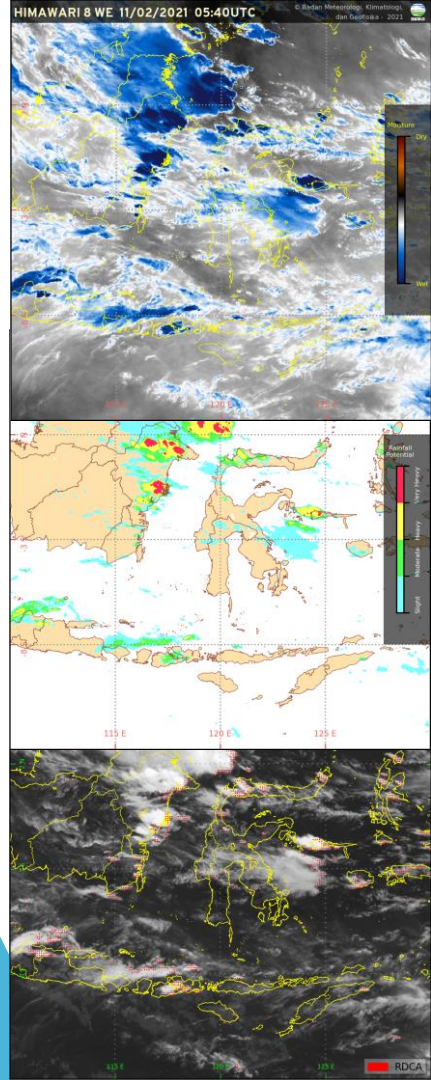
February 11th 2021 and August 12th 2022





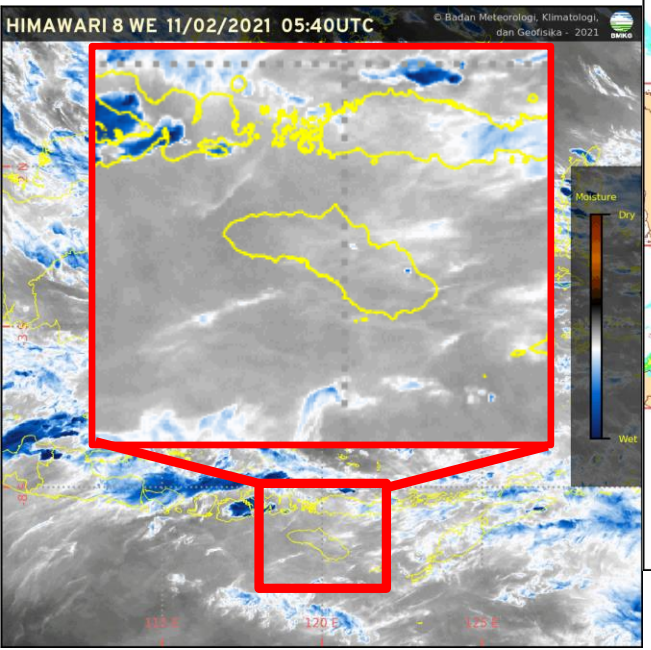
Case 1 – February 11th 2021

- 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

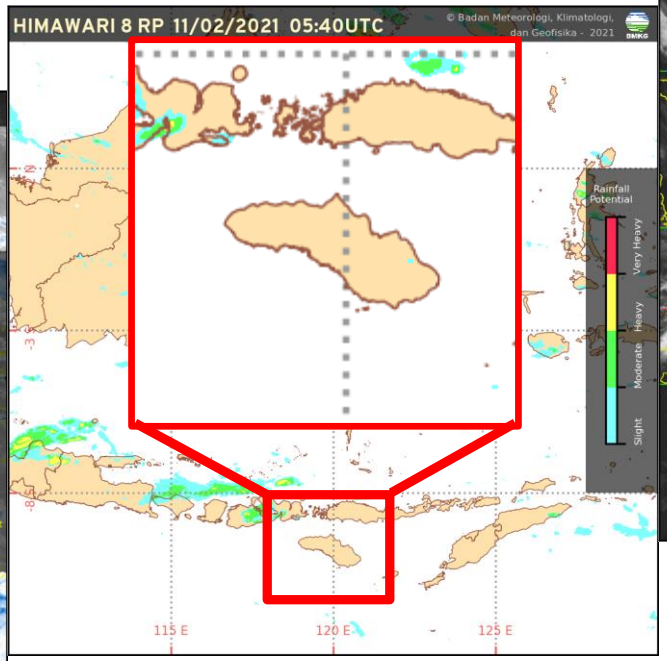


Case 1 – February 11th 2021

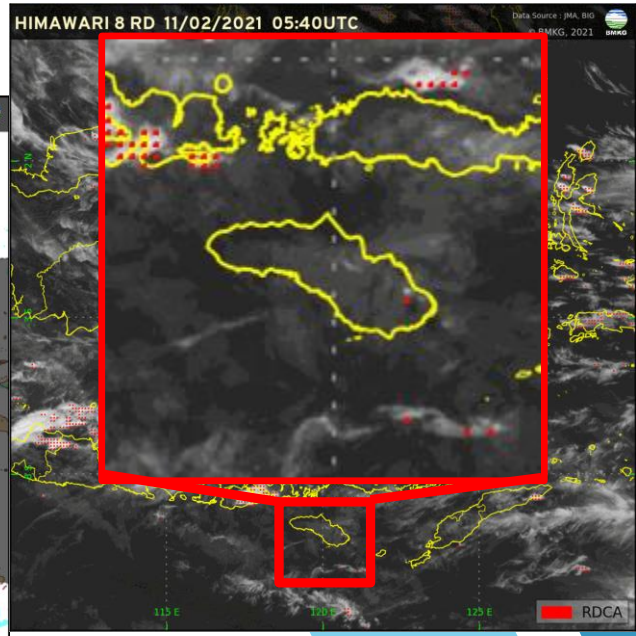
Enhanced-WV : Small burst with dark color inside and steep colour gradient around lasted for 70 min.



RP : slight rain observed

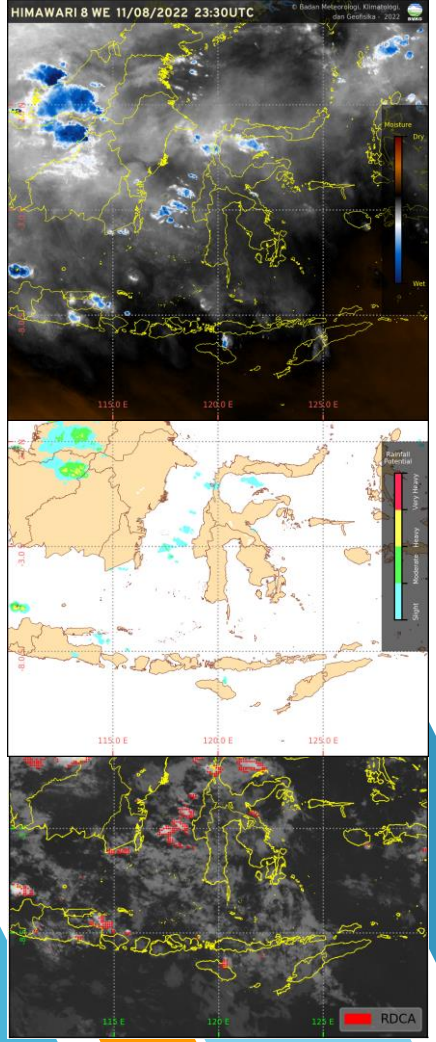


RDCA : red point emerged at the same time



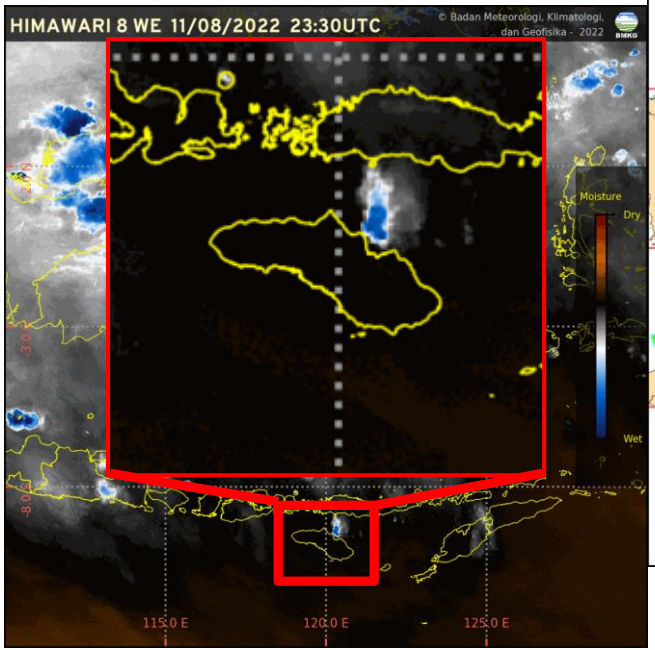
Case 2 – August 12th 2022

- 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

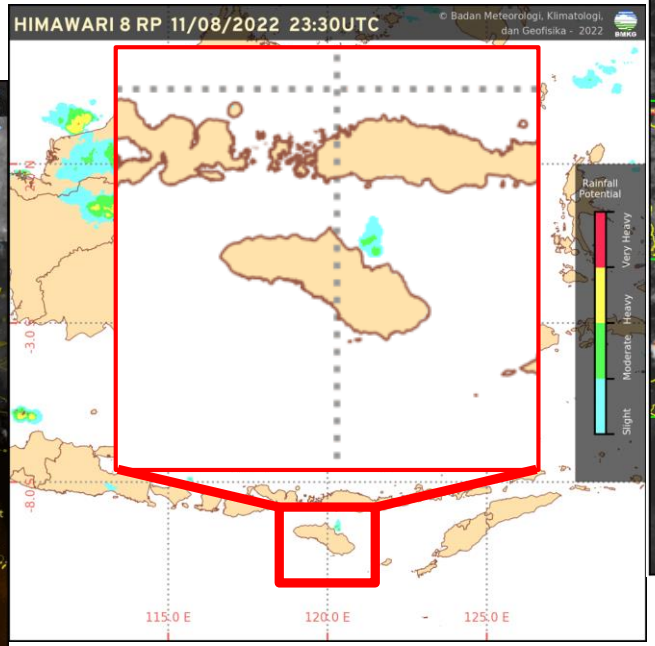


Case 2 – August 12th 2022

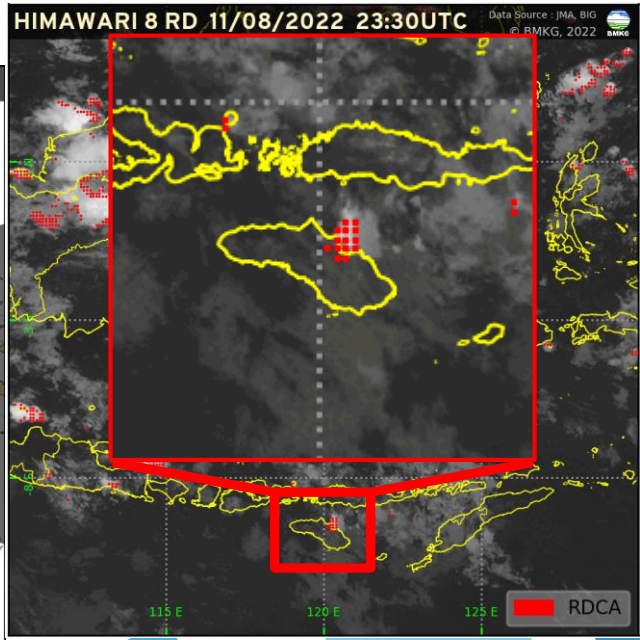
Enhanced-WV : Small burst with dark color inside and steep color gradient around



RP : slight rain observed

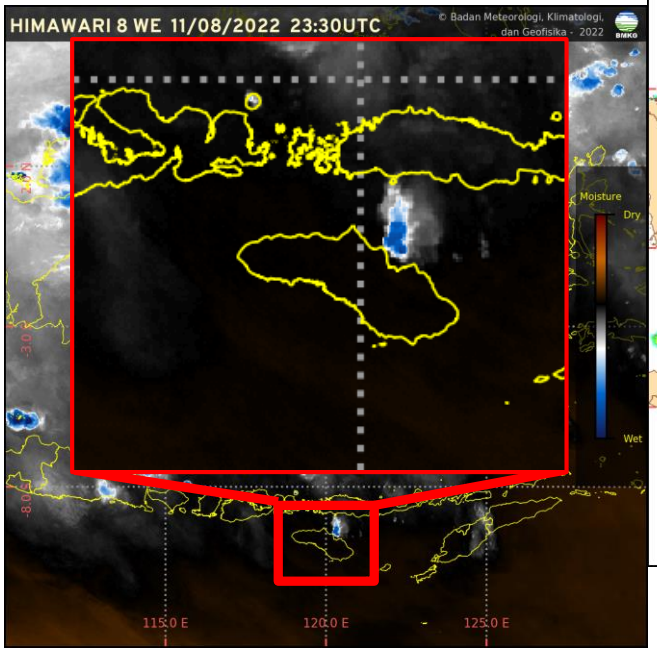


RDCA : red point emerged 10 minutes earlier than WV and RP

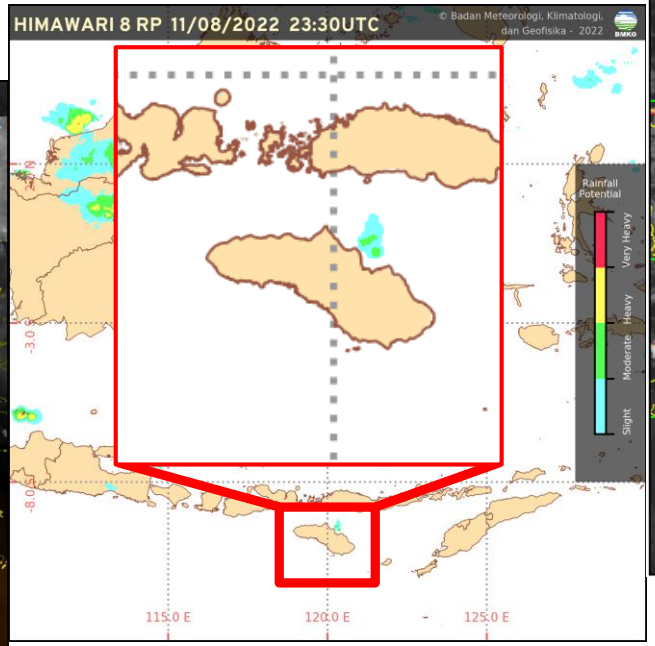


Case 2 – August 12th 2022

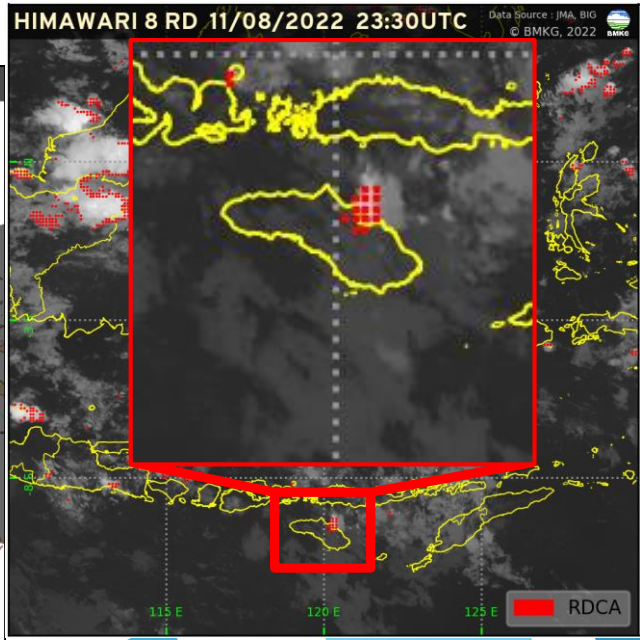
Enhanced-WV : Small burst with dark color inside and steep color gradient around lasted for 2 hrs.



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.