



20 Maret 2021 / 06:00 UTC
 21 Maret 2021 / 06:00 UTC

Data Source:
 - Map: A-G
 - Observed: S-Pol
 - System: WAFS

Tom 6 Nya (Maret), 2021
 20/03/2021 06:00 UTC

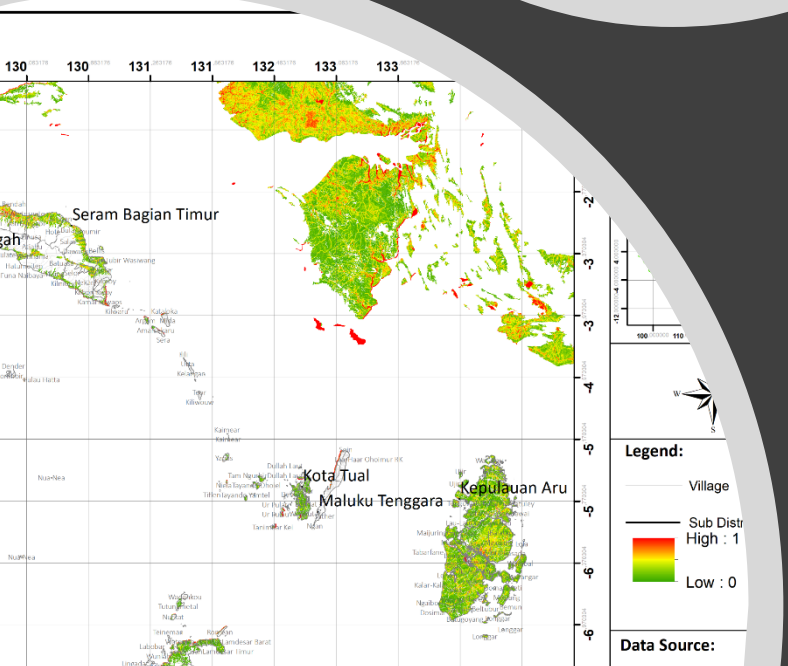
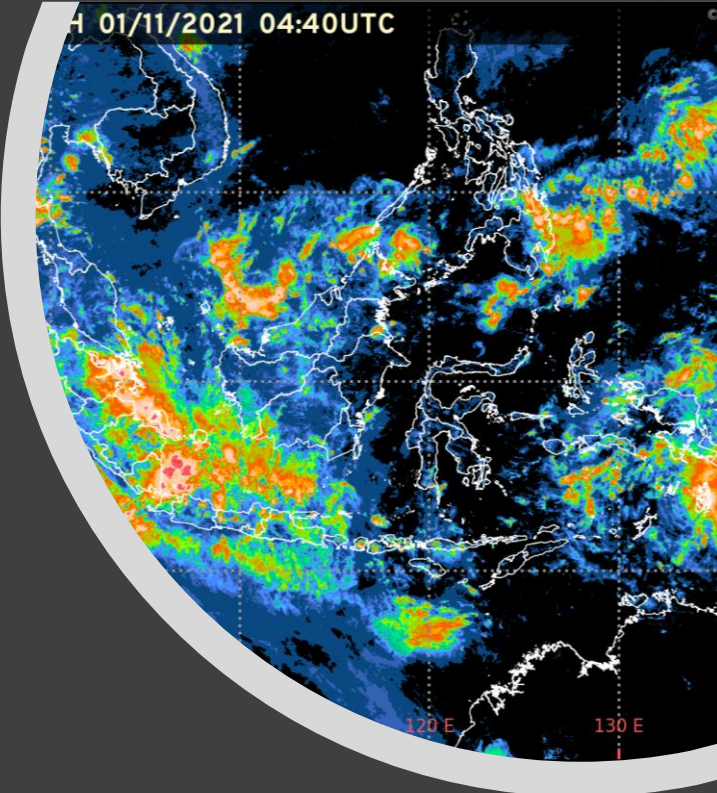
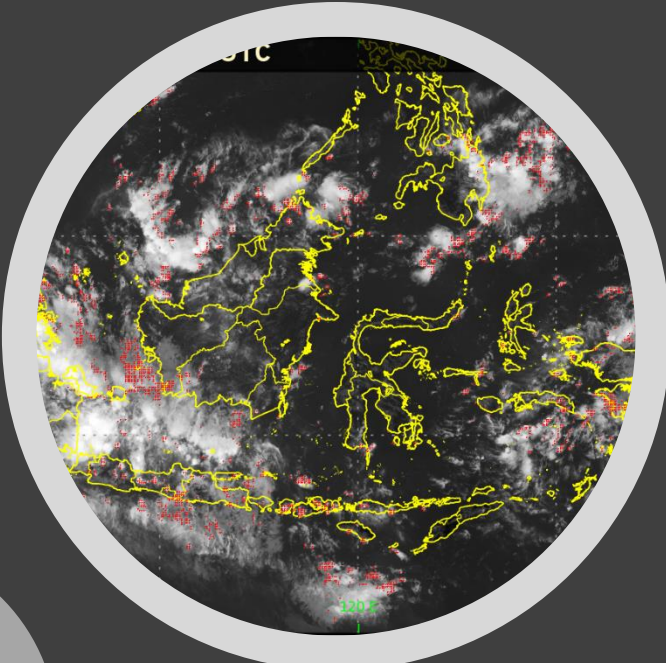
WARNING DETAIL
 Warning issued: 21/03/2021, (Time: 18:22LT)

Affected Area

Area	MALUKU TENGAH, Seram Utara Barat	SERAM BAGIAN BARAT, Inamosol
Sub District:	MALUKU TENGAH, Seram Utara Timur Seti	SERAM BAGIAN BARAT, Kairatu
KOTA AMBON, Baguala	MALUKU TENGAH, Tehoru	SERAM BAGIAN BARAT, Kairatu Barat
KOTA AMBON, Teluk Ambon	MALUKU TENGAH, Teluk Elpaputih	SERAM BAGIAN BARAT, Seram Barat
MALUKU TENGAH, Amahai	MALUKU TENGAH, Teon Nila Serua	SERAM BAGIAN TIMUR, Bula Barat
MALUKU TENGAH, Salanutu	SERAM BAGIAN BARAT, Elpaputih	SERAM BAGIAN TIMUR, Werinama
MALUKU TENGAH, Seram Utara	SERAM BAGIAN BARAT, Huamuall	

Which need to done:

• Tindakan yang harus dilakukan:
 - Perhatikan kondisi cuaca pada saat ini, terutama angin, hujan, dan gelombang.
 - Perhatikan kondisi cuaca pada saat ini, terutama angin, hujan, dan gelombang.
 - Perhatikan kondisi cuaca pada saat ini, terutama angin, hujan, dan gelombang.



Using A Weather Satellite Data to Provide Actual Data for Impact-Based Forecast in Eastern Part of Indonesia (Maluku Region)

Rion S. Salman & Ayufitriya

A weather forecaster & observer at The Pattimura Meteorological Station of Ambon





OUTLINE



Background

1



Data & Method

2



Result & Discussion

3



Conclusion

4





Background

- Providing the ideal information to avoid the disaster with many sources of data (Meteorological Data and Disaster Data) is the main point in IBF system.
- Conventional weather forecast, and MEWS (Three hours & two days letter) are detail but not enough (Just meteorological data)

- Hazard
- Exposure
- Vulnerability



BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA
Stasiun Meteorologi Kelas II Gaser
Provinsi Maluku

PRAKIRAAN CUACA KABUPATEN SERAM BAGIAN TIMUR
Berlaku Mulai: Selasa 30 Maret 2021 / 09:00 WIT
Hingga: Rabu 31 Maret 2021 / 09:00 WIT

LOKASI	09:00	12:00	15:00	18:00	21:00	00:00	03:00	06:00
Bate	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Bata Barat	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Geran Timur	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Kian Barat	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Kilbury	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Lian Vito	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Pulau Gorom	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Pulau Panjang	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Serang Timur	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Susadai	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Talik Wiro	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Taur	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Talik Tolu	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Malaka	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️

Info Meteorologi PTM
Peringatan Dini Cuaca Maluku | BMKG
www.bmkg.go.id

Peringatan Dini Cuaca Maluku tgl. 30 Maret 2021 pkl. 02:16 WIT

Berpotensi terjadi hujan dengan intensitas sedang hingga lebat pada pkl. 02:46 WIT di wilayah:

Kab. Maluku Tengah, Kec: Leihitu, Leihitu Barat dan sekitarnya.
Kab. Seram Bagian Timur, Kec: Gorom Timur, Seram Timur dan sekitarnya.
Kota Tual, Kec: Pulau Dullah Selatan, Pulau Dullah Utara dan sekitarnya.
Kab. Kepulauan Tanimbar, Kec: Tanimbar Selatan, Wertamrian dan sekitarnya.

Dan dapat meluas ke wilayah:

Kota Ambon, Kec: Teluk Ambon dan sekitarnya.
Kab. Seram Bagian Timur, Kec: Pulau Gorom, Pulau Panjang dan sekitarnya.
Kota Tual, Kec: Kur Selatan, Pulau-pulau Kur, Tayando Tam dan sekitarnya.
Kab. Maluku Tenggara, Kec: Kei Besar, Kei Besar Utara Barat, Kei Besar Utara Timur dan sekitarnya.
Kab. Kepulauan Tanimbar, Kec: Kormolin, Wermaktion dan sekitarnya.

Kondisi ini diperkirakan masih akan berlangsung hingga pkl. 05:46 WIT

-PRAKIRAWAN BMKG MALUKU-

BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA
Stasiun Meteorologi Kelas II Pattimura Ambon
Provinsi Maluku

PRAKIRAAN CUACA KOTA AMBON
Berlaku Mulai: Senin 29 Maret 2021 / 09:00 WIT
Hingga: Selasa 30 Maret 2021 / 09:00 WIT

LOKASI	09:00	12:00	15:00	18:00	21:00	00:00	03:00	06:00
Lettim Selatan	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Nusanie	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Sitimu	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Talik Ambon	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️
Talik Ambon Bigaki	☀️	☀️	☀️	☀️	☀️	☀️	☀️	☀️

STASIUN METEOROLOGI KELAS II PATTIMURA AMBON
Alamat: Jl. Dr. J. Lemessa Lala - Ambon 97236
Telp: (0911) 381001, 311751

PERINGATAN DINI CUACA 3 HARIAN WILAYAH MALUKU

BERLAKU TANGGAL 29-31 MARET 2021

NARASI:
Situasi cuaca Maluku pada minggu ini, terdapat ancaman hujan lebat di Maluku bagian selatan yang mengakibatkan pemukiman wilayah terdampak hujan lebat di Maluku bagian selatan. Kondisi ini sangat memungkinkan karena pemukiman rawan hujan di wilayah yang didominasi oleh garis karang dan belukar rawan. Selain itu, hal lain yang harus diperhatikan dalam kondisi ini adalah kondisi pemukiman rawan banjir di wilayah Maluku.

Keterangan	29 Maret 2021	30 Maret 2021	31 Maret 2021
Terdapat yang berpotensi hujan sedang hingga lebat disertai kilang/petir dan hujan angin kencang		• Kab. Maluku Tenggara	
Terdapat yang berpotensi hujan sedang hingga lebat	• Kota Ambon • Kab. Maluku Tengah • Kab. Seram Jaya • Kab. Lep. Tanimbar	• Kota Tual • Kab. Maluku Tenggara • Kab. Seram Tng. Timur • Kab. Lep. Tanimbar	• Kota Tual • Kab. Maluku Tenggara • Kab. Seram Tng. Timur
Terdapat yang berpotensi hujan sedang			

Periode validasi: Minggu, 29 Maret 2021, 17:00 WIT

Selanjutnya lebih lanjut tersedia di:
Web: www.bmkg.go.id/
Twitter: [@BMKGIndonesia](https://twitter.com/BMKGIndonesia)
Facebook: [BMKG Indonesia](https://www.facebook.com/BMKGIndonesia)

Alamat digital yang menghubungi:
Telp: (0911) 381001
WhatsApp: 0853-4216-3913
Email: kominfo@bmkg.go.id

Ambon, 29 Maret 2021
Prakirawan BMKG Maluku

Impact Forecast
24 Jun, 25 Jun, 26 Jun, 27 Jun, 28 Jun

Notification
ALERT HAS BEEN PUBLISHED
Hujan lebat Category 3
Seram Tengah
2 cities and 2 sub-districts
Seram Barat
3 cities and 27 sub-districts

Affected area
Impact: Which must be done Matrix Impact

- Sigi: Dolo Barat, Dolo Selatan, Gumba, Kulu, Pipikom, Kuluai Selatan
- Donggala: Frembani, Rio Pakwa

Detailed Table:

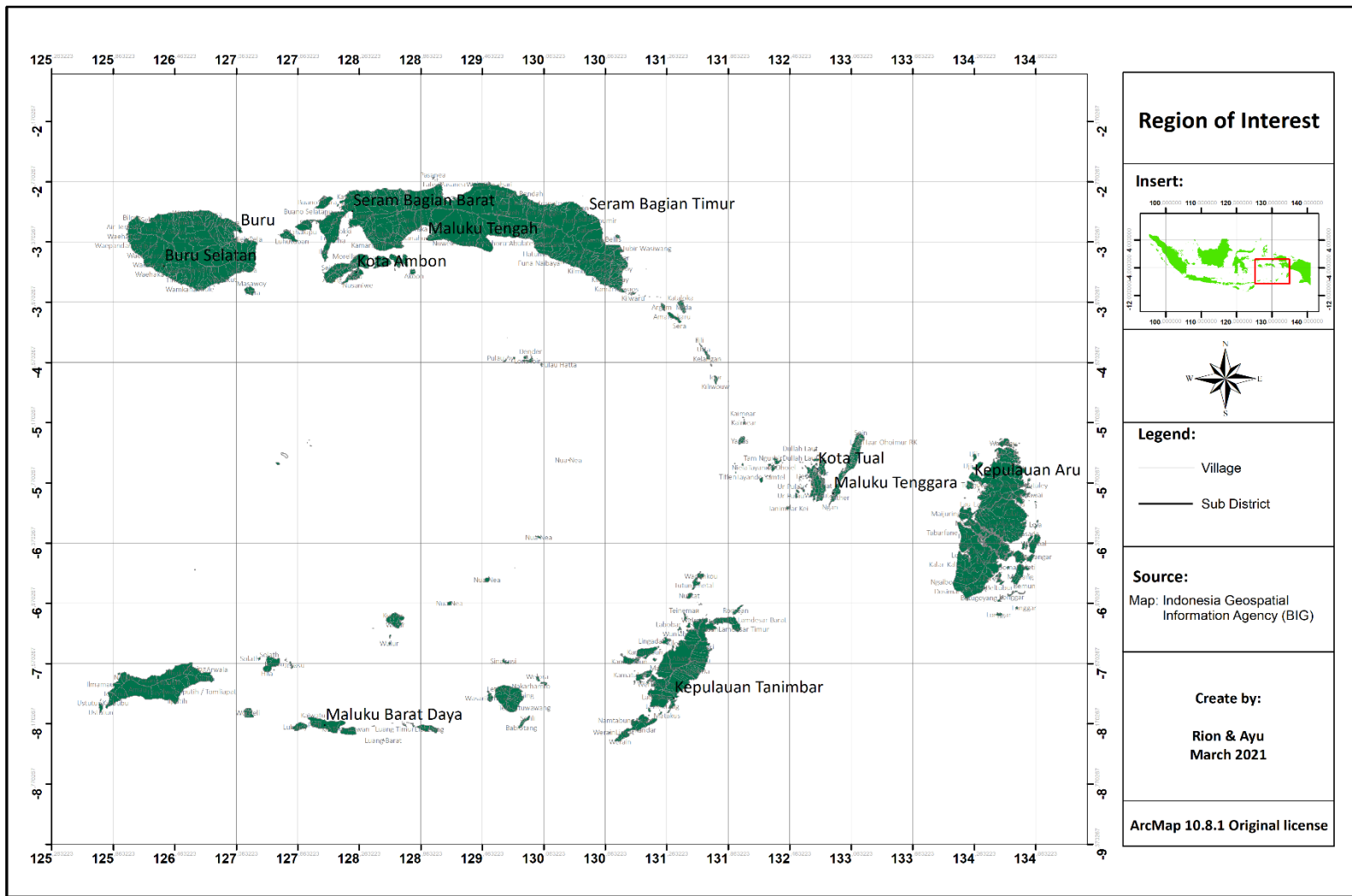
Provinsi	Kabupaten	Kecamatan
MALUKU TENGAH	Seram Utara Barat	Seram bagian Barat, Iramcoel
MALUKU TENGAH	Seram Utara Timur Seti	Seram bagian Barat, Kariwo
MALUKU TENGAH	Tauku	Seram bagian Barat, Kariwo, Bebel
MALUKU TENGAH	Tolik	Seram bagian Barat, Seram Barat
MALUKU TENGAH	Troar Nila Selatan	Seram bagian Barat, Nila Barat
MALUKU TENGAH	Troar Nila Utara	Seram bagian Barat, Nila Barat
MALUKU TENGAH	Troar Nila Tengah	Seram bagian Barat, Nila Barat
MALUKU TENGAH	Troar Nila Utara	Seram bagian Barat, Nila Barat

VS

- Detail (Sub-District Level) with geospatial information
- Many sources of data (Collaboration)
- All information in one map

- Detail (Sub-District Level)
- Per-Three hours & Easy to understand
- From a forecaster side only

Future weather forecasting

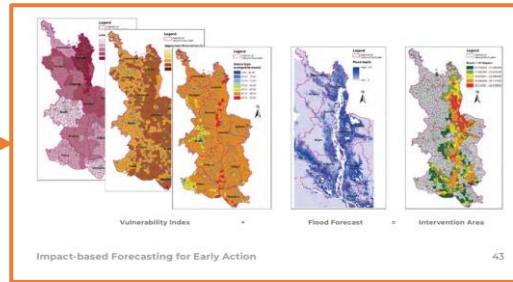
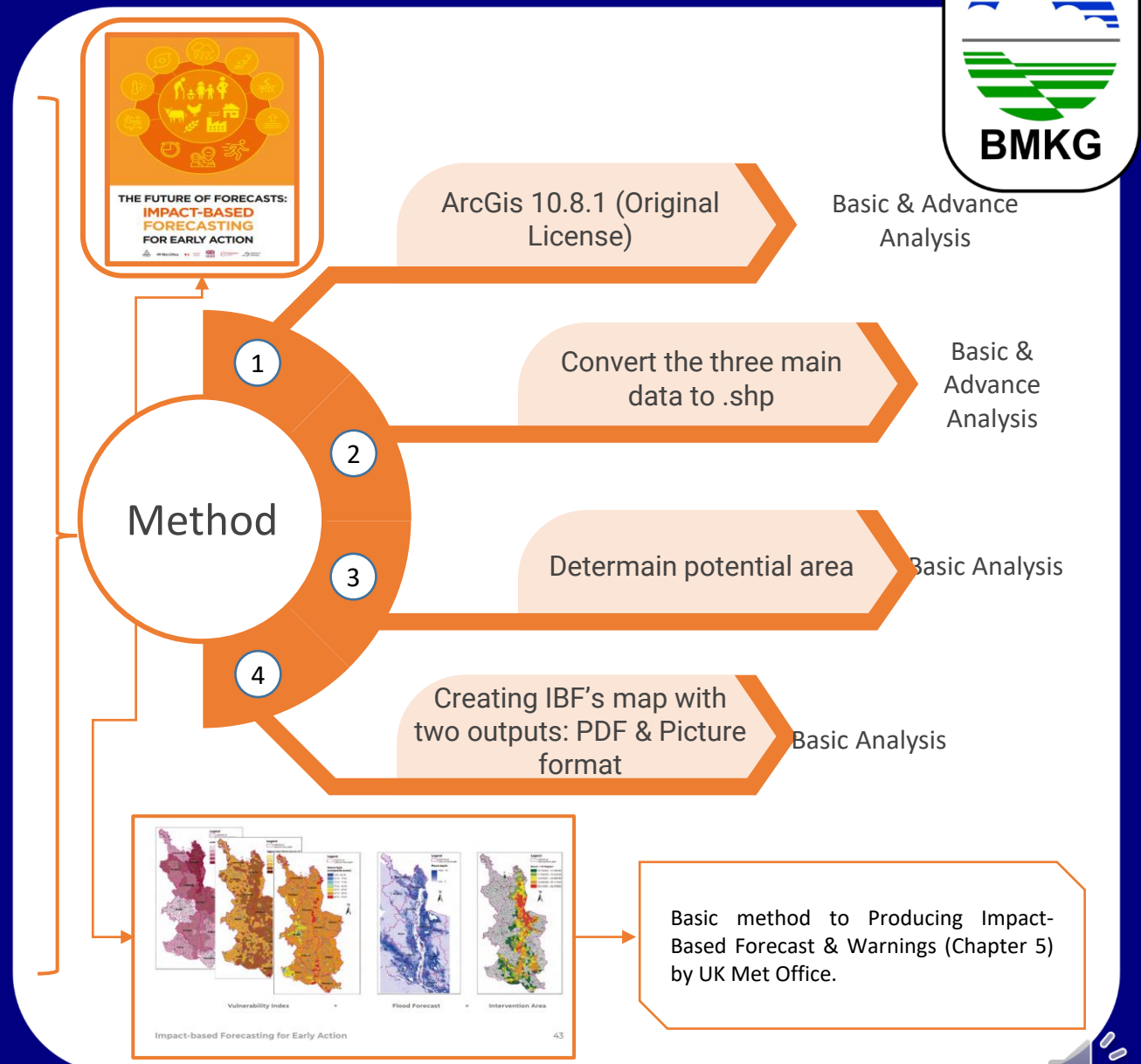
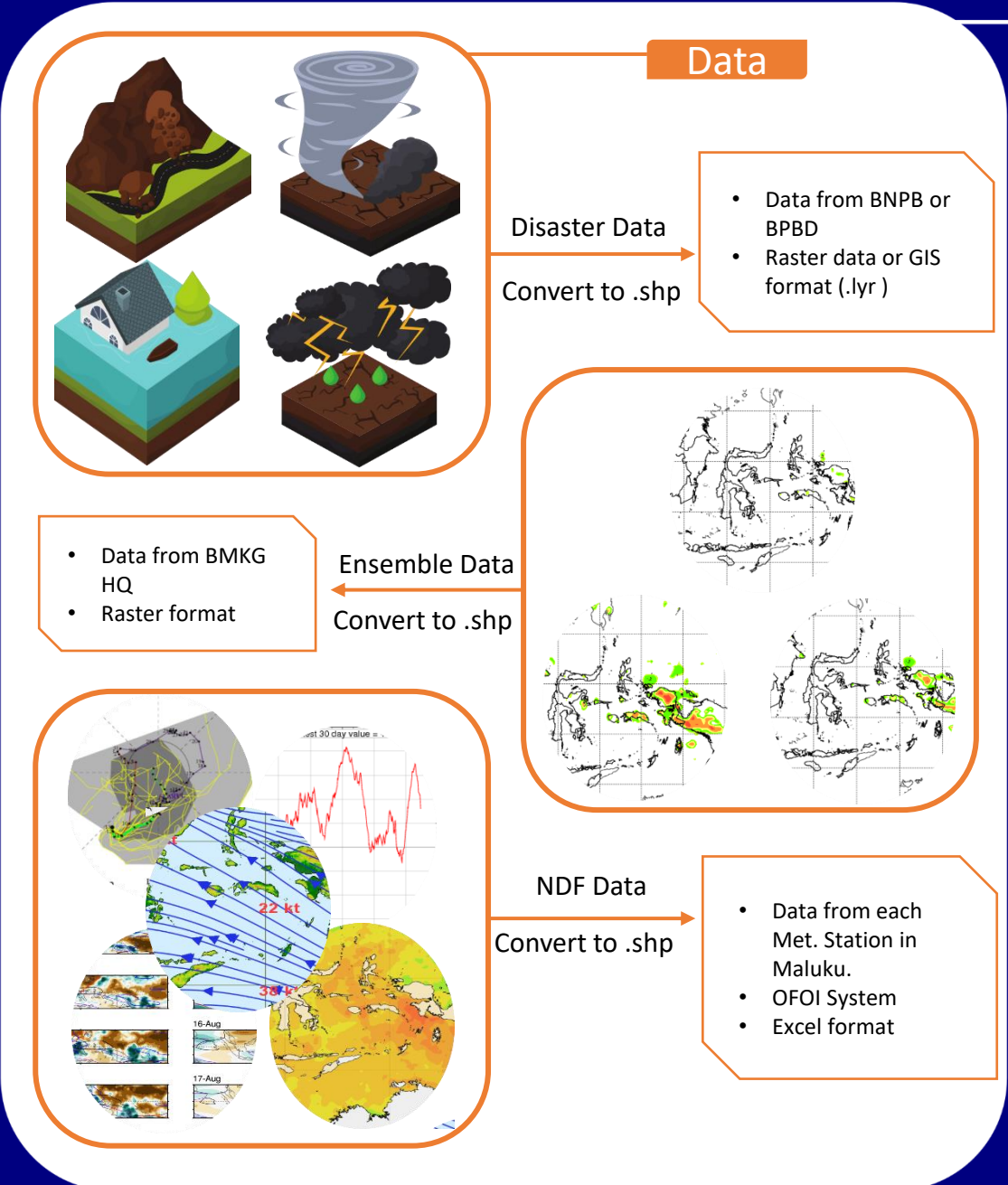


Area of interest

- Maluku region
- Eastern part of Indonesia
- Many small islands
- 11 Districts and 119 Sub-Districts



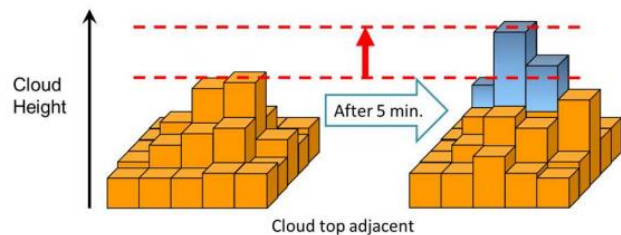
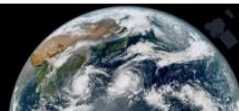
IBF - Implementation





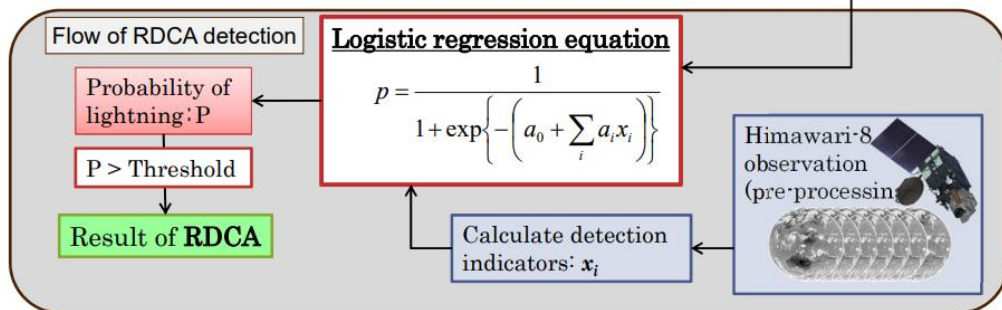
Meteorological Satellite Center (MSC) of JMA

RDCA Detection



Concept of RDCA detection
 Rapidly developing cumulus
 ✓ cloud top is getting high
 ✓ increasing asperity of cloud top
 ✓ cloud microphysical parameters transition

Estimate logistic Regression coefficients



Meteorological Satellite Center (MSC) of JMA

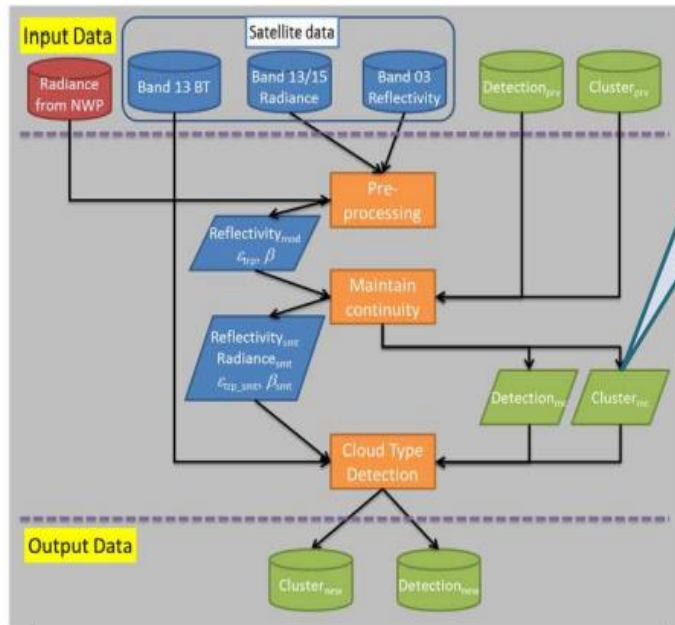
RDCA detection parameters



	No.	Detection Parameter	Main Objective		
Only day time	1	B03(0.64um):Max-Ave.	Cloud Top Roughness Detection	One Scene Parameters	
	2	B03:Standad Deviation	Cloud Top Roughness Detection		
	3	B13(10.4um):Min.-Ave.	Cloud Top Roughness Detection		
	4	B13:Standard Deviation	Cloud Top Roughness Detection		
New	5	B16(13.3um)-B13	Ice Cloud Detection		
	6	B08(6.2um)-B13	Water Vapor Detection above Cloud top		
	9	B15(12.4um)-B13	Ice Cloud Detection		
Only day time	10	B10(7.3um)-B08	Water Vapor Detection above Cloud Top		Time difference Parameters
	11	B11(8.6um)-B13	Ice Cloud Detection		
	21	Temporal Variation of B03 Average Value	Presumption of Developing Level of Cloud		
New	23	Temporal Variation of B13 Average Value	Presumption of Developing Level of Cloud		
	24	Temporal Variation of B11-B13 Average Value	Developing Ice Particle Detection		
	25	Temporal Variation of B15-B13 Average Value	Developing Ice Particle Detection		



CBA and MLUA detection



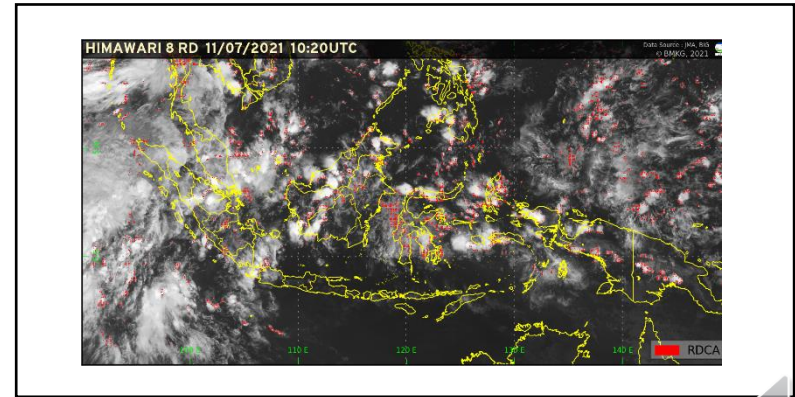
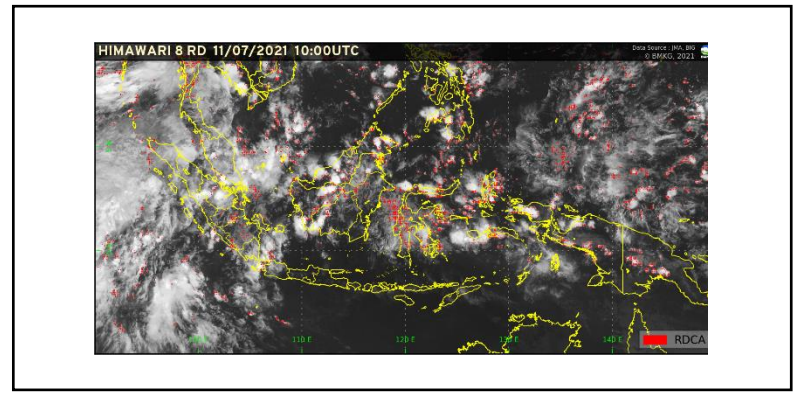
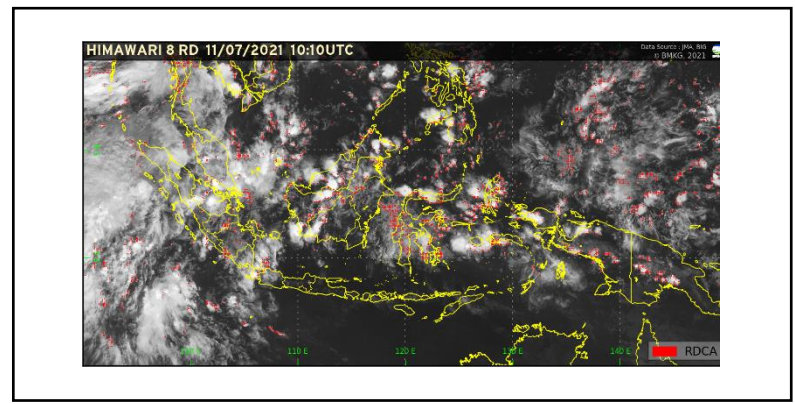
CBA and MLUA detection flow chart

B13 (10.4 μm)

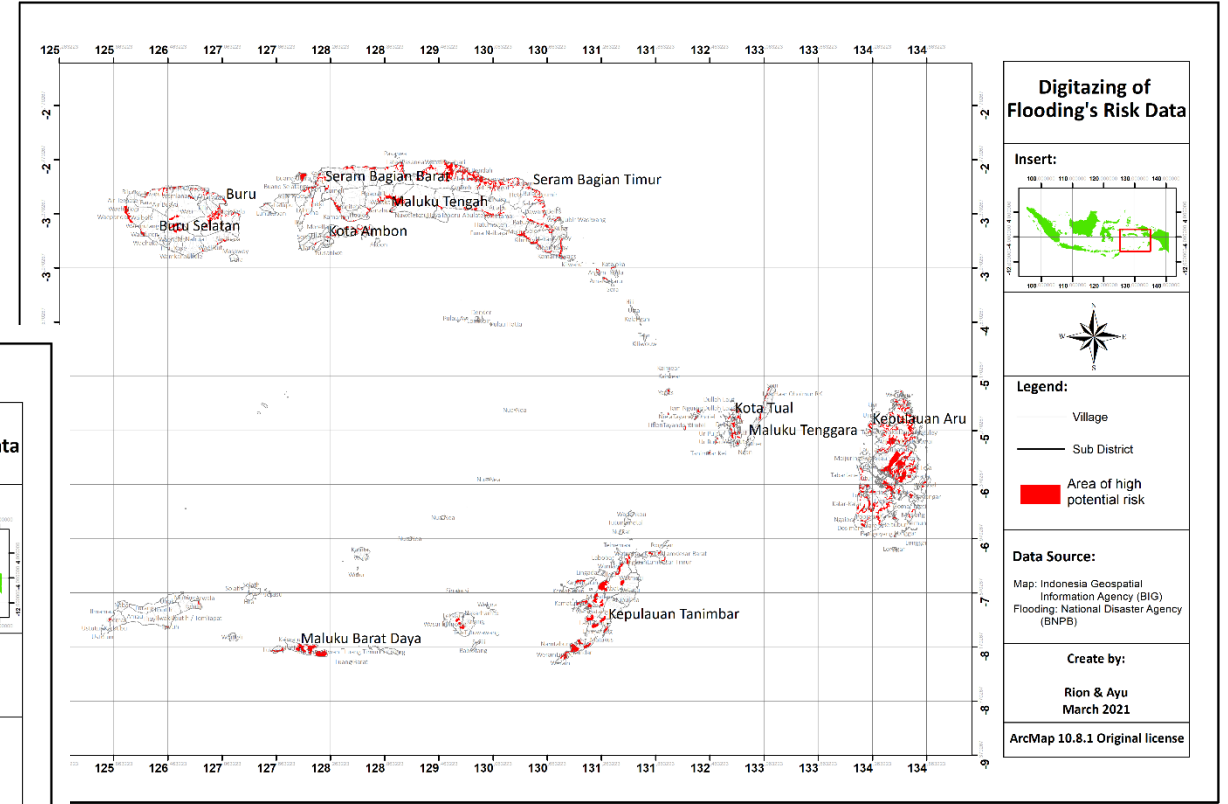
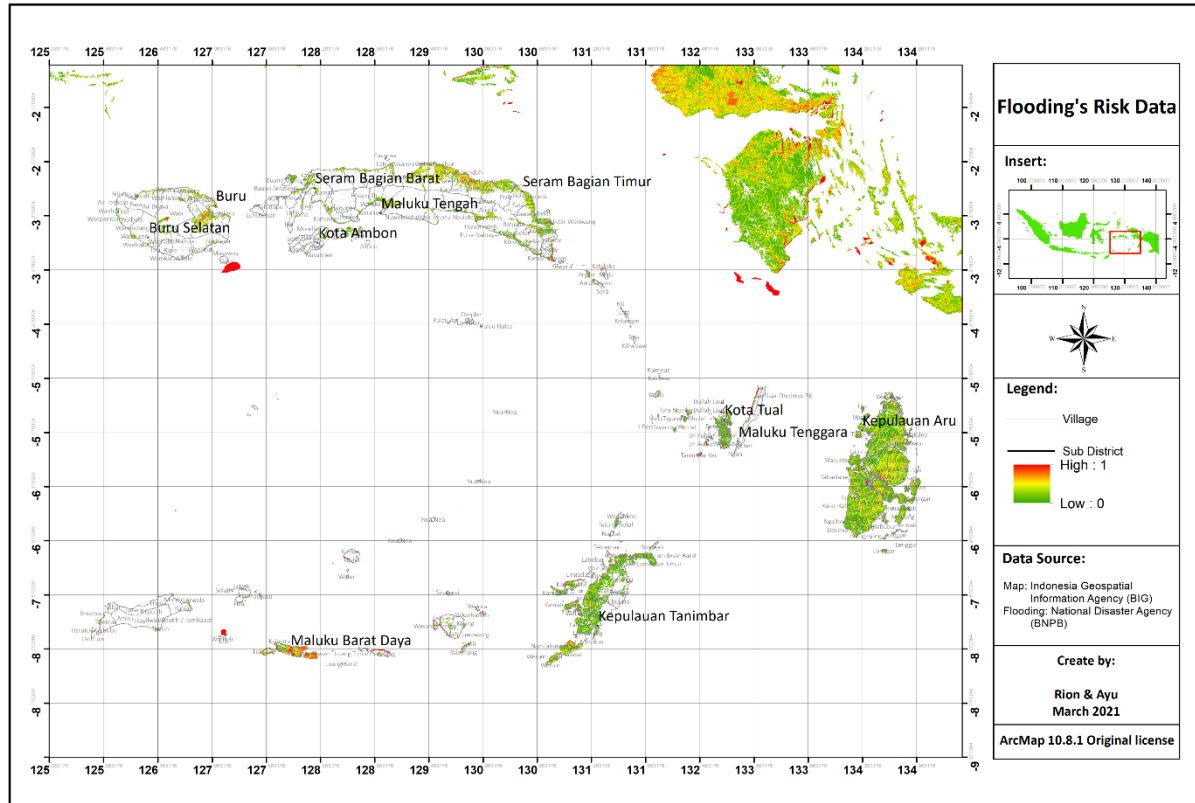
↓ clustering

Clustering

- ✓ Cloud cluster, continuous cloud area in the thick cloud area
- ✓ Radiation field of B13
- ✓ Watershed method searching from local minimum radiance points



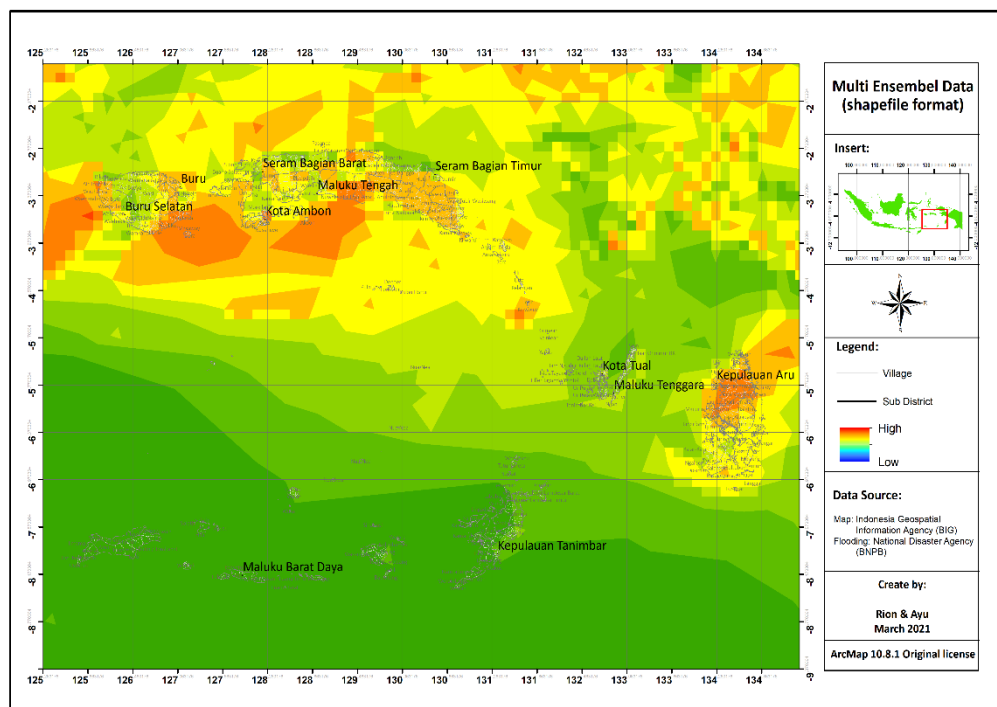
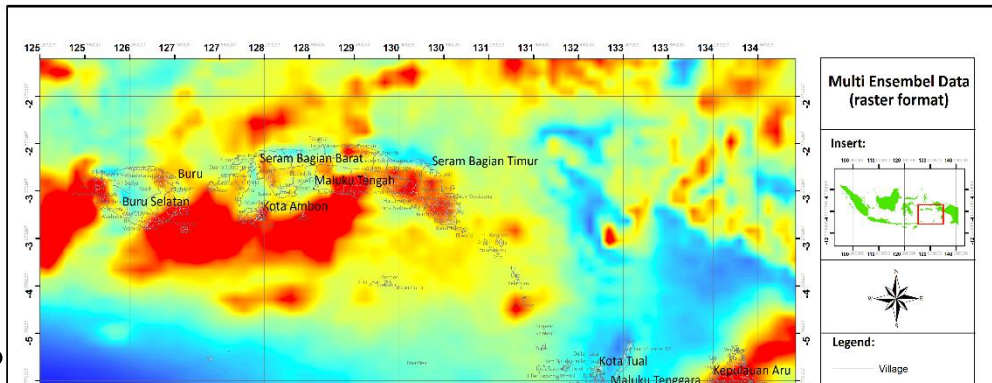
Result & Discussion



Convert with digitizing the Flooding risk data (Basic Method)

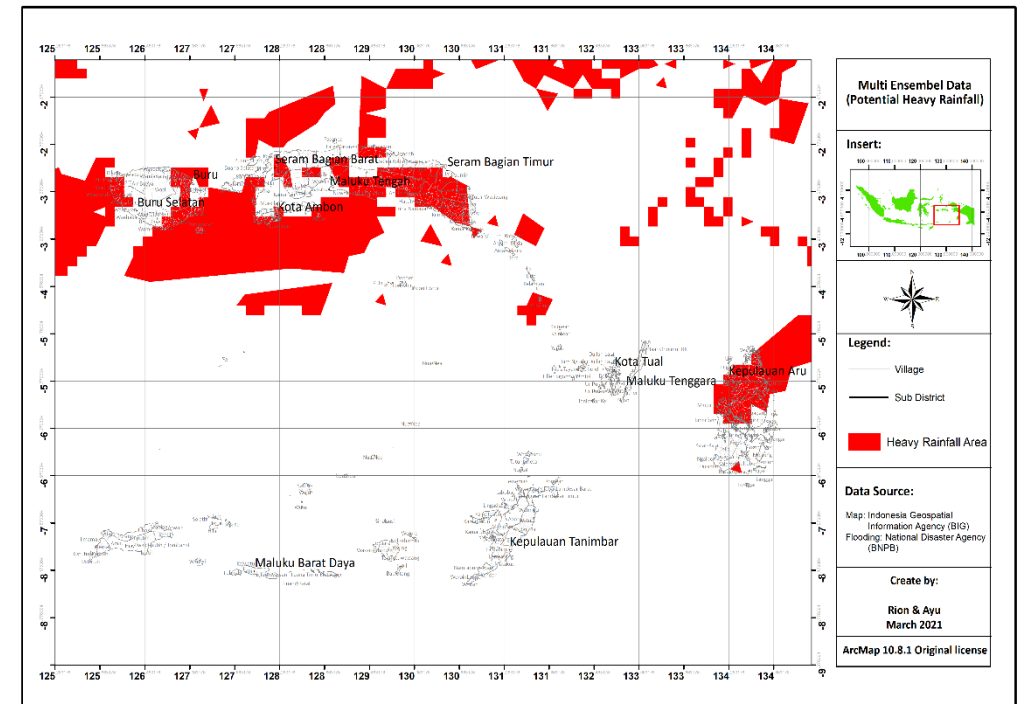


Result & Discussion



Raster data convert to Shapefile data (Advance analysis)

Selecting the high potential only



Result & Discussion

The processing to convert data (Excel format to .shp)

Interpolation from excel use IDW (Raster file)

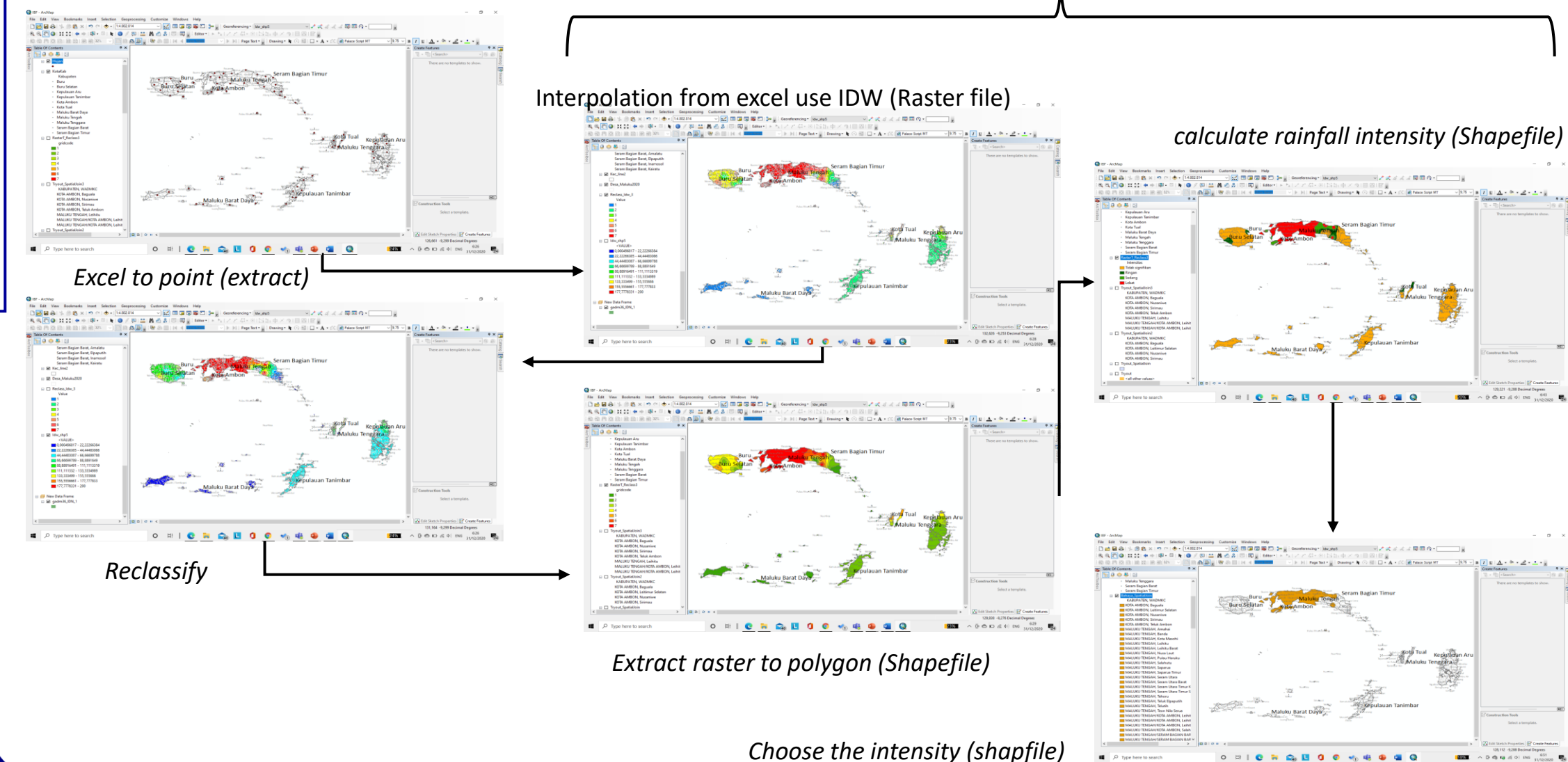
calculate rainfall intensity (Shapefile)

Excel to point (extract)

Reclassify

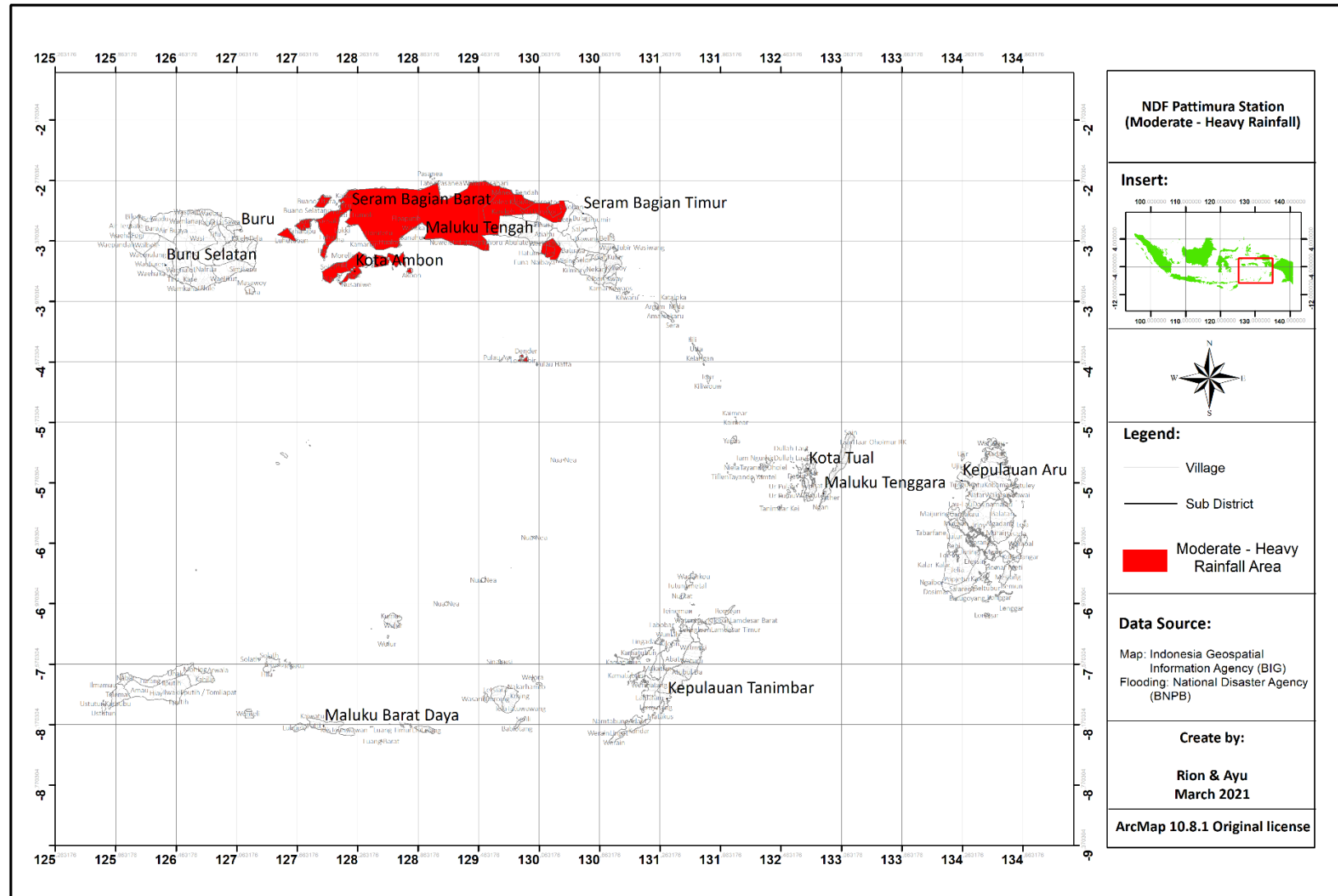
Extract raster to polygon (Shapefile)

Choose the intensity (shapfile)



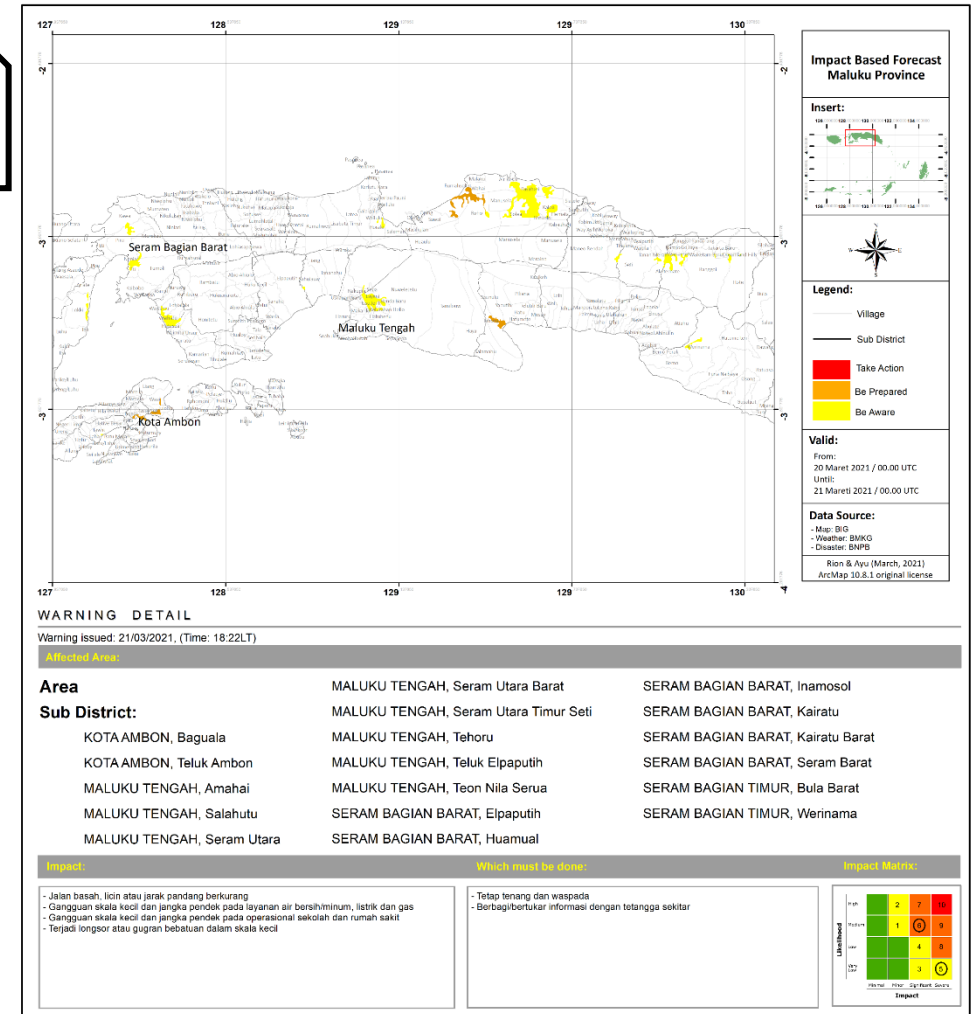
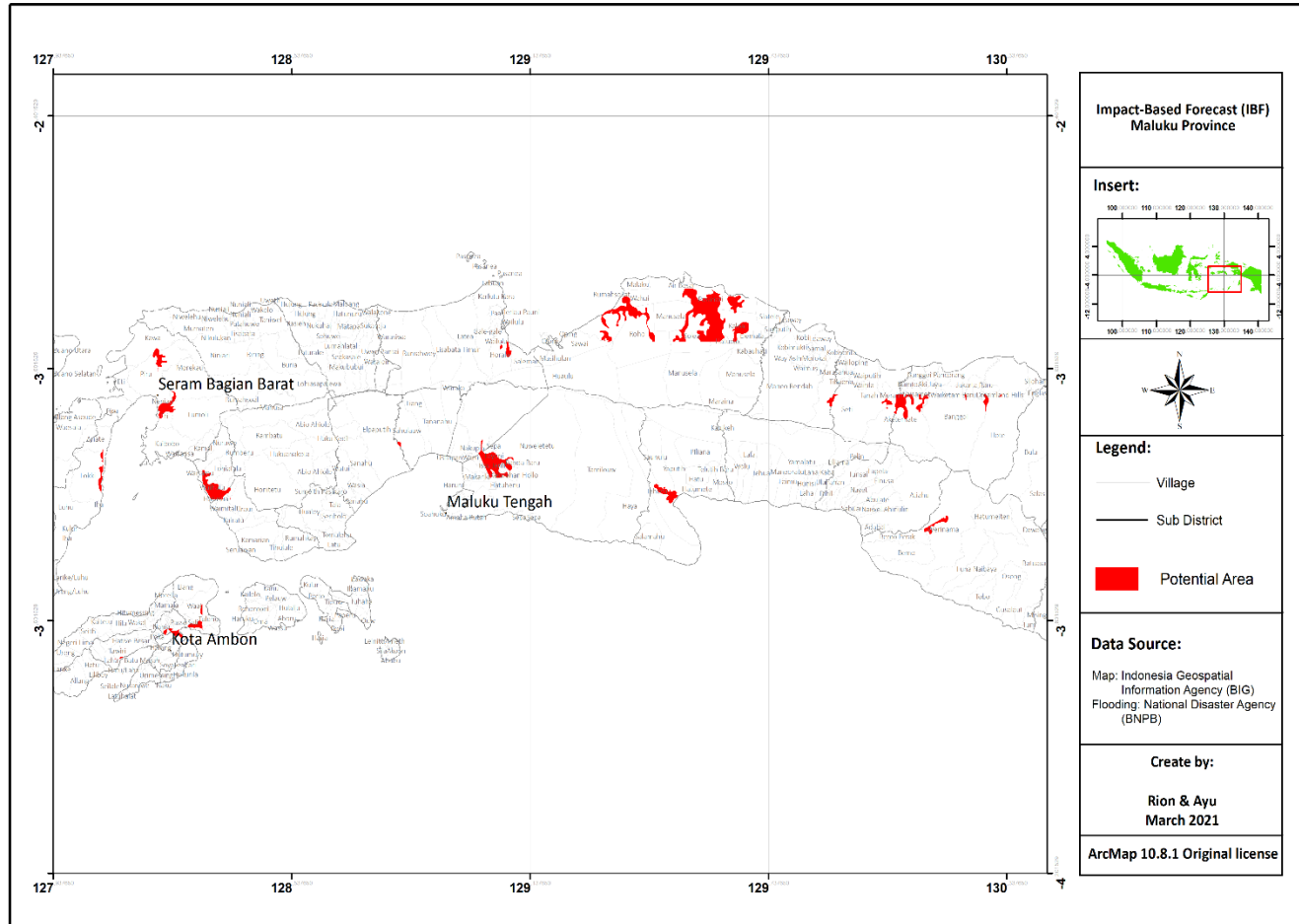
Result & Discussion

The National Digital Forecast system result in .shp



Result & Discussion

The IBF's Map in Maluku region



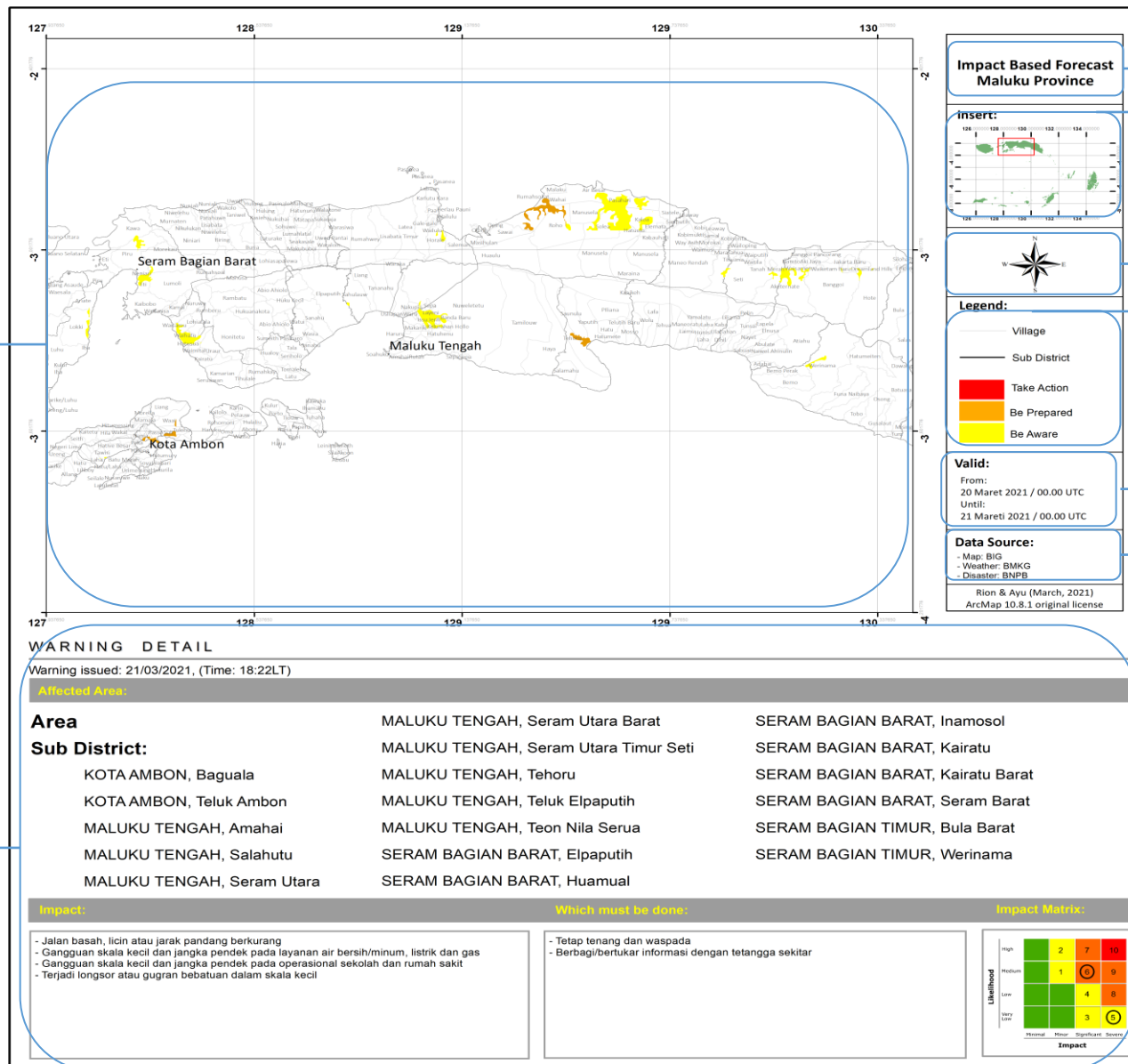
The potential area



Result & Discussion

Region

IBF information



Title

insert

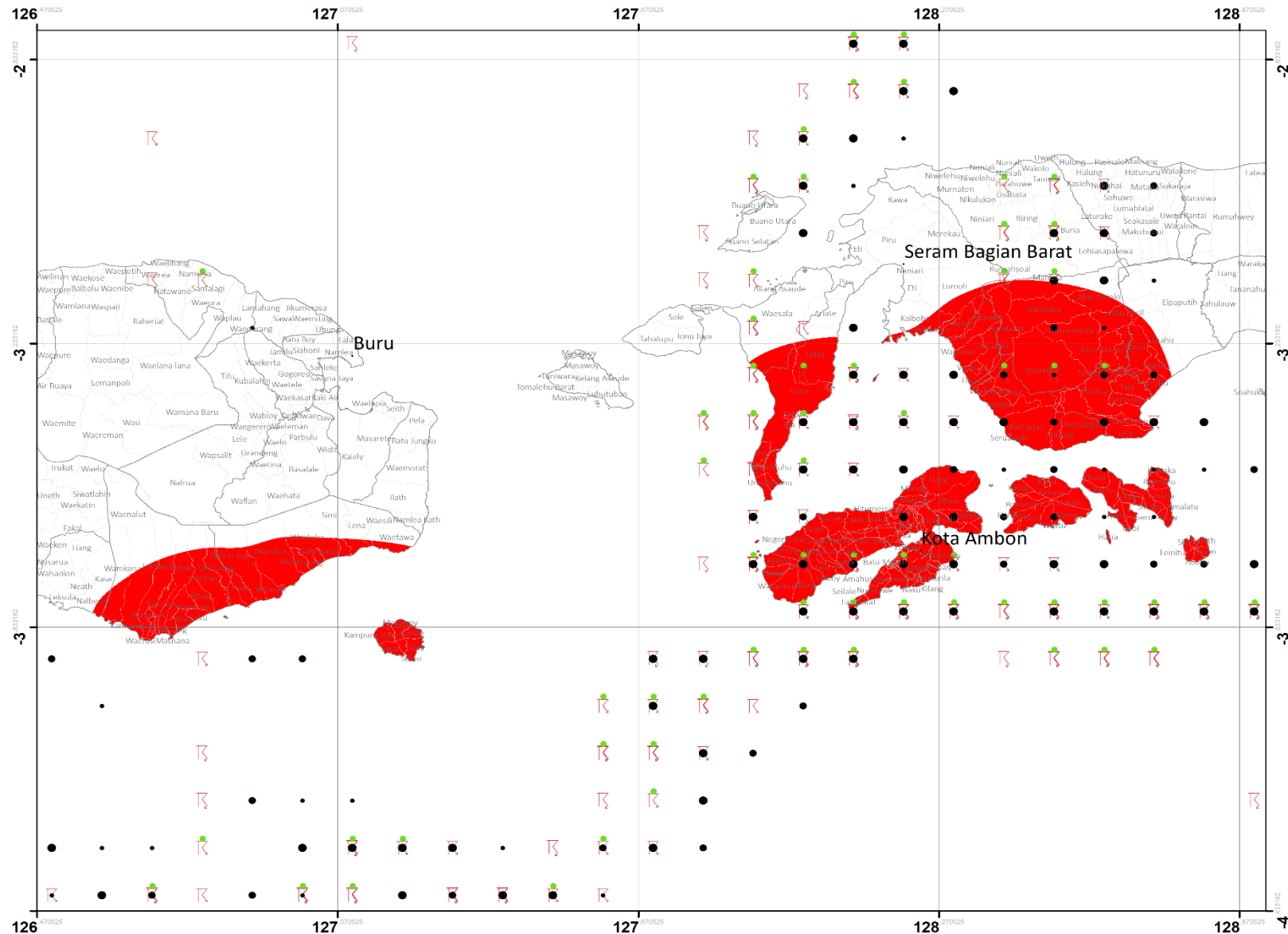
North arrow

Legend

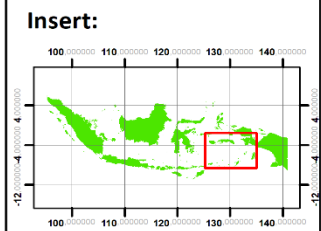
Valid

Data source





**Impact-Based Forecast (IBF)
with RDCA data
(10.00 - 10.50 UTC)
in Maluku Province**



- Legend:**
- Village
 - Sub District
 - Potential Area

Data Source:

Map: Indonesia Geospatial Information Agency (BIG)
Flooding: National Disaster Agency (BNPB)

Create by:

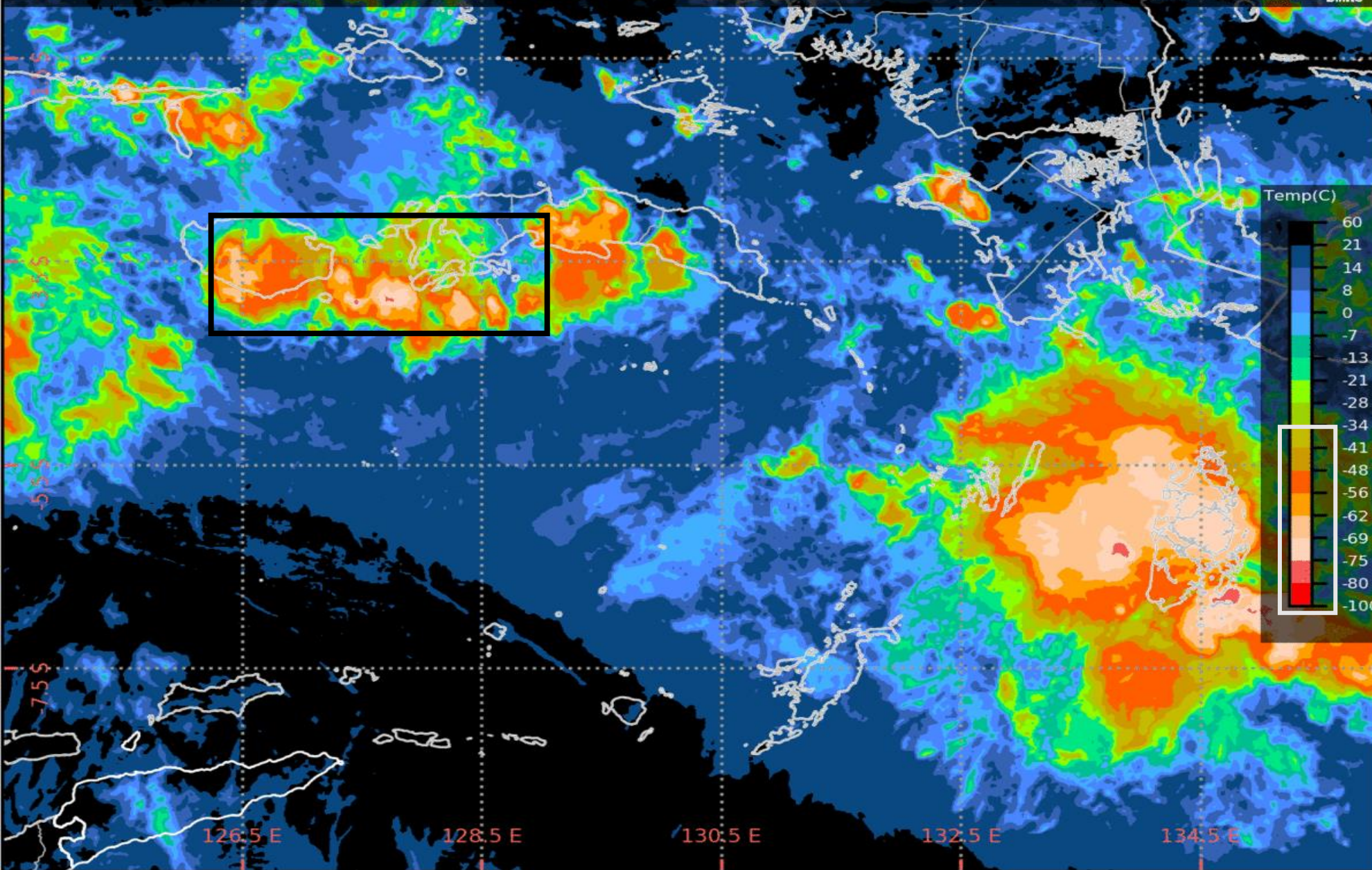
Rion & Ayu
September 2021

ArcMap 10.8.1 Original license



HIMAWARI 8 EH 11/07/2021 05:00UTC

© Badan Meteorologi, Klimatologi,
dan Geofisika - 2021 



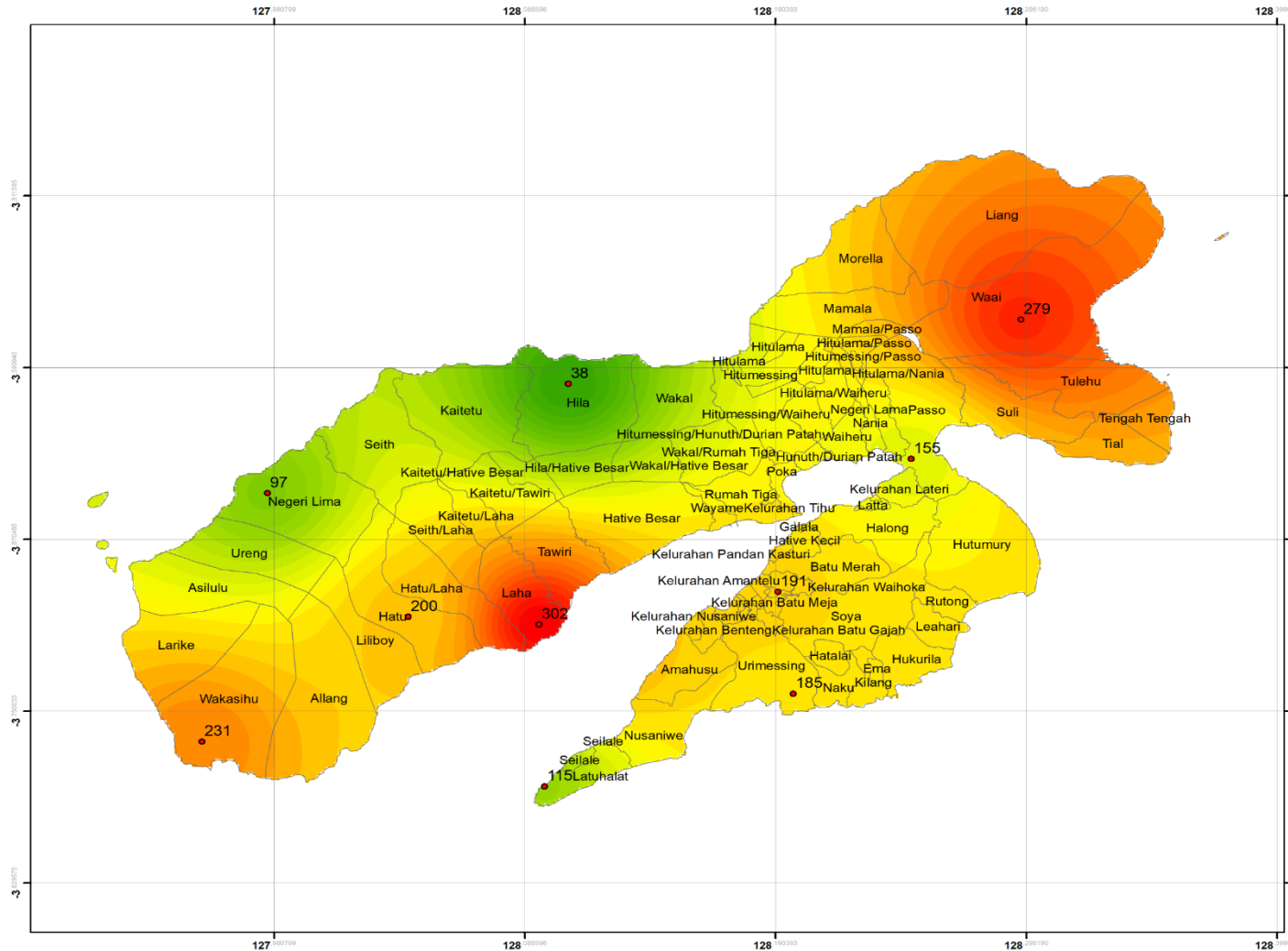
- < -40 (Top of cloud temperature)
- Indicating Cumulonimbus Cloud
- The result is Heavy Rainfall cause flooding and landslides





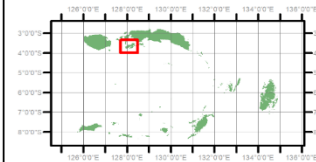
BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA
Stasiun Meteorologi Kelas II Pattimura - Ambon

Jln. Dr. J. Leimena, Komplek Bandar Udara Pattimura Ambon, Kota Ambon - 97236
Telp. (0911) - 3681683, 311751. Email: bmkgpattimura@yahoo.co.id



**Peta Curah Hujan
Pulau Ambon
11 Juli 2021**

Insert:



Legenda:

— Batas Desa

Curah Hujan (mm) :

- Hatu, 200
- Hila, 38
- Karang Panjang, 191
- Laha, 302
- Latuhalat, 115
- Mahia, 185
- Negeri Lima, 97
- Passo, 155
- Tapi, 231
- Waai, 279

Sumber:

- Peta: BIG
- Data CH: Stamet, Stageof, Stamar, dan
Pos Penakar Hujan



Conclusion

Using the satellite data will help the forecaster to make quick decision to support the Impact-based Forecast. This will be useful to avoid people from the hydrometeorological hazard that will happen in the specific area.





Thank you for your attention

Any question?