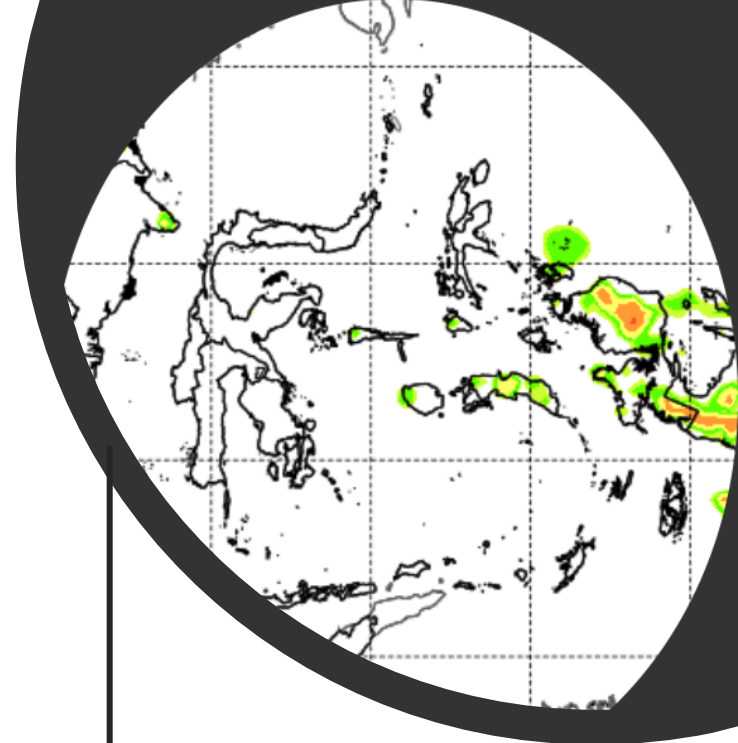
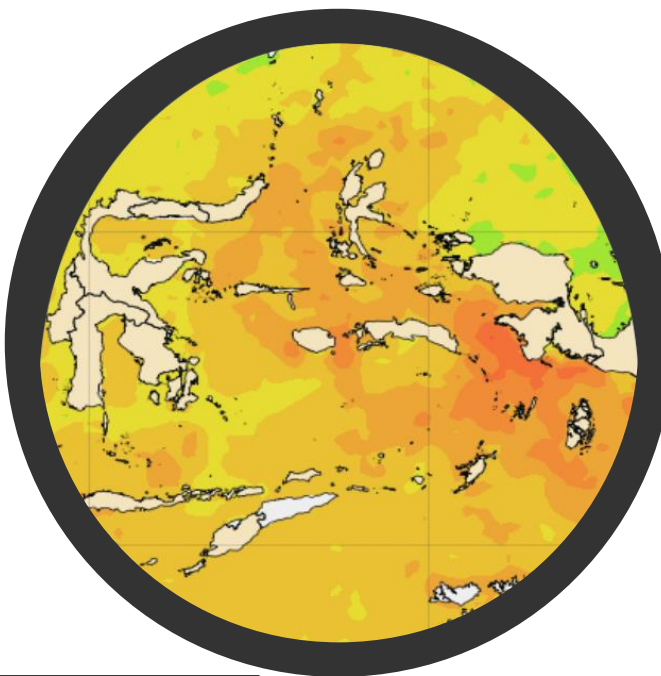
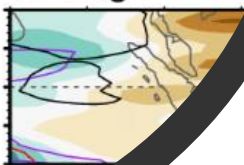
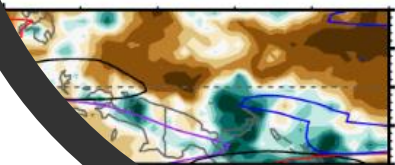


16-Aug



BMKG

Impact-Based Flood Forecast for Maluku Province

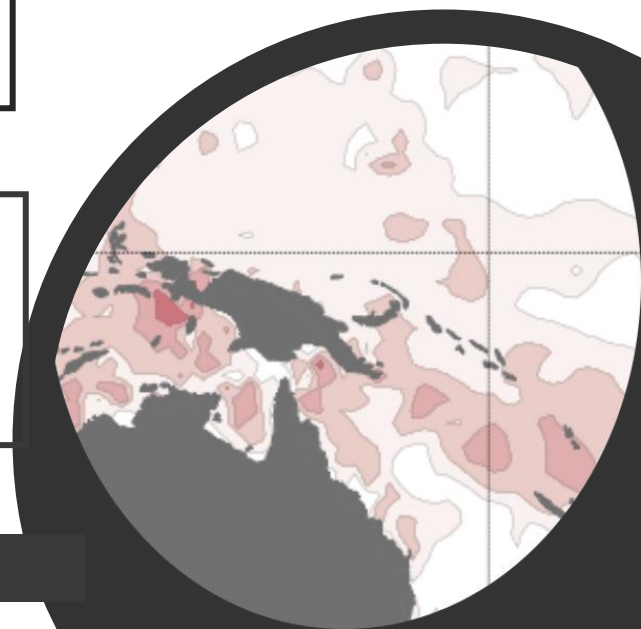
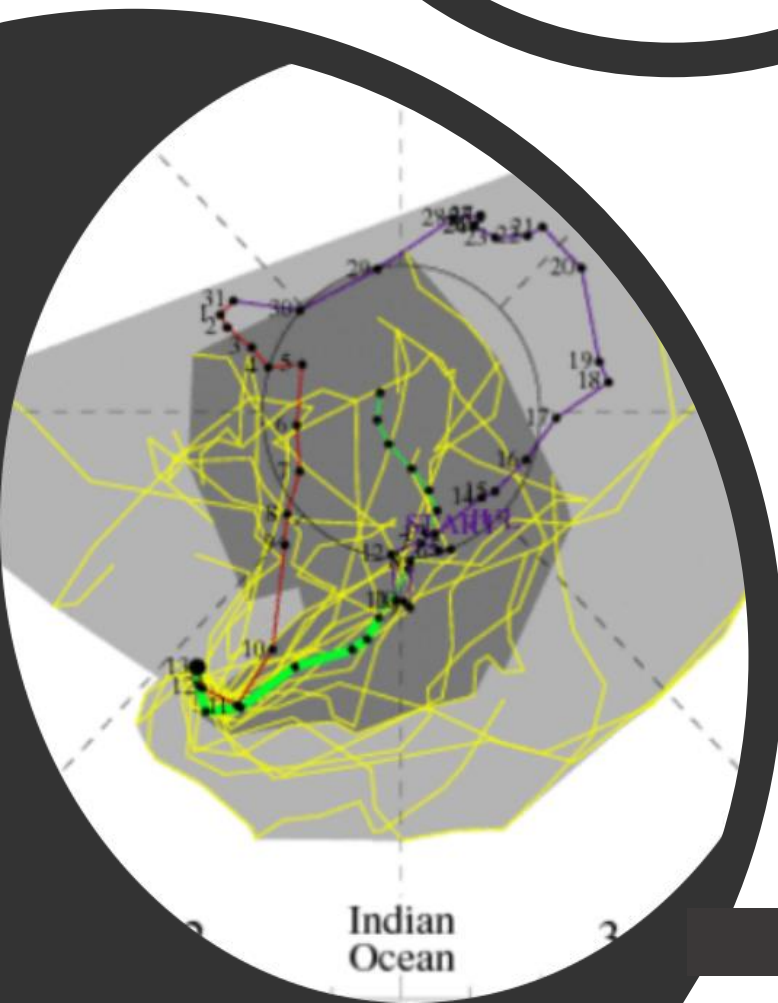
Rion S. Salman, Rochelle Campbell, and Celina Kattan



1st WMO/WWRP

WEATHER & SOCIETY

CONFERENCE, February 28 - 11 March 2022



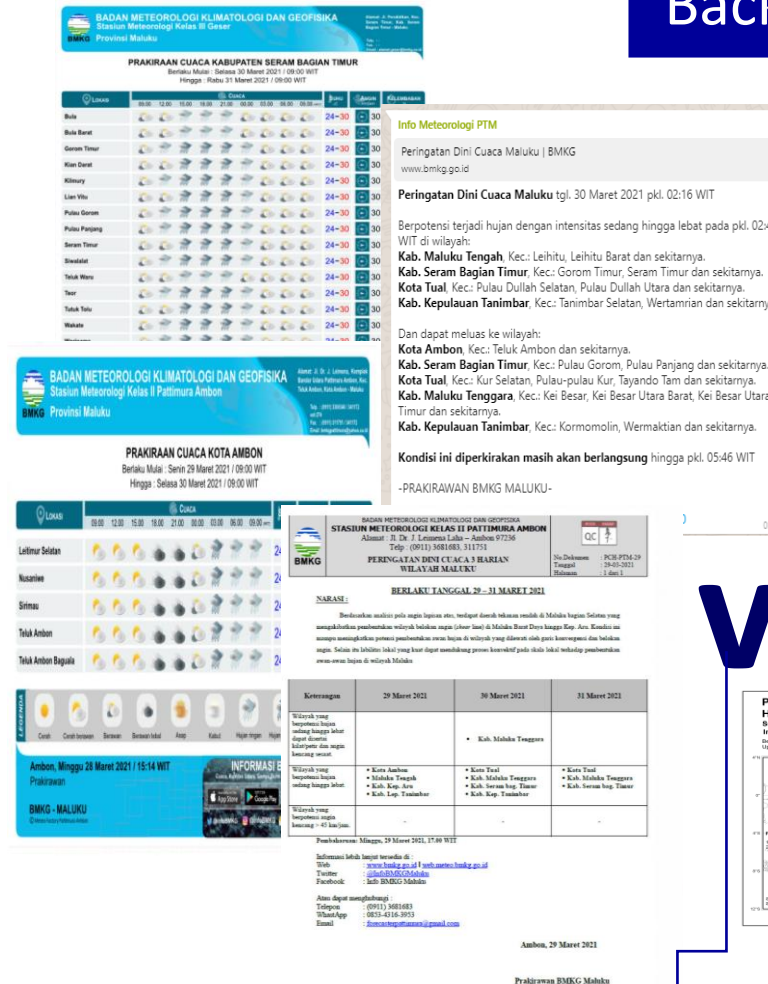
The Pattimura Meteorological Station of Ambon

OUTLINE

-  Background 1
-  Data & Method 2
-  Result & Discussion 3
-  Conclusion 4

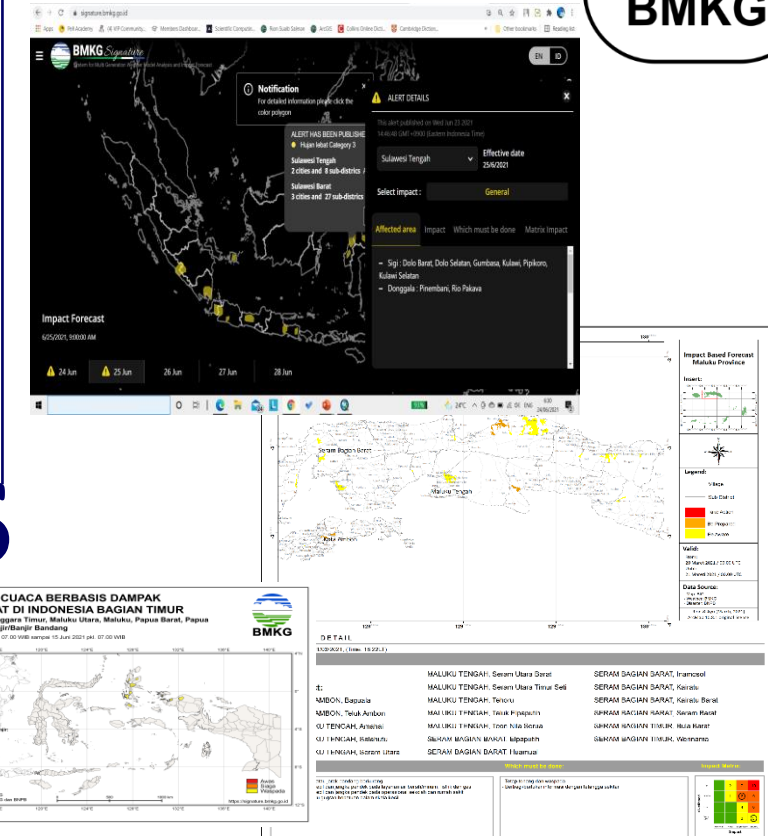
- Providing essential information on the hazard, exposure and vulnerability is key for mitigating disasters (Meteorological Data and Disaster Data).
- Conventional weather forecast, and MEWS (Three hours & two days) are detail but not enough (Just meteorological data)

- Hazard
- Exposure
- Vulnerability



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

Background

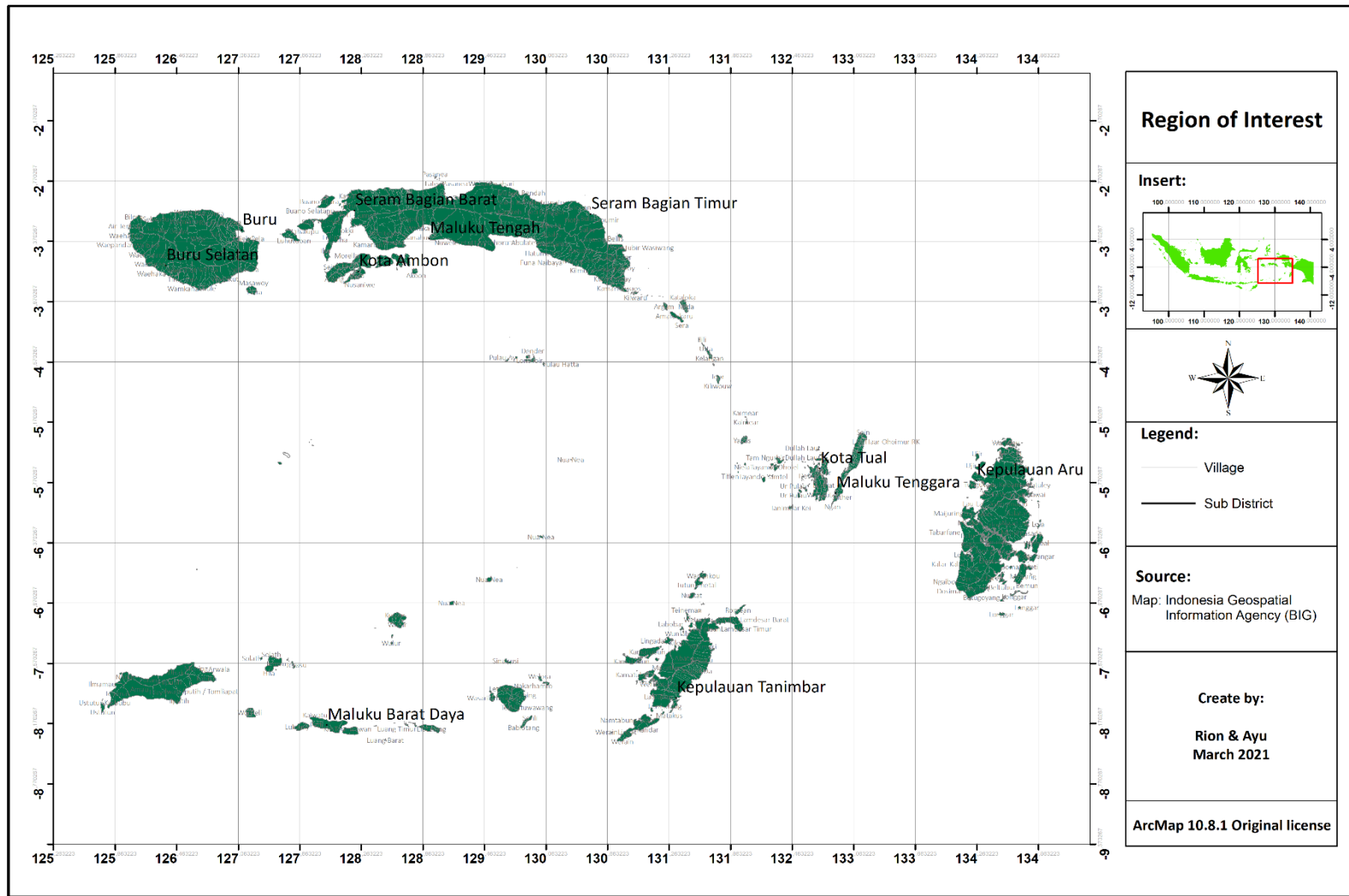


- Detail (Sub-District Level) with geospatial information
- Many sources of data (Collaboration)
- All information in one map

Impact-Based Forecast (IBF)



Future weather forecasting



Area of interest

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

Impact-Based Forecast (IBF)

IBF - Implementation



Data

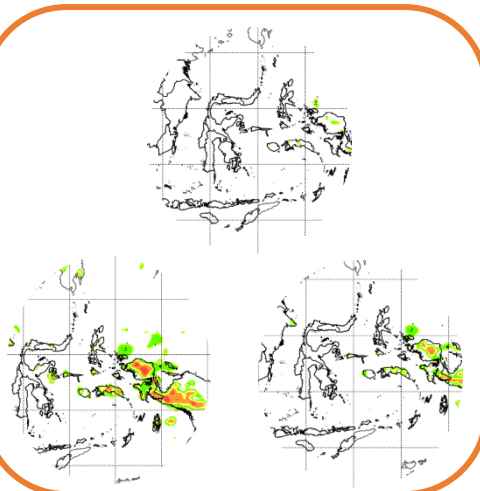


Disaster Data
Convert to .shp

- Data from BNPB or BPBD
- Raster data or GIS format (.lyr)

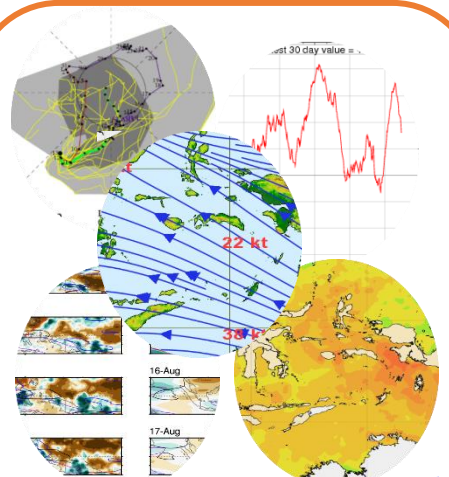
- Data from BMKG HQ
- Raster format

Ensemble Data
Convert to .shp



NDF Data
Convert to .shp

- Data from each Met. Station in Maluku.
- OFOI System
- Excel format



Method

- 1
- 2
- 3
- 4

ArcGis 10.8.1 (Original License)

Basic & Advance Analysis

Convert the three main data to .shp

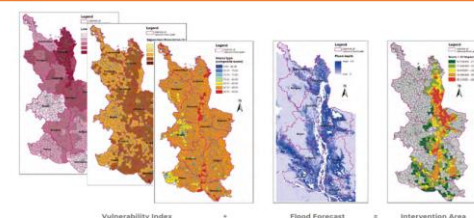
Basic & Advance Analysis

Determine potential area

Basic Analysis

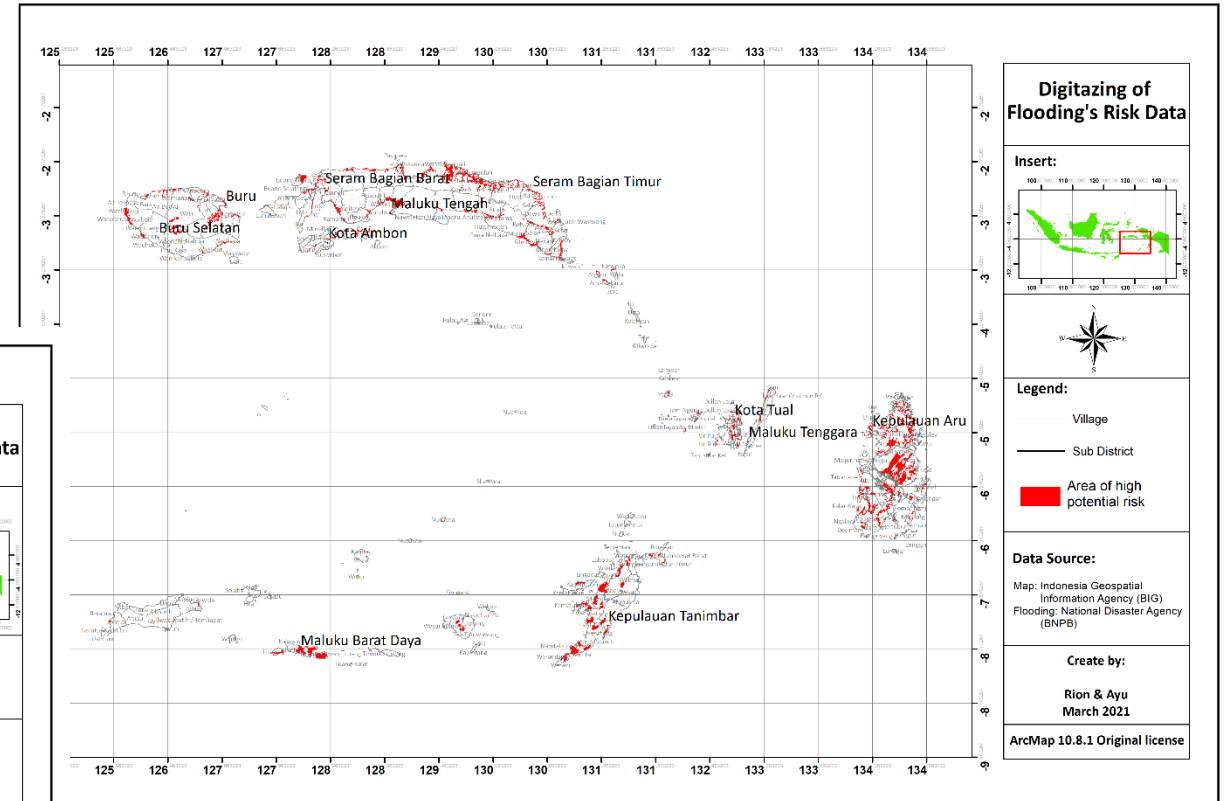
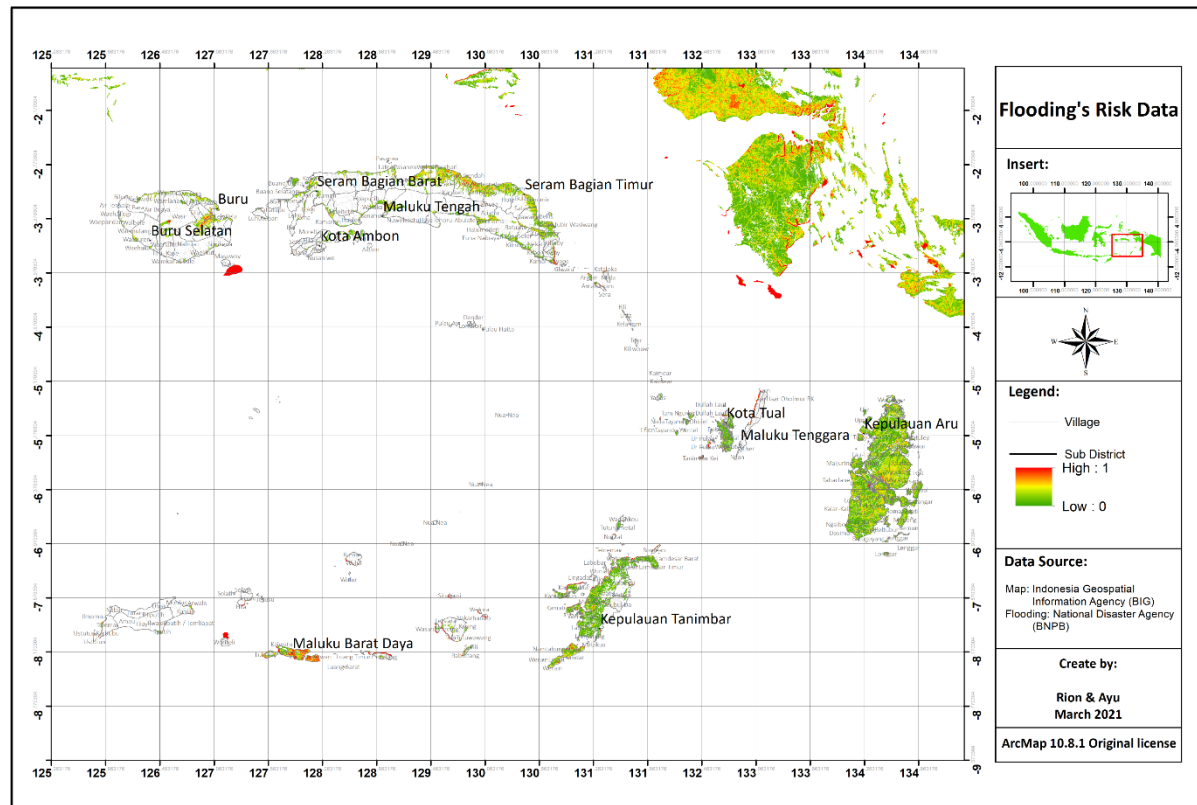
Creating IBF's map with two outputs: PDF & Picture format

Basic Analysis



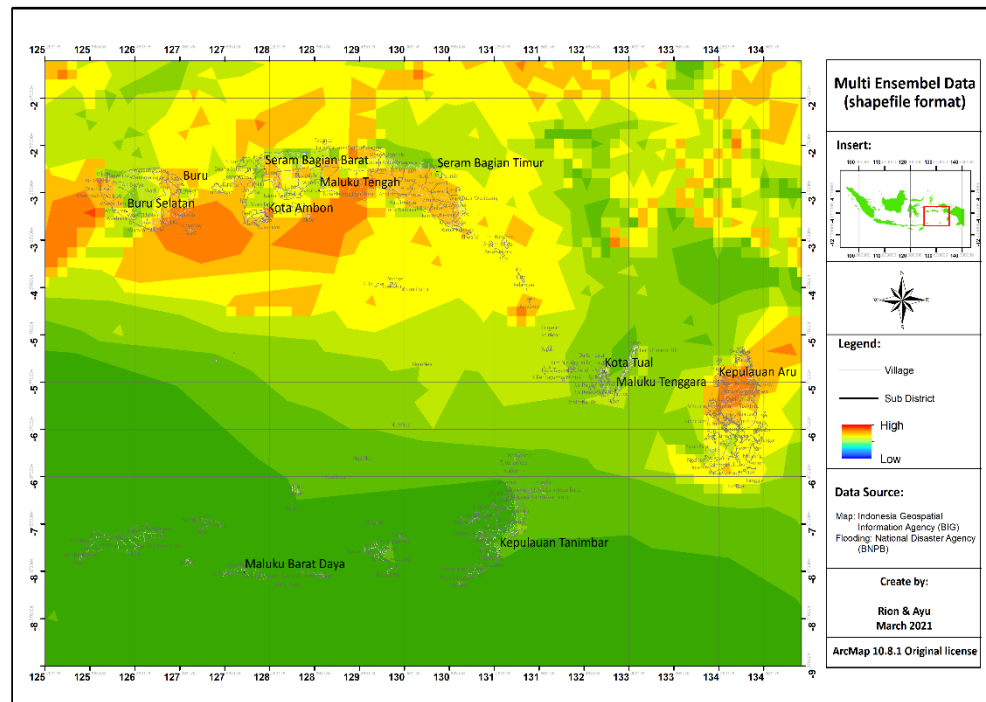
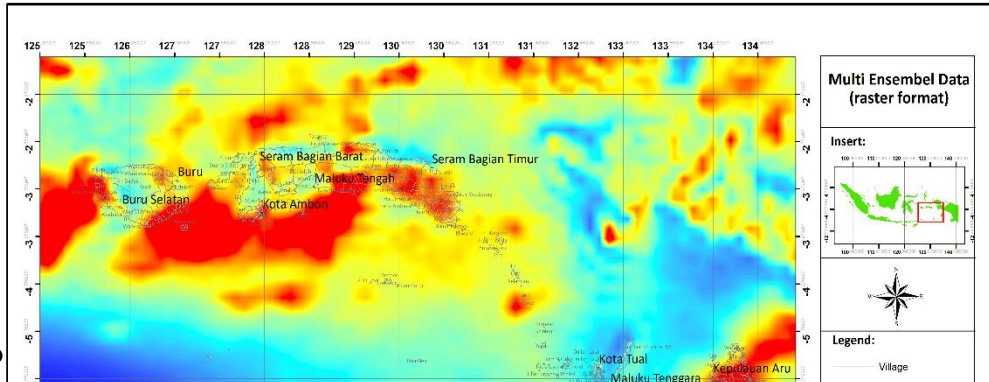
Basic method to Producing Impact-Based Forecast & Warnings (Chapter 5) by UK Met Office.

Result & Discussion

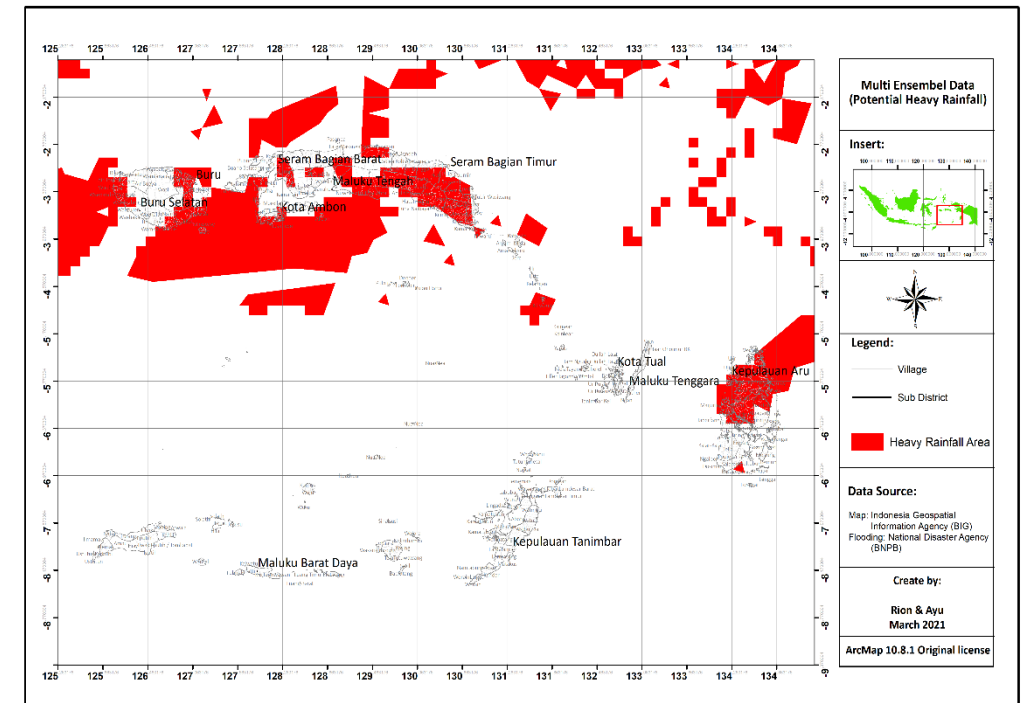


Convert with
digitizing the
Flooding risk
data (Basic
Method)

Result & Discussion



Selecting the high potential only



Raster data
convert to
Shapefile data
(Advance
analysis)

Result & Discussion

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

Interpolation from excel use IDW (Raster file)

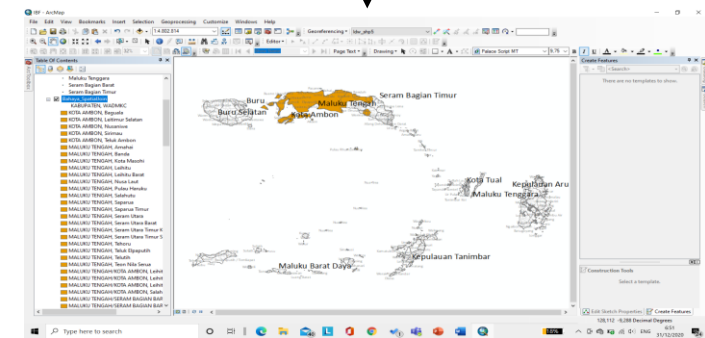
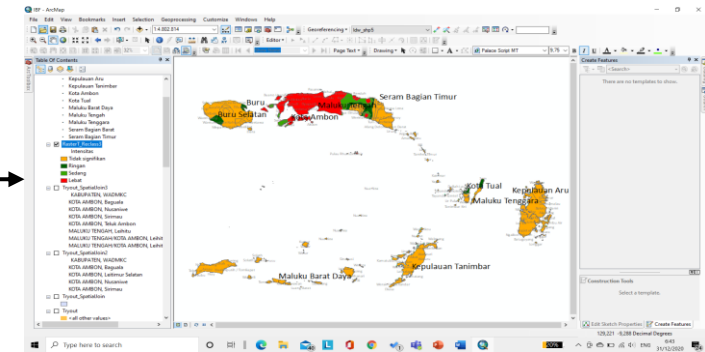
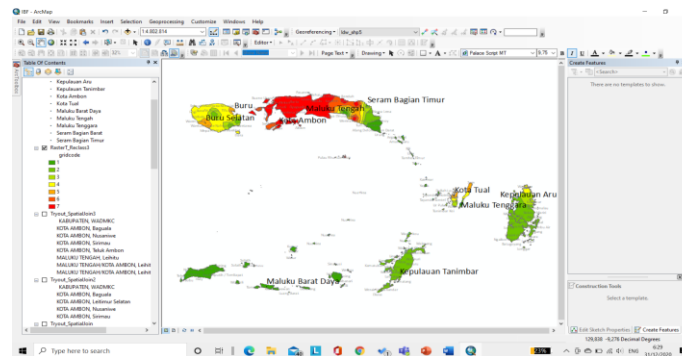
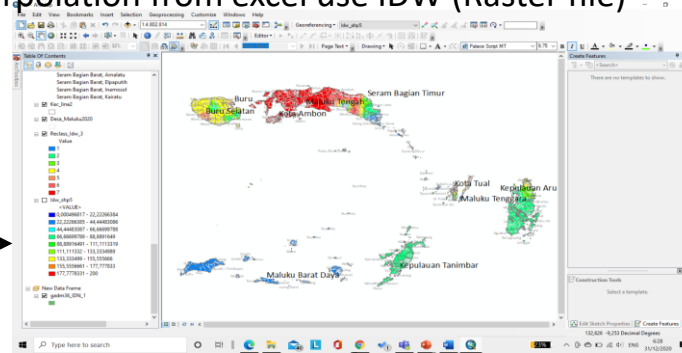
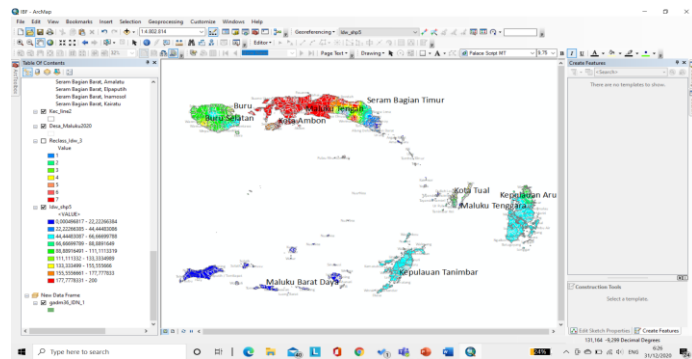
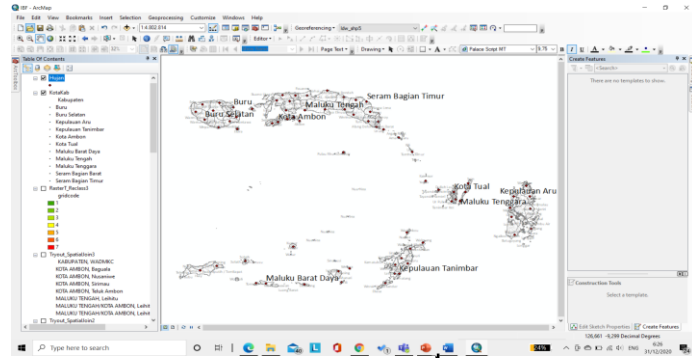
calculate rainfall intensity (Shapefile)

Excel to point (extract)

Reclassify

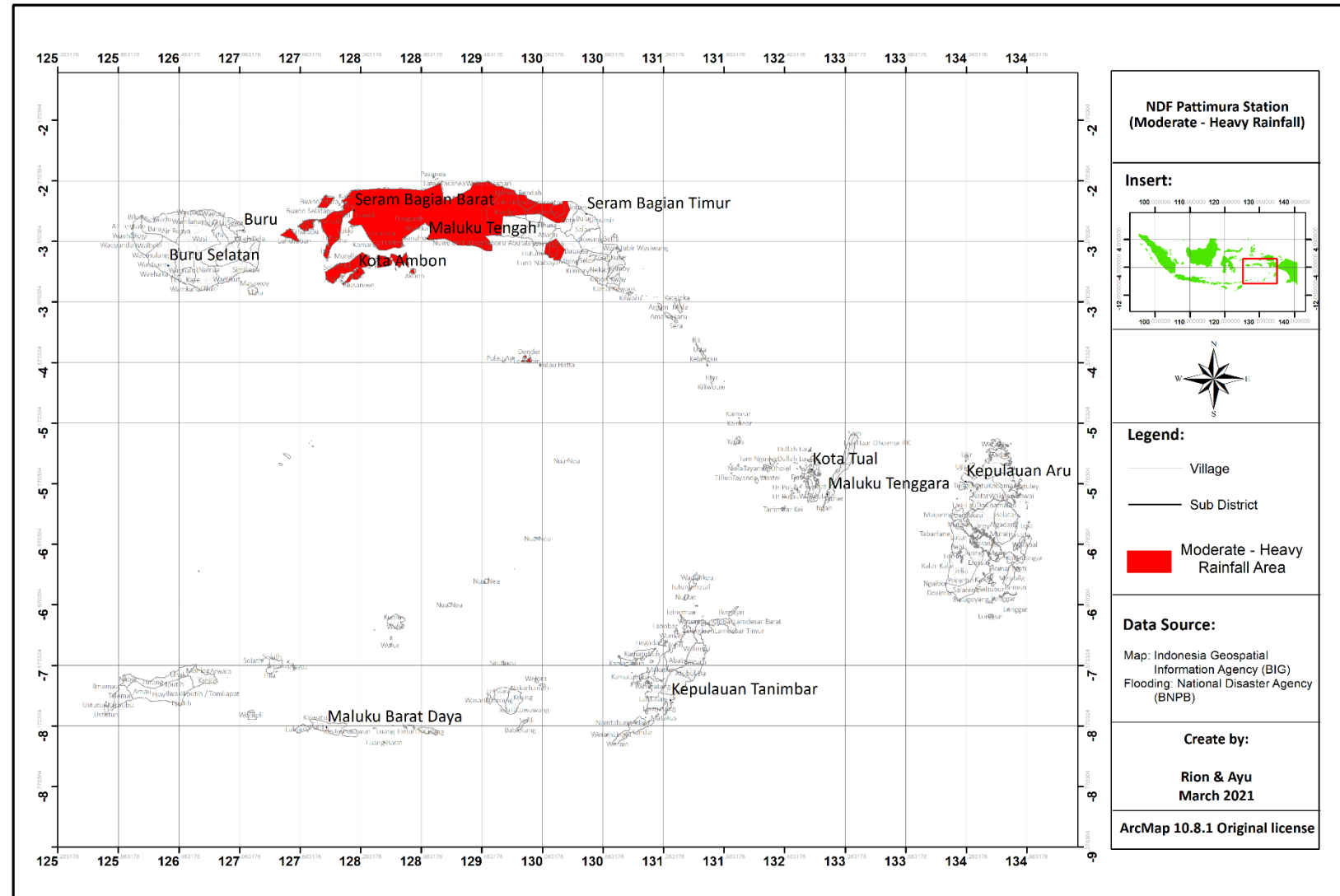
Extract raster to polygon (Shapefile)

Choose the intensity (shapefile)



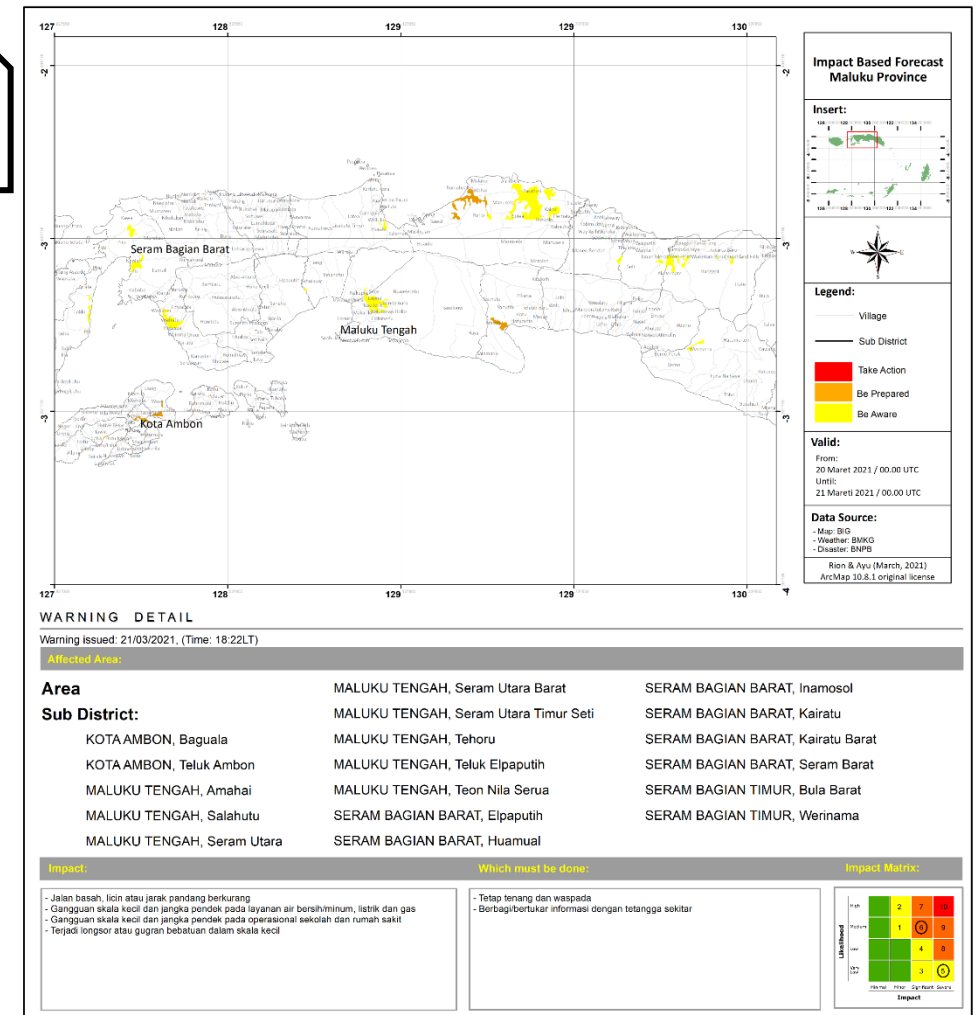
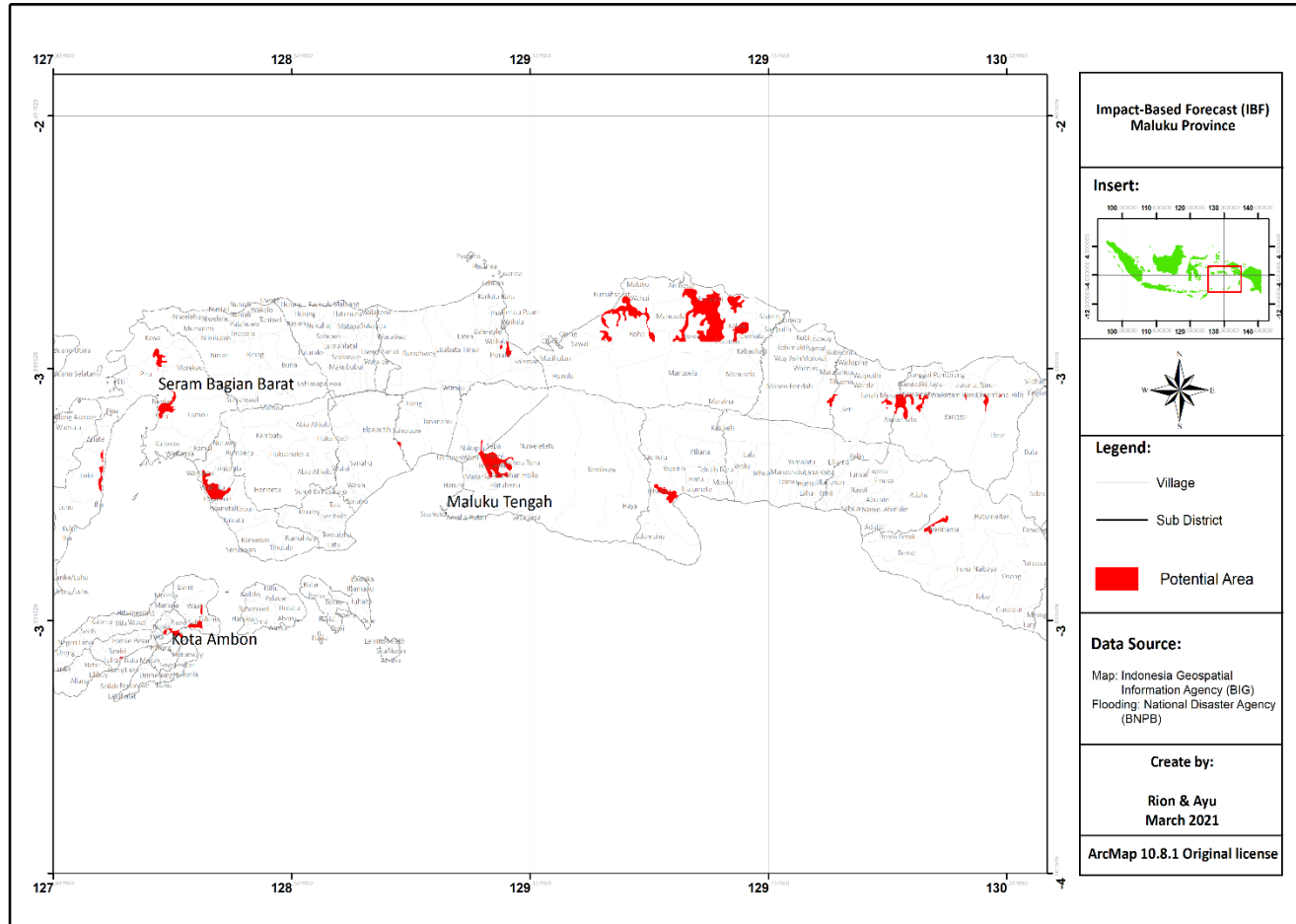
Result & Discussion

The National Digital Forecast system result in .shp



Result & Discussion

The IBF's Map in Maluku region



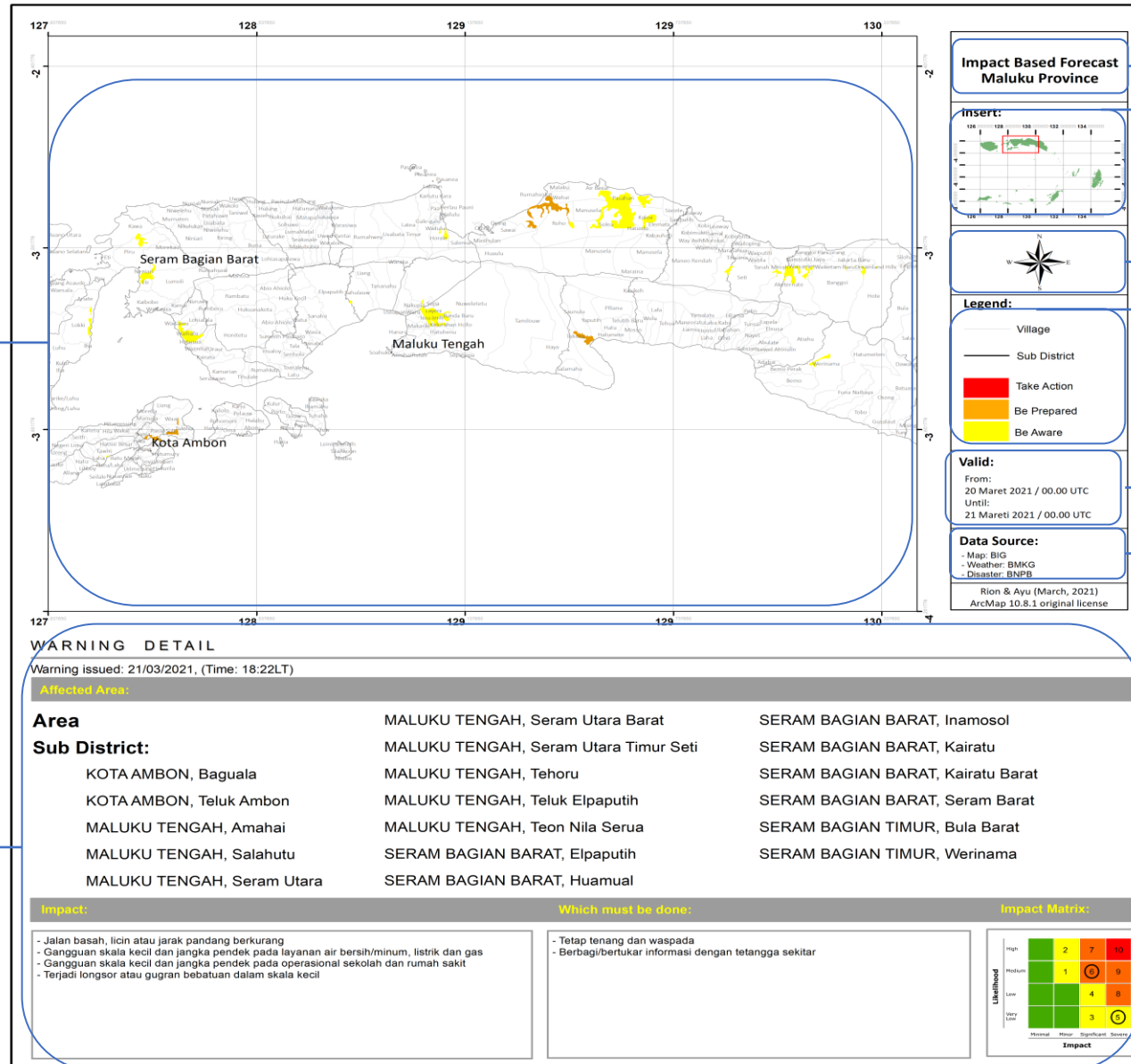
The potential area



Result & Discussion

Region

IBF
information



Title

insert

North
arrow

Legend

Valid

Data
source



Conclusion

- The IBF layout contains all the information that stakeholders and users need, such as impact area, expected impacts for society and recommended actions.
- Geography Information System (SIG) and geospatial analysis tools facilitates the development of impact-based forecasts for weather forecasters.
- ArcMap 10.8.1 software provides advantages for forecasters to create the IBF's map in Maluku Province. Tools like spatial analysis and analysis tool are very useful for geospatial analysis.



Thank you for your attention