

MIMU



Spatial Analysis of probable affected population by Cyclone Mocha

BY

MIMU

17 May 2023

Preparation of Cyclone Mocha

- Create Cyclone Mocha Page

(Base Map, PCode, Dashboard, Report and so on)

- Storm Track Map on a time-by-time (GDACS, JTWC and so on)
- Probable Flood Map with JAXA image supported by Sentinel Asia
- **Spatial Analysis of probable affected population by Cyclone Mocha**

Create Cyclone Mocha Page

https://themimu.info/emergencies/storm_mocha_may23

Cyclone Mocha

This page serves as a hub for resources on Cyclone Mocha - it contains emergency-related information as well as key reference documents to support the various stages of disaster management including preparedness, risk assessment, and post-disaster recovery. Please submit any updates and relevant materials to info.mimu@undp.org.

Latest Reports

- Probable Flood Inundated Area in Rakhine (as of 15 May 00:30am)_MIMU
- Flash Update #4 on Cyclone Mocha_OCHA_15May2023
- Tropical Cyclone Mocha - Humanitarian Snapshot_OCHA_15May2023
- Situation Update #2 on Cyclone Mocha_UNICEF_15May2023
- Situation Report on Cyclone Mocha_WFP_15May2023



+ Situation Updates

+ Recent Maps

+ Awareness Raising and Preparedness Messages

+ Myanmar's Low Lying Areas & Flood Monitoring Dashboard

+ Emergency Preparedness Dashboard - Township Profiles

+ Resources - Baseline Datasets & Place Codes

+ MIMU 5W Resources

+ Reference Maps

Myanmar's Low Lying Areas & Flood Monitoring Dashboard

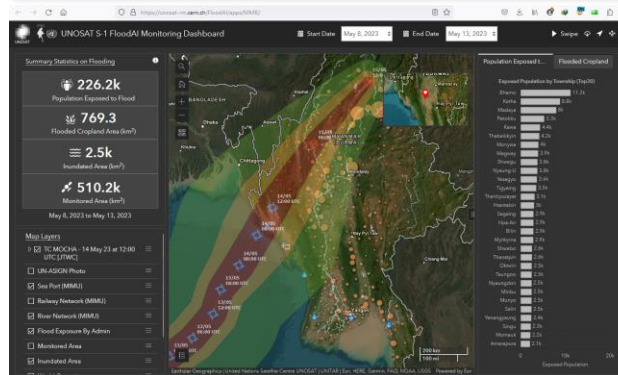
MIMU resources on [low-lying coastal areas](#) of Myanmar under 5 metres elevation have been developed using the Multi-Error-Removed Improved-Terrain / MERIT DEM.



The [UN Satellite Centre \(UNOSAT\) dashboard](#) uses Sentinel-1 radar satellite data to provide projections of likely flood-affected areas using Artificial Intelligence model. Users can select the time period of interest to view Inundated areas and statistics of the potentially exposed population in that period in Myanmar.



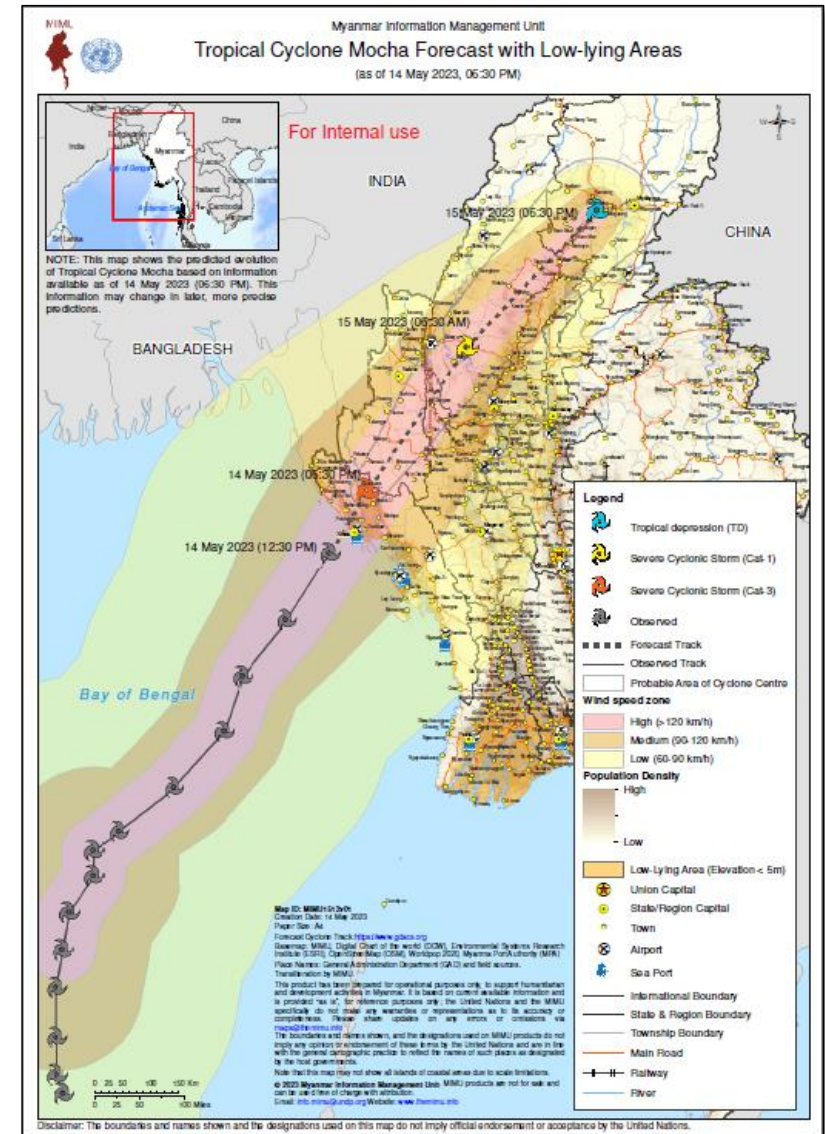
The dashboard is regularly updated with the acquisition of new satellite data. For more information on UNOSAT methodology, see the [UNOSAT academic paper](#) and the [introductory article](#).



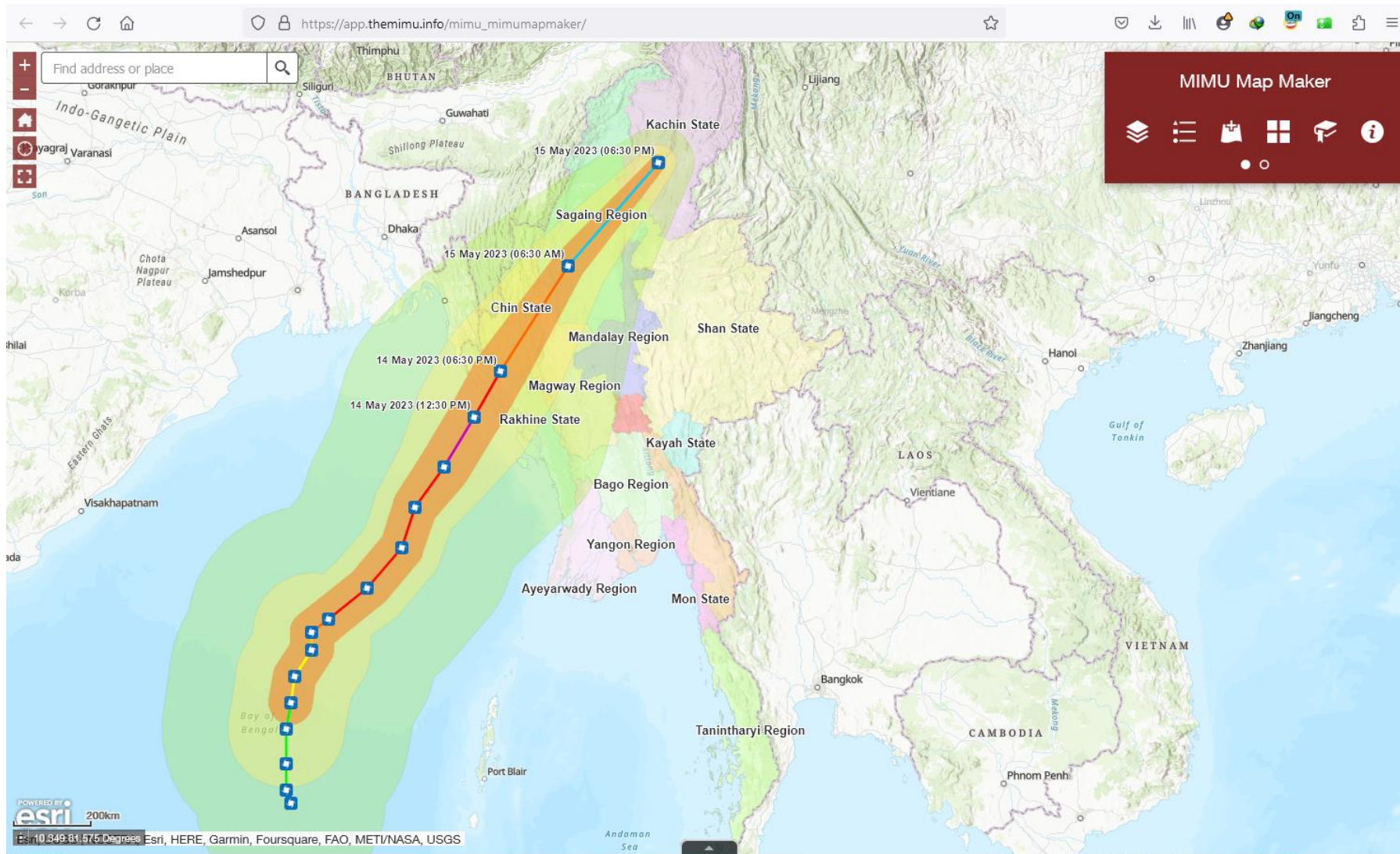
<https://unosat-rm.cern.ch/FloodAI/apps/MMR/>

Storm Track Map on a time-by-time

- Monitor reliable sources about cyclone (GDACS, JTWC and so on)
- Download data
- Prepare Map
- Share partner organizations for preparedness and response



MIMU Map Maker



Layers

The Layers control panel is located on the right side of the map. It features a search bar and several icons representing different map layers. The layers listed below are:

- + Tropical Cyclone Mocha
- + Natural Disasters and Emergency
- + Population
- + Administrative Boundary
- + Settlements
- + Transportation
- + Economy
- + Health
- + Environment
- + Hard to Reach Area
- + Education
- + Hydrography
- + Night Light (2016)
- + Election Constituencies
- + Agencies' activities (MIMU 5W - Who,
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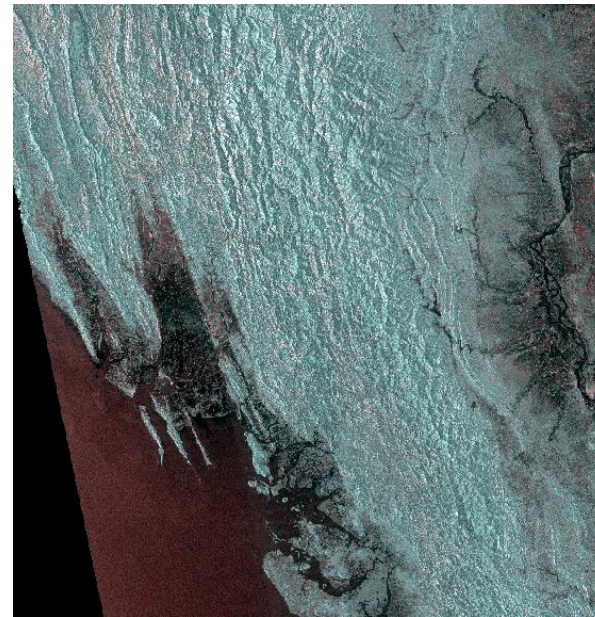
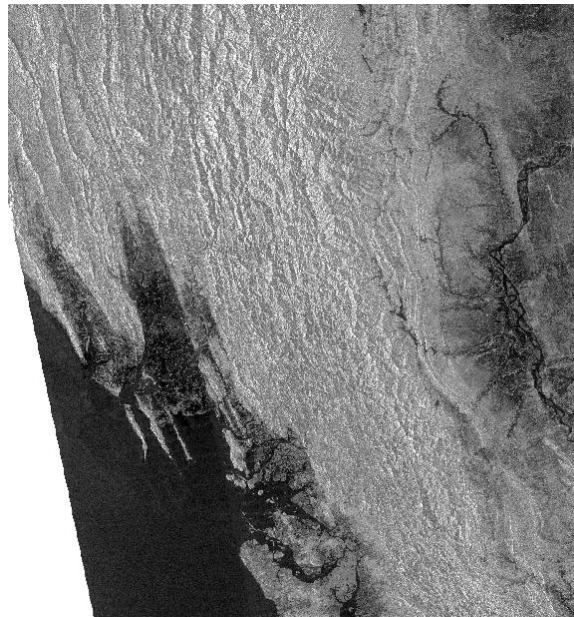
Probable Flood Map with JAXA image

Produce Map about disaster (Cyclone, Landslide, Earthquake, Flood and so on)

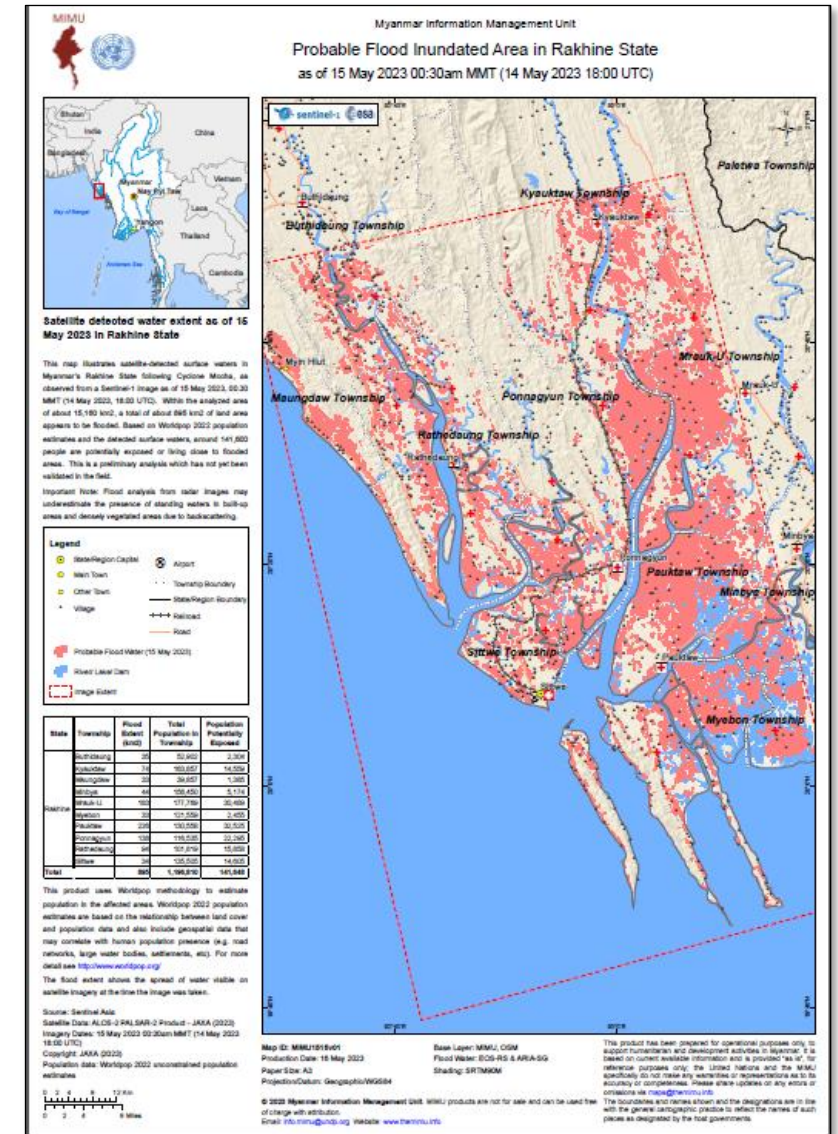
MIMU is one of the member of Sentinel Asia. When disaster occurs, they provide Satellite Images and share other products.

DDM and AHA center requested to Sentinel Asia.

Prepare Probable Flood Inundated Area for Rakhine State (as of 15 May 2023 00:30am MMT (14 May 2023 18:00 UTC))



ALOS Satellite Image (20230514 17:48:12.259)



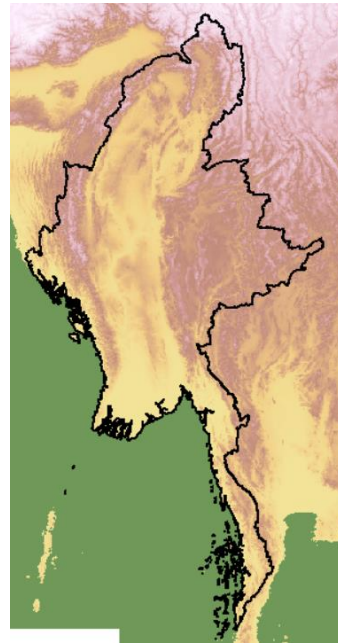
Spatial Analysis of probable affected population by cyclone

Data used

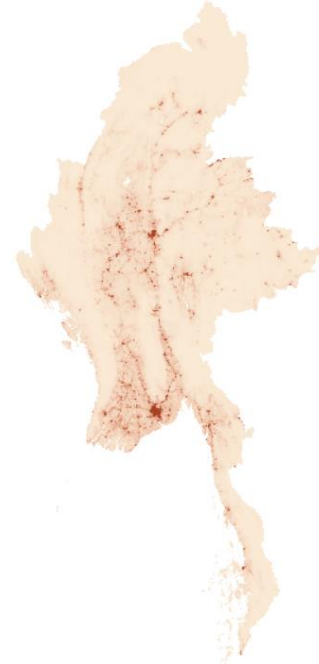
Admin Boundary



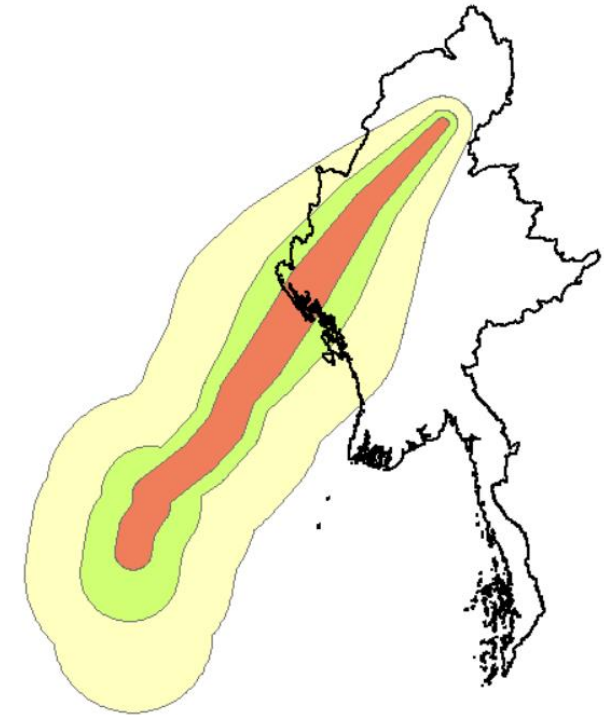
MERIT DEM (Multi-Error-Removed Improved-Terrain DEM)



Population (Worldpop 2022 population estimates)



Forecast Wind Speed

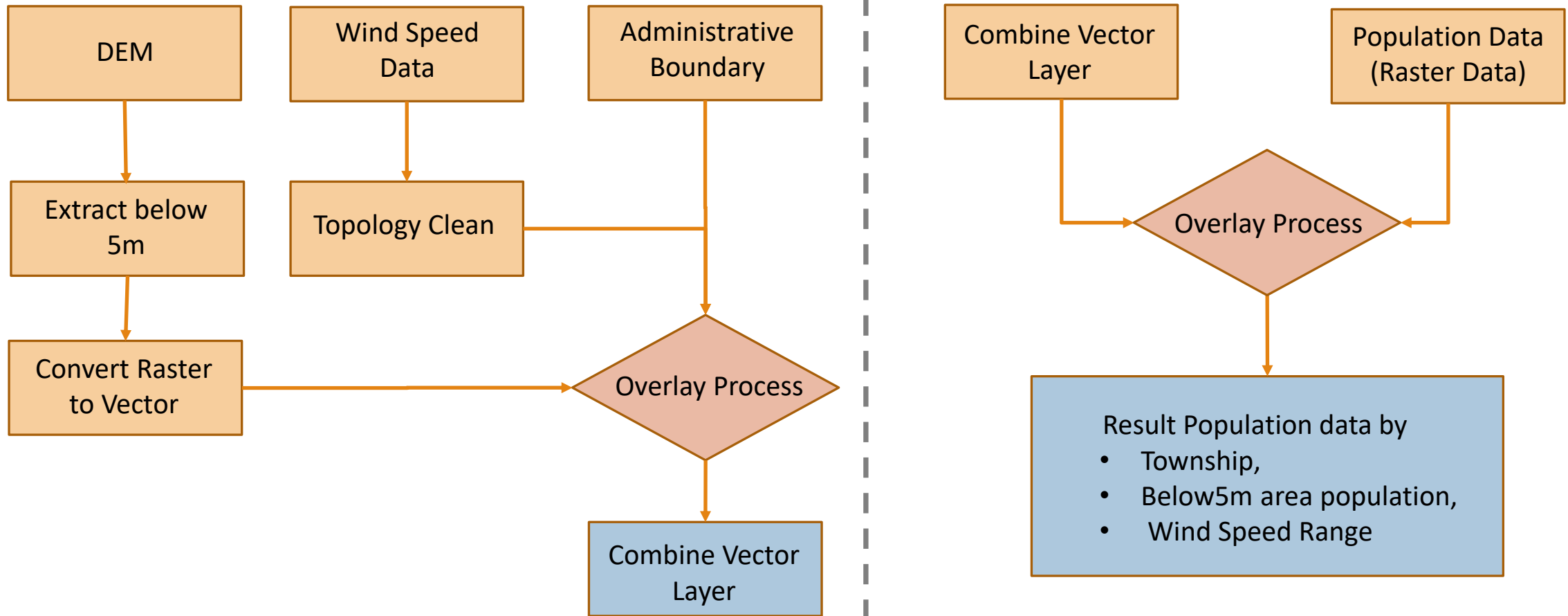


Worldpop

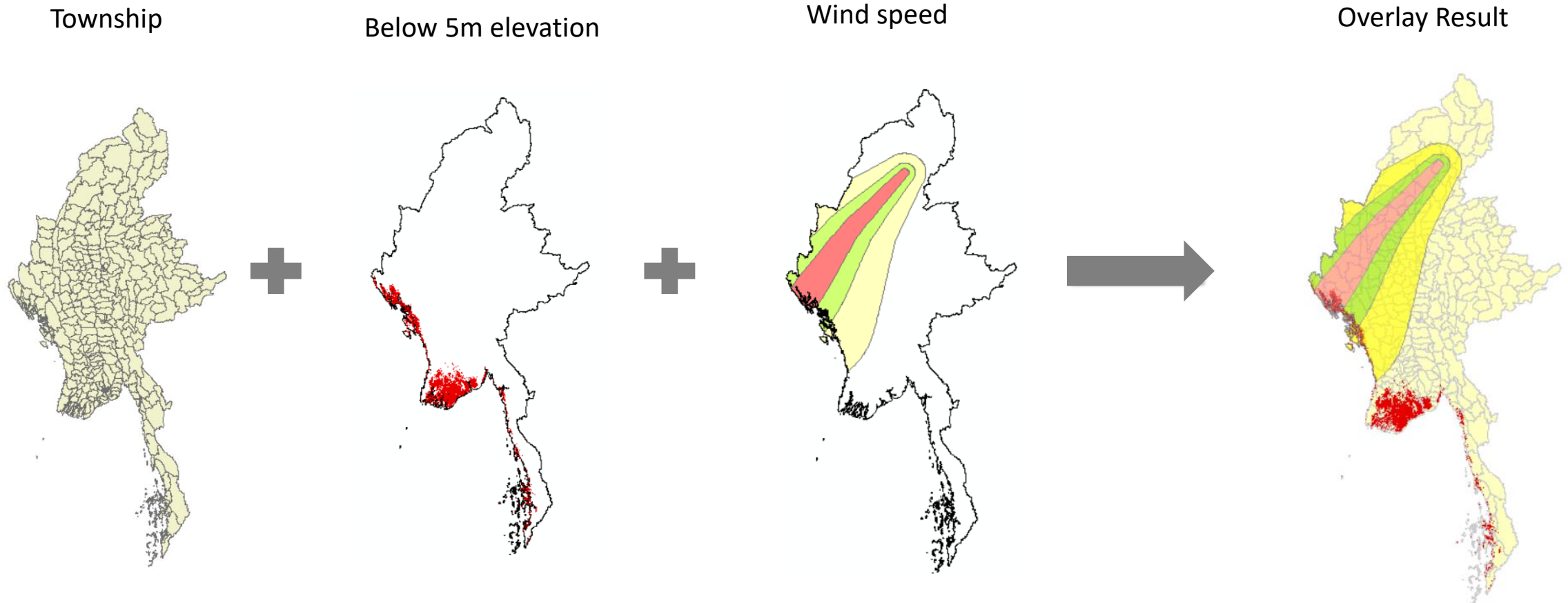
Methodology to estimate population in the affected areas. Worldpop 2022 population estimates are based on the relationship between land cover and population data and also include geospatial data that may correlate with human population presence (e.g. road networks, large water bodies, settlements, etc).

The MERIT DEM was developed by removing multiple error components (absolute bias, stripe noise, speckle noise, and tree height bias) from the existing spaceborne DEMs (SRTM3 v2.1 and AW3D-30m v1). It represents the terrain elevations at a 3sec resolution (~90m at the equator), and covers land areas between 90N-60S, referenced to EGM96 geoid.

Spatial Analysis of probable affected population by Cyclone Mocha

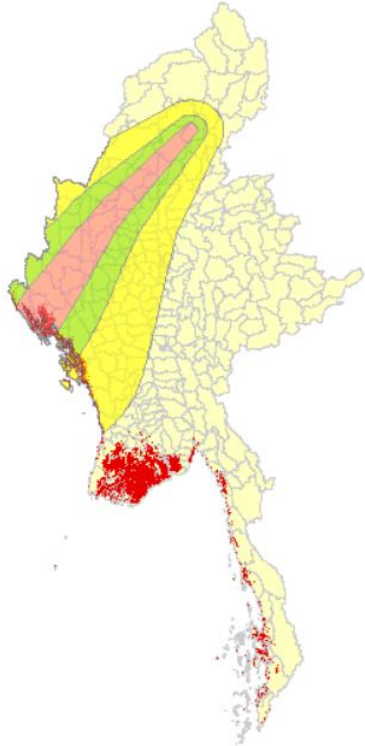


Layer Overlay Analysis

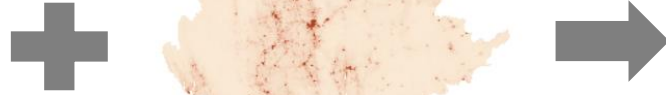


Calculation of Population Data

Overlay Layers



Population Data (WorldPop)



ST	ST_PC CODE	TS	Pcode_V	Elev_Class	Wind Speed	Population (Wpop2022)
Rakhine	MMR012	Minbya	9.3	Below 5m	90 km/h	42
Ayeyarwady	MMR017	Hinthada	9.3	Below 5m		115
Nay Pyi Taw	MMR018	Lewe	9.3		60 km/h	197
Sagaing	MMR005	Katha	9.3		120 km/h	244
Tanintharyi	MMR006	Tanintharyi	9.3	Below 5m		284
Magway	MMR009	Sidoktaya	9.3		60 km/h	302
Yangon	MMR013	Cocokyun	9.3	Below 5m		321
Rakhine	MMR012	Munaung	9.3	Below 5m	90 km/h	360
Nay Pyi Taw	MMR018	Oke Ta Ra Thi Ri	9.3		60 km/h	383
Sagaing	MMR005	Chaung-U	9.3		90 km/h	494
Magway	MMR009	Ngape	9.3		90 km/h	496
Shan (North)	MMR015	Mabein	9.3		90 km/h	499
Magway	MMR009	Taungdwingyi	9.3			518
Magway	MMR009	Sinbaungwe	9.3			527
Rakhine	MMR012	Pauktaw	9.3		90 km/h	555
Bago (West)	MMR008	Thayarwady	9.3	Below 5m		565
Chin	MMR004	Falam	9.3		120 km/h	628
Rakhine	MMR012	Gwa	9.3	Below 5m		629
Sagaing	MMR005	Paungbyin	9.3		120 km/h	646
Rakhine	MMR012	Munaung	9.3		90 km/h	649
Bago (East)	MMR007	Thanatpin	9.3	Below 5m		693
Ayeyarwady	MMR017	Kyangin	9.3			700
Magway	MMR009	Pauk	9.3		120 km/h	758
Kachin	MMR001	Hpakant	9.3		120 km/h	802

Monitoring and Reference website

<https://data.worldpop.org>

<https://www.gdacs.org/>

<https://www.metoc.navy.mil/jtwc/jtwc.html>

<http://www.tropicalstormrisk.com>

<https://mausam.imd.gov.in/>

<https://www.moezala.gov.mm>

<https://zoom.earth/storms/mocha-2023/#map=wind-speed/model=icon>

http://hydro.iis.u-tokyo.ac.jp/~yamadai/MERIT_DEM/index.html

<https://hub.worldpop.org><https://hub.worldpop.org/project/categories?id=3>

Thank you for your attention

Questions?

info.mimu@undp.org