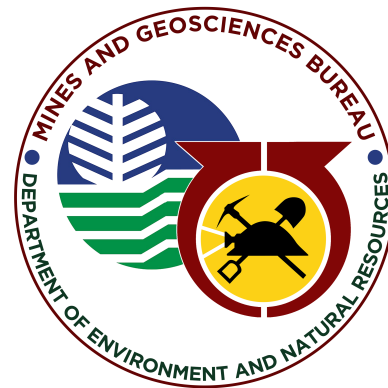


MGB GEOHAZARD ADVISORY FOR TD “AGATON” AND TS “MALAKAS”

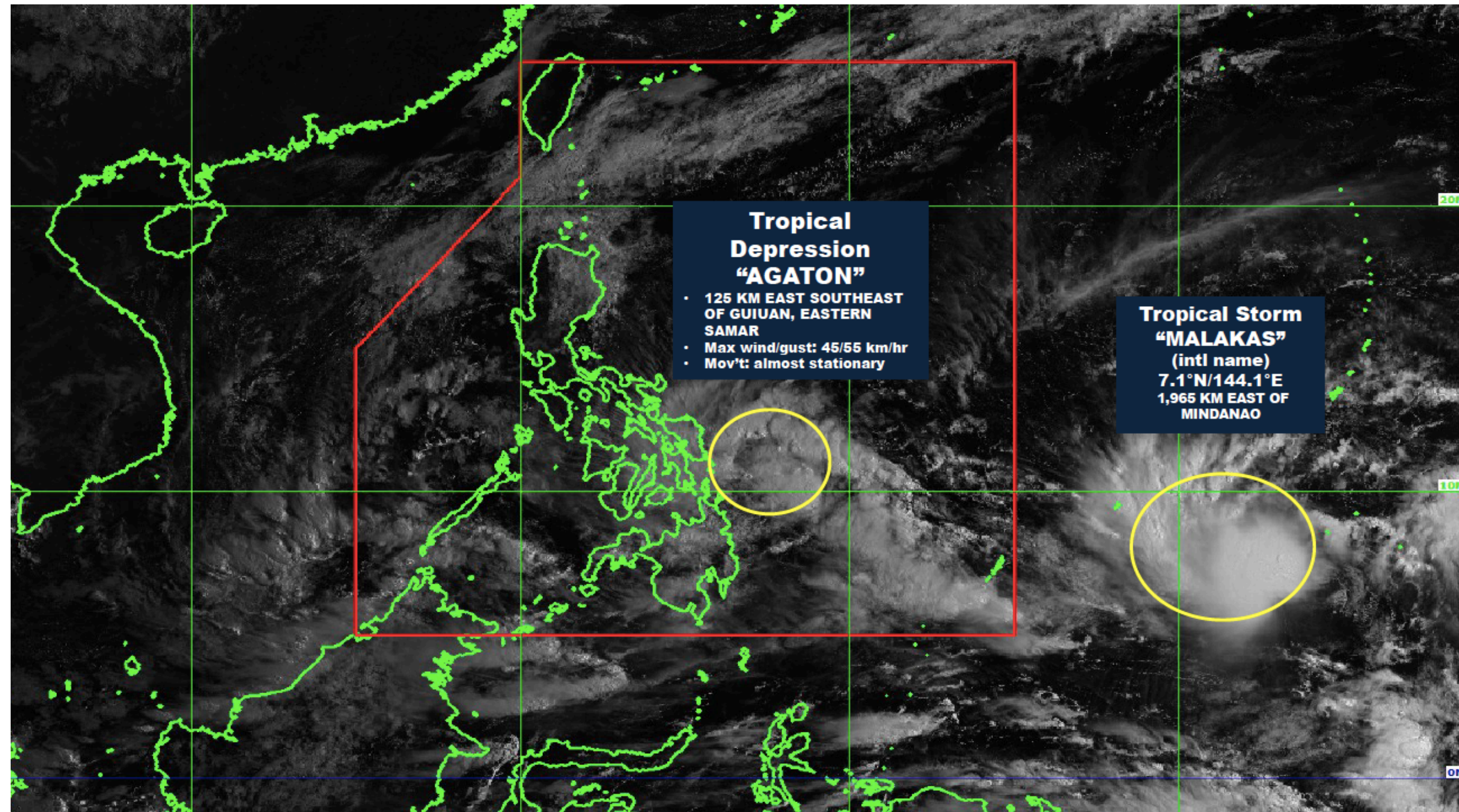


09 APRIL 2022



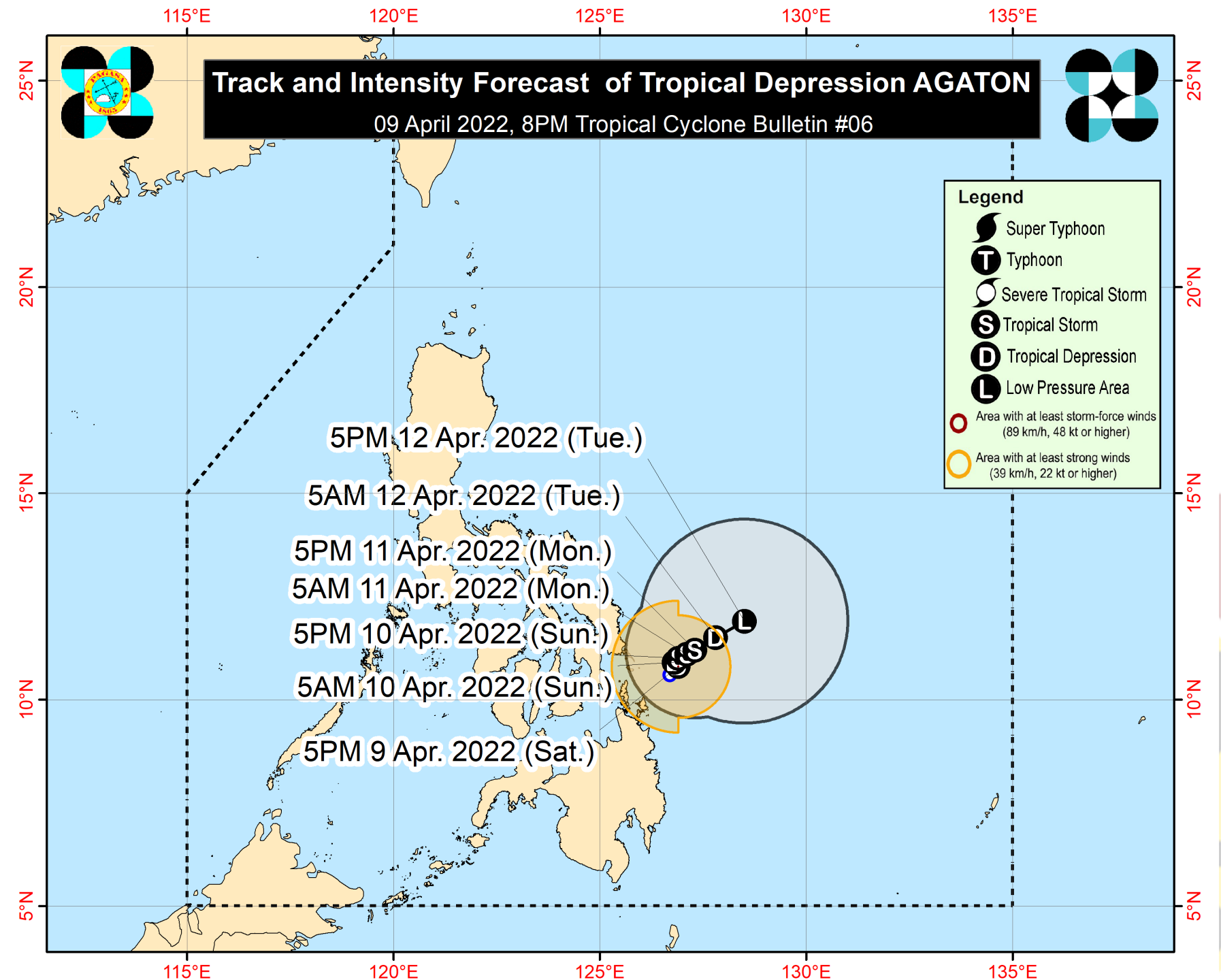
MGB GEOHAZARD ADVISORY FOR TD “AGATON” AND TS “MALAKAS”

Based on all available data, Philippine Atmospheric, Geophysical, and Astronomical Services Administration (DOST-PAGASA) advises three (3) different weather systems affecting the country – Tropical Depression “AGATON,” Tropical Storm international name “MALAKAS” outside PAR, and a low pressure area west of Palawan.



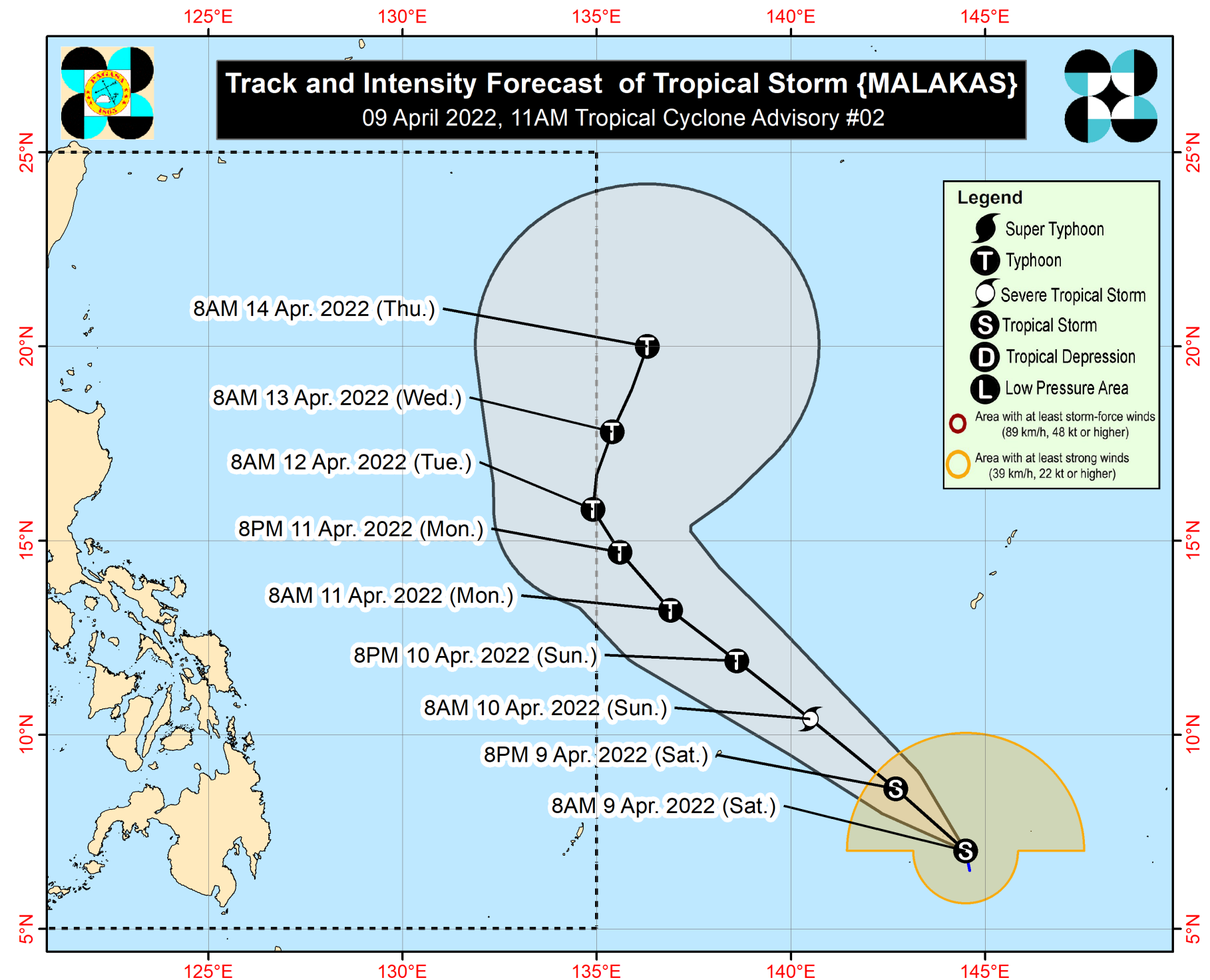
MGB GEOHAZARD ADVISORY FOR TD “AGATON” AND TS “MALAKAS”

As of April 9, 2022, 8PM, the TD, east of Samar, has remained almost stationary with rain-bearing clouds causing moderate to heavy, and at times intense, rainfall on southern parts of Bicol Region, Visayas, and Northern and Northeastern Mindanao. This prompted TCWS #1 to be hoisted in Eastern Samar, Dinagat Islands, Siargao, and Bucas Grande Islands. It may develop into a Tropical Storm within the next 24 hours and weaken to a low pressure area on Apr 12, Tuesday, due to its interaction with TS “MALAKAS.” Also, due to its erratic nature, landfall over the coast of Eastern Samar is possible within the next 24 hrs.

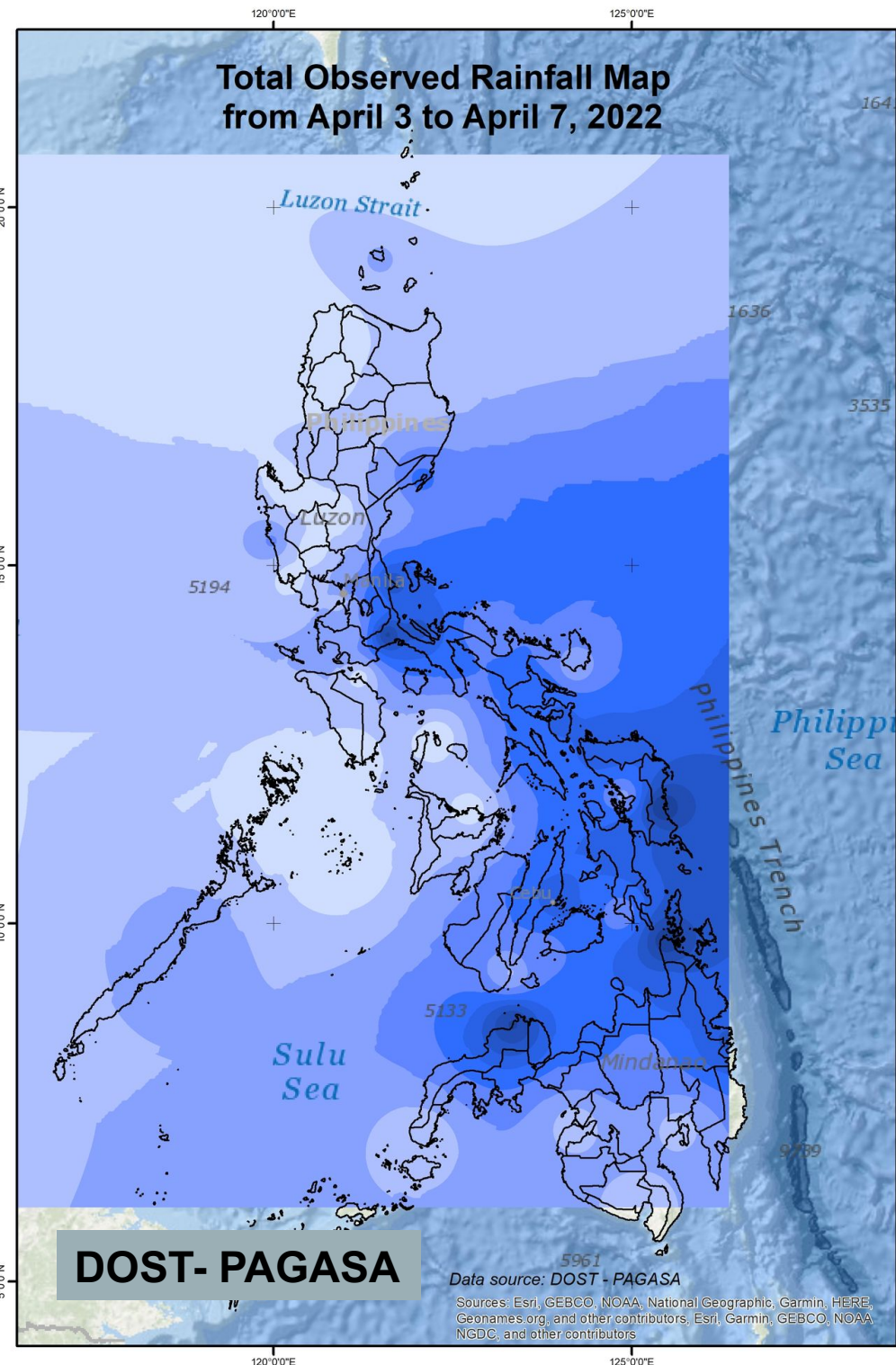


MGB GEOHAZARD ADVISORY FOR TD “AGATON” AND TS “MALAKAS”

As of April 9, 2022, 11:00 AM, the TS outside PAR may develop into a Typhoon within the next 36 hours. The TS is moving northwestward and may enter PAR by the evening of Apr 11, Monday, and then recurve north-northeastward. It may influence the behavior (intensity and movement) of TD “AGATON,” although Fujiwara Effect (merging of weather systems) is not ruled out. Based on available models, it is unlikely to make landfall.



MGB GEOHAZARD ADVISORY FOR TD “AGATON” AND TS “MALAKAS”



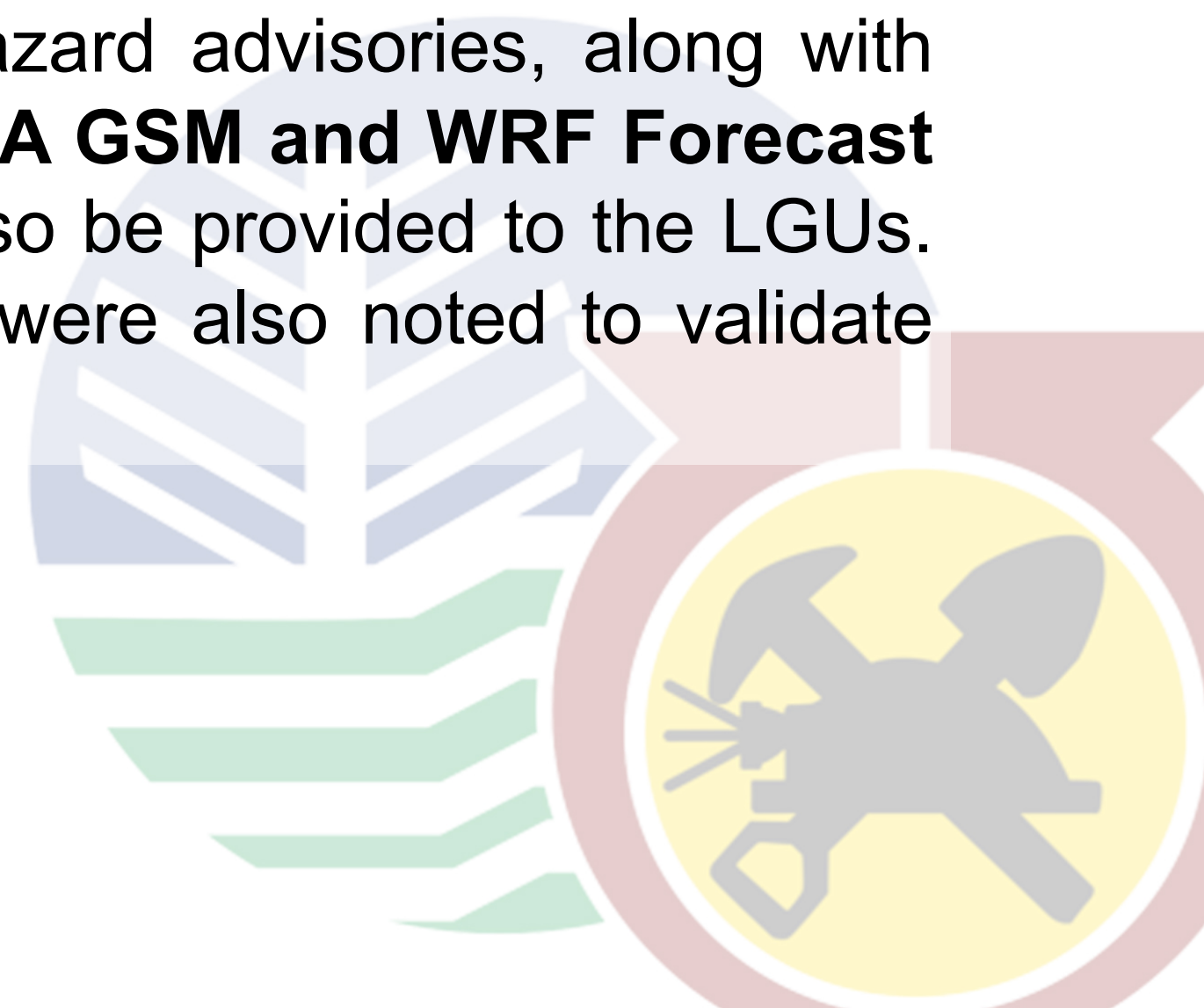
Name	Total
Borongan City,...	552.8
Surigao City, S...	531.5
Tayabas, Quezon	501.1
Dipolog City, Z...	497.9
Infanta, Quezon	430.6
Guiuan, Eastern...	411.4
Alabat, Quezon	387.1
Hinatuan, Surig...	375.1
Catarman, North...	366.3
Tacloban City,...	340.1
Mactan City, Ce...	336.6
Juban, Sorsogon	331.3
Butuan City, Ag...	310.4
Legazpi City, A...	301.7
Tanay, Rizal	285.8
El Salvador Cit...	271.1
Masbate City, M...	268.6
Casiguran, Auro...	260.6
Science Garden,...	238.8
Dauis, Bohol	223.7

Name	Total
Malaybalay, Buk...	209
Daet, Camarines...	203.9
Maasin City, So...	202
Iba, Zambales	194.6
Catbalogan City...	168.9
Puerto Princesa...	162.9
Virac, Catandua...	142.9
Baler, Aurora	140
Port Area, Mani...	134
Calayan, Cagaya...	132.4
Ambulong, Batan...	127.6
Dumaguete City,...	119.1
NAIA, Pasay Cit...	115.4
Baguio City, Be...	101.6
Davao City, Dav...	97.5
Cotabato City,...	89.3
General Santos...	81.4

The continuous rainfall brought about by the low pressure area, which intensified to TS “AGATON” within the past week in the areas of Southern Luzon (Quezon and Bicol), Visayas, and Mindanao, resulted to the **oversaturation of the ground**. This may lead to a higher probability of flood and rain-induced landslide events in areas with **moderate, high, and very high susceptibility** to said hazards.

MGB GEOHAZARD ADVISORY FOR TD “AGATON” AND TS “MALAKAS”

With this, the Mines and Geosciences Bureau Central and concerned Regional Offices have activated their respective **Geohazard Operation Centers (OpCen)** to continuously monitor and report any flood and landslide incidents within their jurisdiction. Moreover, geohazard advisories, along with the Barangay Listings based on the **DOST-PAGASA GSM and WRF Forecast Rainfall from Apr 8, 8PM to Apr 12, 8AM**, will also be provided to the LGUs. Additionally, actual on-ground weather conditions were also noted to validate the previously generated barangay listings.



MGB GEOHAZARD ADVISORY FOR TD “AGATON” AND TS “MALAKAS”

The MGB Regional OpCens are in close coordination with the local PDRA Analyst and Core Groups, as well as the LGUs included in the barangay listings, to execute appropriate measures on Early Warning System, especially given the oversaturation of ground that led to the lowering of rainfall threshold to induce rain-induced landslide and flood.

The MGB is advising the public to stay vigilant for signs of imminent flood and rain-induced landslide events, and be aware of the geohazard in your areas by checking the MGB Web portal and other platforms like Hazard Hunter (GeoRiskPH) where the MGB Geohazard Maps are published. Also, take note of what to do before, during, and after a flood or landslide event presented in our information posters.

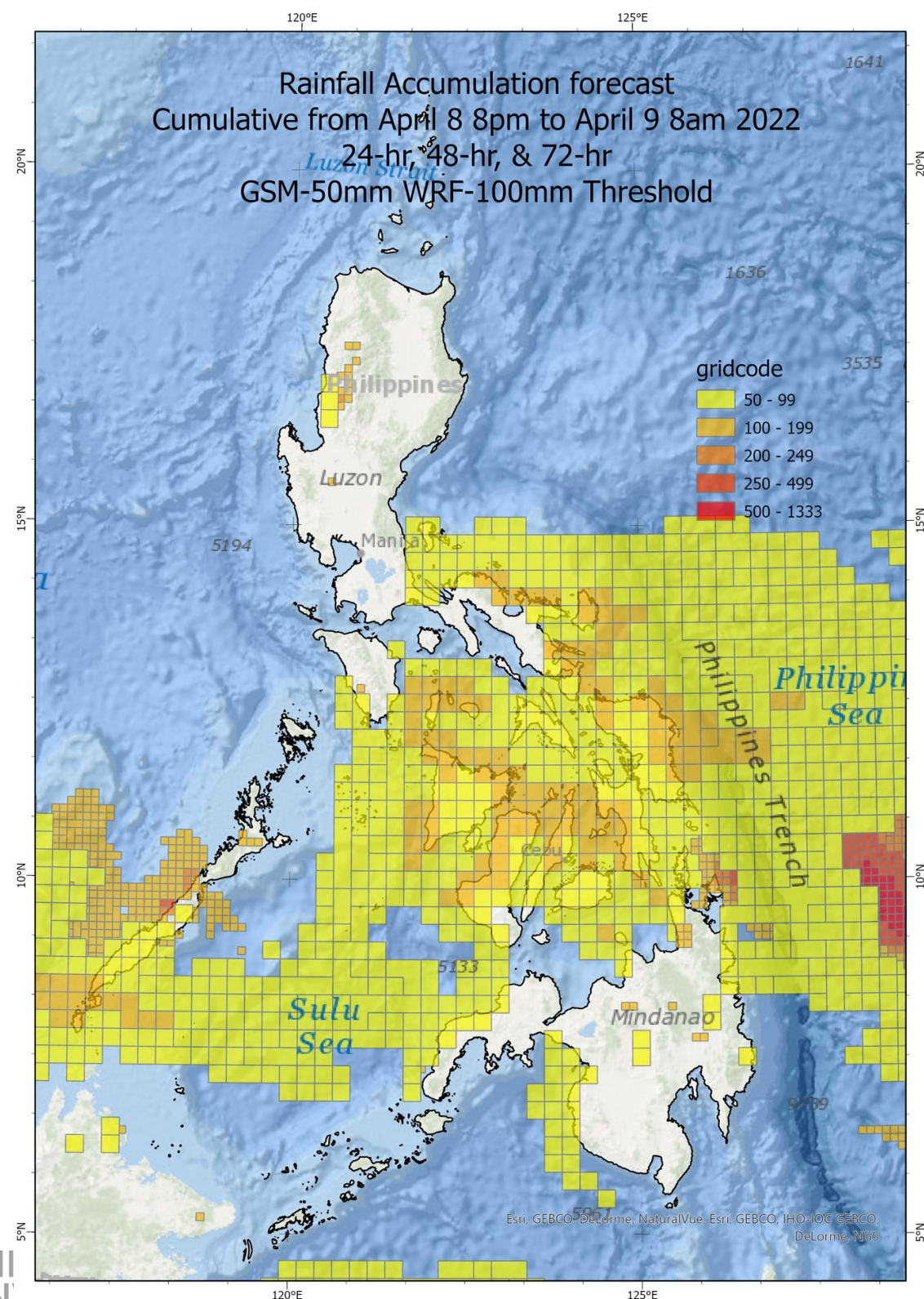
DATA UTILIZED IN THE ANALYSES

- **DOST-PAG-ASA's**
 - **GSM and WRF 72-hr forecast data:**
April 8, 8PM – April 12, 8AM
 - **Antecedent Rainfall:** April 3 – 7, 2022
- **Threshold:** 50 mm GSM; 100 mm WRF
250 mm Debris Flow



GSM AND WRF 72-HR RAINFALL DATA

APR 8, 8PM TO APR 12, 8AM

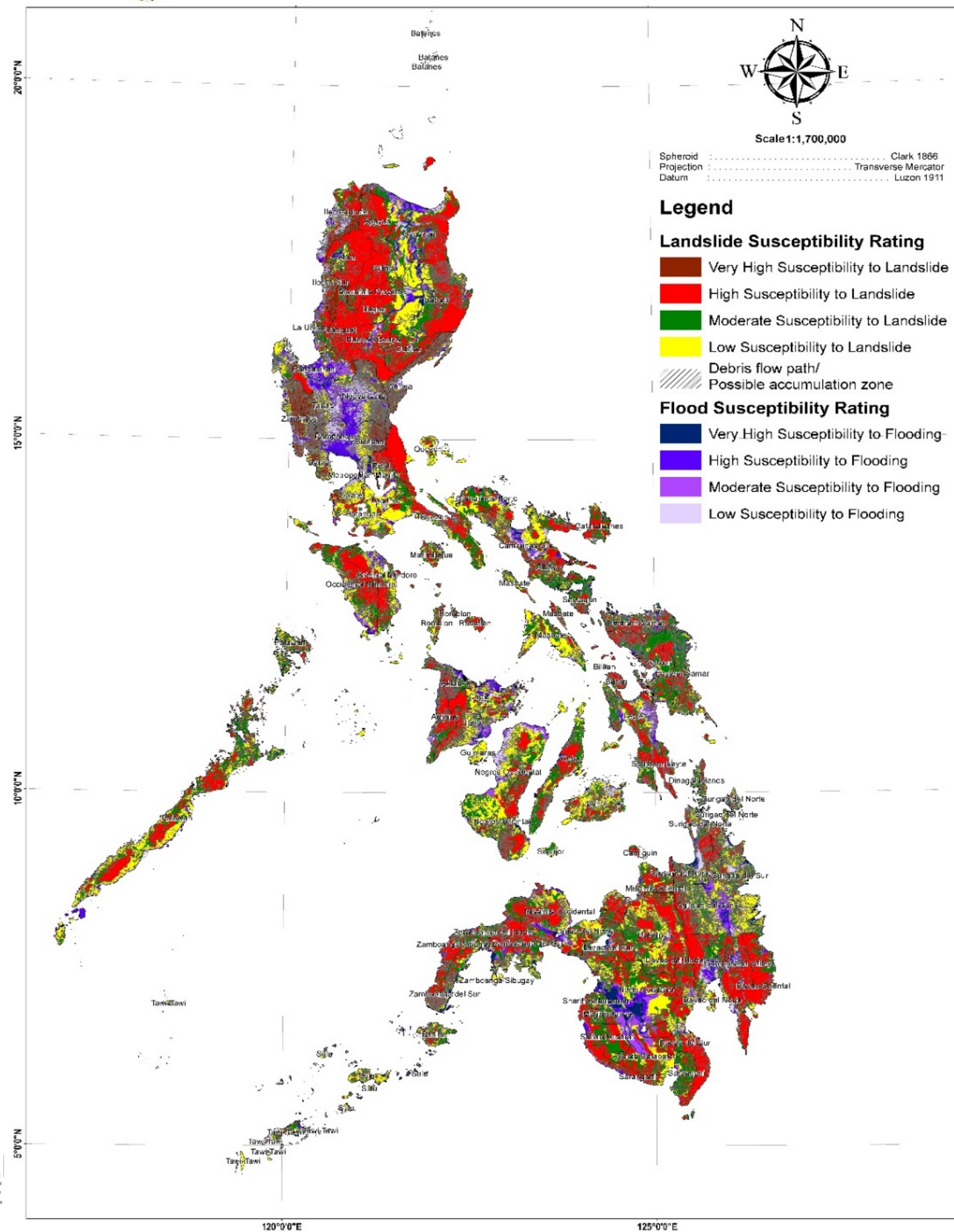


ACCUMULATED RAINFALL IN 24 HRS (mm)





1:10,000 SCALE GEOHAZARD MAP OF THE PHILIPPINES



VERY HIGH FLOOD SUSCEPTIBILITY

Areas likely to experience flood heights in excess of 2.0 meters and/or flood duration of more than 3 days; also prone to flashfloods.

HIGH FLOOD SUSCEPTIBILITY

Areas likely to experience flood heights of 1.0 to 2.0 meters and/or flood duration of more than 3 days. These areas are immediately flooded during heavy rains of several hours.

MODERATE FLOOD SUSCEPTIBILITY

Areas likely to experience flood heights of 0.5 to 1.0 meters and/or flood duration of 1 to 3 days.

LOW FLOOD SUSCEPTIBILITY

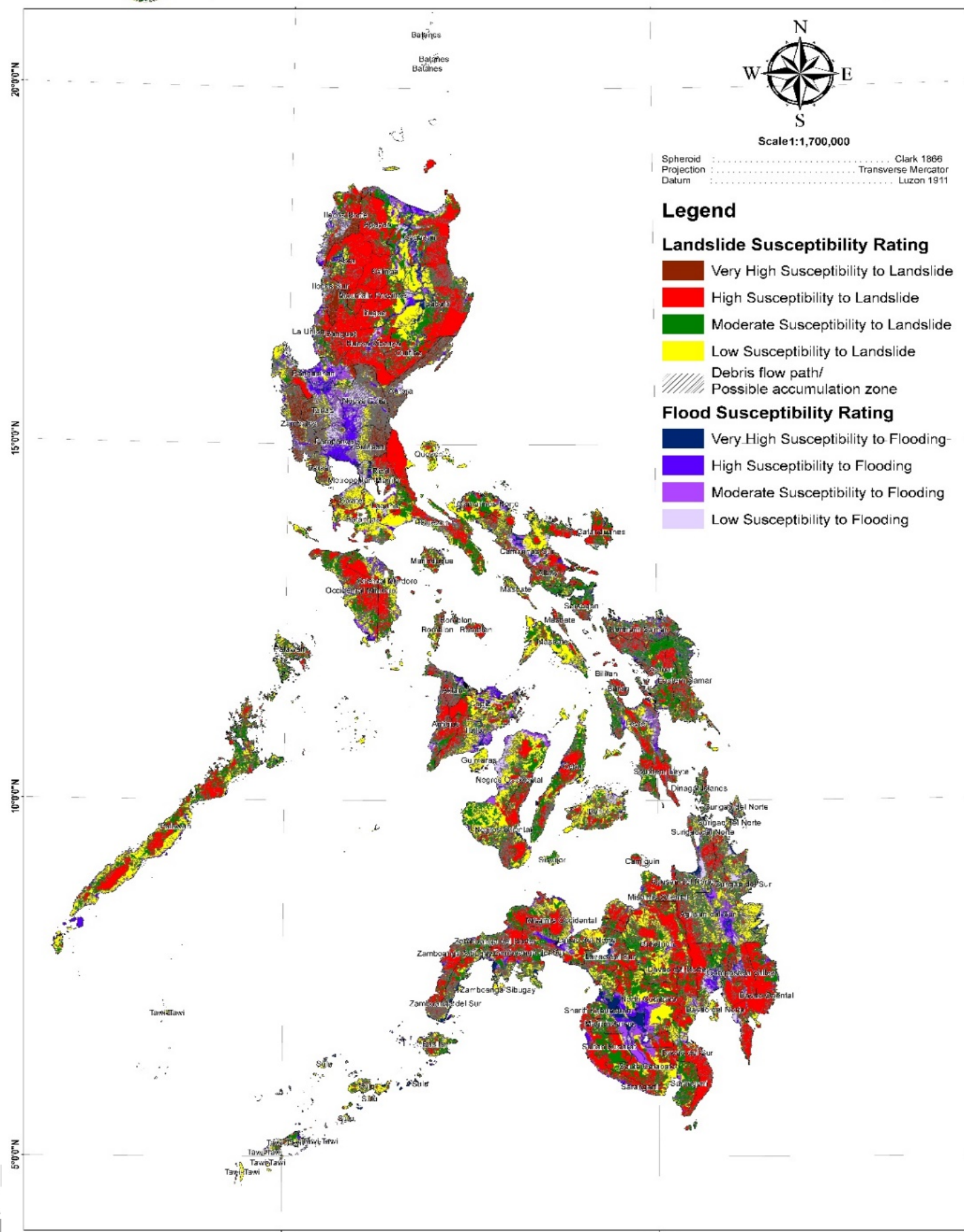
Areas likely to experience flood heights of <0.5 meter and/or flood duration of less than 1 day. These areas include low hills and gentle slopes. They also have sparse to moderate drainage density.

Included in the Barangay Listings





1:10,000 SCALE GEOHAZARD MAP OF THE PHILIPPINES



VERY HIGH LANDSLIDE SUSCEPTIBILITY

Unstable areas, significant areas of which are affected by mass movement. Human initiated effects are usually high.

HIGH LANDSLIDE SUSCEPTIBILITY

Unstable areas, highly susceptible to mass movement.

MODERATE LANDSLIDE SUSCEPTIBILITY

Stable areas with occasional or localized to mass movement.

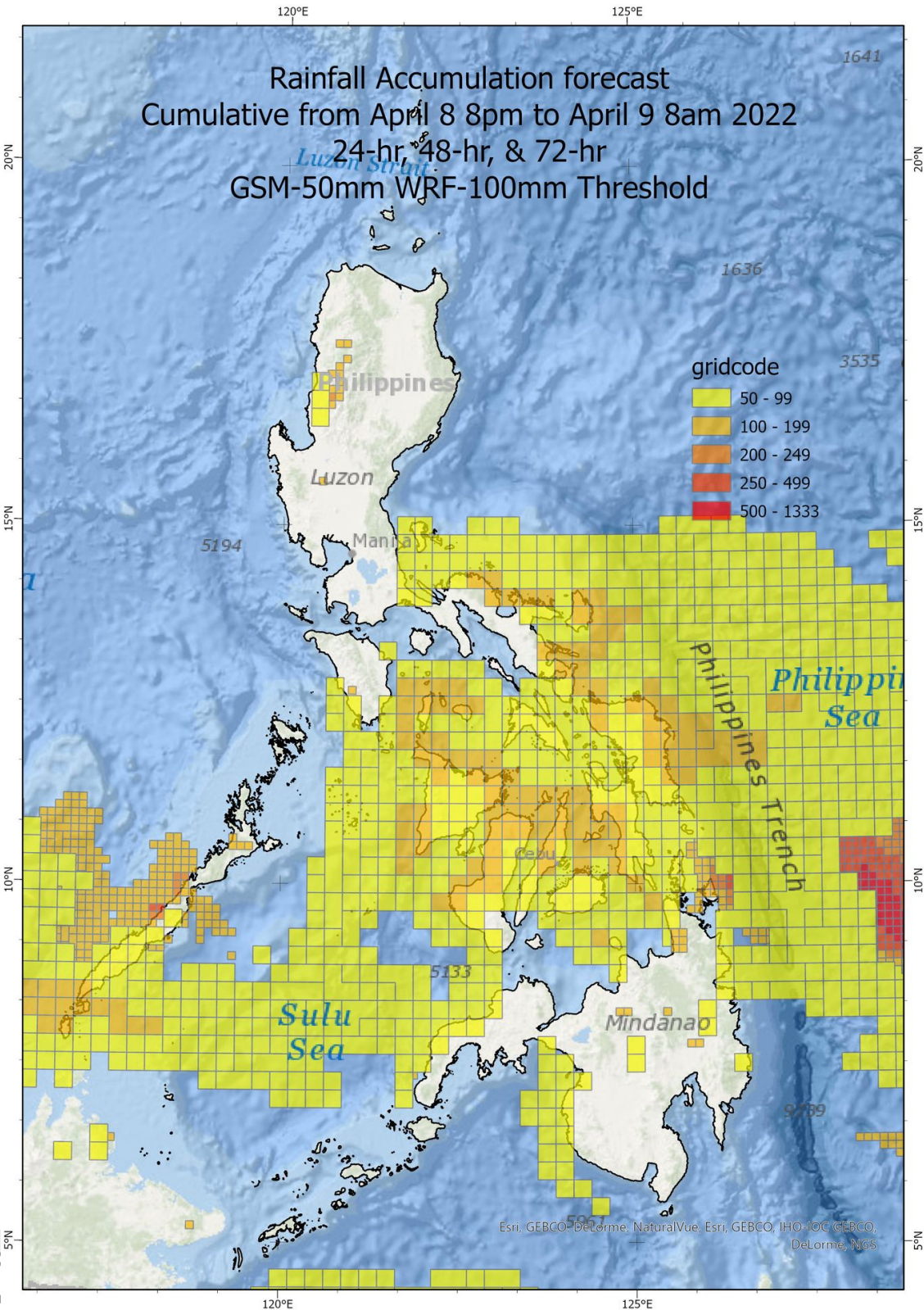
LOW LANDSLIDE SUSCEPTIBILITY

Stable areas with no identified landslide scars, either active or relict.

Included in the Barangay Listings



LIST OF REGIONS/PROVINCES/MUNICIPALITIES SUSCEPTIBLE TO LANDSLIDE AND FLOOD



Cumulative April 8 8pm to April 9 8am, 2022

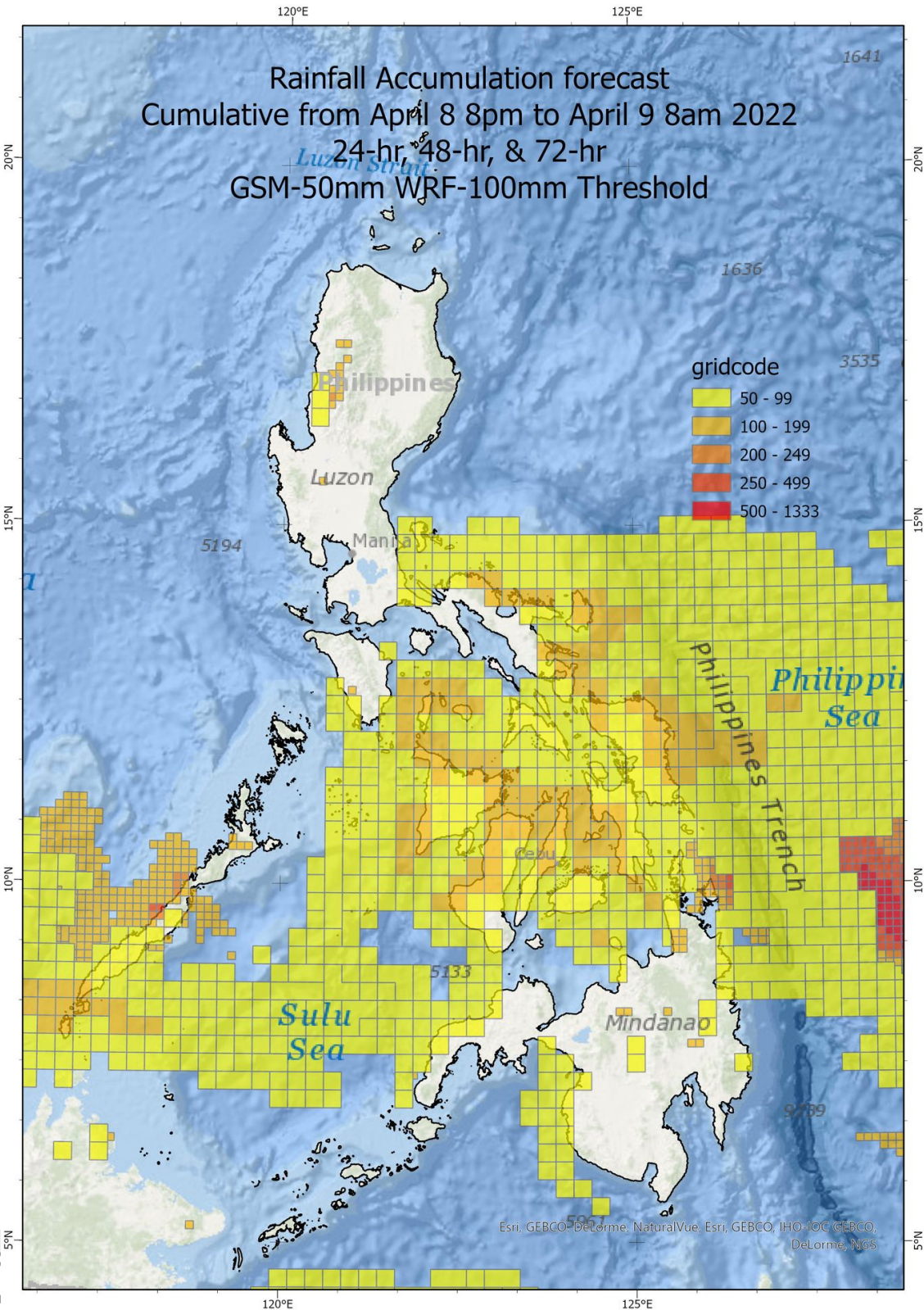
GSM 50mm WRF 100 Threshold

Row Labels

Count of BARANGAY

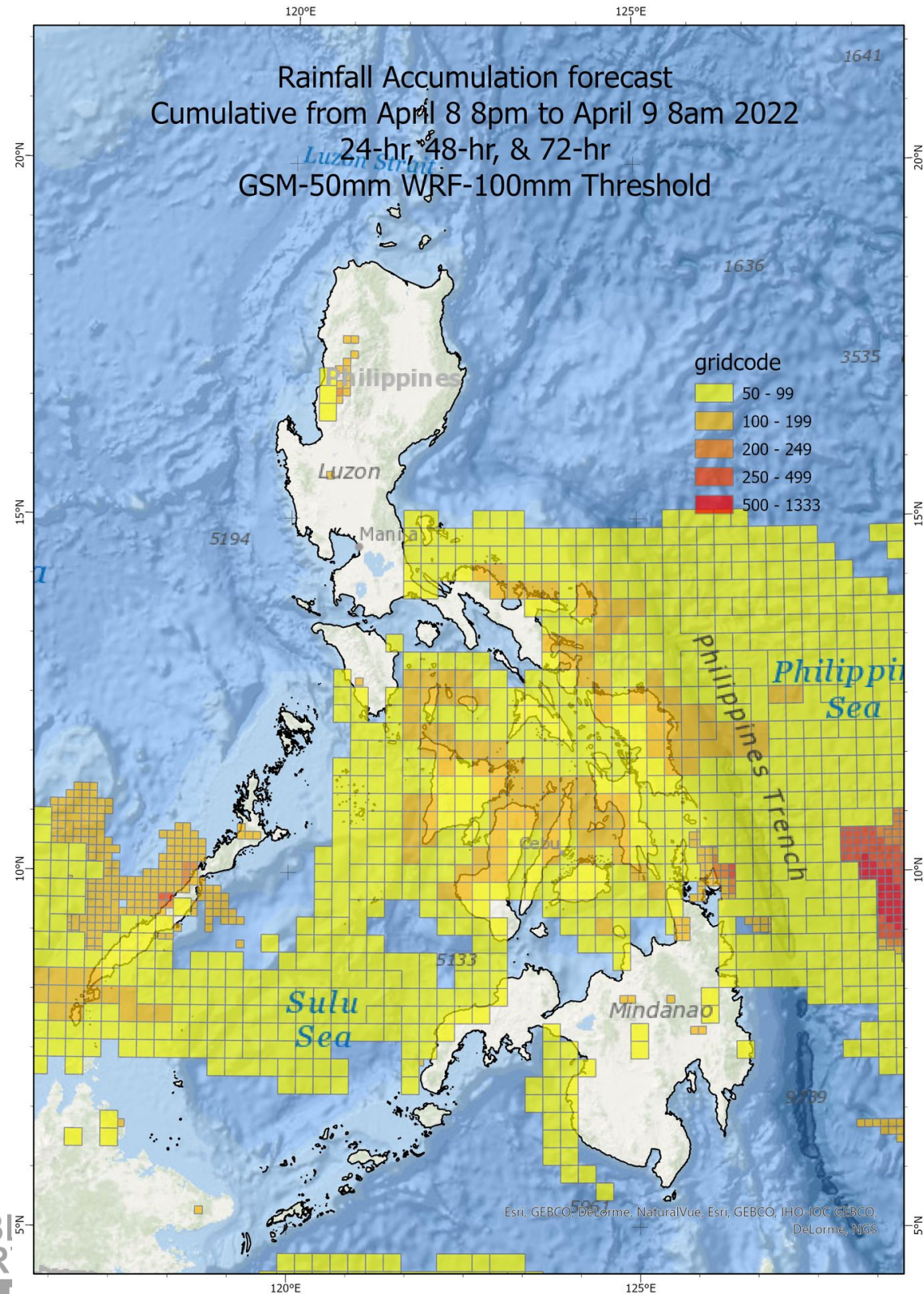
Autonomous Region of Muslim Mindanao (ARMM)	208
+ Lanao del Sur	48
+ Maguindanao	30
+ Shariff Kabunsuan	130
Bicol Region (Region V)	2227
+ Albay	419
+ Camarines Norte	263
+ Camarines Sur	257
+ Catanduanes	307
+ Masbate	489
+ Sorsogon	492
CALABARZON (Region IV-A)	331
+ Laguna	2
+ Quezon	329
Caraga (Region XIII)	663
+ Agusan del Norte	85
+ Agusan del Sur	71
+ Dinagat Islands	100
+ Surigao del Norte	258
+ Surigao del Sur	149

LIST OF REGIONS/PROVINCES/MUNICIPALITIES SUSCEPTIBLE TO LANDSLIDE AND FLOOD



Central Luzon (Region III)	60
+ Tarlac	60
Central Visayas (Region VII)	2432
+ Bohol	1010
+ Cebu	1081
+ Negros Oriental	341
Cordillera Administrative Region (CAR)	288
+ Abra	53
+ Benguet	214
+ Kalinga	1
+ Mountain Province	20
Davao Region (Region XI)	63
+ Davao de Oro (ComVal)	35
+ Davao del Norte	8
+ Davao Oriental	20
Eastern Visayas (Region VIII)	4355
+ Biliran	130
+ Eastern Samar	593
+ Leyte	1619
+ Northern Samar	564
+ Samar	949
+ Southern Leyte	500

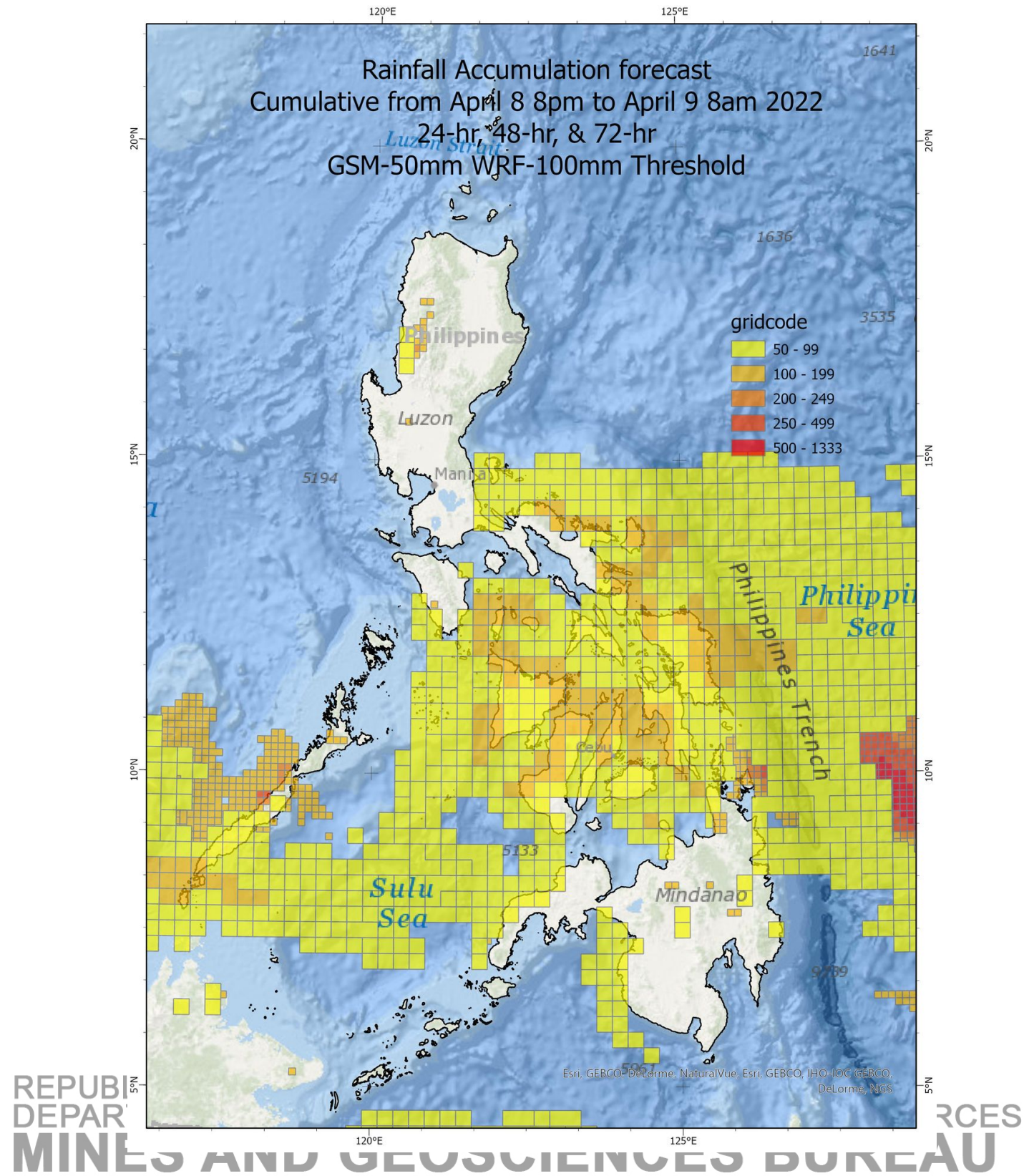
LIST OF REGIONS/PROVINCES/MUNICIPALITIES SUSCEPTIBLE TO LANDSLIDE AND FLOOD



<input type="checkbox"/> Ilocos Region (Region I)	465
<input type="checkbox"/> Ilocos Sur	181
<input type="checkbox"/> La Union	284
<input type="checkbox"/> MIMAROPA (Region IV-B)	590
<input type="checkbox"/> Occidental Mindoro	67
<input type="checkbox"/> Oriental Mindoro	64
<input type="checkbox"/> Palawan	241
<input type="checkbox"/> Romblon	218
<input type="checkbox"/> Northern Mindanao (Region X)	441
<input type="checkbox"/> Bukidnon	180
<input type="checkbox"/> Camiguin	58
<input type="checkbox"/> Lanao del Norte	76
<input type="checkbox"/> Misamis Oriental	127
<input type="checkbox"/> SOCCSKSARGEN (Region XII)	67
<input type="checkbox"/> North Cotabato	25
<input type="checkbox"/> Sultan Kudarat	42



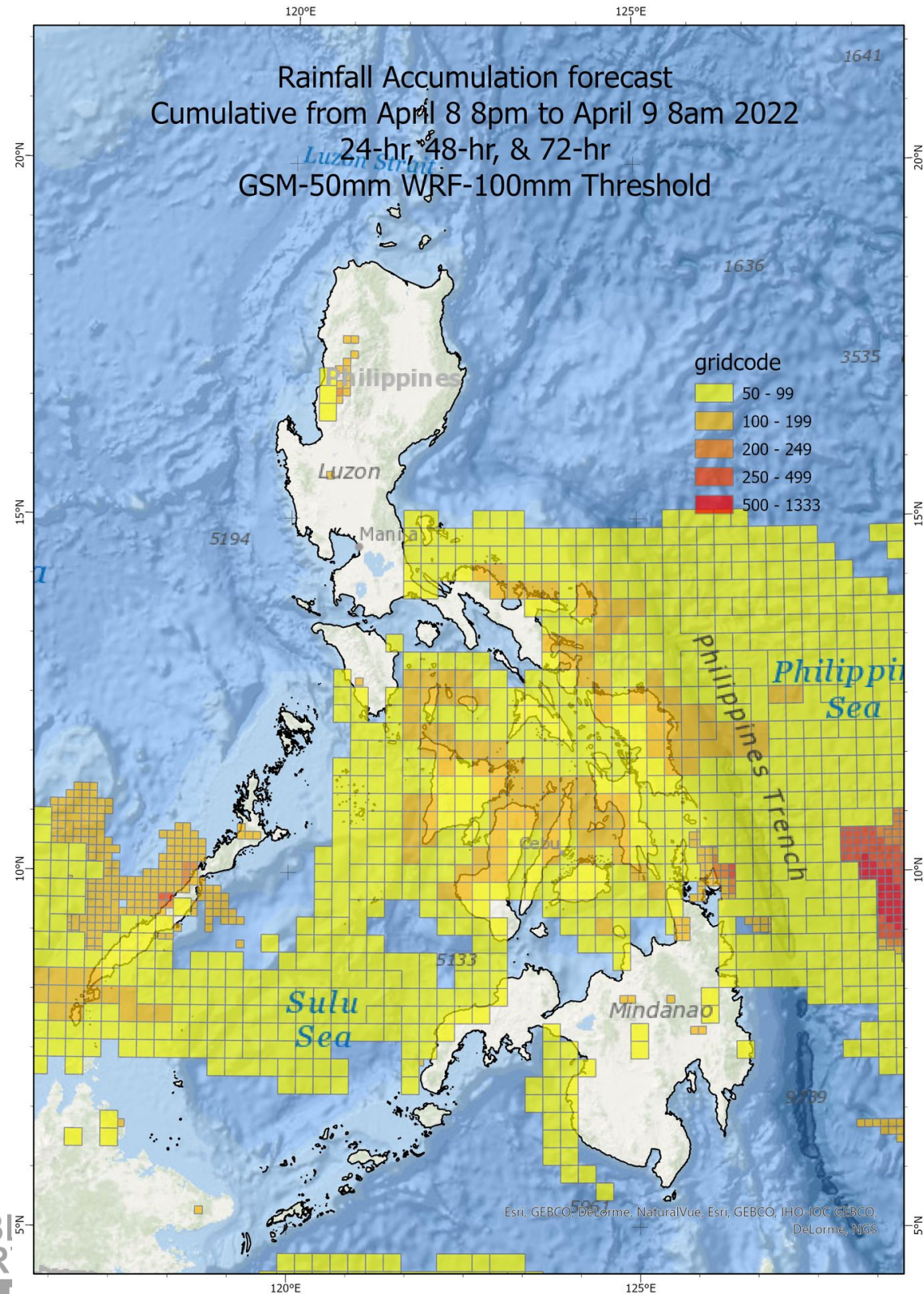
LIST OF REGIONS/PROVINCES/MUNICIPALITIES SUSCEPTIBLE TO LANDSLIDE AND FLOOD



Western Visayas (Region VI)	3873
+ Aklan	324
+ Antique	571
+ Capiz	445
+ Guimaras	92
+ Iloilo	1828
+ Negros Occidental	613
Zamboanga Peninsula (Region IX)	365
+ Zamboanga del Norte	329
+ Zamboanga del Sur	1
+ Zamboanga Sibugay	35
Grand Total	16428



SUMMARY LIST OF BARANGAYS SUSCEPTIBLE TO LANDSLIDE AND FLOOD



Cumulative April 8 8pm to April 9 8am, 2022	GSM 50mm WRF 100 Threshold
Row Labels	Count of BARANGAY
⦿ Autonomous Region of Muslim Mindanao (ARMM)	208
⦿ Bicol Region (Region V)	2227
⦿ CALABARZON (Region IV-A)	331
⦿ Caraga (Region XIII)	663
⦿ Central Luzon (Region III)	60
⦿ Central Visayas (Region VII)	2432
⦿ Cordillera Administrative Region (CAR)	288
⦿ Davao Region (Region XI)	63
⦿ Eastern Visayas (Region VIII)	4355
⦿ Ilocos Region (Region I)	465
⦿ MIMAROPA (Region IV-B)	590
⦿ Northern Mindanao (Region X)	441
⦿ SOCCSKSARGEN (Region XII)	67
⦿ Western Visayas (Region VI)	3873
⦿ Zamboanga Peninsula (Region IX)	365
Grand Total	16428

Through this link, you can see the full list of Barangays susceptible to flooding, landslide, and debris flow as of 8 AM April 9, 2022.

<https://tinyurl.com/MGB-Agaton-Advisory>

RECOMMENDATIONS



1. Vigilant monitoring of areas showing **signs of landslides**: tension cracks, seepages, terracettes, tilting of trees, etc.



Tilting of fence/walls



Tension Cracks



Seepage



Terracettes

2. Avoid areas affected by repeated flooding, meandering with riverbank erosion, floodplain with shifting and braiding streams, coastal areas, affected by storm surge, **flashflood areas**, river deltas with many distributary channels, etc.



Riverbank Erosion



Entrenched River

3. Monitor downstream areas of river systems and check for possible channel damming.

4. Vigilant monitoring in quarry/mining areas. Clear water ways, ensure dams are stable, freeboard of tailings dam can accommodate projected rainfall amount, **temporary stop underground mining operations, and other earth moving activities in the mine sites**

5. Temporarily stop caving activities.

6. **Be aware of the geohazard in your area.** MGB Geohazard maps are available in the barangay, municipal, and provincial LGUs nationwide as well as your respective MGB Regional Offices. Visit MGB Web portal and other platforms like Hazard Hunter (GeoRiskPH).

7. Please take note of the barangay listings (in excel format) provided to our Regional Offices and other partner agencies (OCD, DILG, DSWD, etc.). **Those areas in the previous listings should still remain vigilant.**

THE MGB GEOHAZARDS WEB PORTAL

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by the survey are the municipalities of Mercedes, Dadi, Taday, Tinzona, Pagsanjan, and Caparanga. The report contains the most up-to-date information for the province about the threats posed by coastal hazards and the recommendations to mitigate or to minimize their effects on the populace.

Read more: [MGSD Conducts Coastal Hazards Vulnerability Assessment of Camarines Norte Province](#)

[More MGB News...](#)

Newspaper Articles

[Revenues from the mining sector will help government](#)
Monday, 13 September 2021

[3.3 milyong forest seedlings naitanim sa Nuela Vizcaya](#)
Tuesday, 07 September 2021

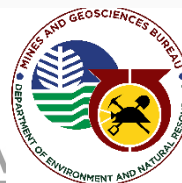
[Strong metal prices fuel mining growth](#)
Friday, 03 September 2021

[Local communities want South Cotabato mining ban lifted](#)
Monday, 23 August 2021

[Small-scale miners urged to apply for 'Minahang Bayan'](#)
Wednesday, 18 August 2021

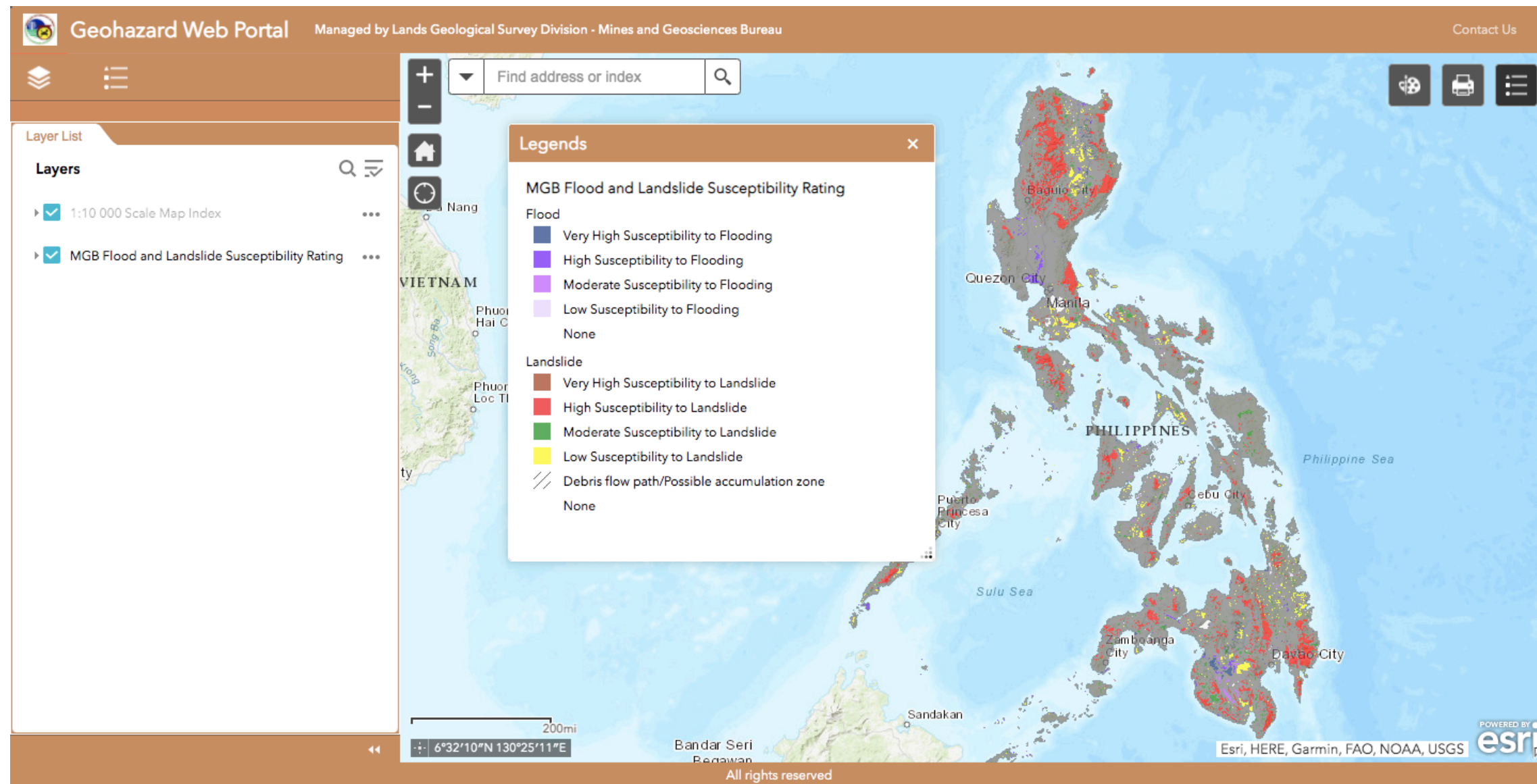
Quick Links

- MGB Online Process Flow
- MGB Client Satisfaction Survey Form
- Gender and Development Corner
- Mineral Statistics Corner
- MGB Central Database Portal
- ASEAN Mineral Database Information System
- GeoRisk PH
- Available Geologic and Mineral Distribution Map
- Geohazard Portal Map**
- Philippine Geoportal
- Job Opportunities
- Laws and Regulations
- Research and Development



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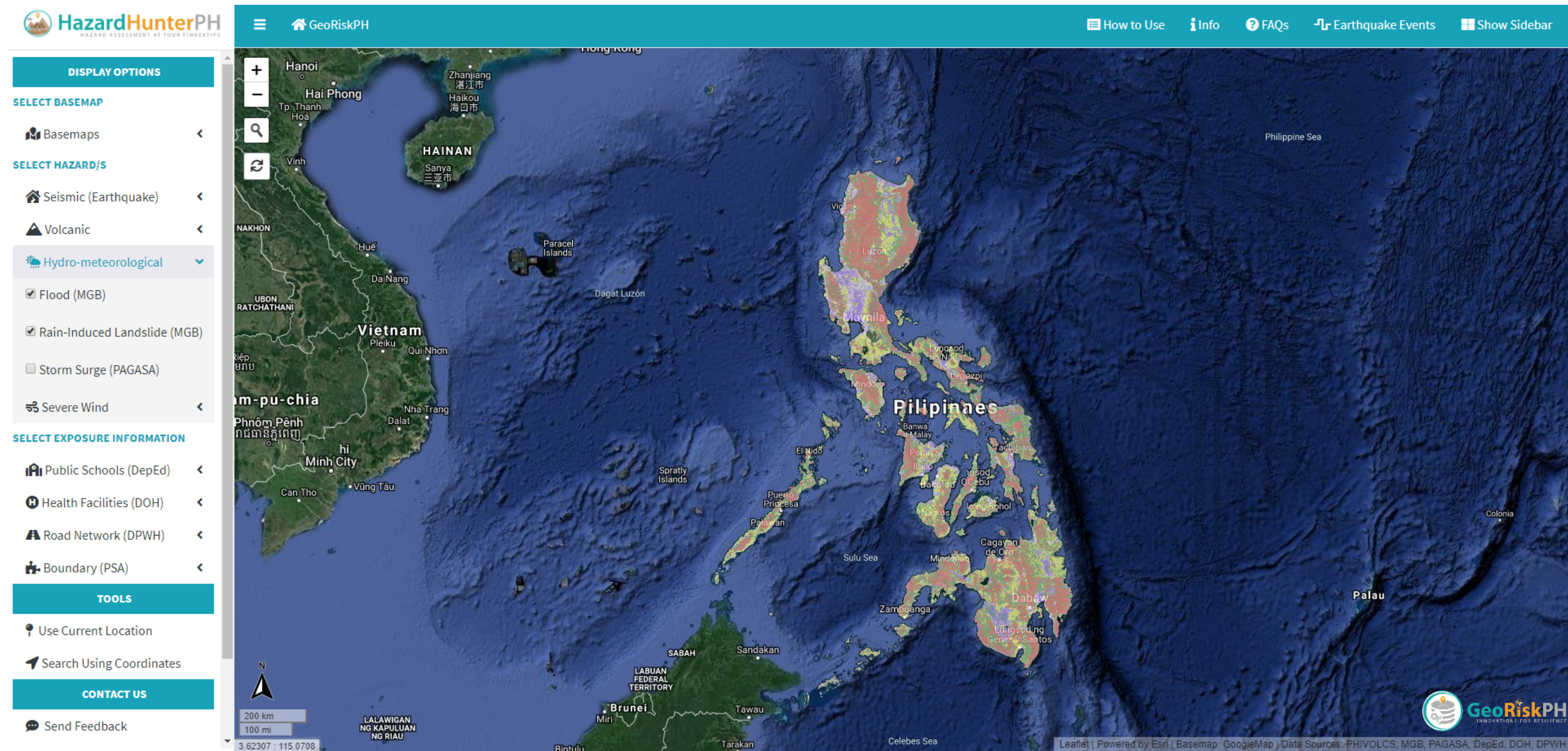


Currently being updated



www.tinyurl.com/MGB-Geohazard-Portal

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<https://hazardhunter.georisk.gov.ph/>