

LAND SUITABILITY MAP

CASSAVA

**LAND RESOURCES EVALUATION AND SUITABILITY
ASSESSMENT OF STRATEGIC PRODUCTION AREAS**

PROVINCE OF DAVAO DEL SUR

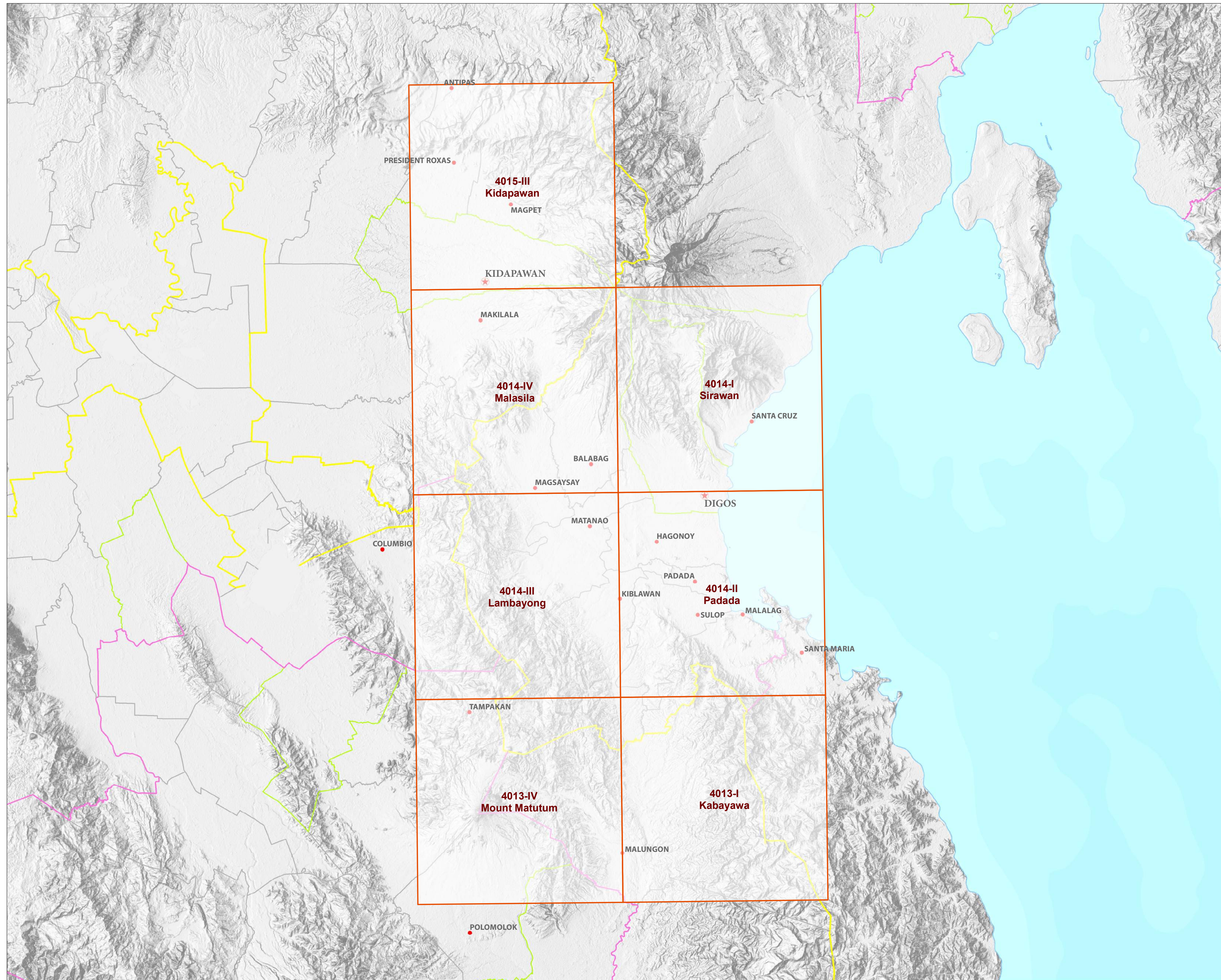


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DEPARTMENT OF AGRICULTURE
BUREAU OF SOILS AND WATER MANAGEMENT

SRDC Bldg., Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101
Tel/Fax No.: (+632) 332-9534 E-mail: bswmclientcenter@yahoo.com

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LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS PROVINCE OF DAVAO DEL SUR



LEGEND

Places

- ★ Capital City
- ★ City
- Capital Town
- Town

Administrative Boundary

- Regional
- Provincial
- City
- Municipal

Map Index

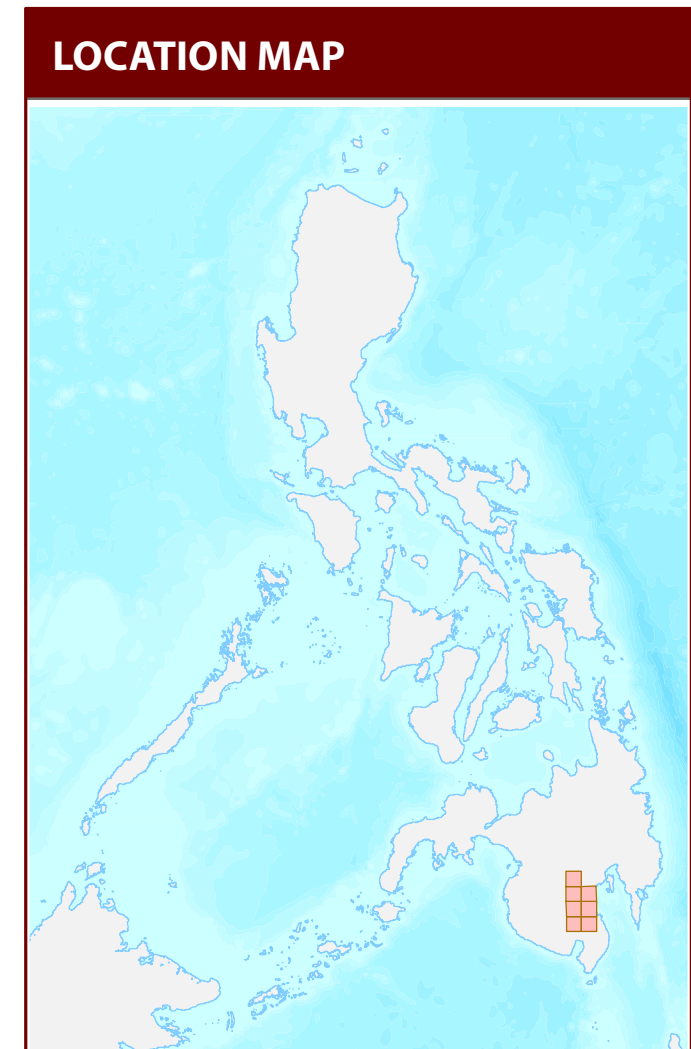
- Index grid

Topographic Relief

- (Shaded relief symbol)

Bathymetry

- (Blue gradient symbol)



MISCELLANEOUS INFORMATION

Land suitability information produced by the Bureau of Soils and Water Management (BSWM) through the Land Resources Evaluation and Suitability Assessment of Strategic Production Areas for Major Commodities Project duly supported by the Philippine Council on Agriculture and Fisheries (PCAFA) and funded by the Bureau of Agricultural Research (BAR).

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 Diliman, Quezon City 1101 Philippines
 Tel/Fax No. : (432) 332-9534 E-mail: bswmclientcenter@yahoo.com

LAND SUITABILITY MAP FOR CASSAVA

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS DAVAO DEL SUR, REGION XI

EXTENT OF SUITABILITY FOR CASSAVA PRODUCTION BY MUNICIPALITY

| MUNICIPALITY | EXISTING CASSAVA (Ha) | | | EXPANSION AREA (Ha) | | | | | | CONFLICT RESOLUTION AREA (Ha) | | | | | | | | TOTAL POTENTIAL EXPANSION AREA (Ha) | | |
|---------------|-----------------------|----|----|---------------------|--------|-----------------------|-----|-----------------------|-----|-------------------------------|-------|--------|-------|-------|-------|-----------|-----|-------------------------------------|-------------|--------|
| | S1 | S2 | S3 | Coconut | | Shrubland, unmanaged* | | Grassland, unmanaged* | | Mango | | Banana | | Corn | | Sugarcane | | | Other crops | |
| | | | | S1 | S2 | S1 | S2 | S1 | S2 | S1 | S2 | S1 | S2 | S1 | S2 | S1 | S2 | | S1 | S2 |
| BANSALAN | - | - | - | 3,019 | 1,713 | - | 4 | - | - | 1,429 | 964 | - | - | 23 | 1 | 19 | 10 | 11 | 126 | 7,317 |
| CITY OF DIGOS | - | - | - | 2,717 | 868 | 13 | - | 31 | 302 | 627 | 43 | 65 | - | 47 | - | 16 | 1 | 92 | 67 | 4,889 |
| HAGONOY | - | - | - | 678 | 14 | - | - | - | - | 96 | 2 | 1,214 | 105 | 42 | - | 13 | - | 187 | 78 | 2,428 |
| KIBLAWAN | - | - | - | 571 | 978 | - | 38 | - | 282 | 13 | 17 | 815 | 952 | 748 | 884 | 809 | 568 | - | - | 6,674 |
| MAGSAYSAY | - | - | - | 2,790 | 2,652 | - | 2 | - | 88 | 301 | 122 | - | - | 96 | 24 | - | - | 1,212 | 822 | 8,108 |
| MALALAG | - | - | - | 2,788 | 2,815 | 13 | 43 | - | 77 | 83 | 44 | 447 | 95 | 125 | 30 | 17 | 4 | - | - | 6,582 |
| MATANAO | - | - | - | 776 | 1,151 | - | - | - | 169 | 3,436 | 602 | 18 | - | 338 | 217 | 688 | 18 | 22 | 46 | 7,481 |
| PADADA | - | - | - | 1,586 | 86 | - | - | - | - | 21 | 9 | 677 | 80 | 72 | - | - | - | - | - | 2,530 |
| SANTA CRUZ | - | - | - | 3,296 | 1,949 | - | - | 59 | 35 | 1 | - | 105 | 106 | - | - | - | - | 257 | 620 | 6,428 |
| SULOP | - | - | - | 3,605 | 1,850 | 6 | 140 | - | 10 | 82 | 53 | 478 | 1,089 | 131 | 29 | 31 | 30 | - | - | 7,534 |
| TOTAL | - | - | - | 21,827 | 14,075 | 32 | 226 | 90 | 964 | 6,088 | 1,856 | 3,819 | 2,426 | 1,622 | 1,184 | 1,592 | 630 | 1,781 | 1,759 | 59,971 |

Note: Delivery of cassava planting materials must be started on the onset of rainy season.
*establishment of shade trees prior to planting of cassava.

SUITABILITY CLASSES:

Highly Suitable (S1)
Land having no significant limitation to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

Moderately Suitable (S2)
Land having limitation which in aggregate are moderately severe for sustained application of a given use; the limitation will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.

Marginally Suitable (S3)
Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable / Not Relevant
Land having limitations which may be surmountable in time but which cannot be corrected with existing knowledge at currently acceptable cost; the limitations are so severe as to preclude successful sustained use of the land in the given manner. Existing forest, shrubland greater than 18% slope, irrigated paddy rice and miscellaneous land types such as built up areas, roads, etc are considered as not relevant.

AGRONOMIC REQUIREMENT OF CASSAVA PRODUCTION

| LAND UTILIZATION TYPE | SUITABILITY RATING | SLOPE (%) | SOIL DEPTH (cm) | SOIL TEXTURE | SOIL DRAINAGE | SOIL REACTION (pH) | INHERENT FERTILITY | FLOODING CLASS | EROSION CLASS | ROCK OUTCROPS | ELEVATION (mas) | ANNUAL RAINFALL (mm) | CLIMATIC TYPE |
|-----------------------|--------------------|-----------|-----------------|--|---------------|------------------------|--------------------|----------------|---------------|---------------|-----------------|----------------------|----------------|
| Cassava | S1 | <8 | >50 | FSL, L, SIL, CL, SICL, SCL, SC, SIC, C | WD, MWD | 5.6 - 7.2 | high | none-slight | none-slight | none-few | <500 | 1000-2000 | I, II, III, IV |
| | S2 | 8 - 18 | 30 - 50 | SL, HC | SPD, PD | 5.1 - 5.5 7.3 - 7.8 | medium | moderate | moderate | common | 500-1500 | 2001-4500 | II |
| | S3 | 18 - 30 | <30 | S, LS, CSL | VPD, ED | <5.0 - > 7.9 | low | severe | severe | many | >1500 | <1000 >4500 | |

SLOPE (%)
0 - 3 - level to gently sloping
3 - 8 - gently sloping to undulating
8 - 18 - undulating to rolling
18 - 30 - rolling to moderately steep
30 - 50 - steep
> 50 - very steep

SOIL DRAINAGE
ED - excessively drained
WD - well drained
MWD - moderately well drained
SPD - somewhat poorly drained
PD - poorly drained
VPD - very poorly drained

SOIL REACTION (pH)
< 4.5 - extremely acid
4.5 - 5.0 - very strongly acid
5.1 - 5.5 - strongly acid
5.6 - 6.0 - medium acid
6.1 - 6.5 - slightly acid
6.6 - 7.2 - neutral
7.3 - 7.8 - mildly alkaline
7.9 - 8.4 - moderately alkaline
> 8.5 - strongly alkaline

SOIL TEXTURE
Coarse
S - sand
LS - loamy sand
CSL - coarse sandy loam
SL - sandy loam
Medium
FSL - fine sandy loam
L - loam
SIL - silt loam
CL - clay loam
SICL - silty clay loam
SCL - sandy clay loam

Fine
SC - sandy clay
SiC - silty clay
C - clay
HC - heavy clay

SOIL DEPTH (cm)
0 - 30 - very shallow
30 - 50 - shallow
50 - 100 - moderately deep
> 100 - deep to very deep

SURFACE IMPEDIMENT
ROCK OUTCROPS
< 10% - none - few
10 - 30% - common
> 30% - many

LAND LIMITATIONS DESCRIPTION AND COMBINATIONS

ELEVATION
E12 - 500 - 1000m or 2000 - 2500m
E13 - < 500m or > 2500m

SOIL DRAINAGE
D2 - Somewhat poorly drained to poorly drained
D3 - Very poorly drained or excessively drained

SOIL DEPTH
Sh2 - Shallow to moderately deep (30 - 100cm)
Sh3 - Very shallow (< 30cm)

SOIL EROSION
E2 - Moderate erosion
E3 - Severe erosion

SLOPE/TOPOGRAPHY
T2 - Undulating to moderately steep
T3 - Steep to very steep

SOIL TEXTURE
Tc - Coarse texture

ROCK OUTCROPS
Rc2 - Common
Rc3 - Many

FLOODING
F2 - Moderate seasonal flooding
F3 - Severe seasonal flooding

| CODE | LIMITATION | CODE | LIMITATION | CODE | LIMITATION | CODE | LIMITATION | CODE | LIMITATION |
|------|-------------|------|----------------|------|-------------------|------|-------------------|------|-------------------|
| 1 | E12 | 11 | T2-E2-Sh2-Rc2 | 21 | T3-E3-Sh2-Rc2 | 31 | T3-E13-E3 | 41 | T3-E12-E3 |
| 2 | E12-Sh2-Rc2 | 12 | T2-E12 | 22 | T3-E3-Sh2-Rc3 | 32 | T3-E13-E3-Sh2-Rc2 | 42 | T3-E12-E3-Sh3-Rc3 |
| 3 | E13 | 13 | T2-E12-Sh2-Rc2 | 23 | T3-E3-Sh3-Rc2 | 33 | T3-E13-E3-Sh3-Rc2 | 43 | T3-E13-E3-Sh3-Rc3 |
| 4 | E13-Sh2-Rc2 | 14 | T2-E12-Sh2-Rc3 | 24 | T3-E3-Sh3-Rc3 | 34 | T3-F2-D2 | 44 | T3-E13 |
| 5 | F2-D2 | 15 | T2-E13-Sh2-Rc2 | 25 | T3-E12 | 35 | T3-F3-D2 | 45 | Tc |
| 6 | F2-Tc | 16 | T2-F2-D2 | 26 | T3-E12-E3 | 36 | T3 | | |
| 7 | F3-D2 | 17 | T2-F3-D2 | 27 | T3-E12-E3-Sh2-Rc2 | 37 | T3-E3 | | |
| 8 | Sh2 | 18 | T3 | 28 | T3-E12-E3-Sh2-Rc3 | 38 | T3-E3-Rc3 | | |
| 9 | Sh2-Rc2 | 19 | T3-E3 | 29 | T3-E12-E3-Sh3-Rc2 | 39 | T3-E3-Sh3-Rc3 | | |
| 10 | T2 | 20 | T3-E3-Rc2 | 30 | T3-E12-E3-Sh3-Rc3 | 40 | T3-E12 | | |

| CODE | LANDUSE | CODE | LANDUSE |
|------|-------------------|------|--------------------|
| 4 | Corn | 105 | Fruit trees, mixed |
| 34 | Diversified crops | 107 | Abaca |
| 50 | Rootcrops | 112 | Sugarcane |
| 81 | Coffee | 116 | Coconut |
| 84 | Pineapple | 126 | Grassland |
| 85 | Mango | 134 | Shrubs, unmanaged |
| 89 | Durian | 137 | Rubber (T) |
| 90 | Pomelo | | |
| 91 | Banana | | |
| 93 | Mangosteen | | |

CLIMATE TYPE

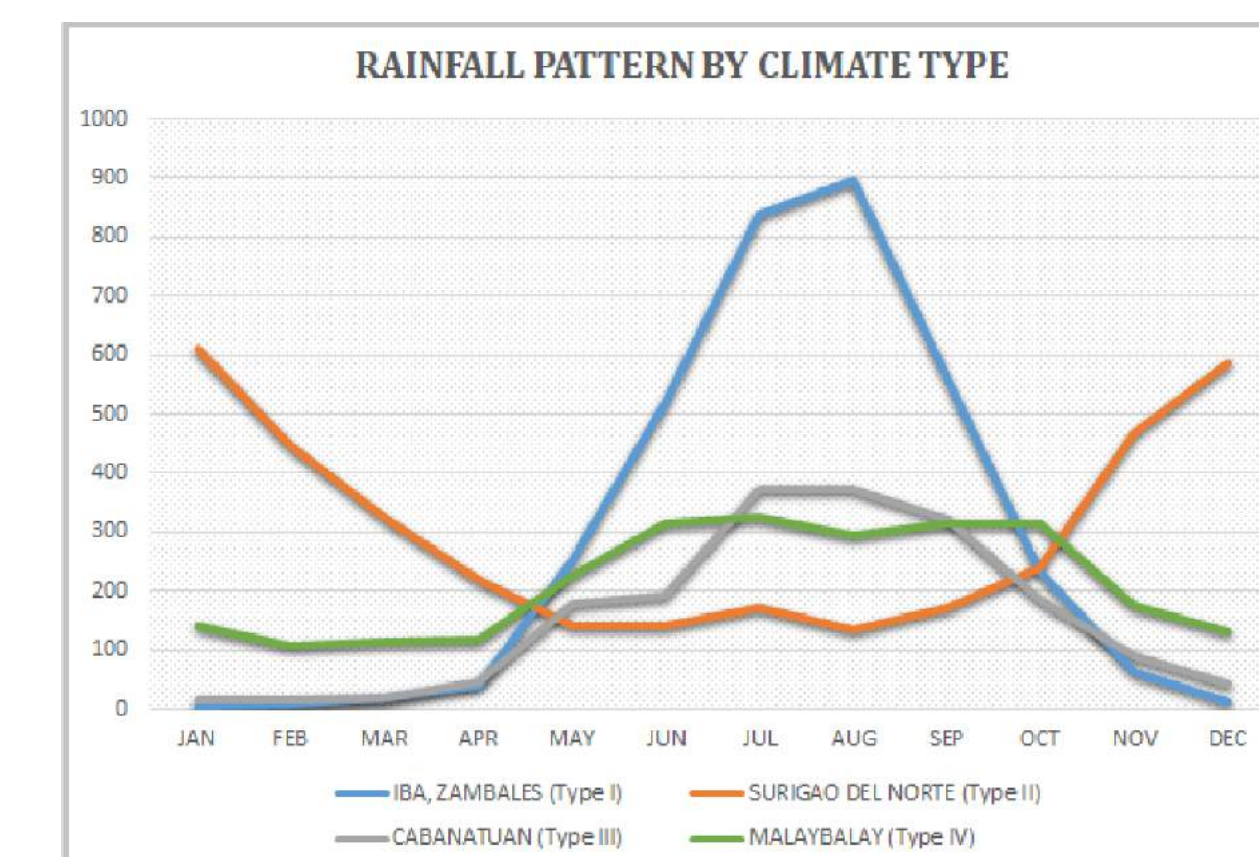
TYPE I : Two pronounced season, dry from November to April and wet during the rest of the year. Maximum rain period is from June to September

TYPE II : No dry season with a very pronounced maximum rain period from December to February. There is not a single dry month. Maximum monthly rainfall occurs during the period from March to May.

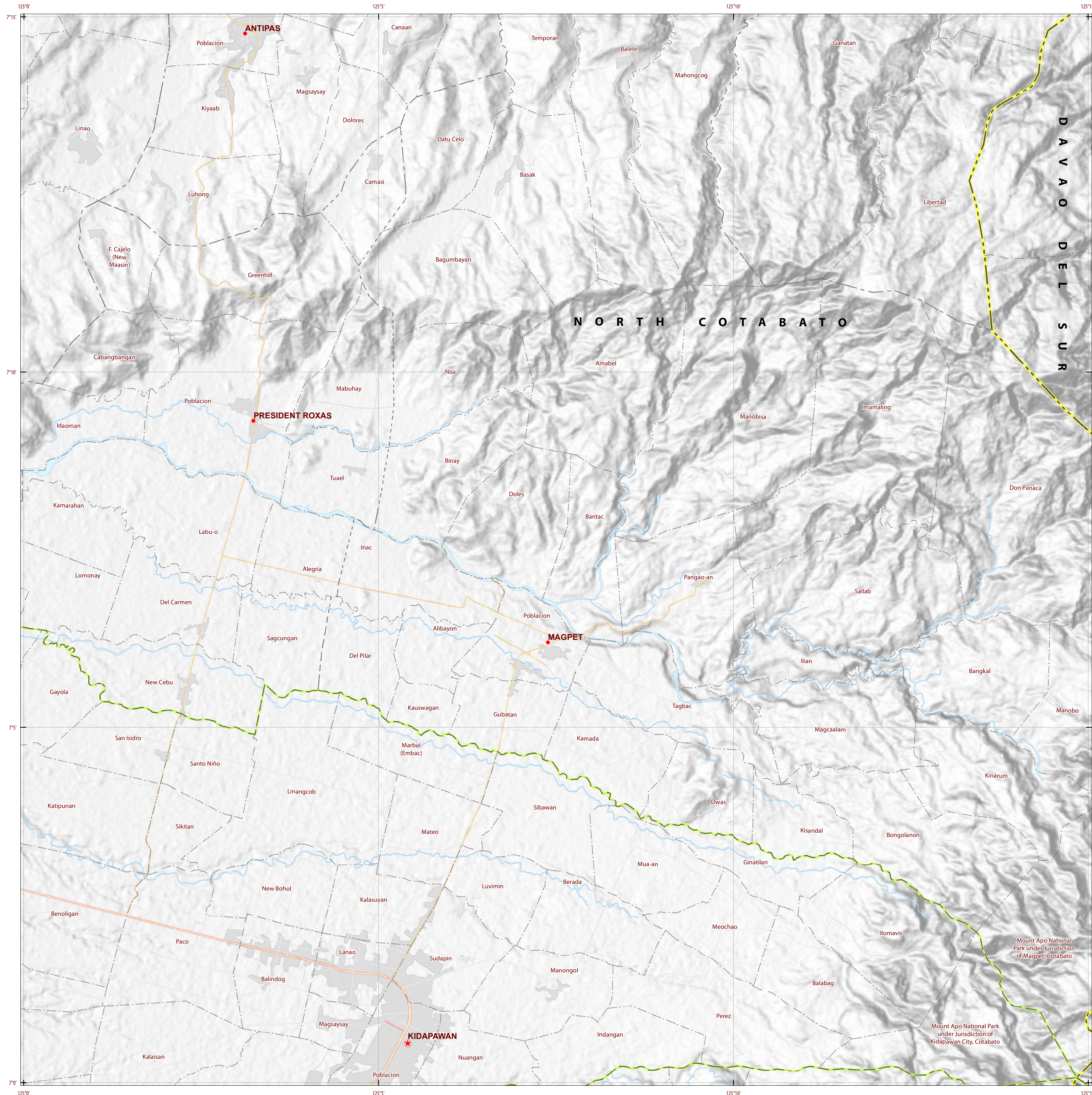
TYPE III : No very pronounced maximum rain period, with a dry season lasting only from one to three months, either during the period from December to February or from March to May. This type resembles Type I since it has a short dry season.

TYPE IV : Rainfall is more or less evenly distributed throughout the year. This type resembles Type II since it has no dry season.

Davao Del Sur is classified as climatic Type IV.

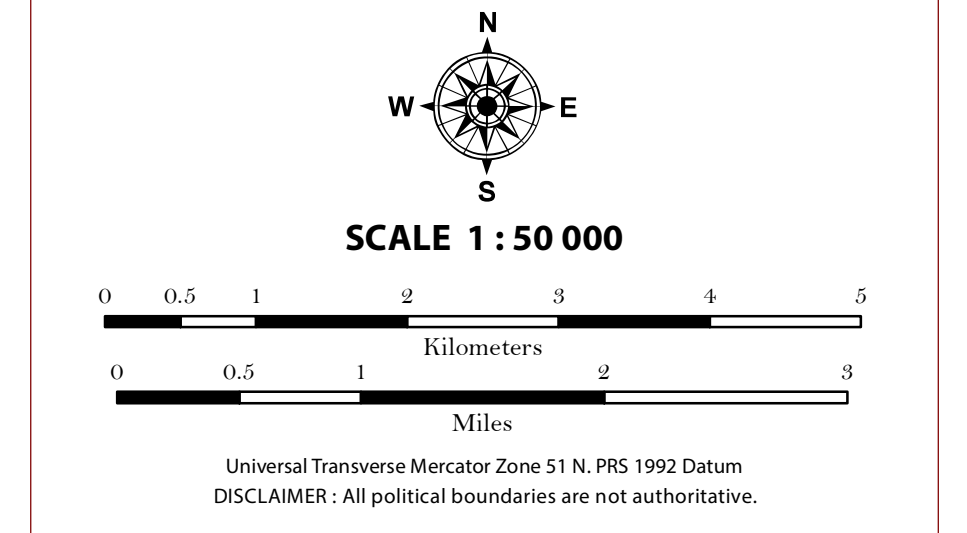


Source: PAGASA 2018, *Climatological Normals (Rainfall)*, Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), accessed 27 July 2018, <<https://www1.pagasa.dost.gov.ph/index.php/climate/climatological-normals>>.



LAND SUITABILITY MAP CASSAVA

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



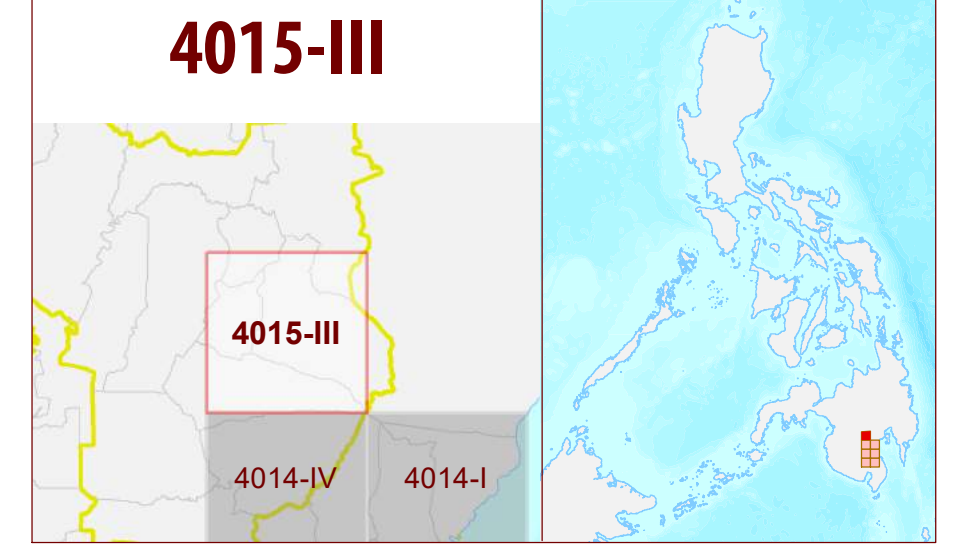
LEGEND

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 - S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.
- Not Suitable/ Not Relevant**
- OTHER SIGNS**
- NGP Areas
 - Cacao
 - Land limitation
 - Land use

CONVENTIONAL SIGNS

- ROADS**
- Expressway
 - Trunk line
 - Primary
 - Secondary
 - Tertiary
- BOUNDARY**
- Region
 - Province
 - District
 - Municipality
 - Barangay
- HYDROLOGY**
- Sea / Shoreline
 - Lakes / Rivers
- PLACES**
- Capital City / City
 - Capital Town / Town
- LAND USE**
- Built-up
 - Fishpond
 - Mangrove

ADJOINING SHEETS



MISCELLANEOUS INFORMATION

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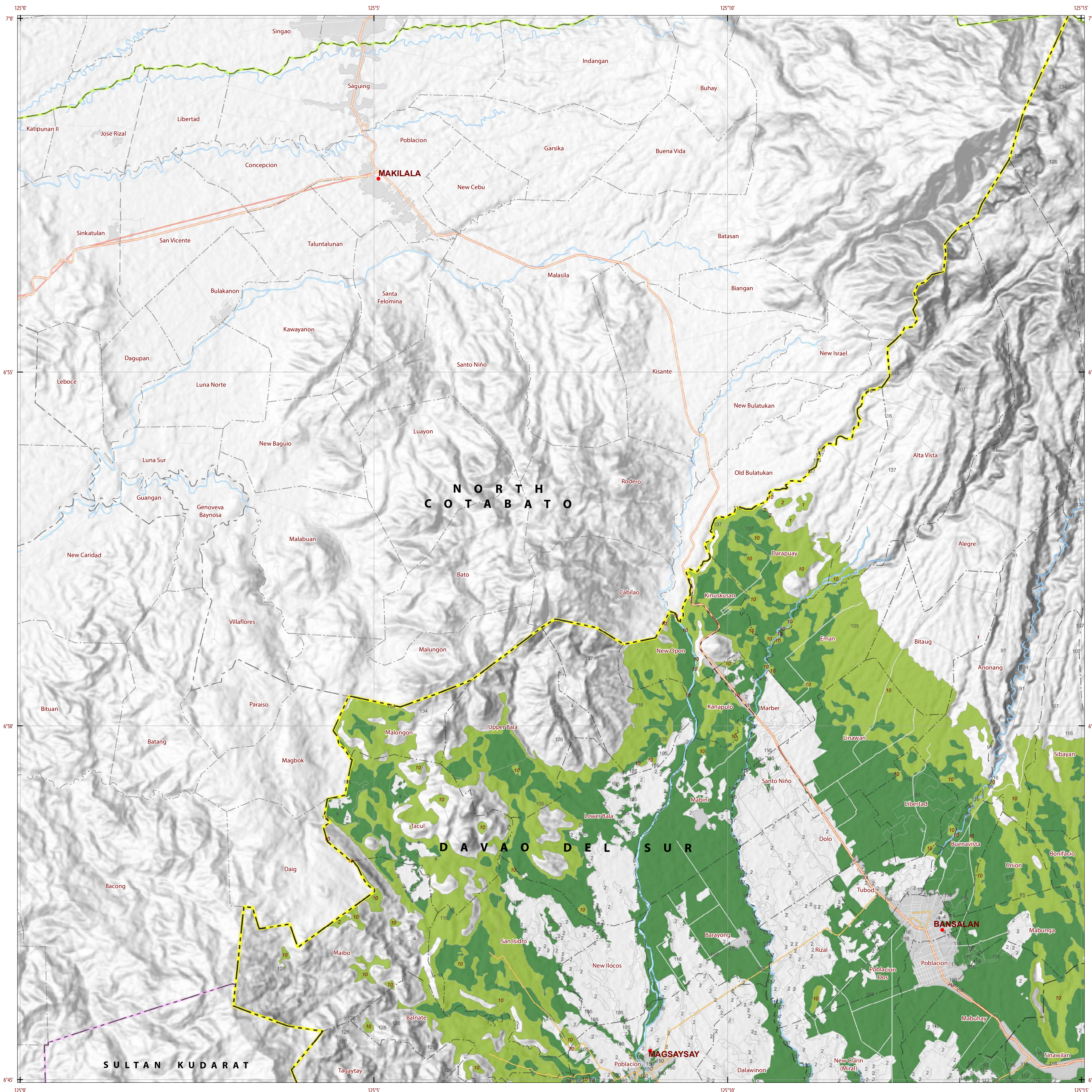
Project Leader : BERNARDO B. PASCUA
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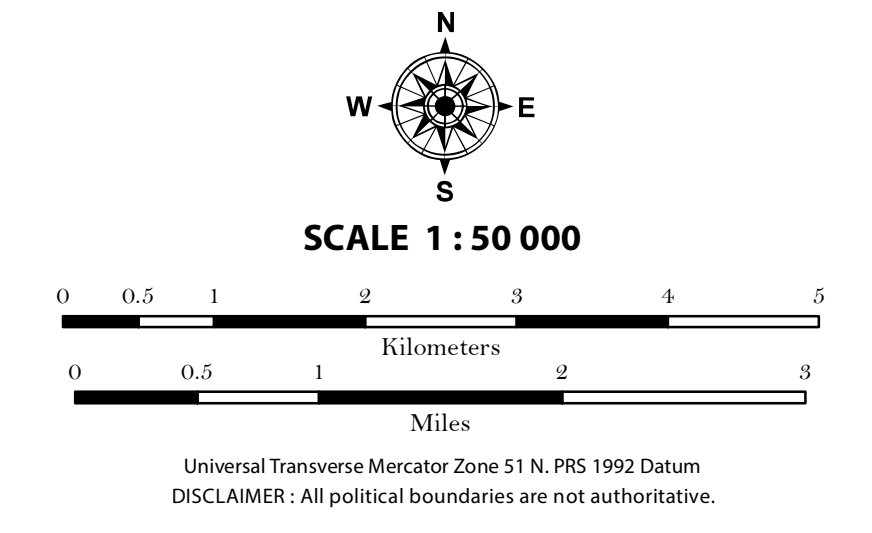
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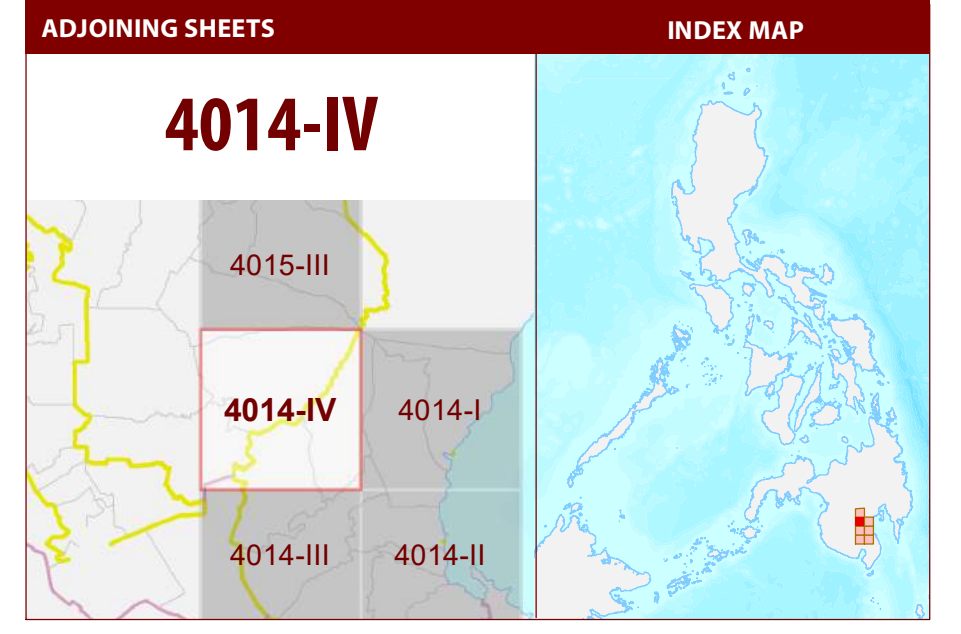
- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

| | | |
|--------------|-----------------|---------------------|
| ROADS | BOUNDARY | HYDROLOGY |
| Expressway | Region | Sea / Shoreline |
| Trunk line | Province | Lakes / Rivers |
| Primary | District | PLACES |
| Secondary | Municipality | Capital City / City |
| Tertiary | Barangay | Capital Town / Town |

LAND USE

- Built-up
- Fishpond
- Mangrove



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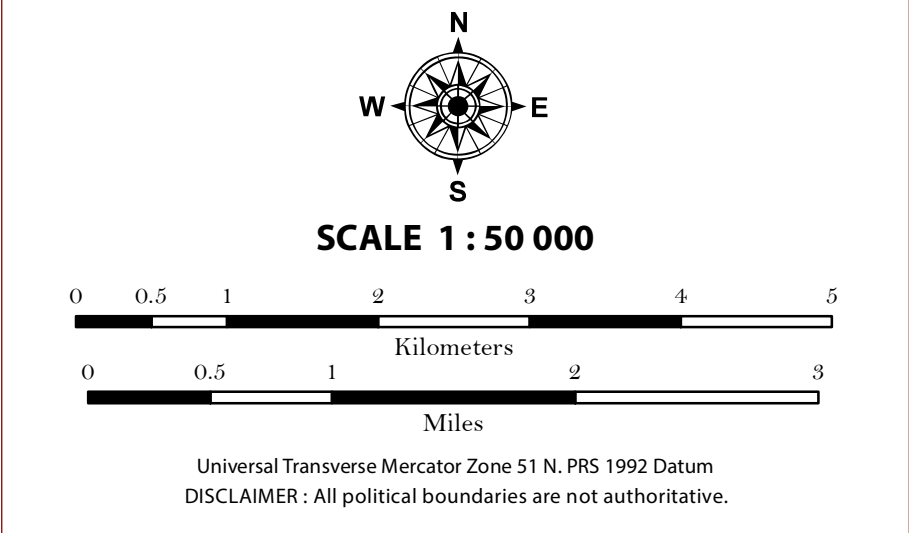
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 Tel/Fax No. +(632) 332-9534 E-mail: bswm@centerentia.gov.ph

PROVINCE OF DAVAO DEL SUR Sheet 2 of 7 Sheet No. 4014-IV



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LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



LEGEND

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OTHER SIGNS

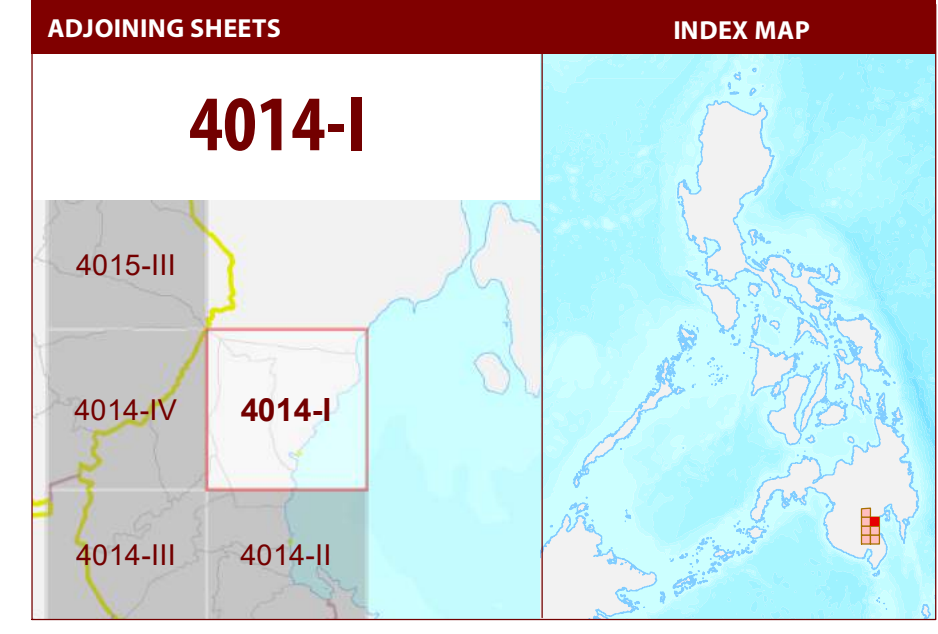
- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

| ROADS | BOUNDARY | HYDROLOGY |
|------------|--------------|-----------------------|
| Expressway | Region | Sea / Shoreline |
| Trunk line | Province | Lakes / Rivers |
| Primary | District | PLACES |
| Secondary | Municipality | ★ Capital City / City |
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LAND USE

- Built-up
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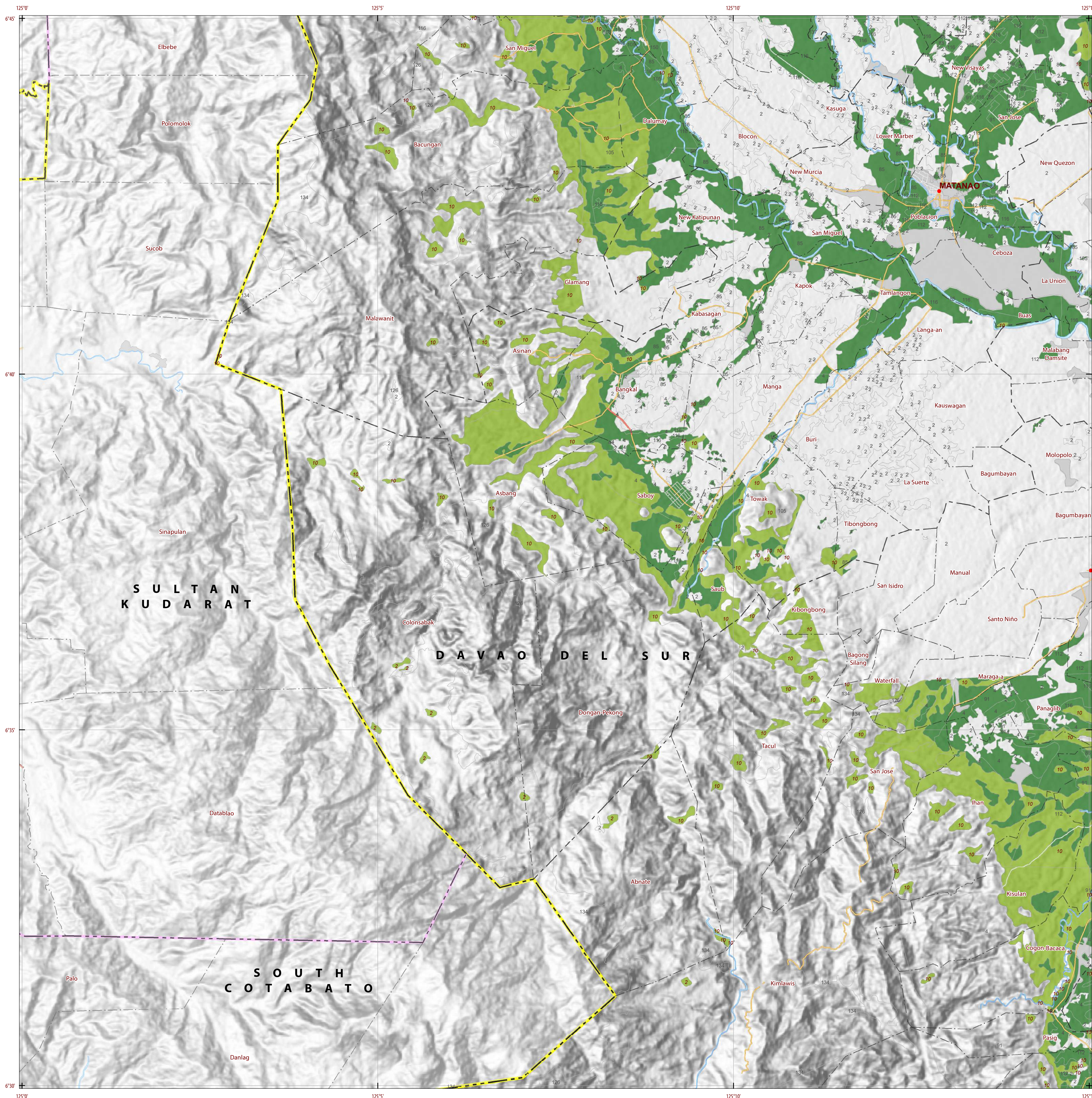
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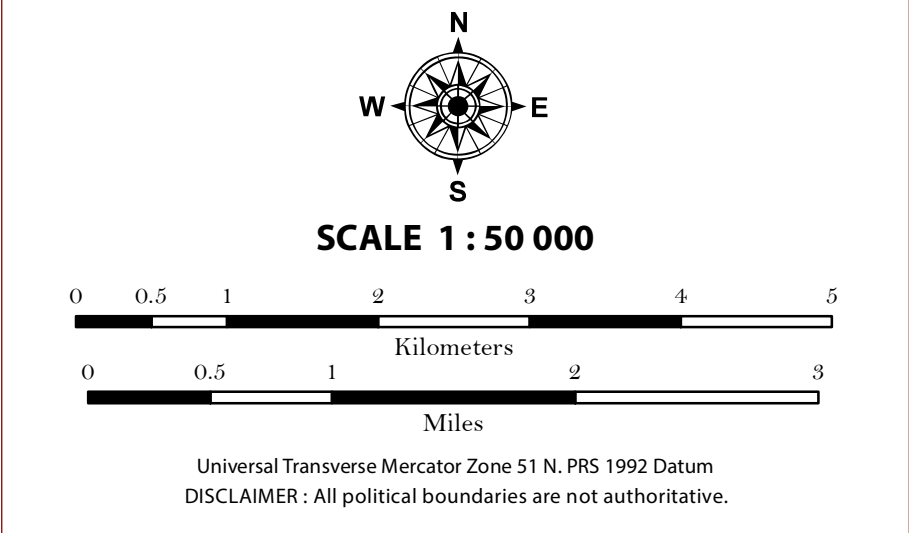
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LAND SUITABILITY MAP CASSAVA

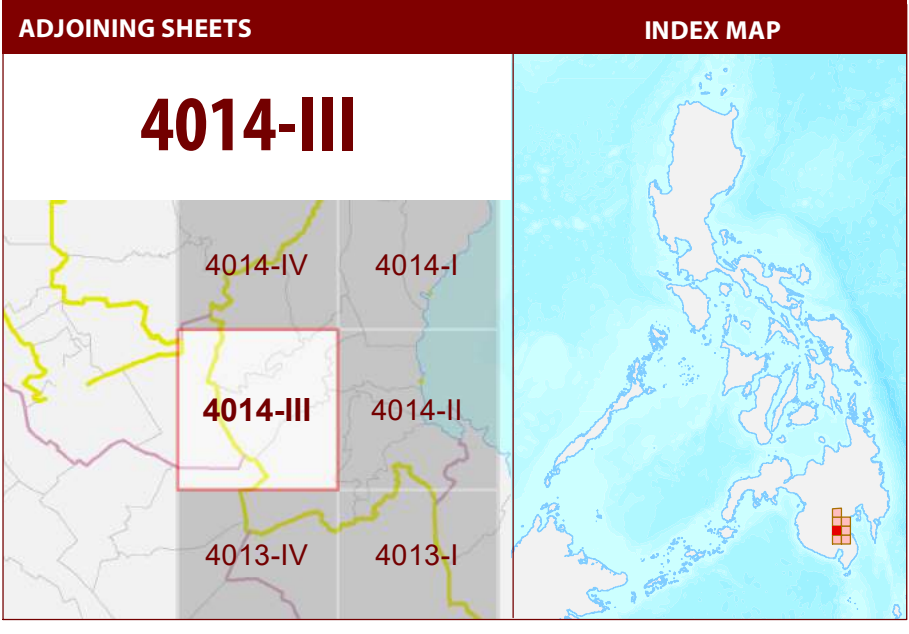
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- OTHER SIGNS**
- NGP Areas
 - Cacao
 - Land limitation
 - Land use

- CONVENTIONAL SIGNS**
- | | | |
|-----------------|-----------------|-----------------------|
| ROADS | BOUNDARY | HYDROLOGY |
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| Trunk line | Province | Lakes / Rivers |
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| LAND USE | | |
| Built-up | Fishpond | Mangrove |



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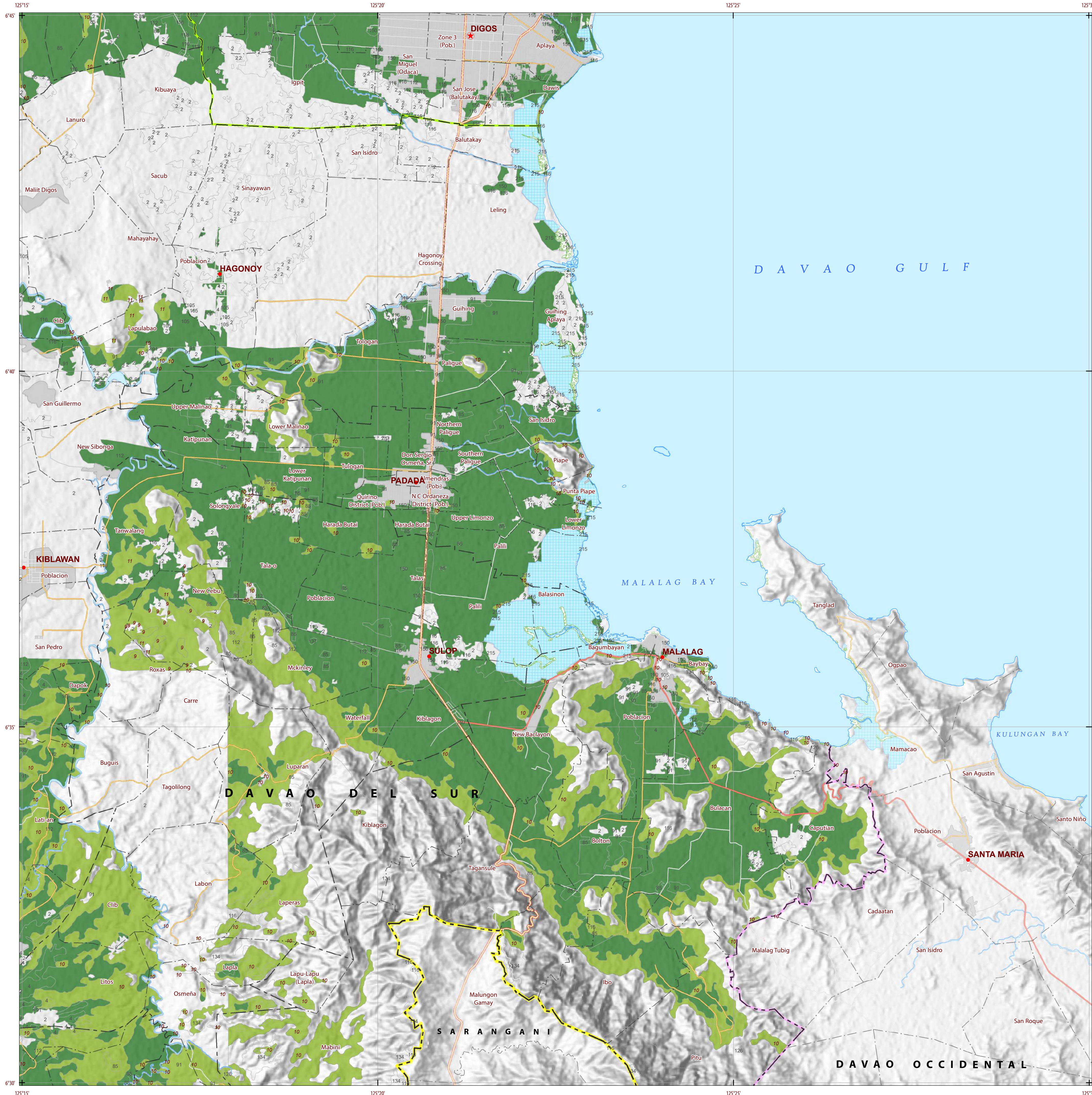
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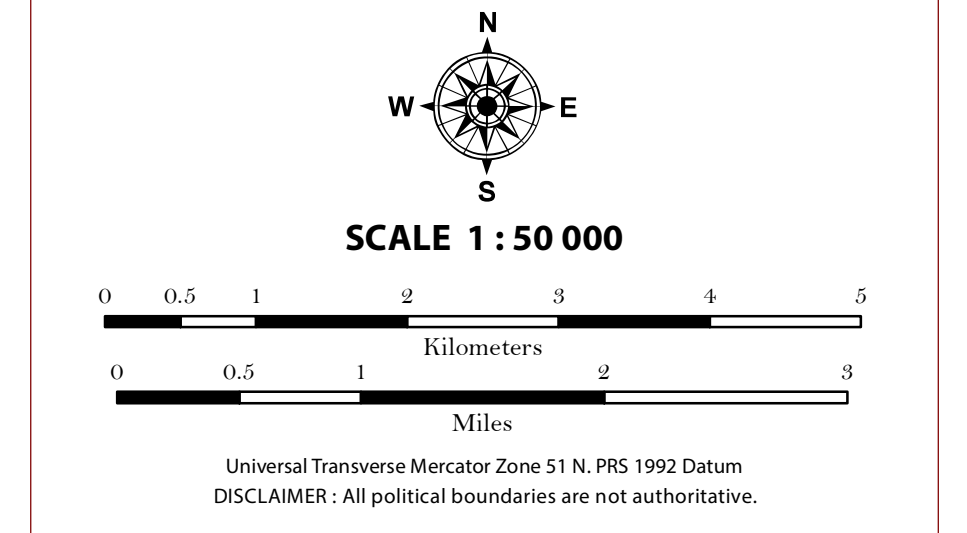
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 DEPARTMENT OF AGRICULTURE
 BUREAU OF SOILS AND WATER MANAGEMENT
 SRDC Bldg, Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101
 Tel/Fax No.:(+632) 332-9534 E-mail: bswmcenter@da.gov.ph



LAND SUITABILITY MAP CASSAVA

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



LEGEND

SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

OTHER SIGNS

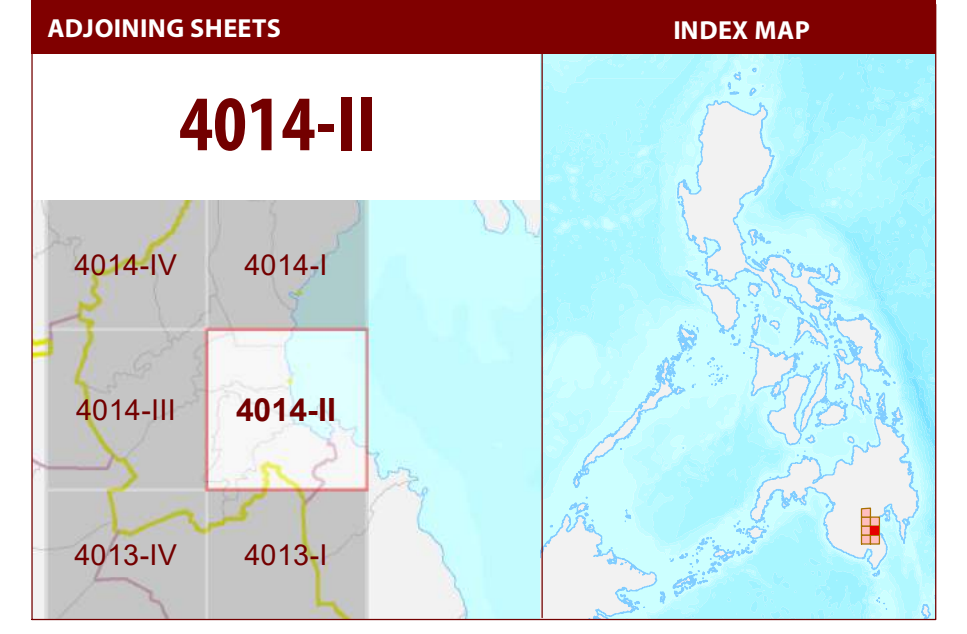
- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

| ROADS | BOUNDARY | HYDROLOGY |
|------------|--------------|-----------------------|
| Expressway | Region | Sea / Shoreline |
| Trunk line | Province | Lakes / Rivers |
| Primary | District | PLACES |
| Secondary | Municipality | ★ Capital City / City |
| Tertiary | Barangay | ● Capital Town / Town |

LAND USE

- Built-up
- Fishpond
- Mangrove



MISCELLANEOUS INFORMATION

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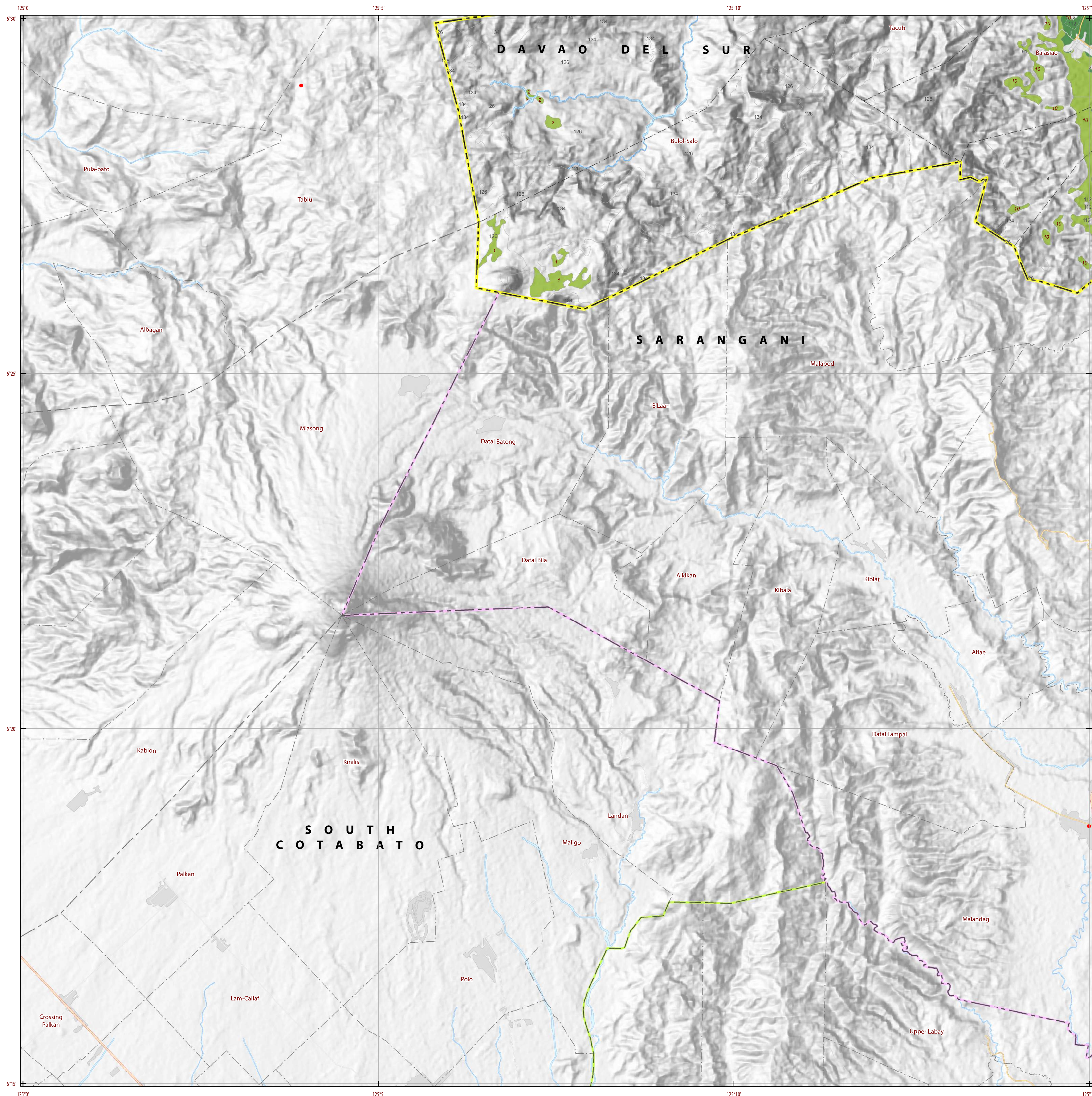
Project Leader : BERNARDO B. PASCUA
GIS and Cartography : IRWIN K. SAMALCA

Funding Agency : Department of Agriculture - Bureau of Agricultural Research (DA-BAR)
Collaborating Agencies : Philippine Council on Agriculture and Fisheries (PCAF)
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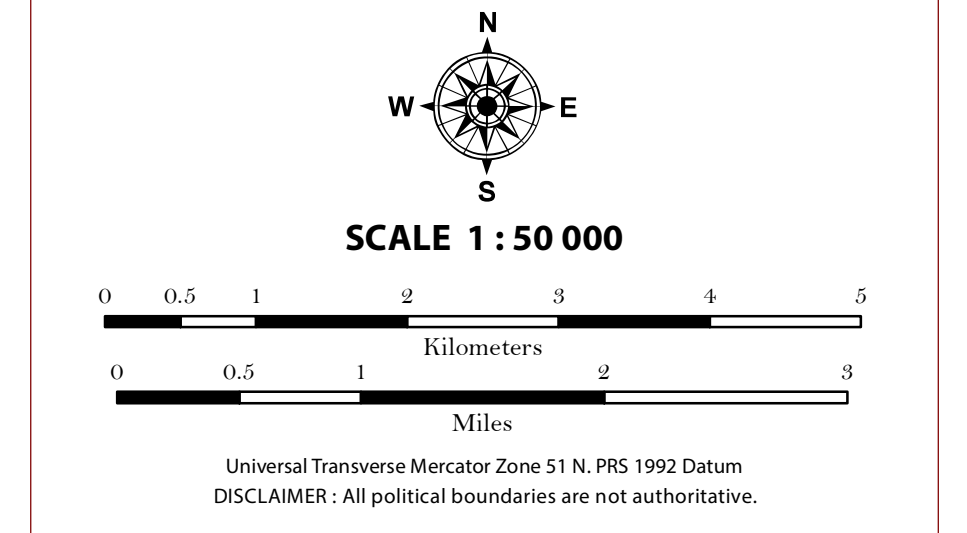
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LAND SUITABILITY MAP CASSAVA

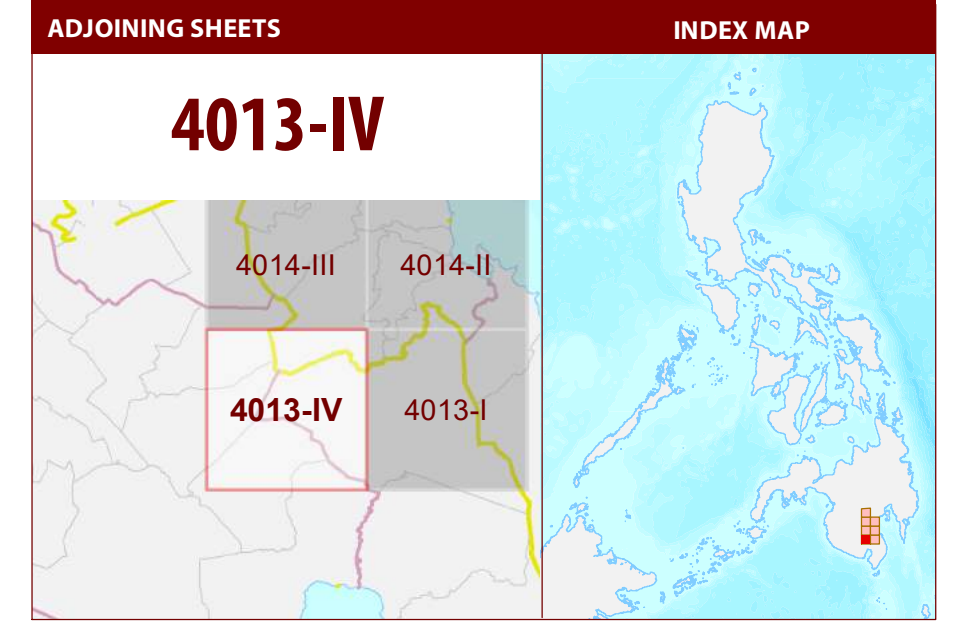
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 - Cacao
 - Land limitation
 - Land use

- CONVENTIONAL SIGNS**
- | | | |
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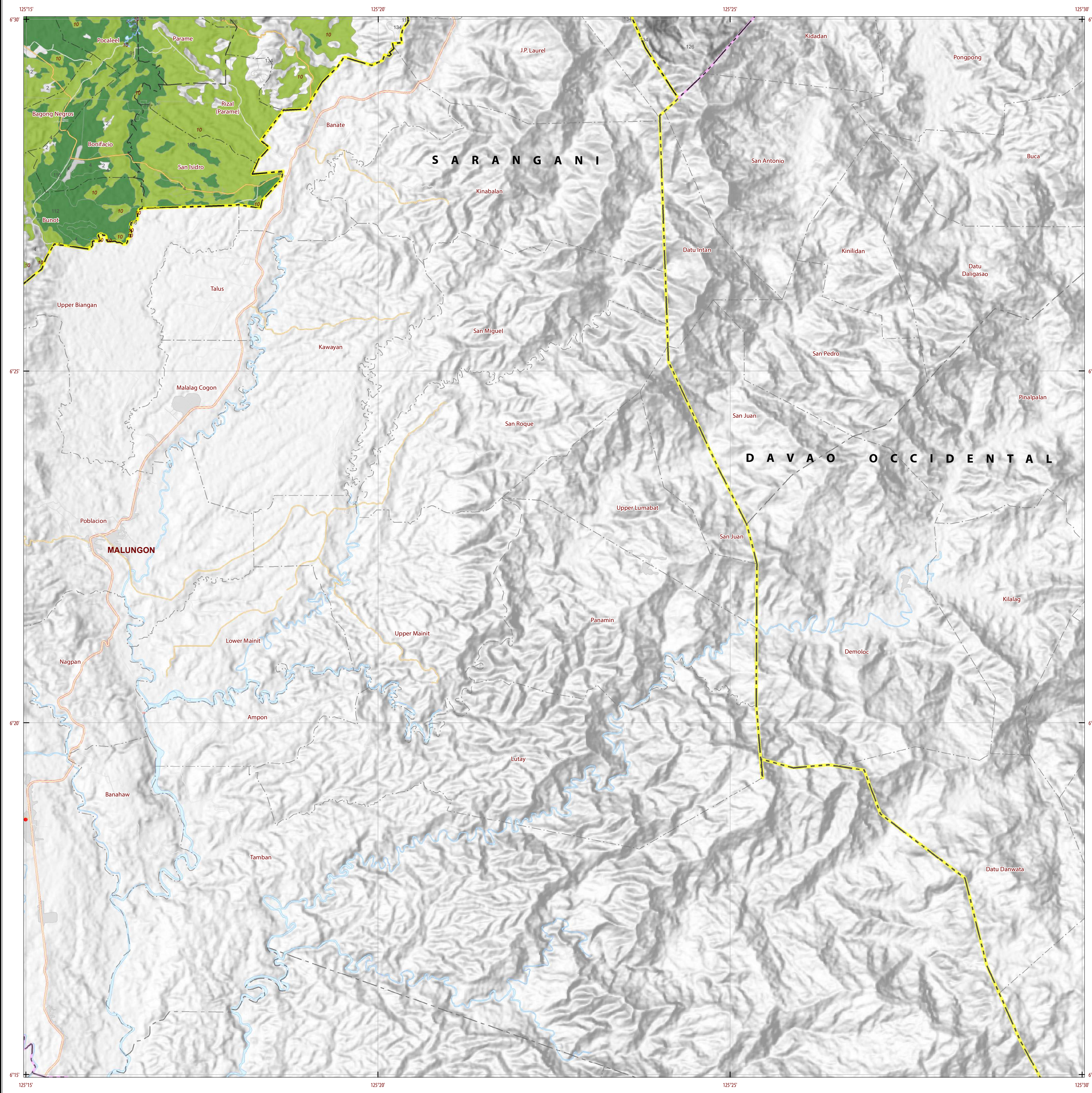
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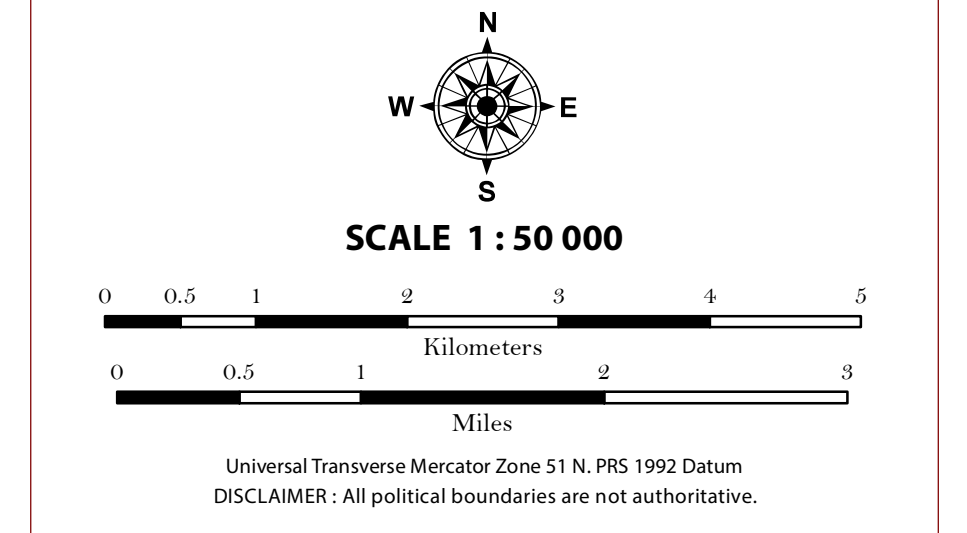
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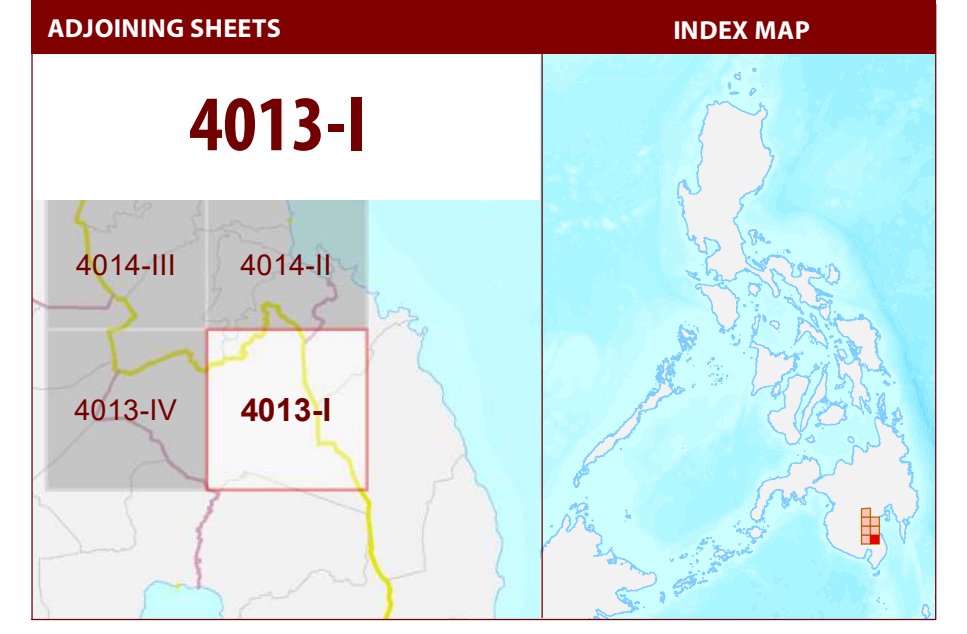
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