LAND SUITABILITY MAP

CACAO

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

PROVINCE OF DAVAO DEL SUR

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRICULTURE
BUREAU OF SOILS AND WATER MANAGEMENT
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MAP INDEX

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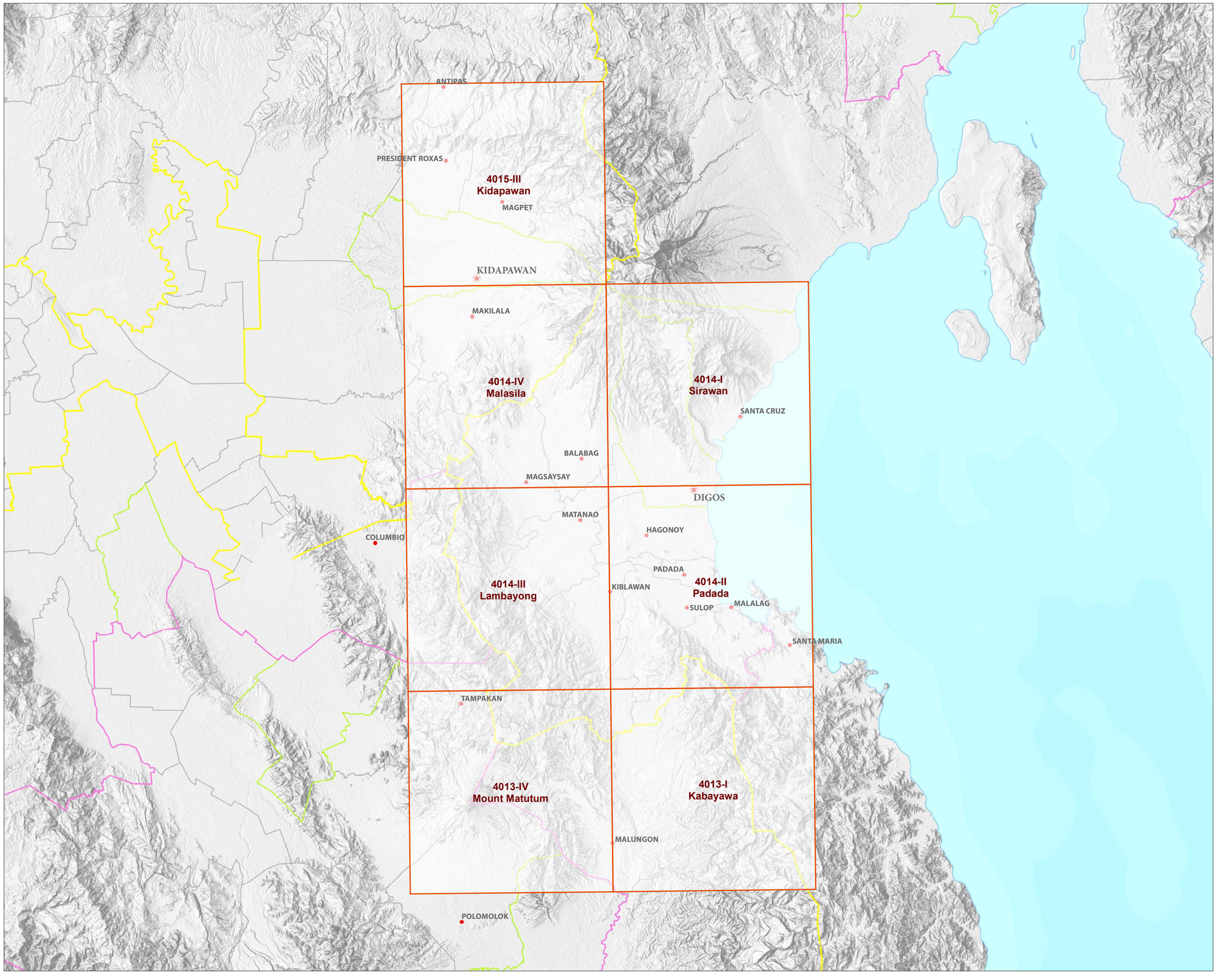
PROVINCE OF DAVAO DEL SUR



LEGEND

Places

- Capital City
- City
- Capital Town
- Town

Administrative Boundary

- Regional
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- Index grid

Topographic Relief

Bathymetry

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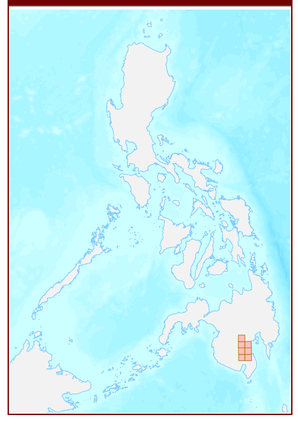

MISCELLANEOUS INFORMATION

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LAND SUITABILITY MAP FOR CACAO

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

DAVAO DEL SUR, REGION XI

EXTENT OF SUITABILITY FOR CACAO PRODUCTION BY MUNICIPALITY

MUNICIPALITY	EXISTING CACAO (Ha)			TOTAL EXISTING AREA (Ha)	EXPANSION AREA (Ha)						CONFLICT RESOLUTION AREA (Ha)										TOTAL POTENTIAL EXPANSION AREA (Ha)
					Coconut		Shrubland, unmanaged*		Grassland, unmanaged*		Mango		Banana		Corn		Sugarcane		Other crops		
	S1	S2	S3		S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	
BANSALAN	-	-	-	-	4,705	1,274	4	105	-	-	2,393	129	-	1	24	-	28	-	137	18	8,817
CITY OF DIGOS	-	-	-	-	3,579	-	13	-	39	-	670	-	65	-	47	-	17	-	175	-	4,605
HAGONOY	-	-	-	-	691	-	-	-	-	-	98	-	1,302	16	42	-	13	-	188	77	2,428
KIBLAWAN	-	-	-	-	1,549	-	35	143	162	392	29	-	1,768	-	1,632	-	1,376	14	-	-	7,101
MAGSAYSAY	-	-	-	-	5,435	58	2	7	85	195	423	-	-	-	119	7	-	-	2,034	-	8,365
MALALAG	-	-	-	-	5,603	-	56	-	78	-	127	-	542	-	156	-	21	-	-	-	6,583
MATANAO	-	-	-	-	1,927	-	-	-	145	109	4,038	-	18	-	555	-	706	-	68	-	7,566
PADADA	-	-	-	-	1,672	-	-	-	-	-	30	-	757	-	72	-	-	-	-	-	2,531
SANTA CRUZ	-	-	-	-	5,234	179	-	-	59	9	1	-	211	-	-	-	-	-	877	-	6,569
SULOP	-	-	-	-	5,317	138	146	-	10	-	135	-	1,567	-	160	-	61	2	-	-	7,536
TOTAL	-	-	-	-	35,713	1,649	256	255	579	704	7,943	129	6,229	17	2,807	7	2,222	16	3,479	94	**62,101**

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

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 CACAO 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 (masl)	ANNUAL RAINFALL (mm)	CLIMATIC TYPE
Cacao	S1	<8	>100	CL, SiCL, SCL, SC, SiC, C, HC	WD,MWD	5.6 -7.2	high	none-slight	none-slight	none-few	<1000	2001-4500	I, III, IV
	S2	8 - 30	50 - 100	FSL, L, SiL	SPD,PD	5.1 - 5.5 7.3 - 7.8	medium	moderate	moderate	common	1000-1500	1000-2000	I, II
	S3	>30	<50	S, LS, CSL, SL	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 DEPTH (cm)
0 - 30 - very shallow
30 - 50 - shallow
50 - 100 - moderately deep
> 100 - deep to very deep

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

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

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

LAND LIMITATIONS DESCRIPTION AND COMBINATIONS

ELEVATION
El2 - 1000m - 1500m
El3 - > 1500m

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

SOIL DEPTH
Sh2 - Moderately deep (50 - 100cm)
Sh3 - Very shallow to shallow (< 50cm)

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	E2-Sh2-Rc2	*11*	Sh2-Rc2	*21*	T2-El3-E3	*31*	T3-El2-E3	*41*	T3-El2
2	El2	*12*	T2	*22*	T2-El3-E3-Sh2-Rc2	*32*	T3-El2-E3-Sh3-Rc2	*42*	T3-El2-E3
3	El2-Sh2-Rc2	*13*	T2-E3	*23*	T2-F2-D2	*33*	T3-El2-E3-Sh3-Rc3	*43*	T3-El2-E3-Sh3-Rc3
4	El2-Sh2-Rc3	*14*	T2-E3-Rc2	*24*	T2-F3-D2	*34*	T3-El3-E3-Sh3-Rc2	*44*	T3-El3-E3-Sh3-Rc3
5	El3	*15*	T2-E3-Sh2-Rc2	*25*	T3	*35*	T3-F2-D2	*45*	T3-El3
6	El3-Sh2-Rc2	*16*	T2-E3-Sh2-Rc3	*26*	T3-E3	*36*	T3-F3-D2	*46*	Tc
7	F2-D2	*17*	T2-El2	*27*	T3-E3-Rc2	*37*	T3		
8	F2-Tc	*18*	T2-El2-E3	*28*	T3-E3-Sh3-Rc2	*38*	T3-E3		
9	F3-D2	*19*	T2-El2-E3-Sh2-Rc2	*29*	T3-E3-Sh3-Rc3	*39*	T3-E3-Rc3		
10	Sh2	*20*	T2-El2-E3-Sh2-Rc3	*30*	T3-El2	*40*	T3-E3-Sh3-Rc3		

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

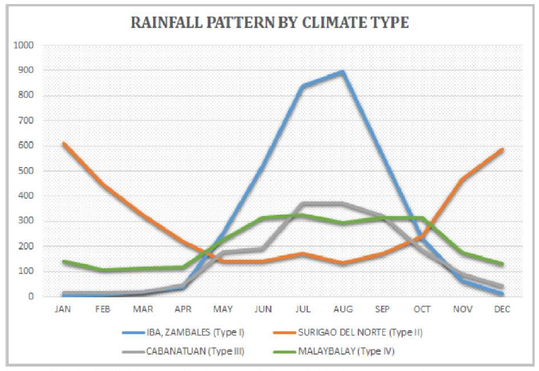
TYPE I : Two pronouced season, dry from November to April and wet during the rest of the year. Maximum rain period is from June to September

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.

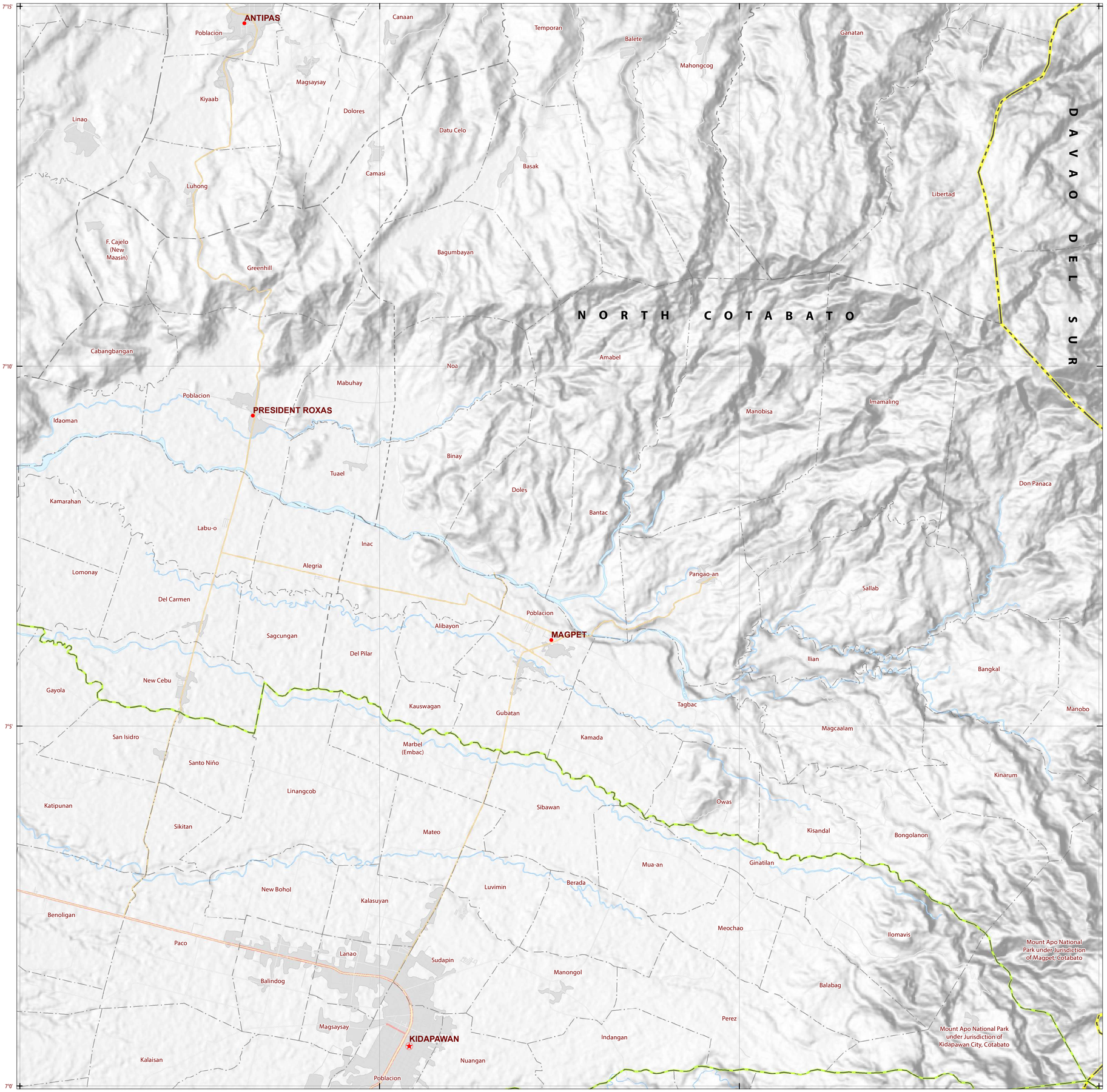
TYPE III : No very pronounced maximum rain period, with a dry season lasting only from one to three months, either during the period from December to February or from March to May. This type resembles Type I since it has a short dry season.

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 CACAO

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers
0 0.5 1 2 3
Miles

Universal Transverse Mercator Zone 51 N. PRS 1992 Datum
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LEGEND

SUITABILITY CLASSES

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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
1 Land limitation
118 Land use

CONVENTIONAL SIGNS

ROADS
Expressway
Trunk line
Primary
Secondary
Tertiary

BOUNDARY
Region
Province
District
Municipality
Barangay

HYDROLOGY
Sea / Shoreline
Lakes / Rivers

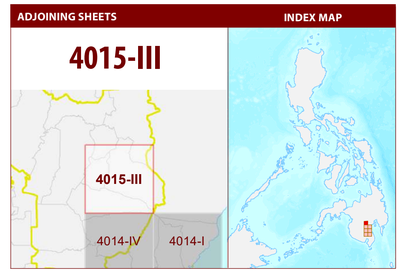
PLACES
Capital City / City
Capital Town / Town

LAND USE
Built-up
Fishpond
Mangrove

ADJOINING SHEETS

4015-III

INDEX MAP



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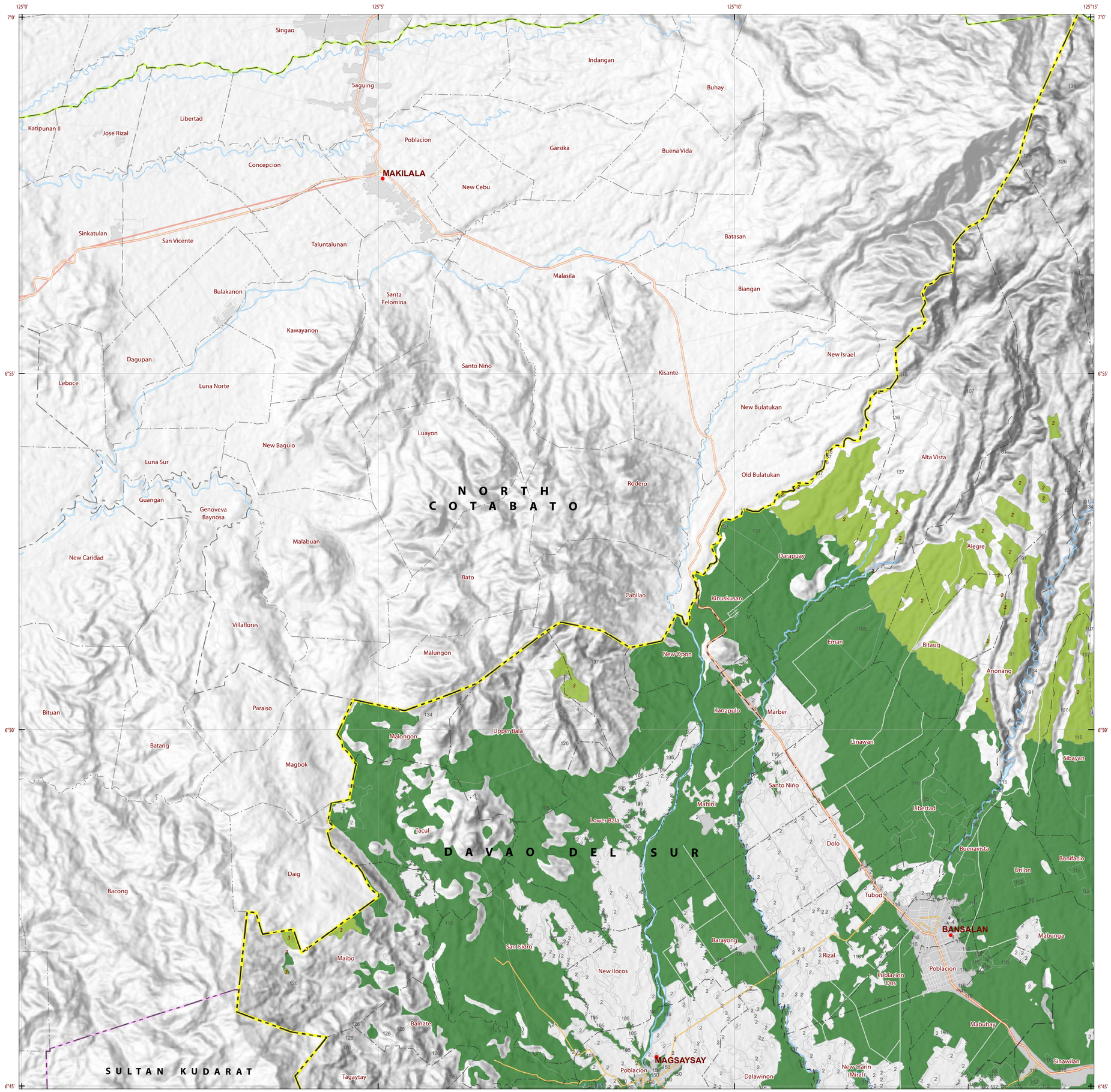

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- 116 — Land use

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- Lakes / Rivers

PLACES
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LAND USE
- Built-up
- Fishpond
- Mangrove

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4014-IV

4015-III
4014-IV
4014-I
4014-III
4014-II

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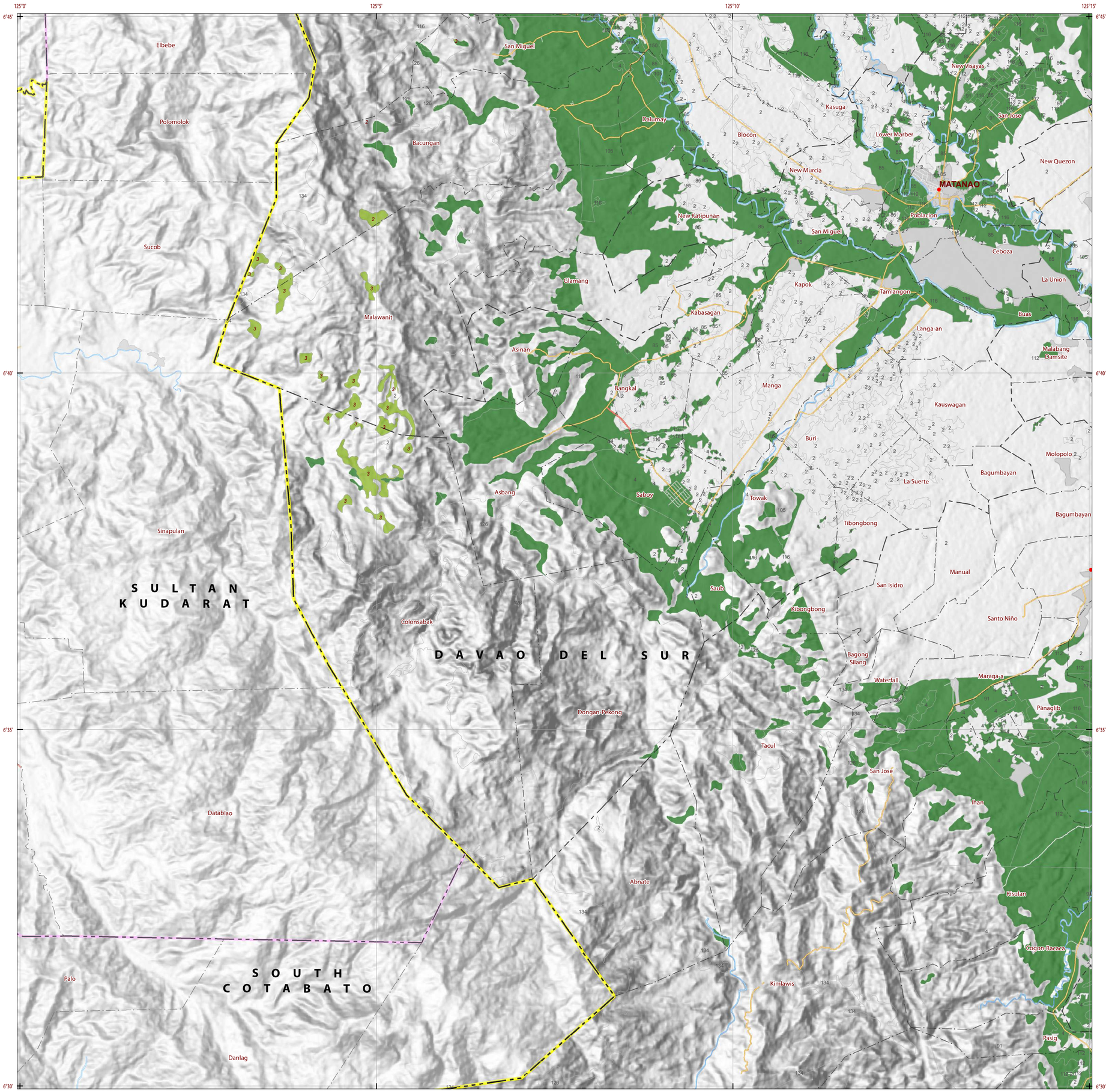

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CACAO

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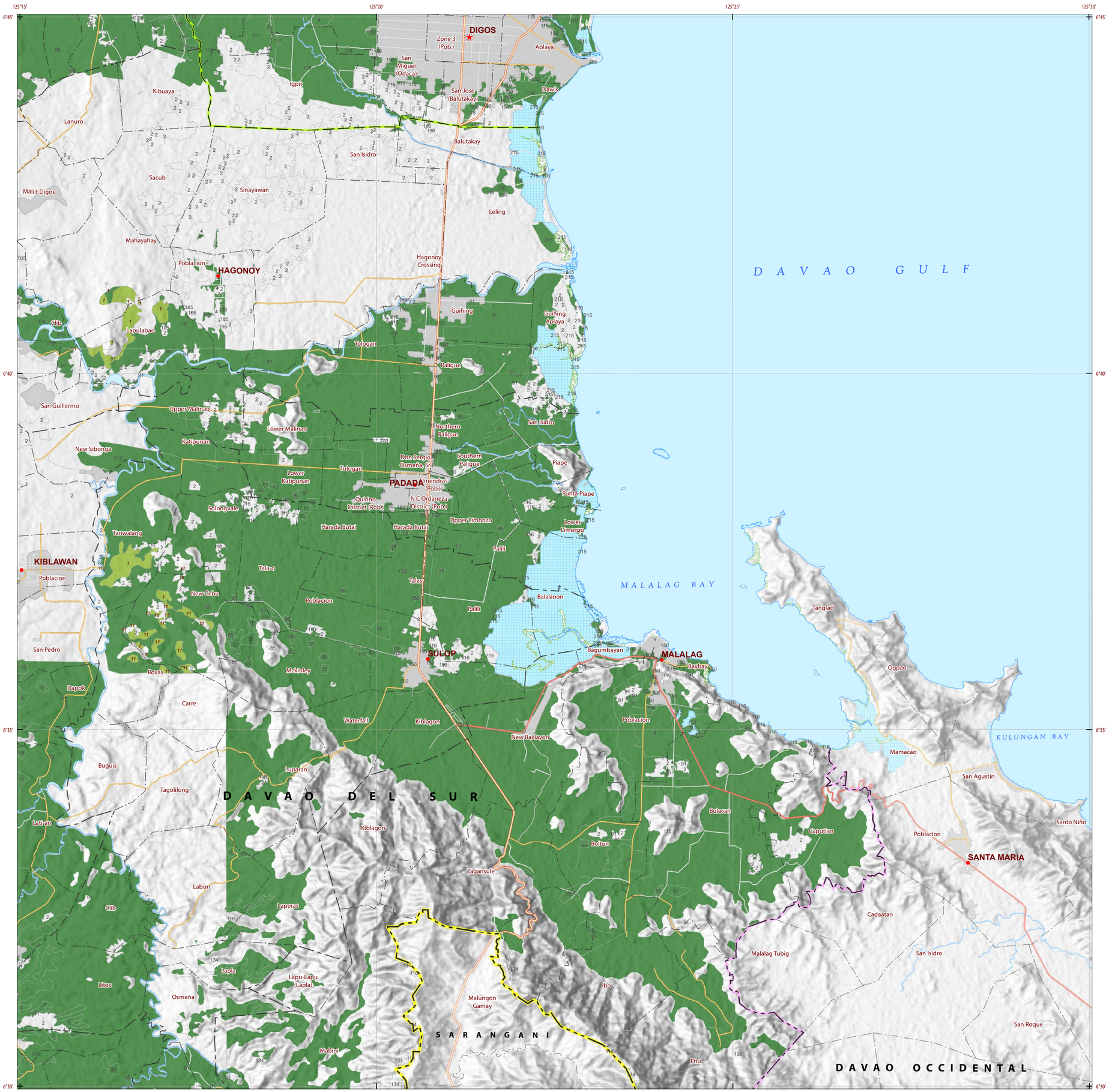

LAND SUITABILITY MAP CACAO

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

N
W E
S

SCALE 1 : 50 000

0 0.5 1 2 3 4 5
Kilometers
0 0.5 1 2 3
Miles

Universal Transverse Mercator Zone 51 N. PRS 1992 Datum
DISCLAIMER : All political boundaries are not authoritative.

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
- 1 / 118 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

4014-II

4014-IV | 4014-I
4014-III | 4014-II
4013-IV | 4013-I

INDEX MAP

MISCELLANEOUS INFORMATION

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

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Collaborating Agencies : Philippine Council on Agriculture and Fisheries (PCAF)
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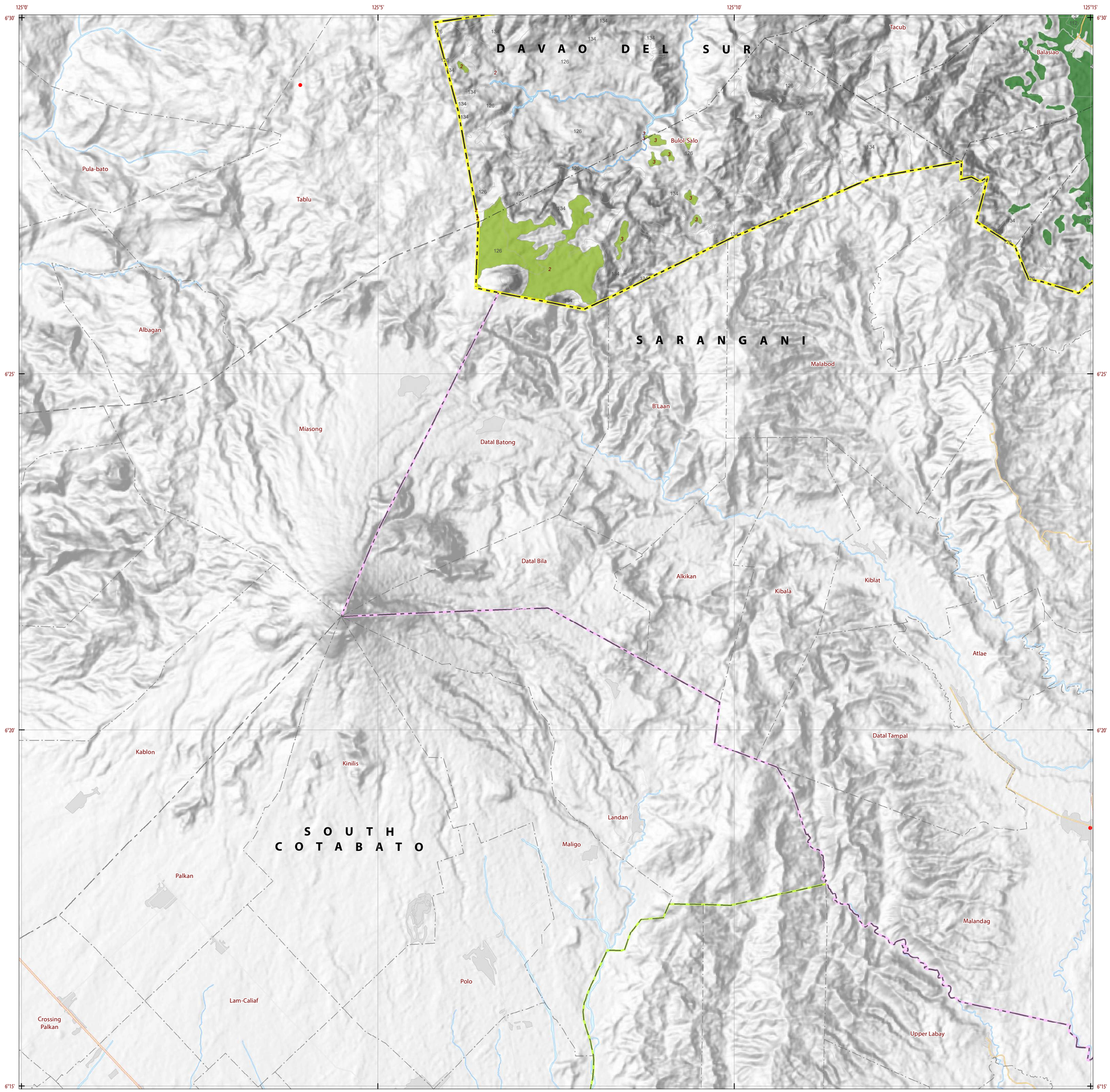

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ROADS
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PLACES
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LAND USE
- Built-up
- Fishpond
- Mangrove

ADJOINING SHEETS

4013-IV

4014-III | 4014-II
4013-IV | 4013-I

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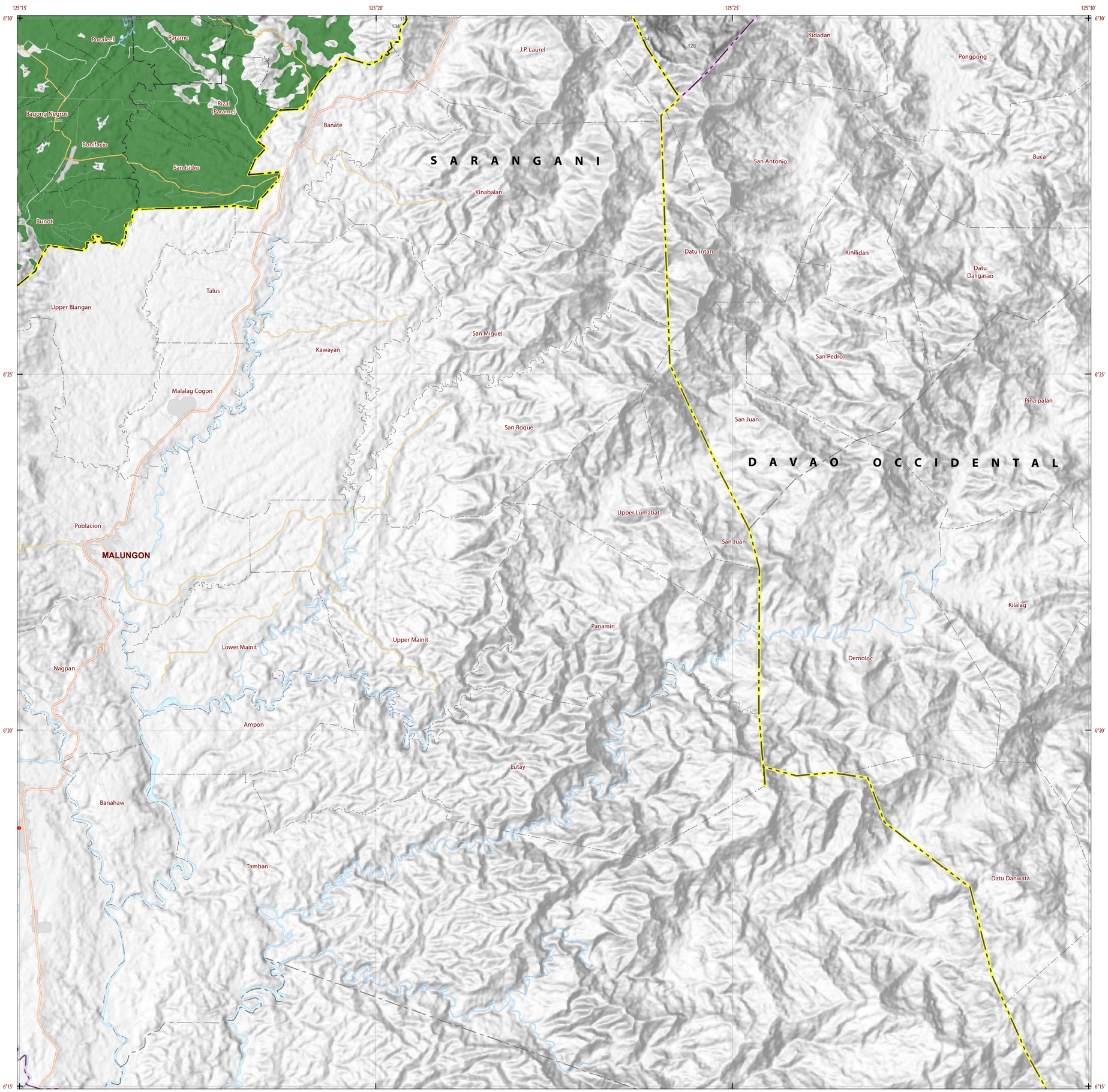

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