

Factsheet: Vol. 10

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[Land Cover Map]

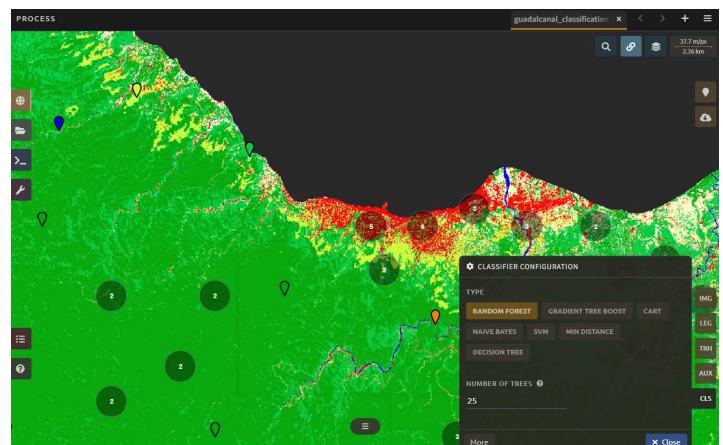
Food and Agriculture
Organization of the
United NationsThe Project on Capacity Development for
Sustainable Forest Resource Management in Solomon Islands

[Overview]

The Forest Type map was created in 1990's but the information is outdated considering the current development in Solomon Islands. Therefore this Land Cover Map is newly created, which was created by recent satellite images until 2020. The Land Cover Map is basic information for the effective forest management in Solomon Islands. The map defines the land use type and additional forest type. A forest type is basically a group of tree stands which poses a general similarity in composition and character. It may be unique, which means the particular forest has distinctive forest only dominated by a particular species type. However, forest type is more often and naturally of forested land of mixed composition. According to the forest type classification adopted by Solomon Islands National Forest Resource Inventory, it has identified various forest types. These forest types include Upper hill forest, Hill forest, Lowland rainforest, Freshwater Swamp forest and Saline forest. Other forest types such as planted forests, river courses and so forth, were classified under Other Forest areas. Given that the map will be revised every five years, land use changes can be detected, and this information contributes to establish the effective forest management policy.

[Work step to create Land Cover Map]

The creation of the LCM is a joint activity implemented by MOFR with support from the JICA, using the outputs of the SEPAL training by the FAO IFM project. SEPAL is FAO's Cloud Computing Service, which allows users to harness cloud-based supercomputers and modern geospatial data infrastructures for the satellite image classification. Firstly, Collect Earth sampling points were used as training data, which were made for FRL report, were used as the basic training data. After the verification of outputs, extra training points were added to classify effectively.


Step 1
Create mosaic
image 2020

Step 2
Classify with
basic training
data

Step 3
Modify the map
with external
information

Step 4
Create shape
file and organize
attribute


[DEFINITION MOSAIC IMAGE AND CLASSIFICATION]

1. Mosaic image specification

Source: Landsat 8 and Landsat 8TM image library,

Year to be used: Images from 1 Jan 2015 to 31 Dec 2019 (5 years)
to make year 2020 data

Naming: (province name)_mosaic_L8_2020

2. Classification image specification

Source: Mosaic images defined above (Each province)

Naming: (province name)_classification_L8_2020

***The year 2020 data is defined to use images from 1 Jan 2015
to 31 Dec 2019 (5 years)

[PRIMARY CLASS DEFINITION OF LAND COVER TYPES]

cd	td	color
11	Primary	#00a506
12	Disturbed	#00cc41
13	Mangrove	#5bd8b6
14	Swamp	#00cc8c
20	Water	#0000ff
30	Settlement	#ff0000
40	Otherland	#ff8000
50	Grassland	#ccff34
61	Subsistence	#ffffcc
62	Palm	#ffff8a
63	Coconut	#cccc5c

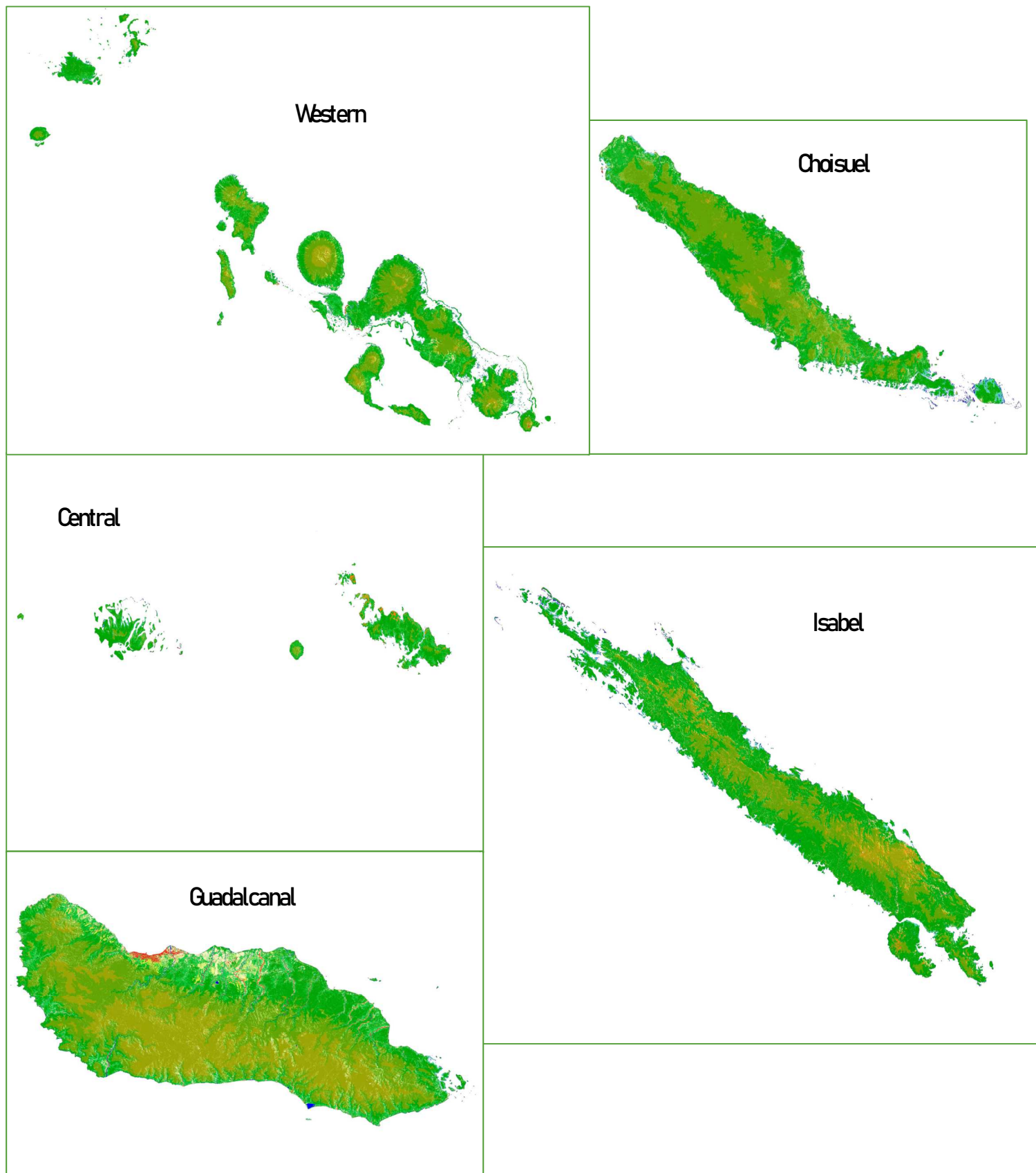
11	Primary
12	Disturbed
13	Mangrove
14	Swamp
20	Water
30	Settlement
40	Otherland
50	Grassland
61	Subsistence
62	Palm
63	Coconut

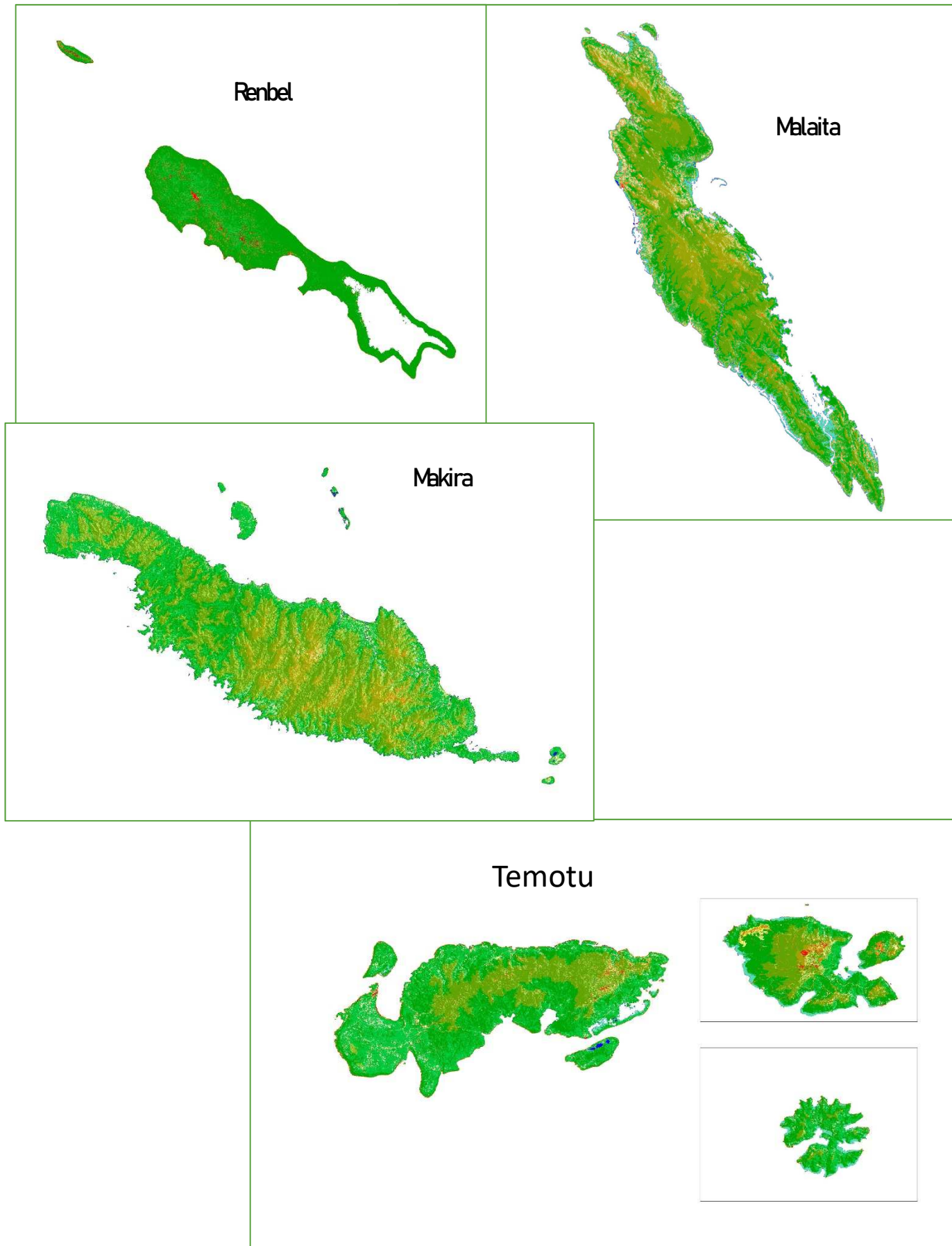
[Stratified Class Definition and Forest Cover Map]

The first classification map was stratified with elevation information (SRTM30) based on the class specification of Forest Type information or FRL definitions.

111	Lp
112	Ld
121	Hp
122	Hd
131	Up
132	Ud
140	M
150	S
160	P
200	W
300	S
400	O
500	G
610	Cs
630	Cc
620	Cp

Code	LU	Land Cover Map	Disturbance	Description
111	Lp	Lowland Forest	Primary	Forest on level or nearly level land below 200 m.a.s.l.
112	Ld		Degraded	
121	Hp	Hill Forest	Primary	Forest between 200-600 m.a.s.l.
122	Hd		Degraded	
131	Up	Montane Forest	Primary	Forest on at higher altitude ridge tops, generally above 600 m.a.s.l.
132	Ud		Degraded	
140	M	Mangrove Forest	-	Forest on land subjected to tidal influences such as estuaries and foreshores
150	S	Freshwater Swamp and Riverine Forest	-	Forest on land with little relief and impeded drainage
160	P	Forest Plantation	-	
200	W	Water	-	
300	S	Settlement	-	
400	O	Otherland	-	
500	G	Grassland	-	
610	Cs	Cropland	Subsistence	
620	Cp		Palm	
630	Cc		Coconut	

[Output]**Solomon Islands Land Cover Map 2020**

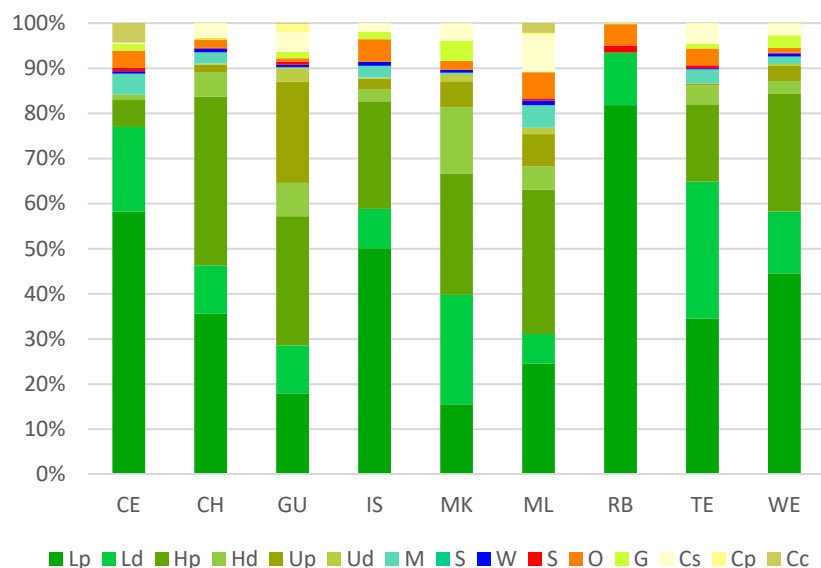
[Output]**Solomon Islands Land Cover Map 2020**

[Assessment]

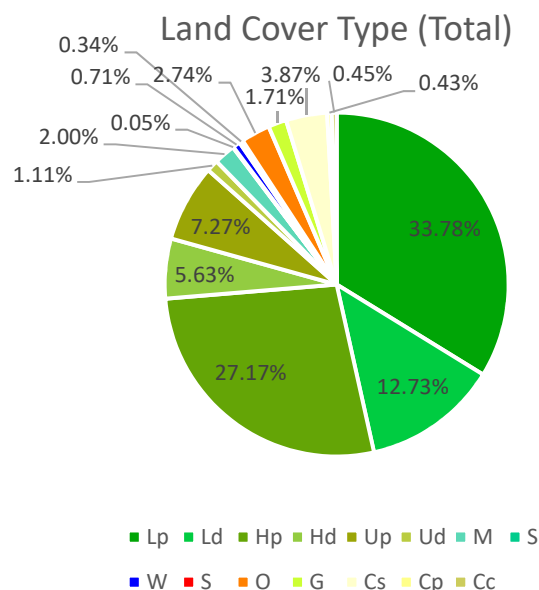
Created Land Cover Map was assessed with external information. Table shows the result of the classification map which is modified with external dataset after classified with SEPAL. The result has consistency with past classification model.

Class	CE	CH	GU	IS	MK	ML	RB	TE	WE	Total
Lowland Forest Primary	37,238.85	117,730.49	96,318.33	211,478.08	50,062.97	103,613.66	55,011.96	30,599.93	244,922.93	946,977.20
Lowland Forest Disturbed	11,973.24	35,339.13	57,039.05	36,808.73	78,158.92	27,548.30	7,828.62	26,912.44	75,352.22	356,960.65
Hill Forest Primary	3,818.38	123,762.73	153,724.02	100,498.51	86,699.88	134,997.21	0.44	15,063.30	143,261.49	761,825.96
Hill Forest Disturbed	752.03	17,995.00	39,513.96	10,939.22	47,214.21	21,673.41	0.00	3,899.61	15,923.11	157,910.55
Montane Forest Primary	0.00	5,472.61	120,636.14	10,236.23	18,562.13	30,296.64	0.00	312.71	18,338.46	203,854.92
Montane Forest Disturbed	0.00	771.40	15,935.09	965.79	5,164.19	5,931.81	0.00	30.47	2,322.70	31,121.45
Mangrove Forest	2,844.63	8,009.57	1,253.41	11,085.13	516.43	21,088.02	0.00	2,781.33	8,556.56	56,135.08
Freshwater Swamp and Riverine Forest	142.71	198.22	0.00	79.30	511.70	23.62	0.00	0.00	472.27	1,427.82
Forest Plantation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water	340.08	2,689.51	2,804.81	3,701.22	2,058.42	4,323.76	0.00	208.51	3,731.20	19,857.51
Settlement	479.58	513.18	3,706.79	34.20	51.56	1,921.14	1,060.06	576.49	1,068.50	9,411.50
Otherland	2,427.87	6,173.40	4,053.66	20,999.65	6,238.21	24,615.78	3,175.21	3,287.74	5,720.62	76,692.14
Grassland	942.17	1,296.53	7,886.94	6,875.82	14,641.99	0.00	160.27	954.14	15,304.09	48,061.95
Cropland Subsistence	205.62	10,746.94	23,144.32	8,276.00	12,333.20	34,845.11	0.00	4,045.57	15,013.52	108,610.28
Cropland Palm	0.00	0.00	10,118.90	0.00	0.00	2,010.00	0.00	0.00	0.00	12,128.90
Cropland Coconut	2,758.48	3.86	755.31	0.00	118.16	9,065.27	0.00	0.00	1.87	12,702.95
Total	63,923.64	330,702.57	536,890.73	421,977.88	322,331.97	421,953.73	67,236.56	88,672.24	549,989.54	2,803,678.86

Land Cover Type (Provinces)



Land Cover Type (Total)



There exists traditional Forest Type Map in Solomon Island created by AusAID in 1990's. This map is introduced for better understanding of Land Cover Map from this part. These concept is also introduced to this creation of Land Cover Map

LEVEL 1: ECOLOGICAL CLASSES

These are distinctive land cover areas displaying characteristics pattern and essentially comprises of species adapted to prevailing site conditions.

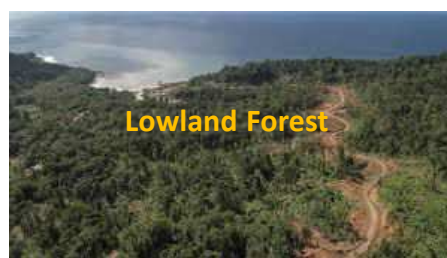
UPLAND HILL FOREST

CLASS	COMPOSITION
UM	Upland forest on hills, mixed composition



OTHER AREAS

CLASS	COMPOSITION
NH	Herbaceous swamps, mixed spp composition
NR	River courses: braided streams
NW	Open waterland
NP	Plantation areas for timber production
NC	Cloud obscured areas



SALINE SWAMP FOREST

CLASS	COMPOSITION
SM	Saline Swamp forest, mixed spp (mangrove)
SN	Degraded forest (anthropogenic, gardens etc.)



HILL FOREST

CLASS	COMPOSITION
HM	Rainforest on hills, mixed spp composition
HC	Casuarina dominated hill forest
HN	Degraded rainforest on hills
HL	Logged forest



FRESHWATER SWAMP FOREST

CLASS	COMPOSITION
FM	Freshwater swamp forest, mixed spp composition
FC	Casuarina swamp forest
FP	Pandan swamp forest
FS	Sago swamp forest
FT	Terminalia swamp forest
FL	Logged forest
FN	Degraded forest (anthropogenic, gardens etc)

**LOWLAND RAINFOREST ON NEAR LEVELS LANDS**

CLASS	COMPOSITION
LM	Lowland rainforest, mixed spp composition
LC	Casuarina dominated lowland rainforest
LL	Logged forest
LN	Degraded forest (anthropogenic, gardens etc)

**LEVEL 2: CANOPY DENSITY CLASSES**

The Canopy Density Class shows the level of forest disturbance in each forest types.

CLASS	DENSITY	DESCRIPTION
1	10-20%	<ul style="list-style-type: none"> Degraded Forest areas Cleared to sparse remnant forest Primary canopy: Very open to isolated trees
2	10-50%	<ul style="list-style-type: none"> Severe to moderately disturbed forest areas Sparse to mid-dense forest Primary canopy: clearly separated
3	40-100%	<ul style="list-style-type: none"> Moderate to relatively undisturbed forest areas Mid dense to dense forest Primary canopy: separated to overlapping

LEVEL 3: CROWN SIZE CLASSES

Crown size class help estimate the possible sizes of a particular forest type.

CLASS	CROWN SIZE
S	SMALL-MEDIUM
M	MEDIUM-LARGE
V	VARIOUS

MAP CODING OF PRIMARY CLASSIFICATION OF FOREST TYPES

An example of how forest type classification is done.

ECOLOGICAL CLASS	Lowland rainforest on hills of mixed composition	HM
CANOPY DENSITY CLASS	Mid-dense to dense forest	3
CROWN SIZE CLASS	Small to medium crowns	S

APPLICATION OF MAP CODING OF FOREST TYPES

Forest Type Coding for provinces in Solomon Islands.

Central Forest Type Map — Features Total: 1177, Filtered: 1177, Selected: 0

OBJECTID	PROVINCE	TYPE	F_TYPE1	F
1	4029 Central	HM2V	H	HM
2	4028 Central	HM2V	H	HM
3	4026 Central	HM2V	H	HM
4	4034 Central	HM2V	H	HM
5	4033 Central	HM2V	H	HM

Choiseul Forest Type Map — Features Total: 3732, Filtered: 3732, Selected: 0

OBJECTID	PROVINCE	TYPE	F
1	2114 Choiseul	HM3V	H
2	2121 Choiseul	HM3V	H
3	2120 Choiseul	HM1V	H
4	2119 Choiseul	HM3V	H
5	2118 Choiseul	HM2V	H
6	2125 Choiseul	HM3S	H
7	2124 Choiseul	HM2V	H
8	2123 Choiseul	HM2V	H
9	2122 Choiseul	FM3V	F

Isabel Forest Type Map — Features Total: 7135, Filtered: 7135, Selected: 0

OBJECTID	PROVINCE	TYPE	F_TYPE1	F_TYPE2
1	18139 Isabel	HM2V	H	HM
2	18146 Isabel	HM2V	H	HM
3	18145 Isabel	HM3V	H	HM
4	18144 Isabel	FM3V	F	FM
5	18143 Isabel	UM3V	U	UM
6	18150 Isabel	UM3S	U	UM
7	18149 Isabel	HM2V	H	HM
8	18148 Isabel	HM2V	H	HM
9	18147 Isabel	HM3V	H	HM
10	18154 Isabel	HM2V	H	HM
11	18153 Isabel	HM3V	H	HM
12	18152 Isabel	HN1V	H	HN
13	18151 Isabel	UM3S	U	UM
14	18158 Isabel	HM2V	H	HM

Guadalcanal Forest Type Map — Features Total: 8220, Filtered: 8220, Selected: 0

OBJECTID	PROVINCE	TYPE	F_TYPE1	F_TYPE2
1	13115 Guadalcanal	HM3V	H	HM
2	13114 Guadalcanal	UM3V	U	UM
3	13113 Guadalcanal	HM3V	H	HM
4	13112 Guadalcanal	UM2V	U	UM
5	13115 Guadalcanal	LN1V	L	LN
6	13110 Guadalcanal	UM3V	U	UM

Malaita Forest Type Map — Features Total: 6082, Filtered: 6082, Selected: 0

OBJECTID	PROVINCE	TYPE	F_TYPE1
1	31151 Malaita	HM2V	H
2	31150 Malaita	HM3V	H
3	31157 Malaita		
4	31156 Malaita		
5	31155 Malaita		
6	31162 Malaita		
7	31160 Malaita		
8	31159 Malaita		
9	31165 Malaita		

Temotu Forest Type Map — Features Total: 856, Filtered: 856, Selected: 0

OBJECTID	PROVINCE	TYPE	F_TYPE1
1	33174 Temotu	HM3V	H
2	33187 Temotu	HM3V	H
3	33186 Temotu	HM3V	H
4	33185 Temotu	HM3V	H
5	33182 Temotu	HM2V	H
6	33196 Temotu	SM3S	S
7	33194 Temotu	HM3V	H
8	33192 Temotu	HM3M	H
9	33189 Temotu	NC	N
10	33208 Temotu	HM3S	H
11	33204 Temotu	SM3S	S
12	33203 Temotu	HL2S	H
13	33200 Temotu	LM3S	L
14	33219 Temotu	HM3V	H
15	33217 Temotu		

Rennell Forest Type Map — Features Total: 485, Filtered: 485, Selected: 0

OBJECTID	PROVINCE	TYPE	F
1	32553 Rennell	HM2V	H
2	32560 Rennell	LM2V	L
3	32559 Rennell	LM3V	L
4	32558 Rennell	LM3V	L
5	32557 Rennell	LM2V	L
6	32500 Rennell	HM2V	H
7	32499 Rennell	HR1V	H
8	32498 Rennell	HM2S	H
9	32497 Rennell	HN1V	H
10	32504 Rennell	LM3V	L

Western Forest Type Map — Features Total: 5733, Filtered: 5733, Selected: 0

OBJECTID	PROVINCE	TYPE	F_TYPE1
1	25418 Makira	HM2V	H
2	25425 Makira	HM2V	H
3	25424 Makira	HM3V	H
4	25423 Makira	HM2V	H
5	25422 Makira	HM2V	H
6	25429 Makira	HM3M	H
7	25428 Makira	HN1V	H
8	25427 Makira	HM2V	H
9	25426 Makira	HM3S	H
10	25433 Makira	HM2V	H
11	25432 Makira	HM2V	H
12	25431 Makira	HM2V	H
13	25430 Makira	HM2V	H
14	25437 Makira	HM3M	H
15	25438 Makira	HM2V	H

Western Forest Type Map — Features Total: 485, Filtered: 485, Selected: 0

OBJECTID	PROVINCE	TYPE	F_TYPE1
1	33513 Western	NW	N
2	33712 Western	FM2V	F
3	33684 Western	FM2V	F
4	33655 Western	HL2V	H
5	33627 Western	LM2V	L
6	33806 Western	FM2V	F
7	33797 Western	UM2S	U
8	33768 Western	NP	N
9	33739 Western	HN1V	H

This Forest Type Codes reveals the different types of forests that exist in each of the provinces. As well as the forest density and the estimate forest crown size.

Forest Type Map

