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## 1. Introduction

10m resolution mosaic data set of ALOS (Advanced Land Observing Satellite) / PALSAR (Phased Array type L-band Synthetic Aperture Radar) have been created by EORC/JAXA which have ±60 degrees in latitude. Land cover classification has been carried out to the 10m mosaic data set and evaluation of the preliminary results are described in this presentation.

(a) 2009

# 2. Material and Method

### 2-1. Status of PALSAR 10m mosaic generation

Figure1 shows status of PALSAR 10m mosaic generation. The data set completed for green region and still on going for orange region. Not only for the data set year 2007 and 2009 but also for 2008 and 1997 which u sing JERS-1 are planned. Schedules for the data set generation are shown in table1.

Table1 Schedule of PALSAR 10m mosaic generation

	4	5	6	7	8	9	10	11	12	1	2	3
Mosaics						+						
Classification							↑					

### 2-2. Classification method

For our first trial of land cover classification, HH. HV (FBD) of PALSAR 10m mosaic and SRTM-3 were used over Borneo Island. eCognition were applied for the object-based image analysis method. Classification results of N. R. Wielaard et. al. was used as a reference.



Figure1 Status of PALSAR 10m mosaic generation



Processor: SIGMA-SAR Ver.10022201 Slope Correction: On Spacing:10m Resampling: Bi-tinear DEM: SRTM-3 Projection: Geographic Lat/Lon

PALSAR mosaic images Observation date: 2009/06/12~2009/8/19 Observation Path: 29 Mode: HH, HV Resolution: 10m

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Figure2 PALSAR mosaic image(R:HH, G:HV, B:HH/HV) and classification image of Borneo island by eCognition

### 3. Results and Discussion

Table2 shows accuracy on the grid point assessment result of multi-category classification compared with the reference. Table3 shows the result, which recategorized to Forest/Non-forest. Table2 and Table3 show good results, while some region of mangrove, peat forest, swamp forest and plantations are misclassified. One of the reasons for low classification accuracy is that back scattering of mangrove, peat forest and swamp forest are lower than the other forest categories. The other reasons is miss categories of acacia and rubber plantations which have higher back scattering leads to classified as forest.

Table3	Accuracy o	f classificati	ion (Fores	st/ Non	-forest)
	Forest	Non-forest	Water	Total	Accuracy
Forest	50	2	0	52	96%
Non-forest	5	19	1	25	76%
Water	1	2	23	26	88%
Total	56	23	24	103	
Accuracy	89%	83%	96%		89%

# 4. Feature plan

High accurate classification rule sets are required. And also robustness in classification rule sets is required. For example Figure4 shows the preliminary result of classification on Sumatra island. which modified a rule set which are based on Borneo island. Comparing to the reference (WWF classification map), obviously over estimated in forest categories. Reference data sets in variety of conditions are necessary for the development of the accurate and robust rule sets.

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Prof. R. Lucas and the stuff in Aberystwyth Univ., and also DEFiNIENS who gave us an opportunity to learn about eCognition.

N.R.Wielaard et. al.

Figure3 Classification image of Borneo island by N.R. Wielaard et. al.

Table? Accuracy of	f algorification .	(Multi cotogory)
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Table2 Accuracy of classification (Wutti-category)										
	Forest	Riverine forest	Mangrove	Ferns /gra	ass	Cropland	Plantation	Water	Total	Accuracy
Tropical lowland forest	7					1			8	88%
Tropical mountain forest	25								25	100%
Riverine forest	1		1				1		3	0%
Swamp forest	4								4	100%
Mangrove forest		2	7						9	78%
Nipah mangrove forest			2						2	100%
Peat swamp (pole) forest	1								1	100%
Hight shrub					1		1		2	50%
Medium shrub						1			1	0%
Ferns/ grass			2		1		3	1	7	14%
Cropland (upland)	1	1				1			3	33%
Plantations		1			3		8		12	67%
Water		1				1	1	23	26	88%
Total	39	5	12		5	4	14	24	102	
Accuracy	92%	0%	75%	2	0%	25%	57%	96%		76%





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Figure4 Classification Image of Sumatra Island by eCognition and WWF based on Landsat