#### **K&C Phase 3 – Brief project essentials**

OS

K&C Initiative

An international science collaboration led by JAX.

Climate-Relevant Modernization of the National Forest Policy and Piloting of REDD+ Measures in the Philippines

> Francisco B. Tavora, Jr. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ PH)

> > Jose Don T. De Alban Fauna & Flora International (FFI)

*Enrico C. Paringit, D.Eng.* Department of Geomatics Engineering, University of the Philippines (UP-DGE)

Science Team meeting #16 – Phase 3 Kick-off JAXA TKSC/RESTEC HQ, Tsukuba/Tokyo, October 17-21, 2011

#### **State of Philippine Forest**

K&C Initiative

An international science collaboration led by JAXA

□ The Philippines has 23% of forest cover left (National Mapping Resource and Information Authority, 1988)



Source: Philippine National REDD-Plus Strategy (2010)

OS

## 1988 FMB\* Data vis-á-vis 2003 NAMRIA\*\* Data

LOS

**K&C** Initiative An international science collaboration led by JAXA

1988 FRI Data		2003 NAMRIA Data				
Land Use/ Forest Type	Area (ha)	Land Use/ Forest Type	Area (ha)			
Forest		Forest				
Dipterocarp Old Growth Forest	988,300	Broad-leaved Forest, Closed	2,448,864			
Dipterocarp Residual Forest	3,412,800	Broad-leaved Forest, Open	3,847,284			
Pine Forest, Closed	129,600	Coniferous Forest, Closed	87,390			
Pine Forest, Open	109,200	Coniferous Forest, Open	113,443			
Submarginal Forest	544,200	Mixed Forest, Open	69,861			
Mossy Forest	1,137,400	Mixed Forest, Closed	24,618			
Mangroves	139,100	Mangroves	247,362			
		Broad-leaved Plantation	324,554			
		Coniferous Plantation	3,479			
		Mangrove Plantation	1,545			
Sub-total	6,460,600	Sub-total	7,168,400			
Brushland	2,525,100	Other Wooded Land	7,589,230			
Other Land Use	21,014,300	Other Land 14,258,				
		Inland Water	518,000			
Total	30,000,000	Total	29,533,780			

\*Forest Management Bureau; \*\* National Mapping and Resource Information Authority



### **PNRPS Strategies**

K&C Initiative

An international science collaboration led by JAXA

- 1. Utilizing Appropriate Monitoring, Reporting and Verification (MRV) Tools
- 2. Developing capacities and technologies for remotely measuring changes to forest cover (e.g., remote Sensing)
- 3. Improving capacity to monitor emissions factors

LOS

- 4. Calculating emissions reference levels (at least to the Tier 2 level)
- 5. Create business-as-usual and REDD-plus projections
- 6. Assuming a phased approach to carbon MRV
- 7. Establishing socioeconomic and environmental impact assessments
- 8. Establishing financial review procedures
- 9. Establishing review of policies and transactions

# Pilot Initiatives in Forest Cover and Carbon Stock using Remote Sensing

**Fauna & Flora International (FFI)** 

ALOS

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ Philippines) Philippine National REDD+ Strategy (PNRPS)

K&C Initiative

An international science collaboration led by JAXA

Technical assistance for RS related Work

University of the Philippines

#### **K&C Project Collaborators and Partners**

K&C Initiative

An international science collaboration led by JAX

**Project Collaborators** 

LOS

- 1. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- 2. Fauna & Flora International
- 3. Department of Geomatics Engineering, University of the Philippines

#### Partners & Supporting Agencies

- 1. Non-Timber Forest Products-Task Force
- 2. TEaM Energy Foundation in the Philippines (supported by Tokyo Electric Company & Marubeni)
- 3. European Commission
- 4. Department of Natural Resources: Forest Management Bureau & National Mapping and Resource Information Authority



## **Project areas: Philippines**

**K&C** Initiative An international science collaboration led by JAXA

#### Sub-national REDD+ Pilot Sites

- 1. Southern Sierra Madre mountain range
- 2. Leyte island
- 3. Victoria-Anepahan mountain range, Palawan island

#### **Project objectives**

K&C Initiative

An international science collaboration led by JAXA

For each of the three identified REDD+ pilot sites, the project aims to:

1. Establish baseline forest carbon stocks

LOS

2.Pilot forest carbon inventory and monitoring methods in support of validating ALOS PALSAR imageries

3. Determine reference deforestation rate

#### **Field Inventory Parameters**

LOS

**K&C Initiative** An international science collaboration led by JAXA



# K&C Initiative An international science collaboration led by JAXA



ALOS





ALOS PALSAR: Palawan (2009)

> STUDY AREA Narra and Quezon, Palawan

© JAXA, METI Analyzed by JAXA





2009 Sigmanaught image

Kuan Filtered





2009 Normalized Radar Crosssection

**Kuan Filtered** 

Slope Corrected





#### 2009 ALOS PALSAR Unsupervised Classification

Sites from field work



#### ALOS **K&C** Initiative An international science collaboration led by JAXA **Methodology: Carbon Estimate Modeling** GPS **DN** values **Slope Corrected** coordinates of from plots Image (HH, HV, HH/HV) Plots **Compute Individual** Sum of Trunk Vol Resulting Trunk Vol (merchantable REGRESSION GRAPHS (merchantable ht) height) Forestry Inventory Plots **Compute Individual** Sum of Trunk Vol Trunk Vol (total height) (total height)



#### **Project schedule**

**K&C Initiative** An international science collaboration led by JAXA

ALOS

Main Activities	2011		2012		2013		2014	
	S1	S2	S1	S2	S1	S2	S1	S2
1. Image processing								
<ol> <li>Forest carbon inventories and biodiversity assessments</li> </ol>								
3. Image post-processing, analysis, change detection								
4. Report writing								
Legend: Sierra Madre			Ley	te		Palawan		

#### Support to JAXA's global forest mapping effort

OS

K&C Initiative

An international science collaboration led by JAX.

- 1. Sharing of in-situ data from forest inventories and other field activities from REDD+ sites
- 2. Validation of JAXA forest/non-forest cover maps and land use/land cover change maps
- 3. Input to development of algorithms for forest classification, carbon stock assessment, and forest stratification

The in-situ data that will be shared with JAXA includes: broad habitat and land cover types; location/GPS coordinates; tree diameter, merchantable tree height, and tree species; tree canopy cover; leaf litter; and deadwood.

#### **Deliverables**

K&C Initiative

An international science collaboration led by JAXA

The project envisions the following results:

- □ Forest cover and change maps produced
- Deforestation rates determined

OS

- Baseline forest carbon stocks established
- Image processing methodologies and accuracy assessments documented