



Survey of REDD projects in Central Africa Etude des projets REDD en Afrique Centrale

(formulaire à renvoyer à cdewasseige@foraf.eu et philippe.mayaux@jrc.ec.europa.eu)

1) General description / Description générale

Project name / Nom du projet:

CANOPY

Domain of activity / Domaine d'activité

(n answers possible, if possible sorted by priority 1= highest priority
plusieurs réponses possibles, si possible par priorité 1= plus haute priorité)

Monitoring of forest cover (deforestation and degradation) Suivi du couvert forestier (déforestation et dégradation)	X
Assessment of carbon stocks Mesures des stocks de carbone	
Forest dynamics Dynamique forestière	
Modelling of forest dynamics (including reference scenario) Modélisation des dynamiques forestières (dont scénario de référence)	
Political and institutional context Contexte Institutionnel et Politique	
Capacity-building and technology transfer Renforcement des capacités nationales et transfert de technologie.	
Promotion of participation of local communities Promotion de la participation des communautés locales	
Field Project with REDD potential (project generating emission reduction from Deforestation and Degradation without an MRV component) Projet de terrain ayant un potentiel REDD (projet permettant la réduction des GES liées à la déforestation et la dégradation sans composante MRV)	
REDD Pilot Project (project aiming to generate measurable and verifiable GHG emissions reduction from deforestation and forest degradation) Projet Pilote REDD (projet visant la réduction mesurable et vérifiable des émissions de GES liés à la déforestation et à la dégradation forestière)	X

General objective / Objectif général

Specific objectives / Objectifs spécifiques

Through this Project we intend to apply and validate at broad-scale a method for predicting forest stand structure parameters (and indirectly the above-ground biomass) from texture analysis of very high resolution canopy imagery. This method has yielded encouraging results for both mangrove and firm soils forests in French Guiana which justify undertaking a pilot R&D project for operational applications at broad scale. We want to verify the potential of the method to monitor structural changes in forests including both natural dynamics and degradation in accordance with the objectives of the protocol for Reducing Emissions from forest Degradation and Deforestation (REDD) adopted at the Bali Conference (2007). Reliable methods for monitoring forest degradation are still awaited in order to allow tropical countries and sustainable management projects to apply to the compensatory mechanisms considered. From the point of view of basic science, reliable spatial information on forest structures could be stored in regional databases and used as inputs (among other environmental descriptors) by models investigating species distributions and biodiversity determinants at regional scales.

Region of interest / Région d'intérêt

Congo and Amazon Basins

Budget

(order of magnitude if confidential / ordre de grandeur si confidentiel)

2) Partners / Partenaires

(Institution, contact person, email)

Project leader / Leader du projet

Pierre Couteron – Project manager

Institut de Recherche pour le Développement

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Technical and scientific partners / Partenaires techniques et scientifiques

Laurent Dufy

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Institutional partners (COMIFAC countries) / Partenaires institutionnels (Pays COMIFAC)

Financial partners / Partenaires financiers

Planet Action (a Spot Image initiative).

3) Earth Observation component / Composante d'Observation de la terre

This part aims at identifying the characteristics of the Earth observation component if there is one. Leave it blank if it not the case.

Cette partie veut identifier les caractéristiques de la composante d'observation de la terre, s'il y en a une. Ne remplissez pas cette partie si ce n'est pas le cas.

Data used / données utilisées

Dataset Doonnées	Sensor / capteur Radar/optical/lidar...	Resolution	Coverage Couverture	Time & frequency Date et fréquence	Quality / qualité (good-medium- bad)	Accessibility (free access- with conditions – restricted)
VHR data	Formosat 2, Spot 5, Ikonos, GeoEye	0.5 to 5 m	10*15 km	Recent archives or programmed acquisitions	Good	Restricted

Methods / Méthodes

(short description on sampling, classification methods... / description de l'échantillonnage, des méthodes de classification...)

Expected results / résultats attendus

(short description of products, parameters measured, frequency, expected accuracy..
Courte description des produits, paramètres mesurés, fréquence, précision attendue...))

One of the expected results is the application of the developed method at broad scale. The method will be presented to the international community working on the reduction of emission from deforestation and forest degradation.

Validation

(short description of validation protocols, reference data... / courte description des protocoles de validation et des données de référence)

4) Ground component / Composante sol

Parameters collected / paramètres collectés

(list of parameters with short description of collection method / liste des paramètres collectés avec une courte description des méthodes de collecte)

Sampling strategy / Stratégie d'échantillonnage

Reference sites have been selected by the partners involved in natural forest management and studies in the targeted countries, in association with local partners. For all selected sites, field data (tree enumeration and diameter measurement in field plots) from thorough forest sampling (consistent methodology) are available. For example, inventories have been carried out by FRM in the Congo Basin on transects usually representing 1% of the total area. They record all trees with a diameter over 10 or 20 cm (depending on the country). These 0.5 ha sampling plots are located very precisely and can therefore be linked to image analysis. Such inventories are essential to a satisfactory carbon stock estimate and very useful to test canopy program methods.

Statistical analysis / Analyse statistique

Statistical relationships predicting biomass from tree size will be fitted in situ. The method for canopy texture analysis as described in the published references (Couteron et al. 2005, Proisy et al. 2007) will be applied to Spot 5, FORMOSAT-2 and KOMPSAT-2 panchromatic images in order to compute canopy texture indices derived from the Fourier spectra of the images. Good correlation between texture indices and some stand forest parameters (tree density, stand distribution of diameter values) are expected according to the preliminary studies from French Guiana.

5) Integration Earth Observation - ground / Intégration Télédétection-sol

Integration methods / Méthodes d'intégration

(assimilation models, statistical models...)

Statistical relationships predicting biomass from tree size will be fitted in situ.

Final products / Produits finaux

(estimation de biomasse, de flux de carbone, de flux financiers...)

One of the expected results is the application of the developed method at broad scale. By the end of the Project, the method will be calibrated to be used with several kinds of satellite imagery and variable sun and atmospheric conditions during imagery recording. The method will be presented to the international community working on the reduction of emission from deforestation and forest degradation. In the REDD context, such a method will be included in a broad monitoring approach (combining detailed monitoring using this method with medium resolution image analysis) in order to monitor degradation of forests at national level.

Validation

(short description of validation protocols, reference data...)

Conditions limiting the use of the method, such as particular ecological conditions and technical parameters of image acquisition will be identified. The standard error of prediction will be assessed for each main forest parameter, including standing above-ground biomass.

6) Political component / Composante politique

Beneficiaries / Bénéficiaires

(REDD focal points, forest services, monitoring services, local communities... / points focaux REDD, services forestiers, services de suivi, communautés locales...)

The Project, monitoring forest degradation in Central Africa and Brazil, will have a positive impact on both regions. Local countries using this method to monitor their forests will have a better control and understanding of the environment and will be able to take part in REDD mechanism:

- The State Governments or the environment related administrations will have access to the results which will allow them to improve their sustainable management of their natural resources and areas scheduled for long-term biodiversity conservation. Their technical services will have the opportunity to localise more precisely the main sensitive areas to degradation and deforestation, thus improving their practical management;
- NGOs and local populations will benefit from the Project's outputs: the knowledge of sensitive areas will allow them to adapt their actions at a local scale, and this new point of view on their natural resources will place these stakeholders in an interesting REDD perspective;
- Through the research institutes associated to the Project, students and teachers will have access to new methods and knowledge, creating an opportunity to develop high potential research and studies on REDD.

Theme / thème

(Negotiation, reporting, monitoring, retrocession of payment... / négociation, reporting, suivi, distribution des bénéfices)

Type of action

(training, awareness-raising, field project, demonstration project, development of economic alternatives to deforestation and/or degradation, political study... / formation, sensibilisation, projet de terrain, projet de démonstration, développement d'alternatives à la deforestation et degradation, étude politique)

The results of the Project will be presented in each country hosting a test site and at regional level. Oral presentations will be made and booklets will be given to local stakeholders. The administrations in charge of the forest will be the privileged interlocutors for the duration of the Project. The partners of the Project will use their own websites and professional networks to spread the results of the Project.

7) Capacity Building activities

Trainings delivered

(theme, beneficiaries, location, date, duration, frequency / thèmes, bénéficiaires, lieu, date, durée, fréquence)

Workshop organized

(theme, beneficiaries, location, date, duration, frequency / thèmes, bénéficiaires, lieu, date, durée, fréquence)

Support Provided for the organisation of local communities and/or local project management institutions

(Types of institutions created, structure and modus operandi, legal status, contractual arrangement and benefits sharing agreement / Types d'institutions créées structure et modes opérationnels, statut legal, accord contractuels et accord sur le partage des benefices)

Potential support in training/capacity building activities organized by others

8) General Details (For REDD Pilot Projects Only /Pour projets pilotes REDD seulement)

Pays	Gabon, CAR, CONGO, DRC
Surface	Forest concessions covering over 1.5 million hectares
Type de certification (MDP, VCS, ...)	
tURCE/VER générées	
Date de début du projet	
Méthodologie utilisée	
Période de comptabilisation	
Coûts d'investissement (hors composante carbone)	Si disponible
% fonds propre	Si disponible
% dette	Si disponible
Revenus carbone	Si disponible
Delta TIR	Si disponible
Promoteur	Si disponible
Financier	Si disponible

9) Publications

List of publications or reports available in or relevant for the project – please send a digital copy of the public documents for publication on the OFAC web site

Liste des publications ou rapports disponibles dans le projet – envoyez une copie digitale des documents publics pour mise à disposition sur le site de OFAC)

Proisy, C., Couteron, P., Fromard, F. (2007). *Predicting and mapping mangrove biomass from canopy grain analysis using Fourier-based textural ordination of IKONOS images*. *Remote Sensing of Environment*, 109(3): 379-392.

Couteron, P., Pélissier, R., Nicolini, E., & Paget, D. (2005). *Predicting tropical forest stand structure parameters from Fourier transform of very high-resolution remotely sensed canopy figures*. *Journal of Applied Ecology*, 42: 1121-1128.

Souza Filho, P.W.M., Farias Martins, E.S., & da Costa, F.R. (2006). *Using mangroves as a geological indicator of coastal changes in the Braganca macrotidal flat, Brazilian Amazon: A remote sensing data approach*. *Ocean & Coastal Management*, 49(7-8), 462-475.

10) Free comments / Commentaires libres

(including what you expect from this survey / incluant ce que vous attendez de cette enquête)