

StatEO

5-7 May 2026 | ESA-ESRIN | Frascati (Rome), Italy

Harmonized approach for multi-purpose activity data to support AFOLU policies

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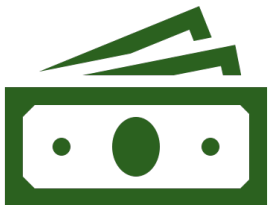
Background



→ Upper Guinean Forest countries have committed to reduce deforestation and forest degradation including through their Nationally Determined Contributions (NDCs);



→ The World Bank through various initiatives supports countries hosting Upper Guinean Forests in REDD+ processes and the mobilization of carbon markets related financing;



→ World bank has mobilized a consortium of experts to support countries in the development of roadmaps, programs ideas and program documentation for reducing emissions due to deforestation and forest degradation.

Objectives

Support countries in advancing their REDD+ agendas,

- Elaborating ER-PINs and ER-PDs;
- Developing roadmaps to advance REDD+;
- Strengthening the capacities of national counterparts.

→ The development of a sound, harmonised, robust and multi-purpose approach to collect activity data is key to support these processes

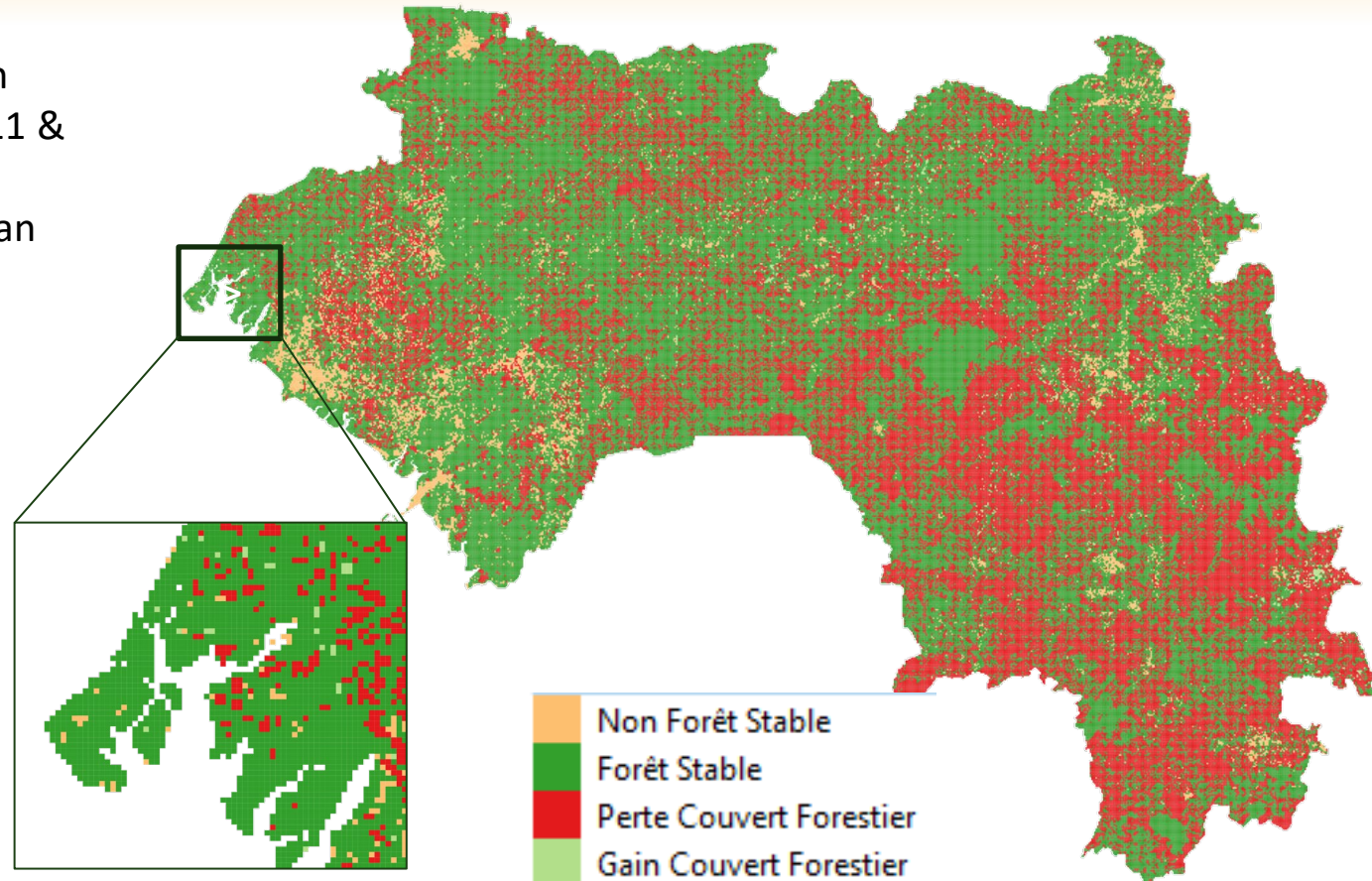
The approach is initially developed for the Republic of Guinea, but would also be applicable to other countries



Sample Allocation for 2015-2020

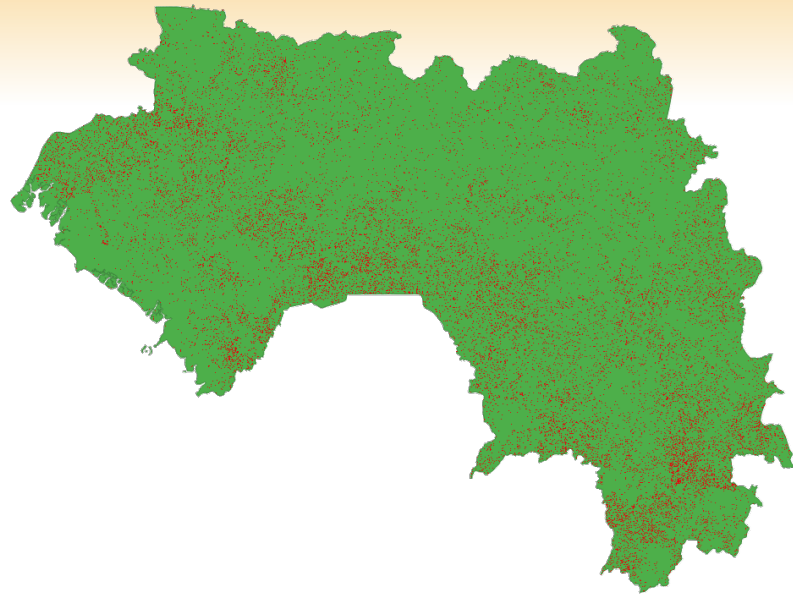
- Initial Systematic sample of 100 units across the whole of Guinea
- Assess stratification and apply Neyman optimal Allocation
- Establish systematic sampling using a kilometer grid (10/11 & 14 km²) to select the desired number of sample units
- Gain an overview of the main sources of change in Guinean forest cover
- Optimize the stratification and distribution of samples, avoiding, if possible, omissions of changes in forest cover

	Nh	n	Var	Var.Nh	Nb Unités
Stable NF	10507	3	0	0	110
Stable F	145030	59	0.00421	610.5831	741
Change*	99389	39	0.006471	643.1275	837
Total	254926	101			1688

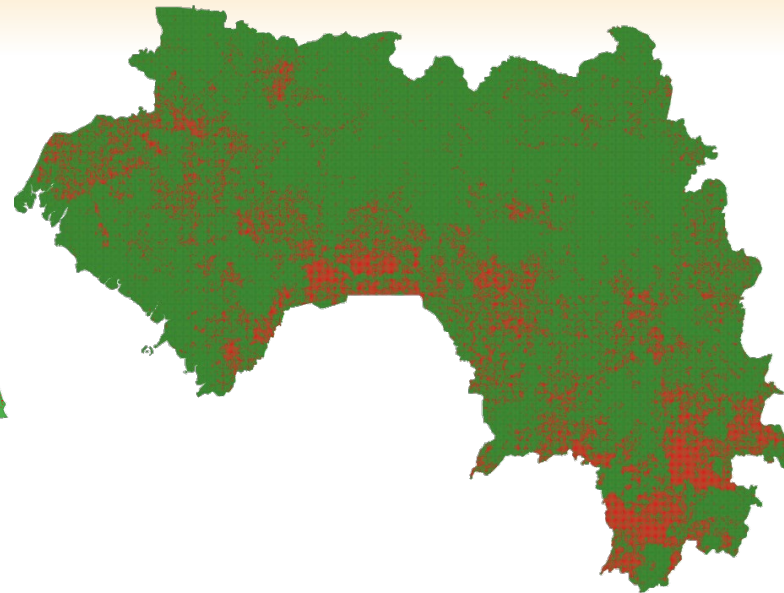


*Gain stratum only represents 0,7% of total area and merged with loss stratum

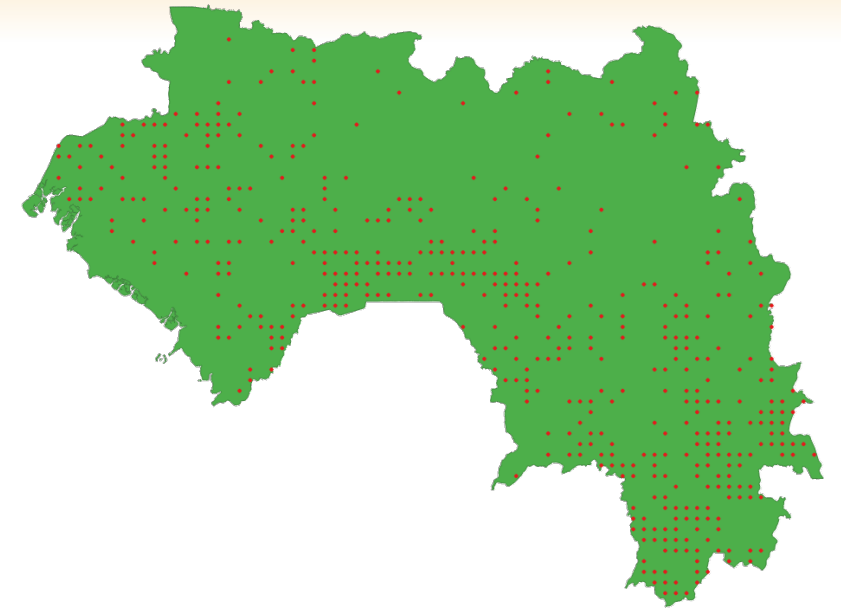
Additional Sampling for 2020-2025



Combination of
GLAD RADD and
TCDM Alerts
between 2020-
2025

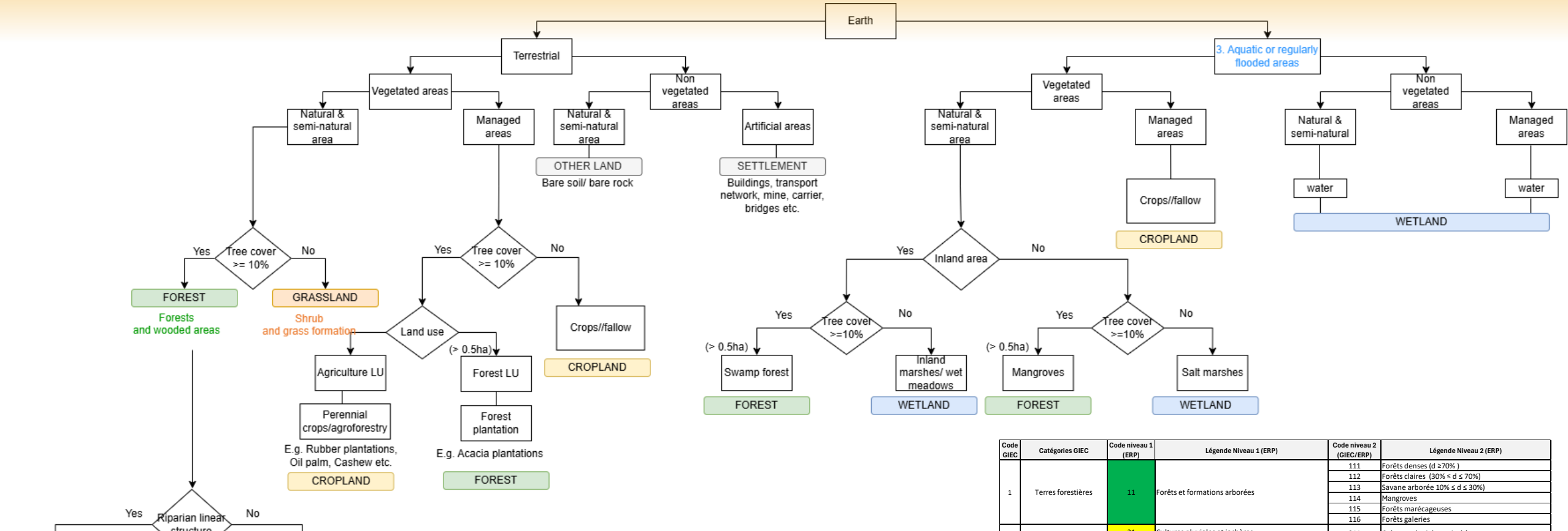


Extraction of zonal
statistics over 1km
grid and application
of 10% change
thresholds to
create additional
change stratum



Application of
11km Systematic
grid to select 482
1km² additional
Sample units to
target 2015-2020
changes

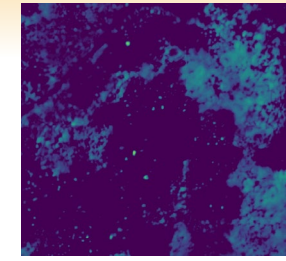
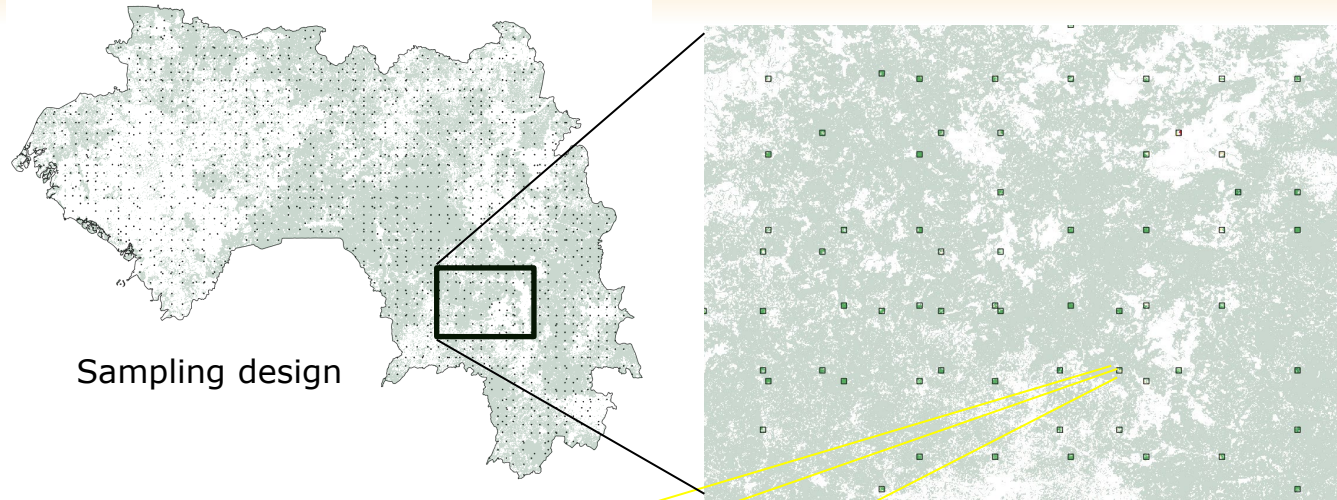
Response Design - Decision trees & Nomenclature



Based on the national forest code, a forest is defined as :
Area >= 0.5 ha,
Tree height >= 5 m,
Tree cover density >= 10%

Code GIEC	Catégories GIEC	Code niveau 1 (ERP)	Légende Niveau 1 (ERP)	Code niveau 2 (GIEC/ERP)	Légende Niveau 2 (ERP)
1	Terres forestières	11	Forêts et formations arborées	111	Forêts denses (d > 70%)
				112	Forêts claires (30% ≤ d ≤ 70%)
				113	Savane arborée 10% ≤ d ≤ 30%
				114	Mangroves
				115	Forêts marécageuses
				116	Forêts galeries
2	Terres cultivées	22	Cultures pérennes et agroforêts	211	Cultures pluviales et jachères
				221	Vergers arboriculturales
				222	Palmeraies et palmiers naturels
				223	Hévéa
				224	Anacardières
				225	Agroforêts et autres associations de cultures
				226	Plantations forestières et reboisements
3	Terres humides	31	Marais intérieurs et marais maritimes	30	Eau
				311	Marais intérieurs
				312	Prairies marécageuses
4	Etablissements humains	42	Mines, carrières & chantiers	313	Marais maritimes
				40	Habitat
				41	Infrastructures routières et surfaces associées
				42	Mines, carrières & chantiers
5	Terres graminéennes (Prairies)	50	Formations / arbustives et herbeuses	50	Formations / arbustives et herbeuses (< 10% d'arbres)
6	Autres terres	60	Sols nus / roches nues	60	Sols nus / roches nues

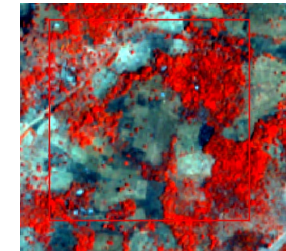
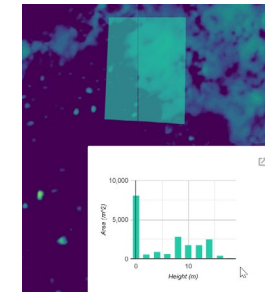
Interpretation of PSUs



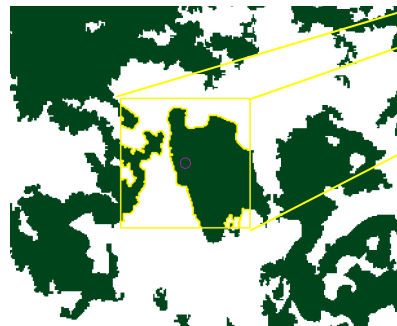
Canopy height 2020



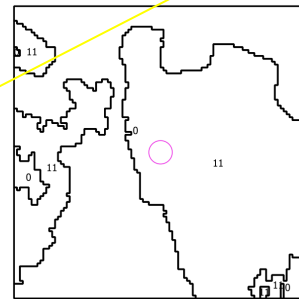
VHR Data and historical VHR data



SPOT 6/7 2015



clip

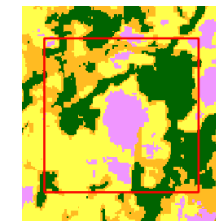


1 km

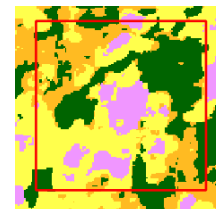
Limite of the forest mask from 2015



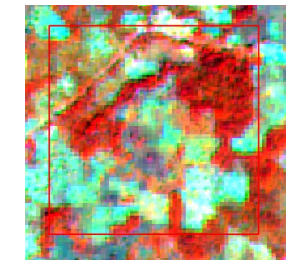
Visual interpretation and digitising of land cover and Identification of changes between 2015-2020 and 2020-2025



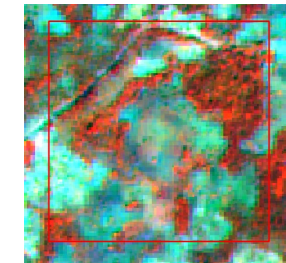
LCFM



ESA 2021



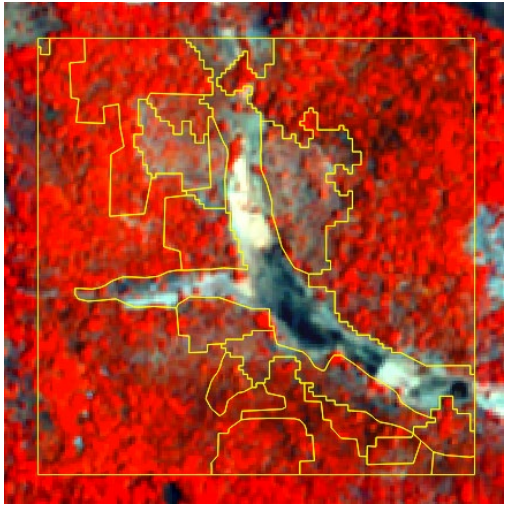
S2 2020



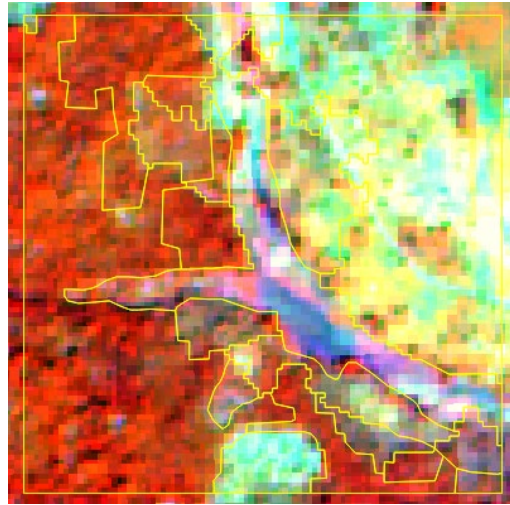
S2 2025

Exemple 1

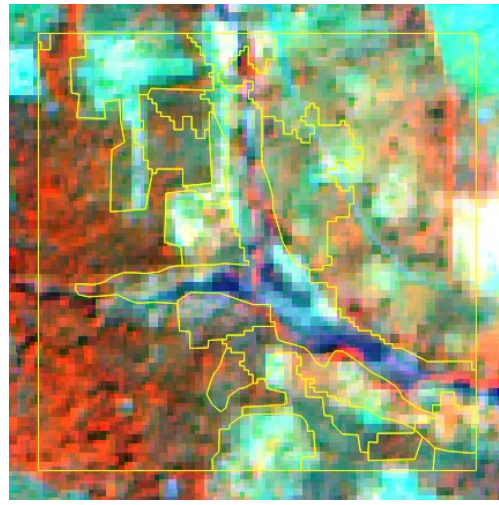
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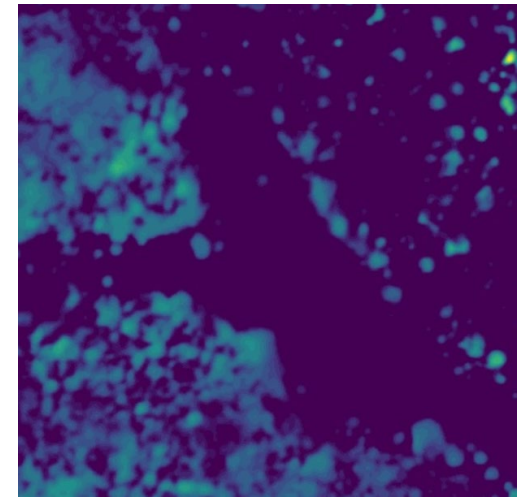
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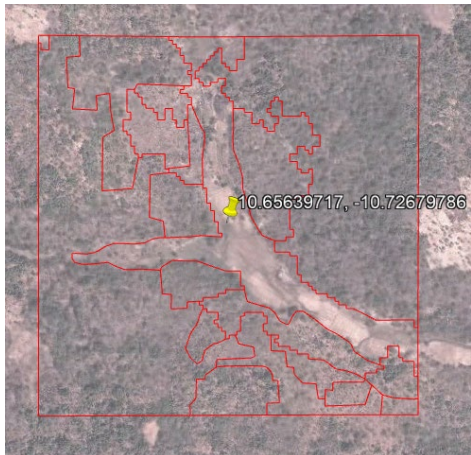
S2_
T29PLM 20211119



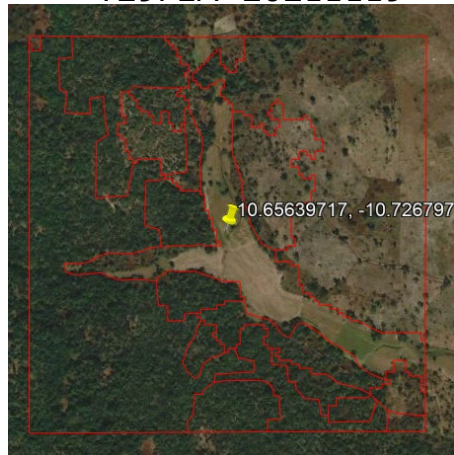
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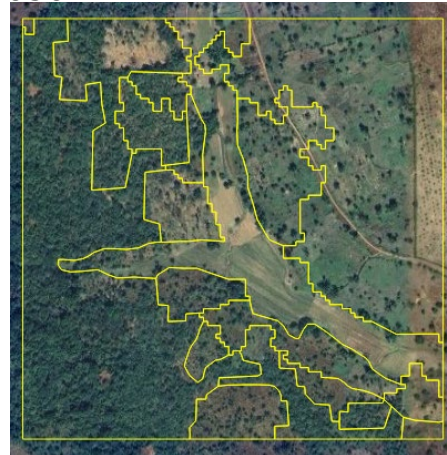
Canopy height 2020



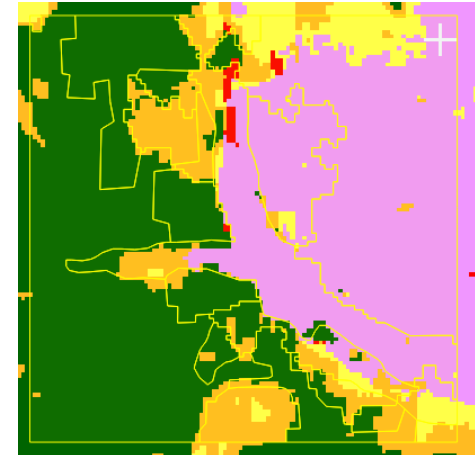
GE 20/01/2012



GE 20/01/2012



GE 19/04/2024



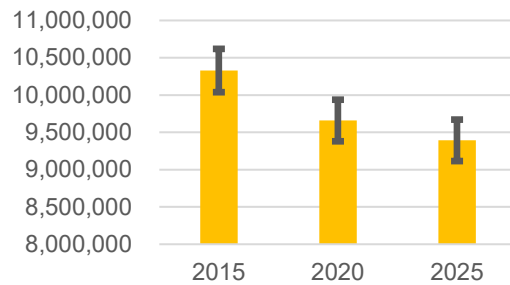
LCFM2020

Analysis & Results

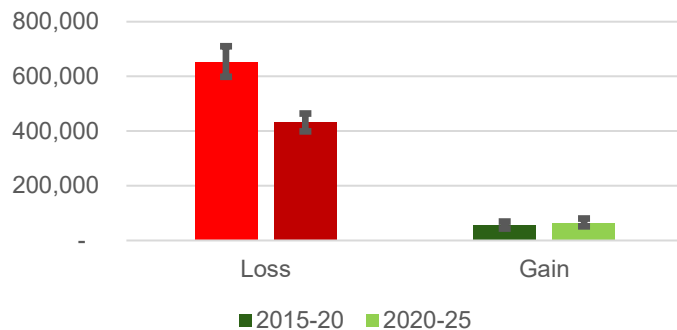
- Standard stratified estimator is applied
- Forest cover represent around 40% of Guinea
- Detailed area & change estimates per land cover type
- Average deforestation > 1% for 2015-20 and < 1% for 2020-25

(ha)	Couvert Forestier			2015-20		2020-25	
	2015	2020	2025	Loss	Gain	Loss	Gain
Estimate	10.328.757	9.659.006	9.392.977	654.404	56.374	431.585	66.026
CI90	290.482	278.777	278.122	55.823	12.814	32.644	14.281
CV90CI	2,8%	2,9%	3,0%	8,5%	22,7%	7,6%	21,6%

Guinea Forest Cover



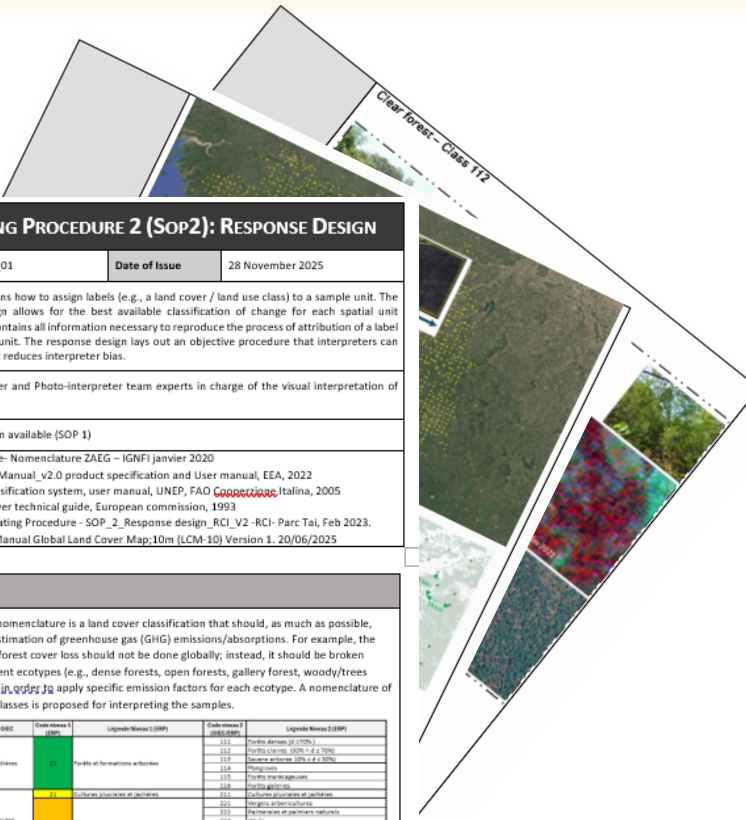
Forest Cover Change in Guinea



		2020																									
Area Estimates (ha)		Forêts denses (d ≥ 70%)	Forêts claires (30% ≤ d ≤ 70%)	Savane arborée (10% ≤ d ≤ 30%)	Mangroves	Forêts marécageuses	Forêts galeries	Cultures pluviales et jachères	Vergers arboricultures	Palmeraies et palmiers naturels	Hévéa	Anacardiens	Agroforêts et autres associations de cultures	Plantation forestière	Eau	Marais intérieurs	Prairies marécageuses	Marais maritimes	Habitat	Infrastructures routières et surfaces associées	Mines, carrières & chantiers	Formations / arbustives et herbeuses (< 10% d'arbres)	Sols nus/ roches nues	TOTAL AREA (ha)			
		111	112	113	114	115	116	211	221	222	223	224	225	226	30	311	312	313	40	41	42	50	60				
2015	Forêts denses (d ≥ 70%)	363.904	501					2.129											77					369.925			
	Forêts claires (30% ≤ d ≤ 70%)		2.924.369	3.820				96.538				2.291						76		391	82	28	41.668		3.069.263		
	Savane arborée 10% ≤ d ≤ 30%)			2.879	5.776.452				321.174				9.692						481		118		283	1.494	5.301	146.338	6.264.212
	Mangroves					124.572			1.190										9				1.786			127.556	
	Forêts marécageuses						4.633																		4.633		
	Forêts galeries							491.407	3.115				102										124	79	193	497.315	
	Cultures pluviales et jachères				5.583				2.184.525			4.983	1.908	25.730	1.974	10	3.008			10.330	3.593	392	2.294	343.139		2.587.468	
	Vergers arboricultures										18.748												141			18.890	
	Palmeraies et palmiers naturels											2.398											2.163	1.162	512	764	239.866
	Hévéa												25.809													25.809	
	Anacardiens													120.361												121.027	
	Agroforêts et autres associations de cultures								5.246												6.808	458		5.616		474.013	
	Plantations forestières et reboisements														23.000									1.316		24.315	
	Eau																129.139									129.139	
	Marais intérieurs															1.543		61.314								64.007	
	Prairies marécageuses																		179.346					44	688	270	181.800
	Marais maritimes					296																		42.490		42.786	
Habitat																							249.565	4.020	253.585		
Infrastructures routières et surfaces associées																							27.951		28.315		
Mines, carrières & chantiers																								9.320	10.057		
Formations / arbustives et herbeuses			4.129	47.738				671.266	629	9.341	7.638	46.125	10.139	3.155	5.142					8.645	7.635	32.982	9.972.920	1.973	10.829.458		
Sols nus/ roches nues															3.033								285	605	125.207	129.129	
TOTAL AREA (ha)		363.904	2.931.878	5.833.593	124.868	4.633	491.407	3.290.351	19.377	247.339	35.355	204.301	467.999	26.165	143.372	62.162	180.987	54.606	271.666	39.342	55.508	10.516.576	127.180	25.492.568			

Main findings

- Approach successfully applied in Guinea
- Detailed area and area change estimates are available for multiple landcover changes
- Forest cover change estimate with uncertainty < 10% over 5 year
- The whole approach is fully documented and can be applicable elsewhere
- Can be used as input to LULUCF reporting and access to carbon finance



STANDARD OPERATING PROCEDURE 2 (SOP2): RESPONSE DESIGN

Version	SOP2_Version_01	Date of Issue	28 November 2025
Purpose	This SOP explains how to assign labels (e.g., a land cover / land use class) to a sample unit. The response design allows for the best available classification of change for each spatial unit sampled and contains all information necessary to reproduce the process of attribution of a label to the sample unit. The response design lays out an objective procedure that interpreters can follow and that reduces interpreter bias.		
Responsibilities	Project manager and Photo-interpreter team experts in charge of the visual interpretation of samples		
Prerequisites	Sampling design available (SOP 1)		
Related documents	Technical Guide- Nomenclature ZAEG – IGNFI janvier 2020 CLC-BB_User_Manual_v2.0 product specification and User manual, EEA, 2022 Land cover classification system, user manual, UNEP, FAO Copernicus/Corine, 2005 Corine land cover technical guide, European commission, 1993 Standard Operating Procedure -SOP_2_Response design, RCI_V2 -RCI- Parc Tai, Feb 2023. Product User Manual Global Land Cover Map:10m (LCM-10) Version 1. 20/06/2025		

Procedure

Step 1: Specifying the classification scheme

The proposed nomenclature is a land cover classification that should, as much as possible, allow for the estimation of greenhouse gas (GHG) emissions/absorptions. For example, the assessment of forest cover loss should not be done globally; instead, it should be broken down by different ecotypes (e.g., dense forests, open forests, gallery forest, woody/trees savannas, etc.) in order to apply specific emission factors for each ecotype. A nomenclature of about twenty classes is proposed for interpreting the samples.

Code land	Catégorie OGC	Catégorie 1 OGC	Logotype Niveau 1 (OGC)	Catégorie 2 OGC	Logotype Niveau 2 (OGC)
1	Terres forestières	11	Forêts et formations arborescentes	111	Forêts denses de > 10% ₁
				112	Forêts denses de 10% à < 10% ₁
				113	Forêts denses de 10% à < 10% ₁
2	Terres agricoles	21	Cultures arborées et agroforêts	211	Forêts denses de > 10% ₂
				212	Forêts denses de 10% à < 10% ₂
				213	Forêts denses de 10% à < 10% ₂
3	Terres humides	31	Mares, marais et zones humides	311	Mares, marais et zones humides
				312	Mares, marais et zones humides
				313	Mares, marais et zones humides
4	Établissements humains	41	Mansions, habitations et surfaces associées	411	Mansions, habitations et surfaces associées
				412	Mansions, habitations et surfaces associées
				413	Mansions, habitations et surfaces associées
5	Terres pastorales (prairies)	51	Prairies, pâturages et herbages	511	Prairies, pâturages et herbages < 10%
				512	Prairies, pâturages et herbages < 10%
				513	Prairies, pâturages et herbages < 10%
6	Autres terres	61	Sols nus, rochers nus	611	Sols nus, rochers nus
				612	Sols nus, rochers nus
				613	Sols nus, rochers nus

Step 1 bis: Classification scheme of Land cover changes

The matrix below shows the theoretical matrix of land cover changes, which will be indicated in surface area units (m²/ha, etc.). It is important to note that not all changes will be possible, only some of them will be feasible. Gains, losses in forest cover, deforestation, and degradation will be determined and will be identified as a matter of priority.