



A CHALLENGE TO HARMONIZE INTERNATIONAL EFFORTS TO FIGHT AGAINST DEFORESTATION: TOWARDS A NEW, ECOLOGICALLY ROBUST TYPOLOGY OF THE WORLD'S FORESTS

Forest, forest degradation, deforestation: why and how should we change the definitions?

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Why do we ask this question?

- France has launched its national strategy to fight against imported deforestation for the period 2018-2030
 - ✓ Signing of the New York Declaration on Forests (UN climate summit, 2014) and the Amsterdam Declarations in 2015, of which France took the presidency in 2018
 - ✓ Commitment to end the import of agricultural or forestry products that contribute to direct or indirect deforestation by 2020
- Efforts included in the EU target
 - ✓ 2008 => 2020: 50% less gross tropical deforestation
 - ✓ 2030: stopping the loss of global forest cover
- Is part of ongoing work on drafting a European regulation to stop deforestation being imported and exported from Europe



A lot of existing definitions

Forest definition	Tree cover (%)	Minimal area	Minimal width	Minimal height
FAO	10%	0,5 ha	20 m	5 m
UNFCCC	10 à 30%	0,05 à 1 ha		2 à 5 m
JRC*	15%	100 ha		3 m
Hansen <i>et al.</i> (2013)**	Au choix	0,09 ha		5 m
ITTO and IUFRO	No definition			
IPCC (GIEC)	National definitions			
IPBES	UNFCCC definition			
EU, CBD	Similar to FAO definition			
Countries (99)	10 à 80%	0,01 à 50 ha	9 à 60 m	1,3 à 10 m

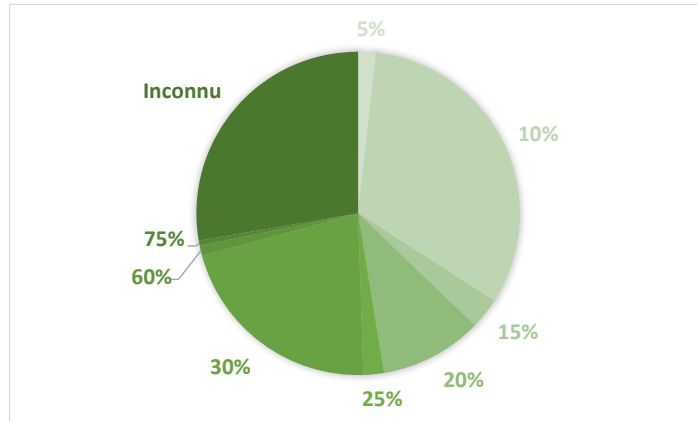
*Spot 4/Vegetation à 1 km x 1 km de résolution

**Landsat 7 à 30 m x 30 m de résolution

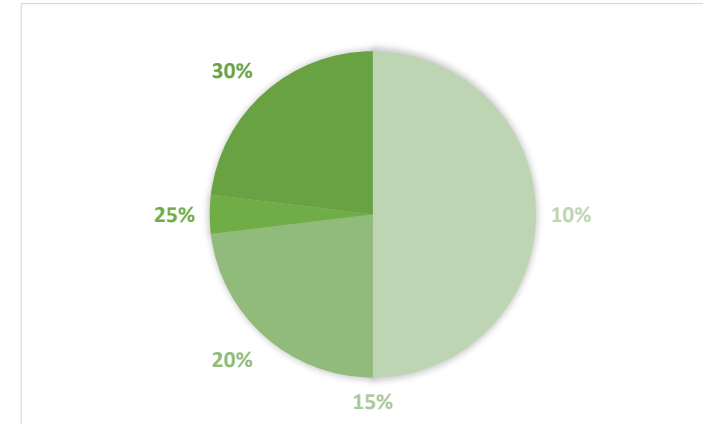


Some examples regarding countries

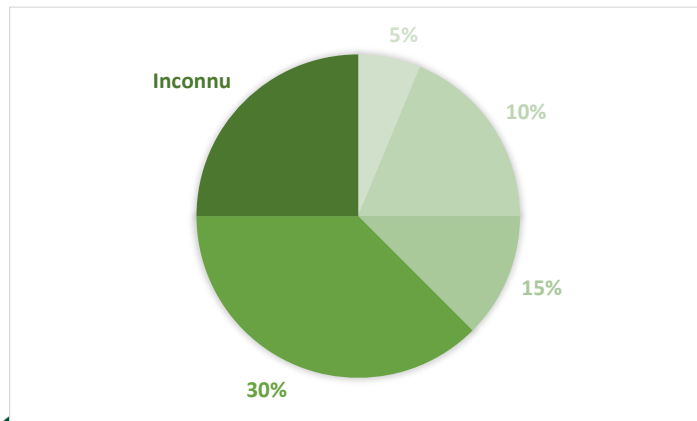
The 193 UNO states



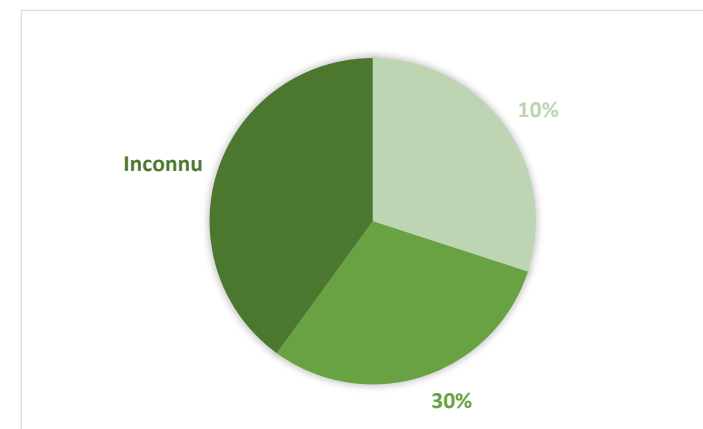
The 26 EU states



The 16 West Africa states



The 10 COMIFAC states



NB. « Inconnu » means « Unknown »

And a lot of related questions

« Land cover » vs « Land use »

- According to organisms and countries:
 - ✓ forest = type of vegetation present at the time of observation (« land cover ») or absent, but on an area legally designated as forest (« land use »)
 - ✓ About 33% of 149 countries studied use the « land cover » concept, 21% the « land use » concept and 46% do not clarify it

« Plantation » vs « Forest »

- Palm plantations + non-wood producing tree plantations (cocoa, rubber plantations, etc.): generally excluded from these definitions. But areas sometimes included in those of forests (cf. satellite images supporting or largely replacing field inventories)

Gross deforestation vs net deforestation

- Gross: disappearance of a natural forest
- Net: difference between the areas of forest that disappear each year and those that are planted or regenerate naturally

Legal deforestation vs illegal deforestation

- Linked to permanent and non-permanent forest domains (PFD and NPFD). Legal forest disappearance in PFD and NPFD: no deforestation. Illegal disappearance in PFD: deforestation. In NPFD: ?

Zero deforestation

- Gross or net?

Why does the variety of definitions create problems?

- Countries in the same ecological zones have adopted different values for the percentage of tree cover: Ghana 15%, Côte d'Ivoire 30%, Equatorial Guinea 10%, Gabon 30%
- These definitions have implications for imported deforestation : the threshold currently proposed in the EU regulatory text is 10% - inspired by the FAO definition

Examples for countries which ecological zones are not the same and forest types are not comparable

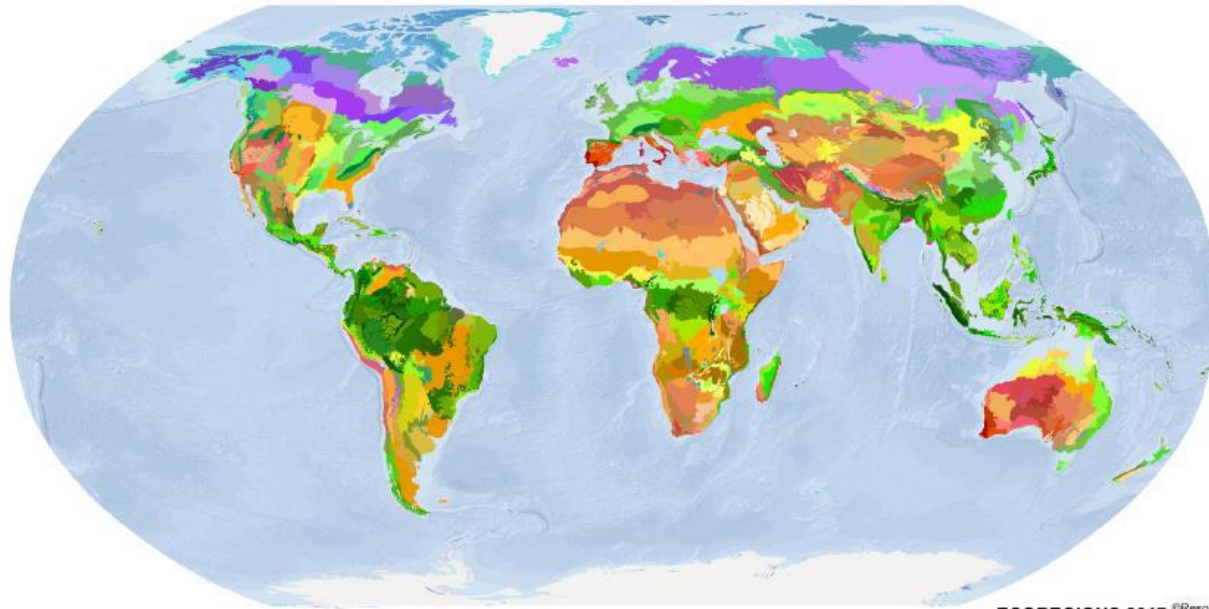
Countries	Forest area in 2018, 10% threshold (millions ha)	Forest area in 2018, 30% threshold (millions ha)	Area difference between the 10% and 30% rates (millions ha)
Gabon	25,7	24,5	1,2
Uganda	17,3	6,4	10,9

Mettre les références



How should we change definitions?

- “Forest” definition must be adapted to the ecological conditions – thus ecological zones – in which woody vegetation develop
 - ✓ 2000, 2010: FAO ecozones (20), 2017: WWF ecoregions (846), 2020: UICN ecosystem functional groups (34 in the terrestrial realm)...



WWF ecoregions (Dinerstein et al., 2017)

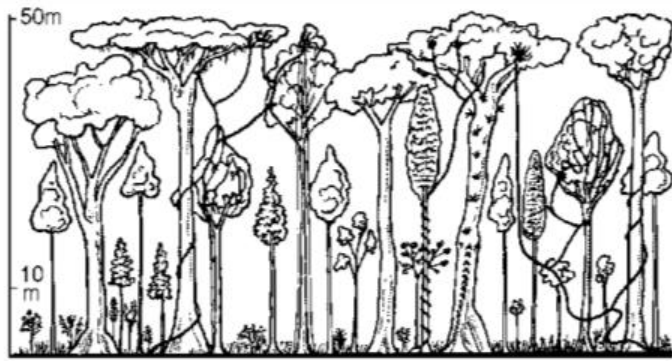
ECOREGIONS 2017 ©Resolve



How should we change definitions?

- Ecological zones can be linked with forest types, example of the Yangambi classification of african vegetation (1956)

Dense
evergreen
moist forest



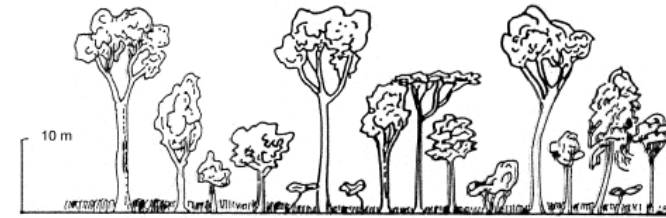
Forêt dense humide sempervirente

Dense
semi-
deciduous
moist forest



Forêt dense humide semi-décidue

Clear forest



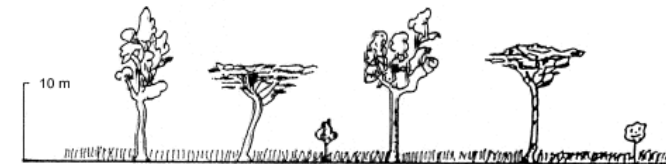
FORET CLAIRE

Dense wooded
savannah



SAVANE BOISEE

Clear wooded
savannah



SAVANE ARBOREE

Shrubby and
herbaceous
savannahs



SAVANE ARBUSTIVE



SAVANE HERBEUSE

Dense semi-deciduous moist forest



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Clear forest



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Dense wooded savannah

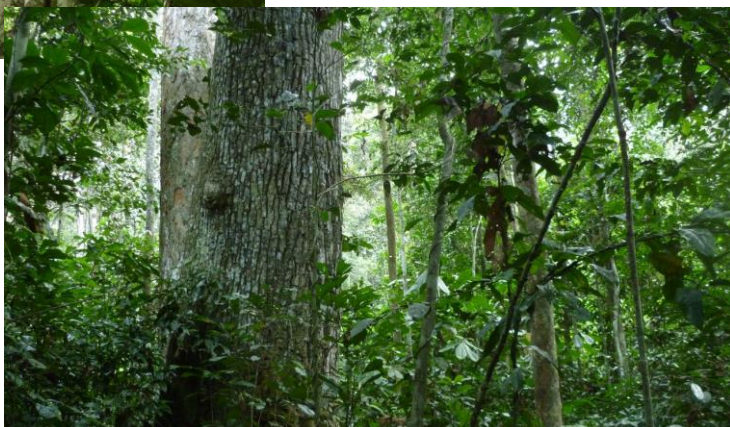


© FAO (Zambie)

Shrubby savannah



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Clear wooded savannah



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Herbaceous savannah



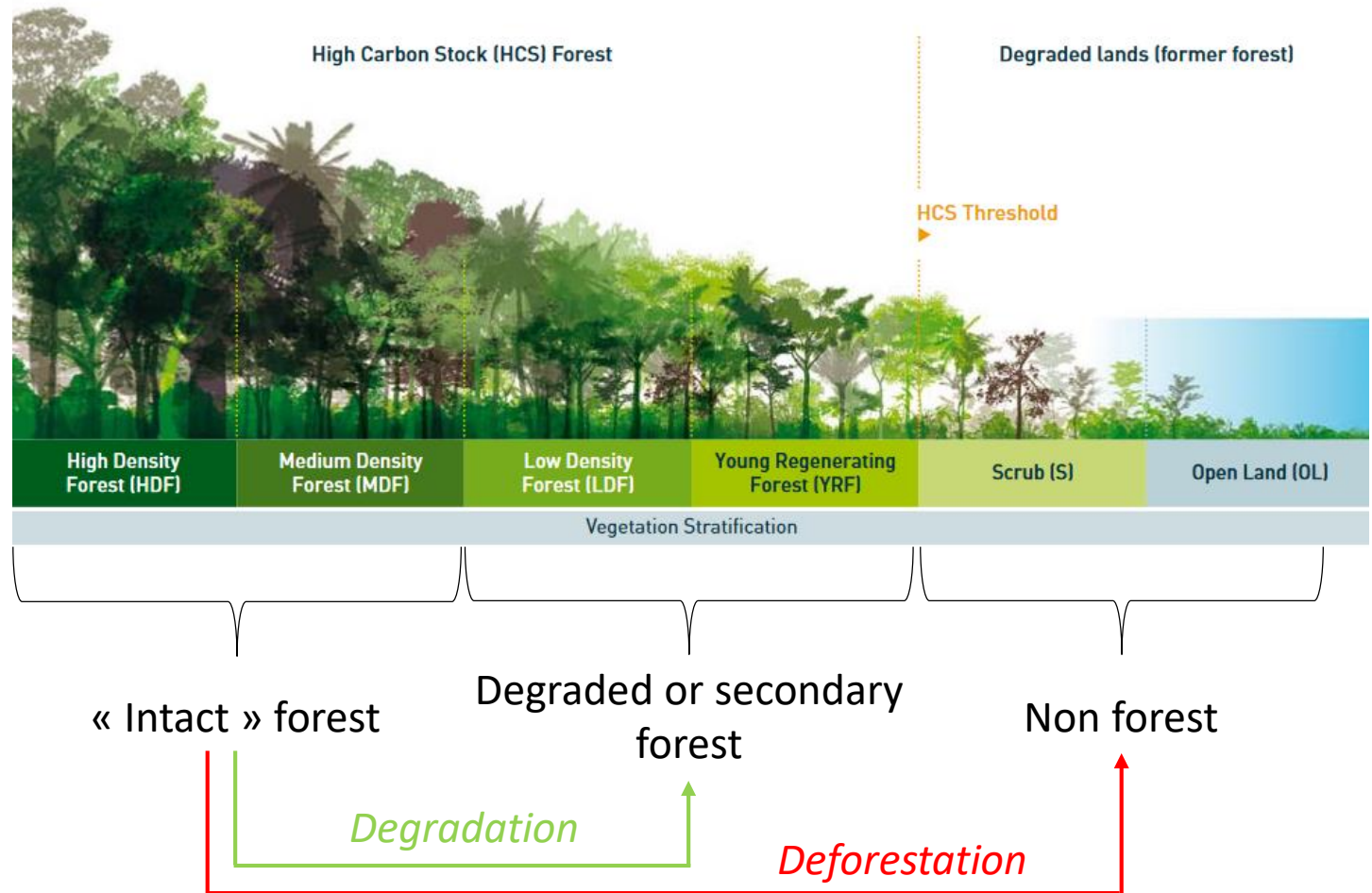
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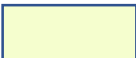
How should we change definitions?

- Within each ecological zone and forest type, « intact » and « degraded » forest should be identified and defined based on a simplified HCSA « vegetation stratification »

HCSA « vegetation stratification » (Rosoman et al., 2017)

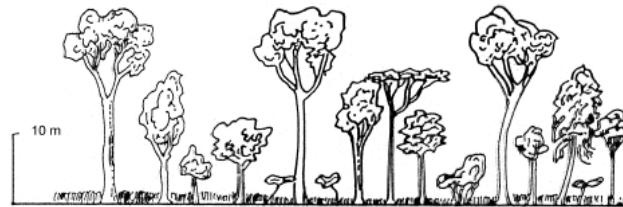


How should we change definitions?

-  « Intact » forest
-  Degraded or secondary forest
-  Non forest



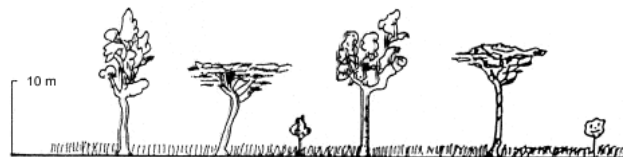
Forêt dense humide sempervirente



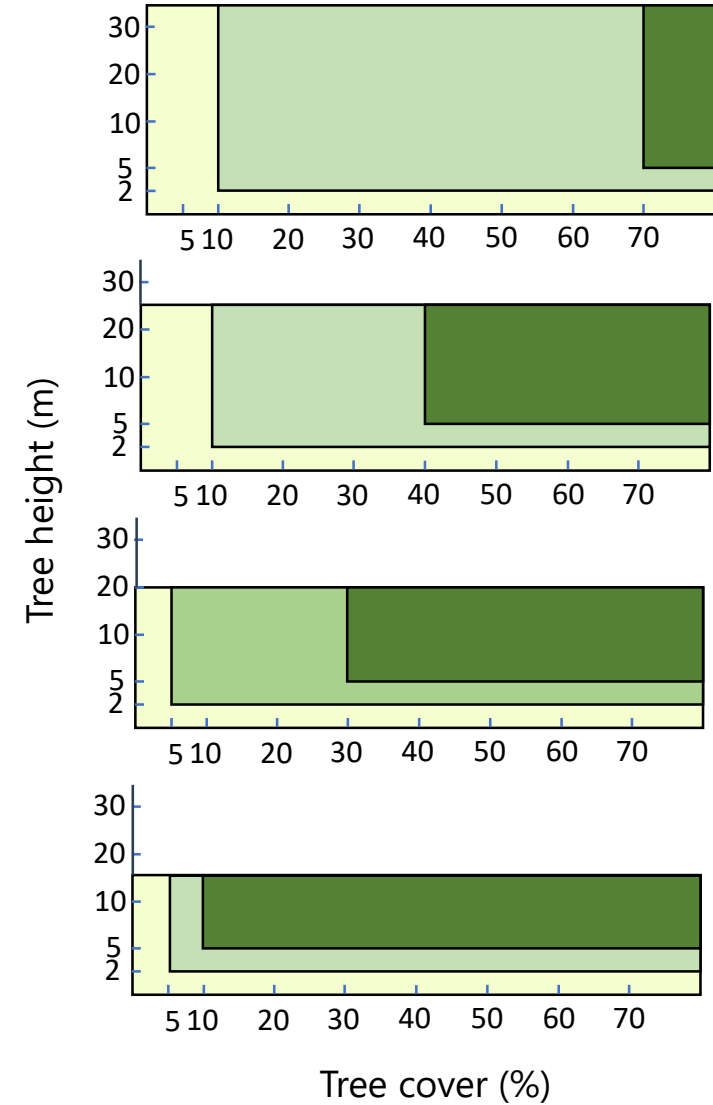
FORET CLAIRE



SAVANE BOISEE



SAVANE ARBOREE



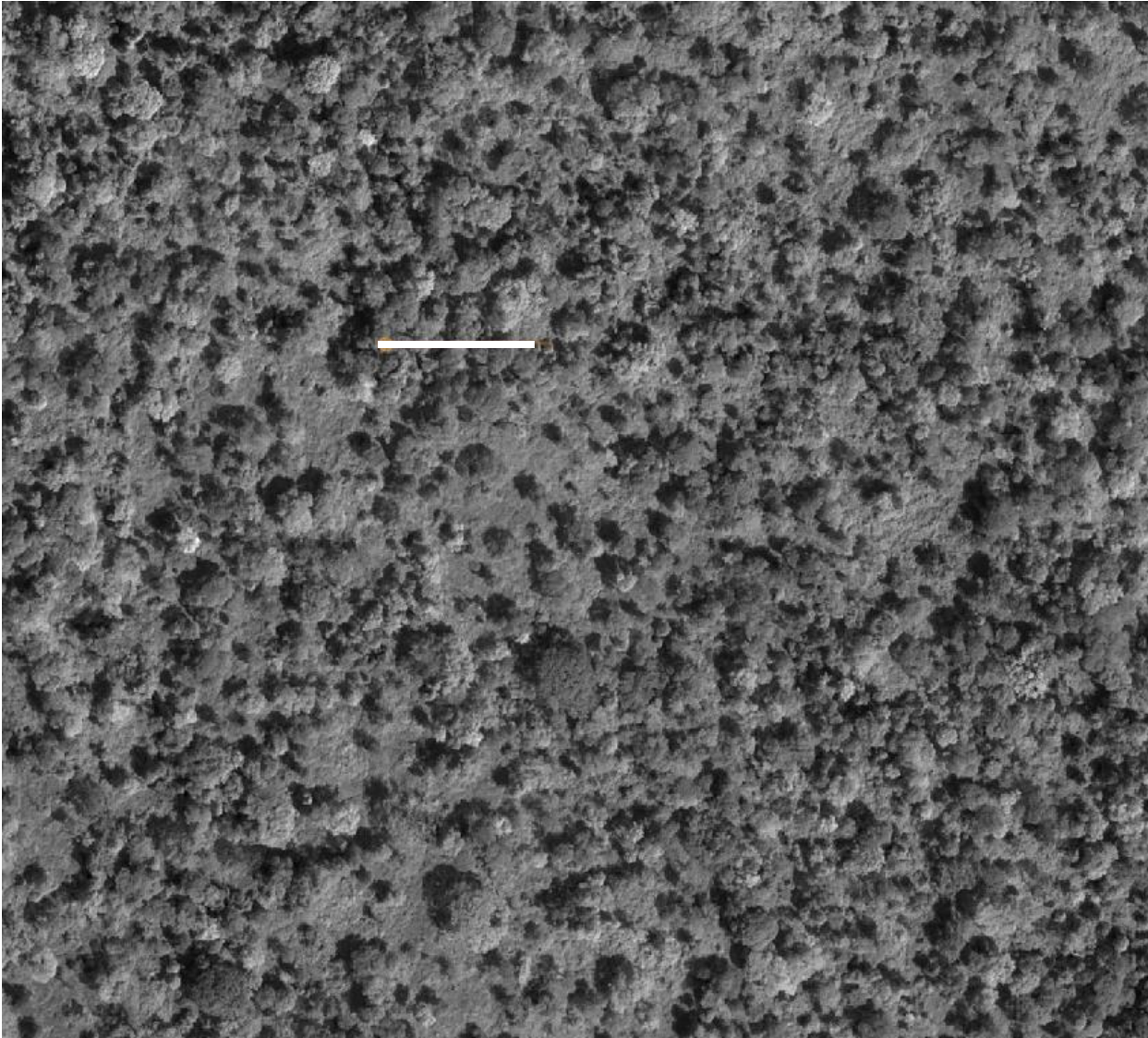
Main difficulties...

- Quantifying degradation should be done with satellite images over 5 years periods
 - ✓ Our « static » proposals are temporary
 - ✓ The current definitions are very vague... Some examples:
 - Burkina Faso: “observed stock loss for forest land remaining forest land”
 - Chile: “all forms of carbon reduction in a forest induced by human activity to such an extensive degree that a halt of all regular forestry activities are required, but does not provoke a change in land-use”
 - Romania: “stand that has been severely damaged, either as a result of human activity or a natural phenomenon”
 - EU regulation proposal: forest degradation’ means harvesting operations that are not sustainable and cause a reduction or loss of the biological or economic productivity and complexity of forest ecosystems, resulting in the long-term reduction of the overall supply of benefits from forest, which includes wood, biodiversity and other products or services
- Significant differences in structure can be observed between ecological zones when following the proposed classifications (FAO, WWF) as in Cameroon, but sometimes not, as in Brazil. Using field inventories remain essential to link ecological zones to particular structures. Work is ongoing to find a suitable classification



... and possible progress

- New satellite data are becoming available, making it possible to improve the set of variables used to quantify forest structure
- We could drop the « tree cover » variable » and replace or complete the forest definition with two more informative variables detectable by Pleiades satellites (to be completed with Planet)
 - ✓ Crown size
 - ✓ Number of trees per hectare
- These two variables have different values in different ecological zones



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Thank you for your attention

