Objective

- Support countries in accessing *Carbon Finance*
- *Reliable* estimates of Forest Change (High-integrity)
- *Consistency* over time
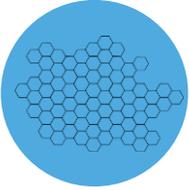- Address *Uncertainty*
- Being *practical*
- *Manage* expectations

source: Olofson et al 2020
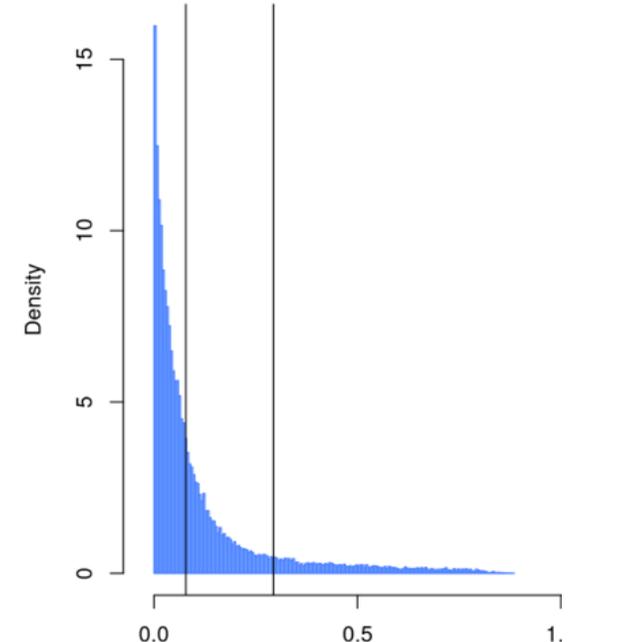
Overview - Ensemble

Time-Series Extraction

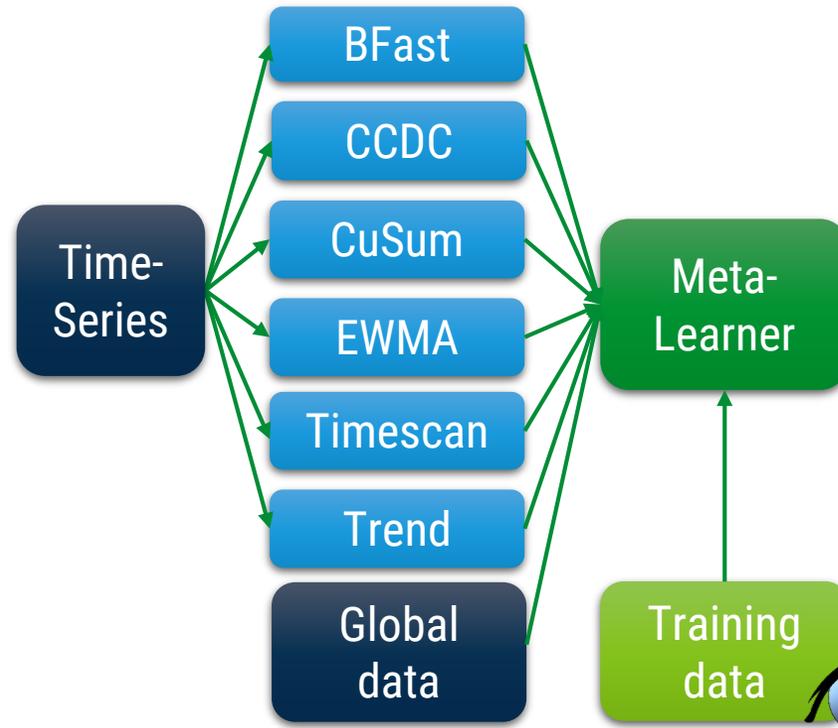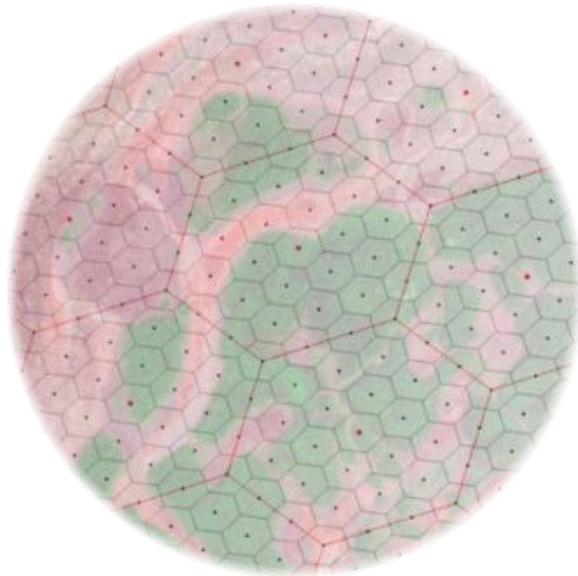Probability of potential change

Dense systematic sampling grid

Ensemble of Change

Dalenius type of stratification

Time-Series → BFast, CCDC, CuSum, EWMA, Timescan, Trend → Meta-Learner
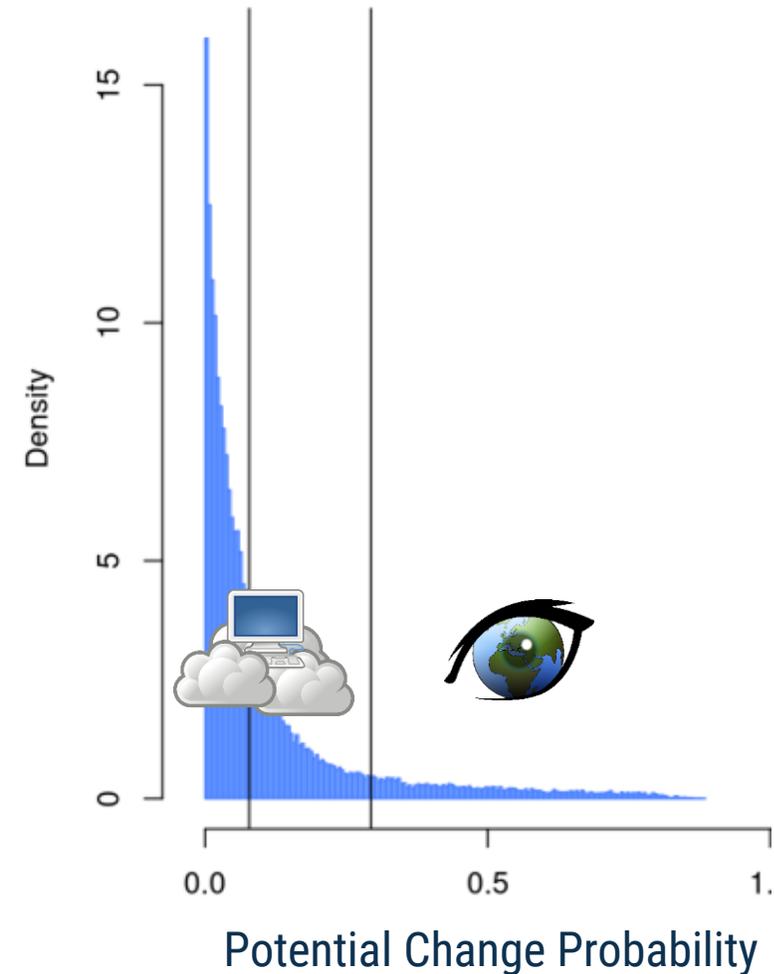
Global data

Training data

Density

Potential Change Probability

Usage scenario I – Prioritization of interpretation

Systematic grid

- -> visually check a subset of points
- potentially HFLD countries, where huge parts are just stable (forest)
- e.g. strict rule-based selection could replace visual interpretation

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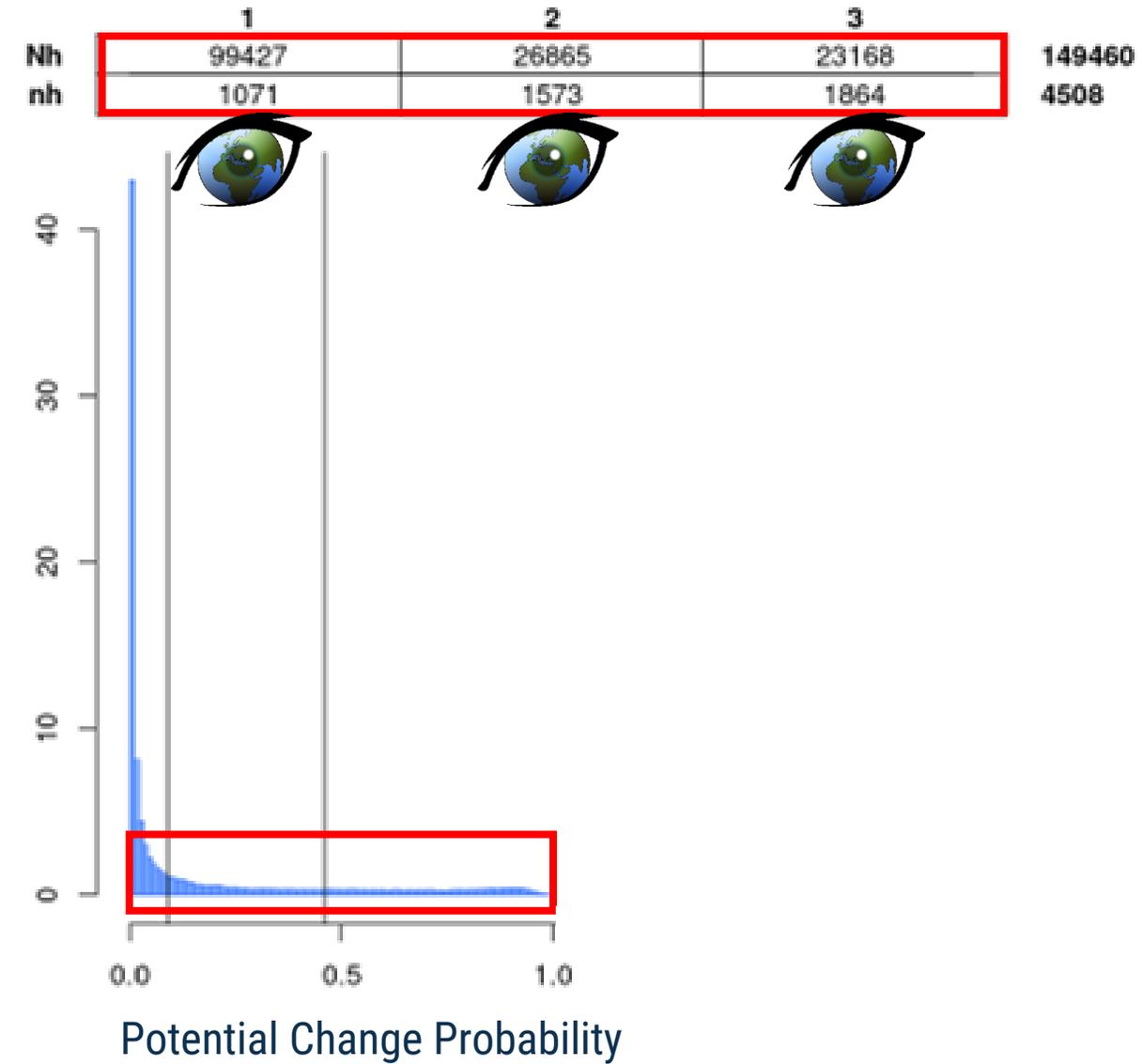- e.g. strict rule-based selection could replace visual interpretation
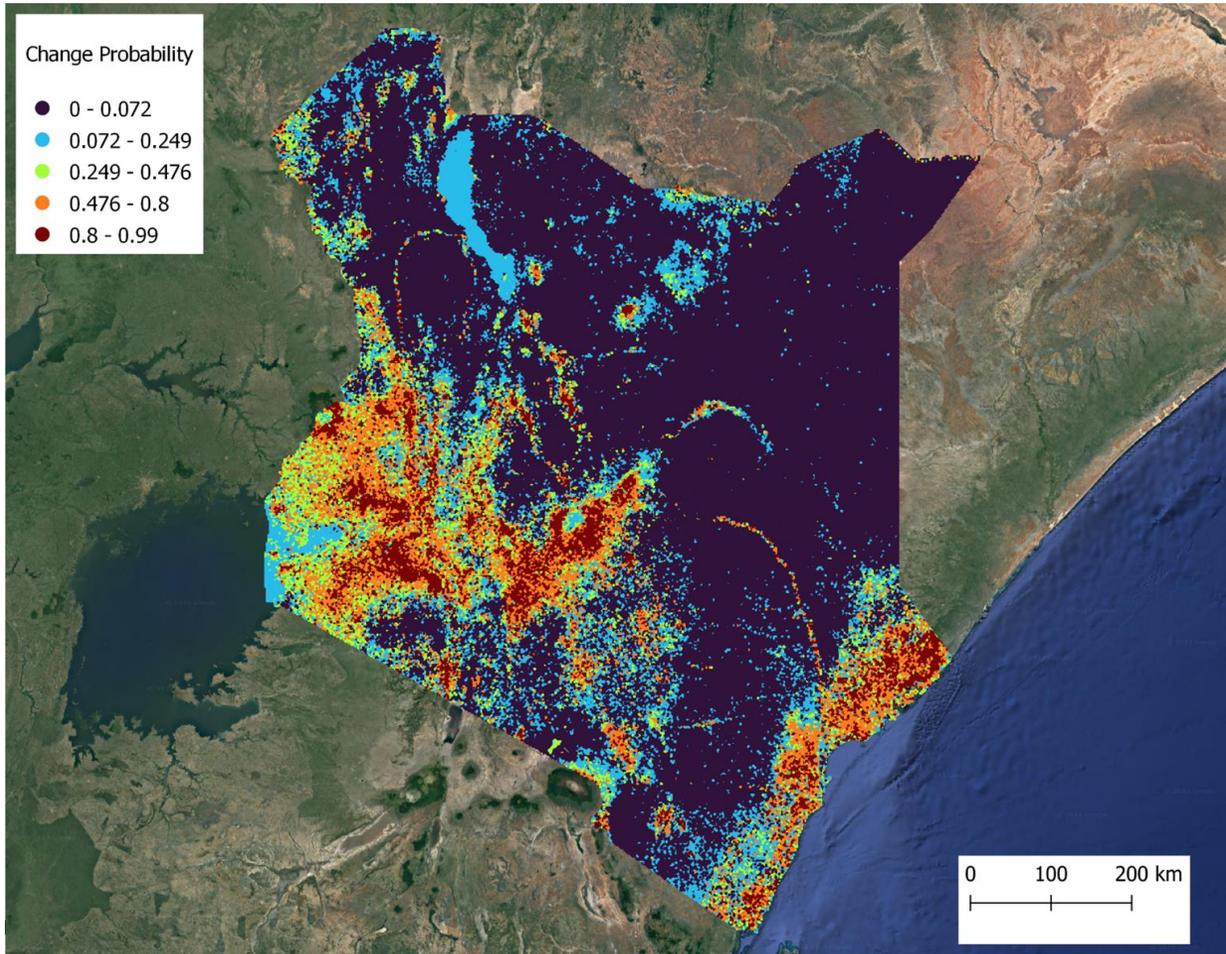
Stratified random

- From existing maps
- Intensification of stable strata in case of omissions
- e.g. strict rule-based selection could replace visual interpretation

Usage scenario II - Stratification

Kozak Neyman with 3 strata

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Kozak Neyman with 3 strata

	1	2	3	
Nh	99427	26865	23168	149460
nh	1071	1573	1864	4508

Potential Change Probability

Still want to have a wall-to-wall map?

→ **Use the interpreted samples as training data**

Usage scenario III – QA/QC

- Already interpreted data
- Use of „the machine" as an independent interpreter
- Using the ensemble to re-classify the samples
- Samples with disagreement between visual and re-classified results are prioritized

	Change	No-Change
Change	125	27
No-Change	36	250

Wrap-up

- How do we avoid bias and get to low uncertainties without having to interpret 100 of thousands of points?

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- How do we avoid bias and get to low uncertainties without having to interpret 100 of thousands of points?
- Can we use a *combination of algorithms* to avoid huge interpretation campaigns in areas with *very few forest (dynamics)*
- What would be the best way forward in doing so?