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Wah it cost fi miss a clearing can change which forest map a team pick inna Guyana

A study of two map using di same published reference sample, 2001–2017

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Wa di study find

Di two forest map agree wid di reference label pon more dan 99% a di land weh di researchers check. Dat figure enough fi choose a map? Wi tek di published result fi Guyana an give two kind a mistake different cost. Di national map come out cheaper when missing one hectare cost more dan six-seventh a wah a false alarm cost fi one hectare. Below dat point, di global map have di lower cost. Dat point apply to dis historical sample an di two cost wi set.

Weh di risorch a aks?

How much one hectare a non-forest weh di map miss haffi cost before di national map error cost less dan Global Forest Change?

Data an metad

Galiatsatos an im colleagues publish one reference assessment fi both map [1, Table 3]. Dem adapt Global Forest Change, di satellite product weh Hansen an im colleagues develop [2], fi fit Guyana definition a forest. Wi tek di four cell value fi each map. Dem measure hectare inna di sample. Forest an non-forest describe di land cover across di whole period dem compare.

Di map miss a hectare when it seh forest but di reference seh non-forest. It give a false alarm when it seh non-forest but di reference seh forest. Wi mek one false alarm cost one unit per hectare. Mek r stand fi di cost per hectare weh di map miss, inna di same unit. It can be zero or more. Total cost equal r times di hectare weh di map miss, plus di hectare weh get false alarm. Wi try three cost an work out weh di two total meet.

Rizolt dem

Outta 96,127 hectare weh dem check, di global map miss 522 an give false alarm pon 114. Di national map miss 375 an give false alarm pon 240. Outta di 9,236 hectare weh di reference call non-forest, di share weh di map miss drop from 5.65% to 4.06%. Di national map give false alarm pon 126 more hectare but miss 147 fewer hectare.

Tek di global cost from di national cost an yuh get $126 - 147r$. Di difference reach zero when $r = 6/7$, about 0.857. When di two mistake cost di same, di national map come to 615 error unit an di global map come to 636. When a miss cost double, di total come to 990 an 1,158. When a miss cost half, di order switch.

Total error cost fi di two map when di cost of a miss change

error unit



Each false alarm cost one unit per hectare. Di number beside di map name show di cost wi assume fi each hectare weh di map miss. Lower total mean lower cost under dat assumption.

Wa di rizolt mean

A team weh spend nuff time a check false alarm can pick a different map from a team weh a look fi forest loss weh di first check miss. Di crossover give both team a question dem can answer from dem own work record. How much staff time or field expense each kind a mistake tek per hectare? Di calculation assume seh twice di area cost twice as much.

Limit a di study

Di table put 2001–2017 together. It cyaan show weh one clearing deh, when it happen or wah cause it. Hectare inna di same clearing share some condition. Fi work out one trip cost per site, wi woulda need di boundary an di distance. Di published total dem nuh have di sampling-unit record weh wi woulda need fi calculate a confidence interval fi di crossover from di sample design [3]. Di result apply to di old map version dem.

Run di analysis agen

Copy Table 3 inna [1]. Di row dem show di map label an di column dem show di reference label.

Check seh each matrix add up to 96,127 ha an each non-forest reference column add up to 9,236 ha.

Fi r equal to 0.5, 1 an 2, work out 522r + 114 an 375r + 240. Set dem equal fi find di crossover.

Data tiebl

Map	Forest weh di map get right (ha)	Non-forest weh di map miss (ha)	Forest weh di map call non-forest (ha)	Non-forest weh di map get right (ha)
Global Forest Change	86777	522	114	8714
Guyana-MRV	86651	375	240	8861

Suos dem

[1] Galiatsatos et al. (2020). An Assessment of Global Forest Change Datasets for National Forest Monitoring and Reporting. Table 3.

[2] Hansen et al. (2013). High-resolution global maps of 21st-century forest cover change.

[3] Olofsson et al. (2014). Good practices for estimating area and assessing accuracy of land change.

Weh di data come fram

Galiatsatos et al. (2020), Table 3. CAIA weights and cost calculations. CC BY 4.0