Corresponding author(s): Dirk Nikolaus Karger

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Reporting Summary

Nature Research wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Research policies, see our Editorial Policies and the Editorial Policy Checklist.

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a	Confirmed	
☐	☒	The exact sample size (n) for each experimental group/condition, given as a discrete number and unit of measurement
☐	☒	A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☐	☒	The statistical test(s) used AND whether they are one- or two-sided *Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
☐	☒	A description of all covariates tested
☐	☒	A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒	A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☐	☒	For null hypothesis testing, the test statistic (e.g. F, t, r) with confidence intervals, effect sizes, degrees of freedom and P value noted *Give P values as exact values whenever suitable.*
☐	☒	For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☐	☒	For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☐	☒	Estimates of effect sizes (e.g. Cohen's d, Pearson's r), indicating how they were calculated

Our web collection on statistics for biologists contains articles on many of the points above.

Software and code

Policy information about availability of computer code

Data collection	R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/ Version 3.4.4
Data analysis	R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/ Version 3.4.4 https://gitlabext.wsl.ch/karger/cloudforests

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Research guidelines for submitting code & software for further information.

Data

Policy information about availability of data

All manuscripts must include a data availability statement. This statement should provide the following information, where applicable:
- Accession codes, unique identifiers, or web links for publicly available datasets
- A list of figures that have associated raw data
- A description of any restrictions on data availability

Biodiversity data related to this study is available at Map of Live (www.mol.org).
Codes are available at: https://gitlabext.wsl.ch/karger/cloudforests

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☐ Life sciences　　　☐ Behavioural & social sciences　　　☒ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Ecological, evolutionary & environmental sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	We use satellite data to uncover an ongoing decline of tropical cloud forests and their biodiversity inside and outside formally protected areas.
Research sample	We used the Landsat-derived tree cover database in Google Earth engine. Hansen, M. C. et al. High-Resolution Global Maps of 21st-Century Forest Cover Change. Science 342, 850–853 (2013). We combined this with publicly available climate data from CHELSA. Karger, D. N. et al. Climatologies at high resolution for the earth's land surface areas. Scientific Data 4, 170122 (2017), published biodiversity data from Map of Life: Jetz, W., McPherson, J. M. & Guralnick, R. P. Integrating biodiversity distribution knowledge: toward a global map of life. Trends in Ecology & Evolution 27, 151–159 (2012), and known cloud forest occurences from: Aldrich, M., Billington, C., Edwards, M. & Laidlaw, R. A global directory of tropical montane cloud forests. World Conservation Monitoring Centre, , Cambridge, UK. (1997).
Sampling strategy	Not applicable.
Data collection	Not applicable, the data is based on published datasets.
Timing and spatial scale	Satellite data of forest cover changes is available from 2001-2018, which determined the time frame.
Data exclusions	no data was excluded
Reproducibility	Biodiversity data related to this study is available at Map of Live (www.mol.org). Codes are available at: https://gitlabext.wsl.ch/karger/cloudforests and are fully reproducible.
Randomization	Randomizations were used in the counterfactual analysis of protected area effectiveness. They were fully randomized within a five groups of inaccessibility to allow for comparions within inaccessibility groups.
Blinding	Non of the statistical tests needed any blinding.

Did the study involve field work?　　☐ Yes　　☒ No

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☒	☐ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology and archaeology
☒	☐ Animals and other organisms
☒	☐ Human research participants
☒	☐ Clinical data
☒	☐ Dual use research of concern

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging