

LCLUC Virtual Science Team Meeting, Oct 19-21, 2020

Comparing the effectiveness of conservation instruments in the Colombian Andes biodiversity hotspot



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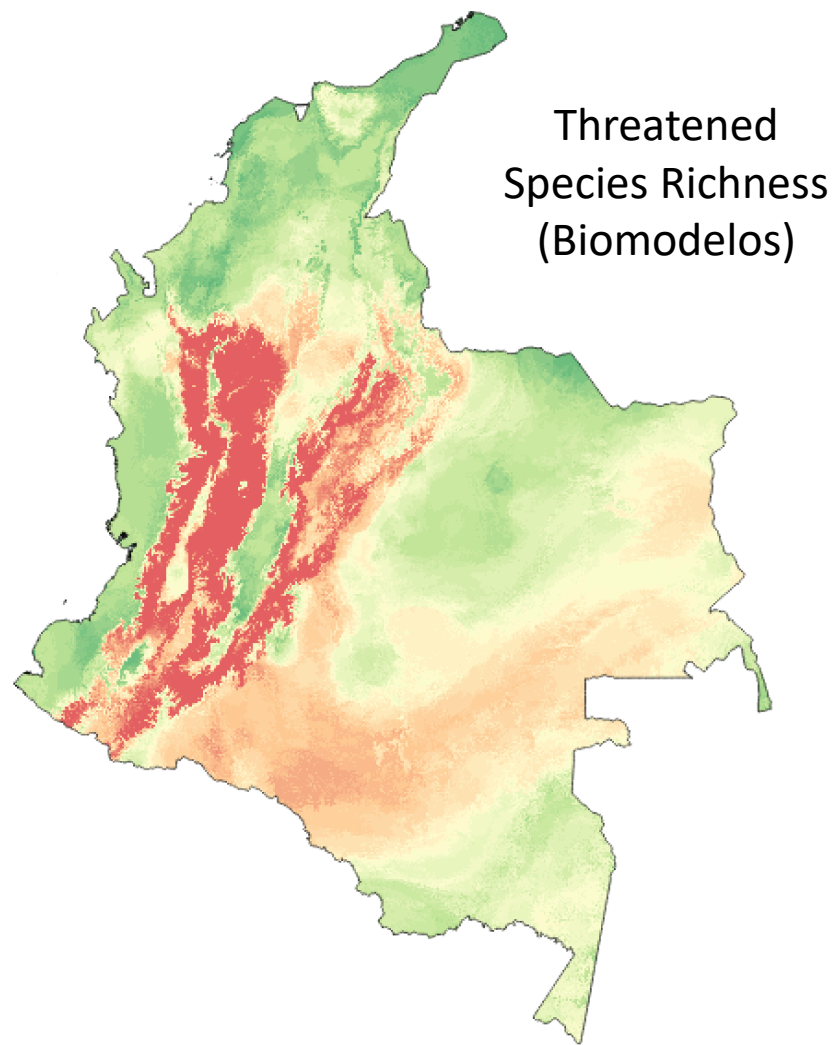
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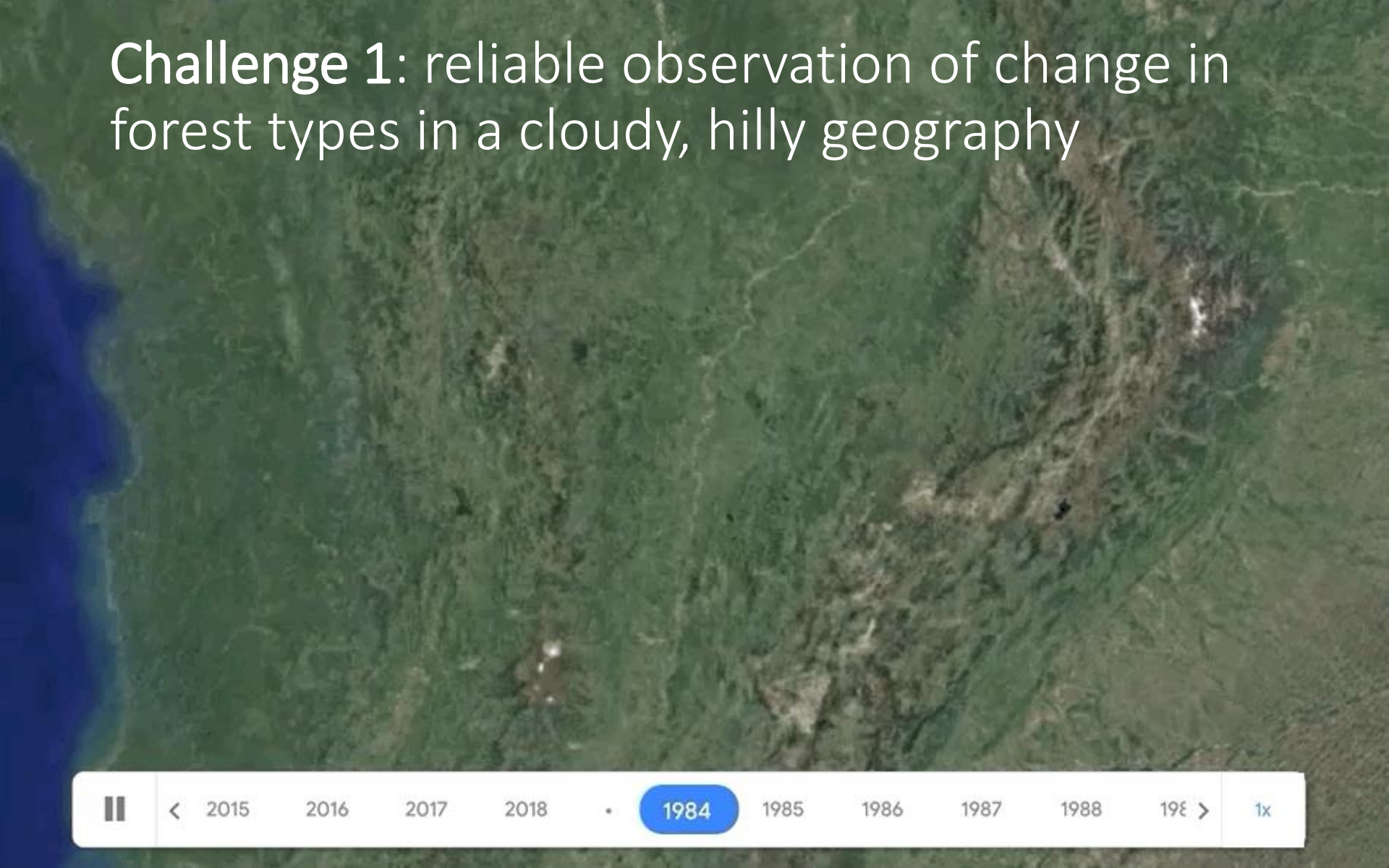
² U.S. Forest Service

Colombian Andes

- Hotspot for threatened species
- Hotspot of public investments in conservation of private lands
 - 1993 law: sub-national governments have to spend 1% of their budget on land acquisitions for conservation (LAC). Extent & impacts: unknown.
- Recently: promotion of payments for environmental services as a substitute for land acquisitions
- Question: which intervention type is more effective in conserving forest habitat for threatened species?

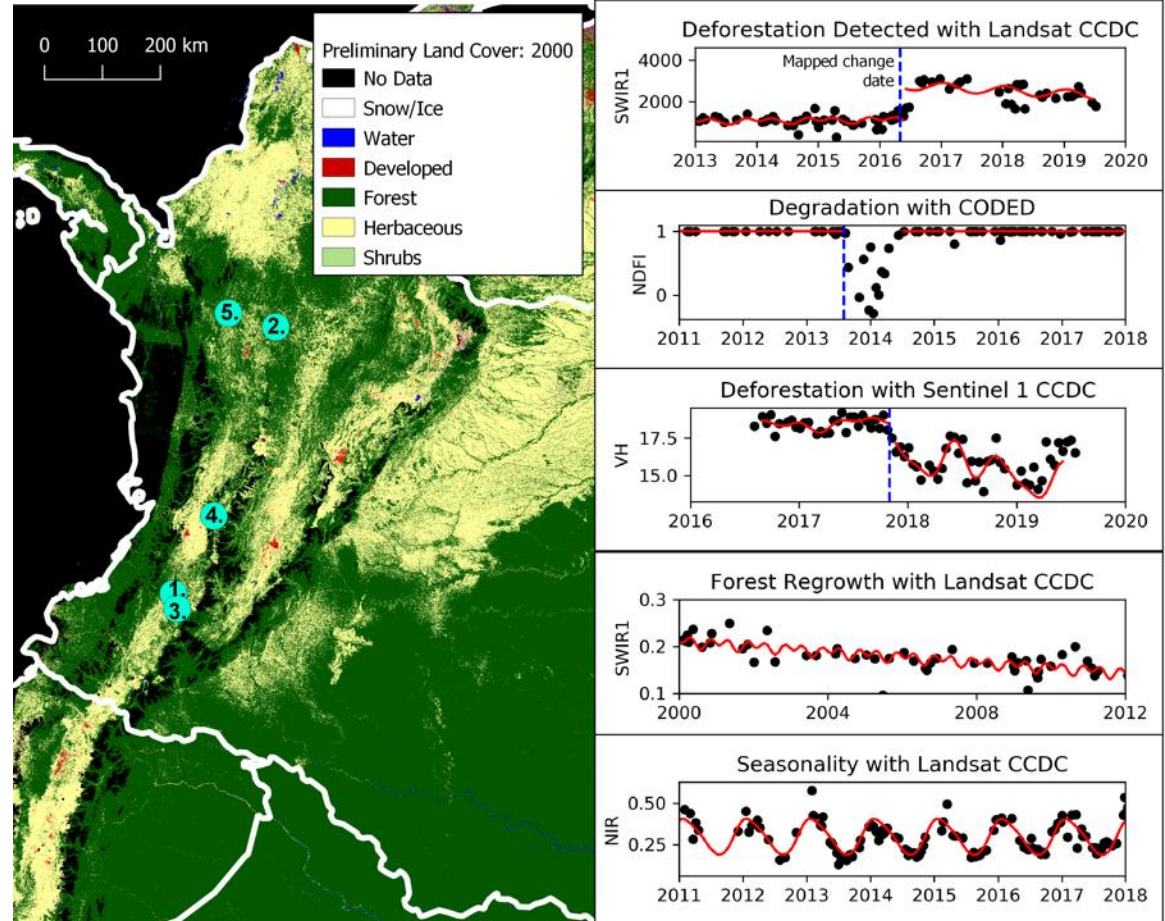


Challenge 1: reliable observation of change in forest types in a cloudy, hilly geography



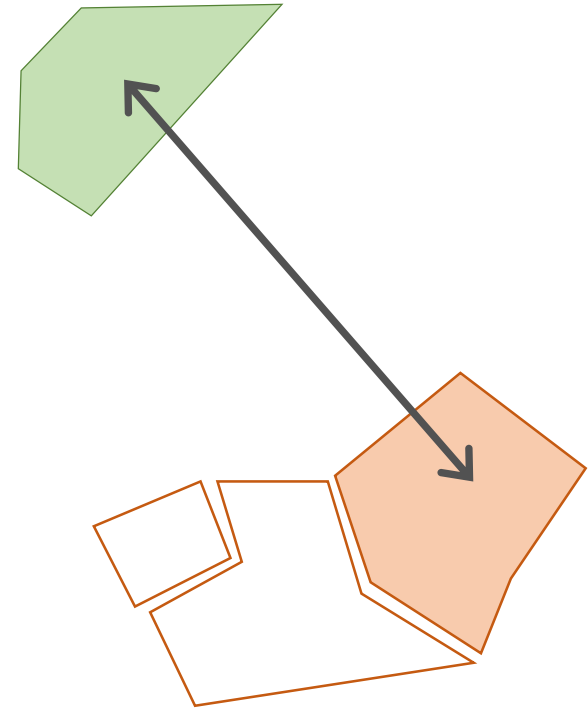
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- Objective: wall-to-wall maps of forest type and disturbance history (~1990 - 2020)
- Forests to be mapped according to disturbance history and forest type
 - Natural vs. planted
 - "Primary" vs. secondary/disturbed
 - Dry seasonal vs. evergreen
- Time series approaches to change detection
 - CCDC, CODED, LandTrendr
 - Extend Landsat-based methodologies to Sentinel 1 & 2

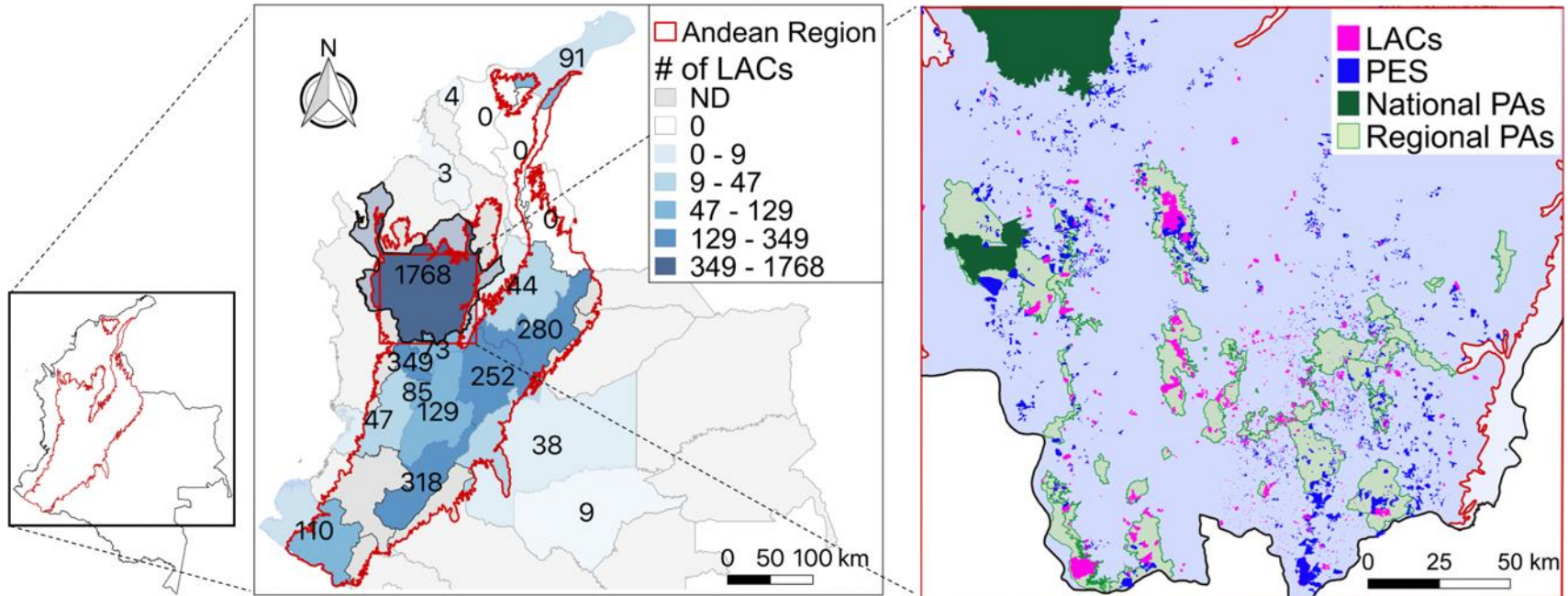


Challenge 2: inference of causal impact of interventions from observational data

- Quasi-experimental matching
 - Identify parcels that have been subject to land acquisitions or payments for environmental services
 - Find spatial units that have **not** been subject to either intervention, but that were “as similar as possible” to the treatment group before the intervention occurred (artificial control group)
 - Possible thanks to the public release of Colombia’s cadaster
 - Estimate intervention impacts from the difference in forest type change in both groups



Building the first database of Colombia's publicly-financed land acquisitions & payments for environmental services (n≈8000)



Metapopulation modeling to infer contributions of avoided change in forest types for the conservation of threatened species

Thank you!



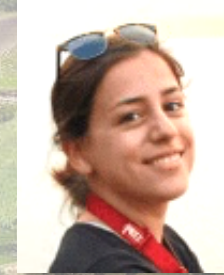
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