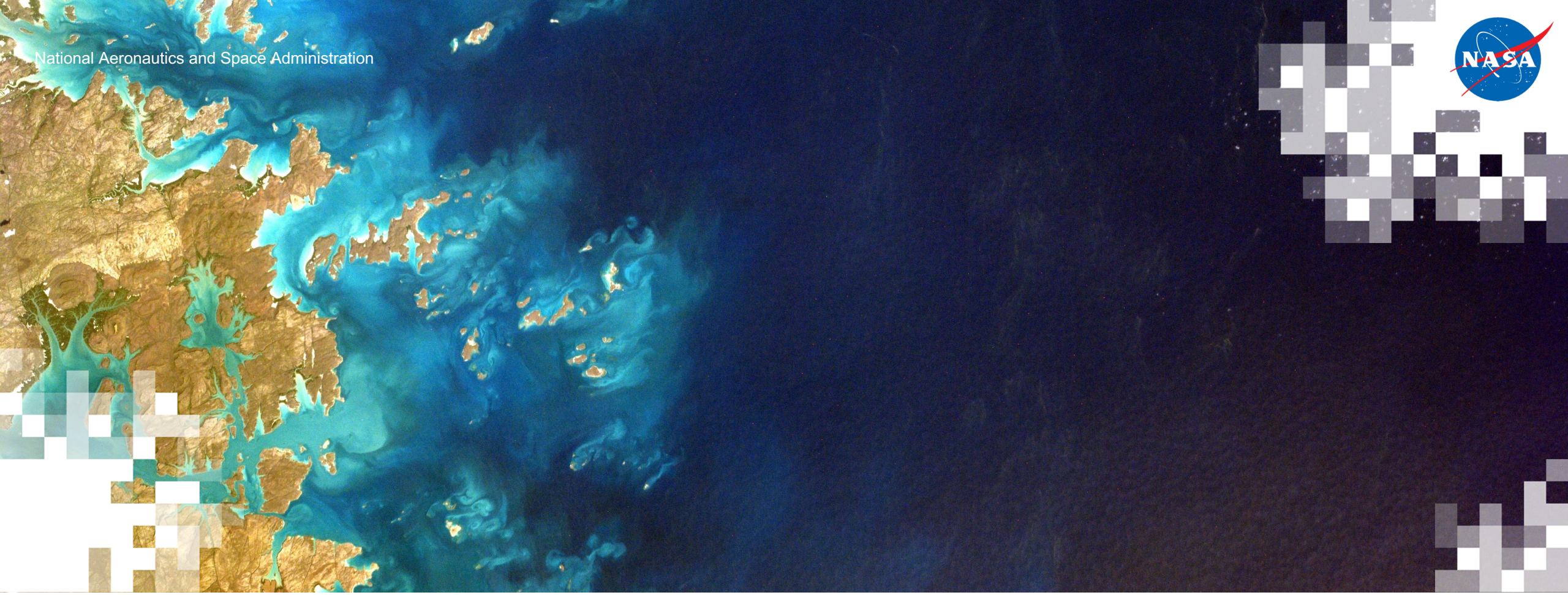


Using UN Biodiversity Lab to Support National Conservation and Sustainable Development Priorities

Amber McCullum, Juan Torres-Pérez, Annie Virnig, Marion Marigo, Diego Ochoa, Christina Supples, Scott Atkinson, Rafael Monge, Susana Rodríguez-Buriticá, Dorine Jn Paul, Sendy Augustin Salomon, Guyguy Mangoni

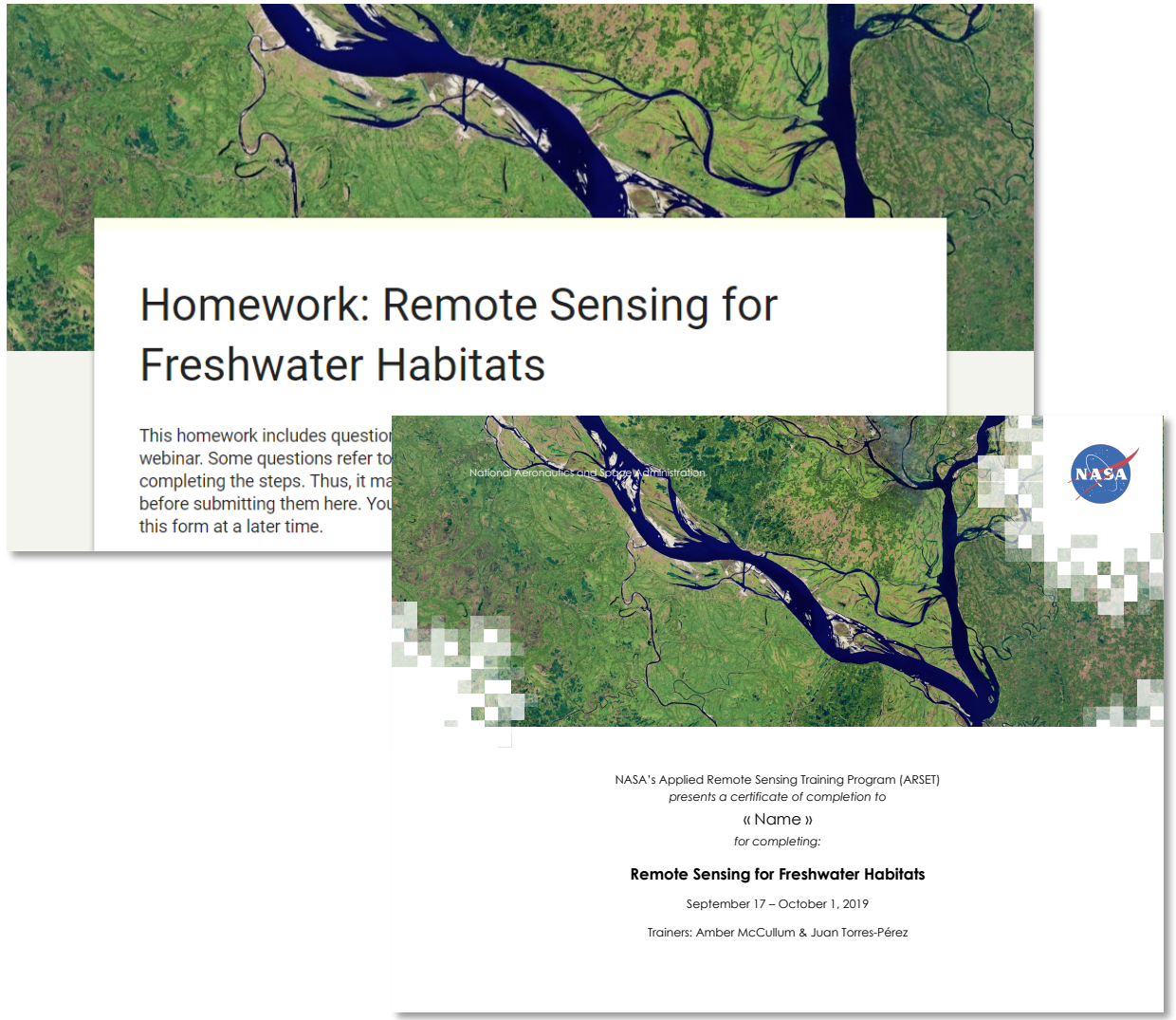
March 24 – April 7, 2020

Course Structure

- Three, 1.5-hour sessions on **March 24, 31,** and **April 7**
- There will be 3 sessions per day presenting the same material in
  - English (9:00-10:30 EST)
  - French (11:00-12:30 EST)
  - Spanish (14:00-15:30 EST)
  - **Please only sign up for and attend one session per day.**
- Webinar recordings, PowerPoint presentations, and the homework assignment can be found after each session at:
  - https://arset.gsfc.nasa.gov/land/webinars/un-biodiversity-2020
- Q&A: Following each lecture and/or by email
  - amberjean.mccullum@nasa.gov
  - juan.l.torresperez@nasa.gov

Homework and Certificates

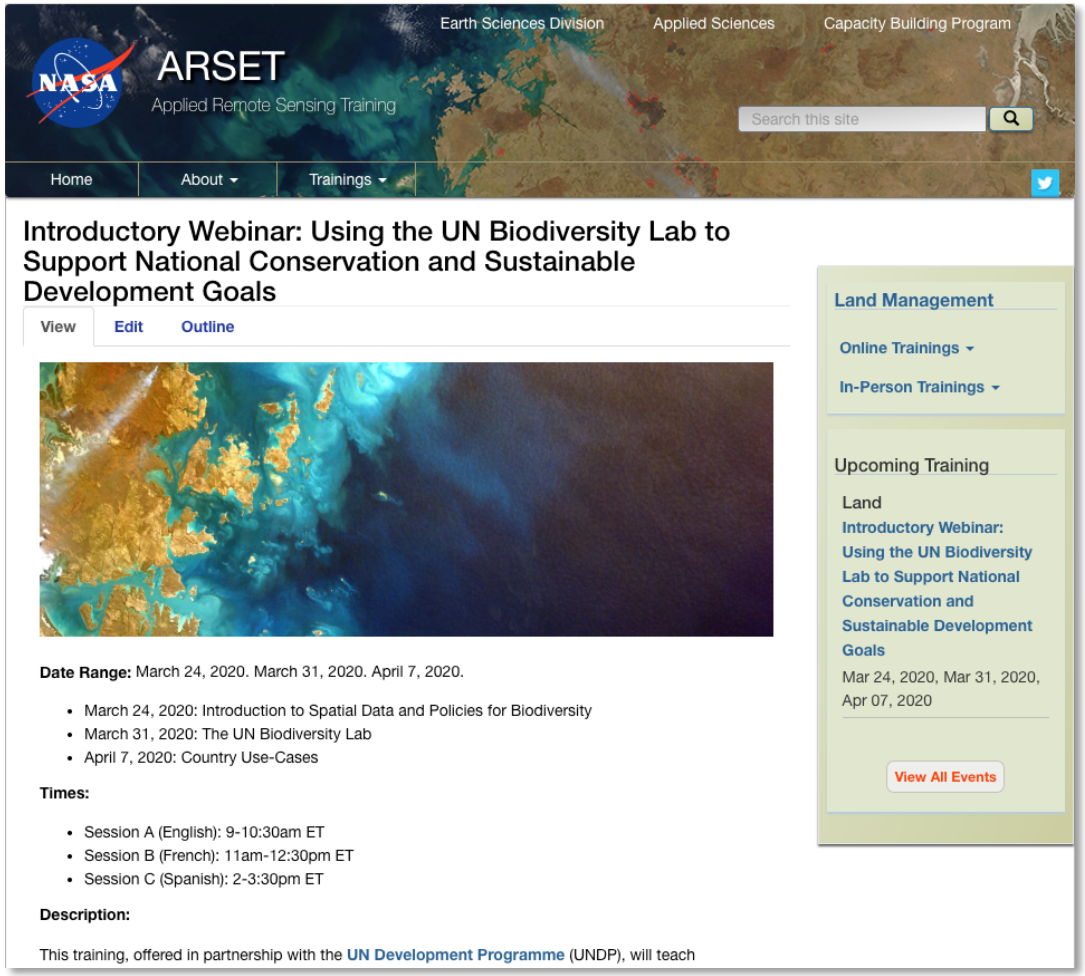
- **Homework:**
  - One homework assignment
  - Answers must be submitted via Google Forms
- **Certificate of Completion:**
  - Attend all three live webinars
  - Complete the homework assignment by **Tuesday, April 21** (access from ARSET website)
  - You will receive certificates approximately two months after completion of the course from: marines.martins@ssaihq.com



Prerequisites and Course Materials

- **Prerequisites:**
  - Please complete Sessions 1 & 2A of Fundamentals of Remote Sensing or have equivalent experience.

- **Course Materials:**
  - https://arset.gsfc.nasa.gov/land/webinars/un-biodiversity-2020



Course Outline

Session 1: Intro to Remote Sensing and Policies for Biodiversity

- NASA satellites and sensors
- Global policy context
- Introduction to UNDP's work on spatial data
- NASA-supported biodiversity projects

Session 2: UN Biodiversity Lab: Introduction and Training

- Overview of UN Biodiversity Lab
- Data products and tools
- Demonstration of data access and analysis

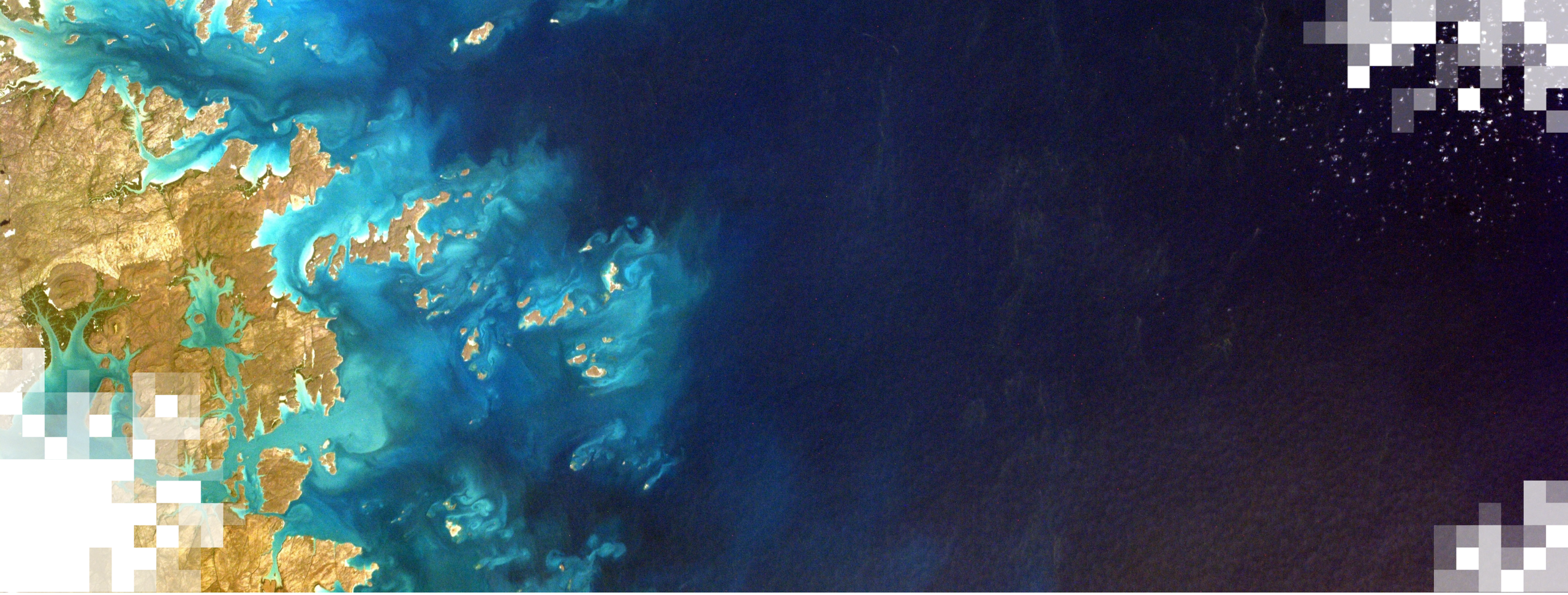
Session 3: How are Countries Using Spatial Data to Support Conservation of Nature?

- Overview of countries involved in UN Biodiversity Lab
- Country-specific examples for English, French, and Spanish

Session 2 Agenda

- Introduction to UN Biodiversity Lab
- Getting Started with UN Biodiversity Lab
  - Register
  - Search
  - Visualize
- Overview of Analyses
- Exercise: Create a Map
- Question and Answer Session

Republic of Congo. Credit: NASA/JPL-Caltech/Sassan Saatchi



Guest Speakers:
Annie Virnig and Scott Atkinson

TRAINING | UN BIODIVERSITY LAB

NASA ARSET Webinar Series
31 March 2020

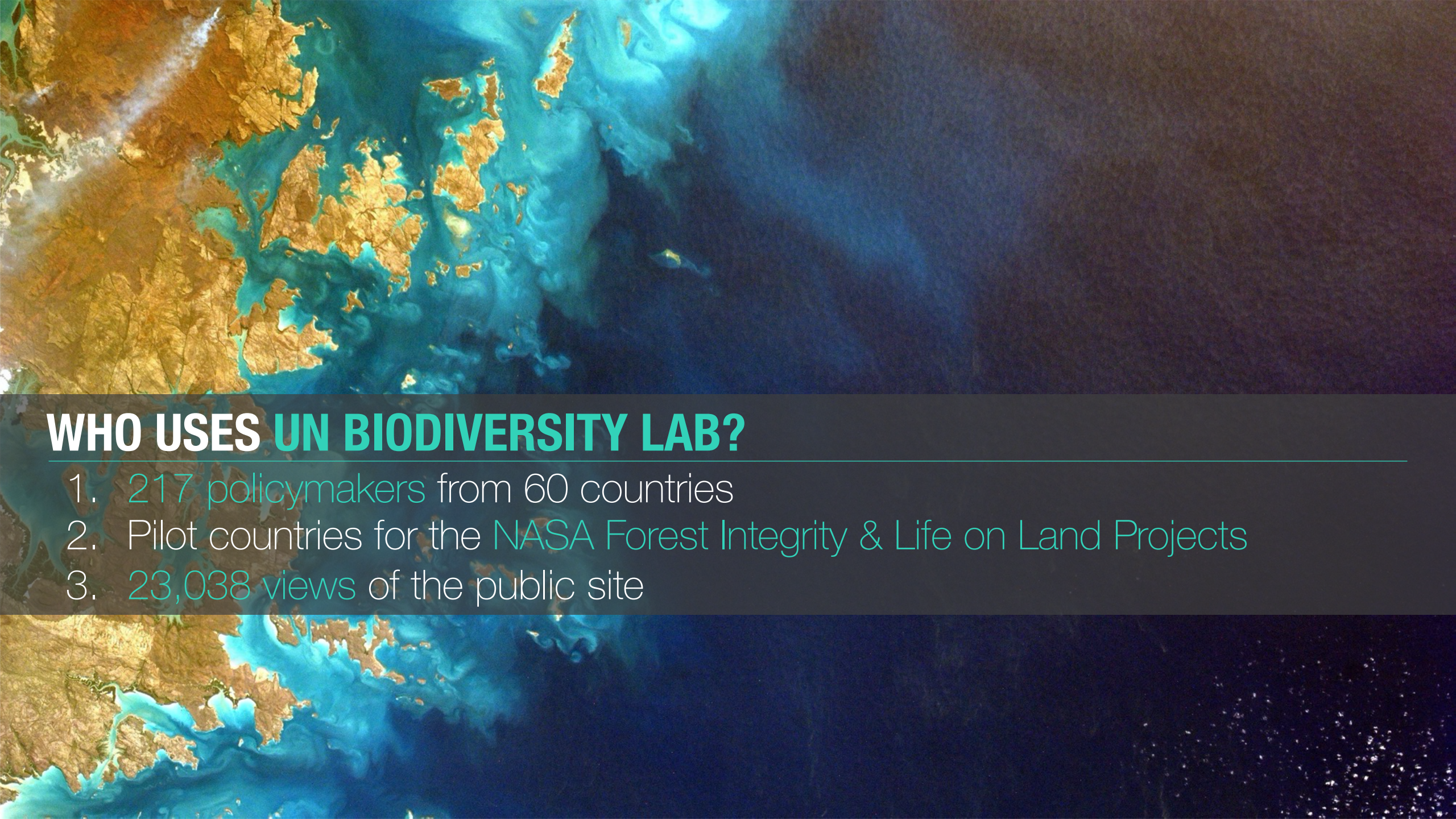
TRAINING OUTLINE

1. Introduction to UN Biodiversity Lab
2. Getting Started on UN Biodiversity Lab
   a. Register for the public platform
   b. Search global data layers
   c. Visualize data
3. Run Basic Analyses and Download Maps
4. Conclusions

1. UN BIODIVERSITY LAB I INTRODUCTION

WHAT IS UN BIODIVERSITY LAB?

- Created to support policymakers in their biodiversity commitments
- Provides 137 governments with access to FREE high-quality global spatial data layers & analytic tools
- Does NOT require GIS expertise

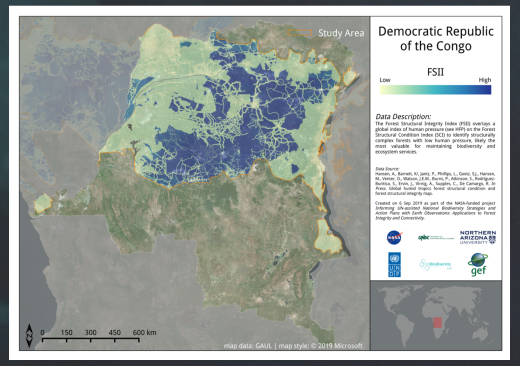


WHO USES UN BIODIVERSITY LAB?

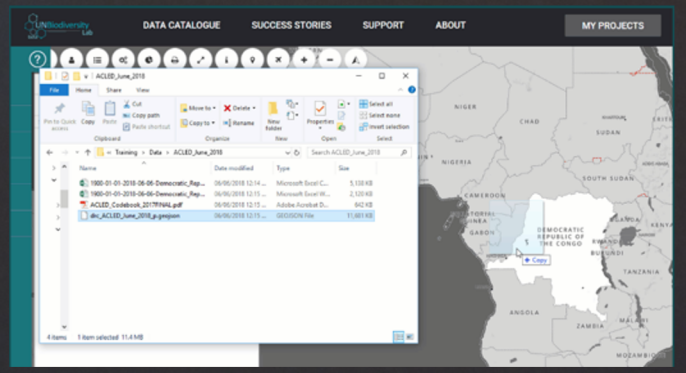
1. 217 policymakers from 60 countries
2. Pilot countries for the NASA Forest Integrity & Life on Land Projects
3. 23,038 views of the public site

UN BIODIVERSITY LAB | FIVE KEY FEATURES

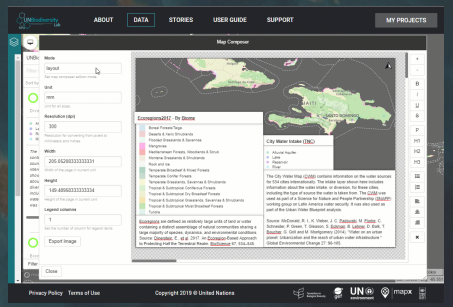
1. Access >100 global data layers



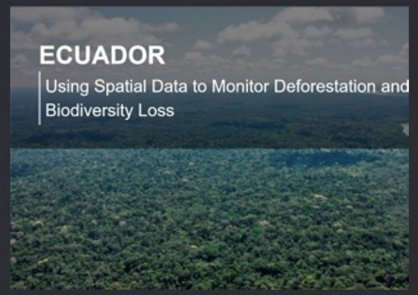
2. Visualize NASA project data



3. Conduct analyses



4. Create maps

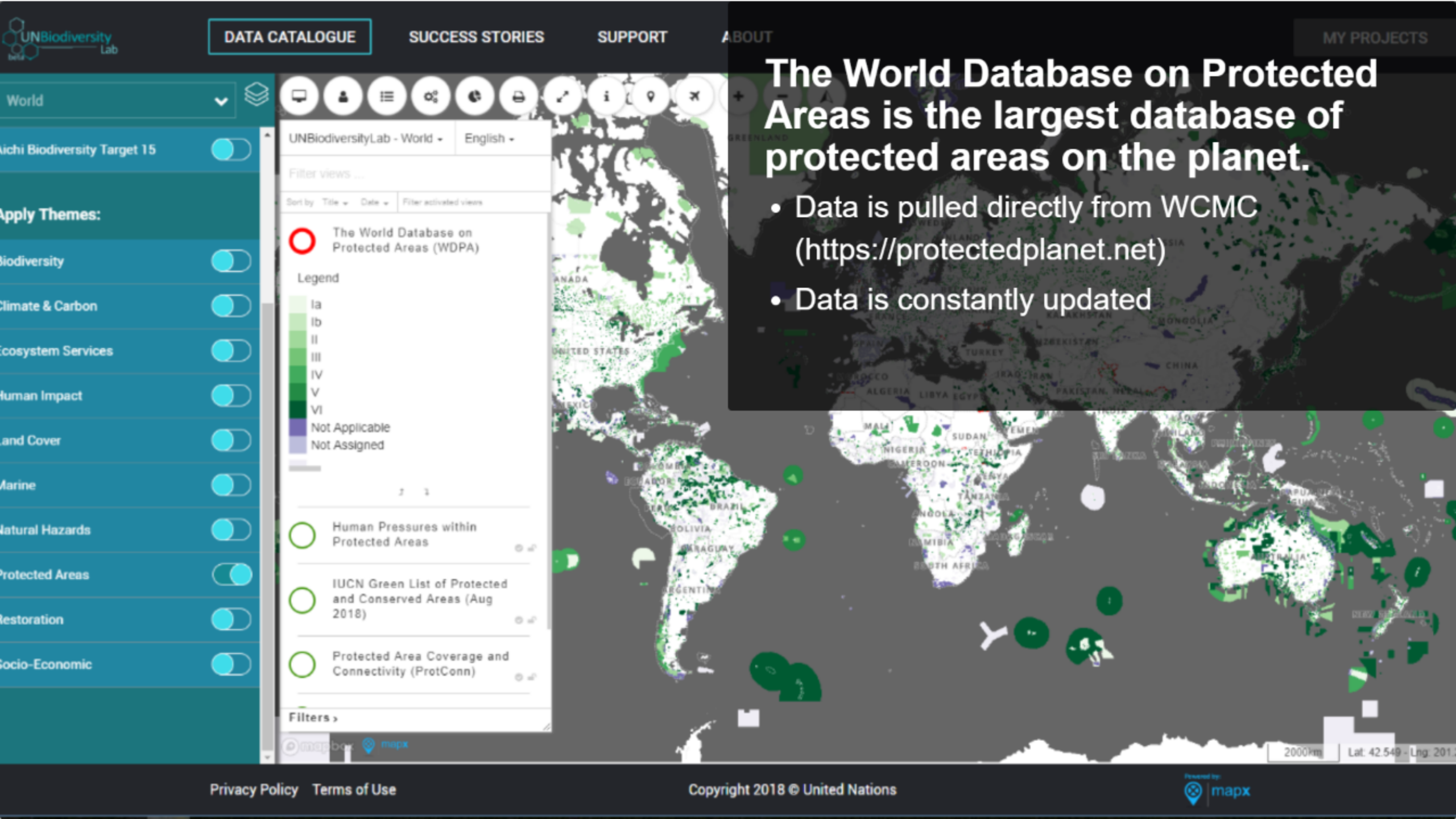


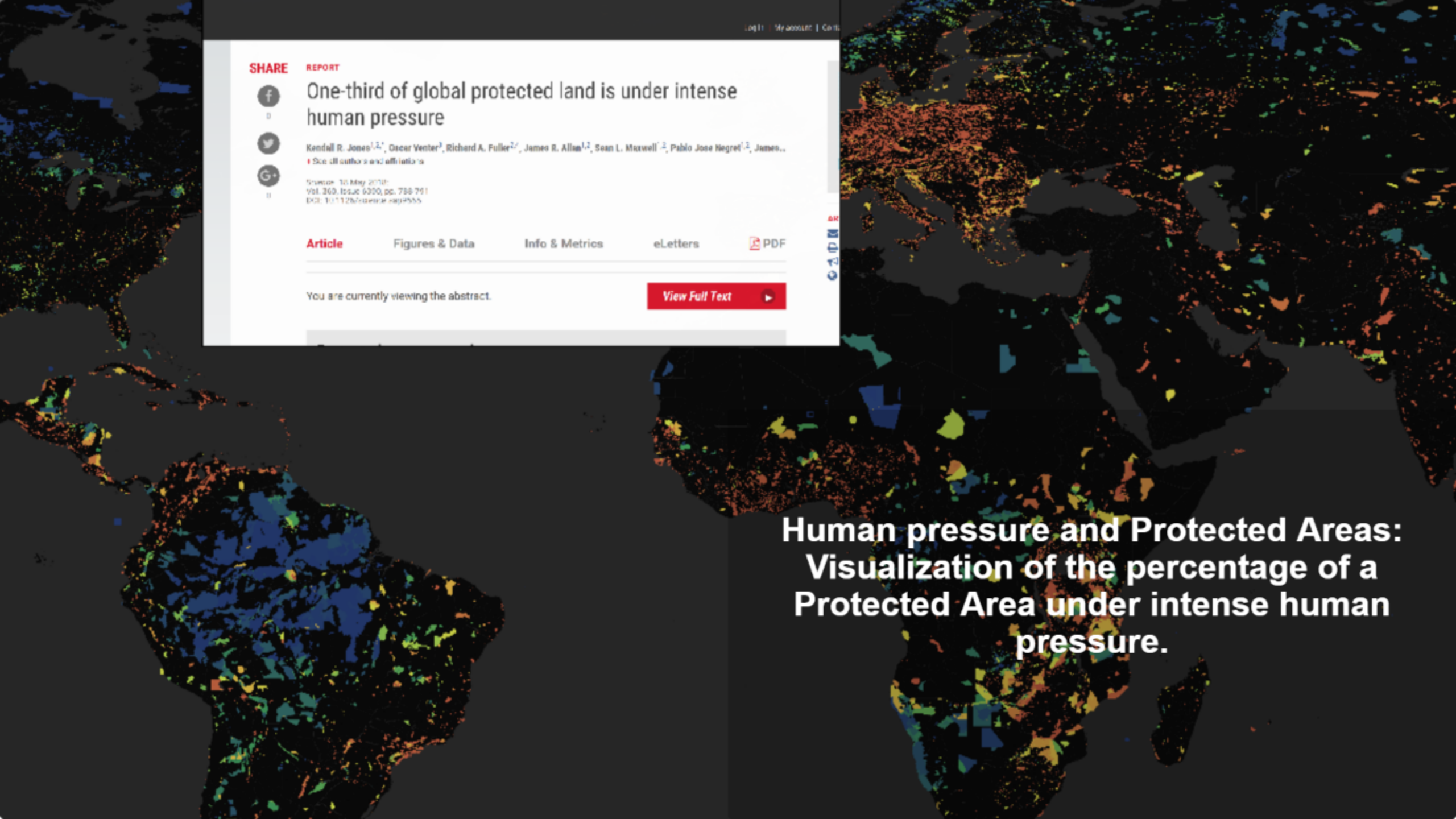
5. View story maps of conservation success


ACCESS >100 GLOBAL DATA LAYERS

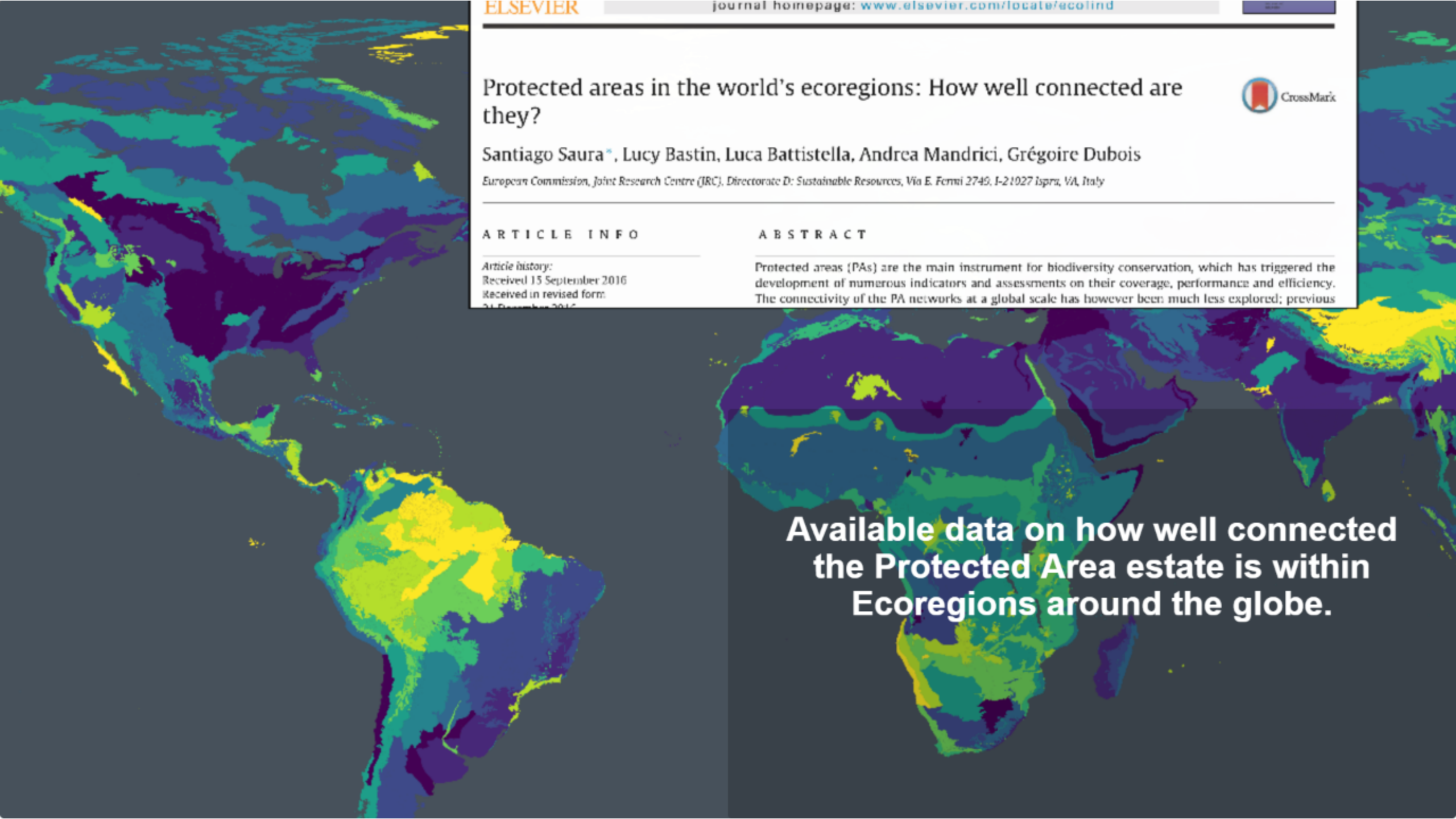
Snapshot of Protected Area Estate Data

Photo Credit: Equator Prize Winner Guassa-Menz Community Conservation


UNBiodiversity Lab
DATA CATALOGUE
SUCCESS STORIES
SUPPORT
ABOUT
MY PROJECTS
World
Aichi Biodiversity Target 15
Apply Themes:
Biodiversity
Climate & Carbon
Ecosystem Services
Human Impact
Land Cover
Marine
Natural Hazards
Protected Areas
Restoration
Socio-Economic
UNBiodiversityLab - World
English
Filter views ...
The World Database on Protected Areas (WDPA)
Legend
Ia
Ib
II
III
IV
V
VI
Not Applicable
Not Assigned
Human Pressures within Protected Areas
IUCN Green List of Protected and Conserved Areas (Aug 2018)
Protected Area Coverage and Connectivity (ProtConn)
Filters ›
The World Database on Protected Areas is the largest database of protected areas on the planet.
• Data is pulled directly from WCMC (https://protectedplanet.net)
• Data is constantly updated
Privacy Policy
Terms of Use
Copyright 2018 © United Nations
mapx



Human pressure and Protected Areas: Visualization of the percentage of a Protected Area under intense human pressure.



ELSEVIER journal homepage: www.elsevier.com/locate/ecolind

Protected areas in the world's ecoregions: How well connected are they?

Santiago Saura*, Lucy Bastin, Luca Battistella, Andrea Mandrici, Grégoire Dubois

European Commission, Joint Research Centre (JRC), Directorate D: Sustainable Resources, Via E. Fermi 2749, I-21027 Ispra, VA, Italy

ARTICLE INFO

Article history:
Received 15 September 2016
Received in revised form:

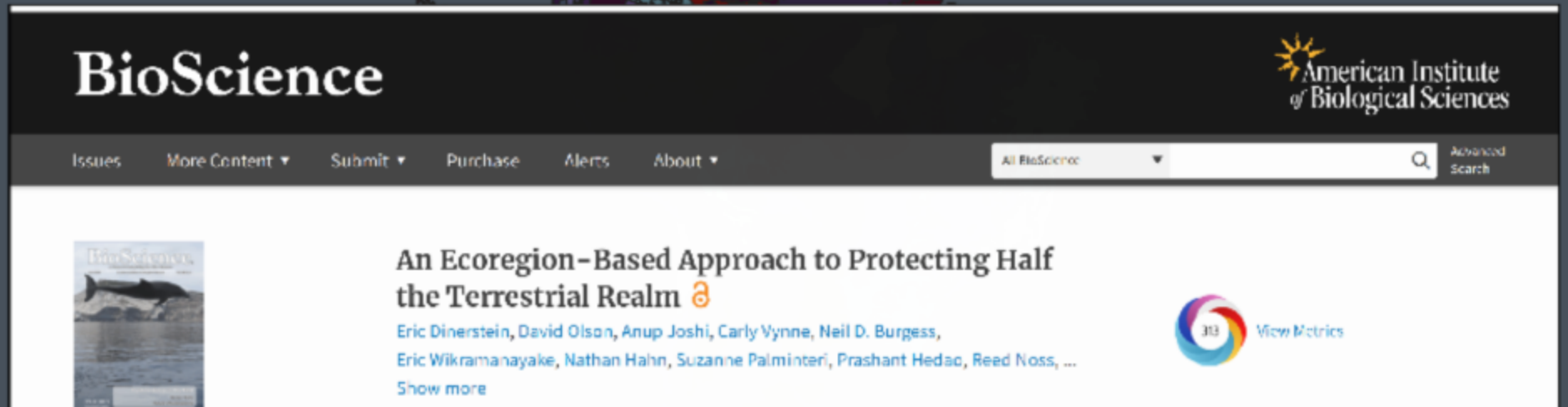
ABSTRACT

Protected areas (PAs) are the main instrument for biodiversity conservation, which has triggered the development of numerous indicators and assessments on their coverage, performance and efficiency. The connectivity of the PA networks at a global scale has however been much less explored; previous

Available data on how well connected the Protected Area estate is within Ecoregions around the globe.


Snapshot of Biodiversity Data

Terrestrial Ecosystems of the World

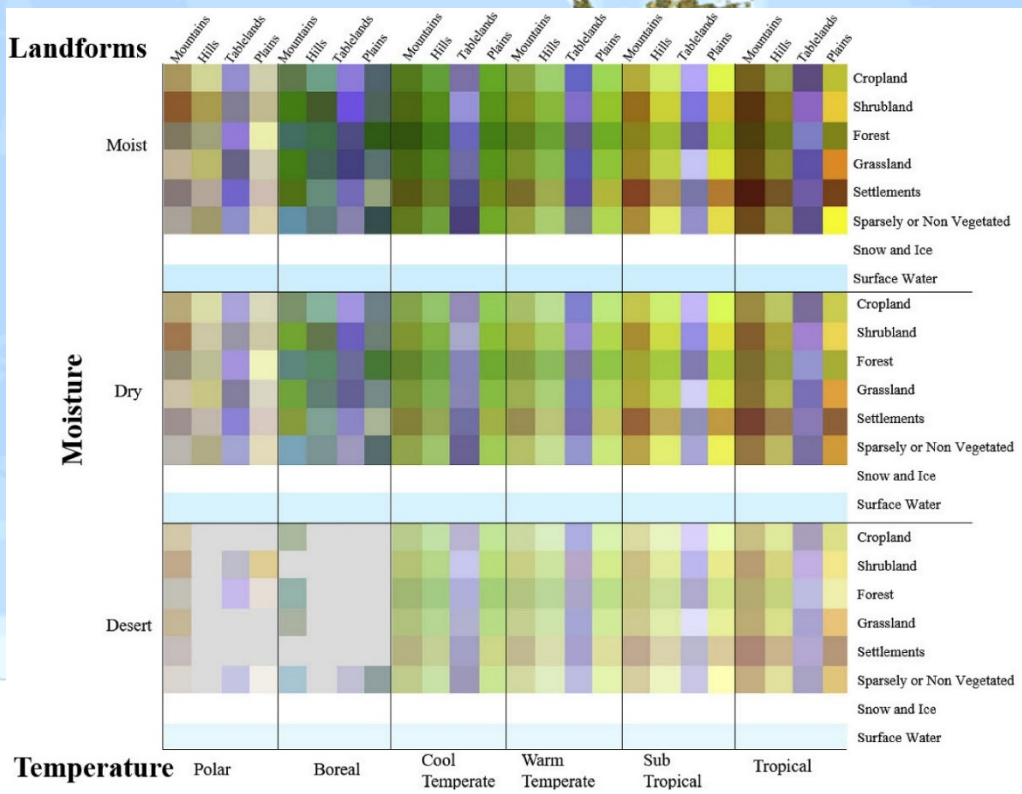


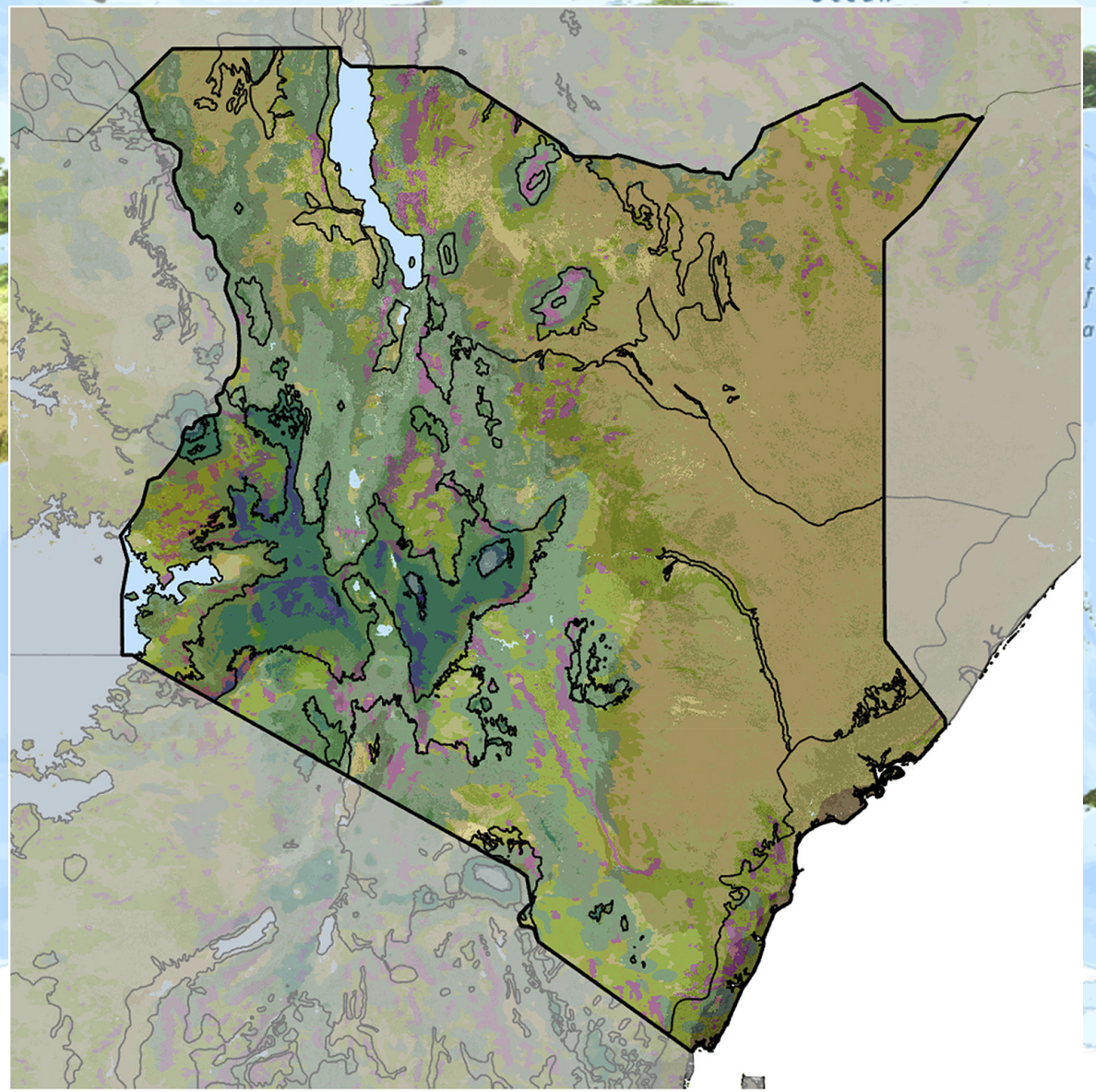
Global Ecology and Conservation
Volume 21, March 2020, e00860

Original Research Article

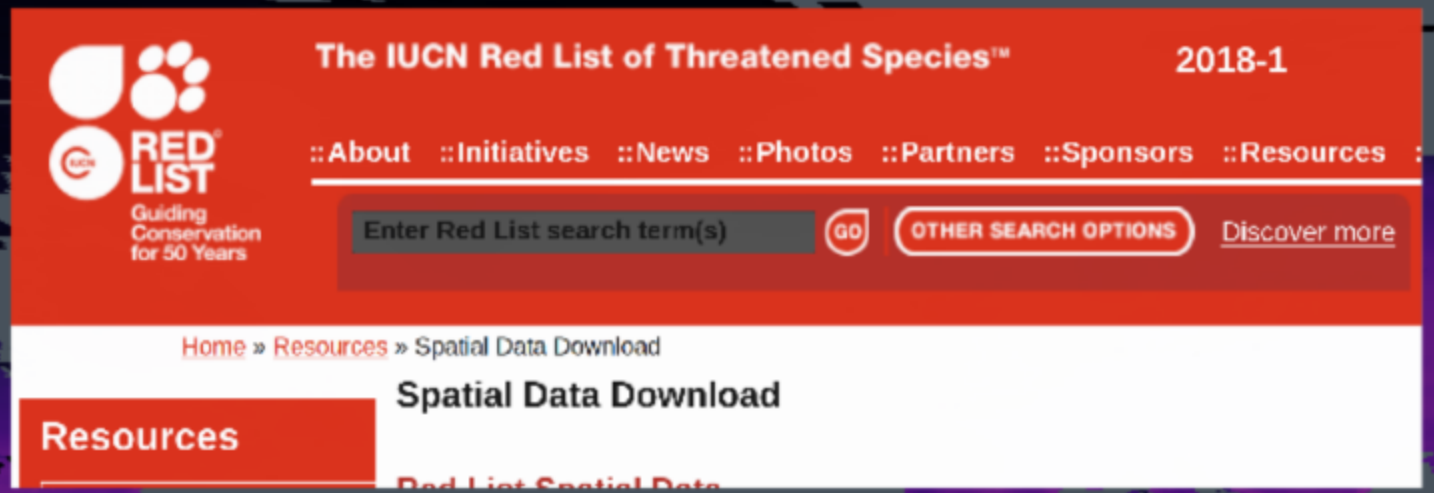
An assessment of the representation of ecosystems in global protected areas using new maps of World Climate Regions and World Ecosystems

Roger Sayre [a], Deniz Karagulle [b], Charlie Frye [b], Timothy Boucher [c], Nicholas H. Wolff [d], Sean Breyer [b], Dawn Wright [b], Madeline Martin [a], Kevin Butler [b], Keith Van Graafeiland [e], Jerry Touval [c], Leonardo Sotomayor [f], Jennifer McGowan [c], Edward T. Game [g], Hugh Possingham [g]



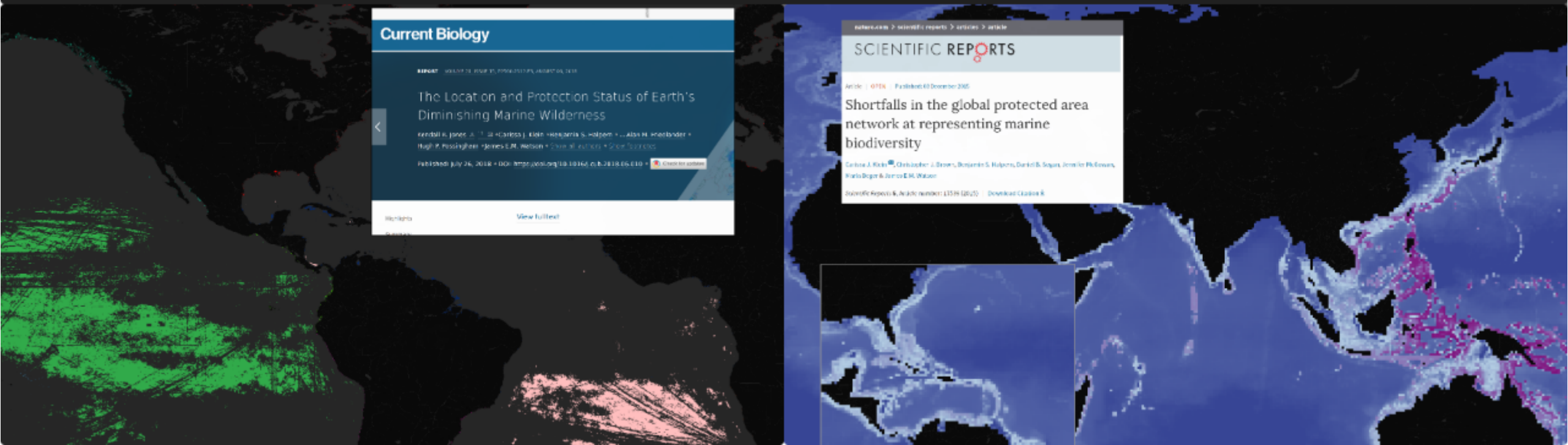


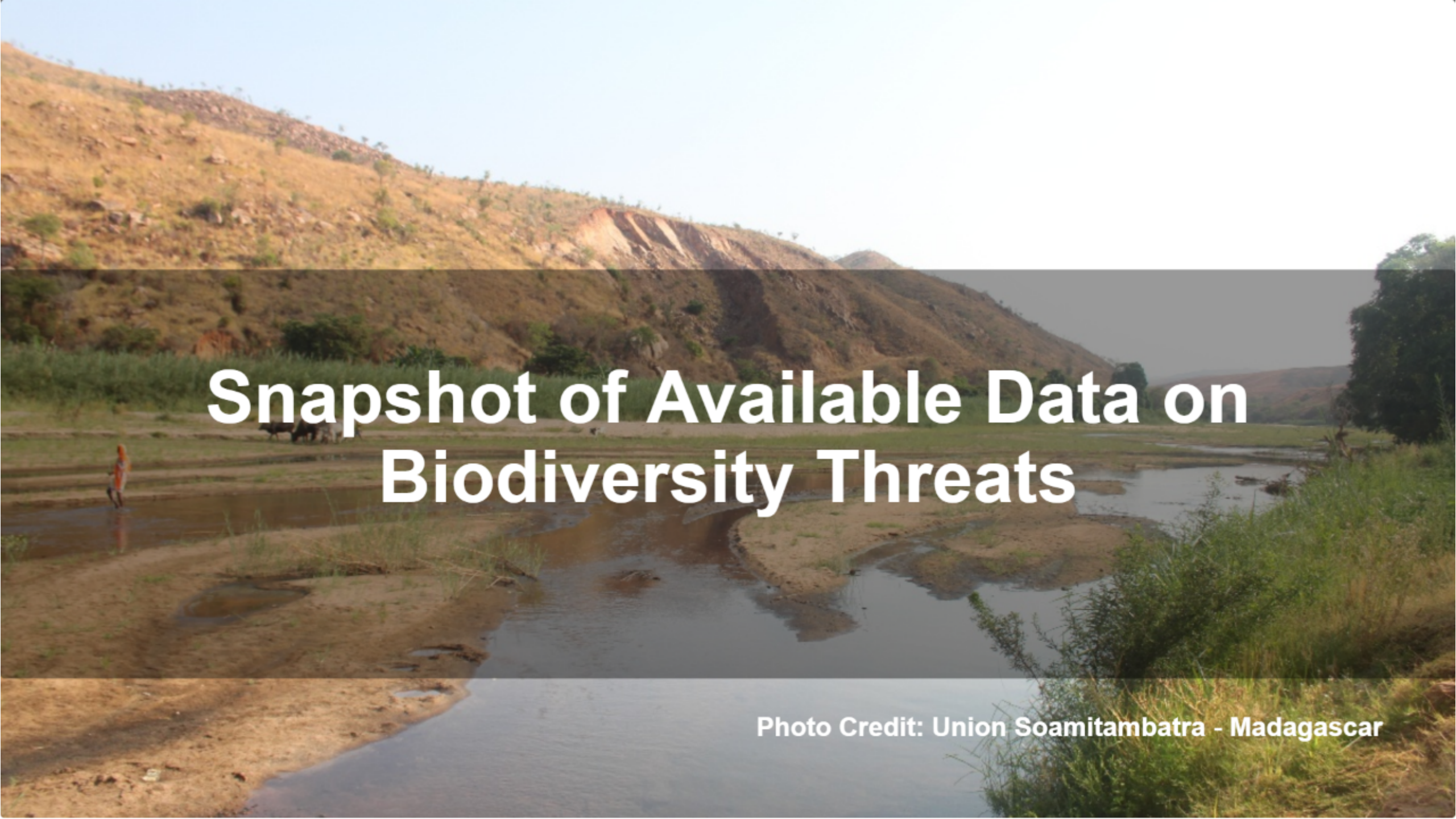
IUCN Red List species



Marine Wilderness Areas

- Data on "species richness, range rarity and proportional range rarity"

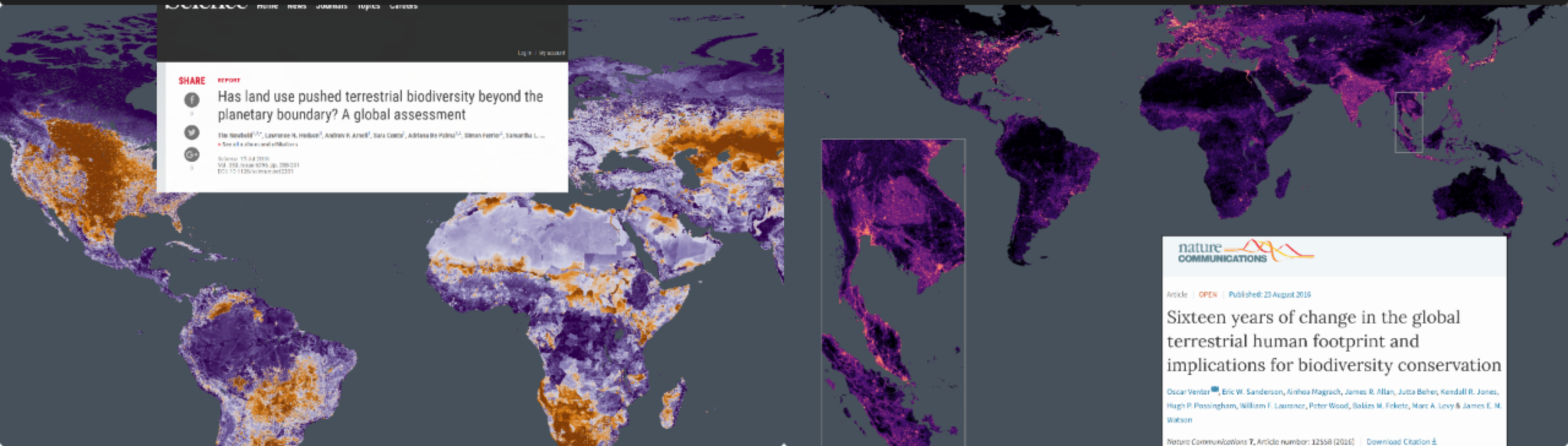


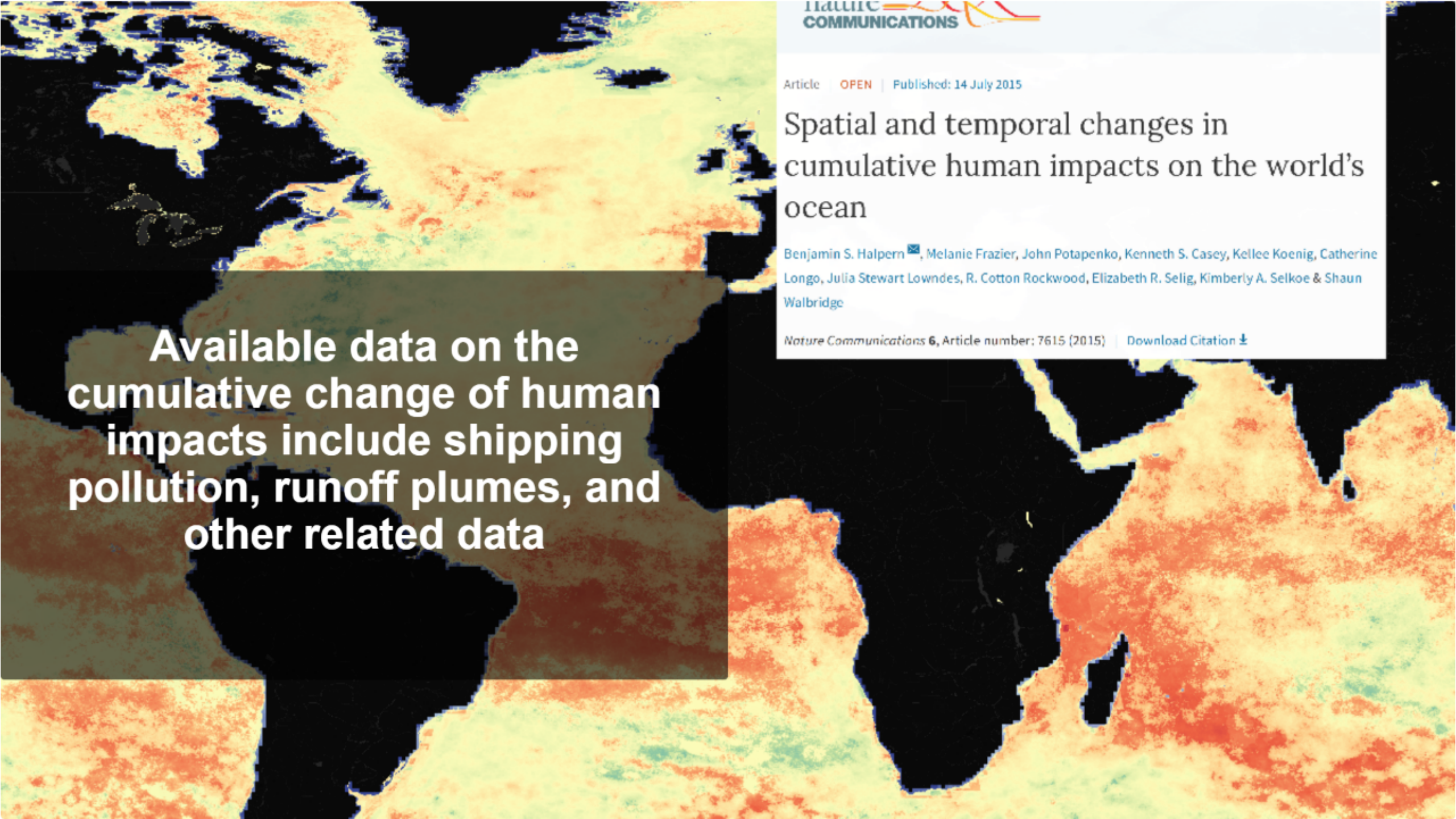


Snapshot of Available Data on Biodiversity Threats

Photo Credit: Union Soamitambatra - Madagascar

Data on Biodiversity Intactness Index and Human Impact





Available data on the cumulative change of human impacts include shipping pollution, runoff plumes, and other related data

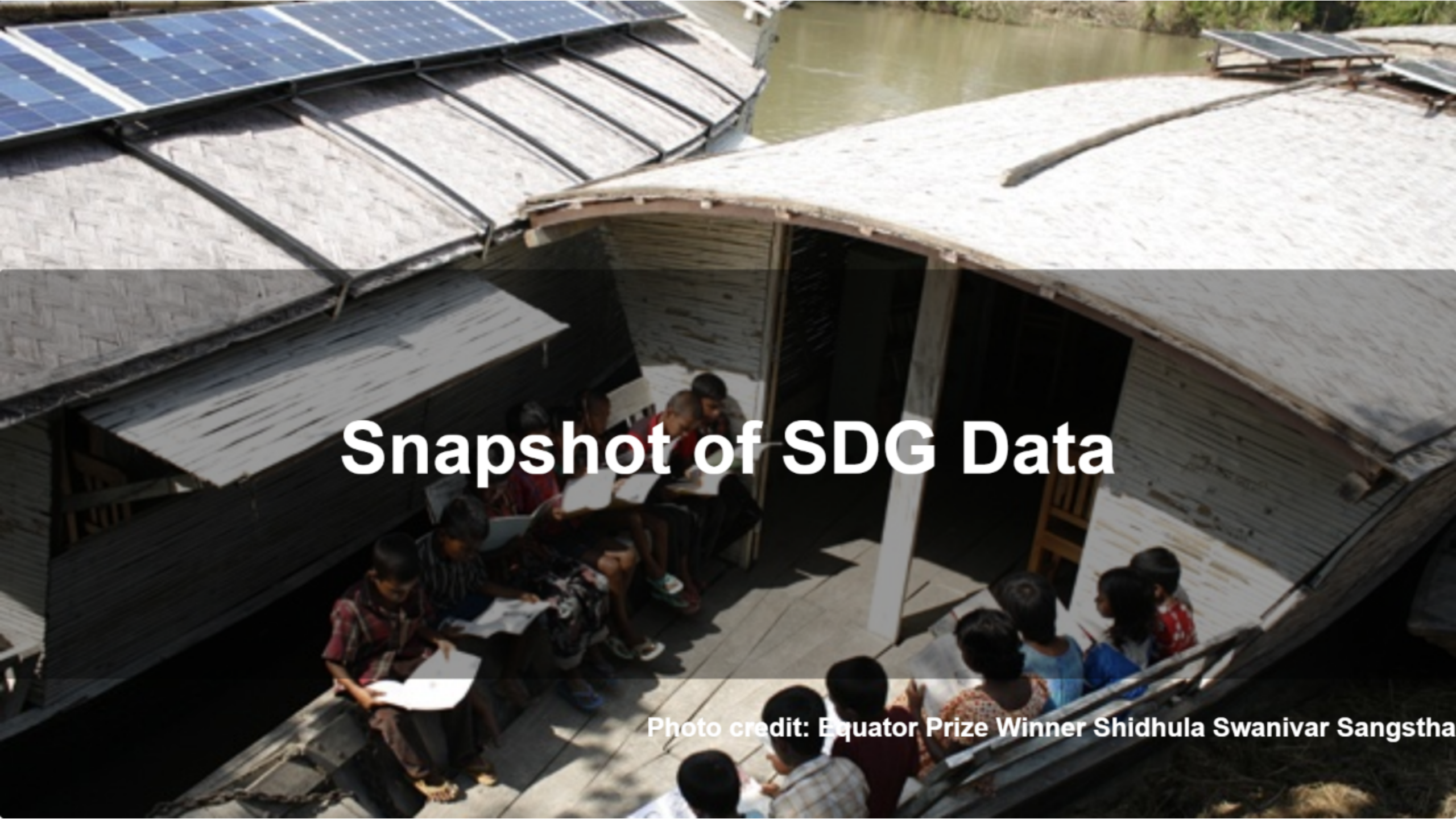
nature COMMUNICATIONS

Article OPEN | Published: 14 July 2015

Spatial and temporal changes in cumulative human impacts on the world's ocean

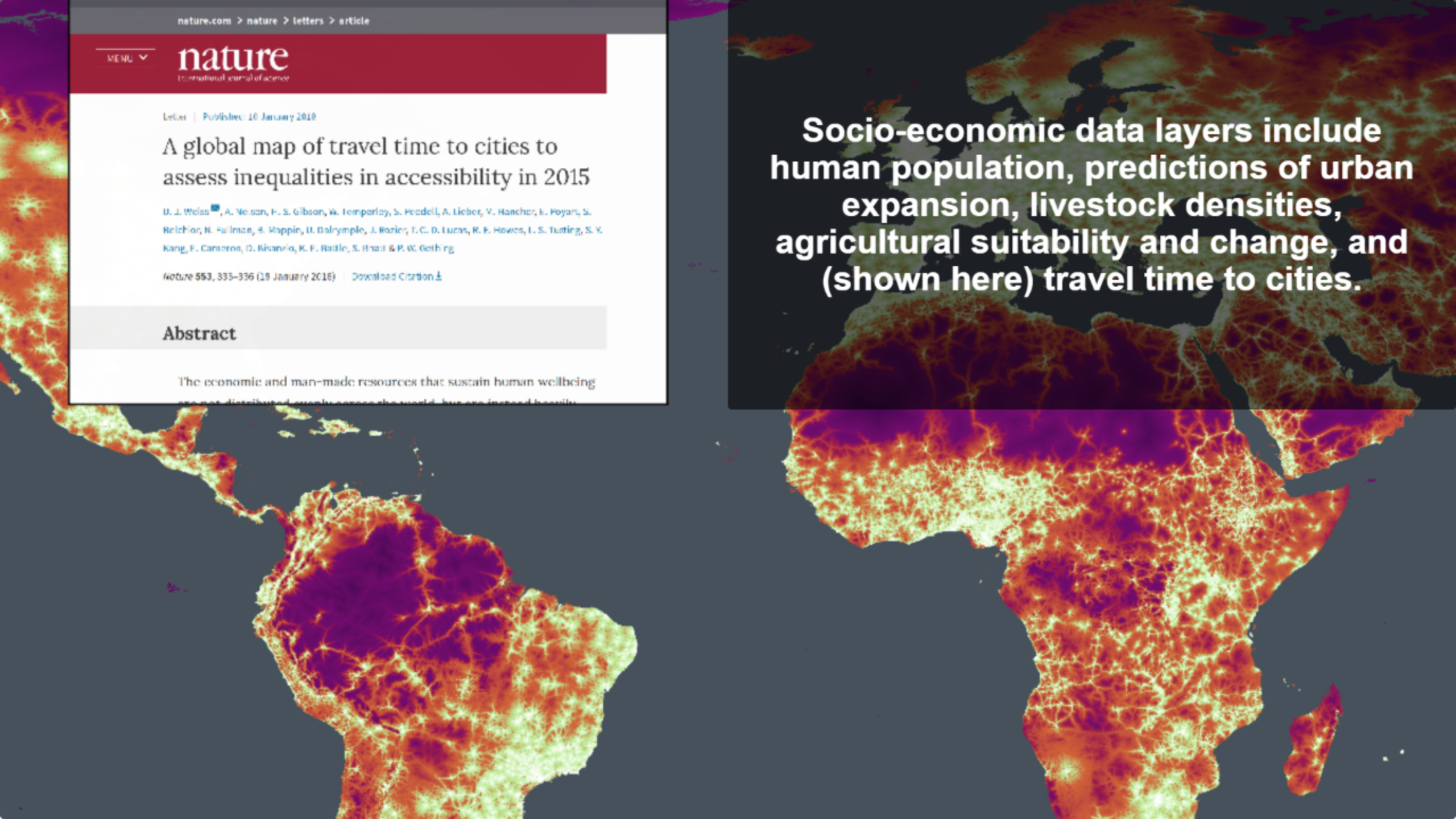
Benjamin S. Halpern ✉, Melanie Frazier, John Potapenko, Kenneth S. Casey, Kellee Koenig, Catherine Longo, Julia Stewart Lowndes, R. Cotton Rockwood, Elizabeth R. Selig, Kimberly A. Selkoe & Shaun Walbridge

Nature Communications **6**, Article number: 7615 (2015) | Download Citation ⬇



Snapshot of SDG Data

Photo credit: Equator Prize Winner Shidhula Swanivar Sangstha


nature.com > nature > letters > article
MENU
nature
Letter | Published: 10 January 2018
A global map of travel time to cities to assess inequalities in accessibility in 2015
Nature 553, 333–336 (18 January 2018) | Download Citation
Abstract
The economic and man-made resources that sustain human wellbeing
Socio-economic data layers include human population, predictions of urban expansion, livestock densities, agricultural suitability and change, and (shown here) travel time to cities.

Remote Sensing of Environment
Volume 168, October 2015, Pages 316-334

Forest growing stock volume of the northern hemisphere: Spatially explicit estimates for 2010 derived from Envisat ASAR

Maurizio Sa
Ronald J. H
, Martin Th

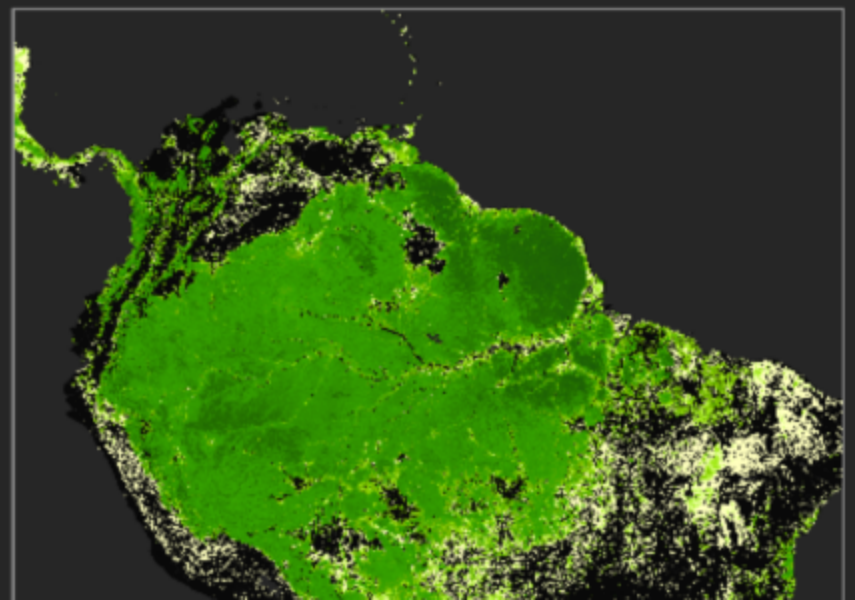
Global Change Biology

Primary Research Article

An integrated pan-tropical biomass map using multiple reference datasets

Valerio Avitabile, Martin Herold, Gerard B. M. Heuvelink, Simon L. Lewis, Oliver L. Phillips, Gregory P. Asner, John Armston, Peter S. Ashton, Lindsay Banin, Nicolas Bayol, ... See all authors

First published: 25 October 2015 | https://doi.org/10.1111/gcb.13139 | Cited by: 93



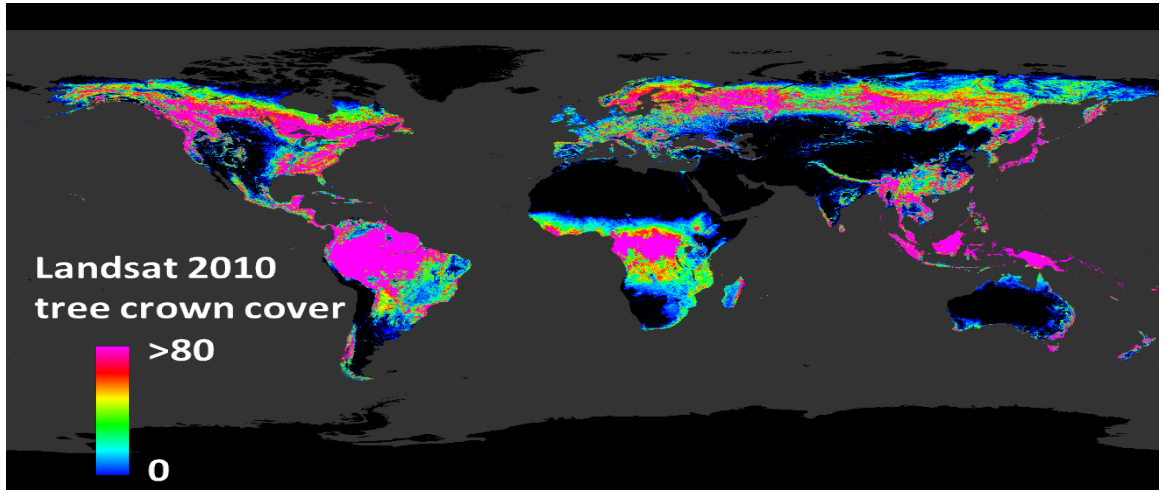
Datasets on Ecosystem Services:

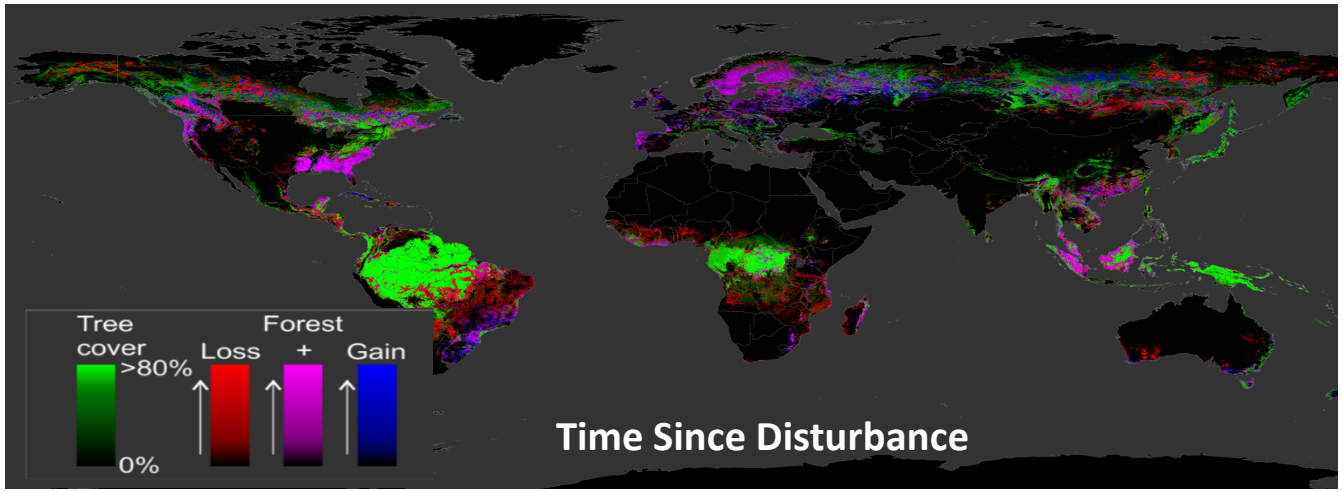
Available datasets include carbon, including above ground forest biomass (shown here), soil carbon - both globally and within mangrove forests, and changes in carbon biomass.

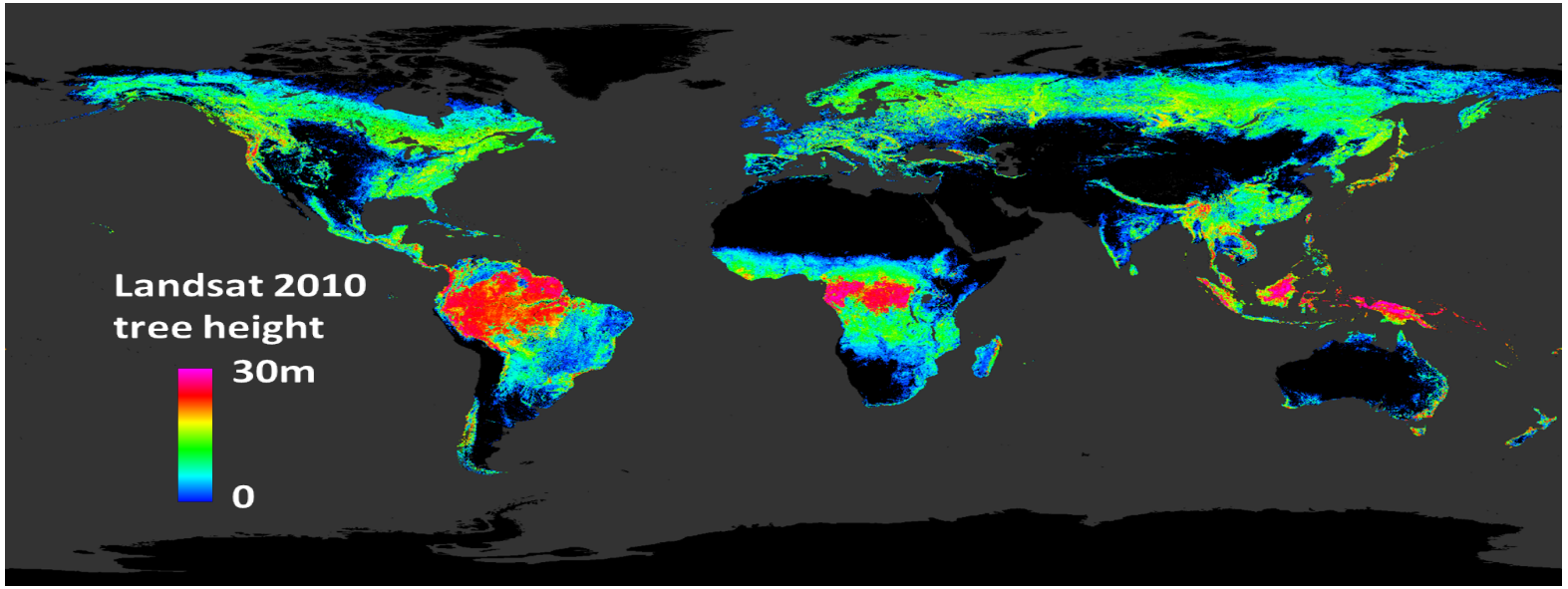
PRIORITY ACCESS TO NASA FOREST INTEGRITY PROJECT DATA

Photo: Amazon Watch

1. FOREST CONDITION





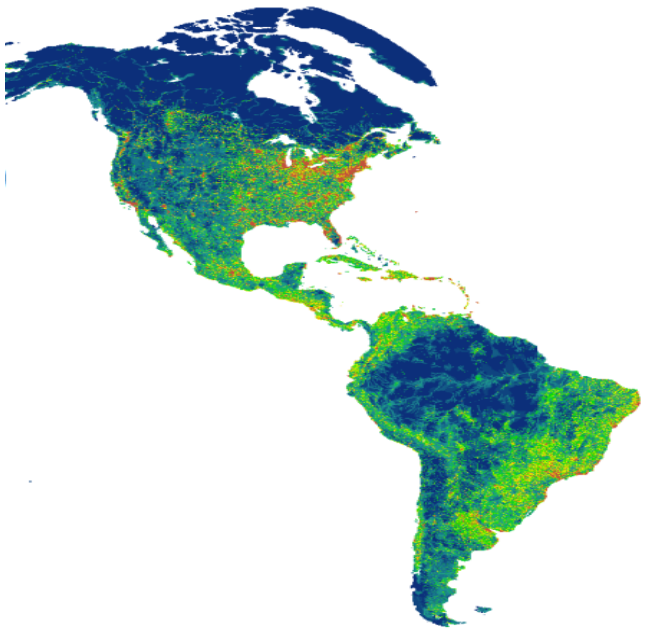


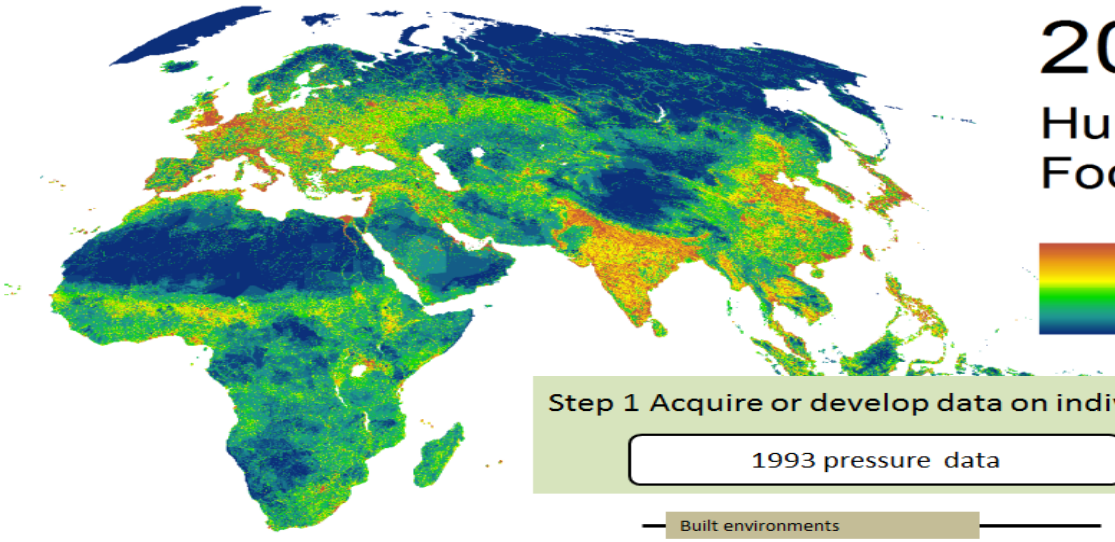
Data Produced

- Canopy cover 2000, 2010
- Time Since Disturbance 2000-2017
- Canopy height 1986, 2001, 2016 (expected)

M. Hansen et al. multiple

2. UPDATED HUMAN FOOTPRINT





2009
Human
Footprint

50

0

Step 1 Acquire or develop data on individual human pressures

1993 pressure data	2009 pressure data
Built environments	Built environments
Population density	Population density
Electric infrastructure	Electric infrastructure
Crop lands	Crop lands
Pasture lands	Pasture lands
Railways	Railways
Major roadways	Major roadways
Navigable waterways	Navigable waterways

Step 2 Assign relative pressure scores to individual pressures

1993 pressures | 2009 pressures

Step 3 Overlay individual pressures to create Human Footprint maps

1993 Human Footprint | 2009 Human Footprint

Data Produced

- HFP 2000, 2013
- National HFP maps

Venter et al. 2016

3. FOREST STRUCTURAL CONDITION INDEX (SCI)

Loss Year	Forest height (m)										
		0-5	>5-15			>15-20			>20		
	Canopy cover (%)		Canopy cover (%)			Canopy cover (%)			Canopy cover (%)		
	<25		25-75	>75-95	>95	25-75	>75-95	>95	25-75	>75-95	>95
2013-2017	1	1	1	1	1	1	1	1	1	1	1
2001-2012	1	1	2	3	4	5	6	7	8	9	10
value.<=2000	1	1	10	11	12	13	14	15	16	17	18

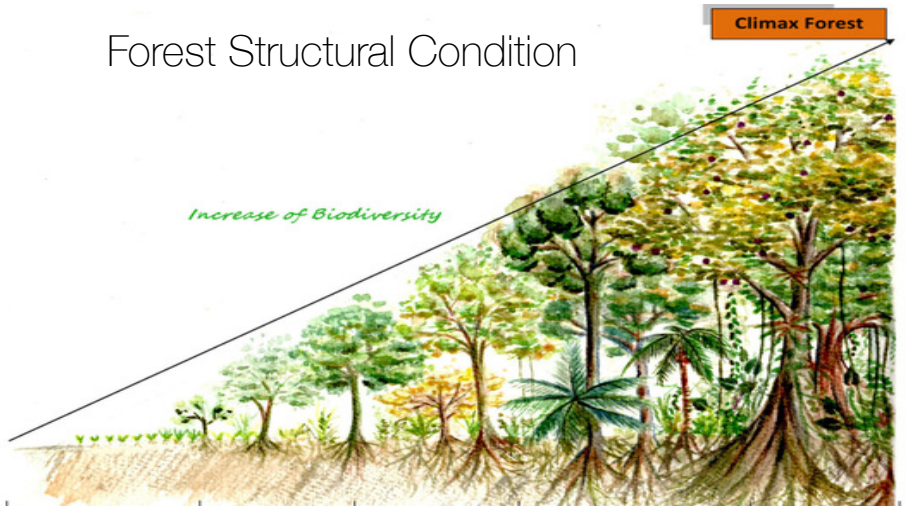
Low SCI: Areas that are low stature or recently disturbed

Riparian Meadows

High SCI: Cells with high stature and cover and not recently disturbed

Deforestation and Primary Forest

4. FOREST INTEGRITY INDEX (FSII)



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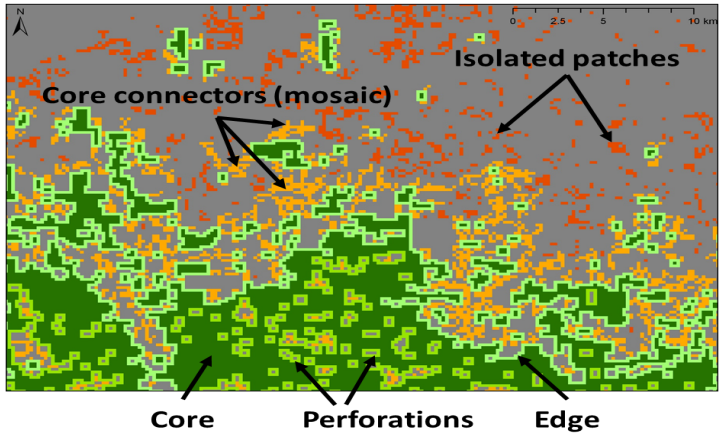
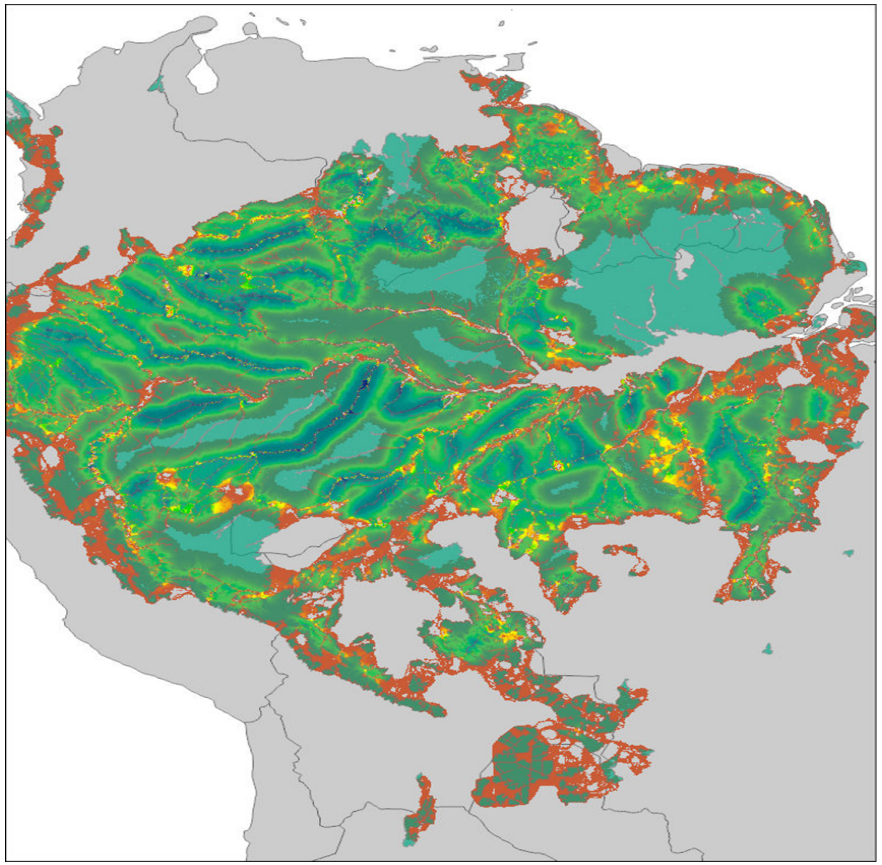
Forest structural condition	Canopy cover (%), Loss year Canopy height
Forest integrity	Canopy cover (%), Loss year Canopy height Human footprint

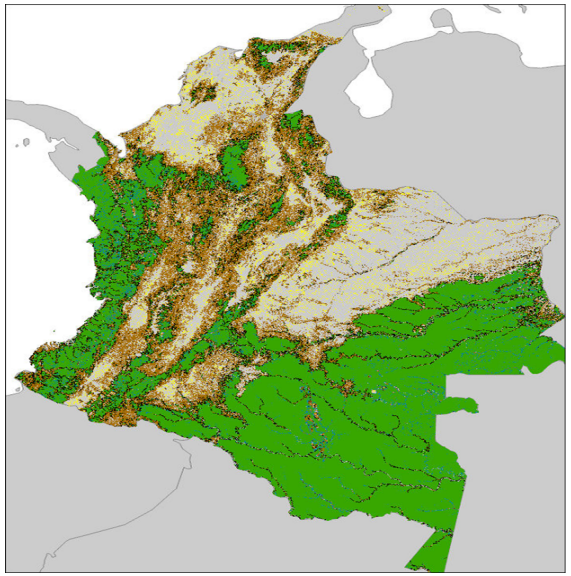
5. FOREST CONNECTIVITY & FRAGMENTATION

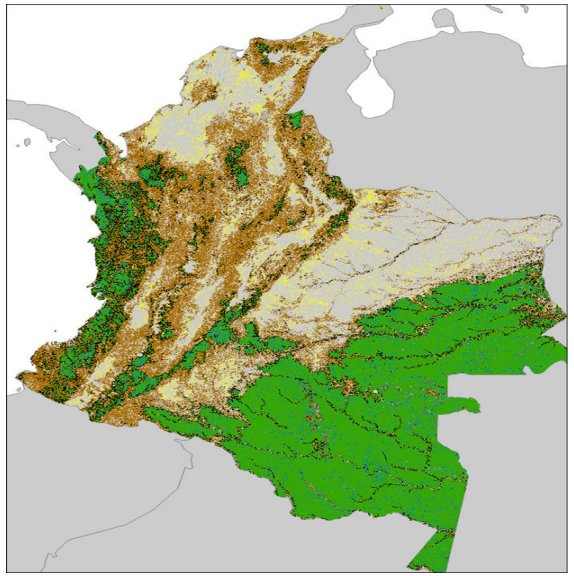
Morphological Spatial Pattern Analysis



Vogt, P. and Riitters, K., 2017. GuidosToolbox: universal digital image object analysis. *European Journal of Remote Sensing*, *50*(1), pp.352-361.







Jantz & Goetz

6. IMPACTS OF FOREST INTEGRITY ON KEY SPECIES

Goal: To evaluate biodiversity responses (richness, population trends, endangerment trends) to HFP, connectivity and forest integrity.

Biodiversity data:

- Predicts – diversity metrics at local sites (all taxa)
- IUCN range maps – coarse grain range maps (vertebrates)
- Living Planet Index: 14,152 populations of 3,706 species

e.g. Venter et al. 2009

2. GETTING STARTED | UN BIODIVERSITY LAB