

GLOBAL COLLABORATION ENGINE



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 @globalyzer



The GLOBE Project: *Online Tools for Global Synthesis of Local Knowledge*

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Computer Science Tim Oates, Penny Rheingans, Tim Finin
 & Matt Schmill

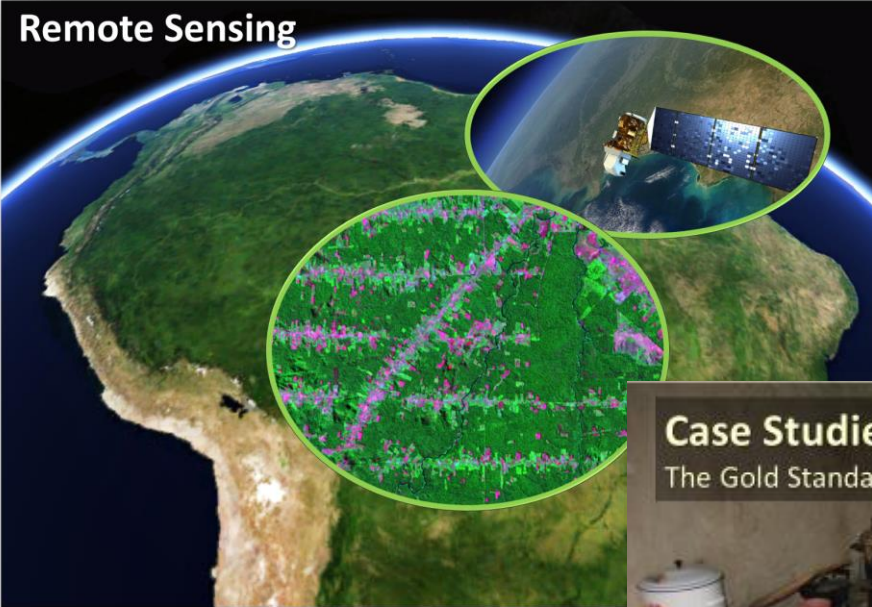


Belmont Forum: E-infrastructures & Data Management
 Collaborative Research Action
 Paris, France November 28-29, 2016

Observing the Anthropocene

Are we observing the global changes that matter?

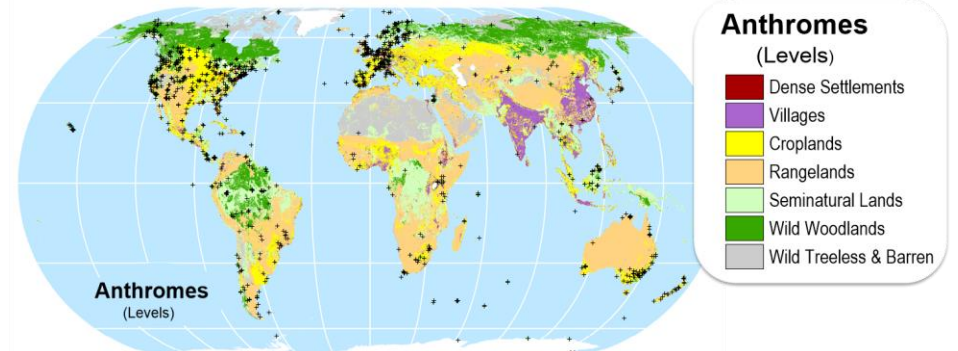
Observing Global Land *Cover* Change



Bias in Ecological Field Research Sites

Ecological Research Sites Top 10 Ecology Journals: 2004 – 2009

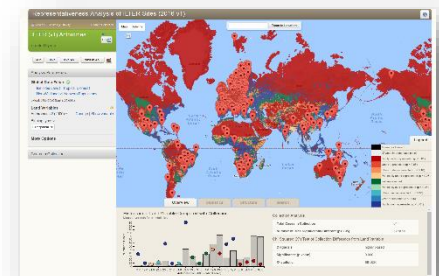
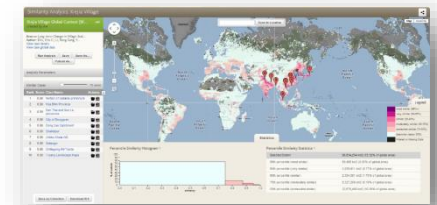
- ❖ 2/3 in “protected areas”
- ❖ Temperate Zone Bias, Wealthy Nation Bias
- ❖ Just 1/6 in agricultural & settled lands



Martin, Blossey & Ellis. 2012. Mapping where ecologists work: biases in the global distribution of terrestrial ecological observations. *Frontiers in Ecology and the Environment* 10:195–201

What GLOBE does:

- 1) Enhances Case Study Sharing, Comparisons & Networking** *Find similar study sites* to facilitate research, networking and sharing with others working under similar conditions.
- 2) Supports Globally Representative Meta-Analysis** Helps researchers *group, weight and synthesize results across case studies*, to develop better global models of human/environment interactions.
- 3) Enhances Site Selection (where next?)** Help researchers and grantmakers *identify gaps and opportunities for future research*.




>17,000 Compiled + User-Entered Case Studies



Land use dynamics of deforestation and afforestation across the Usumacinta Valley, Chiapas, Mexico

Zachary Christman



Poster Session, Wednesday 19 March 2014, 17:30-18:30, Foyer

GLOBE

Monitoring ecosystem transitions with EnMAP: preparatory research activities

Pedro J. Leitão




Poster Session, Wednesday 19 March 2014, 17:30-18:30, Foyer

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Sourcing forest products in the Himalayas of Bhutan

Isaline Jadin




Session No. 24b: Globalization of land use change and geographic displacement: a first step towards a new paradigm? Wednesday 19 March 2014, 14:45

GLOBE



Monitoring global and local land transformations using remote sensing and GIS help?

Pedro J. Leitão



Poster Session, Wednesday 19 March 2014, 12:00 - 12:15, Room 1'306

GLOBE

Risk assessment of mining to Andean wetlands

Pedro J. Leitão




Poster Session, Wednesday 19 March 2014, 17:30-18:30, Foyer

GLOBE

Bridging knowledge and communication gaps through participatory land-use simulations: insights from Reunion Island

Guillaume Lestrelin



Session No. 33a: Land-use simulation in support of planning and sustainability assessment Thursday 20 March 2014, 13:30 - 15:00, Room 0'307

GLOBE

Shifting cultivation dynamics within an ecosystem hotspot of pronounced global interest - a first step towards negotiating trade-offs in North-East Madagascar

Julie Zähringer



Session No. 87a: Trajectories of change in agro-ecosystems Thursday 20 March 2014, 14:30 - 14:45, Room 0'311

GLOBE



Risk models to assess farmers' land use transitions: a first step towards negotiating trade-offs in Mato Grosso, Brazil

Matthias Siebold



Session No. 32a: Understanding farming practices to rethink land change transitions: a research challenge Wednesday 19 March 2014, 14:00 - 15:30, Room 1'303

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Global Datasets (online & by request)



Geophysical: % land, % freshwater, marine coast distance, median elevation, terrain (% plain, % sloping, % steep).

Climate: precipitation & temperature (50 y mean, 2080 ensemble mean), growing degree days, global climate classifications.

Land Cover (MODIS): land cover (%; [16] IGBP classes), Vegetation Continuous Fields (VCF; % trees, % herbaceous, % bare).

Biological: biomes, ecoregions, species richness (plants, mammals), Net Primary Production (NPP: Potential, Actual)

Human: anthromes, population density, market access, market influence, land use (% urban, crops, pastures, irrigation, rice), land protection status, nations, poverty index, human footprint index.

Global Similarity: Assessing the Global Context of Xiejia Village

Market Influenced Rice Village Landscapes

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Similarity Analysis: Xiejia Village

Xiejia Village Global Context (M... created by me)

Source: Long-term Change in Village-Scal...
 Author: Ellis, Erle C.; Li, Rong Gang; Y...
[View case details](#)
[View case global data](#)

Run Analysis Save Save As... Publish As...

Analysis Parameters

Similar Cases 10 cases

Rank	Score	Case Name	Actions
1	0.99	Portion of Saitama prefecture	
2	0.99	Hoa Binh Province	
3	0.99	Bac Thai and Son La provinces	
4	0.99	City of Dongguan	
5	0.99	Dong Cao Catchment	
6	0.99	Shahidpur	
7	0.99	Jhikhu Khola WS	
8	0.99	Selangor	
9	0.98	Chittagong Hill Tracts	
10	0.98	Yiyang Landscape Maps	

Zoom to Location

Map Satellite

Legend

- most similar (99%+)
- very similar (95-99%)
- similar (90-95%)
- moderately similar (75-90%)
- somewhat similar (75-50%)
- dissimilar (below 50%)
- Filtered or Missing Data

Statistics

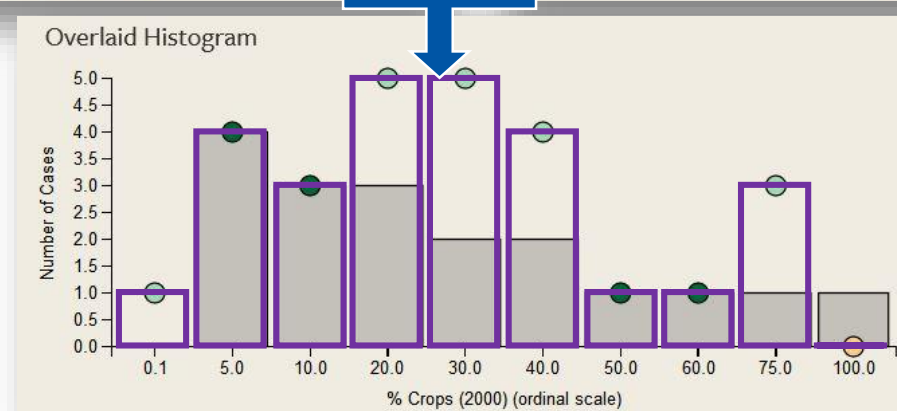
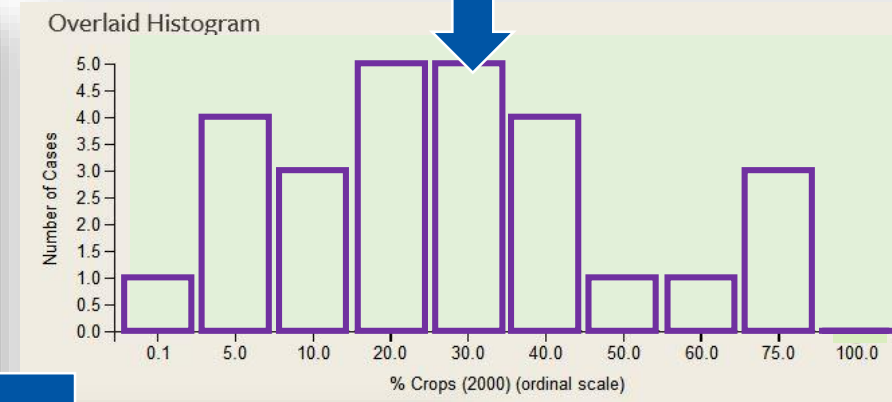
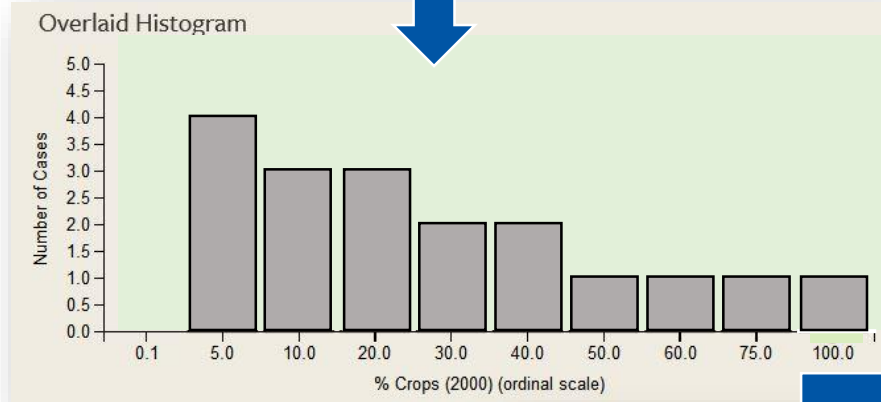
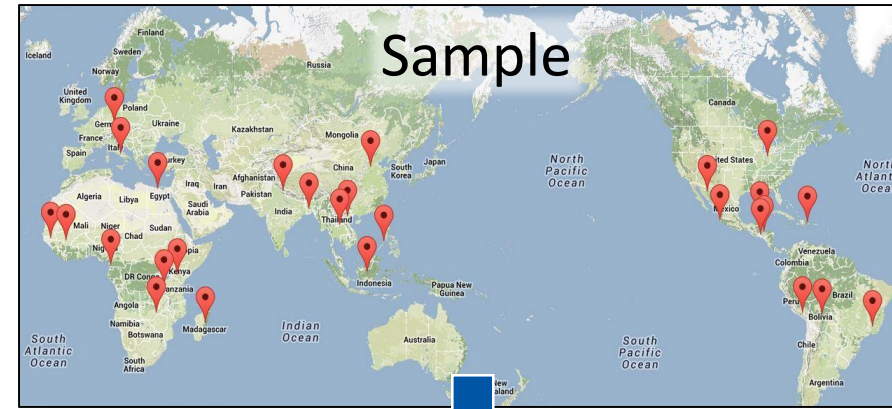
Percentile Similarity Histogram ?

Percentile Similarity Statistics ?

Selected Extent	Area
99th percentile (most similar)	96,834,254 km2 (72.02% of global area)
95th percentile (very similar)	69,498 km2 (0.05% of global area)
90th percentile (similar)	1,029,911 km2 (0.77% of global area)
75th percentile (moderately similar)	2,354,561 km2 (1.75% of global area)
50th percentile (somewhat similar)	8,327,208 km2 (6.19% of global area)

Save as Collection Download RIS

Global Representativeness Analysis



Global Representativeness Analysis

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Welcome back, Erle
[Log out](#)

Representativeness Analysis for a GLOBE Collection

[View Collection](#)
Switch Collection

Deforestation

Cases found by searching for "deforestation" on March 21, 2014

Analysis Parameters

Land Variable
Market Access Index? [Change](#) | [Show distribution](#)

Filters (1)
Filters limit the land area used in analysis.
Add a filter predefined by the GLOBE team:
[Ice-Free Land ?](#) | [Tropical ?](#) | [Non-Wildlands ?](#)

or Add a new filter

Olson Biomes ?

include 6 categories ✕

Options

Run Analysis
Save As...

Zoom to Location

Map | Satellite

Overview
Statistics
Structure
Explorer

Overlaid Histogram

Summary

X² Test

X ² (ess)	142.502
p value (ess)	0
X ² (actual)	142.502
p value (actual)	0

Allocation Analysis

Explanation

The representativeness analysis compares observed data at your collection's sites against the distribution of those data for the global extent you have selected. Gaps between the two distributions indicate areas where your collection may be biased.

A X² analysis is a statistical test that compares a discrete distribution of expected values against a distribution of observed values to determine whether the hypothesis that the observed values could have been drawn at random from the population can be rejected or not. The X² test computes the probability of incorrectly rejecting the hypothesis of an unbiased collection as

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E-INFRASTRUCTURE AND DATA MANAGEMENT ISSUES

Issues, barriers, difficulties encountered with respect to data and e-infrastructure

- **Costs/resources for UI/UX-** not available at universities
- **Sustaining long-term work with user community (takes time!):**
 - E-Infrastructure technical support, development support
 - User community support- including workshops/training & promotion
- **Engaging high-profile users and promoting use cases** – across the full spectrum of users.
- **Changing cultures of collaboration, sharing & synthesis** – journals?

EXPECTATIONS FROM E-I&DM CALL

Needs to overcome issues described on previous slide. What could project gain from inter-project collaboration?

- **NOT: “build it and they will come”**
- **Longer-term / Phase 2 support for promising communities of practice.**
Solve evolving issues, support *system architects*.
 - Supported by a funded *pool* of experts/expertise?
 - Institutional project hosting?
 - Take promising projects to next level: *institutional sustainability*
- **Devil is in details: Learn from domain experiences:** the challenges of science community change - *from development to adoption*.
 - Involve *Information Systems* experts to conduct User research.
 - *In our community (GLP):* GLOBE, Global Forest Watch, GTAP, Land Matrix, SEDAC....