Disentangling socio-ecological interactions using geo-tagged photographs

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ALTER-Net High Impact Actions

Motivation

How can we use **ICT data** to model and visualize **complex socio-ecological interactions** to better understand how **people** interact with **natural spaces**?
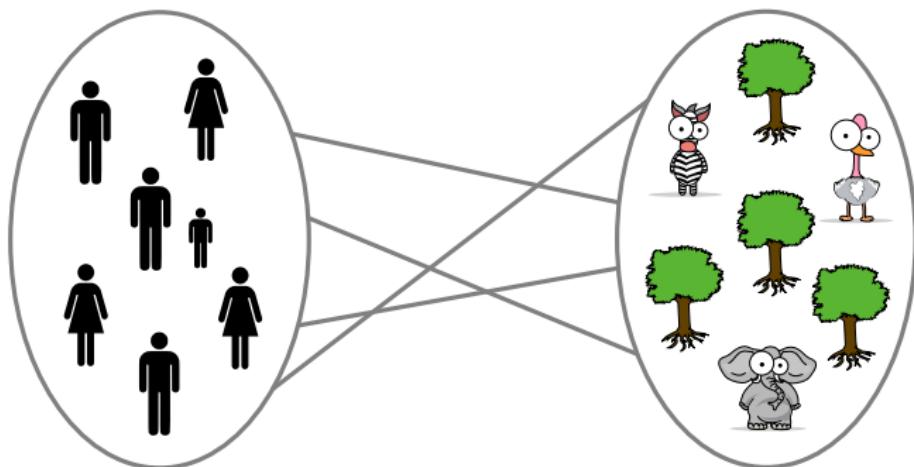
Cultural ecosystem services
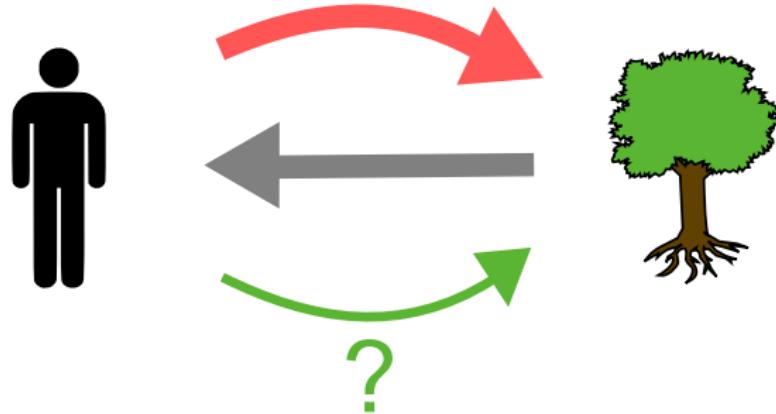
"Nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences"

Millennium Ecosystem Assessment (2005) Ecosystems and Human Well-Being: Synthesis. Island Press, Washington.

Spatio-temporal network
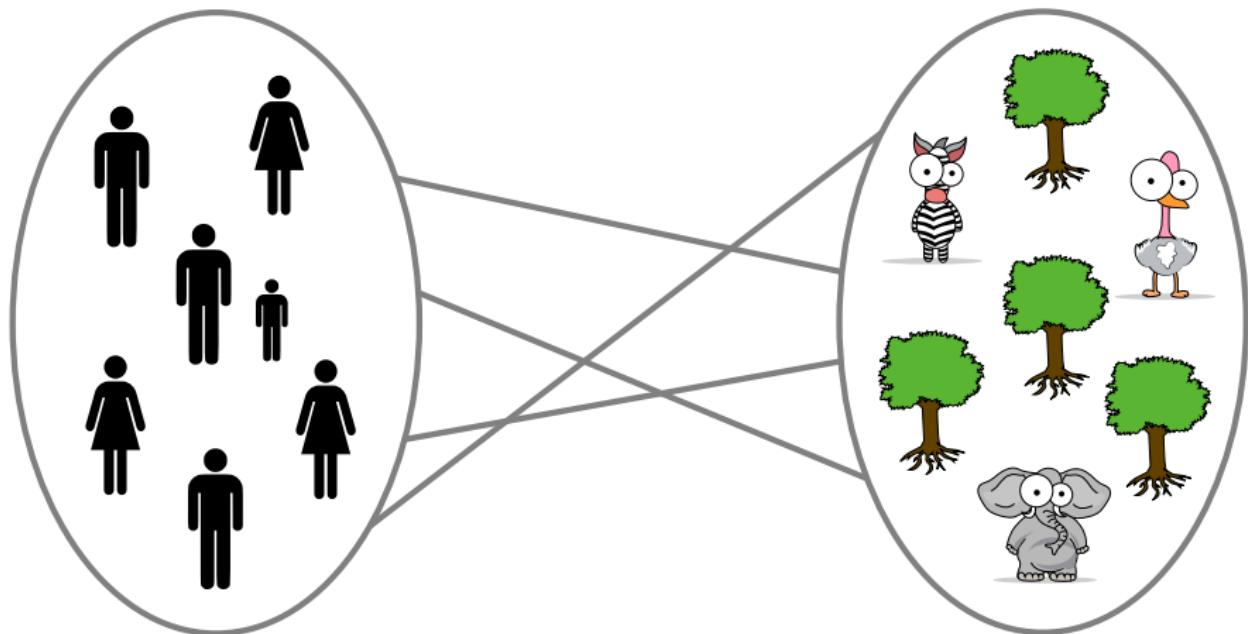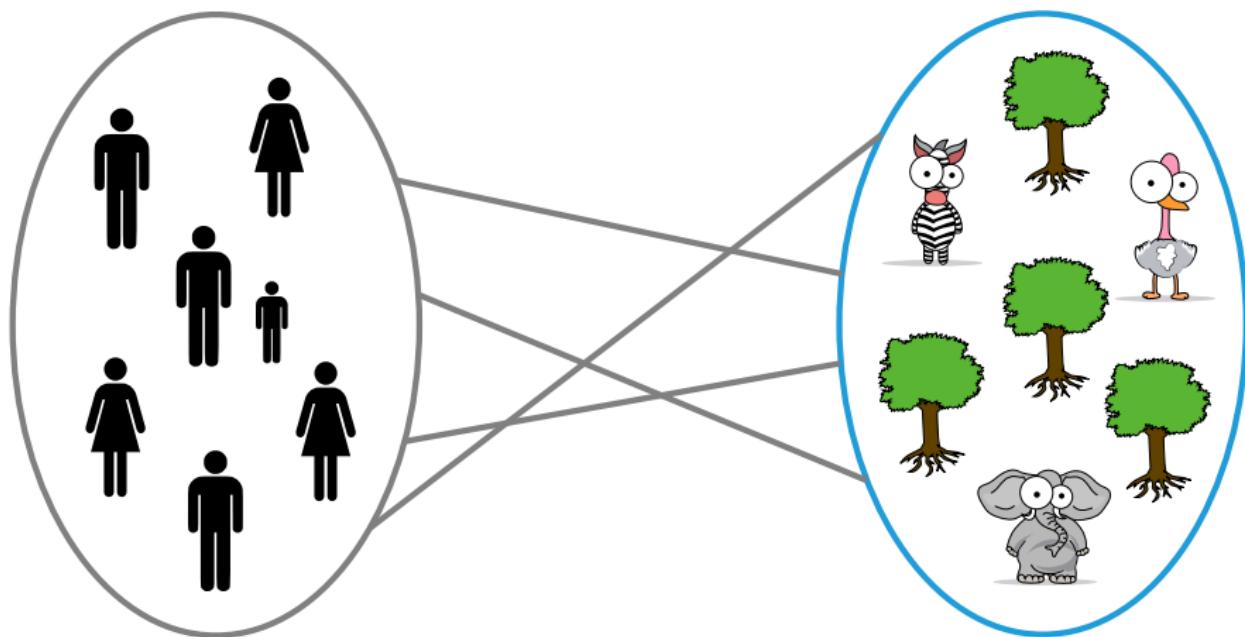
Δ_t Time window

Spatio-temporal network

Δ_t Time window

Spatio-temporal network
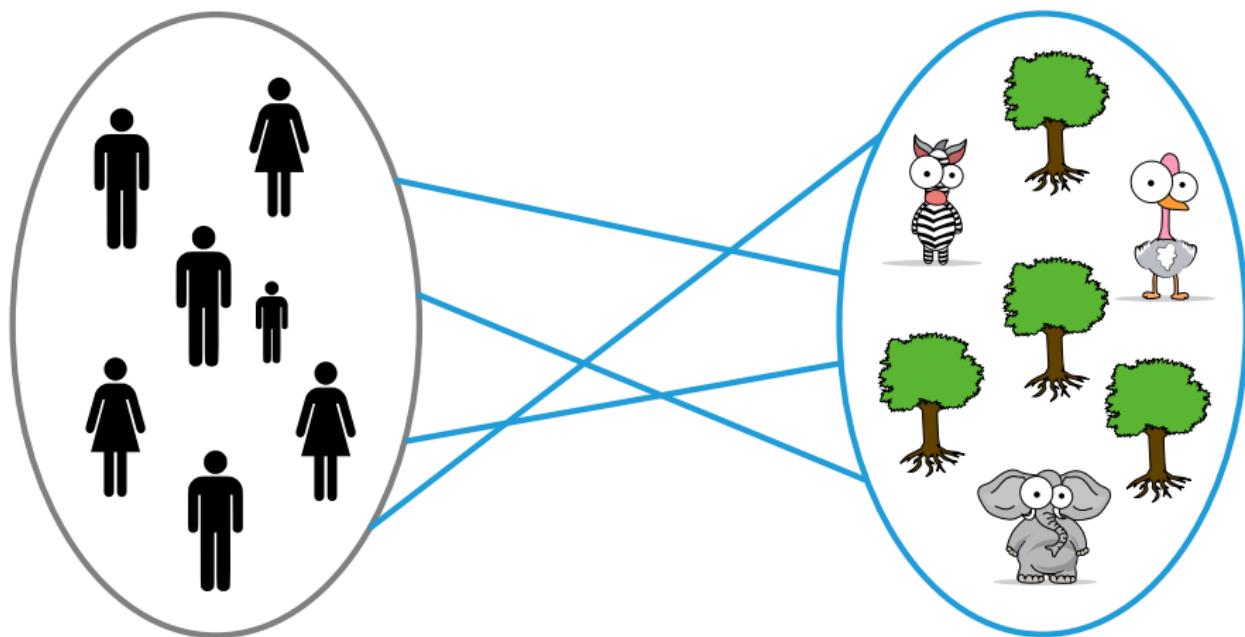

Δ_t Time window

Spatio-temporal network
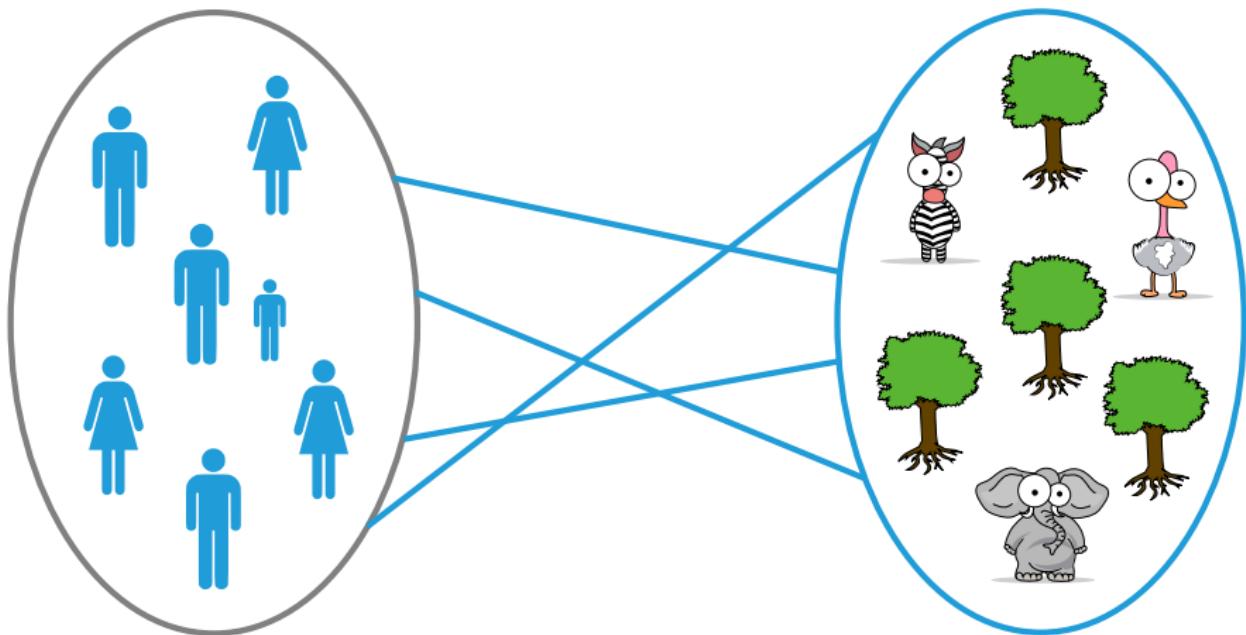
Δ_t Time window

Ecosystems
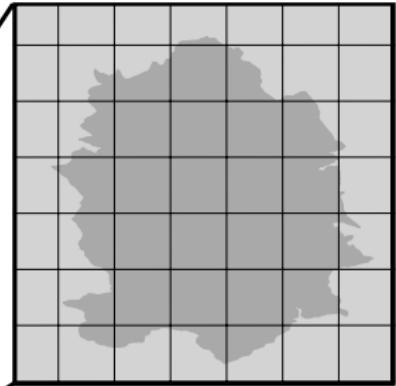
- ▶ OpenStreetMap
- ▶ Copernicus
- ▶ …

Modeling CES flows using Flickr

Cultural ecosystem services

From more than **100,000** to **17,500** photos
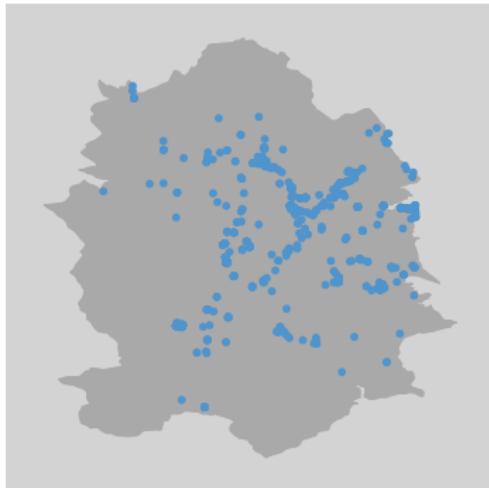
Every Flickr photos has been classified and validated following the Common International Classification of Ecosystem Services

Flickr users

Identification of users' place of residence
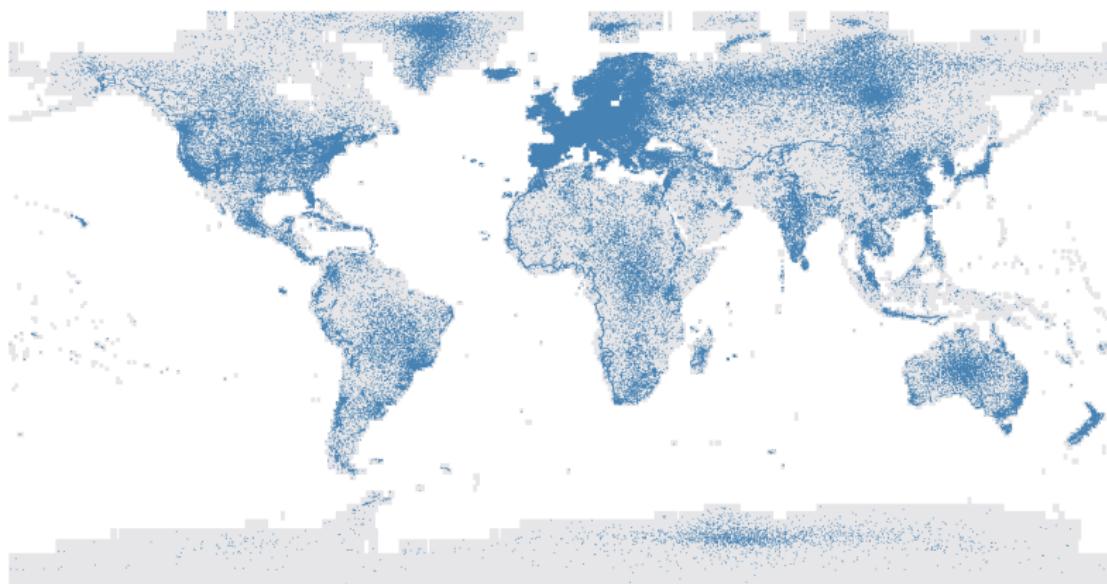
Flickr users

Identification of users' place of residence
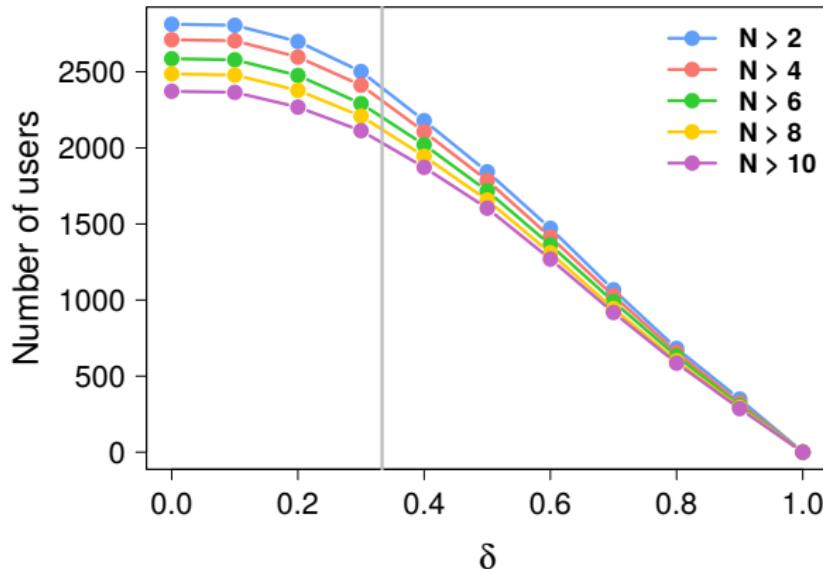
13,000 photos taken by **2,300** users

Flickr group & survey

Flickr group & survey

8% response rate
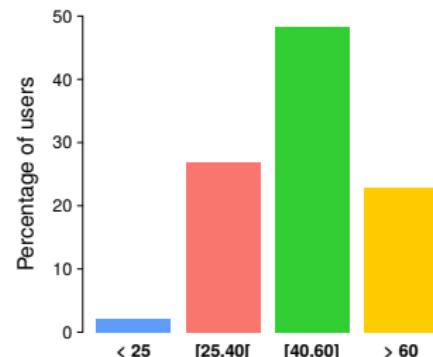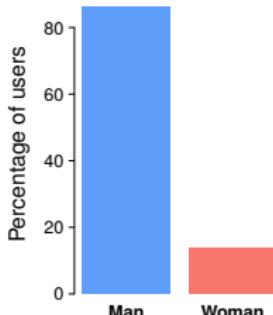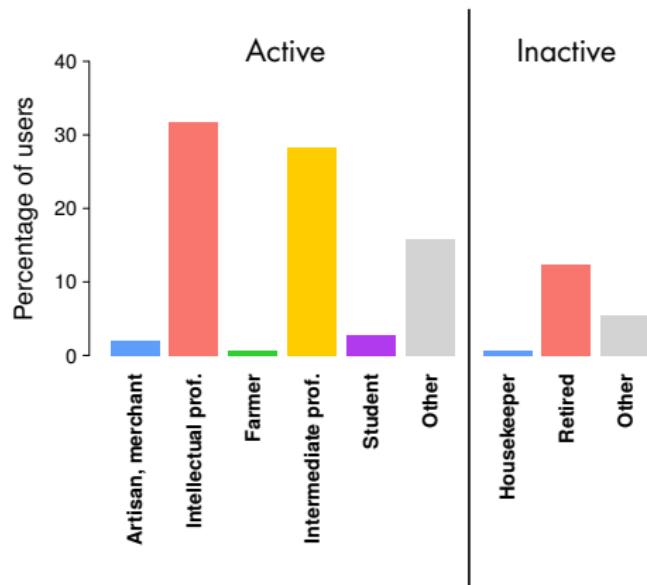
90% of accuracy in the users' place of residence detection!

Spatio-temporal network
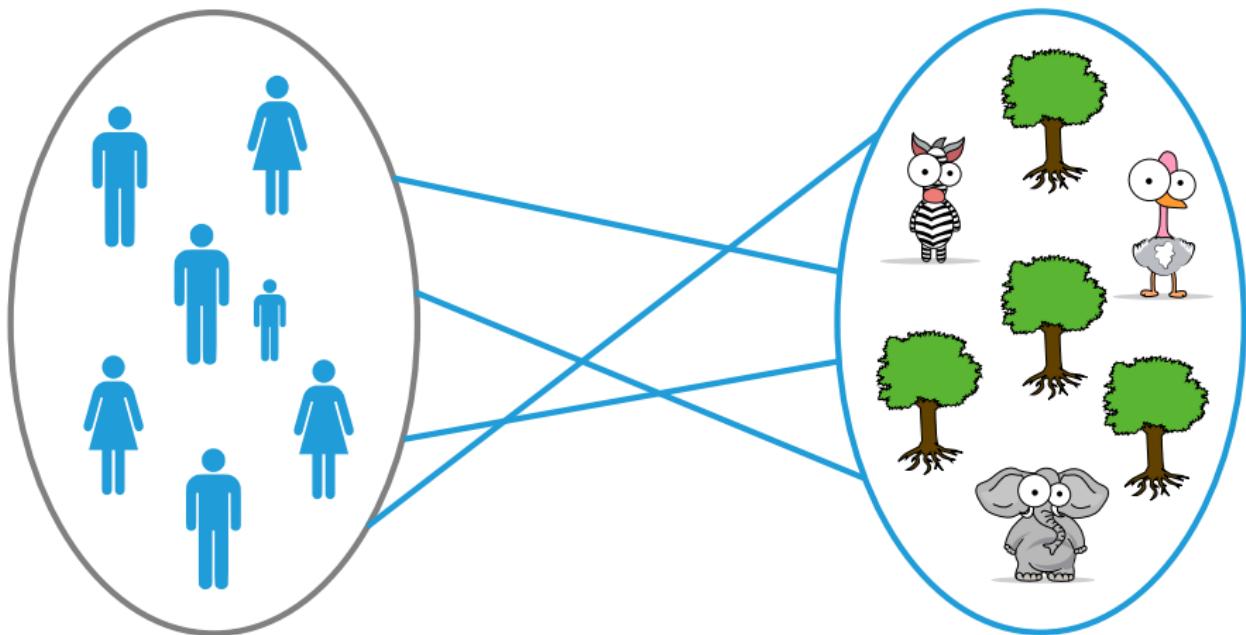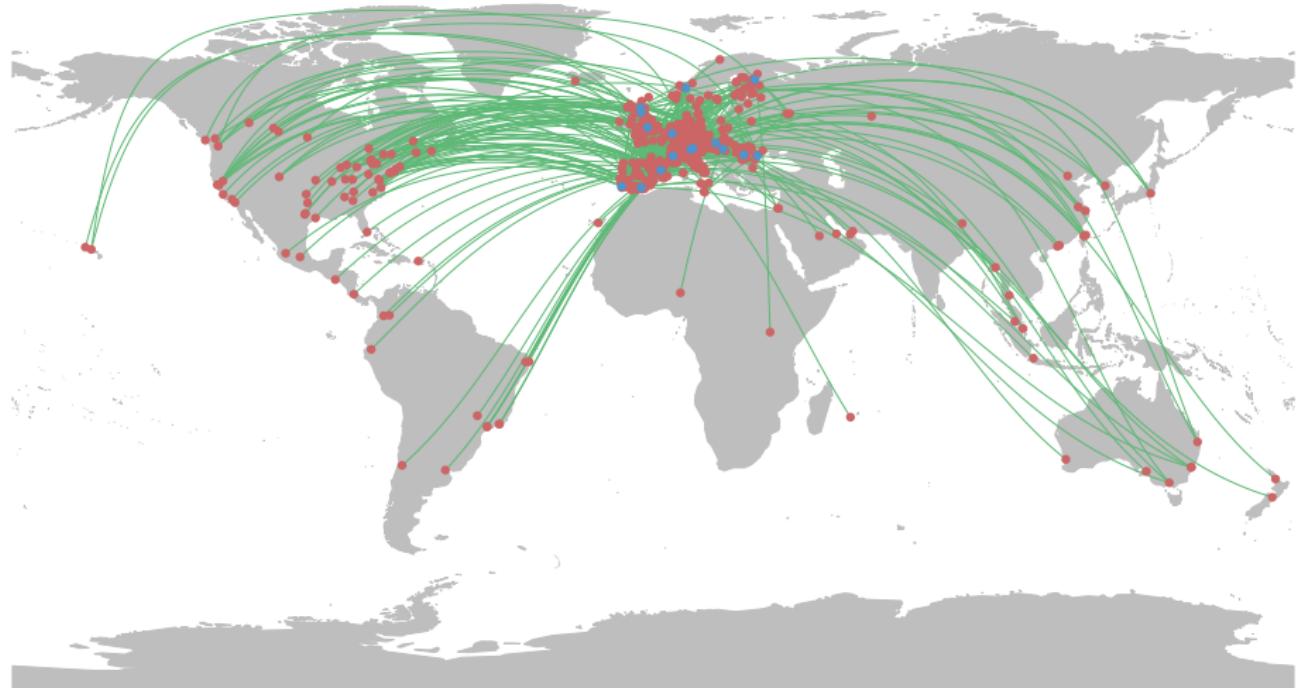
Δ_t Time window

Spatio-temporal network

Take home messages

▶ Modelling of social-ecological interactions with a spatio-temporal network & ICT data

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Diversity of spatio-temporal contexts, individuals and CES

Take home messages

- ▶ Modelling of social-ecological interactions with a spatio-temporal network & ICT data

Diversity of spatio-temporal contexts, individuals and CES

Resillience planning

Take home messages

▶ Modelling of social-ecological interactions with a spatio-temporal network & ICT data

▶ Strong emphasis on the biases and uncertainties associated with Flickr data

Acknowledgements