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Multiscale socio-ecological networks in the age of information

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Multiscale socio-ecological networks in the age of information

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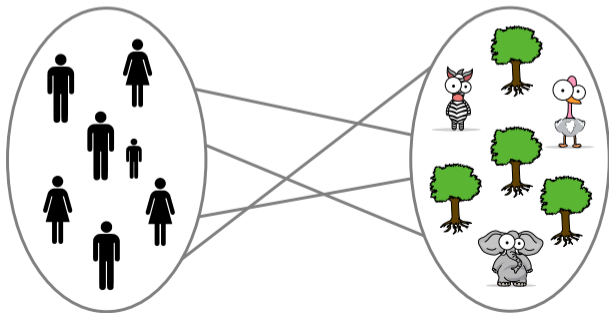
IUFRO 2018 | Posadas, Argentina

Thursday, October 4th 2018

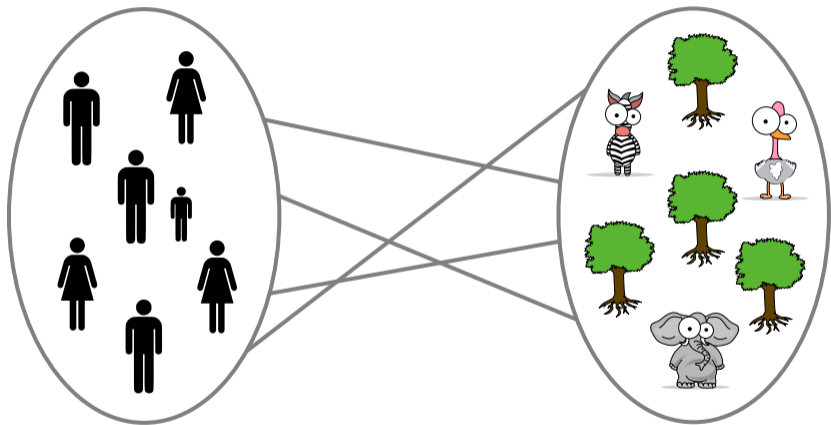


Motivation

How can we use **ICT data** to model and visualize **complex socio-ecological interactions** to better understand how **people** interact with **natural spaces**?

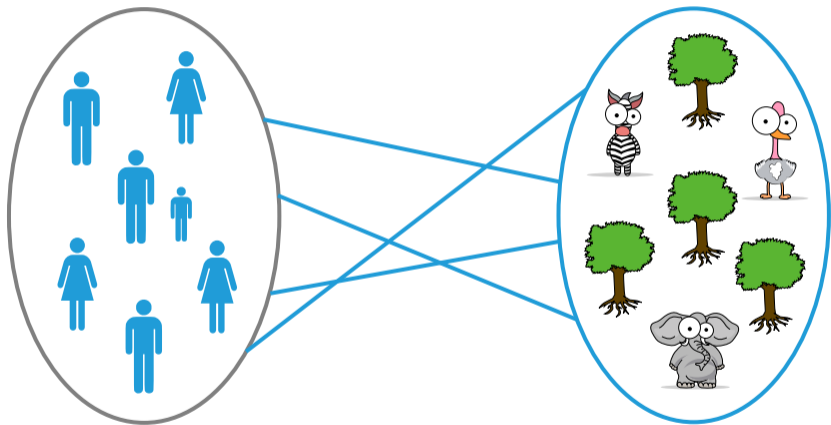


Spatio-temporal network



Non-material interactions
(1 hour in $500 \times 500 \text{ m}^2$)

Spatio-temporal network

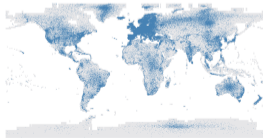


Non-material interactions
(1 hour in $500 \times 500 \text{ m}^2$)

Methodological framework



16 case study sites



+ online survey



flickr



Classify and validate every Flickr photos following the Common International Classification of Ecosystem Services



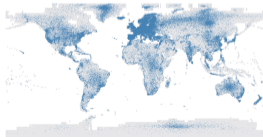
16 case study sites



Methodological framework



16 case study sites



+ online survey



User
Time
Lon/Lat
Photo



flickr





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Flickr data

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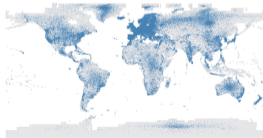
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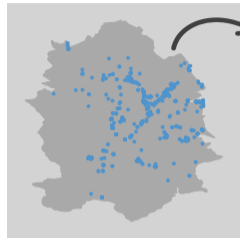
Methodological framework



16 case study sites



+ online survey



User
Time
Lon/Lat
Photo



flickr

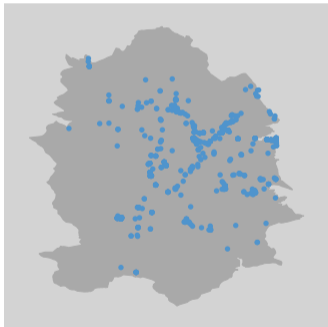


**Classify and validate every Flickr
photos following the Common
International Classification of
Ecosystem Services**



Photos classification process

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



Methodological framework



16 case study sites



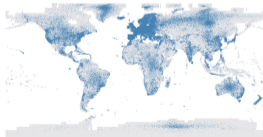
User
Time
Lon/Lat
Photo



flickr



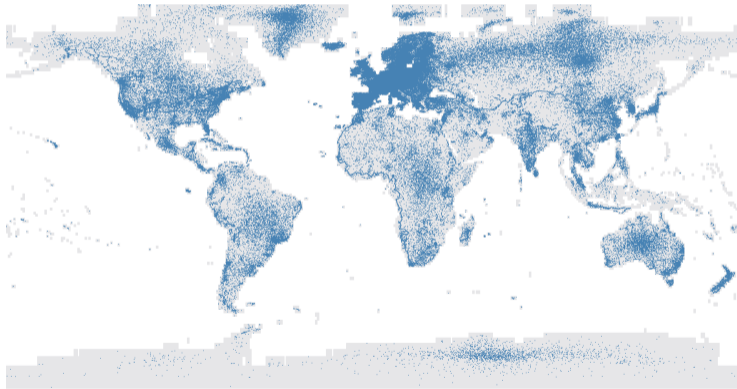
**Classify and validate every Flickr
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Ecosystem Services**



+ online survey

Flickr users

Identification of users' place of residence

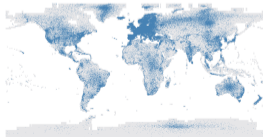


13,000 photos taken by **2,300** users

Methodological framework



16 case study sites



+ online survey



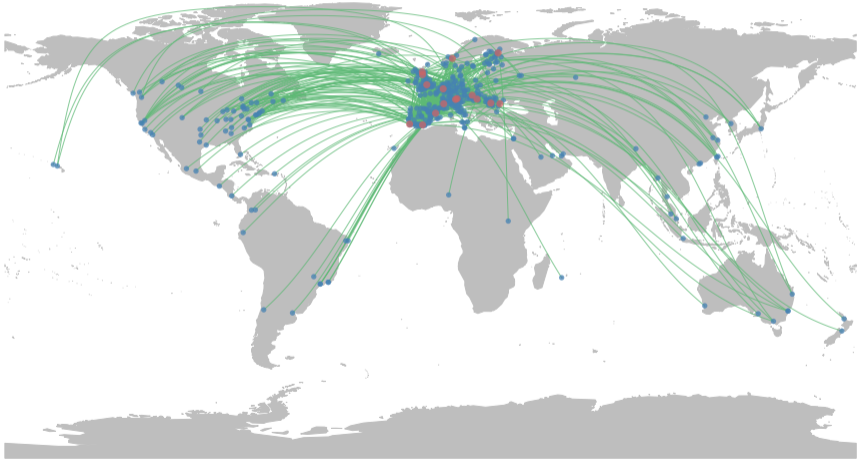
flickr



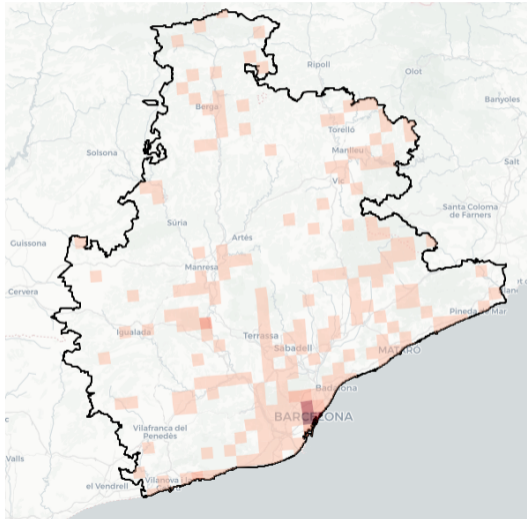
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Multiscale socio-ecological network





Multiscale socio-ecological network



Flickr group & survey

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416 Members • 5.8K Photos • 3 Discussions Group Since June 11, 2017







[Overview](#) [Discussions](#) [Photos](#) [Members](#) [Map](#)

Photo pool

[View 5,800 photos](#)

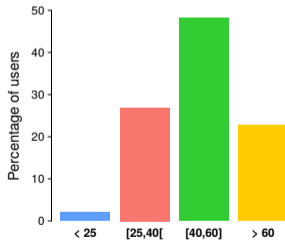
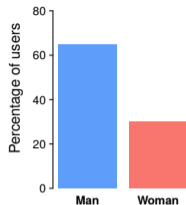
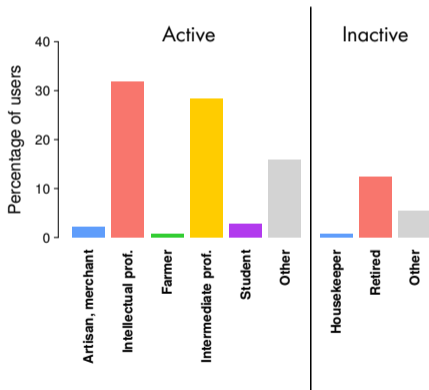


Discussions

Title	Author	Replies	Last Replier	Latest Post
Clarification about the study	 SP.Pictures	4	 Fouaustal PRO	2 months ago
©	 joepdeumes PRO	2	 joepdeumes PRO	3 months ago
FAQ	 SP.Pictures	3	 SP.Pictures	3 months ago

Flickr group & survey

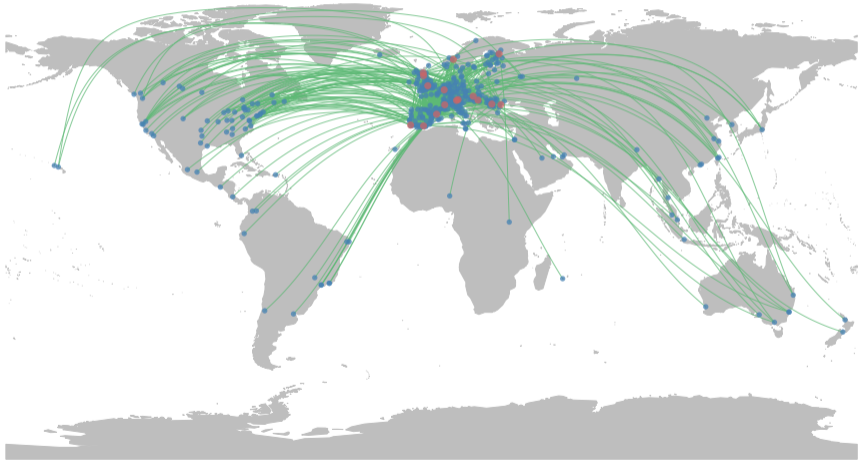
11% response rate



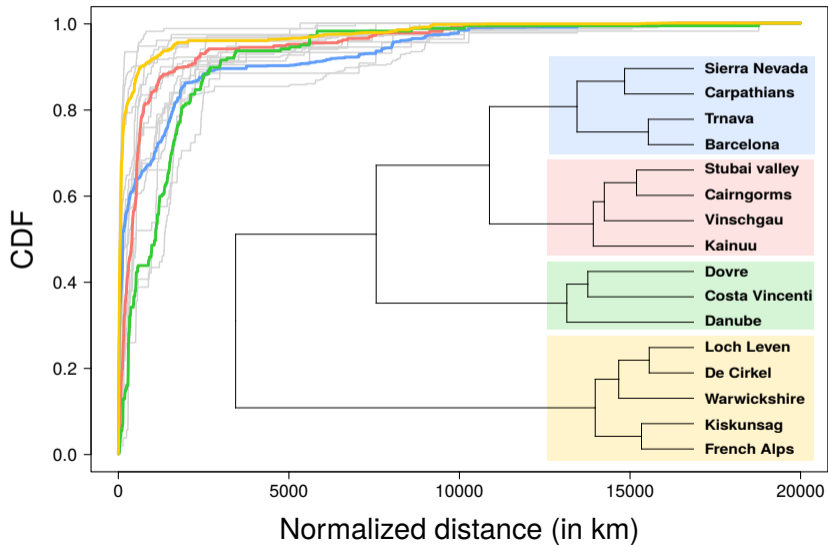
90% of accuracy in the users' place of residence detection!

How does the distance to a site influence the way people explore and interact with this site?

Sites' attractiveness

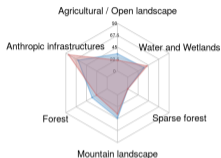


Sites' attractiveness

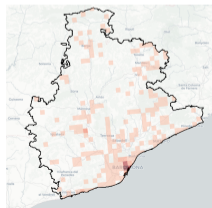


Distribution of interactions

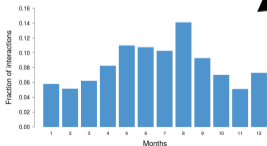
Landscape diversity



Space (cells)



Time (months)

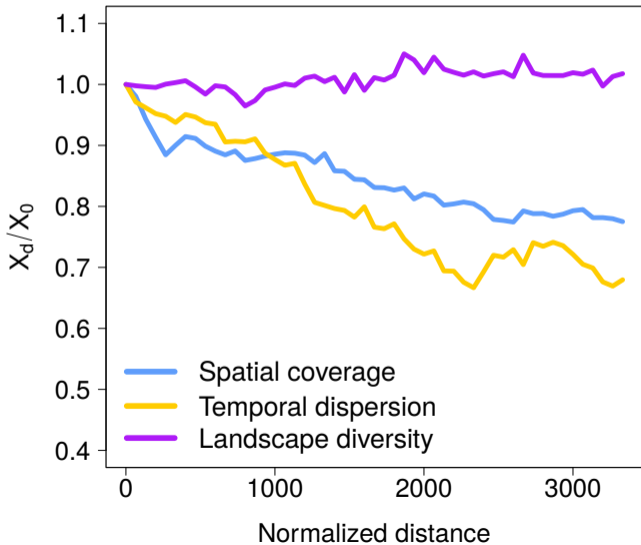


Effect of the distance traveled

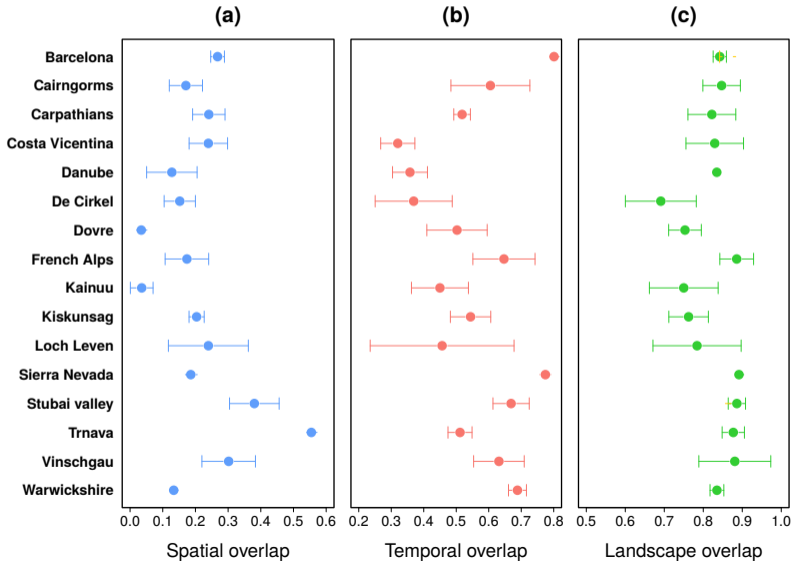


**Impact of the distance
on the distribution**

Median effect



Locals & visitors overlaps



Take home message

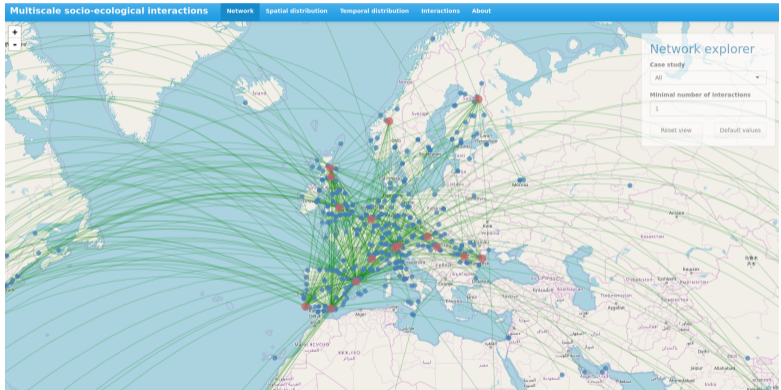
Modelling of social-ecological interactions
with a spatio-temporal network & ICT data

**Diversity of spatio-temporal contexts,
individuals and type of interactions**



Resilience planning

AHIA project outputs



<https://www.maximelenormand.com/Codes/>