



# Funding acknowledgements and altmetric landscapes in Africa

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***Research funding landscapes in Africa:  
using bibliometric Funding  
Acknowledgements for funding studies –  
possibilities & limitations***

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(CREST-Stellenbosch University), South Africa



# Outline

- Funding Acknowledgements
- CWTS Thesaurus of FA
- Funding Acknowledgements and impact in Africa (main figures)
- Recommendations
- Further steps

# Web of Science Funding Acknowledgements

## Author Information

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## Funding

Funding Agency	Grant Number
Mellon Foundation of New York	
South African NRF	
Robert <a href="#">Bosch Foundation</a>	
Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz program of Hesse's Ministry of Higher Education, Research and the Arts	
Biodiversity and Climate Research Centre (BiK-F)	

### Close funding text

Funding was made available through grants from the [Mellon Foundation of New York](#), the [South African NRF](#), the [Robert Bosch Foundation](#), and the [Biodiversity and Climate Research Centre \(BiK-F\)](#) funded by the "[Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz](#)" program of Hesse's Ministry of Higher Education, Research and the Arts. We are grateful to A. Manganyi, M. Mashele, P. Ndlovu, A. Mashele, and D. Modukanele for fieldwork and N. Naude for image analysis. S. Hassler did the calibration for leaf area.

# Introduction

- Since 2009 – Funding Acknowledgments (FA)
  - **New possibilities:** activity of funders, co-funding relationships, influence/impact of funders, etc.
  - **Funding landscapes:** presence and distribution of publications acknowledging funders across fields
- Challenges
  - Only **Science Citation Index** publications
  - No information on money or types of resources
  - No linkage with authors or institutions
  - Noisy data: great variability of names (e.g. Wellcome Trust)
    - “Wellcome Trust”
    - “Wellcome Trust, UK”
    - “Wellcome Trust, London, UK”
    - “Wellcome Trust of Great Britain”
    - “Wellcome Trust (UK)”
    - “Welcome Trust”

**>350 variants!**

# CWTS Thesaurus

- Identification of the most common funders
  - >400 Funding Organizations identified worldwide
  - Metadata on their country, website, etc.
- Linkage with harmonized address database
  - Leiden Ranking standards
  - Structured Thesaurus: connections between funders and programs!

## African FA landscape

- SCIE ‘articles’ and ‘reviews’ (2009-2014) for African authors
  - *Identification of pubs with 1<sup>st</sup> Author from Africa - African lead*

# Indicators on FA, impact and collab.

- **P**= # publications covered in WoS (subject of FA indexing)
- **P(fa)**= # publications with FA
- **PP(fa)**= Proportion of publications with FA
  
- **MNCS**= Mean Normalized Citation Score
- **PP(top 10%)** = Proportion of top 10% most highly cited publications
- **PP(collab)**= Proportion of pubs. in collaboration
- **PP(int collab)**= Proportion of pubs in international coll.

# Research questions

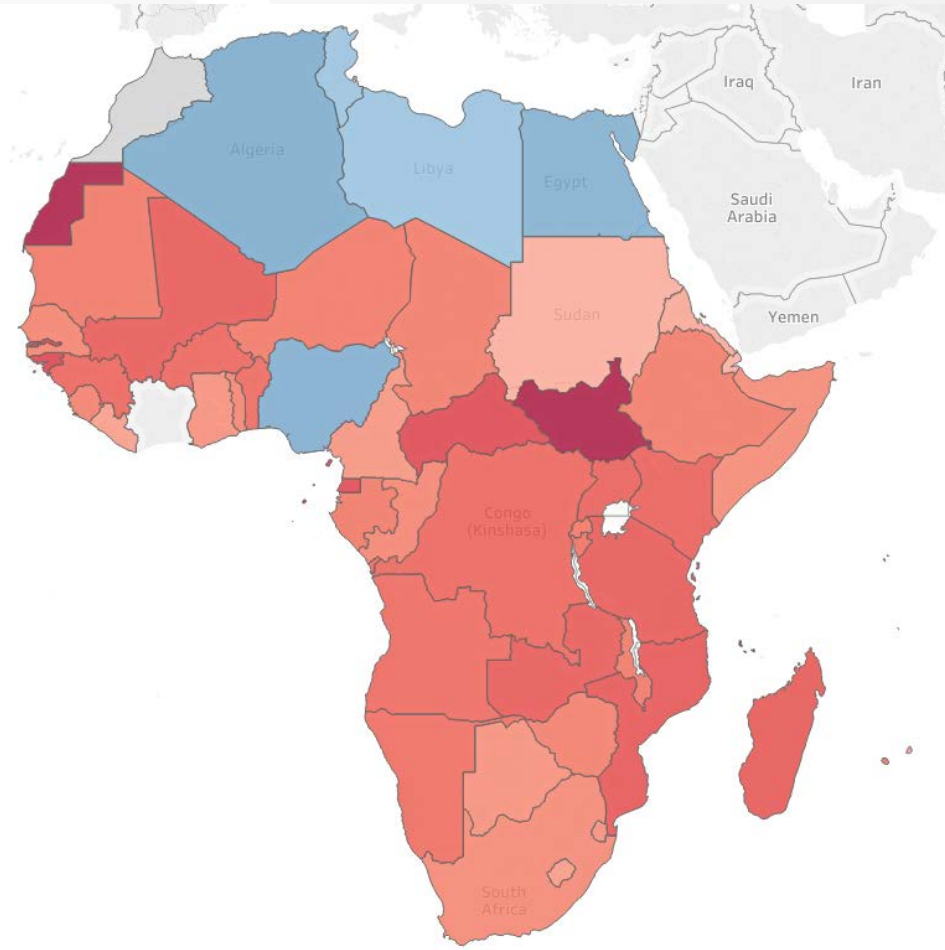
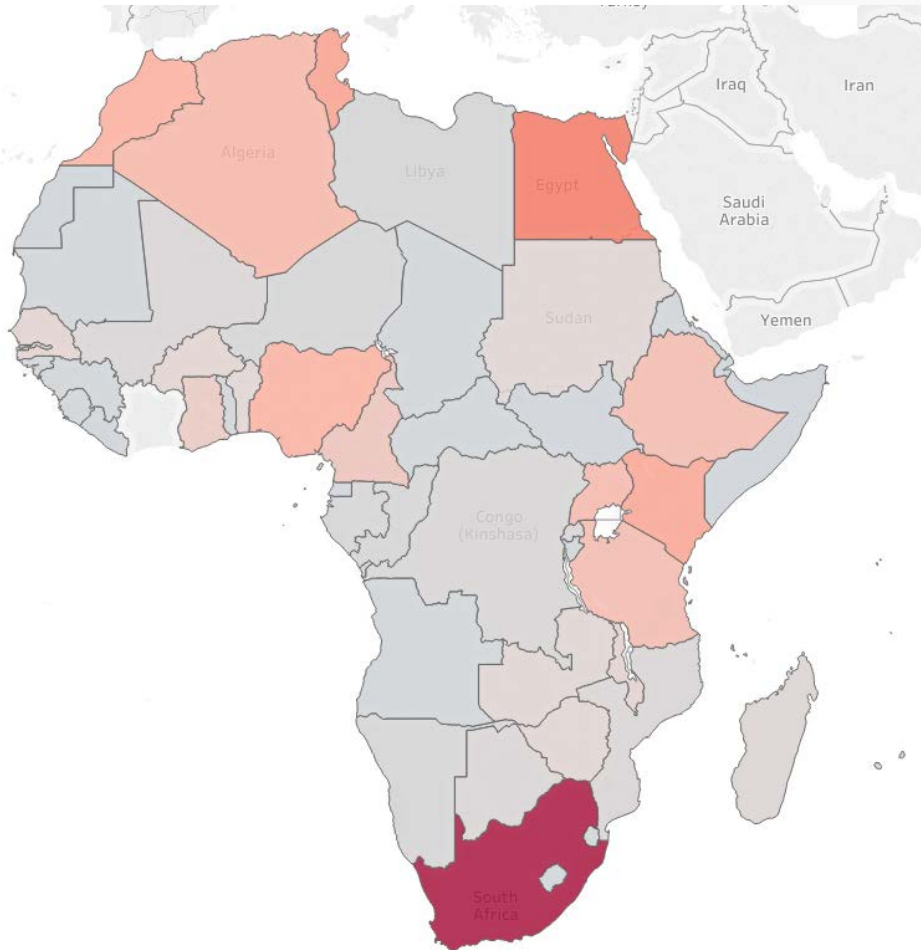
- What is the volume and characteristics of the publications acknowledging some funding in Africa?
  - Citation impact?
  - Collaboration levels?
- What are the most important research funders in Africa? Which countries and fields are they funding?



# Presence FAs across African countries

$P(\text{fa})$

$PP(\text{fa})$



Threshold for red  $> 1000 P(\text{fa})$

Threshold for red  $> 50\% PP(\text{fa})$

# Results: overall values

Dataset	P	P(fa)	PP(fa)
All publications	170776	87152	51.0%
Only Africa	71443	22479	31.5%
African lead	109844	44220	40.3%

Dataset	Country	P	P(fa)	PP(fa)
All publications	SOUTH AFRICA	48259	32477	67.3%
All publications	EGYPT	41284	12918	31.3%
All publications	TUNISIA	15820	6271	39.6%
All publications	NIGERIA	12223	3703	30.3%
All publications	ALGERIA	11057	3240	29.3%
All publications	MOROCCO	7742	3788	48.9%
All publications	KENYA	7087	5544	78.2%
All publications	ETHIOPIA	4140	2939	71.0%
All publications	UGANDA	3933	3078	78.3%
All publications	TANZANIA	3720	2953	79.4%

# Impact analysis

Dataset	Set	P	TCS	MNCS	PP (top 10%)	PP (collab)	PP (int collab)
All publications	Total output	170776	902996	0.86	7.6%	73.8%	59.1%
	Pubs. with FA	87152	574903	<b>1.05</b>	<b>9.7%</b>	<b>85.2%</b>	<b>75.3%</b>
	Pubs. without FA	83624	328093	0.67	5.4%	62.0%	42.2%

Dataset	Set	P	TCS	MNCS	PP (top 10%)	PP (collab)	PP (int collab)
African leading	Total output	109844	420592	0.65	5.2%	59.9%	37.1%
	Pubs. with FA	44220	204266	<b>0.77</b>	<b>6.6%</b>	<b>71.5%</b>	<b>52.4%</b>
	Pubs. without FA	65624	216326	0.57	4.3%	52.1%	26.8%

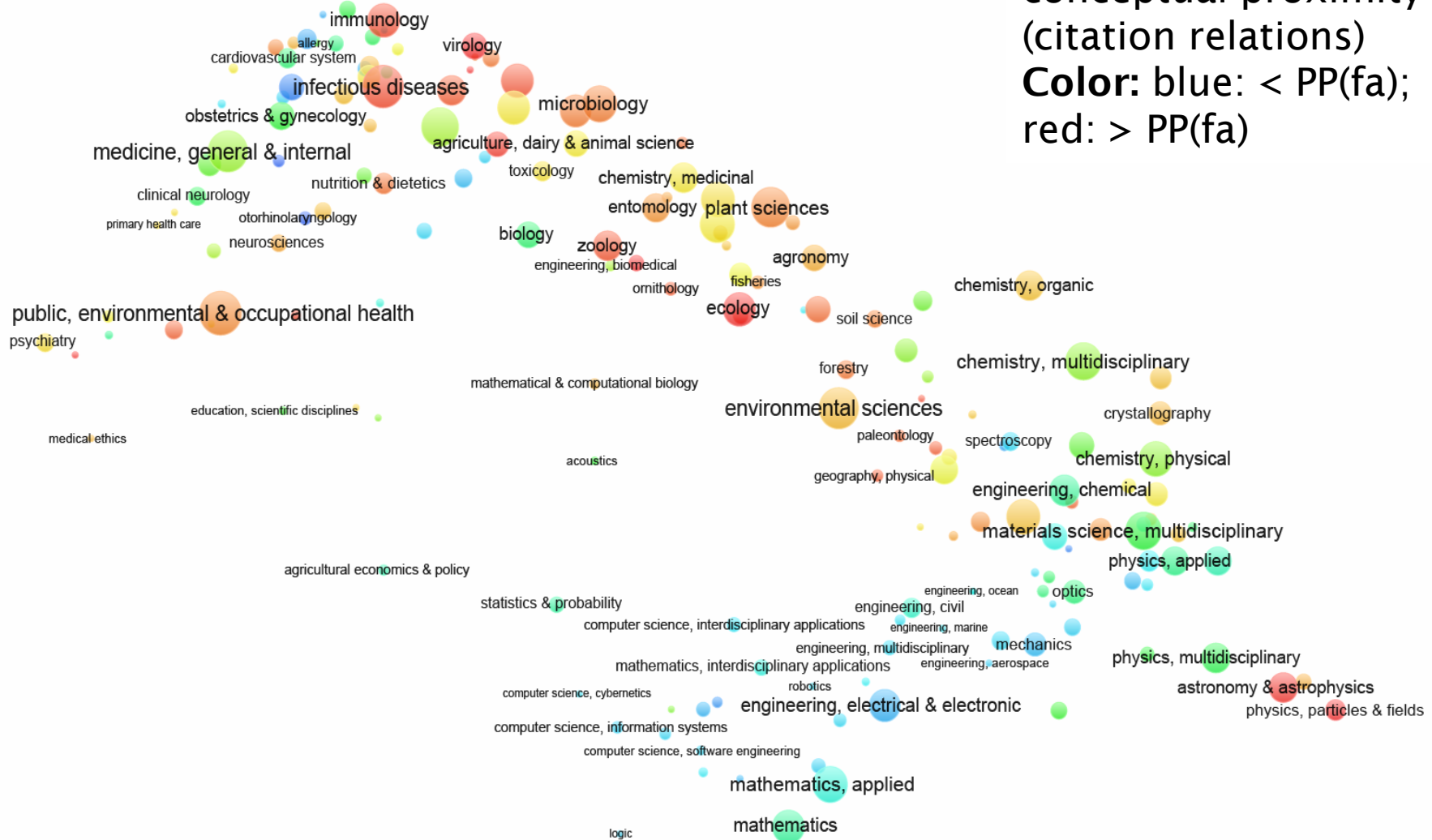


# PP(fa)– African publications

**Nodes:** WoS Subject Categories

**Closeness:** conceptual proximity (citation relations)

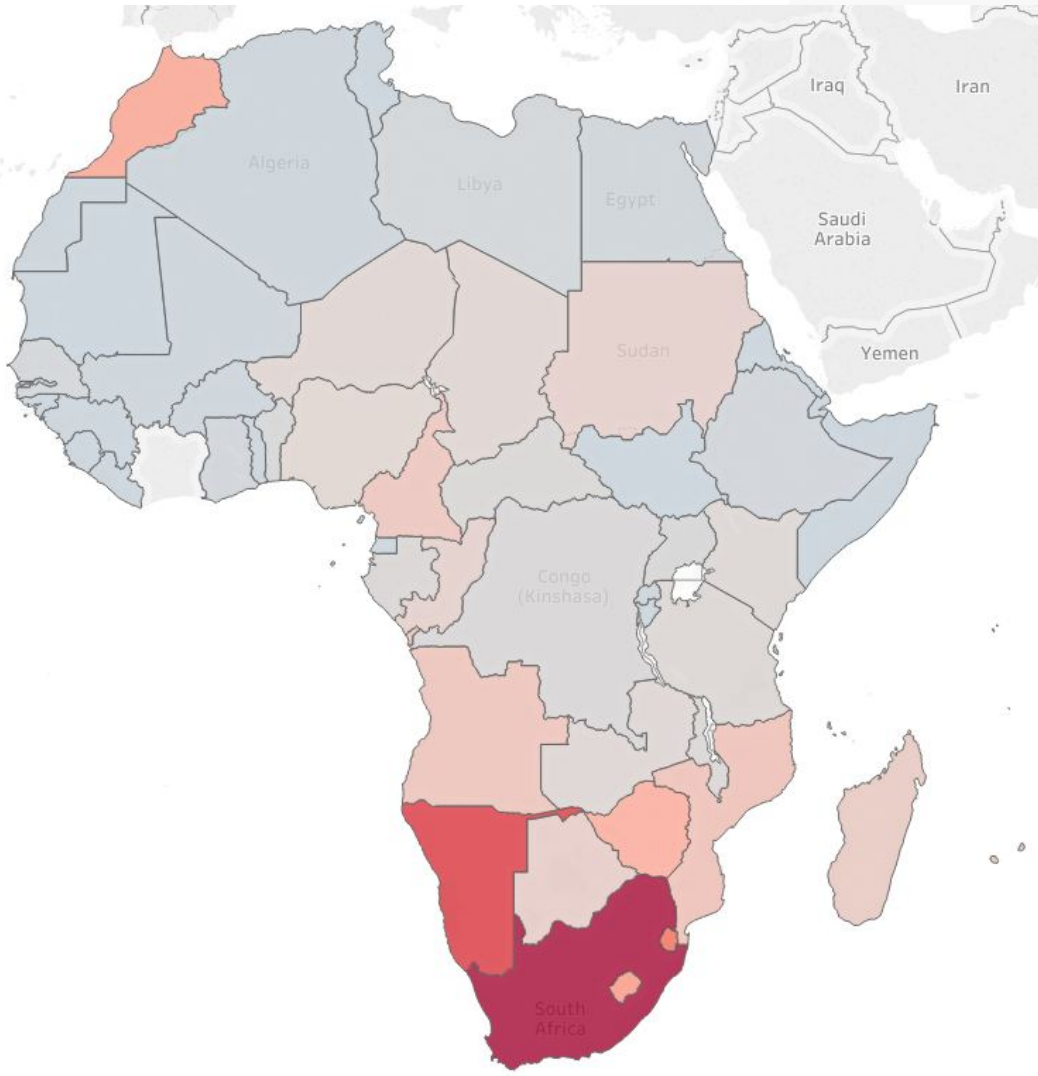
**Color:** blue: < PP(fa); red: > PP(fa)



# Most prominent funders in Africa

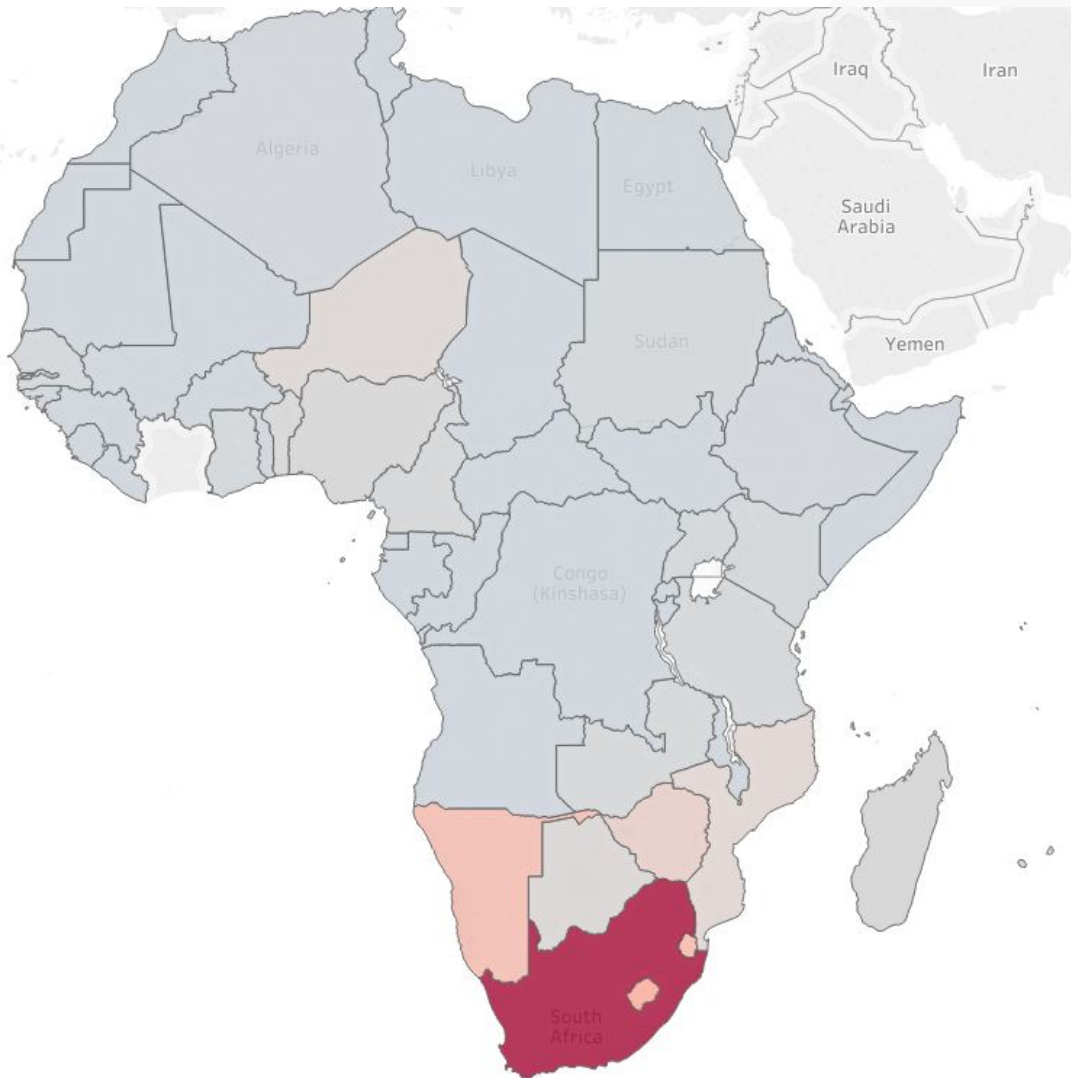
Funder	Funder country	P (%African P( FA))	TCS	MNCS	PP (top 10%)	PP (collab)	PP (int collab)
<b>National Research Foundation</b>	South Africa	11726 (14%)	66526	0.93	8.1%	62.9%	45.4%
<b>European Union</b>	Europe	3734 (4%)	44404	2.08	19.0%	96.7%	94.2%
National Institutes of Health	USA	3072 (4%)	52248	1.94	19.6%	98.7%	97.1%
<b>Wellcome Trust</b>	UK	2663 (3%)	39678	1.90	21.0%	97.4%	94.6%
Deutsche Forschungsgemeinschaft	Germany	2154 (3%)	26457	2.01	18.7%	98.2%	97.6%
<b>Bill &amp; Melinda Gates Foundation</b>	USA	1963 (2%)	36307	2.51	23.2%	97.5%	96.0%

# National Research Foundation (NRF) – countries of influence (*all pubs*)



- Threshold for red:  $PP(fa) > 1\%$
- Countries:
  - South Africa=24% (11661 pubs)
  - Namibia=16% (106 pubs)
  - Swaziland=11% (24 pubs)
  - Lesotho=6% (7 pubs)
  - Morocco =4% (324 pubs)

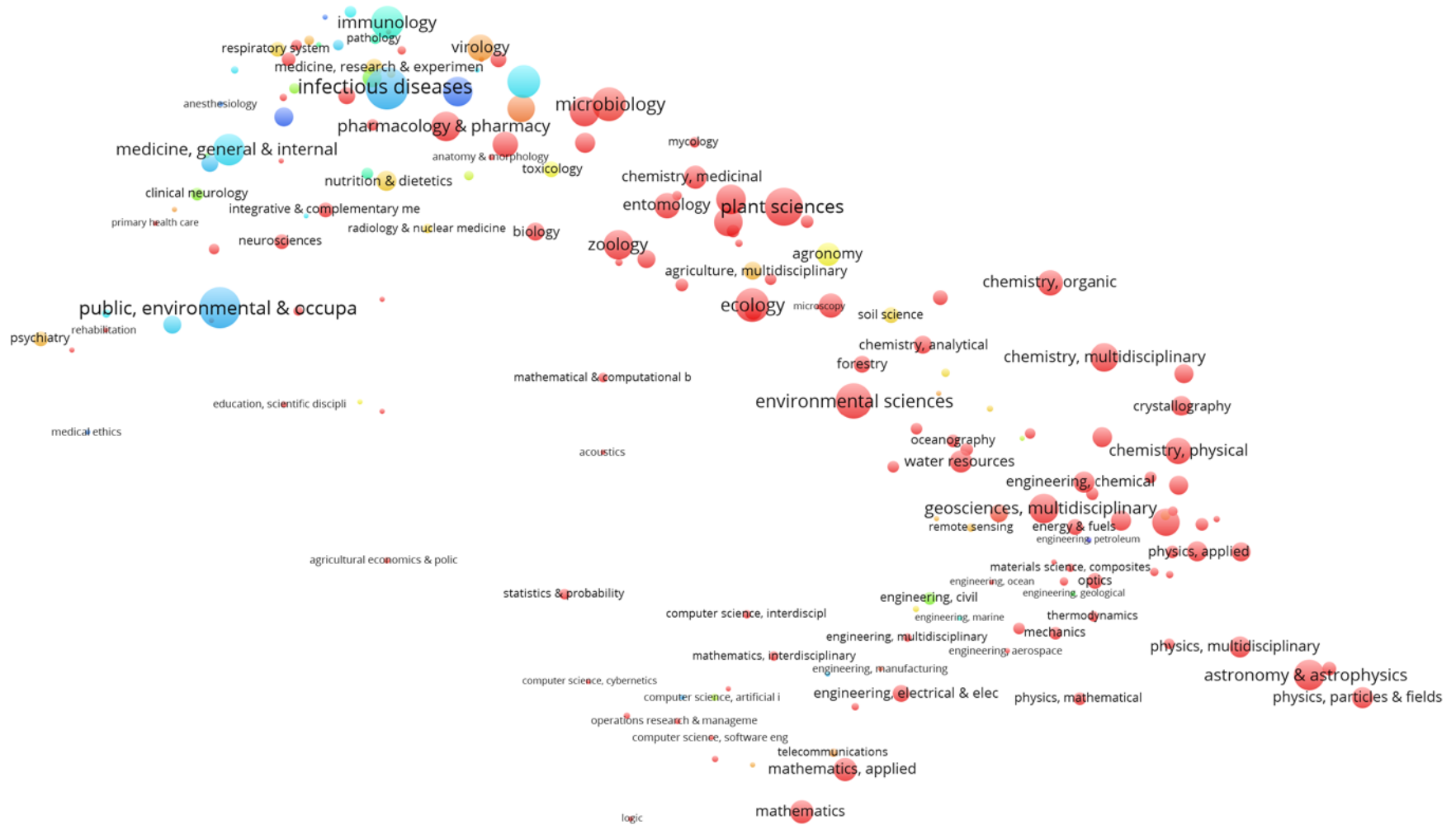
# National Research Foundation (NRF) – countries of influence (*leading*)



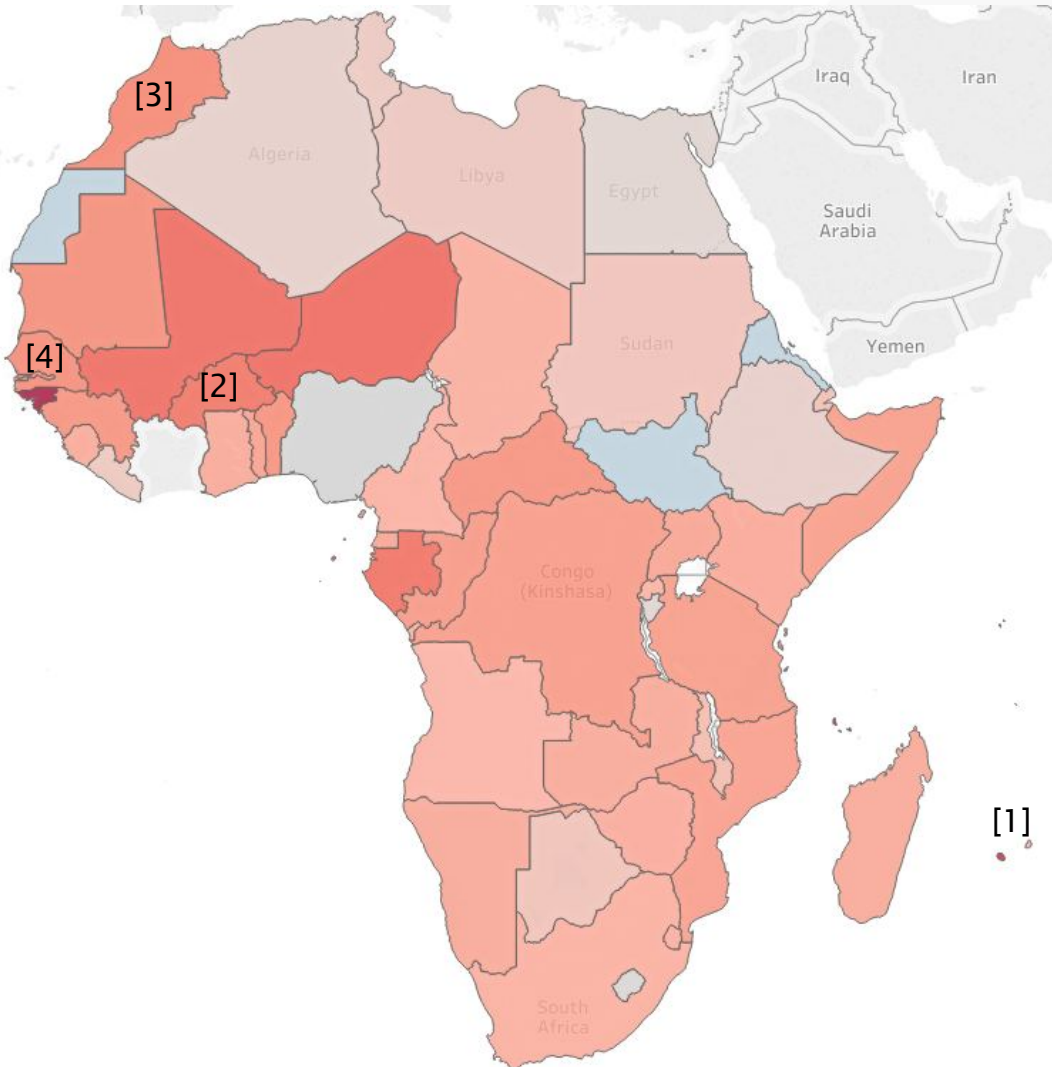
- Threshold for red:  $PP(fa) > 1\%$
- Countries:
  - South Africa=31% (9517 pubs)
  - Lesotho (2), Swaziland (2), Namibia (4), Zimbabwe (10) [2%-4%]



# NRF – PP(fa) (over P(fa))

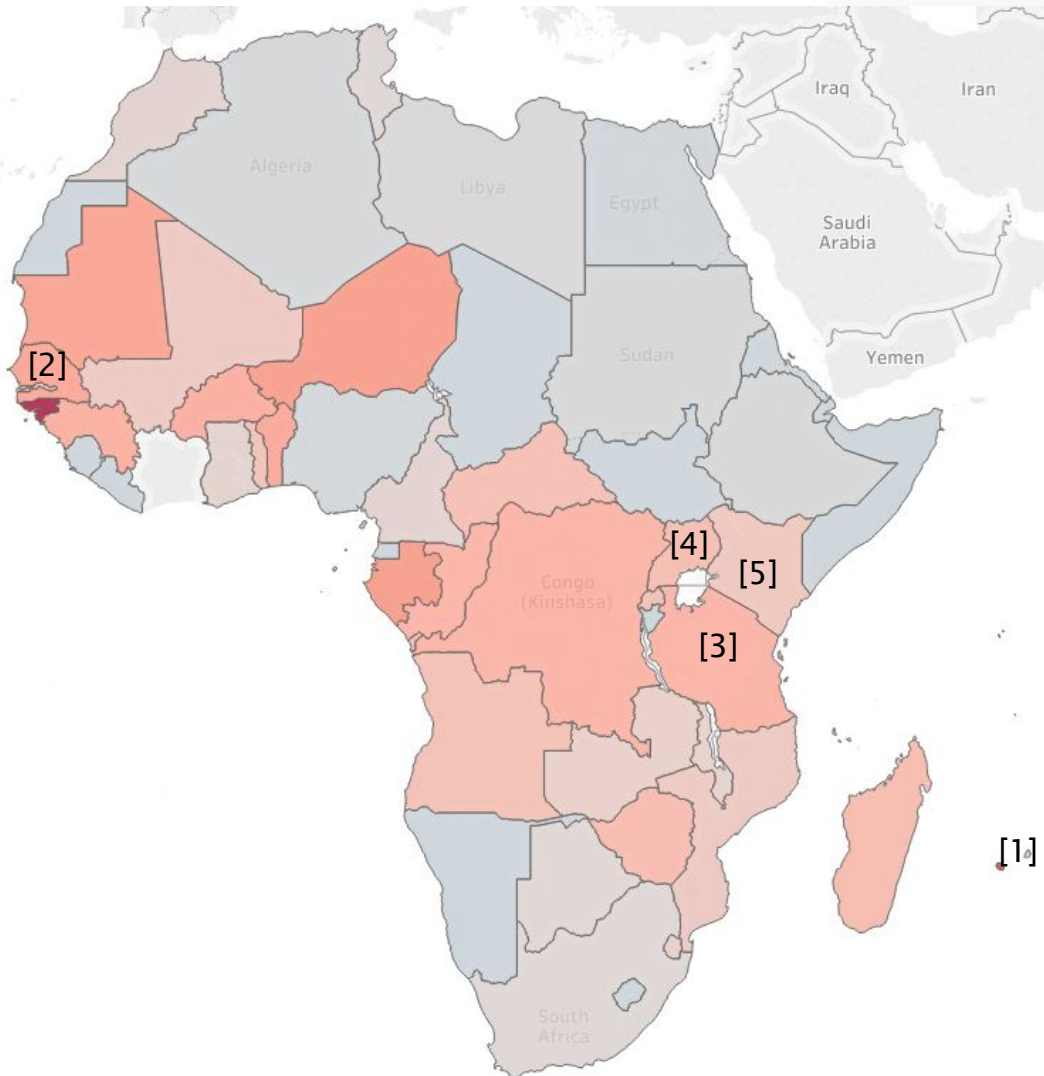


# European Union – countries of influence (*all pubs*)



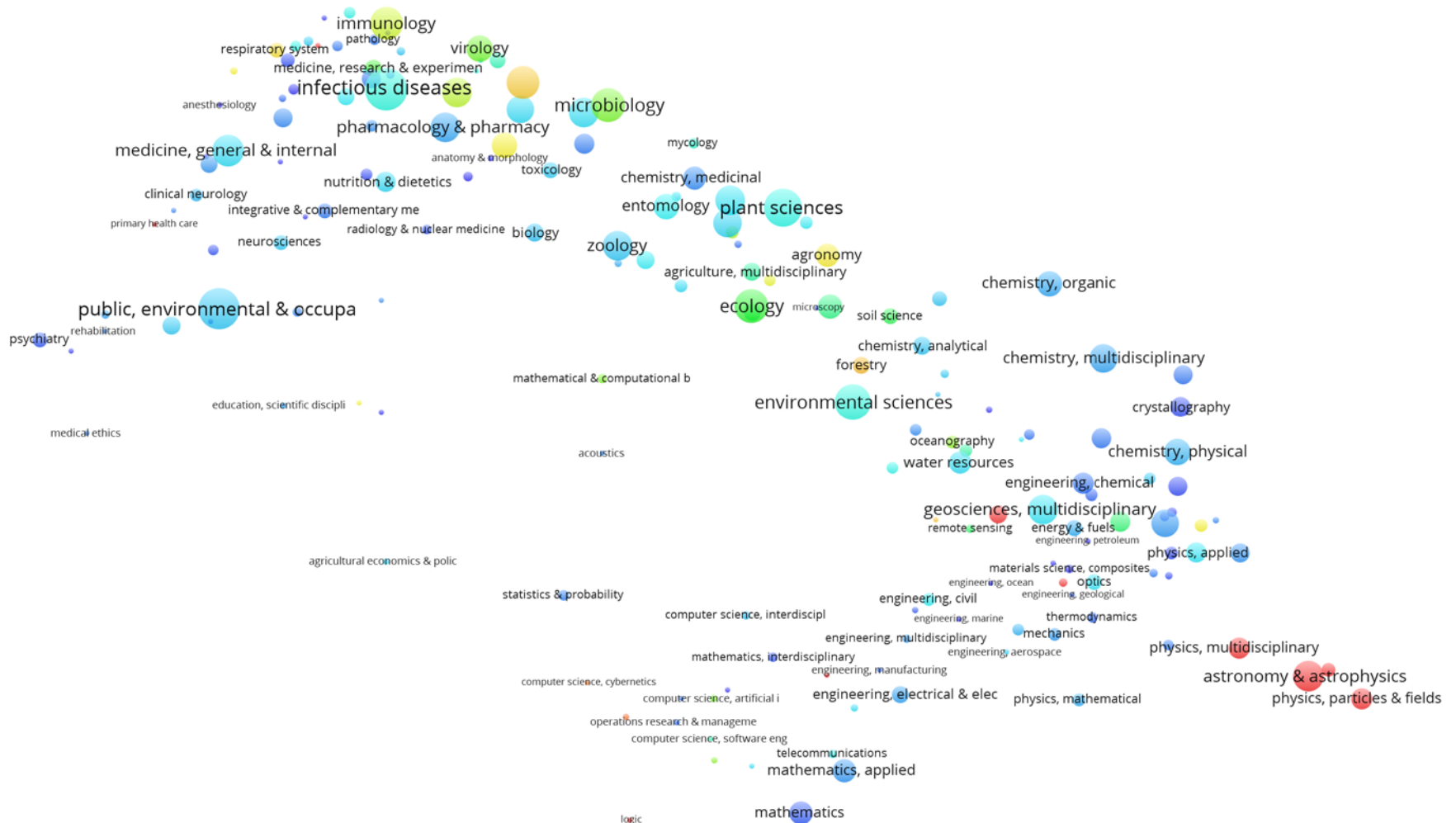
- Threshold for red:  $PP(fa) > 1\%$
- Countries
  - Reunion=15% (130 pubs) [1]
  - Burkina Faso= 9% (122 pubs) [2]
  - Morocco= 7% (538 pubs) [3]
  - Senegal=7% (115 pubs) [4]

# European Union – countries of influence (*leading*)

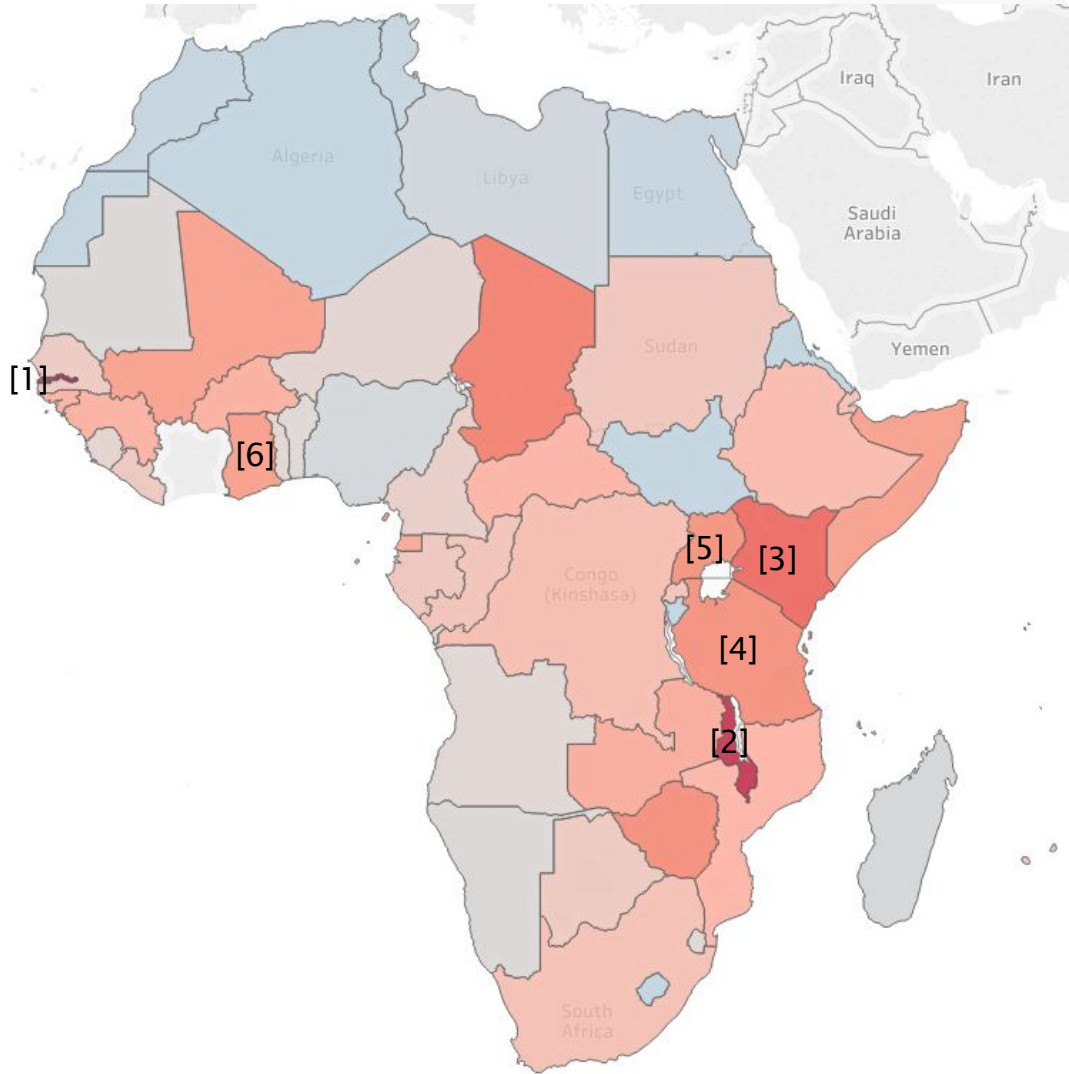


- Threshold for red:  $PP(fa) > 1\%$
- Countries
  - Reunion=19% (72 pubs) [1]
  - Senegal= 6% (34 pubs) [2]
  - Tanzania= 4% (43 pubs) [3]
  - Uganda= 3% (44 pubs) [4]
  - Kenya= 2% (59 pubs) [5]

# EU – PP(fa) (over P(fa))

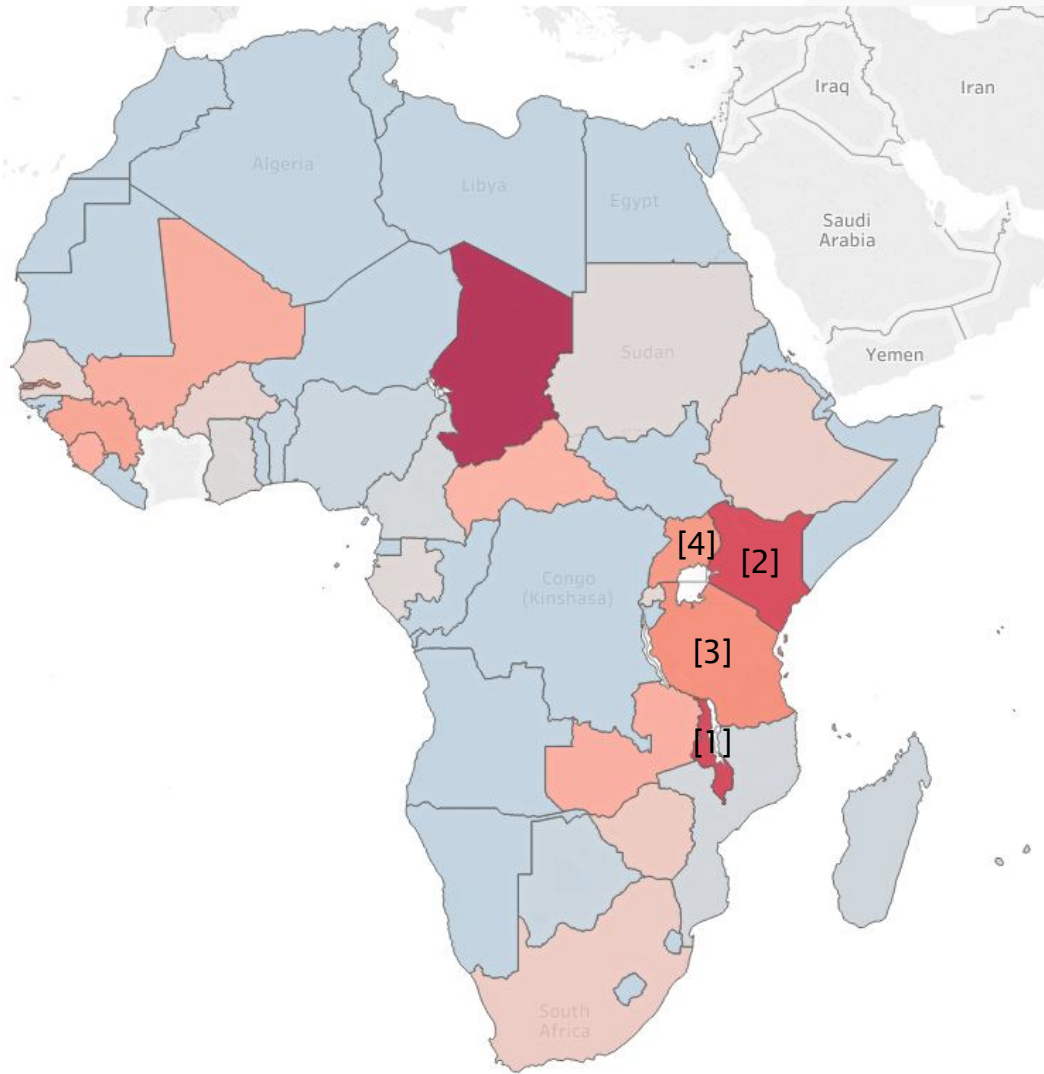


# Wellcome Trust – countries of influence (*all pubs*)



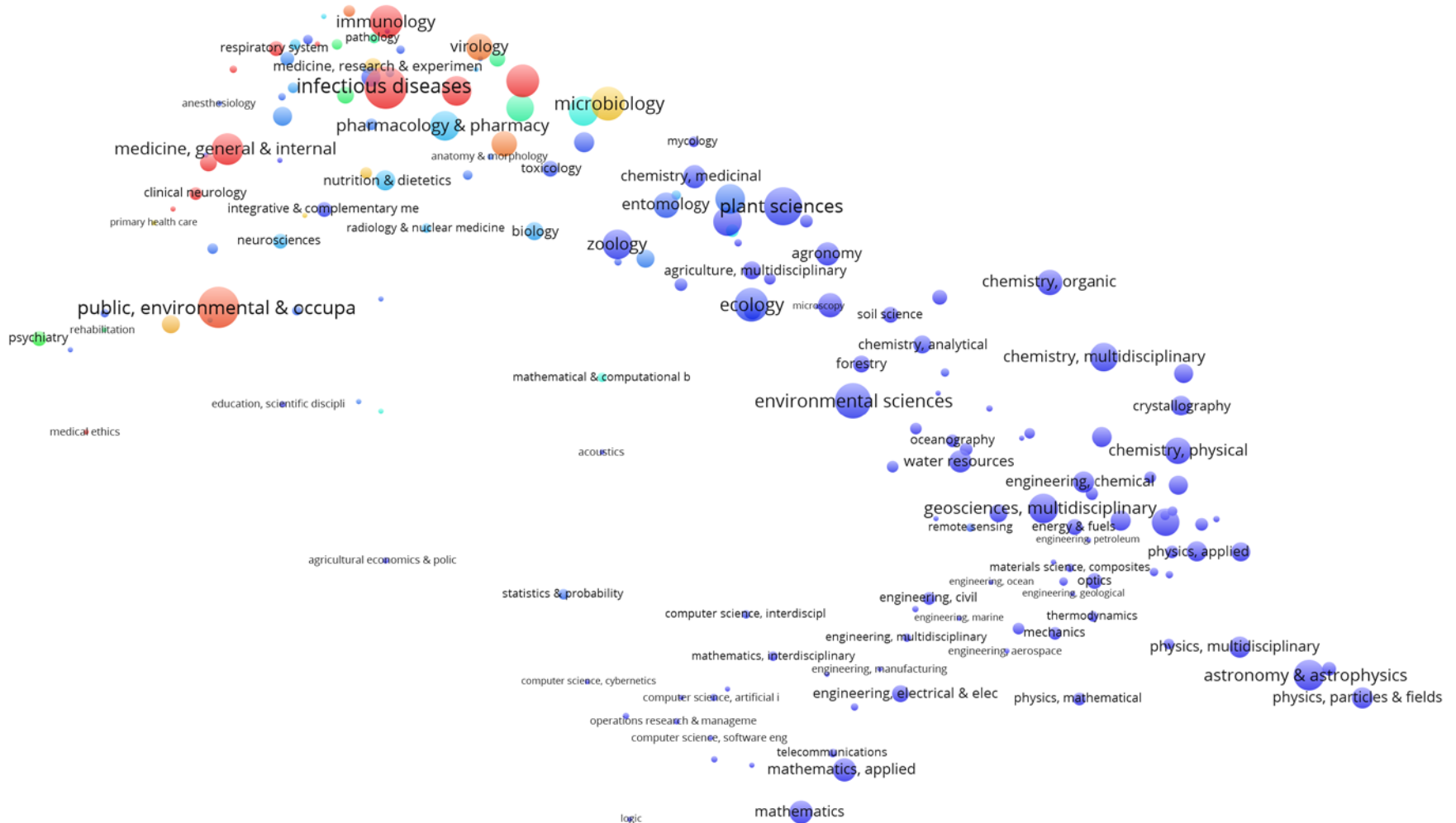
- Threshold for red:  $PP(fa) > 1\%$
- Countries:
  - Gambia=18% (108 pubs) [1]
  - Malawi=16% (264 pubs) [2]
  - Kenya=10% (701 pubs) [3]
  - Tanzania=6% (239 pubs) [4]
  - Uganda=6% (247 pubs) [5]
  - Ghana=5% (144 pubs) [6]

# Wellcome Trust – countries of influence (*leading*)

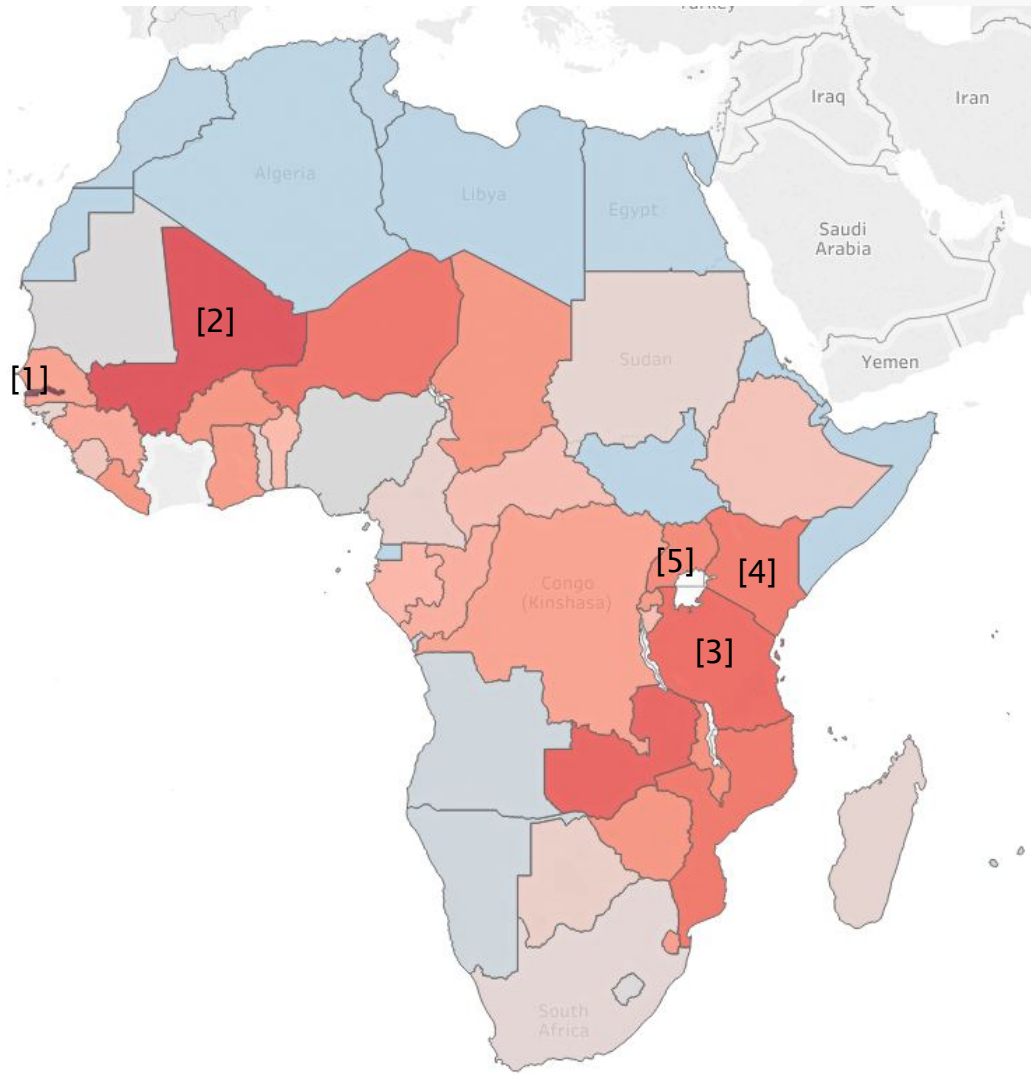


- Threshold for red:  $PP(fa) > 1\%$
- Countries:
  - Malawi=13% (74 pubs) [1]
  - Kenya=16% (341 pubs) [2]
  - Tanzania=7% (79 pubs) [3]
  - Uganda=7% (86 pubs) [4]

# WT - PP(fa) (over P(fa))



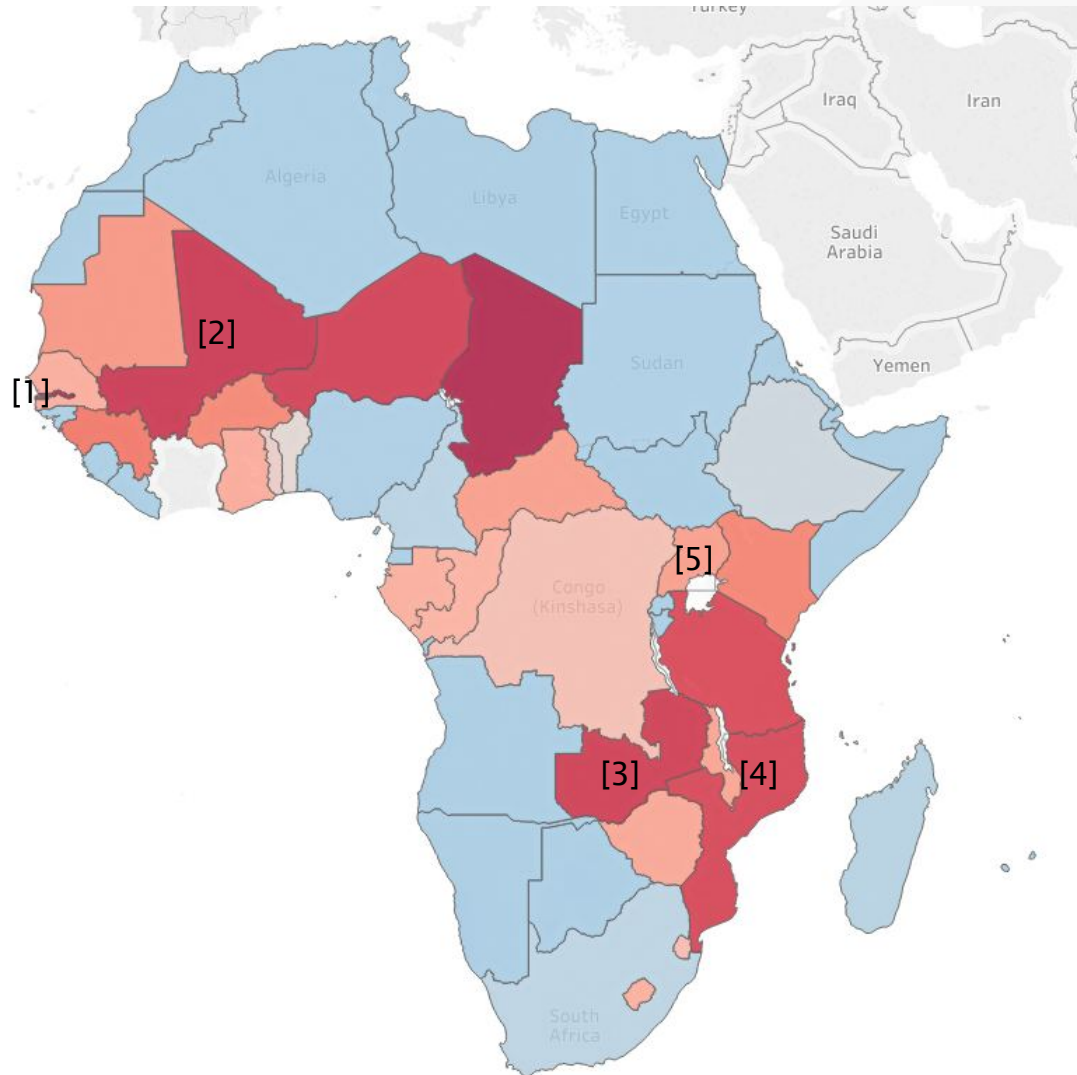
# Bill & Melinda Gates Foundation - countries of influence (*all pubs*)



- Threshold for red:  $PP(fa) > 1\%$ 
  - Gambia=14% (87 pubs) [1]
  - Mali=10% (80 pubs) [2]
  - Tanzania=8% (305 pubs) [3]
  - Kenya=7% (499 pubs) [4]
  - Uganda=6% (240 pubs) [5]

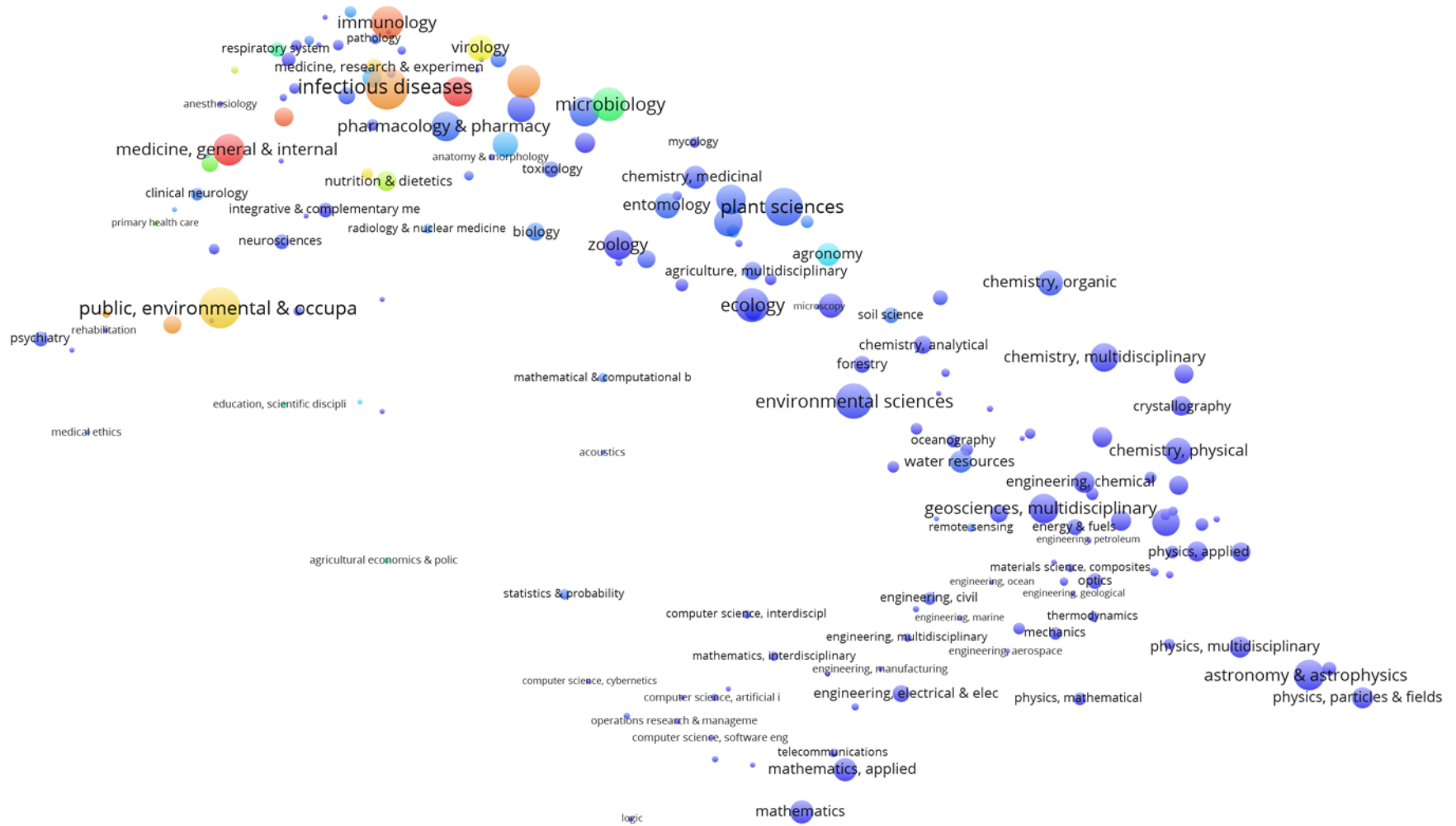


# Bill & Melinda Gates Foundation - countries of influence (*leading*)



- Threshold for red:  $PP(fa) > 1\%$ 
  - Gambia=8% (15 pubs) [1]
  - Mali=7% (11 pubs) [2]
  - Zambia=7% (22 pubs) [3]
  - Mozambique=7% (13 pubs) [4]
  - Uganda=6% (240 pubs) [5]

# Bill & Melinda Gates Foundation - PP(fa) (over P(fa))



# Summary results

- Strong role of international funding in Africa
  - ZA NRF the strongest African funder
  - EU, NIH, Wellcome Trust, Bill & Melinda Gates, etc. relevant roles
- Higher impact of publications with Funding Acknowledgements
- Higher collaboration levels of publications with Funding Acknowledgements
  - International collaboration

# Next steps

- Better funding data modeling
  - African funding
  - Funding targeted to African researchers
- Deeper qualitative perspective
  - Identification of types of ‘funding support’ (e.g. travel grants, project-based funding, scholarships, etc.)
- Validation of FA indicators with funding data from funders
  - Programs and areas of activity
  - Amounts or types of resources granted
  - Individuals/groups funded
  - Self-reported publications
- Development of more advanced indicators
  - Relationships with other indicators (collaboration effects, impact, altmetrics, etc.)



# *Altmetric landscapes in Africa: a comparison with EU28 and USA*

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Universiteit  
Leiden

# Altmetrics? Concept(s)

- Altmetrics Manifesto (2010) (<http://altmetrics.org/manifesto/>)
- *No clear definition*
  - Simple definition: ‘any metric around research products, except citations’
  - Working definition: *events on social and mainstream media platforms related to scholarly content or scholars* [...] and are not the same as [...] citations (Haustein, Bowman, Costas, 2015)
  - Frequently ‘defined’ by the data providers (e.g. Policy documents)
  - Diversity!



- Main challenge: **what do they mean?**

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## Evidence for High-Energy Extraterrestrial Neutrinos at the IceCube Detector

IceCube Collaboration\*

↪\* Full author list after Acknowledgments.

Science 22 Nov 2013:  
Vol. 342, Issue 6161, pp.  
DOI: 10.1126/science.1242856

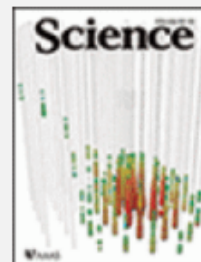
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# Detailed metadata on social media reception of publications

The screenshot displays the Altmetric website for the article "Evidence for High-Energy Extraterrestrial Neutrinos at the IceCube Detector". The page features a large circular attention score of 833, indicating the article is in the top 5% of all research outputs. Below this, a list of social media mentions is shown, including tweets from users like Jielai and Z-Pacey McSpaceFace. The interface includes navigation tabs for different content types and a sidebar with additional context.

Altmetric – Evidence for Hi... x Primer usuario

https://www.altmetric.com/details/1923909/twitter

## Evidence for High-Energy Extraterrestrial Neutrinos at the IceCube Detector

Overview of attention for article published in Science, November 2013

**833**

About this Attention Score

In the top 5% of all research outputs scored by Altmetric

Mentioned by

- 59 news outlets
- 21 blogs
- 184 tweeters

**SUMMARY** News Blogs Twitter Peer reviews Facebook Wikipedia Google+ More...

So far, Altmetric has seen **196** tweets from **184** users, with an upper bound of **1,370,654** followers.

Showing items 1-100 1 2

**Jielai** @zhangjielai  
RT @JossBlandHawtho: Amazing - IceCube (km cube under ice at South Pole) starting to isolate neutrino directions: <https://t.co/N3fo42nOWL> h...  
07 Apr 2016

**Z-Pacey McSpaceFace** @zpacefromspace  
RT @JossBlandHawtho: Amazing - IceCube (km cube under ice at South Pole) starting to isolate neutrino directions: <https://t.co/N3fo42nOWL> h...  
07 Apr 2016

CWIS










# The altmetric landscapes of Africa

- Web of Science publications
  - African countries, EU28 countries and USA
  - All document types
  - Period 2012-2014
- Altmetric.com indicators (up to April 2016)
  - Basic indicators
  - Identification of topics with ‘social media interest’
  - Identification of ‘communities of attention’

# Basic indicators

- Counts

Unit	p	<sup>p</sup> doi/pmid	<sup>pp</sup> doi/pmid	 <b>ttw</b>	 <b>tfb</b>	 <b>tb</b>	 <b>tn</b>	 <b>tgp</b>	 <b>tf1</b>	 <b>tpd</b>	<b>twk</b>
Africa	125801	104040	82.7%	190794	21504	6128	11294	2950	698	887	1249
EU28	1605420	1305386	81.3%	2034886	224366	67262	118568	40204	14106	4153	16006
USA	1686054	1281619	76.0%	3461185	356098	136678	263514	71995	23610	4964	22810

- Averages

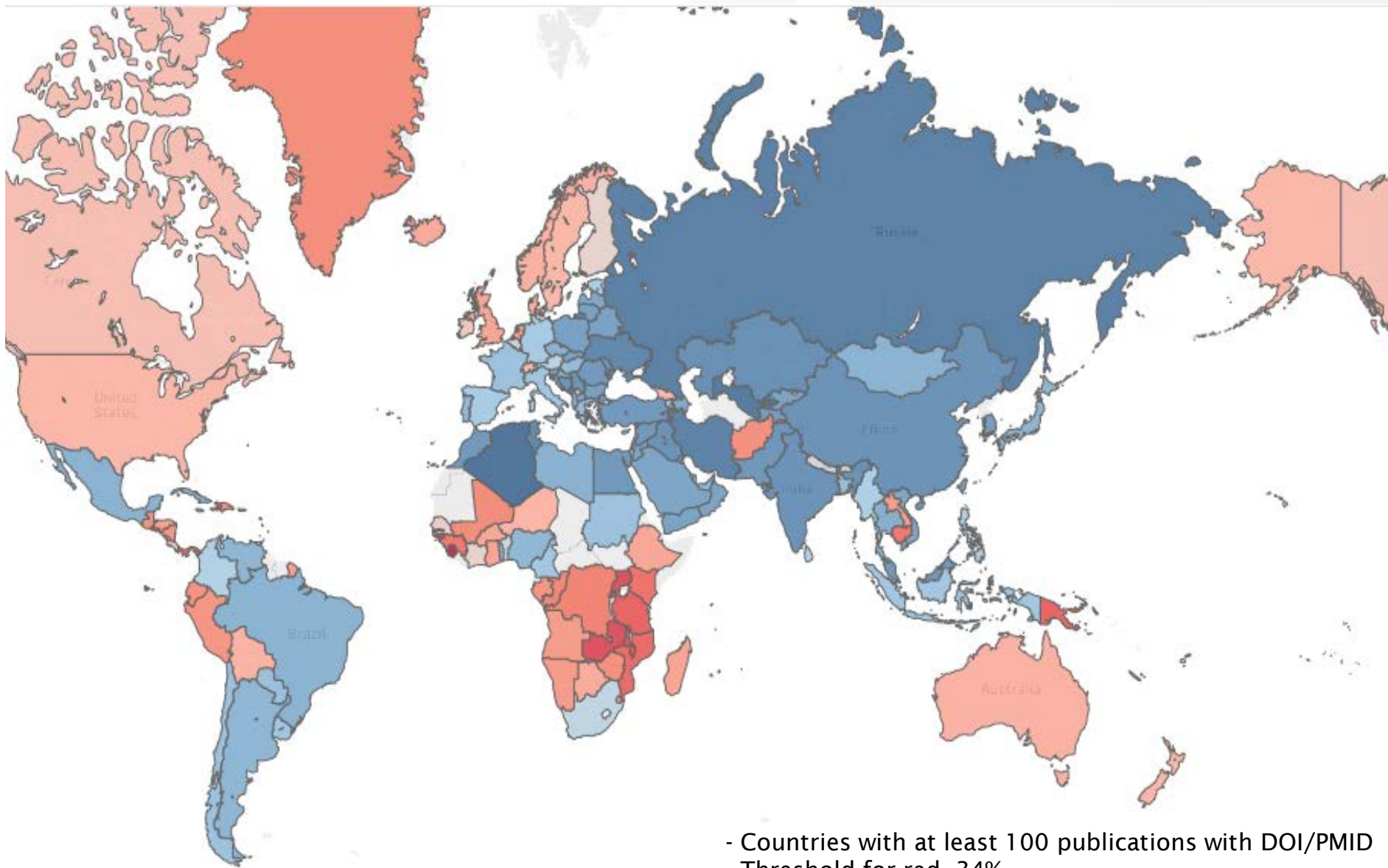
Unit	<sup>P</sup> doi/pmid	<b>mtw</b>	<b>mfb</b>	<b>mb</b>	<b>mn</b>	<b>mgp</b>	<b>mf1</b>	<b>mpd</b>	<b>mwk</b>
Africa	104040	1.83	0.21	0.06	0.11	0.03	0.01	0.01	0.02
EU28	1305386	1.56	0.17	0.05	0.09	0.03	0.01	0.00	0.02
USA	1281619	2.70	0.28	0.11	0.21	0.06	0.02	0.00	0.03

# Basic indicators

- Coverage

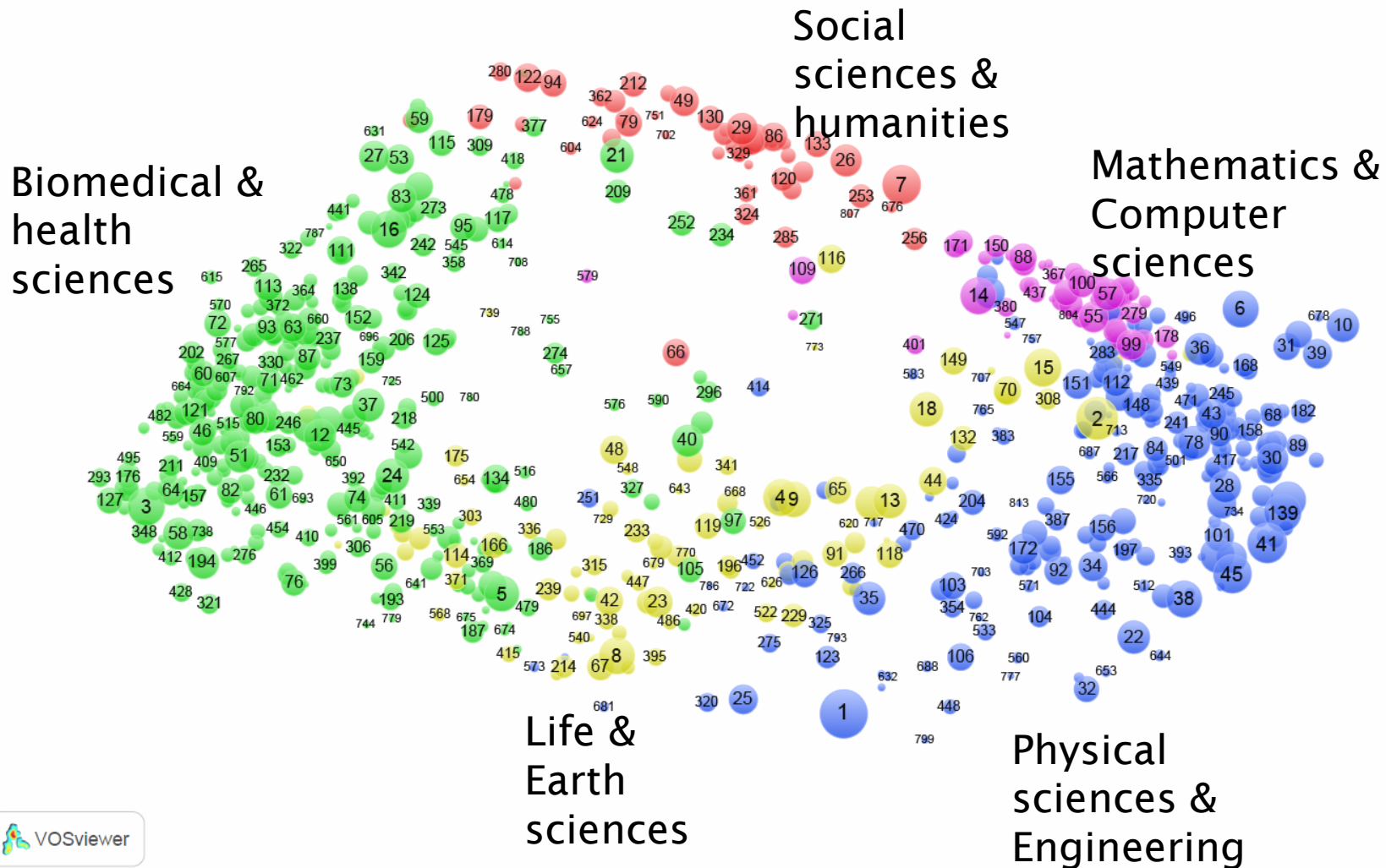
Unit	P doi_pmid	PP (tw1)	PP (fb1)	PP (b1)	PP (n1)	PP (gp1)	PP (f11)	Pp (pd1)	PP (wk1)
Africa	104040	27.02%	7.47%	2.73%	2.12%	0.98%	0.53%	0.64%	1.20%
EU28	1305386	28.50%	6.45%	2.71%	2.32%	1.22%	0.84%	0.25%	1.23%
USA	1281619	37.39%	9.62%	5.09%	4.48%	2.05%	1.42%	0.29%	1.78%

# Twitter coverage landscape worldwide

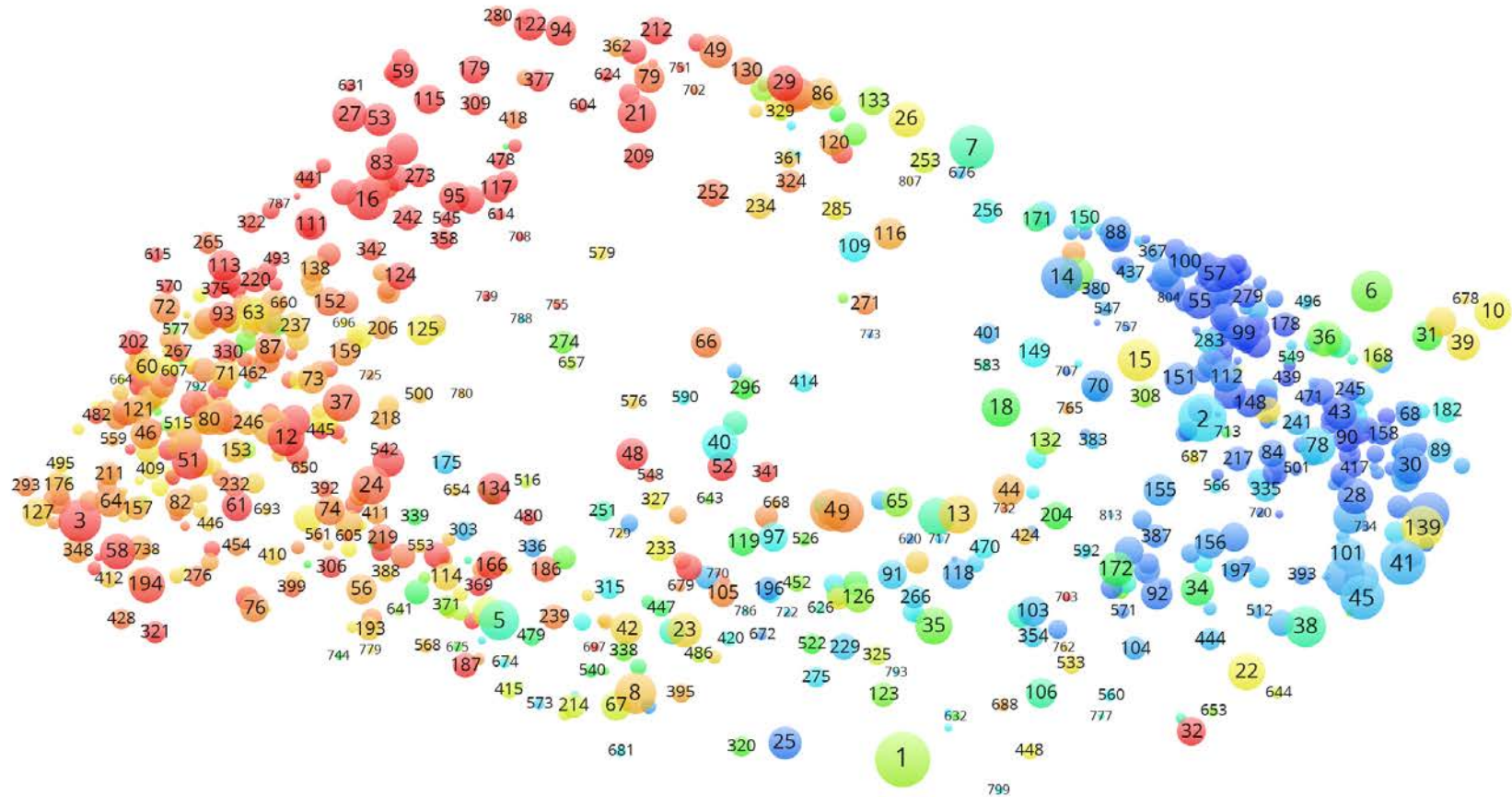


- Countries with at least 100 publications with DOI/PMID
- Threshold for red=34%

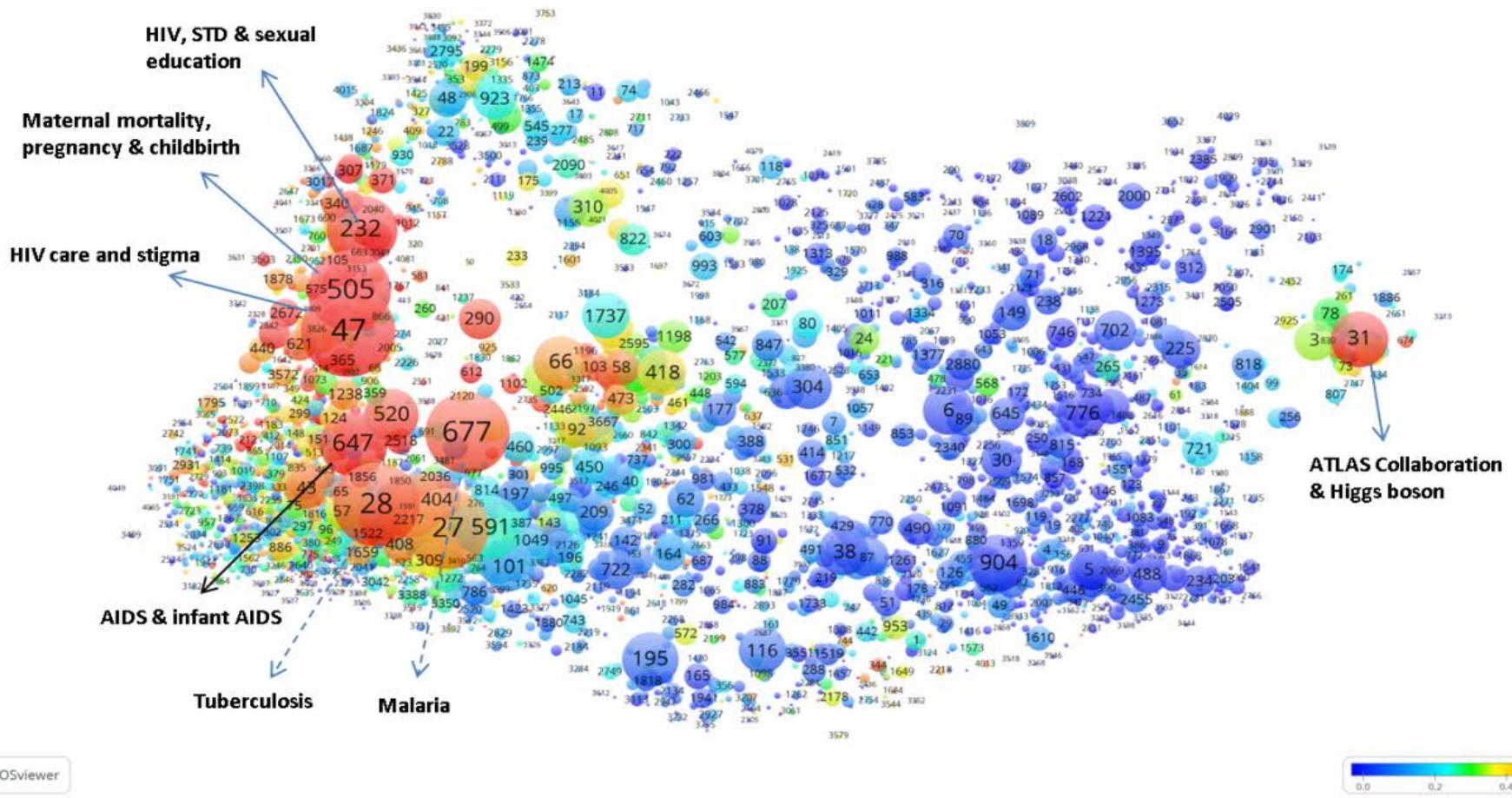
# Altmetric thematic landscape: analysis by 'topics'



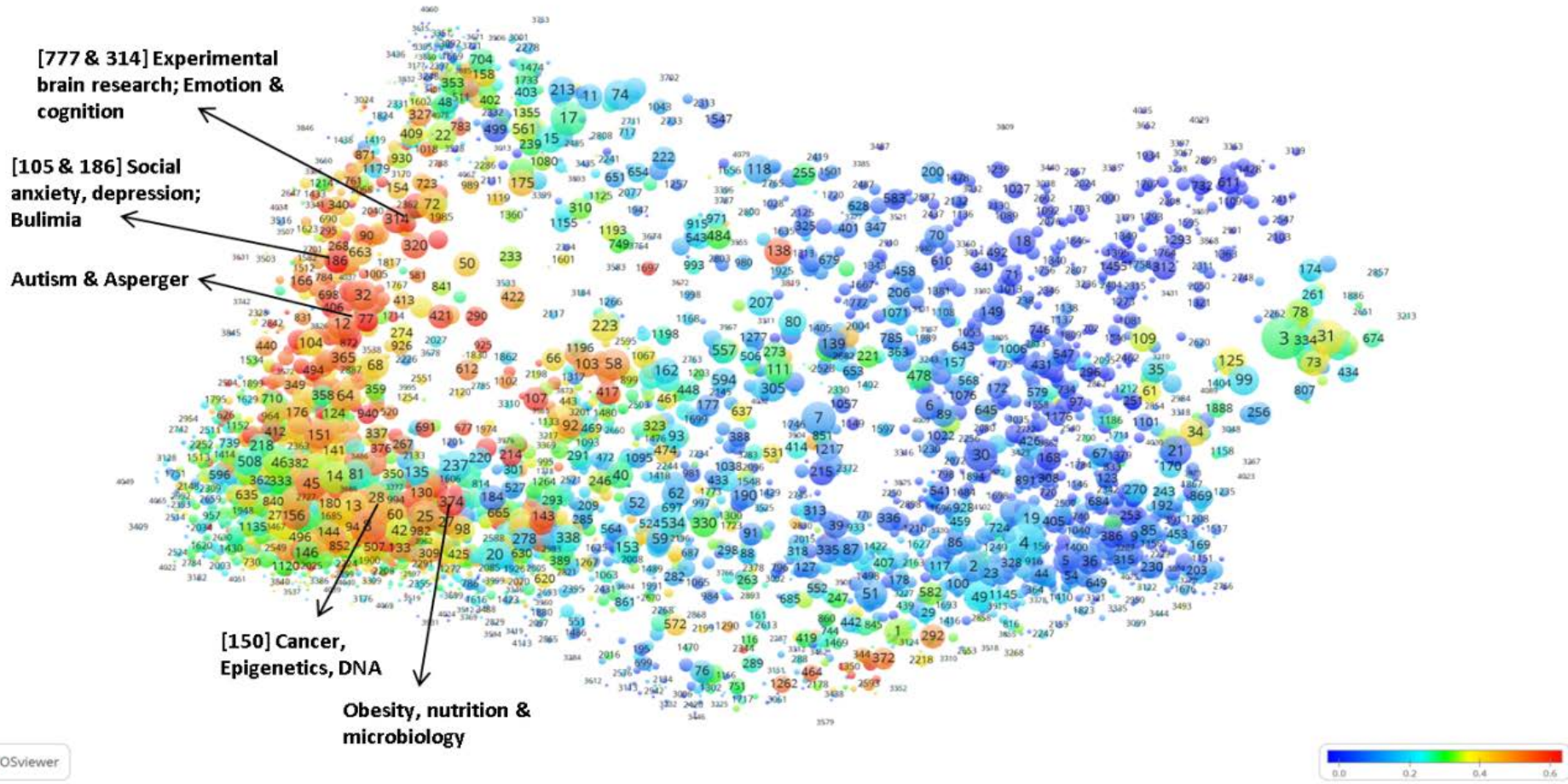
# Global topics with the highest PP(tw1)



# Africa



# EU28











# Conclusions

- Possibilities of altmetrics for the analysis of scientific communication landscapes worldwide
- Relative high visibility of African publications in Social Media (central & eastern Africa)
  - Exception of Northern Africa
- Health-related topics (HIV, STD, etc.) central in African research
  - Highly visible in Twitter and social media
  - Contrast with European/USA topics: cancer, obesity and psychological disorders
- Health-oriented community of attention around African publications
  - Ecology and local actors

# Further research

- Expanding the understanding of communities of attention:
  - Identification of ‘African’ attention:
    - *What topics do Twitter users from Africa discuss the most?*  
Comparison with other countries
  - Other communities: bloggers, newspapers, etc.
- Increasing coverage and scope
  - Local African publications
  - Mendeley.com

**Thank you very much!**