



# LA SCIENCE À L'ÉPREUVE DE LA DÉSINFORMATION

**David Chavalarias**

Directeur de Recherche CNRS

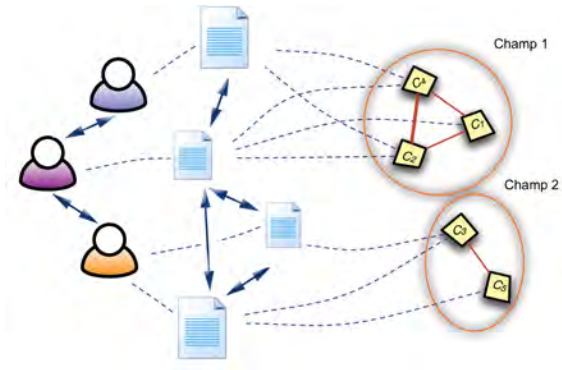
<http://chavalarias.org>

**Université Paris-Saclay**

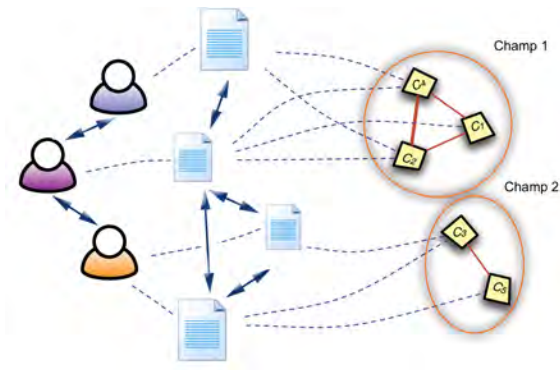
**30 Mai 2022**



# Objets d'étude



# Objets d'étude



1. ISTEEX: littérature académique interdisciplinaire,
2. HAL : archives des EPST français,
3. REPEC : archives pour les sciences économiques
4. ISIDORE : accès unifié aux données de la recherche dans les sciences humaines et sociales,
5. PubMeb : principale archive de la recherche bio-médicale,
6. SCOAP : archives pour la physique des particules.

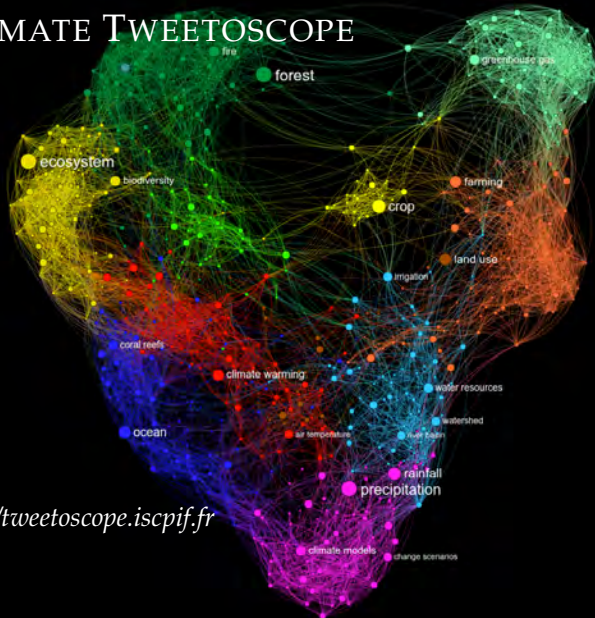
# Trois caractéristiques des environnements numériques

Différences majeurs entre environnement numérique et monde physique :

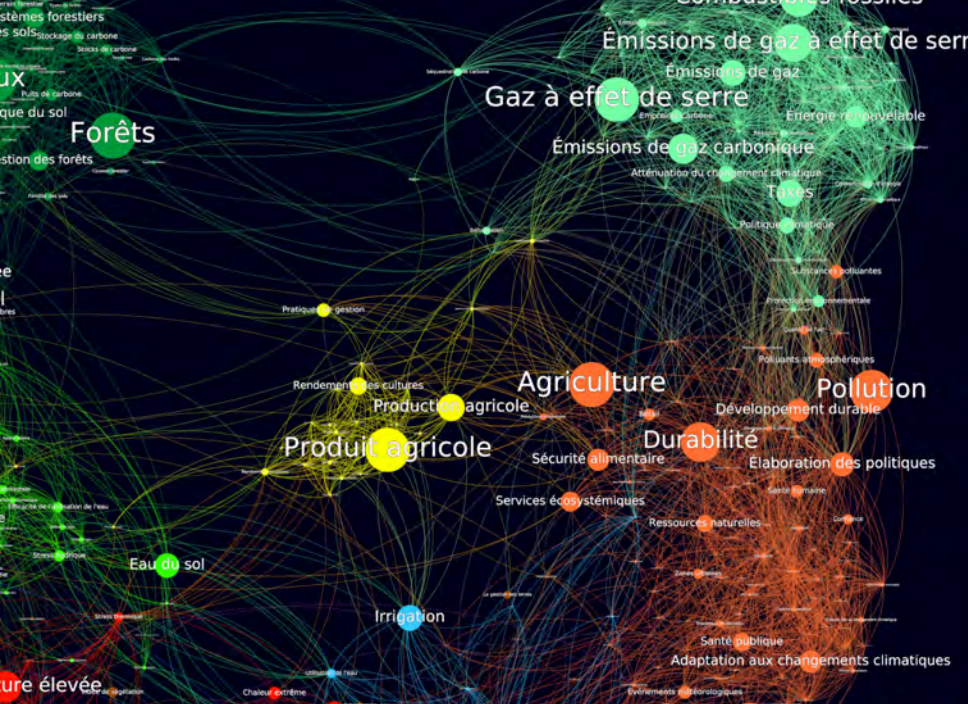
- ▶ déspatialisation / massification,
- ▶ instantanéité,
- ▶ confusion des identités et des messages

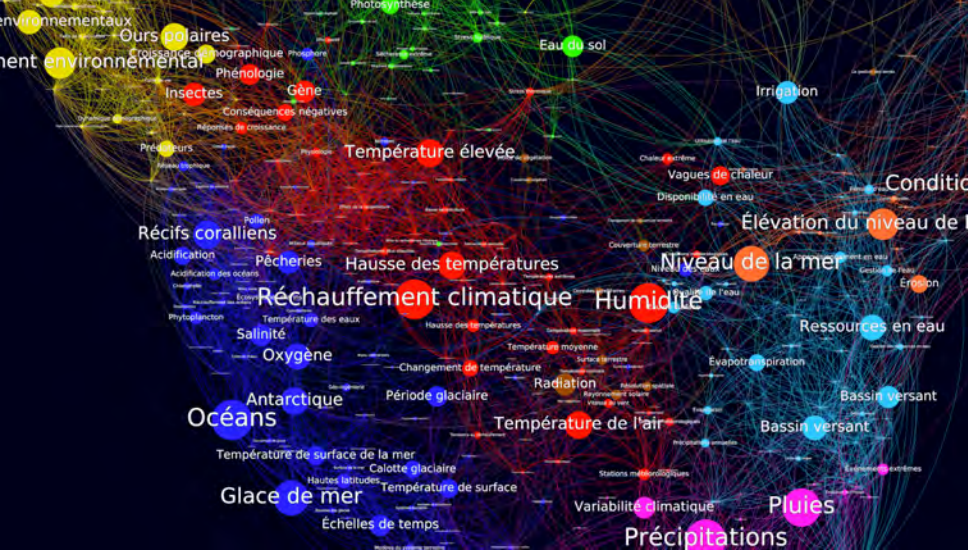


# CLIMATE TWEETOSCOPE

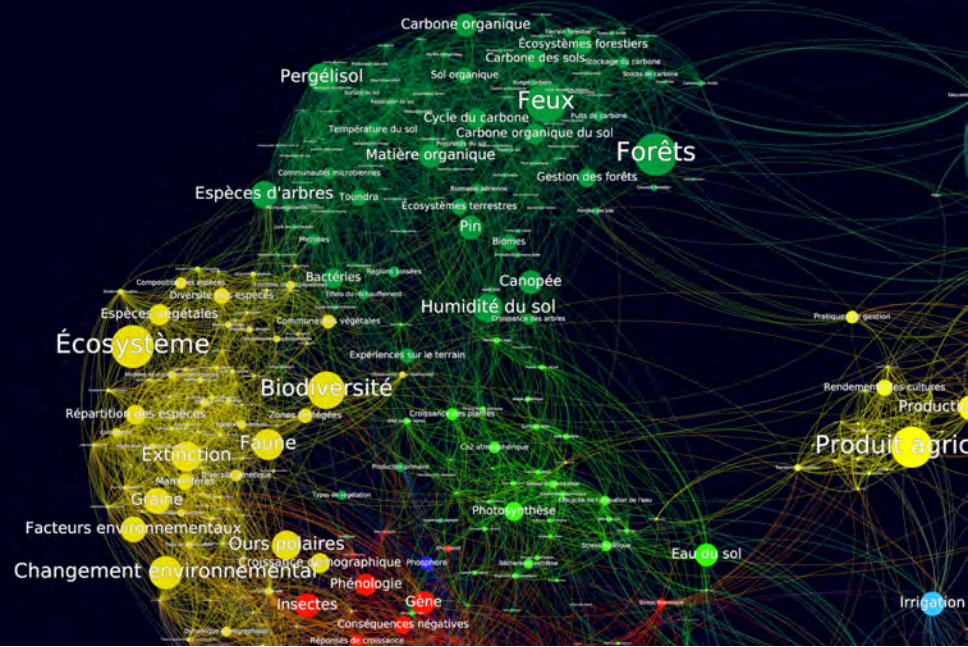


<http://tweetoscope.iscpif.fr>

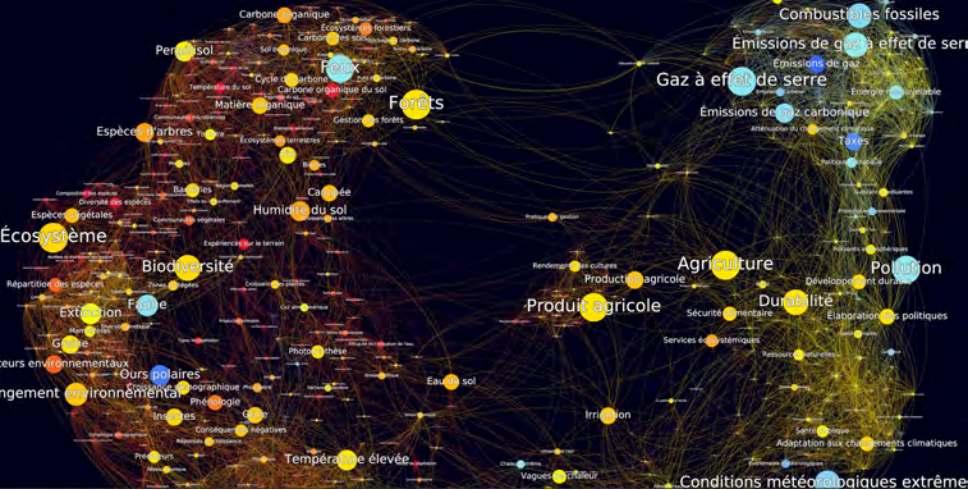




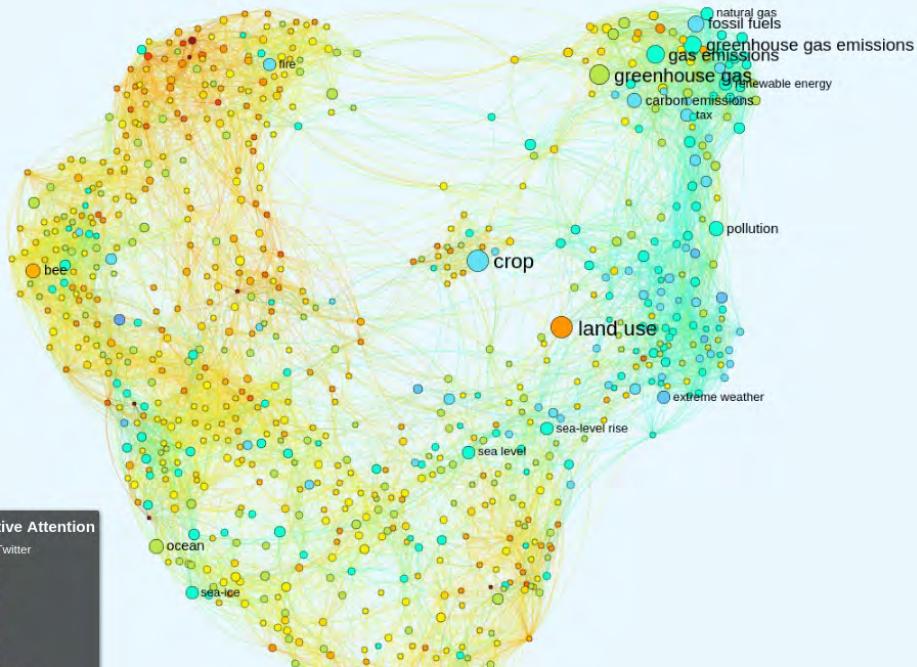








## COMPARISON BETWEEN ACADEMIC AND WEB ATTENTION



## Il n'y a pas de changement climatique

**DSR** @DSR10000000  
Climate Change is not REAL! It's about making people fear so the government can have control of the people! Vote Trump2020 🇺🇸🇺🇸

**Is Climate Change an Existential Threat?** PragerU  
This video was made possible thanks to the generous support of Dr. Bob. Peter Morgan: Is climate change a...  
(prageru.com)

6:58 PM · 21 oct. 2019 · Twitter for iPhone

14 Retweets · 2 Tweets cités · 15 2 aime

## Il n'y a pas de consensus

**Patrick Moore** @PatrickMoore  
I'm proud to be one of the 500 scientists who signed this letter in the form of a petition calling for some common sense to prevail. There is no "emergency" or "crisis" or "catastrophe". Just the normal climate which is variable and sometimes pleasant and sometimes harsh. [twitter.com/drwaheeduddin/...](https://twitter.com/drwaheeduddin/)

**Global Warming?** on Neptune matches Earth's global warming - and follows solar activity.

3:00 PM · 23 oct. 2019 · Twitter for iPhone

3231 Retweets · 213 Tweets cités · 6 728 aime

## Qui sont ces "scientifiques" ?

**Malcolm Roberts** @MalcolmR202  
Does Adam realise that amongst the Australian "scientists" declaring a climate emergency are a naturopath, a hypnotist, an industrial designer, a commercial business analyst, and a psychologist?

Unprecedented propaganda!

**Adam Barnett** @AdamBarnett 6 Nov. 2019  
This is unprecedented.

11,000 scientists from around world unite to declare global climate emergency

Governments, including our own, have not got global warming under control

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## Il y a un agenda politique

**Terence Conran** @TerenceConran · 6 Nov. 2019  
A very interesting read:

Terence Conran: Why the left loves a climate crisis

Leftists with radical agendas are mounting a global climate campaign to bulldoze market capitalism and build a new socialist democratic paradise

**Robyn Gold** @ClimateAction



Terence Conran: Why the left loves a climate crisis

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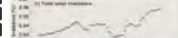
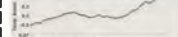
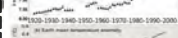
Terence Conran: Why the left loves a climate crisis

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## C'est la variabilité climatique

**Global Warming?** on Neptune matches Earth's global warming - and follows solar activity.



## Le CO2 est bon

**Kate Savage** @KateSavage  
"Carbon dioxide is plant food. The attack on emissions of the irrational attack on industry, our freedoms and prosperity. It has no environment."

Four points:

1. Fossil fuels make everything in our world possible.

2. CO2 isn't pollution. It's plant food. Our world is greener than ever before.

3. There is no climate 'crisis.'

4. Exxon is too stupid to defend itself. You need not be.

[nyti.ms/2qA2WdT](https://nyti.ms/2qA2WdT)

**nyti.ms/2qA2WdT**

2:53 PM · 23 oct. 2019 · Twitter Web Client

157 Retweets · 7 Tweets cités · 311 aime

HOW DID WE END UP 100 YEARS LATER WITH SO MANY CLIMATE CHANGE DENIERS ON SOCIAL NETWORKS ?

# Revenons en 1912 ...

## The Rodney & Otamatea Times

WAITEMATA & KAIPARA GAZETTE.

PRICE—10s per annum in advance

WARKWORTH, WEDNESDAY, AUGUST 14, 1912.

3d. per Copy.

### Science Notes and News.

#### COAL CONSUMPTION AFFECTING CLIMATE.

The furnaces of the world are now burning about 2,000,000,000 tons of coal a year. When this is burned, uniting with oxygen, it adds about 7,000,000,000 tons of carbon dioxide to the atmosphere yearly. This tends to make the air a more effective blanket for the earth and to raise its temperature. The effect may be considerable in a few centuries.

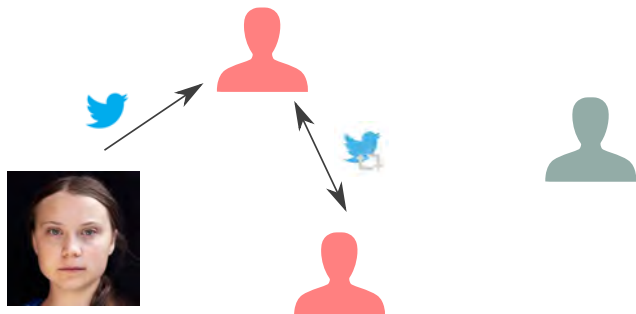
# OBSERVER NOS ENVIRONNEMENTS NUMÉRIQUES

# LA “GÉOGRAPHIE DES ESPACES NUMÉRIQUES”



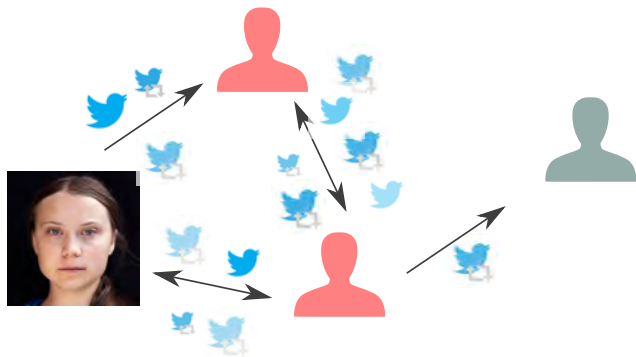
# Structure de l'espace politique sur Twitter

La récurrence de retweets politiques (sans modification), reflète souvent l'adhésion aux opinions de leur auteur.



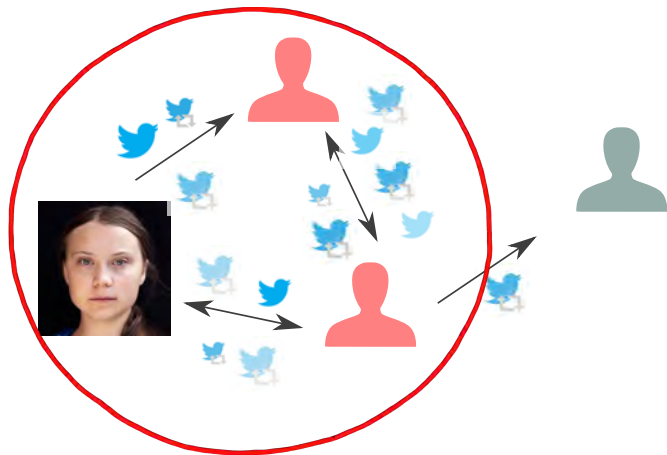
# Identification de communautés politiques sur Twitter

L'information politique circule de manière préférentielle entre personnes de même bord politique.



# Identification de communautés politiques sur Twitter

Les communautés politiques en ligne peuvent être définies comme les zones denses du graphe de retweets.



# Algorithmes de clustering

- ▶ Fast unfolding of communities in large networks, V. D. Blondel, J.-L. Guillaume, R. Lambiotte, E. Lefebvre (2008)
- ▶ division/effacement, Girvan, Newman 2002–2004, Radicchi et al. 2004
- ▶ agglomeration recursive, Pons, Latapy 2006
- ▶ Maximiser une fonction objectif, Clauset, Newman, Moore 2004, Wu, Huberman 2004



# CHANGEMENT CLIMATIQUE PAYSAGE TWITTER (2019 Q4)

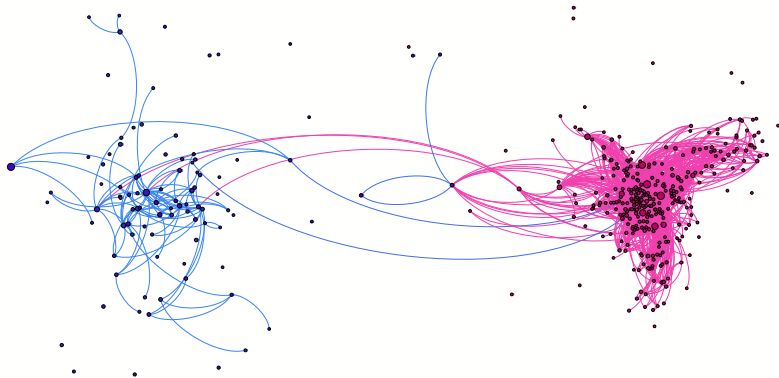
The background of the slide is a dark, almost black, field filled with a complex network of nodes and edges. The nodes are small, semi-transparent circles in shades of blue and red. The edges are thin, light-colored lines connecting these nodes, creating a dense, web-like structure. The overall appearance is that of a large-scale network graph, possibly representing social interactions or information flow. The text is centered in the lower half of the image.

QUELLE EST LA DIFFÉRENCE ENTRE  
CLIMATO-SCEPTIQUES ET DÉFENSEURS DU  
CONSENSUS ?



# QUELLE EST LA DIFFÉRENCE ENTRE CLIMATO-SCEPTIQUES ET DÉFENSEURS DU CONSENSUS ?

Les communautés sceptiques ont un noyau dur  
d'utilisateurs actifs et densément connectés.



# QUELLE EST LA DIFFÉRENCE ENTRE CLIMATO-SCEPTIQUES ET DÉFENSEURS DU CONSENSUS ?

Les communautés sceptiques ont des dynamiques non authentiques,



# WHAT ARE DIFFERENCE BETWEEN CONSENSUS AND SKEPTICS SIDES ?

Les communautés sceptiques ont des schémas d'expertise non authentiques,

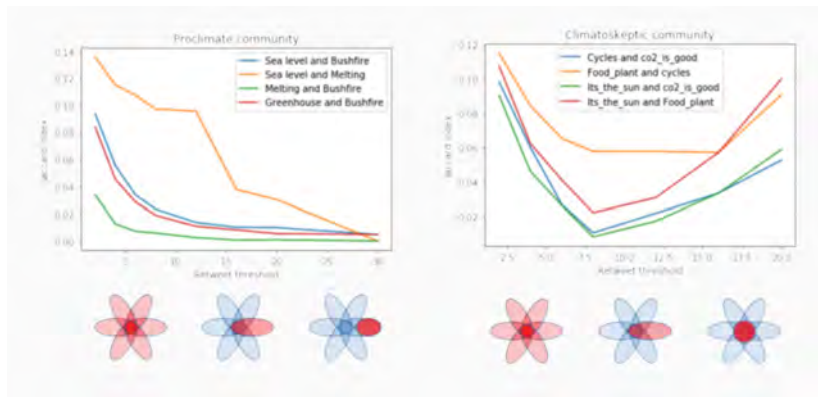
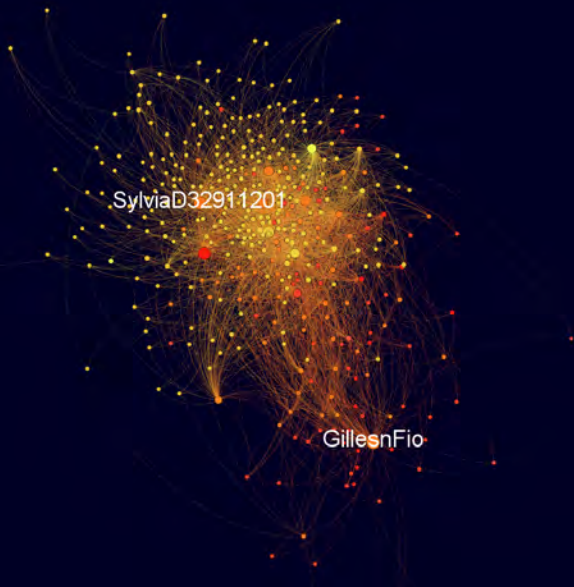


Figure: Source : Victor Chomel



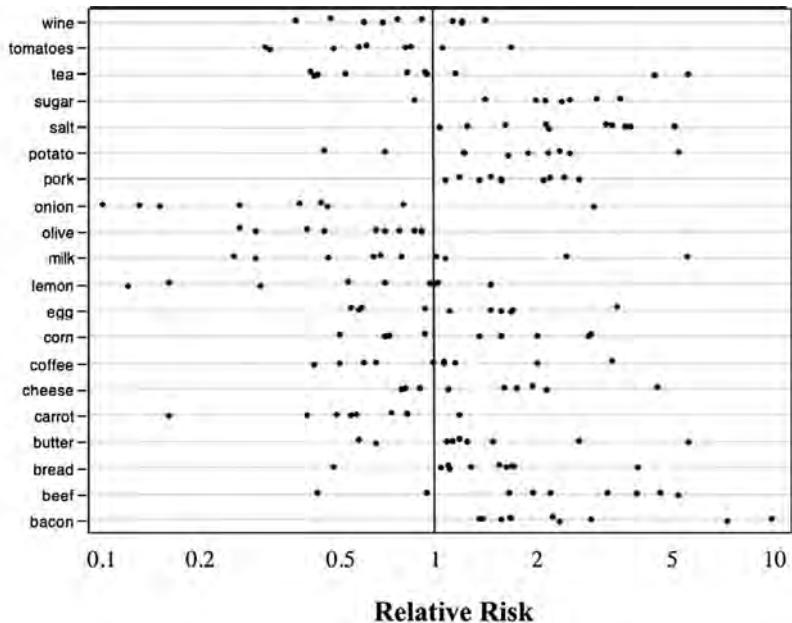
LES COMMUNAUTÉS SCEPTIQUES PRÉSENTENT  
UNE FORTE DENSITÉ DE BOTS.

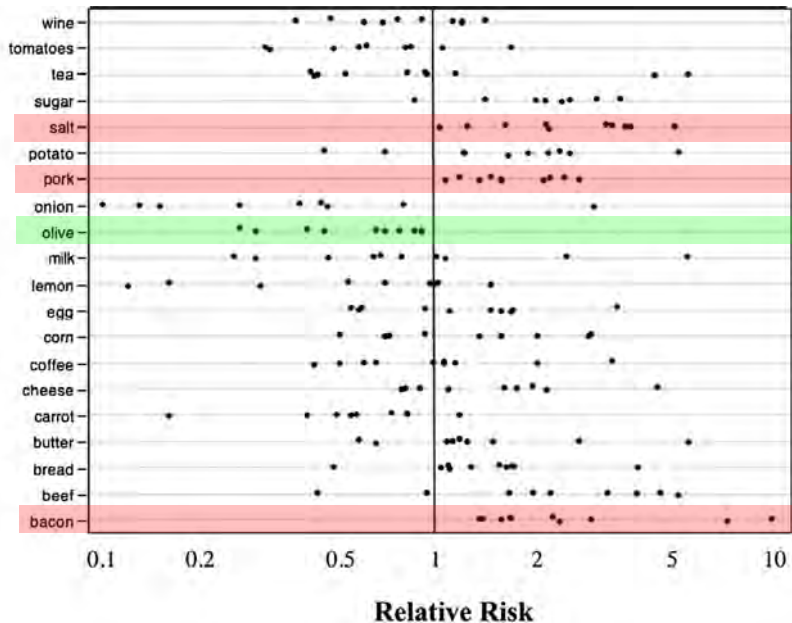


LES COMMUNAUTÉS SCEPTIQUES PRÉSENTENT  
UNE FORTE DENSITÉ DE BOTS.

# COMMENT DÉPARTAGER LE VRAI DU FAUX ?







# Is everything we eat associated with cancer?

## A systematic cookbook review

- ▶ We selected 50 common ingredients from random recipes in a cookbook.
- ▶ PubMed queries identified recent studies that evaluated the relation of each ingredient to cancer risk.
- ▶ Forty ingredients (80%) had articles reporting on their cancer risk.

*Schoenfeld, J.D., Ioannidis, J.P.A., 2013. Am. J. Clin. Nutr. 97, 127–134.*  
*doi:10.3945/ajcn.112.047142*

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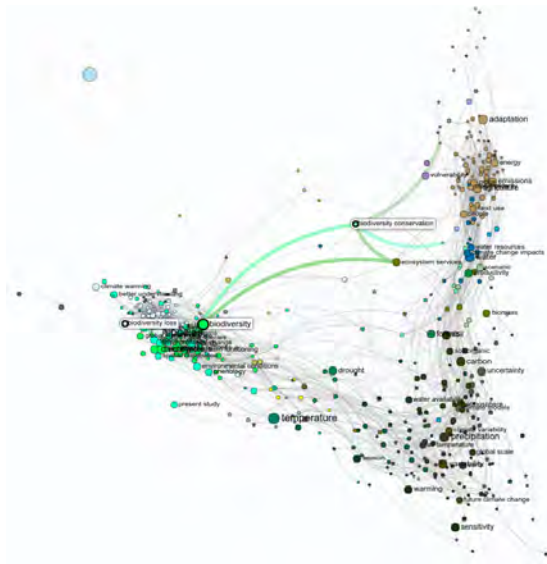
Will everything be linked to everything by “Science”?

## Créer un référentiel commun

*[...] rassembler dans le plus petit espace possible, & à placer, pour ainsi dire, le Philosophe **au-dessus de ce vaste labyrinthe dans un point de vûe fort élevé** d'où il puisse appercevoir à la fois les Sciences & les Arts principaux ; voir d'un coup d'œil les objets de ses spéculations, & les opérations qu'il peut faire sur ces objets ; distinguer les branches générales des connoissances humaines, les points qui les séparent ou qui les unissent ; & entrevoir même quelquefois les routes secretes qui les rapprochent. C'est **une espèce de Mappemonde** qui doit montrer les principaux pays, leur position & leur dépendance mutuelle, le chemin en ligne droite qu'il y a de l'un à l'autre ; chemin souvent coupé par mille obstacles, qui ne peuvent être connus dans chaque pays que des habitans ou des voyageurs, & qui ne sauroient être montrés que dans des cartes particulieres fort détaillées. Ces cartes particulieres seront les différens articles de notre Encyclopédie, & l'arbre ou système figuré en sera la mappemonde.*

D'Alembert (1751) *L'Encyclopédie/1ère édition/Discours préliminaire*

# Créer un référentiel commun



biodiversity / biodiversity conservation / biodiversity loss

Remove

Neighbors

climate change species adaptation  
water diversity agriculture plants  
productivity survival global warming  
emissions drought ecosystem services  
ecosystems environmental conditions  
global change forests same time energy  
stability mediterranean sea

Read More

Publs (5/315)

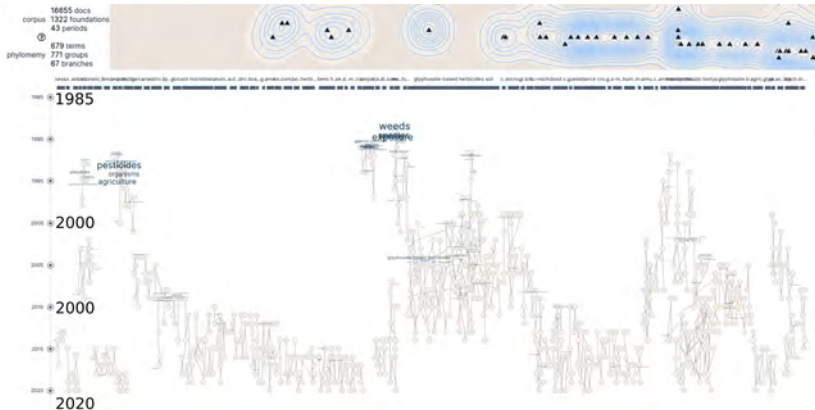
Research on Biodiversity and Climate Change at a Distance: Collaboration Networks between Europe and Latin America and the Caribbean. .  
Published in PLOS ONE. .  
In 2016-06-15 🔍

Biodiversity increases the resistance of ecosystem productivity to climate extremes. .  
Published in NATURE. .  
In 2015-10-22 🔍

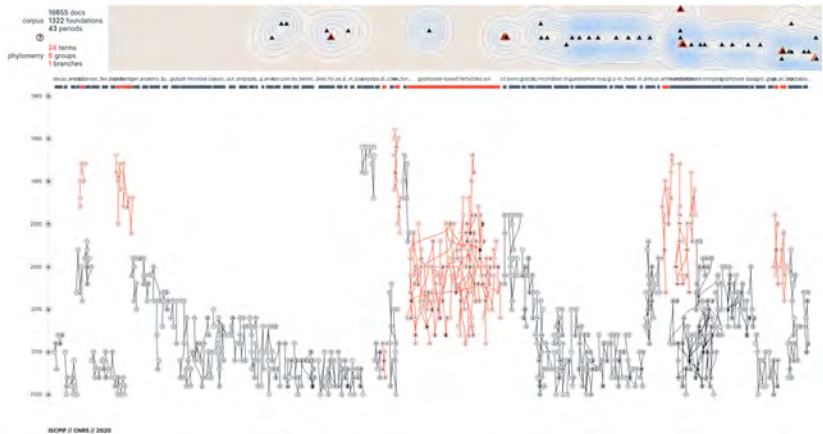
Does the impact of biodiversity differ between emerging and endemic pathogens? The need to separate the concepts of hazard and risk. .  
Published in PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES. .



# Replacer les connaissances dans une perspective historique

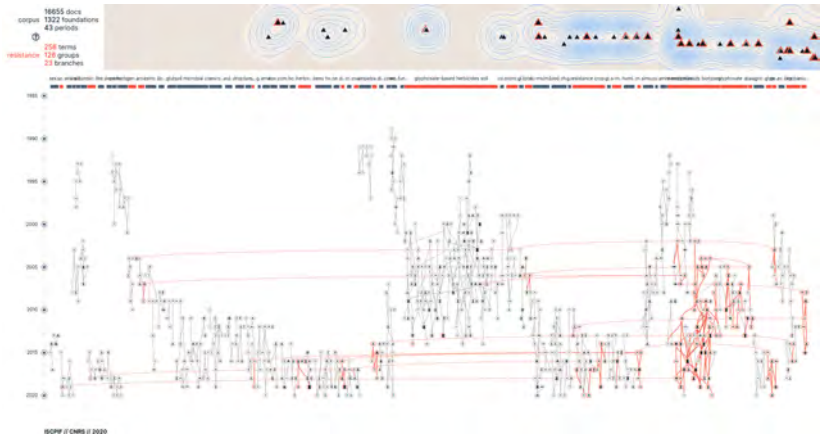


# Evolution of knowledge on glyphosate



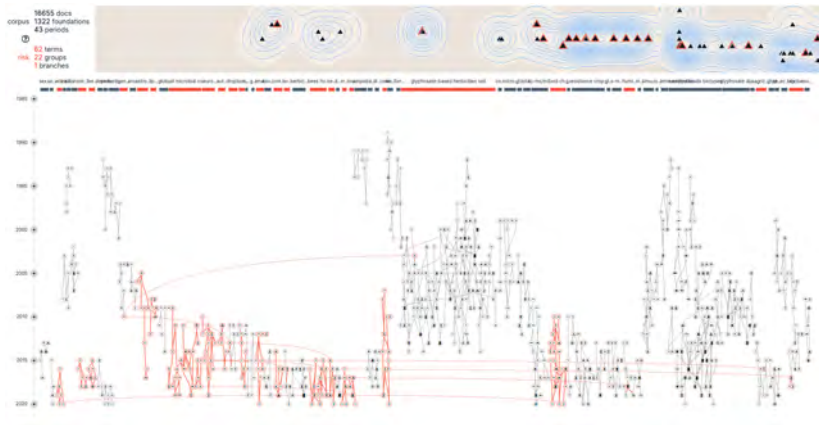
Golden age of glyphosate 1990 - 2005

# Evolution of knowledge on glyphosate



Appearance of the first negative effects: resistance (2005 - )

# Evolution of knowledge on glyphosate



Increasing concerns about environmental and health risks (2010 - )

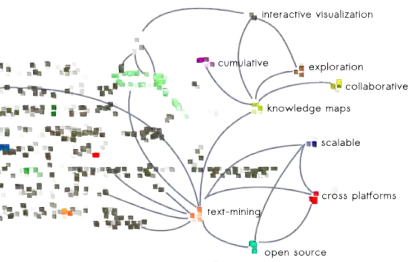


GarganText

*Digital Ecosystem*



Gargantext is a web service that offers advanced text-mining, network analysis, interactive visualisation to provide interactions with your corporate knowledge maps, science maps, write a state in few minutes. Gargantext a project of ISC-PIF gathering several institutions and projects for the interactive exploration



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With contributions from Quentin Lobbe, Nicolas Pouillard, Przemek Kaminski, Abinaya Sudhir, Sudhir Kumar, Justin Woo, Peter Corlett, Mael Nicolas, Guillaume Chérel, ...



Mazyar Panahi - Victor Chomel

David Chavalarias



MERCI POUR VOTRE  
ATTENTION



isfpif.fr  
politoscope.org



Sortie le 2 Mars chez  
Flammarion