

# On the design of a Misinformation Widget (MsW) Against Cloaked Science

*David Arroyo, Sara Degli-Esposti, Alberto Gómez, Santiago Palmero, and Luis Pérez*



## Cloaked Science

“- the use of scientific jargon and community norms to cloak or hide a political, ideological, or financial agenda within the appearance of legitimate scientific research.”



**Dr. Li-Meng YAN** ✓

@DrLiMengYAN1

MD PhD

Independent virologist

Let everyone know the truth of COVID19 since 19th Jan, 2020

AAPS

Host of The Voice of Dr. Yan

Links of YAN Reports are pinned

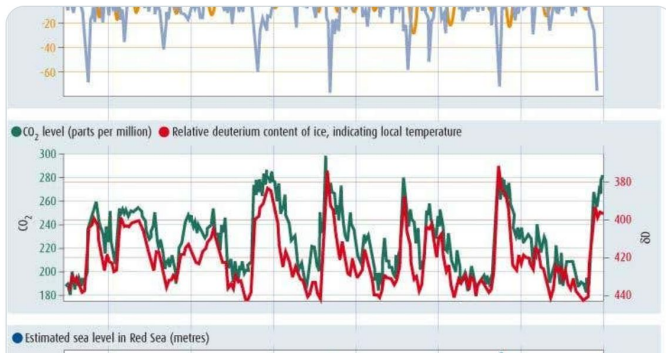
### The Yan Reports

- Pre-prints on Zenodo (hosted by CERN and automatic DOI)
- Evidence of genetic engineering proving the creation of SARS-CoV-2 on a lab.
- Paper later reported to be illegible and irreproducible by other researchers.

# Cloaked Science

Climate myths: Ice cores show CO2 increases lag behind temperature rises, disproving the link to global warming | New Scientist

Traducir Tweet



newscientist.com

Climate myths: Ice cores show CO2 increases lag behind temperature rises, d...  
This proves that rising CO2 was not the trigger that caused the initial warming at the end of these ice ages - but no climate scientist has ever made this claim

7:34 a. m. · 5 abr. 2023 · 1.003 Reproducciones

@GBNEWS,

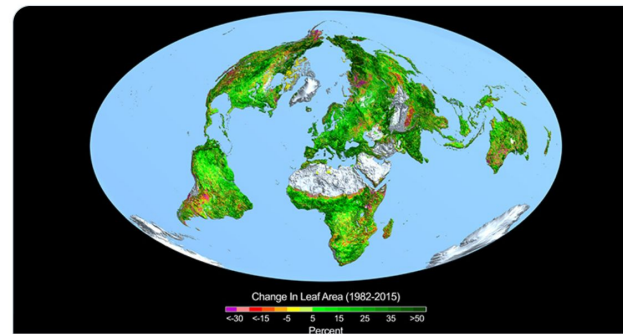
#GlobalGreening due to increased levels of CO2 in the worlds atmosphere is a real thing, as opposed to #GlobalBoiling which is a made up thing.

#GlobalGreening also reduces the world surface temperatures.

[climate.nasa.gov/news/2436/co2-...](https://climate.nasa.gov/news/2436/co2-...)

[nasa.gov/feature/greeni...](https://nasa.gov/feature/greeni...)

Traducir Tweet



climate.nasa.gov

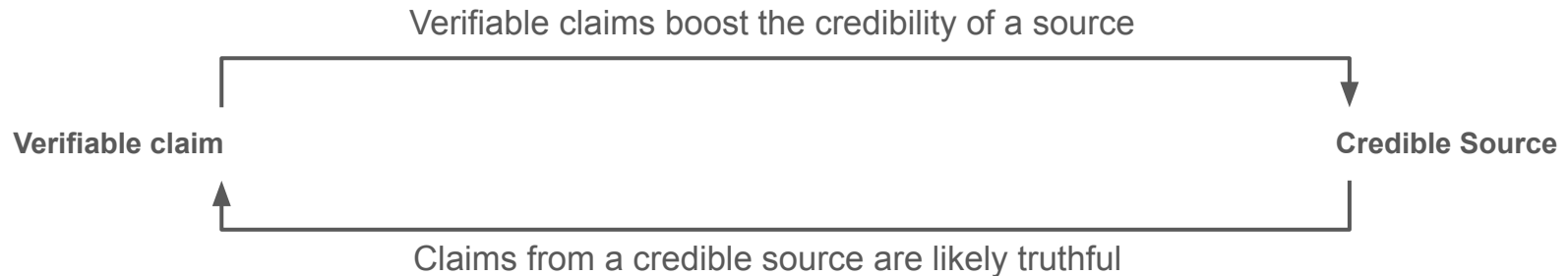
CO2 is making Earth greener—for now

A quarter to half of Earth's vegetated lands has shown significant greening over the last 35 years largely due to rising levels of atmospheric carbon ...

2:43 p. m. · 3 ago. 2023 · 25 Reproducciones

## Human-In-Charge (HIC) approach

- Clear responsibility of humans during the decision-making process.
- Partial automation of the investigative process with multiple points of verification.
- Integration of internal and external ML tools and resources.
- Recursive methodology: from/to claim veracity to/from source credibility assessment.



# Assessment of the credibility of the source

## Are experts or official authorities making the claim?

- NER + NEL module  
NLP model for entity extraction + dbpedia-spotlight model
- Combined with external resources:
  - Online Social Media profiles
  - dbpedia, wikipedia and specific databases (desmog.com)
  - Researcher profile on google scholar or e-thesis online services

## CO2 is making Earth greener—for now

By Samson Reiny,  
NASA's Earth Science News Team



Boston University, ORG; NASA, ORG; Nature Climate Change, ORG; Peking University, ORG

## CO2 Has Almost No Effect on Global Temperature, Says Leading Climate Scientist

BY CHRIS MORRISON 24 SEPTEMBER 2022 5:48 PM



Australian Government, ORG; BBC, ORG; BP, ORG; Chris Morrison, PER; Global Warming Policy Foundation, ORG; William Kininmonth, PER; ...

# Assessment of the credibility of the source

## Is the outlet known for bias?

- Use of aggregated external resources
  - Media Bias Fact Check, AllSides or Ad Fontes Media
  - Beall's list of potential predatory journals
  - Caution on pre-prints or other non peer-review articles



considered **PRO-SCIENCE** by MBFC



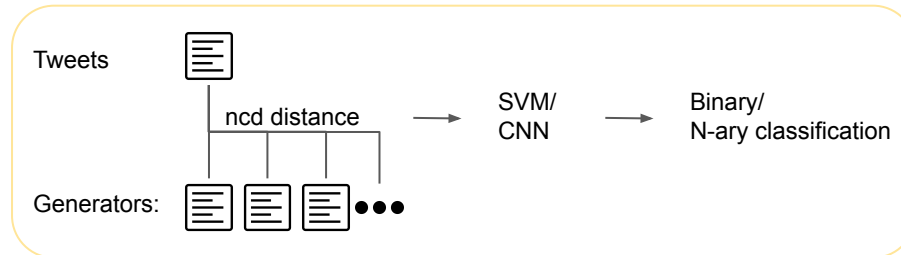
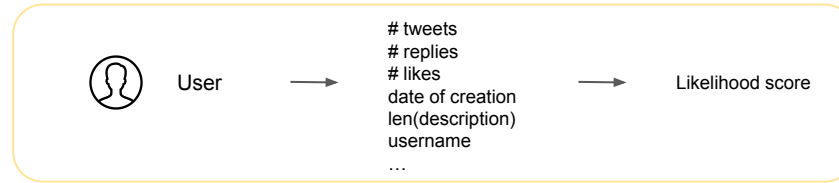
considered **PSEUDOSCIENCE-CONSPIRACY** by MBFC

# Assessment of the credibility of the source

## What network is spreading the claim?

Given a Twitter user account MsW toolbox offers:

- Likelihood of it being a bot
  - From users metadata
- Authorship attribution
  - Known Communities: Covid deniers, and Anthropogenic Climate Change deniers.
  - Attribution to known authors



# Assessment of the veracity of the claim

## Is the headline claim supported by the text?

MsW toolbox integrates a Clickbait functionality.  
LSTM models. Webis Clickbait Corpus 2017 (Potthast et al. 2018)

- Headline stand-alone clickbait

Less common in misinformation.  
Intent to educate, but can present issues as debatable

- Headline-summary difference clickbait

Used as misinformation. Although not in plain denial of science.  
Headlines usually include a less nuance statement than body.

**Are coffee pods better for the environment than you thought? New research offers surprising insights**

A new study compared greenhouse gas emissions from the entire lifecycle of pod, filter and instant coffee.

**How Bad Are Airline Emissions, Really?**

**Shock truth! Industry document shows electric vehicles worse for environment than petrol cars**

NEWS

Analysis by a major car company has revealed electric vehicles have a worse environmental impact than petrol cars in Australia – until cleaner energy is more widely available.



# Assessment of the veracity of the claim

## Has this claim been fact-checked?

Ability to query from the widget:

In case of claims

- Skeptics Stack Exchange
- Google Fact Checks

In case of a scientific publication

- Retraction Watch Database

### Fact Checking: CO2 has no link to global warming



Claim by Social media:

'No correlation' between carbon dioxide emissions and the climate

Carbon dioxide

Climate

USA Today

USA Today rating: False

Fact check: [Scientists say carbon dioxide levels affect the climate](#)

Feb 27, 2023



Claim by Social media:

Post implies climate change is 'cyclical,' not caused by humans

Climate change

Human

USA Today

USA Today rating: Missing Context

Fact check: [Human activity, not temperature cycles, responsible for ...](#)

Feb 10, 2023



Claim by Social media:

Greenhouse effect is a hoax, global warming uncorrelated with CO2 levels

Carbon dioxide

Climate change

Greenhouse gas

USA Today

USA Today rating: False

Fact check: [Global temperatures and atmospheric CO2 levels ...](#)

Jan 10, 2023

# Assessment of the veracity of the claim

Are the resources accompanying the claim true to it?



- Reverse search via Yandex, Google Image
  - Non-scalable
  - Transferring to building own image bank



- Quote traceback via The Quotations Page, Wikiquote API

Consequences of wearing masks  
[Traducir Tweet](#)

**Table 1**  
Physiological and Psychological Effects of Wearing Facemask and Their Potential Health Consequences.

Physiological Effects	Psychological Effect	Health Consequences
<ul style="list-style-type: none"><li>• Hypoxemia</li><li>• Hypercapnia</li><li>• Shortness of breath</li><li>• Increase lactate concentration</li><li>• Decline in pH levels</li><li>• Acidosis</li><li>• Toxicity</li><li>• Inflammation</li><li>• Self-contamination</li><li>• Increase in stress hormones level (adrenaline, noradrenaline and cortisol)</li><li>• Increased muscle tension</li><li>• Immunosuppression</li></ul>	<ul style="list-style-type: none"><li>• Activation of "fight or flight" stress response</li><li>• Chronic stress condition</li><li>• Fear</li><li>• Mood disturbances</li><li>• Insomnia</li><li>• Fatigue</li><li>• Compromised cognitive performance</li></ul>	<ul style="list-style-type: none"><li>• Increased predisposition for viral and infection illnesses</li><li>• Headaches</li><li>• Anxiety</li><li>• Depression</li><li>• Hypertension</li><li>• Cardiovascular disease</li><li>• Cancer</li><li>• Diabetes</li><li>• Alzheimer disease</li><li>• Exacerbation of existing conditions and diseases</li><li>• Accelerated aging process</li><li>• Health deterioration</li><li>• Premature mortality</li></ul>

**CBK\_17**

9:12 p. m. - 16 abr. 2021

Reverse image search

My god, this is simply incredible. [ncbi.nlm.nih.gov/pmc/articles/P...](https://ncbi.nlm.nih.gov/pmc/articles/P...)  
[Traducir Tweet](#)

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6:15 p. m. - 10 abr. 2021

DOI query to  
Retraction Watch DB

Vainshelboim B. Retracted:  
Facemasks in the COVID-19 era: A  
health hypothesis.

Retracted on:  
05/03/2021

Reason(s)
+Concerns/Issues About Data
+Concerns/Issues About Results
+Concerns/Issues about Referencing/Attributions
+False Affiliation

# Be wary of the intent of the claim

In general, posts intentionally spreading disinformation aim to trigger strong emotions.

- Assess the tone of the post:
  - Sentiment analysis
  - Wordcloud
- Highlight controversial topics
  - Those where keywords are used in a partisan way by the communities/outlets talking about them.



## CO2 Has Almost No Effect on Global Temperature, Says Leading Climate Scientist

BY CHRIS MORRISON 24 SEPTEMBER 2022 5:48 PM

SHARE



## CO2 is making Earth greener—for now

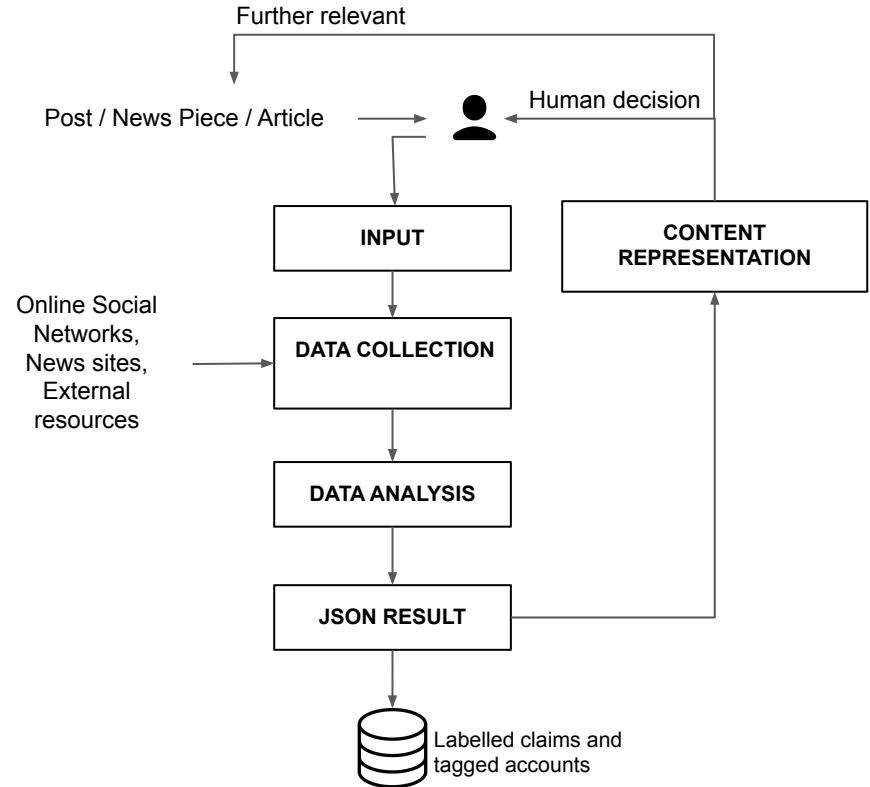
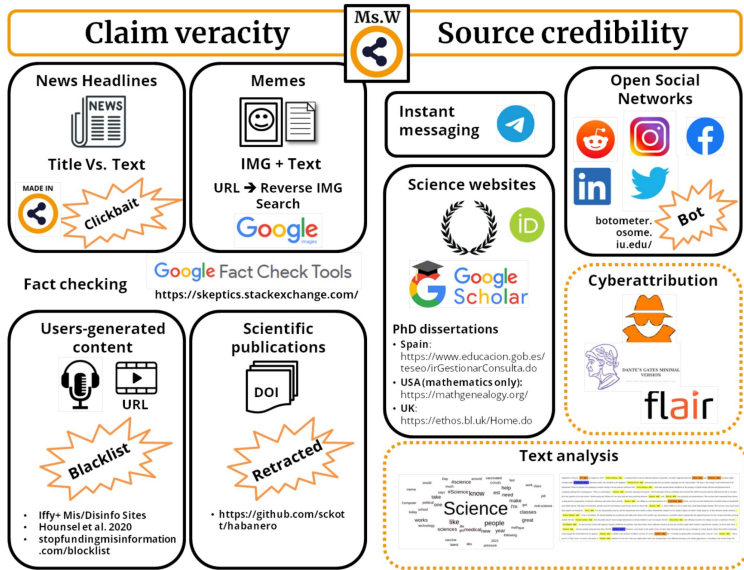
By Samson Reiny,  
NASA's Earth Science News Team



# REST API integration

## Integration:

- Internal AI tools
- External OSINT resources



## FUTURE STEPS

Advancing the Human-In-Charge methodology in order to perform attribution of coordinated misinformation campaigns.

- Datalake (news sources, multimodal information, Cyber Intelligence Feeds) + toolbox.
- Crowdsourcing to improve data curation for NER/NEL in the context of Wikipedia/DBPedia: Constructing a curated database of experts and researchers.
- System interoperability:
  - Fact-checking services
  - Domain specific databases
  - AI techniques information extraction and linking
  - Keep up with recent efforts on integrating intelligence about APTs and APMs: advanced manipulation campaigns and cyberwarfare
  - Standardization: leveraging STIX + DISARM to go beyond Google Fact Checking Platform.