

#semanticClimate

LIBERATING KNOWLEDGE FROM
CLIMATE-RELATED REPORTS
– UN DATATHON 2023

Supporters:



Joint Lab:



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ABOUT #SEMANTICCLIMATE

- We make software to make climate knowledge accessible to all -- both machine and humans
- Create reusable Citizen Science outreach content packages and event formats:
 - Hackathons
 - Intern programmes
 - Code and data science learning packages
 - Climate Reader collation tools for city climate plans, climate vulnerability assessment, and other settings
 - Train-the-trainer formats (AKA Carpentries)



Team and mentors at SDG space Geneva

UN DATATHON 2023 THEME & SDGS

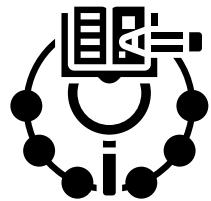
1. Food systems
2. Energy access and affordability
3. Digital connectivity
4. **Education**
5. Jobs and social protection
6. **Climate change, biodiversity loss and pollution**



PROBLEM STATEMENT, METHODOLOGY, & DATA



- **Problem statement:** Support a user of UN Data who is exploring a questions on ‘Climate Vulnerability Indexes’ with Big Data analysis of the global scientific literature, with geolocation.



- **Methodologies:** Iterative software development using hackathons and rapid prototyping, creating replicable frameworks, open notebook science



- **UN Data used:** Carbon Disclosure Project (CDP), 2022 Cities Climate Hazards - <https://data.cdp.net/Climate-Hazards/2022-Cities-Climate-Hazards/rdq4-d52n>

#SEMANTICCLIMATE PRODUCTS / USE CASES

**1. CLIMATE VULNERABILITY ASSESSMENT
TRACKER FOR IPCC REPORTS**

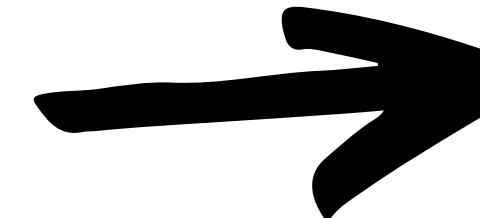
**2. SEMANTIC GLOSSARY FOR UN IPCC READERS
3. PDF READER FOR UN DIPLOMATS**

USE CASE #1: CLIMATE VULNERABILITY ASSESSMENT TRACKER FOR IPCC REPORTS

HELP UN DATA USERS ANALYZE DATA, ACCESS OPEN SCIENTIFIC LITERATURE, AND CREATE REPLICABLE WORKFLOWS USING DASHBOARDS AND OPEN SCIENCE PRINCIPLES



Scenario 1 - WITHOUT PYGETPAPERS TOOL: Climate Scientist wants to create a Climate Change Vulnerability Index for specific region within their country



1000s of related and unrelated data and a methodology from ChatGPT with no scientific proof

**Uses Google search,
ChatGPT and
Scientific Lit
browsers**

UN Data on Climate Vulnerabilities

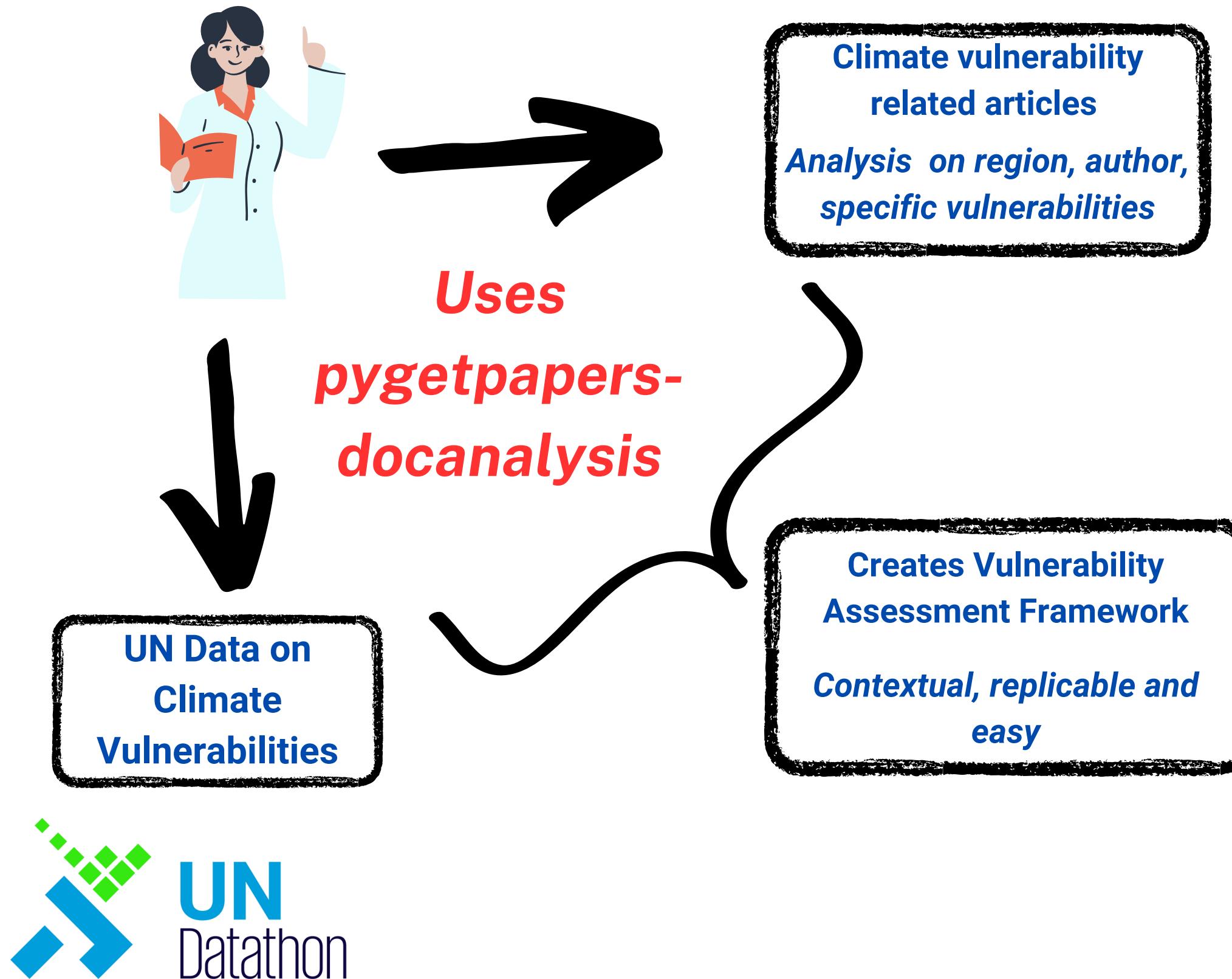
Manually analyses both the data sets

Creates a Climate Change Vulnerability Index

The whole process is time-intensive, resource-intensive, is non-replicable and might not be contextual



Scenario 2 - WITH PYGETPAPERS TOOL: Climate Scientist wants to create a Climate Change Vulnerability Index for specific region within their country

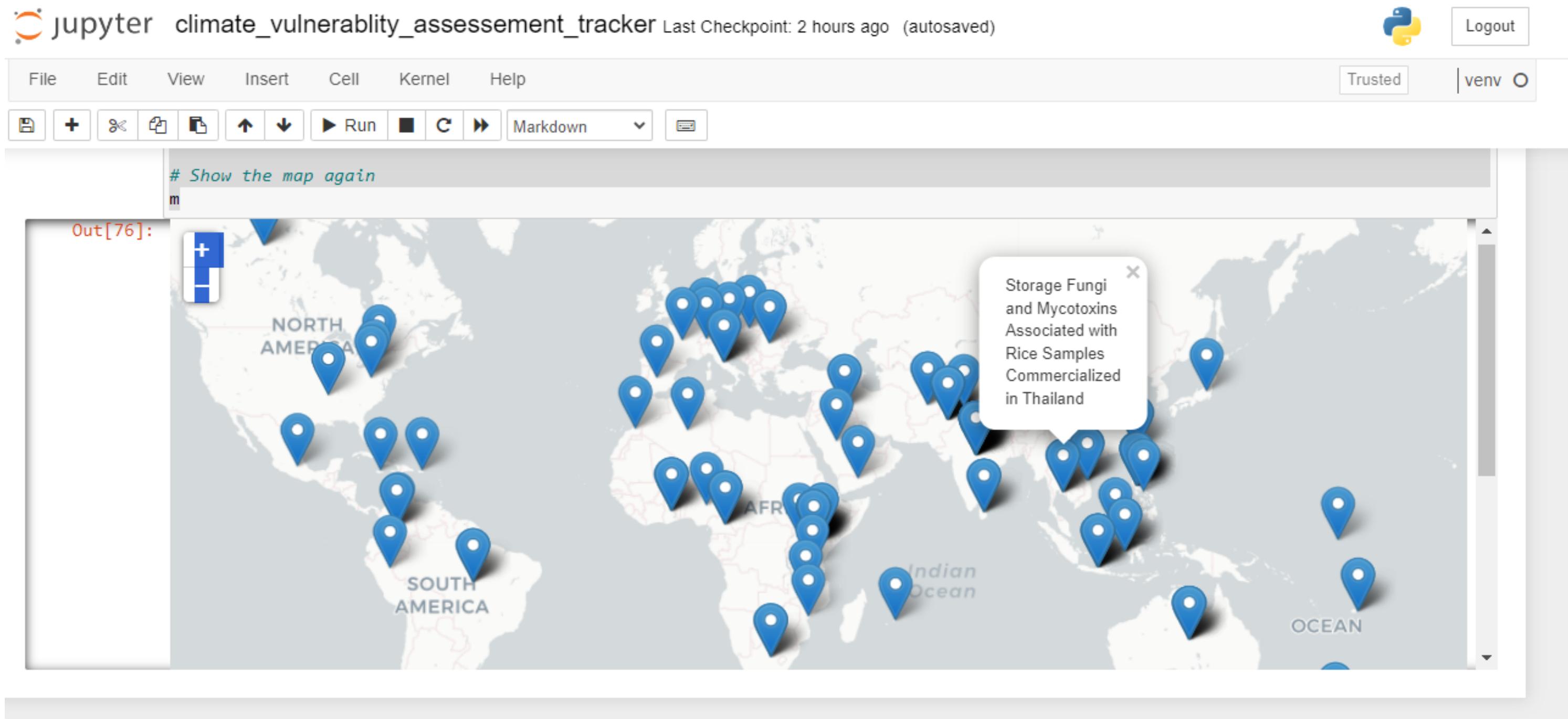


Papers can be:

- *Geo located*
- *Retrieved and downloaded automatically*

An interactive dashboard can be produced

DEMO



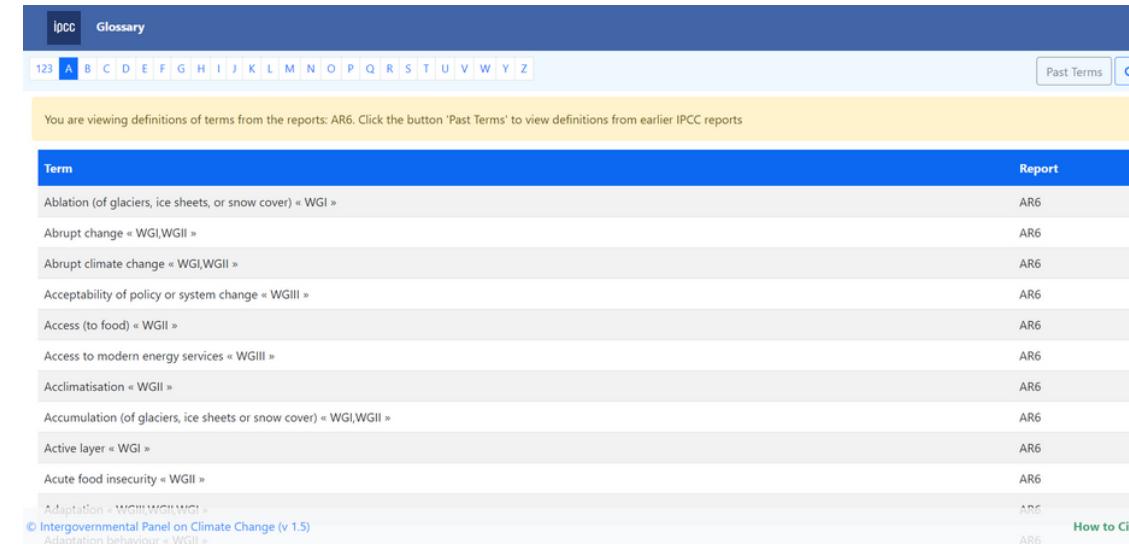
[Code link](#)

USE CASE #2: SEMANTIC GLOSSARY FOR UN IPCC READERS



CONVERTING THE IPCC GLOSSARY

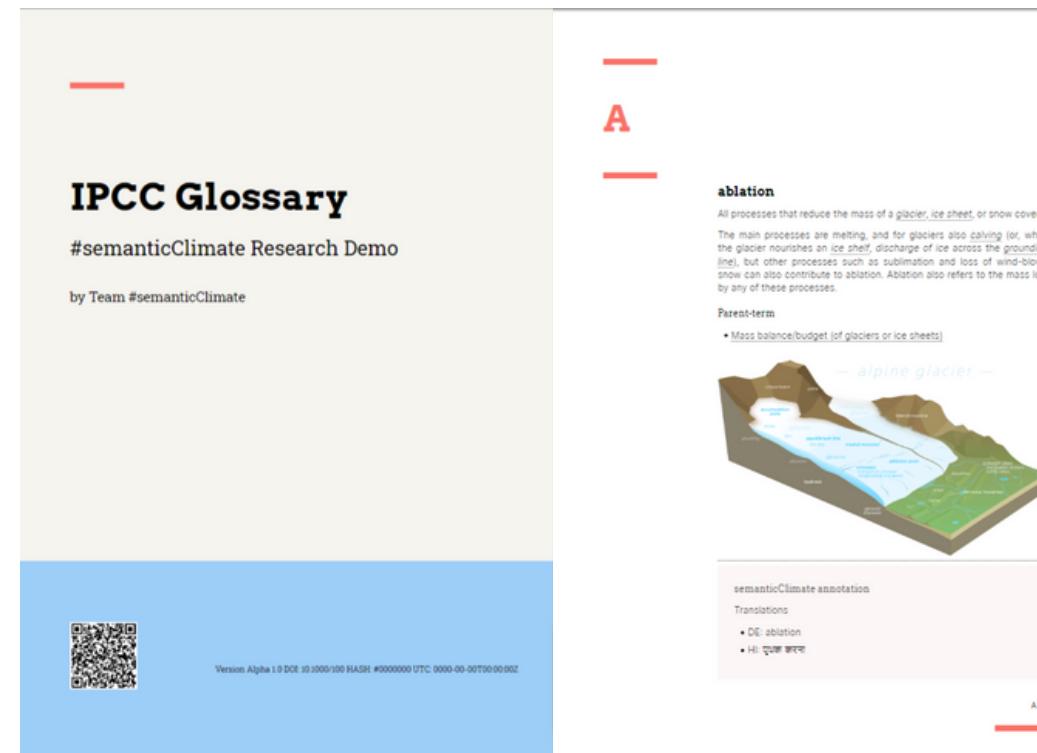
Input



The screenshot shows a table with two columns: 'Term' and 'Report'. The 'Term' column lists various climate-related terms, and the 'Report' column indicates they are from AR6. The terms include Ablation, Abrupt change, Abrupt climate change, Acceptability of policy or system change, Access, Access to modern energy services, Acclimatisation, Accumulation, Active layer, Acute food insecurity, Adaptation, Adaptation behaviour, and Adaptation measures.

Convert from to:

Output



The screenshot shows the semanticClimate Research Demo interface for the term 'ablation'. It includes a detailed definition, a 3D diagram of an alpine glacier, and semanticClimate annotations in German and Hindi.

- **Problem statement:** To make the glossary useful for finding sections in the reports and in the data. In addition adding a layer of crowdsourced multilingual entries

- **What we do**
 - Screen scraping and crowdsourcing
 - CSS Typesetting
 - Multilingual

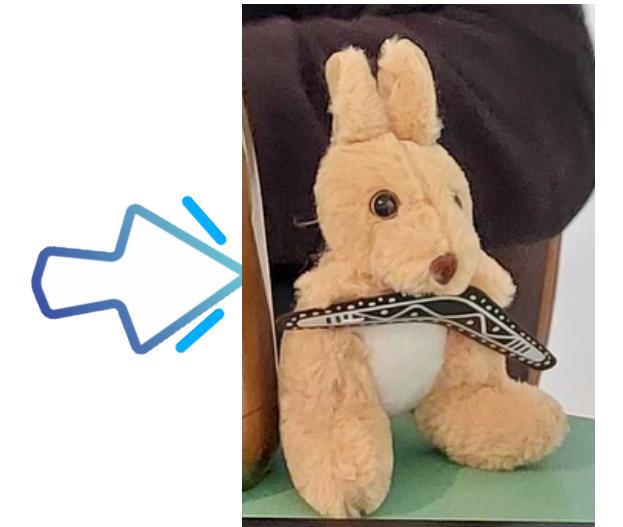
A PROTOTYPE GLOSSARY

- **Problem statement:** To make the glossary useful for finding sections in the reports and in the data. In addition adding a layer of crowdsourced multilingual entries
- **What we do**
 - Screen scraping and crowdsourcing
 - CSS Typesetting
 - Multilingual
- **Linking and enrichment (annotation)**
 - Crowdsourcing: from Wikipedia and Wikidata
 - Link related resources - IPCC Reports, Data, Working Groups, etc: Annotate Wikibase

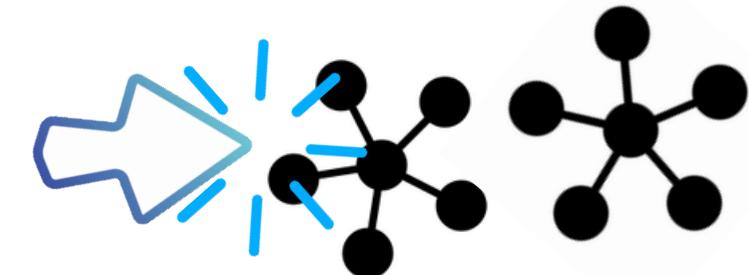
THE DREAM WORKFLOW!



Source



TDM [py4ami]



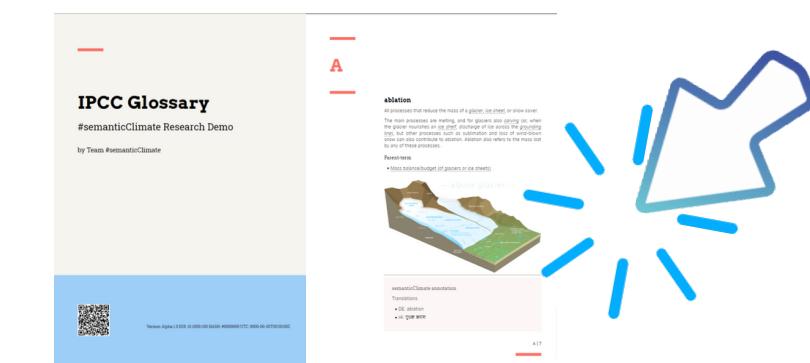
Data model



Terminology Services



*GitHub/Lab
(output storage)*



Outputs (HTML/XML)

*CSS Typesetting [Vivliostyle]: Paged web,
scrolling web, mobile, PDF, PoD, eBook, etc.*

USE CASE #3: PDF READER FOR UN DIPLOMATS



MACHINE-READABLE DOCUMENTS?

Decision 2/CMA.3

Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement

The Conference of the Parties serving as the meeting of the Parties to the Paris Agreement,

Recalling the Paris Agreement,

Also recalling the tenth preambular paragraph of the Paris Agreement, in which Parties take into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities,

Further recalling the eleventh preambular paragraph of the Paris Agreement, acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity,

Recalling Article 2 of the Paris Agreement and decision 1/CP.21,

Also recalling Article 4, paragraph 2, of the Paris Agreement,

Further recalling Article 6 of the Paris Agreement and decisions 1/CP.21, paragraph 36, 8/CMA.1 and 9/CMA.2,

~2000 UNFCCC documents over 30 years, 50 statements/doc => over 1 statements

Cross-references
between documents

SOURCE, RELATION, TARGET DOCUMENTS!

SOURCE

Decision 2/CMA.3

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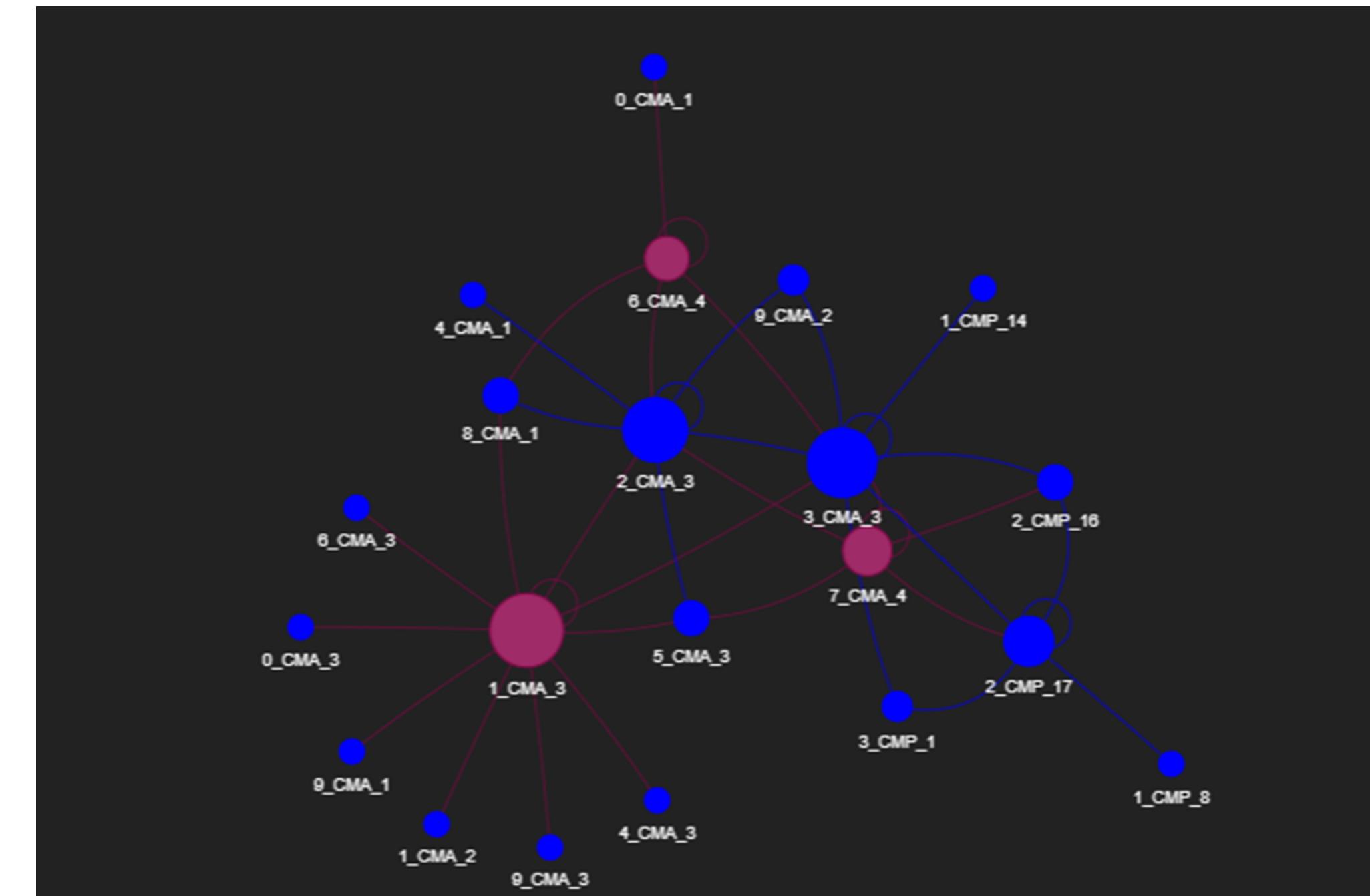
TARGET
DOCUMENTS

CONVERT PDF TO HTML AUTOMATICALLY

Problem statement: To automatically validate authoring and make statements in documents discoverable

- search for SOURCE, RELATION, TARGETS
- Automatic, 1 sec/document
- Gives network graph

SOURCE		TARGET
	temp	
7_CMA_4	refers	7_CMA_4
7_CMA_4	refers	3_CMA_3
7_CMA_4	refers	2_CMA_3
7_CMA_4	refers	3_CMA_3
7_CMA_4	refers	3_CMA_3
7_CMA_4	refers	2_CMA_3
7_CMA_4	refers	2_CMA_3
7_CMA_4	refers	3_CMA_3





THANK YOU!



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Twitter:

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semanticClimate@gmail.com
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