



# Portfolio

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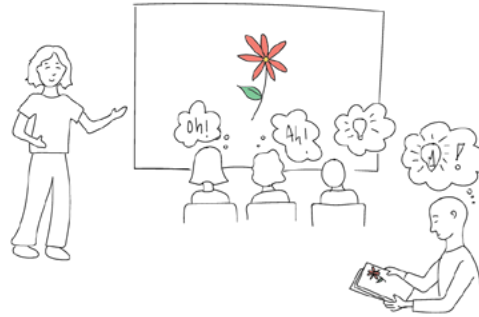
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## AWAKING INTEREST



## ENGAGING OUR AUDIENCE



## IMPROVING UNDERSTANDING



## STIMULATING LONG-TERM

*Memory*

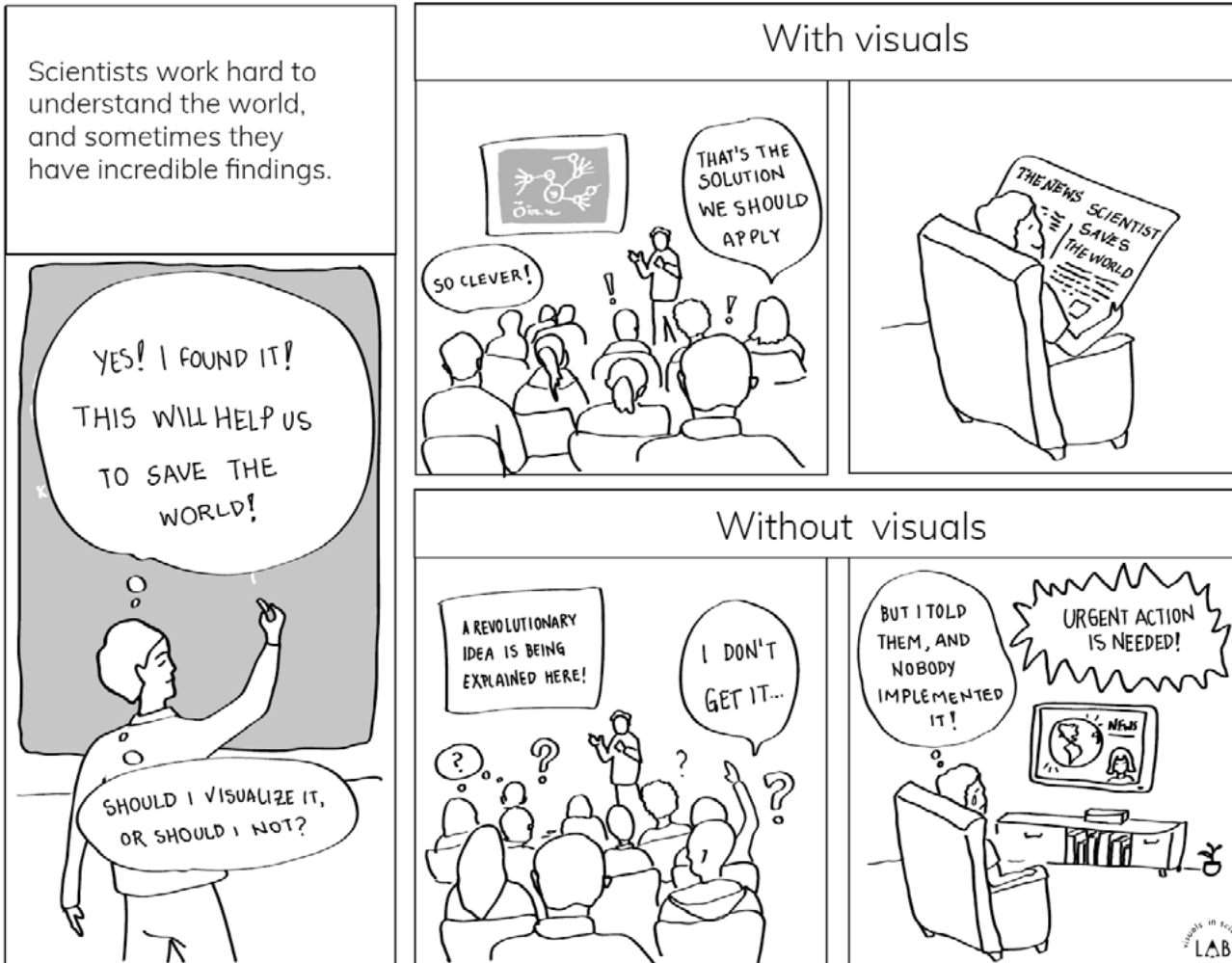


Visuals have power. Don't you think so? Visuals have the potential to call attention and create curiosity, enlightenment, understanding, and remembrance. After all, visuals were one of the humans' first languages, evidenced by the marvellous cave paintings in Altamira (Spain) and other places worldwide.

Of course, visuals alone are not the silver bullet for communication; written text remains the backbone. It helps us to convey difficult and complex thoughts, ideas, and details in a very precise manner. However, it demands careful attention, knowledge of the language, and time from the reader. And remarkably, these resources are becoming scarce in our fast-paced society. So, should visuals replace text?

Not at all! Ultimately, it is not one or the other, but what if we combine images and text to create visuals in which both work synergically and help ideas and concepts reach the minds and hearts of our audiences?

This is our mission and daily motor at Visuals in Science LAB, helping our clients to reach and engage their audiences by combining images and text into attractive, insightful, and accurate visuals. We believe a great idea communicated poorly is a loss for all, the thinker, the audience, and society, but together we can use visuals' full potential and reach the desired outcome.



Just a taste of what can happen if scientific findings and knowledge are not communicated effectively.

Scientific knowledge and its effective communication beyond the scientific community are crucial to adequately respond to today's challenges<sup>[1] [2]</sup>. However, communicating science is not easy. Although visuals are essential for developing, clarifying, and sharing knowledge at all stages of scientific processes<sup>[3]</sup>, scientific communication is often oversimplified or dominated by highly technical information. This also influences the career development of researchers who rely on the outreach and resonance of their findings to collaborate with other professionals and research groups, as well as to access research grants.

Communicating science through visuals promotes its visibility and efficacy<sup>[4]</sup>. Effective, and engaging communication foster interest, discussions, and exchanges, which might result in new work ventures. Thus, when scientific findings and their implications are properly communicated, understood, and applied, they can improve the decision-making of political and societal actors<sup>[5]</sup>, promoting the transformation to a more sustainable and resilient future.

Now, are you ready to improve your visual communication?

1 Rockström, J., et al., Planetary boundaries: exploring the safe operating space for humanity. *Ecology and society*, 2009. 14(2).  
 2 Steffen, W., et al., Planetary boundaries: Guiding human development on a changing planet. *Science*, 2015. 347(6223): p. 1259855.  
 3 Evagorou, M., S. Erduran, and T. Mäntylä, The role of visual representations in scientific practices: from conceptual understanding and knowledge generation to 'seeing' how science works. *International Journal of STEM Education*, 2015. 2(1).  
 4 Murray, A., I. Murray, and C. Barton, Increasing research visibility to maximize impact. 2018, p. 989-990.  
 5 Cheng, K., et al., Proving the value of visual design in scientific communication. *Information Design Journal*, 2017. 23(1): p. 80-95.

# May I have your attention, please?

## Illustration for a grant proposal

**Title**  
Bacteriophage biogeochemistry for sustainable food production

**Client**  
Dr. Kyle Mason Jones, Netherlands Institute of Ecology (NIOO KNAW)

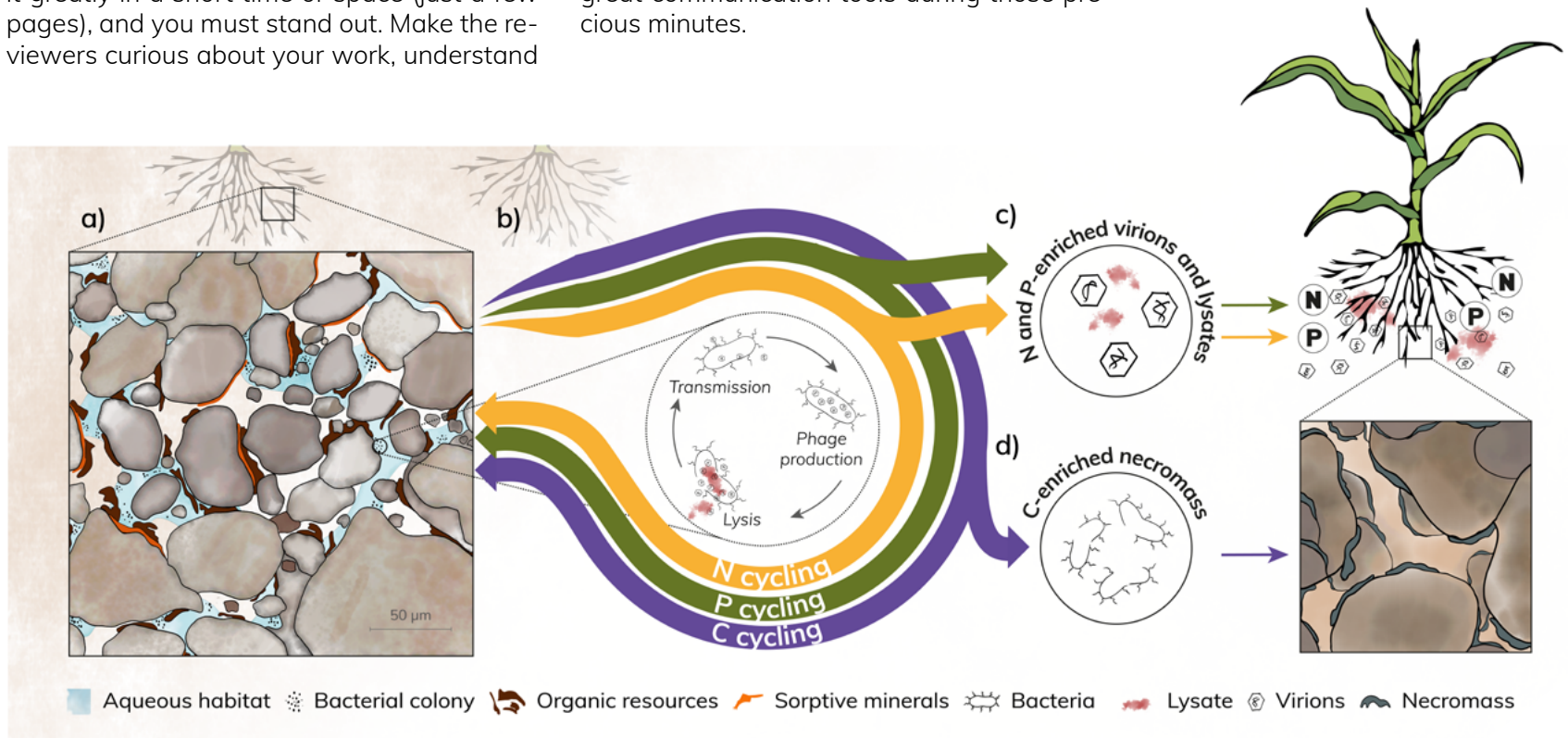
**Topic**  
Bacteriophage biogeochemistry, N-cycle, P-cycle and C-Cycle

Writing grants are daily coffee (or tea?) for researchers. No grant, no project ..., and we all want to continue investigating that super-relevant question further, or?

To get a grant, you need many ingredients, a novel idea, background knowledge and experience, to name some. But it is not enough to have a fantastic idea; you must communicate it greatly in a short time or space (just a few pages), and you must stand out. Make the reviewers curious about your work, understand

your topic, see the relevance of your research question, and remember your proposal. Our visuals help you to achieve that.

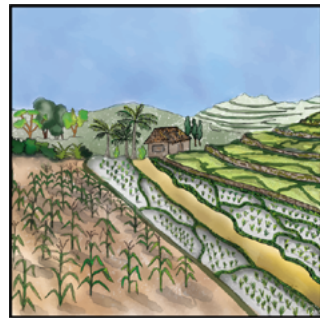
With the proper visual you can stand out. Furthermore, if you are later invited to give a presentation or enter a second round, you already have images that explain your endeavor beautifully and accurately which are a great communication tools during those precious minutes.





# From words to landscapes

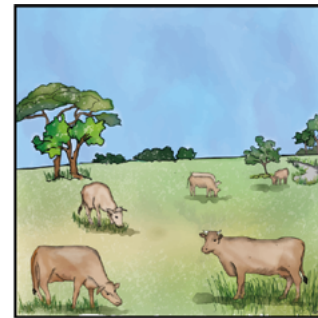
Illustrations for a scientific article



Permanent non-perennial crops



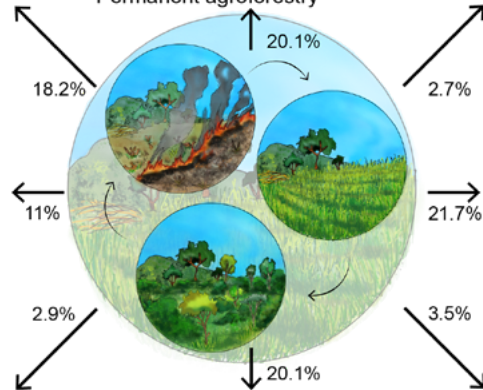
Permanent agroforestry



Pasture



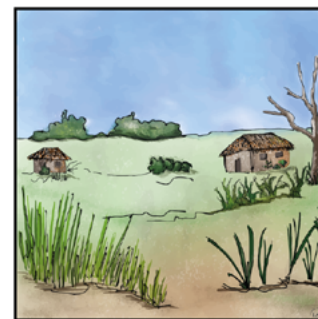
Wood plantation



Actively restored forested land



Passively regrowing forest



Non-cultivated non-forested land

## Topic

Drivers and consequences of archetypical shifting cultivation transitions

## Client

Dr. Dominic Martin, University of Göttingen - Wyss Academy for Nature

## Link

[besjournals.onlinelibrary.wiley.com/doi/10.1002/pan3.10435](https://besjournals.onlinelibrary.wiley.com/doi/10.1002/pan3.10435)

Scientific articles are highly specialized texts that, in a few pages, present a vast amount of information. Usually, they are organized in different sections (Introduction, Methods, Results, Discussion, Conclusion), which gives the reader a clue about what to find in each section and the demanded attention and reading skills. But because this is insufficient to ensure complete comprehension and recall of the information, scientists use tables and graphs to make easier for the reader to understand the information provided.

Tables and graphs have worked well and will continue doing so. However, times change, and so do the needs. Research turns more complex and more variables need to be depicted to communicate the research. Here, other types of visuals are needed, they also become a recovery, breathing point for the reader, where it can pull together, check if all the information is understood, and be fit to continue the marathon, oh no, we mean the reading.

## Scientific illustration

### Title

Scientific representation of a species habitus (personal collection)

### Client

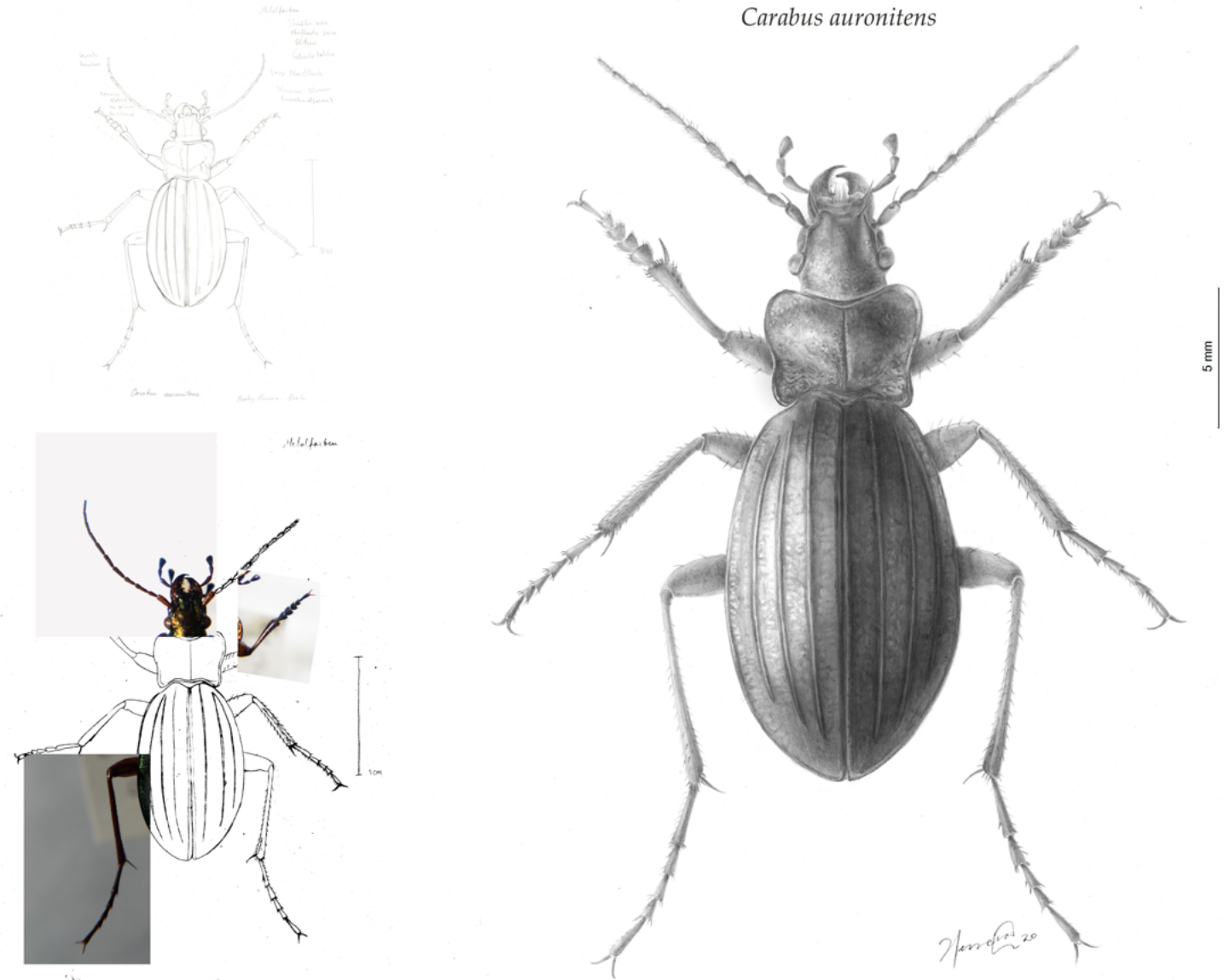
Own work (Beatriz Herrera)

### Link

[www.visualsinscience.com/natural-illustration](http://www.visualsinscience.com/natural-illustration)

Scientific illustration has been a critical component in the evolution of science. It is helpful to objectively complement the description of a species and its structures accurately or to reconstruct the habitus of a lost specimen or an extinct species. Furthermore, scientific illustrations also assist a non-specialized audience during the identification and determination of a specimen.

Each taxonomic group and species are distinguished by different specific characters, and their accurate representation is fundamental. Therefore, the exchange and support of expert scientists in the specific taxonomic group during the illustration process are crucial. However, one of the most significant challenges in scientific illustration is the communication between the expert scientist and the illustrator. For this reason, illustrators who are educated and knowledgeable about the subjects to be represented and capable of understanding the methodology, terminology, and importance of the topic are essential.



# Too much to read but too little time to remember all?

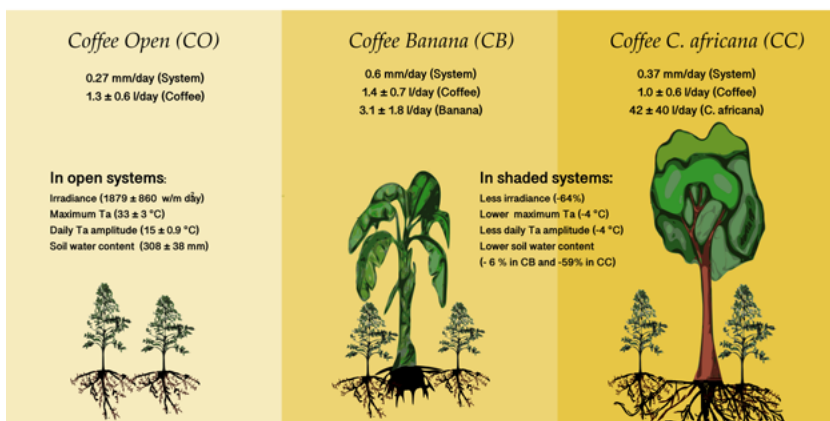
Visual abstracts, a new trend that will stay

We are in the information age (or wave?). Every day we swim hard to avoid getting drawn and keep up with the new findings and trends. In 2018 alone, 3 million scientific articles were published<sup>[1]</sup>, which equals approximately 8000 per day, and scientists can spend up to three hours every day just scanning new literature in their field<sup>[2]</sup>. Moreover, scamming and reading are not enough, but remembering and recalling is the goal.

Visual abstracts are a new trend that will stay. Visuals abstract help to convey complex information in a short visual summary, which also stimulate attention, awaken curiosity, and improve the long-term recall of information.

1 Ware, M. and M. Mabe, The STM Report. 2012, International Association of Scientific, Technical and Medical Publishers: The Netherlands. p. 110.  
 2 Landhuis, E., Scientific literature: Information overload. Nature, 2016. 535(7612): p. 457-458

## Water use of *Coffea arabica* in open versus shaded systems under smallholder's farm conditions in Eastern Uganda



None significant differences in coffee water use across systems  
 Coffee Banana system improves microclimate and provides extra food

### Client

Own work (Dr. Alejandra Sarmiento, University of Göttingen)

### Link 1

[www.sciencedirect.com/science/article/abs/pii/S016819231830399X](http://www.sciencedirect.com/science/article/abs/pii/S016819231830399X)

### Link 2

[www.sciencedirect.com/science/article/abs/pii/S0167880920300724](http://www.sciencedirect.com/science/article/abs/pii/S0167880920300724)

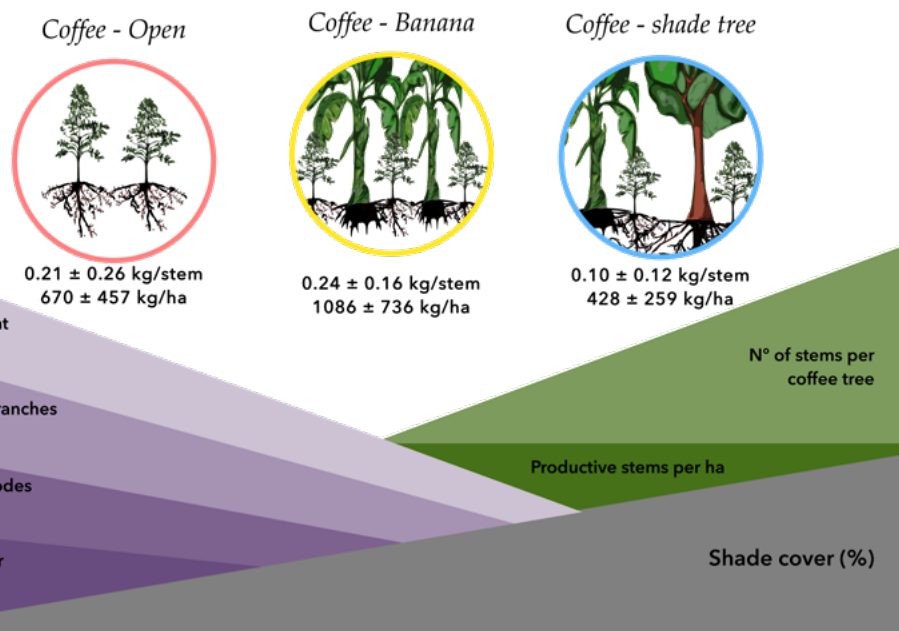
### ARTICLE INFO

Keywords:  
*Coffea arabica*  
 Agroforestry  
 Climate change  
 Productivity  
 East Africa  
 Yield components  
 Sustainable intensification  
 Production factors

### ABSTRACT

Coffee is a key export commodity of East Africa, but average smallholders' yields are low. To guide sustainable yield improvements of smallholders' coffee systems, we investigated coffee yield components in three different types of coffee cropping systems along an altitude gradient (1100–2100 m.a.s.l.) during two production years (2015 and 2016). We selected 810 coffee trees distributed over 27 farms and monitored number of stems per tree, fruit load per branch, productive nodes per branch (on four branches of one stem per tree) and number of productive branches per stem (on one stem per selected tree) in both years. Additionally, we monitored productive stems per ha, coffee tree density and cherry weight in combination with pest and disease occurrence and management information from interviews. Coffee farms were classified as Coffee-Open (CO) (< 20 % shade cover), Coffee-Banana (CB) (coffee dominantly intercropped with bananas) or Coffee-shade Tree (CT) (coffee dominantly intercropped with shade trees). Coffee-Banana had larger yield per ha (green bean kg ha<sup>-1</sup>) (1086 ± 736 kg ha<sup>-1</sup>) and yield per stem (green bean kg stem<sup>-1</sup>) (0.24 ± 0.16 kg stem<sup>-1</sup>) than CO (670 ± 457 kg ha<sup>-1</sup> and 0.21 ± 0.26 kg stem<sup>-1</sup>) and CT (428 ± 259 kg ha<sup>-1</sup> and 0.10 ± 0.12 kg stem<sup>-1</sup>). Fruit loads, productive nodes, productive branches and cherry weight declined with shade cover, especially for shade cover > 30 %. Additionally, the same yield components correlated negatively with number of stems per tree. Fertilizer and fungicide use were related to more productive branches and cherry weight respectively, and stem borer was identified as the most important pest in this area. Our results suggest that yield in the region could be increased, i) by maintaining shade at an intermediate level, particularly at low and mid altitude and by reducing the number of stems per coffee tree (< 4), and ii) by improving soil fertility and protection against pest and disease.

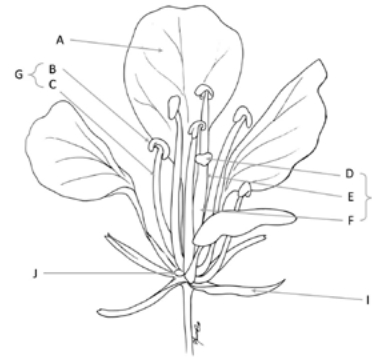
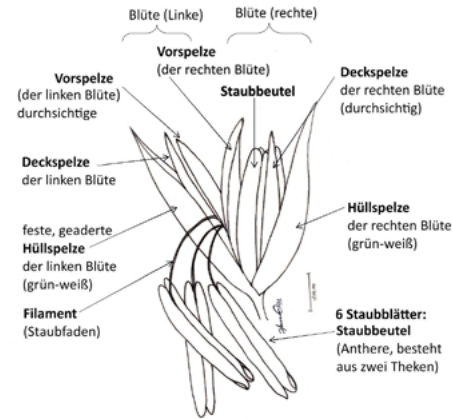
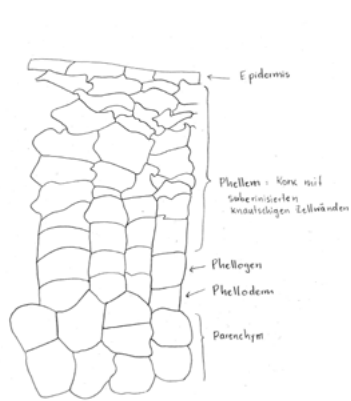
## Effect of cropping system, shade cover and altitudinal gradient on coffee yield components at Mt. Elgon, Uganda





Illustrative material for a practical course

*Zingiber officinale*, Ingwer, Zingiberaceae  
Rhizom, Periderm (Zellulär)  
20x



Example of a working sheet with scientific drawing and respective labeling.

Illustrations used to support the lecture explanations.

Example of illustration used for examinations.

## Topic

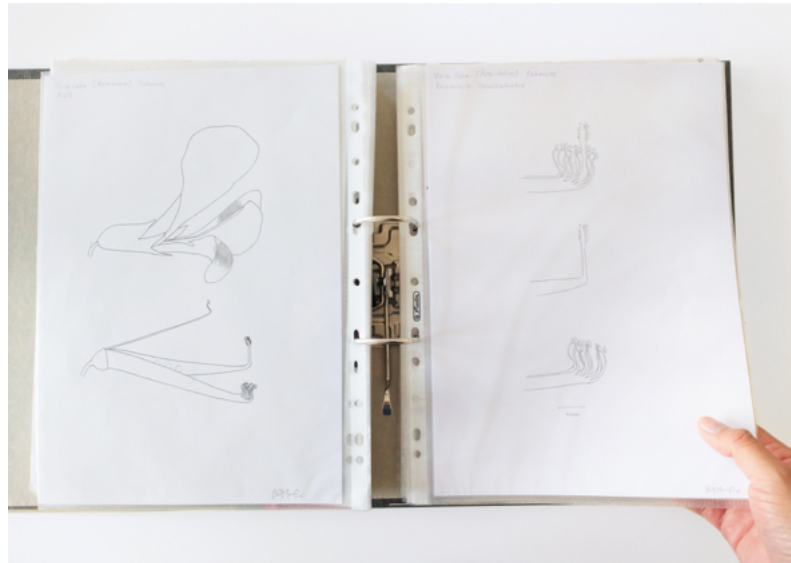
Material for botanical microscopy practice

## Client

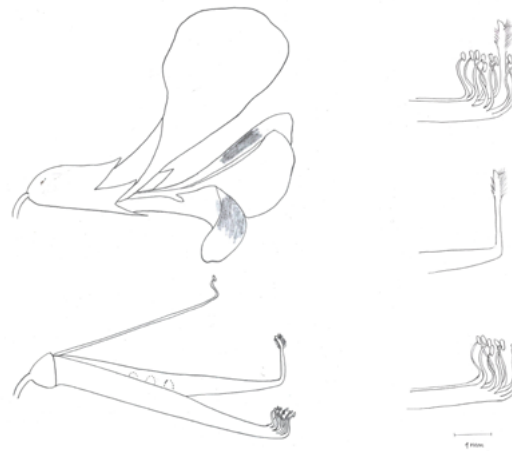
Dr. Anke Sirrenberg, University of Göttingen

This course teaches the structure of the plant. During the course, students use fresh material to learn and identify the different types of plant tissues and their functions. In addition, the students learn how to prepare botanical material to be observed under the light microscope, and to represent it on a scientific illustration.

Therefore, it is practical to have specific support material that exemplifies the schematic drawings and their parameters, and in turn allows comparison between the material observed in class with the expected illustration. The elaboration of such material requires knowledge of the botanical structures and tissues to be illustrated and mastery of the rules for scientific illustration. We can develop model drawings of the specific material addressed in the course which facilitates the interpretation and understanding of what is seen under the microscope and guides the students in the elaboration of the schematic illustration of the plant parts and tissues.



*Vicia faba*, Ackerbohne (Fabaceae)  
Blüte



# Scientific findings beyond scientific journals

## Infographics for social media

### Topic

Women and Global South strikingly under-represented among top-publishing ecologists

### Client

Dr. Bea Maas, University of Vienna

### Tweet

twitter.com/MaasBea/status/1368896981192634369

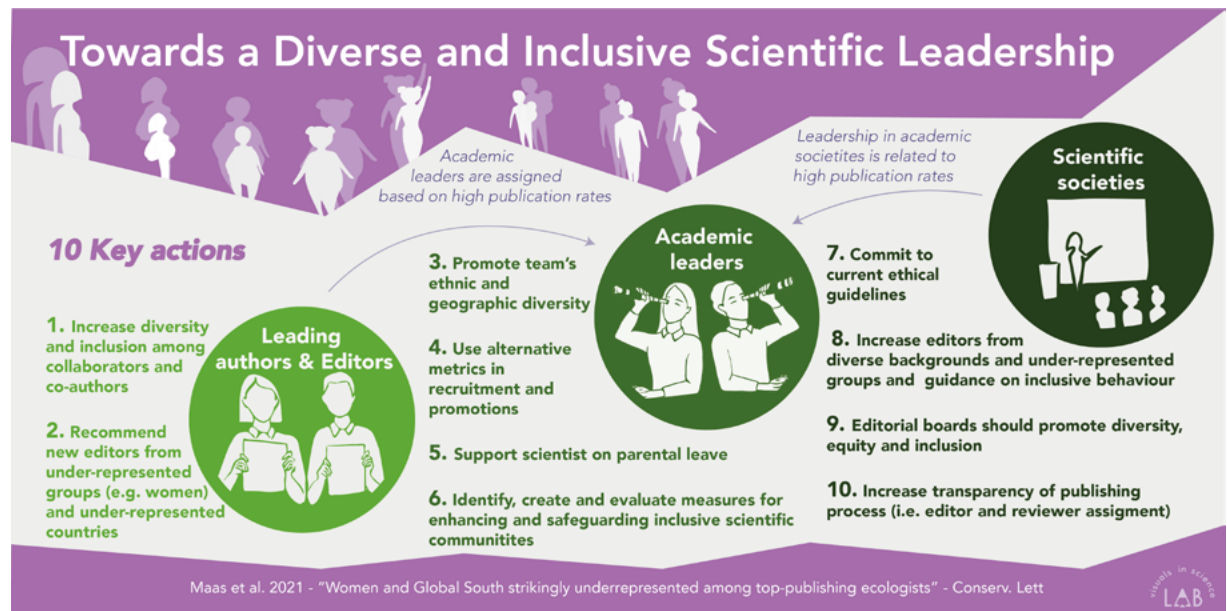
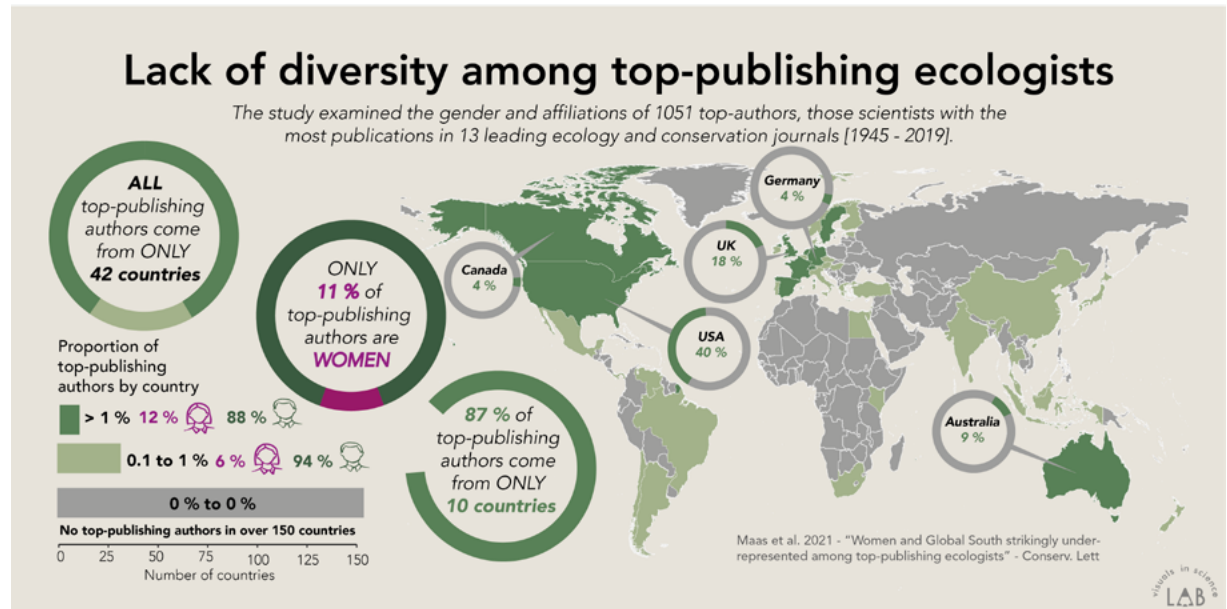
### Publication

conbio.onlinelibrary.wiley.com/doi/full/10.1111/conl.12797

The era in which the promotion of new research articles was only in the hands of scientific journals is over. Recent research has shown that presenting summaries of scientific findings and/or publications in easily accessible formats, such as infographics shared on social media (i.e., Twitter), increases their read and download rates<sup>[1]</sup>. Therefore, more and more researchers and scientific journals are using social media channels to promote their new findings and research articles.

Following this trend, scientists and academics are facing the great challenge of transforming complex information into accessible, attractive but also rigorous, and accurate formats.

With this in mind, these clients commissioned us to translate their publication into two infographics to be disseminated on Twitter to raise awareness by highlighting the results and conclusions. Compared to other publications of the same age and source, this publication has a great attention and engagement impact, as seen in the Altmetric score (630).



1 Ibrahim, A.M., et al., Visual Abstracts to Disseminate Research on Social Media: A Prospective, Case-control Crossover Study. Ann Surg. 2017. 266(6): p. e46-e48

# Representing Deep Time

## Experimental transects or geology infographics

### Topic

Designing with Deep Time - the Hinterland of the Elbe River

### Client

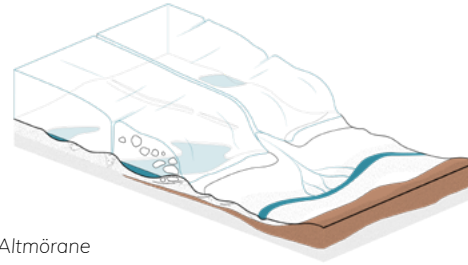
Landscape Architecture Master's Thesis for the Faculty of Architecture and Landscape at the Leibniz Universität Hannover (Lina Buitrago)

### Link

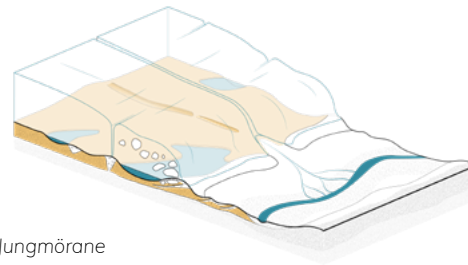
[www.visualsinscience.com/landscape](http://www.visualsinscience.com/landscape)

To make the formation of the North German Plain perceptible, these illustrations show the origin of this landscape formed as a product of the Ice Age, which lasted approximately 2.6 million years.

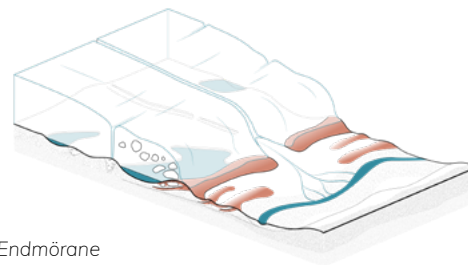
Through these visuals, the processes in "Deep Time", which is geological time, are shown, telling us about the age of the Earth, revealing how strong the Earth is. In addition, the geological perspective of time uncovers specificities, singularities, and the enormous diversity of planet Earth. It also gives voice to the silenced (rocks, sediments, soil...) and makes understandable the force of life in all things. With the representation of this movement in time through the visual, we can be aware of how impressive the origin is of what we call home.



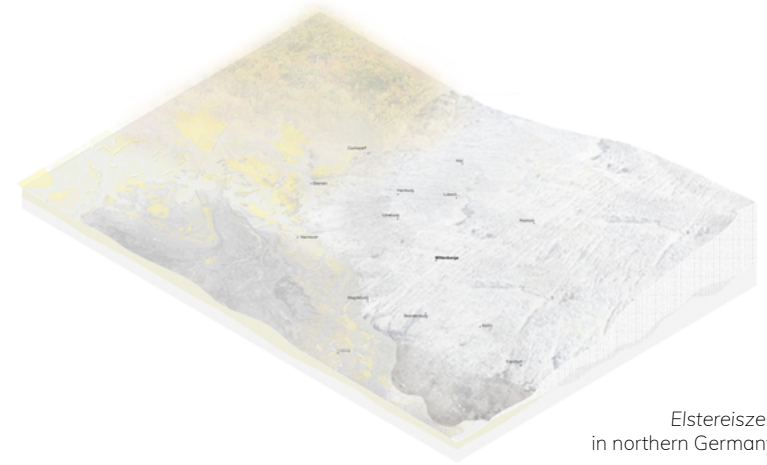
Altmörane



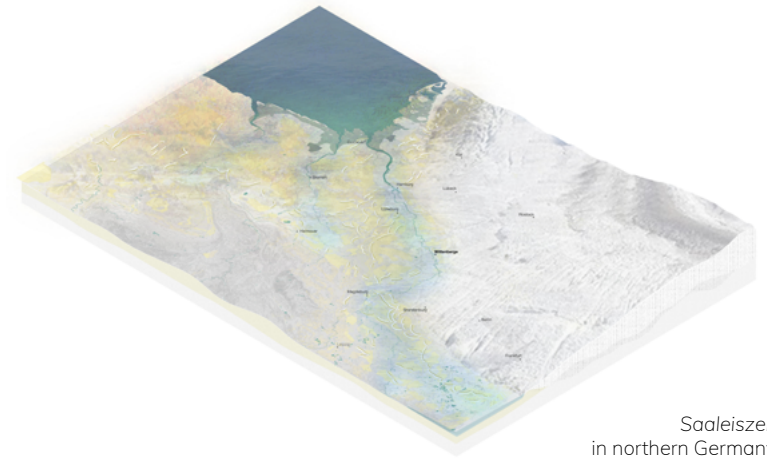
Jungmörane



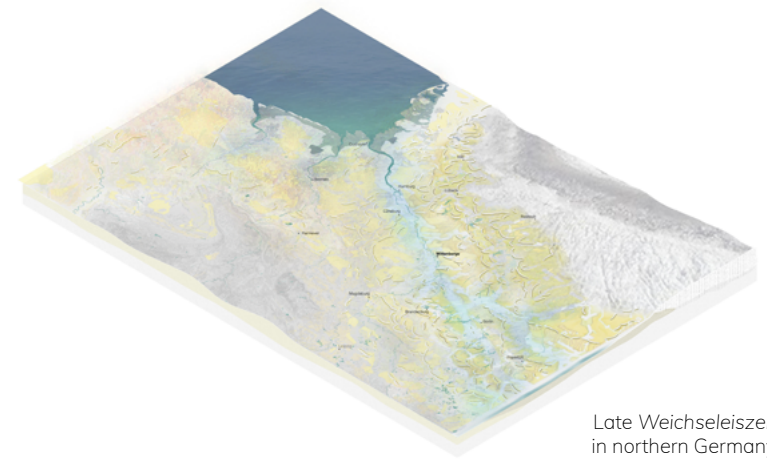
Endmörane



Elstereiszeit  
in northern Germany



Saaleiszeit  
in northern Germany



Late Weichseleiszeit  
in northern Germany



# We are at the eye of the storm

Helping to grasp a difficult-to-imagine future scenario



You can look at the map and understand the information depicted. But what if this information represents a reality that surpasses your imagination?

Imaginative visual representations based on actual data contribute to understanding and imagining complex and almost abstract topics. Moreover, communicating it effectively and accurately helps the public, professionals from other disciplines and policy makers understand incredible but plausible scenarios.

### Title

Osterholz on the Weser Bodden

### Client

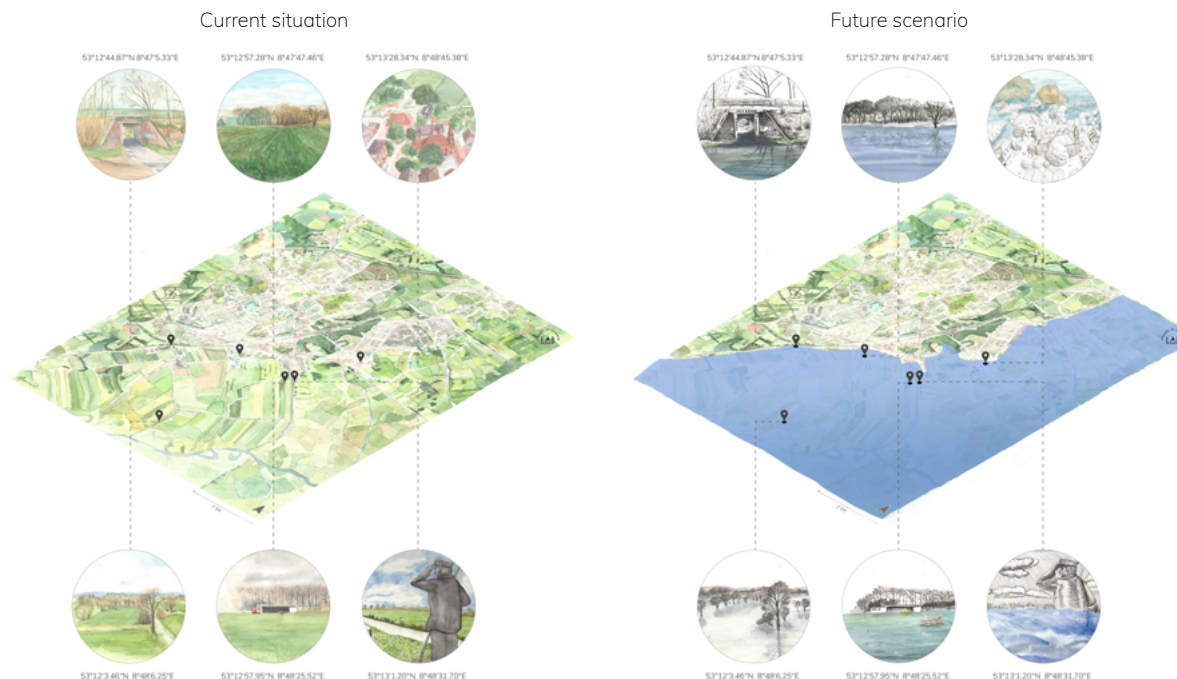
developed by Visuals in Science LAB in cooperation with Dr. Christian Bunn (Alliance of Bioversity International and CIAT)

### Link

[www.visualsinscience.com/osterholz-on-the-weser-bodden/](http://www.visualsinscience.com/osterholz-on-the-weser-bodden/)

“Science needs to be more imaginative in its communication of results to make transformational change happen” C. Bunn.

By the end of the 21st century, sea levels are expected to rise by about 1 meter, but what does this mean? How can this information be interpreted? Scientists have been talking about the impacts of climate change for decades. However, it is challenging to understand what are and will be the consequences of these impacts. And it is even more challenging to visualize how those impacts might change our daily lives and living spaces.





## Facilitation and Graphic Recording

### Title

Can agroecological farming feed the world?  
Farmers and academia's view

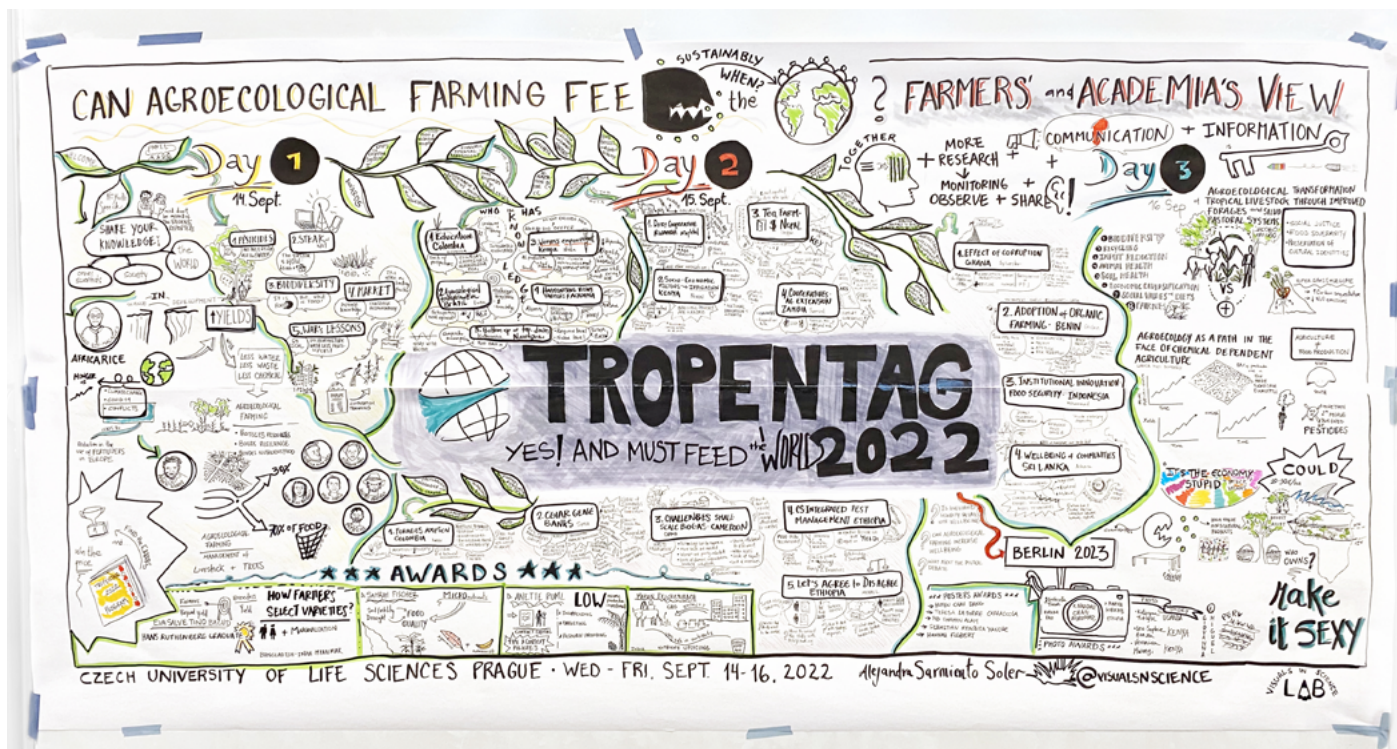
### Client

Tropentag 2023 - Prague

Conferences are exciting experiences in which ideas, concepts, and findings are presented, discussed, and challenged. Furthermore, new ideas, inspirations, and questions are born in them. But how to remember all or at least most of what had been said during those valuable presentations?

We propose to use graphic recording. This means live visualization and drawing of the discussion occurring in the room. Recording your conferences graphically helps to document the event but also to inspire and improve recall. Furthermore, it opens the door for new questions and collaborations. In other words, it helps to establish a dialogue between the participants.

This panel resulted from the three days at the 2022 Tropentag conference in Prague. The Tropentag is an annual international conference focused on tropical forestry and agriculture. This year, there were six rooms holding presentations simultaneously. The visual summarizes the discussions occurring in the main auditorium and the keynote speeches. Did you miss this conference? Then, jump into the visual and discover the topics discussed, open questions, and outlook.





Visuals in Science LAB is a team of three women with different educational backgrounds and professional trajectories, with one unified passion: connecting minds through visual communication.



Lina Buitrago  
Architect, M.Sc. in Landscape Architecture

**Role:** illustration, corporate identity and marketing, project and process manager

She is interested in sensitive approaches for creative processes. Drawing landscapes and plants are her favourite subjects. For her, hand drawing is a fundamental tool to think, observe and understand the environment, and visuals the result that facilitates communication between different groups.



Alejandra Sarmiento  
Biologist, Ph.D. in Agricultural Sciences

**Role:** illustration, vision, finances, administration, and networking

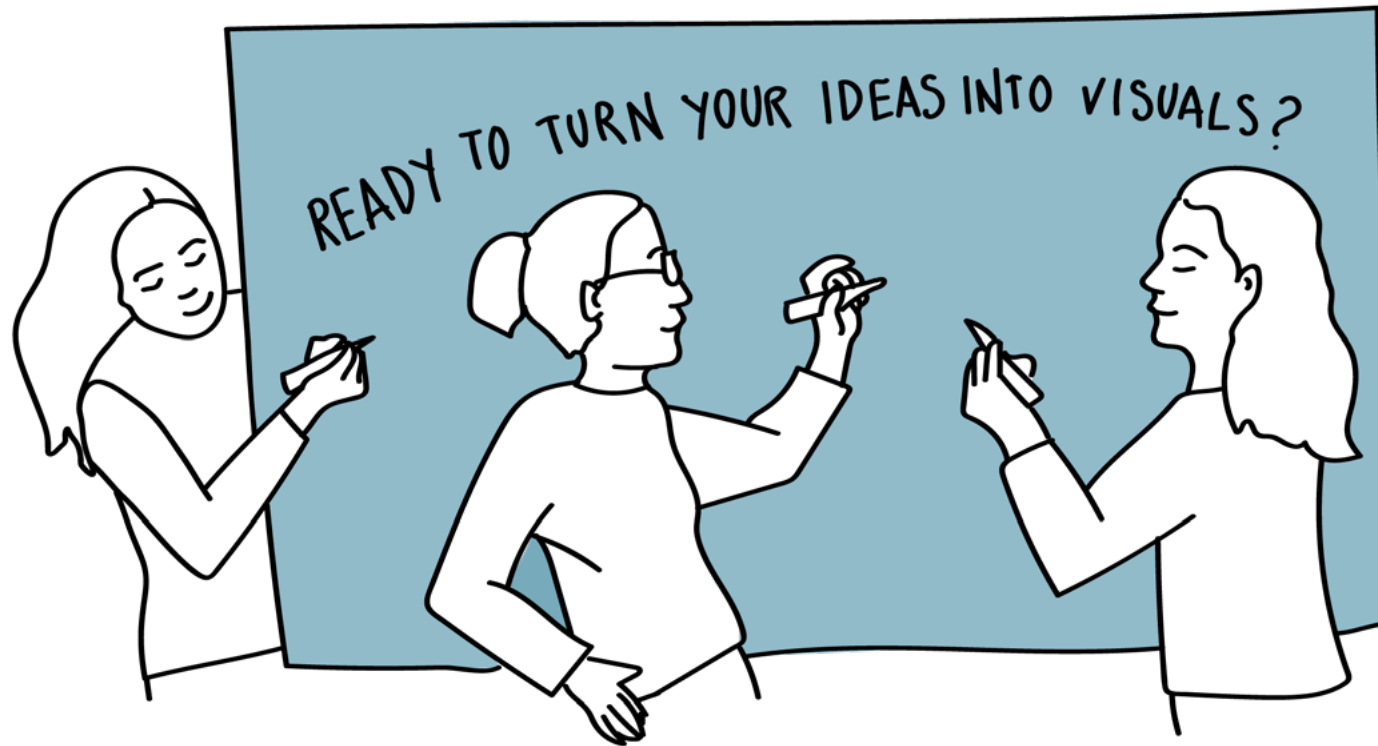
She believes visuals in science are key to the exchange of knowledge and experiences, they help to build bridges within the scientific community and between scientists and general audiences, and thus help to better address current societal and environmental challenges.



Beatriz Herrera  
Geographer, M.Sc. in Crop Protection

**Role:** illustration, corporate communication, information management, and accounting

She is interested in entomological, botanical, and landscape illustration, for her, visuals should be an integral part of scientific communication, that contribute to the correct understanding and interpretation of scientific knowledge.



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[www.visualseinstitute.com](http://www.visualseinstitute.com)





With our visuals, we support you to develop, clarify,  
and share your knowledge during all stages.  
We also help you to explain and promote your  
processes and products.

Visuals in Science LAB helps you communicate your  
ideas through attractive, insightful, and accurate  
visuals to reach your audience's minds and hearts  
and achieve the desired impact.



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