

INTERVIEW QUESTIONS



Prof. Dr. Harry Vereecken received the EGU 2023 Alfred Wegener Medal and Honorary Membership award. Inspired by his recent recognition, the eLTER communication team asked Prof. Dr. Vereecken a few questions about his career as a scientist, his engagement in eLTER and his most recent achievements. Enjoy reading below!

Question 1: Could you please share your current position and the institution or organisation where you are currently employed?

I am the director of the Agrosphere Institute, IBG-3, at the Forschungszentrum Jülich at Jülich, Germany and professor of soil science at Bonn University.

Question 2: What specific projects or research initiatives are you currently involved in?

Currently, I am involved in several larger research initiatives such as the [Phenorob research cluster](#) dealing with the implementation of robotics in agriculture and phenotyping of soil-plant systems and the [DETECT collaborative research center](#). This centre aims to disentangle the influence of climate change and human impact on the terrestrial water and energy cycle. I am also the scientific director of [TERENO](#), a network of terrestrial observatories in Germany, providing long-term data on climate change impact on the land surface for developing mitigation and adaptation strategies in respect to land use and climate change.

Question 3: Did you always know you want to become a scientist? What motivated you to pursue a career in science, and how did you become interested in your specific area of research?

Back in 1989, I was on a visit to the United States where I was attending a conference on estimating soil hydraulic properties. I also visited Cornell University there and was thrilled by the scientific environment and the challenges we face in understanding the functioning of the terrestrial system. I can say that all these influenced my decision to go for a career in science.

Question 4: What does being a scientist look like? How does a day of a scientist go?

As a scientist, you have to be motivated to move forward the scientific understanding of the functioning of systems, in my case, terrestrial ecosystems. You should be driven by curiosity and persistence in reaching this objective and by thinking out of the box. Exchanging and sharing your knowledge with colleagues is an important part of being a researcher.



**Question 5: How did you first become aware of eLTER and what motivated you to join?
What is your current role in eLTER?**

I became aware of eLTER in 2008 when I was proposing a similar infrastructure to the EU dealing with the establishment of a network of hydrological observatories (NOHA). Rather than continuing this effort, I decided to join the eLTER initiative mainly because it was more integrative, connecting different disciplines beyond hydrology to study terrestrial ecosystems. Currently, I am a member of the Steering Committee of eLTER, leading a Work Package in the eLTER PLUS project and coordinating the Research Theme on the water-climate-food nexus.

Question 6: What is the value you see in eLTER and what is eLTER for you?

The main value in my opinion is the holistic approach eLTER takes to studying the impact of climate and land use change on terrestrial ecosystems.

Question 7: How has being part of eLTER benefited your research and career?

It enlarged and broadened my research network and deepened my scientific perspective on understanding the functioning of terrestrial ecosystems.

Question 8: You were recently awarded with the 2023 Alfred Wegener Medal & Honorary Membership of the EGU. Could you describe the research or scientific achievement that led to you being recognised with this award?

Citation from <https://www.egu.eu/awards-medals/alfred-wegener/2023/harry-vereecken/>.

The 2023 Alfred Wegener Medal & Honorary Membership is awarded to Harry Vereecken for groundbreaking contributions to linking soil-plant-atmosphere processes across scales.

Harry Vereecken has made groundbreaking contributions to soil-plant-atmosphere research with a focus on subsurface processes related to the hydrological and biochemical cycles. Not only has he greatly advanced the specific research on the subject, perhaps more importantly, he has been an integrator of connecting the individual sub-processes and sub-disciplines.

Harry Vereecken recognised early on the need for exploring subsurface flow processes by geophysical methods. He integrated soil information into hydraulic functions and developed methods for estimating subsurface properties by combining these hydraulic functions with geophysical and data assimilation techniques using remotely sensed data. He advanced subsurface hydrology and pollutant transport through his pioneering studies on transport processes in heterogeneous soils. These include the development of inverse modelling approaches to better estimate the soil characteristics from soil moisture, soil pore pressure and other variables. These also include the development of upscaling schemes to connect local field measurements with environmental modelling and satellite observations.

Harry Vereecken has also been instrumental in strengthening the observational data base of the soil-plant-atmosphere continuum. He masterminded the TERENO (Terrestrial environmental observatories) initiative, a blueprint for the establishment of large-scale European and worldwide infrastructures for ecological, critical zone and global climate research. As part of these activities, he developed wireless sensor technologies to enable more effective characterization of soil moisture and subsurface heterogeneities. He helped formulate the blueprint for the ESFRI (European Strategy Forum on Research Infrastructures) research infrastructure on ecological long term research and established the European Network of Hydrological Observatories. He is presently leading an international effort of forming a global lysimeter network to foster stronger links between the soil, hydrology and climate communities facilitated via the GEWEX (Global Energy and Water Exchanges) project. His research and these initiatives have radically improved our understanding of soil-plant-atmosphere interactions across scales.

Harry Vereecken has been very active within EGU as evidenced by his services and organisation of sessions. He has made outstanding scientific contributions that have had a lasting impact on soil-plant-atmosphere research, and he demonstrated exceptional scientific leadership. Harry Vereecken is therefore a very worthy recipient of the 2023 EGU Alfred Wegener Medal.

Question 9: The Alfred Wegener Medal and Honorary Membership of the EGU is one of the most prestigious awards made by the Union. What does this award mean to you personally and how would this influence your future work?

Personally, I see this as a recognition of my research during the last 40 years. But this was not only my merit but the result of many interactions with colleagues during that period and especially my collaborators at the Agrosphere Institute.

Question 10: In general, what do you consider as the most rewarding aspects of being a scientist?

There are many but especially the freedom to define your research questions and contribute to moving forward our understanding of the Earth System and providing knowledge to sustainable use of our planet.

Question 11: What are you most proud of in your work?

I am most proud of the work I did on pedotransfer functions and the establishment of TERENO and ISMC (the international soil modeling consortium). I attach also my citation that gives further impressions and answers some of the questions:

First of all, I am very honored to receive the Alfred Wegener Medal for my research in the past decades. I would like to thank the EGU Medal committee for selecting my nomination as being worthy for this prestigious award. My special thanks go to Dani Or for nominating me and Antje Boetius, Ingrid Kögel Knabner and Anne Verhoef for supporting it.

My scientific career started in the early eighties at the KUL in Belgium as I started working on developing PTFs to estimate soil hydraulic properties from simple soil properties. It was triggered by the recognition that soil maps were underused although through their spatial coverage provided information about soils that could be used for other purposes rather than only describing soils in terms of taxonomy. It resulted in a set of equations called Pedotransfer functions that could be used to estimate soil moisture retention and hydraulic conductivity from soil texture, organic carbon and bulk density. I then started working on modelling water and solute transport in soils with a specific focus on nitrogen transport. In the eighties nitrate contamination of groundwater was a big deal as most groundwater bodies in Europe showed nitrate values above the prescribed level. Despite all research done, it is still on the agenda to day and more pressing than ever. In the nineties, I changed to the Forschungszentrum Jülich where I started working on groundwater hydrology. The main focus was on estimating effective hydraulic properties and to assess the impact of heterogeneity on solute transport. In 2000, I became director of the Agrosphere institute in Jülich. I was lucky to be able to help shaping this Institute and become its director. This position greatly broadened my scientific horizon. I had the opportunity to work with many colleagues across disciplines including soil science, hydrology, biogeosciences and climate and atmospheric sciences. I learned a lot from them and I am very grateful for their support and encouragements over the years. These cooperations for sure led the basis for receiving this award. I would also like to thank my colleagues of the Agrosphere Institute at the Forschungszentrum Jülich and my director colleagues Wulf Amelung and Jan Vanderborght. Their creativity, collegiality and innovation spirit are the essential ingredients that helped developing my career and enabled me to progress in my research. All this would not have been possible without the support of my family and especially my wife Monika. She accepted the fact that I more than often prioritized my research. As my professional career at the Agrosphere Institute is reaching an end, time has now come to prioritize differently and to give back many of the things that I have neglected in the past.

Question 12: Can you share an advice to young researchers who are just starting their scientific careers?

Believe in yourself, be persistent in what you are doing (do not give up too quickly) and interact with the science community. It is also important to build up your research network.

Question 13: Is there anything else you would like to share or highlight about your research, the EGU 2023 award or in general?

See Question 11 above.