

Marcus Maeder Selected works and projects 2018 – 2024

Published by domizil and Avataradio, 2024 www.domizil.ch www.avataradio.net Text Copyright: Marcus Maeder, Marianne Preibisch/Werkspuren

ISBN: 978-3-033-07364-7

All rights reserved. Except for brief quotations in critical articles or reviews, no part of this book may be reproduced in any manner without prior written permission from the publishers.

Design: Medusa Cramer

Photos by Marcus Maeder, Christian Beutler, Ken Gubler, Marco Zanoni, Stefanie Maaß, Frank Sperling

aaa

Spreepark Multispezies Bau

Installation, 2024

A sonic multispecies burrow

As part of a residency at the Spreepark, Marcus Maeder observed the soundscape of the former GDR amusement park Plänterwald. The site has been closed for almost twenty years and left to its own devices - flora and fauna have spread through the architecture and grounds of the Spreepark, creating a piece of wilderness in the middle of the city. The park is colonised not only by neobiota such as Japanese knotweed and raccoons, but also by rare native aquatic plants and endangered insects. Today, the Spreepark is a multidimensional niche space (Donna Haraway, 2008) in which not only animals live and socialise, but also people. Whether as part of guided tours, night-time break-ins or for film productions in which the park serves as a "lost place" backdrop, the cultures that frequent Spreepark are diverse and the paths of animals and humans intersect.

Maeder uses methods from wildlife biology and acoustic ecology to observe the activities, interactions and encounters of the fauna (which in Spreepark also includes humans) and flora: He set up automatic audio recorders and wildlife cameras in places where he expected the most "traffic". Maeder is investigating how people, animals and plants coexist in a place that aims to be a model of a new urbanity that includes the wilderness. Will niches stabilise, will new ones emerge? Is the Terrapolis according to Donna Haraway - a "niche space for a multispecies becoming-with" - emerging on a small scale in the Spreepark?

The sound installation "Spreepark Multispezies Bau" consists of a geodesic dome in which loudspeakers are installed at the connection points - the four recording locations selected in the park can be heard spatially placed in a surround audio sound field inside the dome. In addition and for comparison, recordings from the wildlife cameras can be seen on a monitor - the activities of people and animals in the park can be

observed. The dome is partially covered with a textile shell that is reminiscent of a ruinous eavesdropping device, such as can be seen on Berlin's Teufelsberg.

Spreeparkradio

The Spreeparkradio allows you to travel through space and time in the Spreepark Soundscape. In automatic mode, the radio jumps from one location to the next - every five minutes (recording time of the automatic recorders in the area). Once all four locations have been played, the next hour can be heard (recording interval). However, you can also select the locations and time yourself in the menu.

Marcus Maeder writes and photographs in the course of his acoustic observation of the Spreepark. His observations and reflections will be included selectively and continuously in the photo journal on this page.

The research residency took place at the invitation of Spreepark Art Space and as part of the ARCH+ project Cohabitation. Spreepark Multispezies Bau/Spreeparkradio was created as an artistic work for the Spreepark Art Space.

Programming: Ken Gubler Construction dome: Jonas Haala, EMArt and the Spreepark Art Space setup team

https://spreeparkradio.de/

https://www.spreepark-artspace.de/en/programme/ behind-the-scenes/detail/marcus-maeder-how-the-urbanwildemess-of-the-spreepark-sounds/

Exhibitions:

Park Einsichten, Spreepark Art Space, 23.03. – 20.05.2024







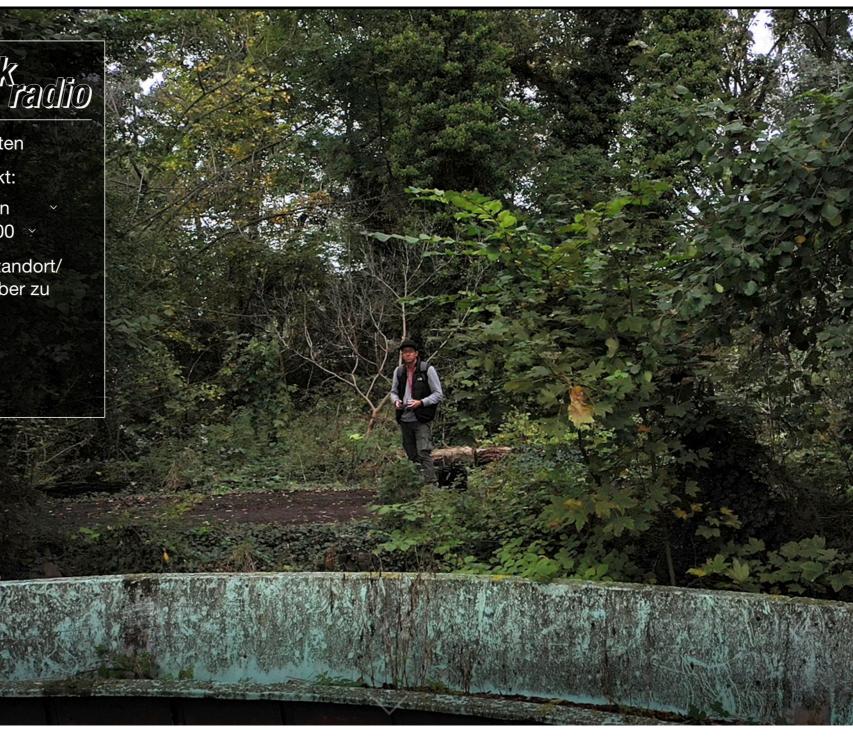


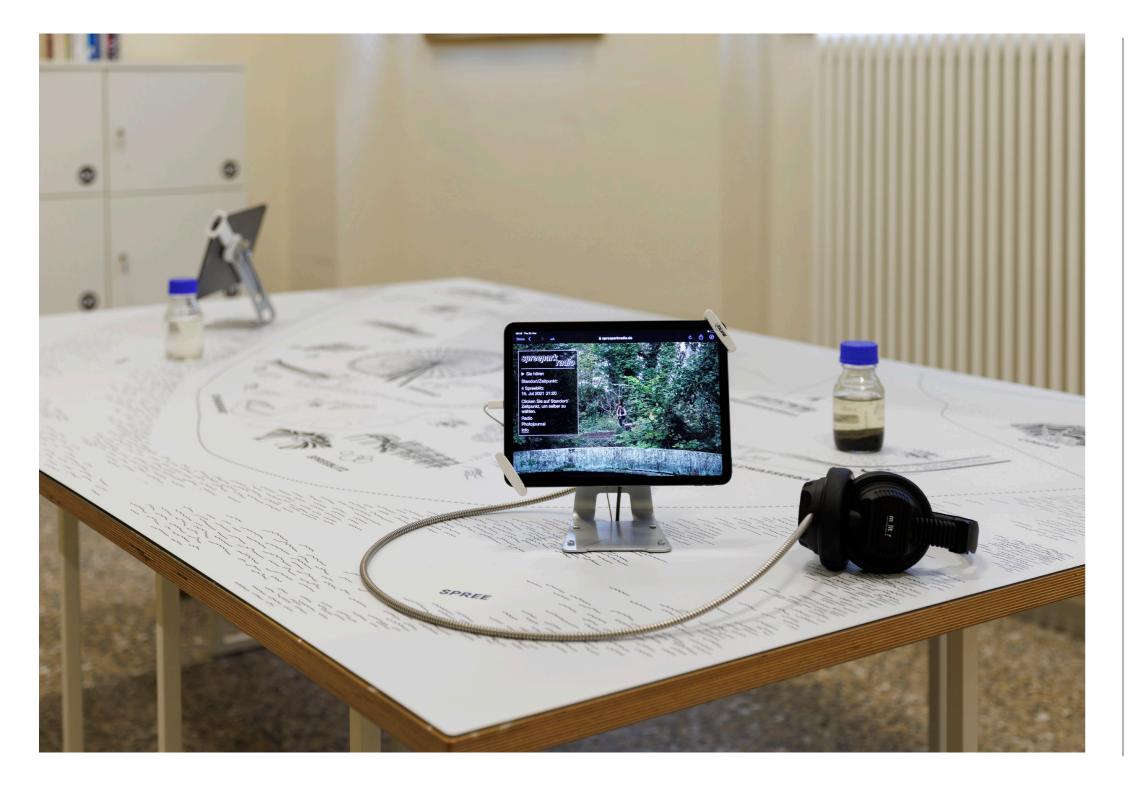




spreepark radio

- II Radio einschalten
- Standort/Zeitpunkt:
- 2 Wildwasserbahn 02.07.2021 □ 3:00 ···
- Clicken Sie auf Standort/ Zeitpunkt, um selber zu wählen.
- Radio Photojournal Info





Speculative Botany Plant Science Fiction Poster Prints, 2023, Spreepark

Speculative botany consists of imagining and exploring hypothetical or fictional plants, plant traits, communities, and ecosystem relationships. Such relationships are designed based on scientific speculation or science fiction concepts. Speculative botany aims to help expand our understanding of plants and stimulate our imagination.

Speculative botany aims to help people develop a greater appreciation and connection to plants. When we can imagine what plants might look like in the future and how they might affect our lives, our power of imagination is stimulated and we begin to engage more consciously with the plants around us.

By imagining new and different properties of plants, we can expand our understanding of nature and ecosystems. For example, we might begin to think of plants and plant communities not just as passive objects of nature, but as actors with their own capabilities and needs.

Speculative botany also aims to help us become more aware of the effects of our actions on the environment and plant life. By imagining how plants will respond to climate change or other environmental changes in the future, we might rethink our own actions and work toward a more sustainable future.

Speculative botany offers a different perspective on neobiota and invasion biology issues by focusing, for example, on what might happen if neophytes continue to spread through the world's ecosystems faster than ever before. Rather than focusing solely on the current state of flora and fauna, speculative botany develops and explores alternative future scenarios.

By using such scenarios, speculative botany may be able to uncover aspects that are neglected in current discussions of

neobiota. For example, a speculative scenario can examine what would happen if a neophyte grew particularly rapidly and became the dominant tree in forests over the next few decades. This would potentially impact other plant species that would need to adapt to that tree as part of their environment.

Speculative botany can also develop scenarios that focus on the impact of neobiota on humans. For example, it can explore what would happen if a species commonly known as an «invasive» plant is suddenly discovered to be a desirable medicinal plant, or if a plant considered a weed in the garden is suddenly used as a valuable resource.

The work «Speculative Botany» was created as an artistic work for the Spreepark Art Space in the context of Marcus Maeder's research residency 2021/22. The poster installation belonging to the manifesto can be seen at Spreepark until October 2023 and can only be visited as part of the public tours or events.

https://spekulativebotanik.de/

Exhibitions:

Art and about. Artistic Research at Spreepark, Spreepark Art Space, Berlin



Migration is a desired and encouraged process that aims to establish new communities of native and alien plants. These communities are expected to develop higher resilience and new diversity with respect to climate warming and weather extremes.

Globalization is a term that in its negative connotation originates from the neoliberal economy of the 20th and 21st century and has been recast: It describes the development of a global community of all life forms, according to their characteristics and capabilities, for the benefit of the biosphere.





Hemerochory as the spread of plants by humans and animals, is a natural process and can also be seen in reverse: People and animals move to where favorable plant communities exist.



Acla - Edaphonic Topography II

Sound installation, 2024

The term "Edaphon" was formulated at the beginning of the 20th century by the Austrian botanist and microbiologist Raoul Heinrich Francé and describes the totality of all soil organisms. Edaphon also contains the word part "phon", which in Greek means voice, sound, sound or tone. The soil ecosystem is still an unknown realm for most people - especially acoustically. Who would imagine if and how it sounds in the soil? Some time ago, out of sheer curiosity, Marcus Maeder stuck a self-made contact microphone, which he had originally developed to listen inside plants, into the soil of a meadow. And what he heard made him sit there and listen for days. A realm full of strange sounds: crawling, buzzing, humming, chirping, rumbling - he would never have expected such a diverse soundscape. The sounds come from soil animals, which not only make noises when they move through the soil, but also when they make communication sounds. This makes sense - you can't see anything in the ground and have to orientate yourself acoustically: Mates, territories, sounds of food sources and prey - all of this is communicated via the acoustic perception of ground dwellers.

Listening to these sounds, for example by lying on the ground and pressing an ear to its surface, is not possible without technology. The sounds of soil fauna and flora are far too quiet; they have to be amplified a thousand times. With special pre-amplifiers, it is possible to hear the sounds of millipedes, stone creepers, woodlice, spiders, mites, spring-tails and ants. The roots of plants also produce sounds, especially when it is dry and the plants are suffering from drought stress. You can also hear sounds above ground: Animals on the soil surface, wind travelling through the vegetation - and noise caused by humans: roads, construction sites - even aircraft noise can be heard in the soil.

The soundscape of the soil not only reflects local communities of soil organisms, but also the influence, land use and

ultimately man's understanding of nature.

In the meantime, a number of scientific research projects have emerged from soil listening, in which the sound topography of the soil is explored: Real new territory that is virtually unexplored. For example, the diversity and daily activity of local soil fauna can be measured acoustically, as we were able to show in the "Sounding Soil" research project.

Marcus Maeder is currently working on a preliminary scientific study in the Safiental valley in Switzerland, in which the soil sounds of two forest areas are being recorded and analysed. One is a natural forest reserve that has existed for over 50 years and where the forest is left to its own devices. The second piece of forest is normally used and maintained for forestry purposes and the researchers want to find out how the biodiversity in the soil develops over the years with climate change. For this purpose, recorders with soil microphones are placed near three trees in each of the two forest sections and record the sounds of the soil fauna. The recorders record the sounds in the mountain forest grounds at hourly intervals, which are then later analysed in connection with the microclimatic dynamics.

The research project, which is being carried out in collaboration with the Swiss Federal Institute for Forest, Snow and Landscape WSL, the Beverin Nature Park, ILEA Institute for Land and Environmental Art and the municipality of Safiental, focuses on the important question of preserving cultural landscapes: How much human intervention is needed to make the forest fit for climate change? Does mountain forest need to be managed/maintained so that it quickly develops resilience to increasing drought or should natural processes be given their time and humans withdraw from the Alpine region?

The soil recordings are incorporated into the sound installation Acla Edaphonic Topography. This consists of a topographical body - an artificial floe or rock slab. Acoustic emitters and contact microphones are mounted on the underside of the body. They turn the body segments into resonating bodies and sound detection surfaces. The installation can be walked through and is interactive: the soil fauna reacts to the visitors' movements. If you move too loudly, too brusquely on the topographical body, then fewer sounds of soil creatures can be heard locally - the fauna retreats.

In the installation, the sounds can not only be heard but also felt: if you sit or lie down on the bodies, touch them with your hands and feet, you can feel the low-frequency components of the soil sounds.

The field recordings from the soils also include synthetic sounds generated from the local microclimatic measurements of the recorder locations: Using data sonification, temperature and soil moisture values are given a sound that can be heard throughout and is constantly changing. This makes it possible to hear correlations between the activity of the soil fauna and the microclimatic conditions. The measured values from the installation's computer control an analogue, modular synthesiser, which is part of the installation.

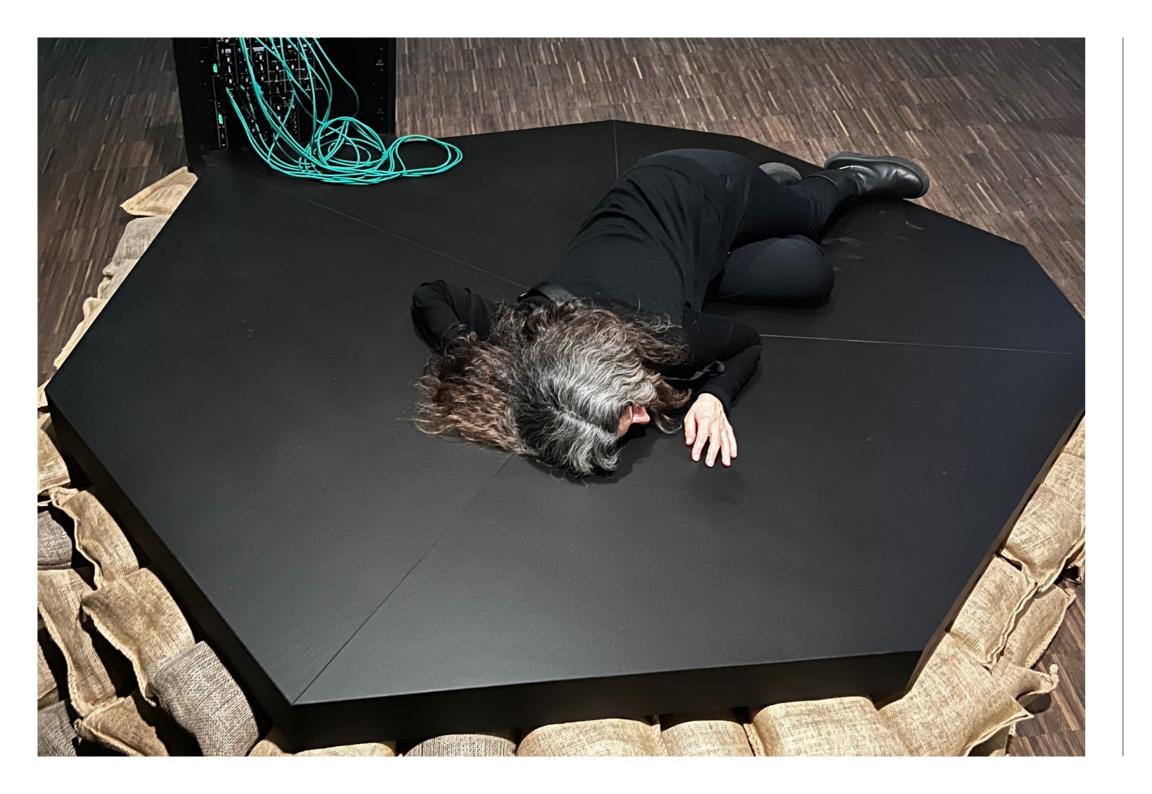
Programming: Ken Gubler Construction; Jungbach/Reto Lui Jung

https://aclasoundscape.ch/

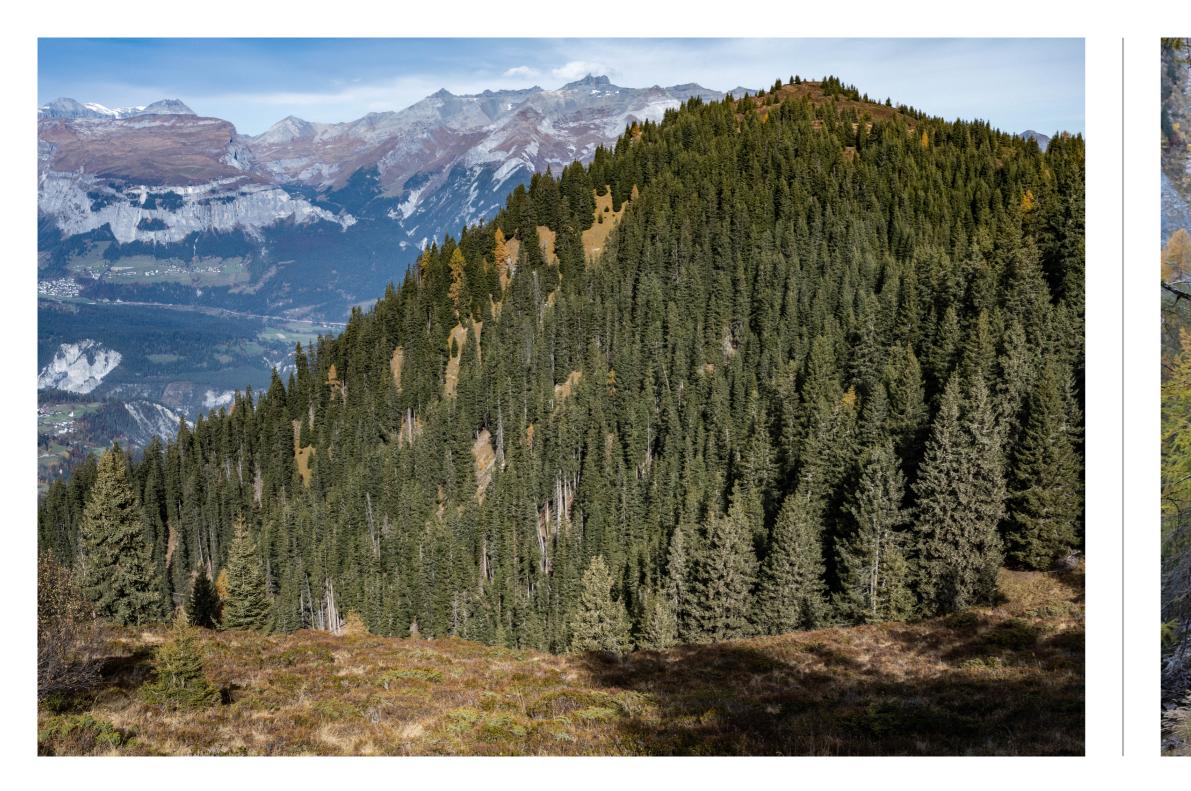
Exhibitions:

Wälder: Von der Romantik in die Zukunft, Romantikmuseum, Frankfurt, 16.03. – 11.08.2024











Imeall an chosta

Installation and ongoing research, 2024

Recently, a disturbing study has been published in the journal Nature Climate Change by the Potsdam Institute for Climate Impact Research: The Gulf Stream has become increasingly unstable over the last hundred years, particularly its climatical- At the four sites underwater/waterline/uphill/inland, the recorly for Europe important northward-flowing part, called the Atlantic meridional overturning circulation (AMOC), which is the heating powerhouse of the European continent as well as the British Isles and Ireland.

thus higher in northern Europe than it would be without the be artistically/aesthectically explored and reflected? Gulf Stream; Europe would resemble the boreal steppes of Canada or Siberia without it. Climate researchers around Nik- The aim of the project was to develop a sound installation las Boers are concerned that Ireland, for example, will have to not mild ones as in the past. The melting of the ice masses at servation, the North Pole changes the salinity of the sea water, which leads to a weakening and ultimately the collapse of the Gulf Stream. The consequences for northern Europe would be catastrophic: in addition to intense winter storms and colder, harsher conditions in general, drier summer months would also have to be expected.

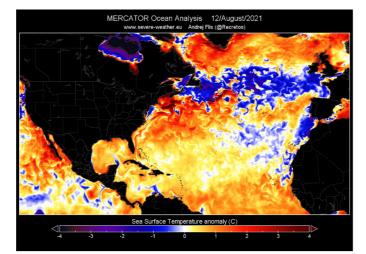
Imeall an chosta (Irish for coastline) aims to scientifically and artistically investigate and observe the climatic changes on the coast of West Cork. The project's focus is on the influence of changing climate on the fauna in the water and on land, especially with regard to biodiversity. Local communities are strongly influenced by microclimatic conditions and exposures - accordingly, these relationships will be studied in a shore ecology context. Biodiversity on land and in water is surveyed and observed using acoustic methods: Automatic audio recorders are placed in the transition area from water to

land, recording at intervals the local soundscape over the air, underwater and soil. These recordings are later analyzed for their acoustic diversity - the measure used (Acoustic Complexity Index) provides clues for assessing the temporal and spatial dynamics of local biodiversity.

ders simultaneously measure the microclimate: Temperature and humidity, as well as water temperature and salinity. During the maintenance in the field, the landscape, fauna and flora will also be observed photographically.

Thanks to the AMOC, European latitudes are much warmer The scientific, eco-acoustic observation is combined with arthan they would normally be at this northern location on the tistic research in Imeall an chosta: How do the manifestations planet - a diversity of plants and animals thrive that is found of climatic changes on the coast of Ireland appear, respecmuch further south in other parts of the world. Biodiversity is tively how can microclimatic and biodiversity-related aspects

as well as a concert version of it, which artistically disposes deal with future temperatures that correspond to the conditi- the spatial and temporal dynamics in the soundscape and ons of Toronto in Canada - i.e. long and very cold winters and microclimate and In addition to the acoustic/sound art ob-

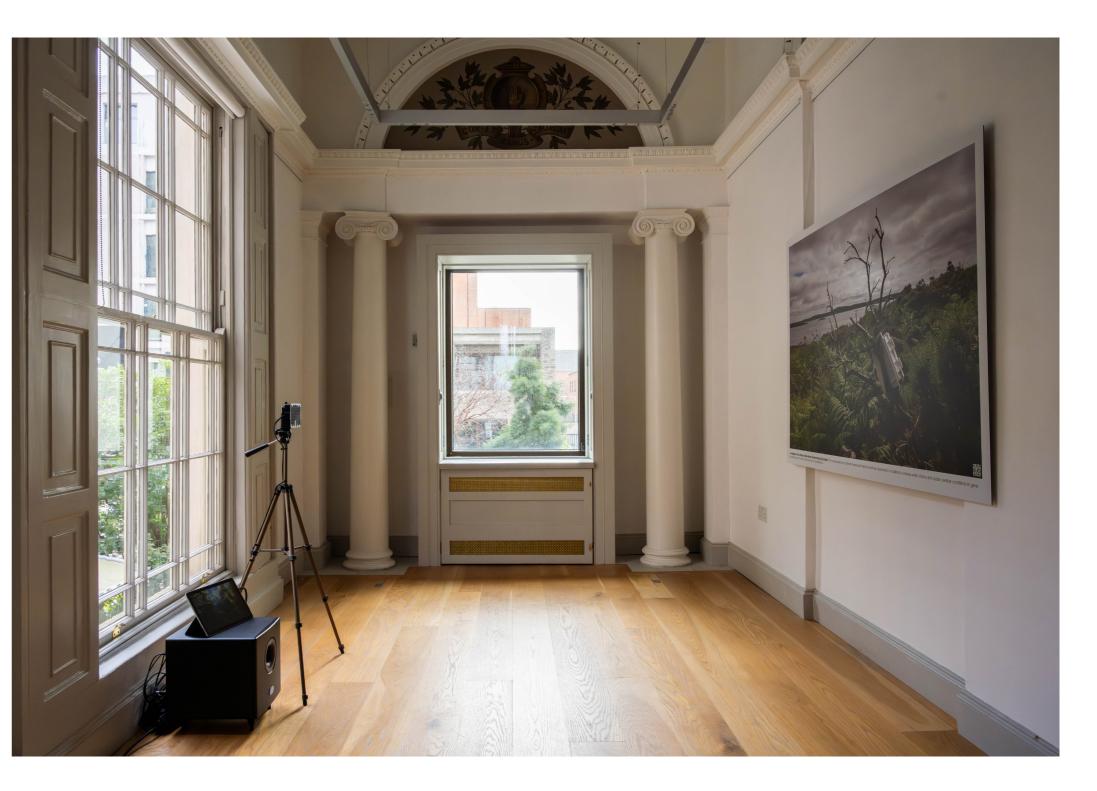


Andrej Flis: Sea surface temperature anomalies, MERCATOR Ocean Analysis, www. severe-weather.eu.

Scientific source: Boers, N. (2021). Observation-based earlywarning signals for a collapse of the Atlantic Meridional Overturning Circulation. Nature Climate Change, 11(8), 680-688.

www.imeall-an-chosta.net

Exhibitions: Disquieting Frequencies, Goethe Institute Dublin,





littoral-2 (waterfront) air humidity: 96.4% air pressure: 996.8 hPa water salinity: 32.17 psu water temperature: 16.47° C main blog About Weather

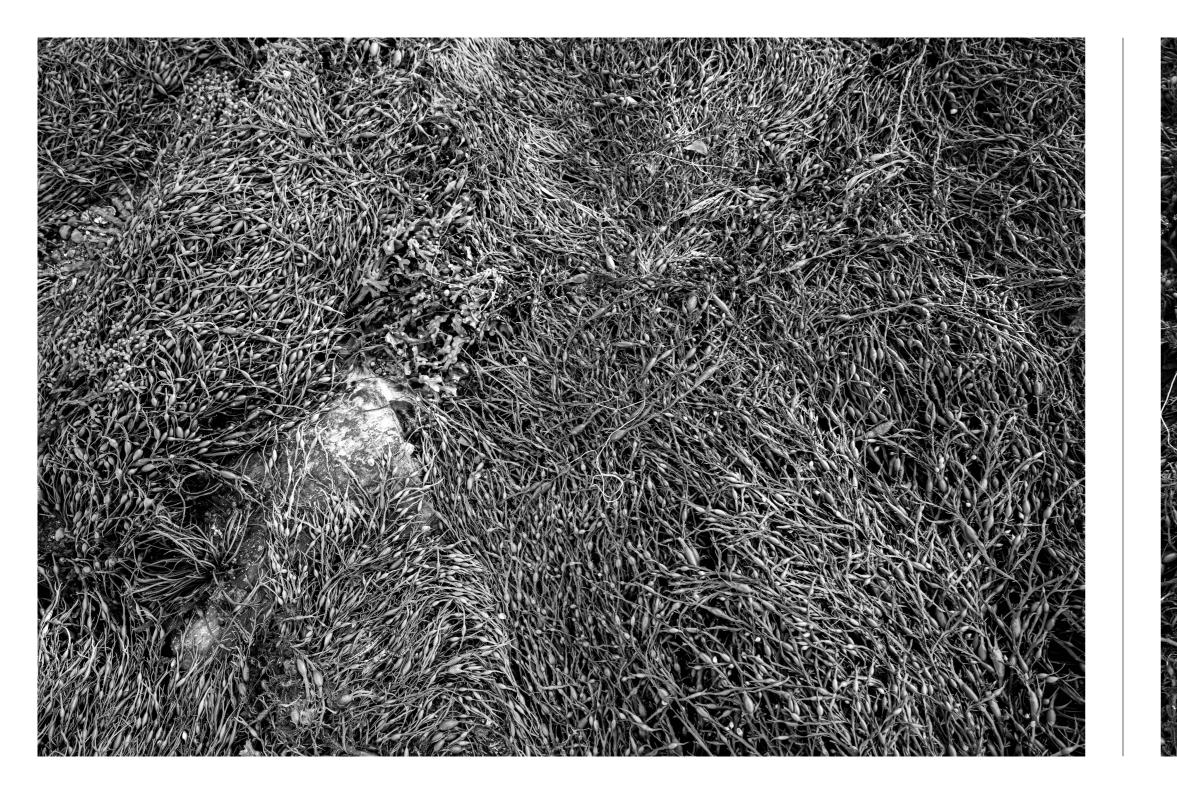


Imeall an chosta

Photographs, 2021 – 2023

Marcus Maeder is interested in ephemeral plastic/scultpural and visual transposition processes in the coastal landscape of Roaring Water Bay - be it the ever changing weather conditions (cloud formations, water surface) or the Celtic Sea that exhibits very high tidal variations which constantly reshape the seabed and coastline. A very diverse marine flora grows in the Roaringwater bay in West Cork: with each retreat of the water, the marine plants and rocks near the shore rearrange according to the drainage patterns of the ebb tide; Maeder documents and examines these sculptural processes photographically.

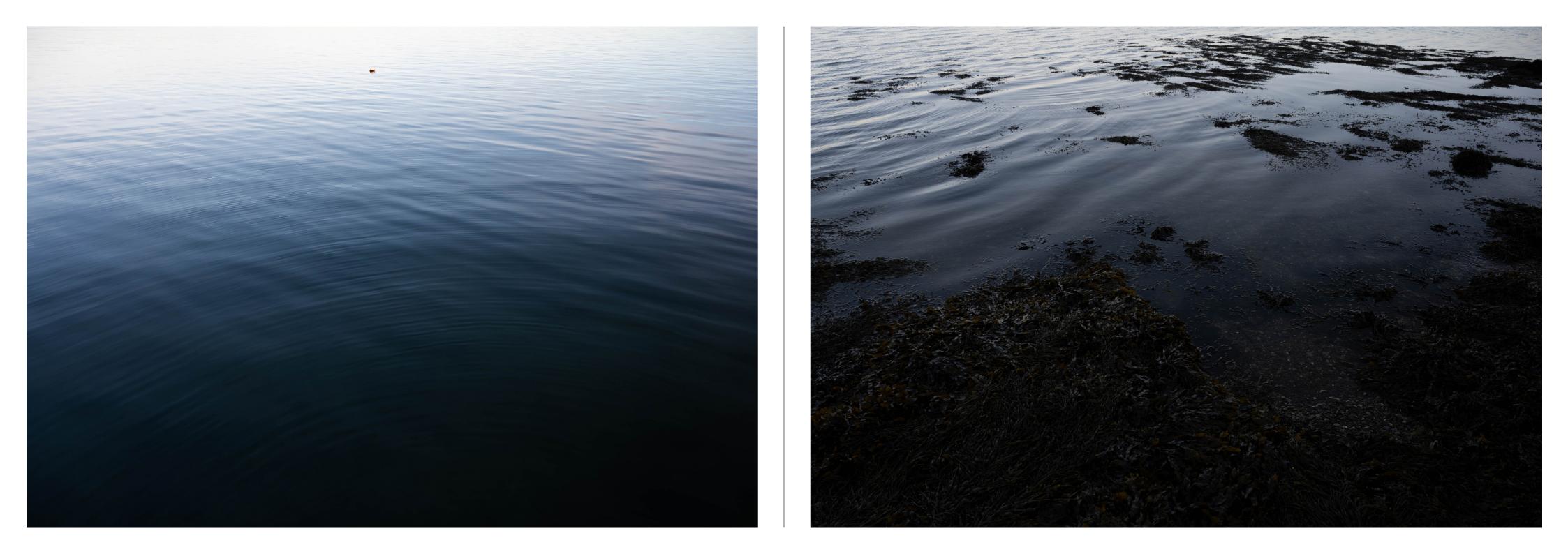


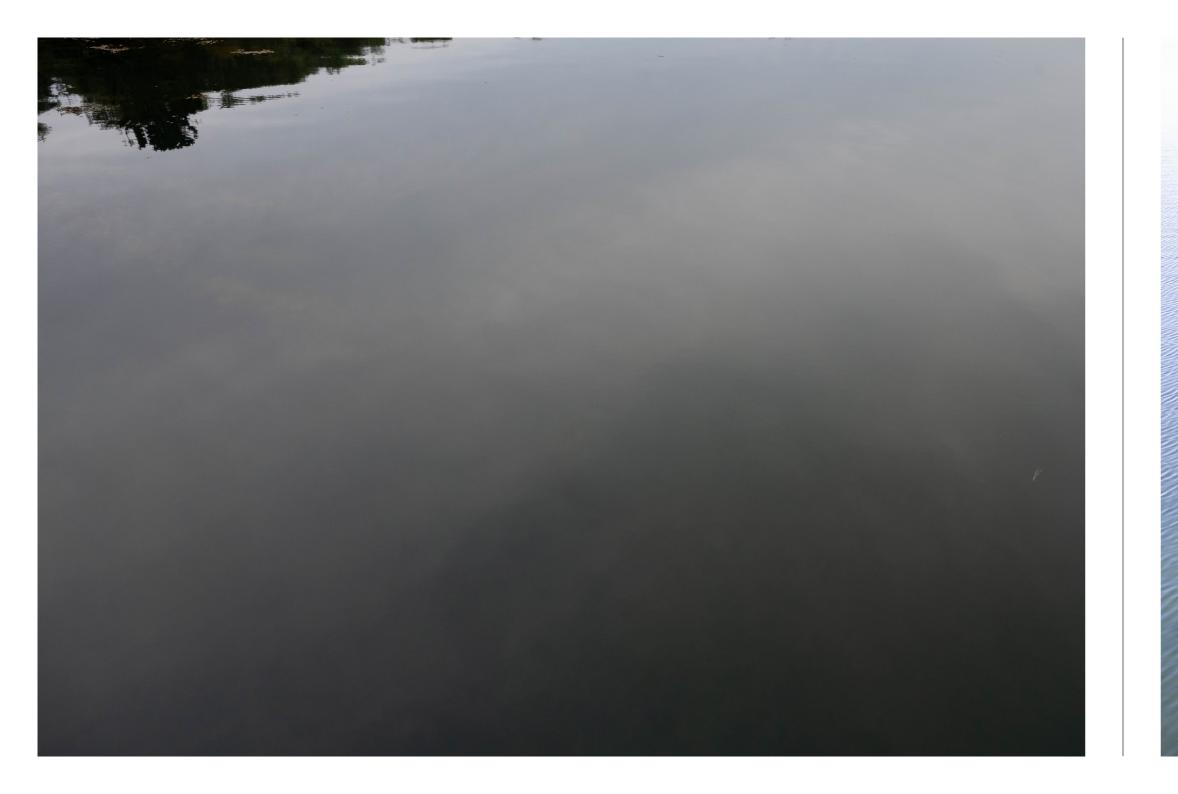


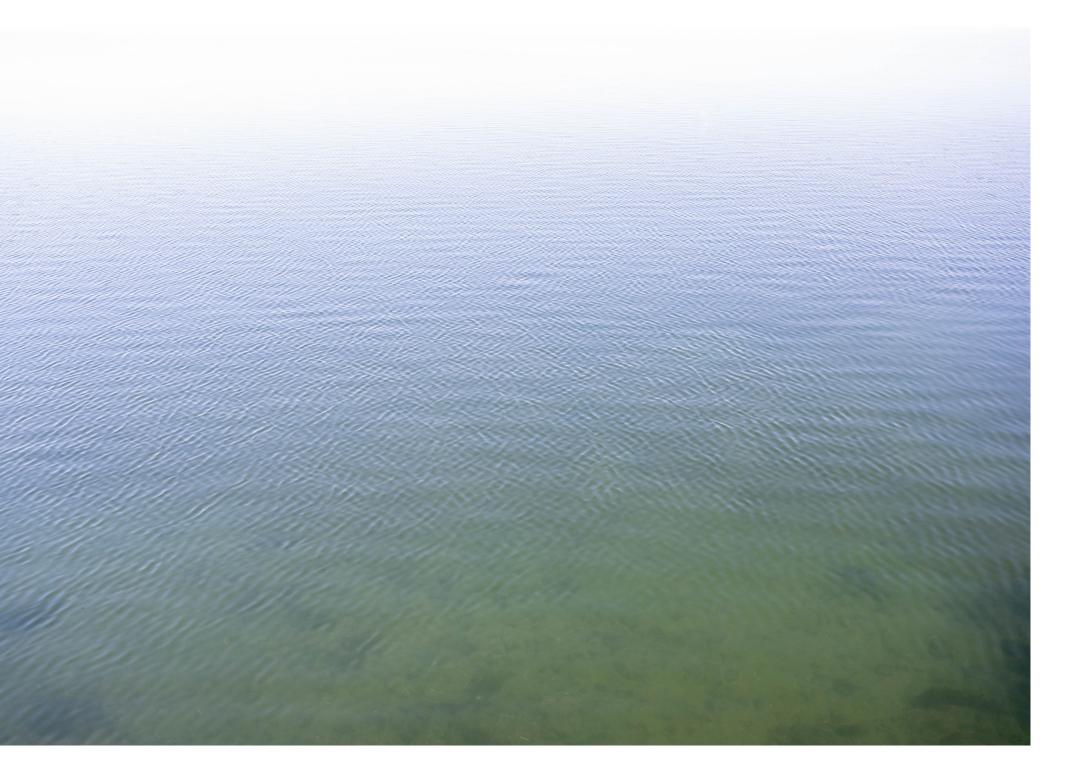




















Acla.

A listening post, 2022.

With the abandonment of the old cantonal road and the former tunnel end of the 1960s, the forest in the Acla gorge has not been maintained and used for forestry purposes for several decades; a wild mountain forest has formed. Since 2009, the area of the Aclatobel, which extends over both sides of the Safien valley to the tree line and includes the Präzer forest, has been a natural forest reserve. This was established with the intention of enabling and observing alpine forest development unaffected by man.

Can untouched forests adapt to climate change in the alpine region on their own or human managementis needed to prepare the forest for a drier future? Does it make sense to preserve cultural landscapes, should humans withdraw from the Alpine region - since traditional, agricultural ways of life will only continue to be possible with high subsidies and thus allow a newly emerging wilderness in the Alps to develop a human-uninfluenced resilience to climate change? Or should/must humans mitigate the environmental damage they cause through targeted landscape management? Fundamentally, this raises the question of man's place and role in the world. How much space on the planet do we really need? Do we have to live everywhere? What would a future, sustainable coexistence with the other inhabitants of the planet - the plants and animals - look like? A coexistence in which humans and their needs no longer dominate and threaten ecosystems and diversity? How much wilderness is possible and meaningful?

These are the questions to be explored by a research and art project that aims to acoustically - artistically and scientifically - observe the Aclatobel and the dynamics of biodiversity at different altitudes and exposures. After an inventory in the first year, a comparable, managed forest area in the Safien valley will be added in a second step. The project is initiated within the framework of Art Safiental 2022 and will be realized from 2023 onwards in cooperation between the municipality of Safiental, the Beverin Nature Park, the ILEA Institute for Land and Environmental Art, the Zurich University of the Arts ZHdK/the Institute for Computer Music and Sound Technology and the Swiss Federal Institute for Forest, Snow and Landscape Research WSL.

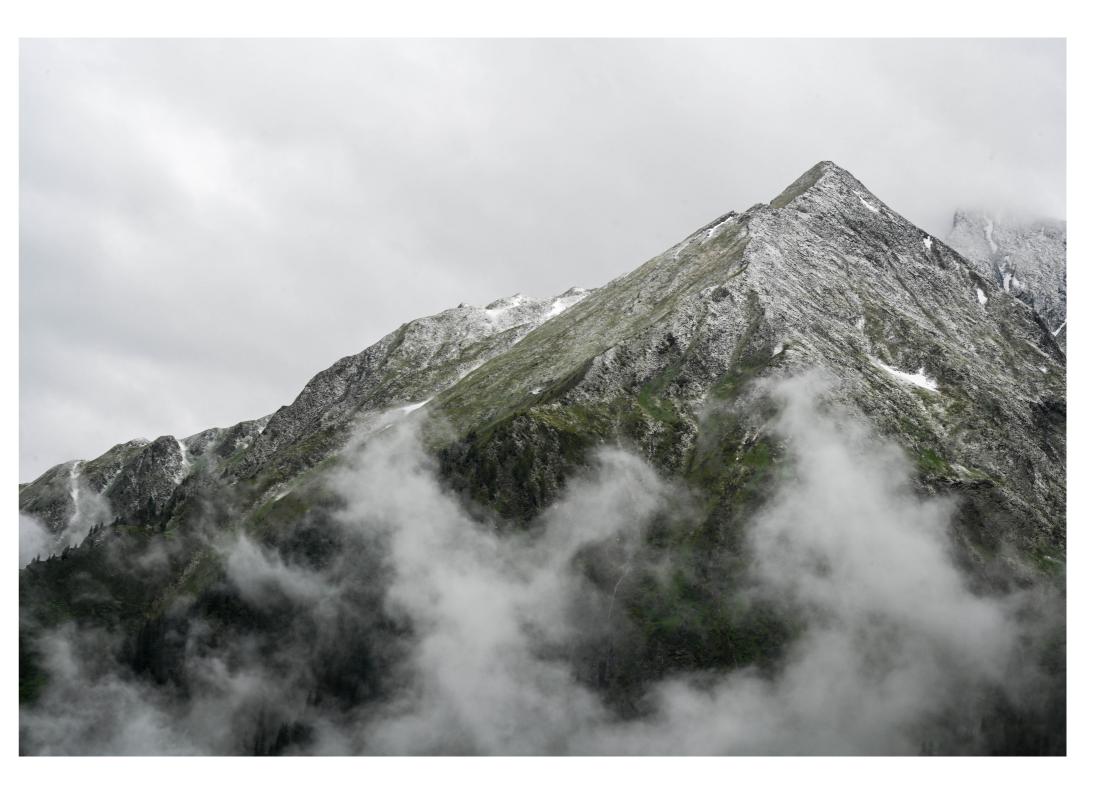
Since summer 2021, the microclimatic conditions and soundscape of the Aclatobel have been observed and recorded. Acoustic recordings of environmental sounds and sonifications of microclimate data at three locations make the Aclatobel experienceable in an unusual way: the artistic product is the installation "Acla" - in the form of a listening post, a tree house at the border of the natural reserve - with console and headphones, where visitors can interact with and explore the observation system as well as the recordings of the soundscape of the Aclatobel. The microclimatic measurements of three sites in the gorge form a chord (by means of data sonification) - a triad that changes with the daily and seasonal dynamics. In addition, the environmental sounds recorded analogously to the measurements can be heard. In this way, links and interactions between microclimatic conditions and sounds of both animate and inanimate nature can be explored: For example, what happens during drought in summer? Does the fauna retreat and become less audible? Can the water level of streams/rivers be heard, what influence does human land use and noise have on the acoustic behavior of animals in the valley? How do the dynamics of the acoustically measurable biodiversity at the three sites develop, what role do exposure and the associated microclimate play?

Artistic/scientific conception: Marcus Maeder

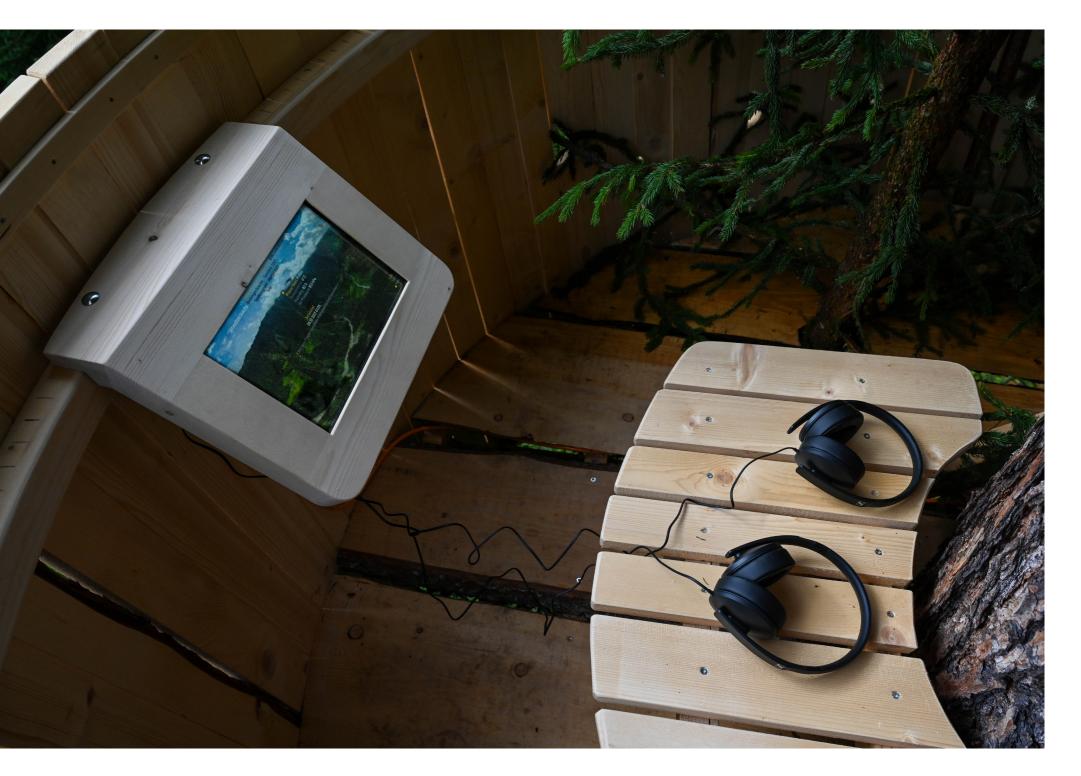
In commission of: ILEA Institute for Land and Environmental Art, Tenna Supported by: Municipality of Safiental, ANU Graubünden, Nature Park Beverin Programming: Ken Gubler Construction of listening post: OBANplan GmbH, Tenna, Sebi Nauck, Max Balser, Salome Oppliger Special thanks: Forestry and Works Service: Daniel Buchli, Simon Casanova; Civil Engineering Office Graubünden; Elektro Raetus; Art Safiental Biennale

www.aclasoundscape.ch

Exhibitions: Art Safiental 2022, Switzerland Jul - Oct 2022









Umweltgeräusche Boden

KlangpannramaZeitfenster bitte auswählenBodengeräuscheSommer 2021SpektrogramHerbst 2021InfoWinter 2021/22

Aclatobel 30.07.2021 01:48 Mit dem Finger durch die Klanglandschaft scrollen >

Lüsch 1020m Temperature: 16° C Humidity: 93 % Air Pressure: 904 hPa

Acla: Textures

Various visual works, 2021

During his field work in the Aclatobel, Maeder also collects further artistic material, examining visual and haptic morphologies he finds in the natural reserve area for their aesthetic qualities. Among other things, he is interested in the texture the visual and haptic nature of the surface and of the ground in the near vicinity of the recording stations. Further, Maeder experiments with artistic transformations of spectrograms of the recorded audio material. In addition, wildlife cameras are mounted at all three observation sites in order to also visually document what is happening on site. The artistic treatment of this material makes up the exhibition Acla:Textures.

Robot drawings: Sound textures

This part of the exhibition consists of pencil drawings made with a drawing robot. Spectrograms of selected recordings from the Aclatobel serve as a template for the robot's interpretation. Striking/special sound events were selected by the artist and represented in a spectrogram. These could be, for example, the call of an eagle or falling boulders. Spectrograms are a form of visual representation of an audio recording on the computer. In them, the time course is displayed horizontally, the frequencies are displayed vertically, and the color and brightness indicate the volume. The robot's control software interprets the brightness values in the spectrogram and converts them into a line drawing.

In their intuitive, expressive appearance, the robot drawings are reminiscent of paintings and drawings from the Informel and abstract Expressionism periods. Grayscales become drawing-like movements that have an inherent performative character. The line textures are the product of a robot choreography that is to a considerable extent randomly controlled: the drawing patterns emerge from a stochastic process that attempts to reproduce grayscale values and the motif to be represented by a line texture.

Black and white photographs: Varying textures

In music, texture refers to a pattern created by stringing together variations of the same motif. Marcus Maeder has applied this compositional method to his visual observations in the Aclatobel: A wildlife camera is also installed at each of the recorder locations, documenting what is happening in a selected section of the landscape and image section. When something moves in the camera's field of view, an image is generated. Not only passing animals can be seen - sometimes weather events or light phenomena also "fall" into the camera trap. The chosen perspective between ancient spruces into the Rabiusa gorge and the entrance to the Safiental valley corresponds to a classic romantic motif, such as those found in Caspar David Friedrich's paintings.

The graininess and limited resolution of the wildlife camera images are reminiscent of historical analog photography particularly at night, when the camera shoots images with infrared flash in even "worse" quality. Especially in these images, the reduced resolution creates textile-like structures. In this context, Maeder is also interested in the aesthetic qualities of a historical impression of the digital - for image textures , as we know them from the first digital images at the beginning of the computer age. To enhance this effect, the photographs are monochrome and printed on classic baryta paper.

Each image shows a different visual facet of the recorder site selected for the photo series in the Präz Forest, which is also part of the Aclatobel Natural Forest Reserve. Be it passing animals, rising mist after precipitation, or branches moving in the wind: Each photograph is a snapshot, a variation on the romantic motif and view of the Safiental landscape.

Color photographs: Terrestrial textures

In the immediate vicinity of the recording stations, Maeder used his camera to examine the morphology of the ground surface. Alpine ecosystems are characterized by a great diversity - on the one hand, this is due to the exposure:

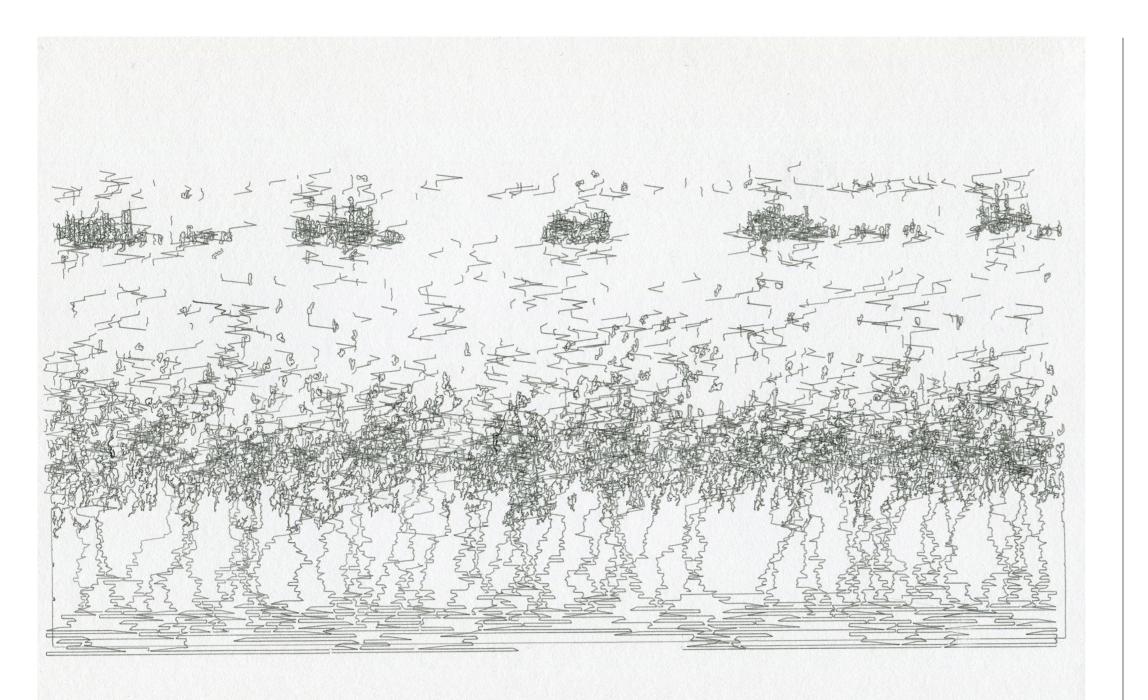
Depending on altitude and orientation to the sun's path, soil morphology and organism communities are composed guite differently. In addition, alpine soil is subject to constant change at many locations: The alpine region is still in motion - erosion by weather, avalanches, human influence (construction projects, agriculture) and, last but not least, effects of climate change (thawing, drying of the soil matrix) expose alpine soils to constant transformation. Maeder's photographs are snapshots of such transformation processes: Exposed, weathering rock, break-offs and slipping rock masses, plant pads; a dry litter layer of needles, leaves, branches and pine cones and traces of human intervention form the texture of the photographs, which at times are reminiscent of abstract paintings - the intuitive brushwork of a painter is replaced here by physical and biological processes that form a multi-part pictorial motif.

Acla – Biodiversity, Alpine Microclimates and Forest Resilience, is a preliminary study of the Institute for Computer Music and Sound Technology at the Zurich University of the Arts ZHdK, the Swiss Federal Institute for Forest, Landscape and Snow Research WSL, the Institute for Land and Environmental Art, Beverin Nature Park, and the community of Safiental.

Exhibitions:

ILEA Institute, Hotel Alpenblick, Tenna/Switzerland Jan - March 2022

























Growth Model

Sound installation Marcus Maeder & Roman Zweifel, 2022

The TreeNet research and observation network¹ has been continuously collecting data on the health of the Swiss forests since 2011. Over 420 trees at 61 sites are monitored in the automated sensor network. The goal of TreeNet is to generate high temporal resolution datasets on tree growth and tree water dynamics for research and to provide near real-time indicators of forest growth performance and their management of drought stress to a wide audience.

In recently published studies²³, the dynamics of tree growth in TreeNet were observed in detail for the first time and astonishing things were discovered: trees grow mainly at night, when they fill their vessels and cells with water from the soil and the turgor pressure in the cells is sufficiently high. Each tree species grows at a different rate and in different time windows during the year - the increasing dryness in the course of climate change also has its influence on the growth of trees in Switzerland. In the installation "Growth Model" the data of the growth period 2018 (March-October) of 8 selected trees are sonified, i.e. brought into a sonic-artistic form of experience. In the process of sonification, series of measurements are used to drive sound generation on a computer. The ash tree (Fraxinus excelsior) is an important tree species for the forest and timber industry. It is a deciduous tree and its wood is used wherever strength and elasticity are required; for example, in tool handles and stalks or sports equipment. It is not only climate change with longer and more intensive dry and hot periods that causes problems, but in recent years also the ash shoot dieback, which is caused by an introduced fungus. In addition, the tree species is attacked by the Asian ash borer beetle and it is to be feared that the ash tree in Europe will be very severely decimated in the coming decades.

The Growth Model installation consists of ash wood tubes, each of which has a speaker chassis embedded in it. The

hollow body of the tubes is stimulated to vibrate by the loudspeakers - the objects thus become electro-acoustic instruments on which the growth data of ash trees at three locations in the treenet (Lägern ZH, Schänis SG and Visp VS) are played as sounds. In the exhibition space, the date and time of the measurement data played back in the installation is projected in order to be able to relate the sonifications/growth spurts to the time of day and season.

Artistic concept and realization: Marcus Maeder Measurements and data preparation: Roman Zweifel Programming: Ken Gubler

Zweifel R, Etzold S, Basler D, Bischoff R, Braun S, Buchmann N, Conedera M, Fonti P, Gessler A, Haeni M, Hoch G, Kahmen A, Köchli R, Maeder M, Nievergelt D, Peter M, Peters RL, Schaub M, Trotsiuk V, Walthert L, Wilhelm M and Eugster W (2021) TreeNet–The Biological Drought and Growth Indicator Network. Front. For. Glob. Change 4:776905. doi: 10.3389/ffgc.2021.776905

Zweifel R, Sterck F, Braun S, Buchmann N, Eugster W, Gessler A, Häni M, Peters RL, Walthert L, Wilhelm M, Ziemińska K. Why trees grow at night. New Phytologist. 2021 Jun 12.

3. Etzold, S., Sterck, F., Bose, A.K., Braun, S., Buchmann, N., Eugster, W., et al. (2021) Number of growth days and not length of the growth period determines radial stem growth of temperate trees. Ecology Letters, 00, 1– 13. Available from: https://doi.org/10.1111/ele.13933

www.treenet.info

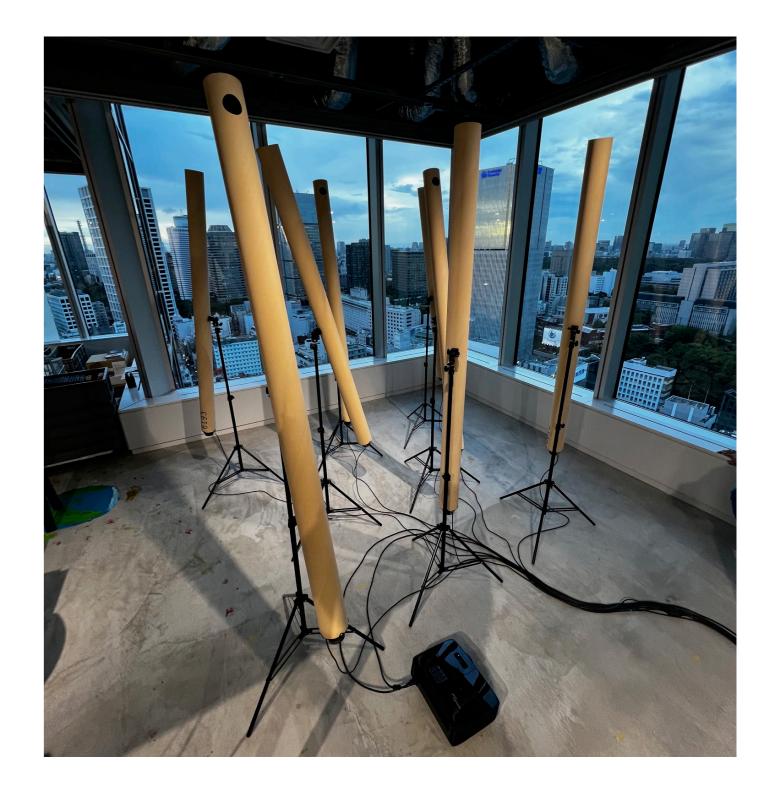
Exhibitions:

Tokyo Biennal, University of Creativity, September November 2023

Touch Wood, ZAZ Museum Bellerive, Zurich, Switzerland June - December 2022







Silva

A forest observatory, 2021

Silva is a panoramic and surround audio environment in which the sounds and images of a forest patch in the 100-year-old Järvselja forest near Tartu in Estonia are played. The observatory enables observations that would not be possible in the forest itself: In addition to the environmental sounds, physiological processes in the trees and sounds in the soil can be heard.

For this purpose, three spruces (Picea abies) have been equipped with special contact microphones and ecophysiological measuring devices. In addition, the sounds of the soil fauna have been recorded with a special recording device. All recordings were made automatically in intervals over a period of two weeks in summer 2021. In the observatory, the diurnal course of the sounds in the forest can be heard accelerated, accordingly the panoramic picture of the forest also changes faster than in real time. In this way, changes in the soundscape of the forest are directly perceptible; trees and the forest in general live in a different temporal domain than we humans do. In order to observe correlations between physiological processes in trees, microclimatic conditions, and the activity of soil fauna, the playback of the recording and measurement intervals (1-10 minutes, depending on the device) must be accelerated, as these processes normally occur much more slowly. The recordings are seamlessly blended by the system to provide a constant flow of sound. When the measurement and recording station was installed in the forest, recordings of sap flow were made in all three trees equipped with ecophysiological sensors. The playback speed or pitch of these sounds is controlled in the system by measurement data of the trunk diameter this sonification method is called audification. The sap flow decreases during the day in the course of transpiration (the evaporation of water during photosynthesis in the needles of the trees) and increases at night when the vessels and cells in the tree fill up with water again - late at night the trees grow - when the turgor pressure in the cells is higher

than during the day. Accordingly, sap flow sounds are more intensive during the day than at night, since during the day the negative pressure in the tree's vessels is much higher and the water absorbed in the soil virtually rushes up through the vessels to the crown.

Measurements of bioelectric signals were also taken in each tree. These would normally not be audible either and are sonified in the system as electrical crackling, i.e. a short recording of an electrical discharge is controlled in its pitch and volume by the measurement data of the individual tree. Many life processes in plants are controlled by electrical signals - accordingly, as researchers, we wonder when these occur. Furthermore, recordings of the water moving in the soil and its pore space were made in the root space of the individual trees. The pitch of these recordings is in turn controlled by measurement data of the soil water potential: low frequency sounds indicate low levels, high frequency sounds indicate high levels/high water content.

In the center of the forest plot, the sounds of soil animals were recorded. These can be heard on the lowest speakers of the system. Our previous research has shown that these sounds increase especially before the middle of the day, when the forest floor warms up due to the sunrays falling on it and the ground animals become active. At night, most sounds decrease and the forest "sleeps" because many processes and activities are directly tied to the sun's energy. Many of the sounds described here are not immediately noticeable at first listen. Take your time, observe and listen carefully. This is what we also do first when we study an ecosystem. Listening to a soundscape must be learned all over again each time, even by ecoacoustic professionals. And over time, you suddenly discover connections between what you hear and see in Silva - like when the first sunspots show up on the forest floor, the sounds in the ground increase, and the sap flow in the trees accelerates.

We have chosen three spruces for our observatory. This tree species is under pressure in Estonia in two respects at

once: On the one hand, it is exposed to increasing drought, as is the case everywhere in Europe, and will probably disappear from the lower altitudes in the next few decades. On the other hand, there is a constant debate in Estonia about how intensively these trees, as well as entire forest areas, should be used or how much they should be protected.

Here, our installation wants to provide a different, more intense and aesthetic access to an intact, native forest ecosystem - where it becomes audible how much all organisms live and interact together in a complex (acoustic) community. In this sense, our installation Silva aims to raise awareness of Installation view, Estonian National Museum the forest as a fragile ecosystem that needs to be protected.

Ecophysiological measurements and analysis: Roman Zweifel Programming: Ken Gubler Art realisation: Jungbach, Reto Jung A commission of Goethe Institute, Tallinn Administration: Markus Köcher Measurement/recording site provided by the Estonian University of Life Sciences, with special thanks to Marek Metslaid.

https://www.goethe.de/ins/ee/de/ver.cfm? fuseaction=events.detail&event_id=22215512& https://www.goethe.de/ins/ee/de/kul/sup/ www/22216470.html

Exhibitions:

Vlastivědné muzeum, Olomouc, Czech Republic, April 2022

Estonian National Museum, October/November 2021







On Land

Installation, 2021

The background of the installation "On Land" is an acoustic experiment that was carried out in summer 2020 in the DOK experiment of the Research Institute of Organic Agriculture FiBL in Therwil/BL. The DOK experiment has been comparing bio-dynamic, organic and conventional (integrated) farming systems since 1978.

For several years, Marcus Maeder has been studying sounds in the soil as a researcher. A large number of the sounds, recorded with special equipment developed by Maeder and his research team, come from soil animals moving, feeding or communicating. Based on the diversity of sounds in the soil, the biodiversity of the fauna can be assessed and observed.

Industrial agricultural cultivation methods are increasingly criticized, the political discussion about sustainable agriculture without synthetic pesticides is currently hotly debated, deepening the rifts between environmentalists and farmers, between urban and rural areas. In the course of his dissertation project at ETH Zurich, where Marcus Maeder is investigating the ecoacoustics of soils, the ecological significance of sounds in the soil. And he noticed in many places in intensively farmed areas that the soil is silent. Maeder wanted to investigate this more closely in a scientifically controlled setting, and wired two corn crops in the DOK experiment with soil microphones.

The recordings of the growing period - from the sowing of the seedlings to the harvest - can be heard in the sound installation. The two black panels of the installation represent the two cultivation areas in the field experiment: one is intensively cultivated (left), the other biodynamically. Between the two plots in the DOK experiment was a weather station, where two cameras recorded timelapse images of the course of the day, the growth of the plants, and the weather conditions. These movies can be seen on the screens. On the underside of the black surfaces, Maeder attached acoustic emitters that reproduce the recordings in the field soils in the arrangement appropriate to the experiment.

Maeder's scientific question in the DOK experiment was whether there are differences in the soundscapes of the two croplands according to their respective management practices - that is, whether one can hear whether a soil is managed intensively or biodynamically and, accordingly, whether more or fewer different animals can be heard in one or the other cropland.

The results of the study were inconclusive. The recordings were examined by a student of ETH Zurich within the scope of her bachelor thesis with regard to their acoustic complexity - there were no clear indications that more different animals could be heard in one area than in the other. In soil samples taken during the recording period, slightly more soil animals were found in the sample of the biodynamic area but overall, so few animals and their sounds were discernible in both areas that the experiment did not reveal any useful scientific results.

Here, the problem of agriculture shows itself in a certain intensification: Regarding the sounds of the soil fauna, a biodynamicly managed field differs little from an intensively cultivated one. Except for the use of pesticides and mineral fertilizers, the cultivation of both areas differed only slightly - indeed, the soil in the biodynamic area was rather more disturbed by the regular, mechanical removal of weeds. Whether intensive/integrated or biodynamic, agriculture today is an industrial one in which monocultures are grown and maintained by machines; this is also the case with "organic". A much greater difference would probably be seen between permaculture and intensive cultivation - because in permaculture, care is taken to ensure that the soil is always covered with a layer of vegetation - which in turn creates better habitats for soil fauna and allows for a diverse soil life. "On Land," whose title comes from a record from Brian Eno's "Ambient" cycle from the 1970s to 1980s, is the artistic mo-

del of a scientific experiment - a model that, as an acoustic observatory, turns visitors into observers: where is what heard, when, to what extent is this related to what is seen on the screens? The ambiguity of the scientific findings of this experiment becomes the ambiguity of art with "On Land": the interpretation of the experience is up to the viewer - questioning their own evaluations, values and rather foregrounding the concrete experience of the artwork: What do I hear, see here and what meaning does it have - and beyond that: How do I imagine sustainable agriculture in light of its artistic questioning?

Programming: Ken Gubler Art realization: Nino Tempini A commission of the Bündner Kunstmuseum, Curator: Damian Jurt

https://kunstmuseum.gr.ch/en/ausstellungen/ aktuell/Seiten/LandLiebe.aspx

Exhibitions:

"Landliebe", Bündner Kunstmuseum, Sept 2021 -Jan 2022









Nephoscope

Installation, 2021

A nephoscope or cloud mirror is an instrument developed in the 19th century to measure the direction and speed of cloud movement. Cloud mirrors consisted of a black mirror engraved with a compass rose and other markings. The mirrors were mounted horizontally on a tripod and the clouds reflected in them were examined for their direction and speed.

Nephoscope is based on the concept of cloud mirrors and is intended to be an artistic instrument that generates an audiovisual experience from the ever-changing cloud formations and sky colors. To this end, a camera outside the exhibition space transmits a video image of the sky to the installation' s computer. A program generates sine tones and color patches from the light and color values measured at twelve points in the sky image.

Twelve loudspeakers are mounted on the upper platform, reproducing sine tones that slowly change in pitch and according to the cloud movements in the sky - depending on the degree of cloud cover and the time of day. High tones correspond to bright areas such as the clouds themselves, and low tones to darker hues on the underside of the clouds or the sky itself.

The measured color and brightness values are translated into a video image on the lower platform, which is divided into twelve squares that, like the tones, change in color according to the cloud movements.

The acoustic and visual processes are very slow and lead to a different and more leisurely temporal experience of the environment. It is worthwhile here to return to the installation several times and listen to how the sounds and colors have changed according to the weather and time of day. The installation also aims to draw visitors' attention to the fact that what is happening in the sky is beginning to change as a result of climate change: as a result of rising carbon dioxide concentrations in the Earth's atmosphere, fewer clouds are forming - the Earth is becoming less shaded. Darker land and ocean surfaces absorb more sunlight, heating up more and thus boosting global warming.

The joy of beautiful weather and a constantly blue sky will give way to fear of drought and heat, especially in the tropics, which are still covered by large bands of clouds today, as fewer clouds will form in the future, especially around the equator. And so the sound of the nephoscope would also become more monotonous as fewer clouds pass by - or, conversely, more varied and dramatic as more extreme weather events occur at the location of the cloud level.

Pencil drawings of cloud formations are displayed with the installation. These were created with a drawing robot whose software converts cloud formations into a line image and displays the brightness values as sinusoidal oscillations.

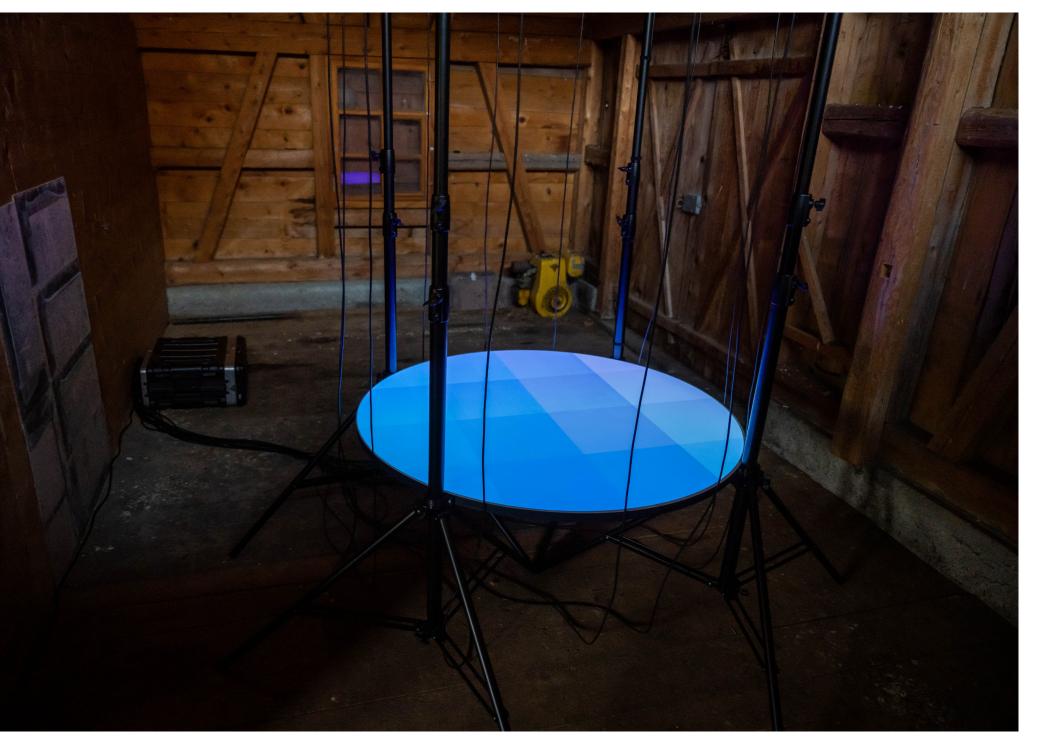
Scientific source: Max Planck Society, EUREC4A field campaign, www.mpg.de

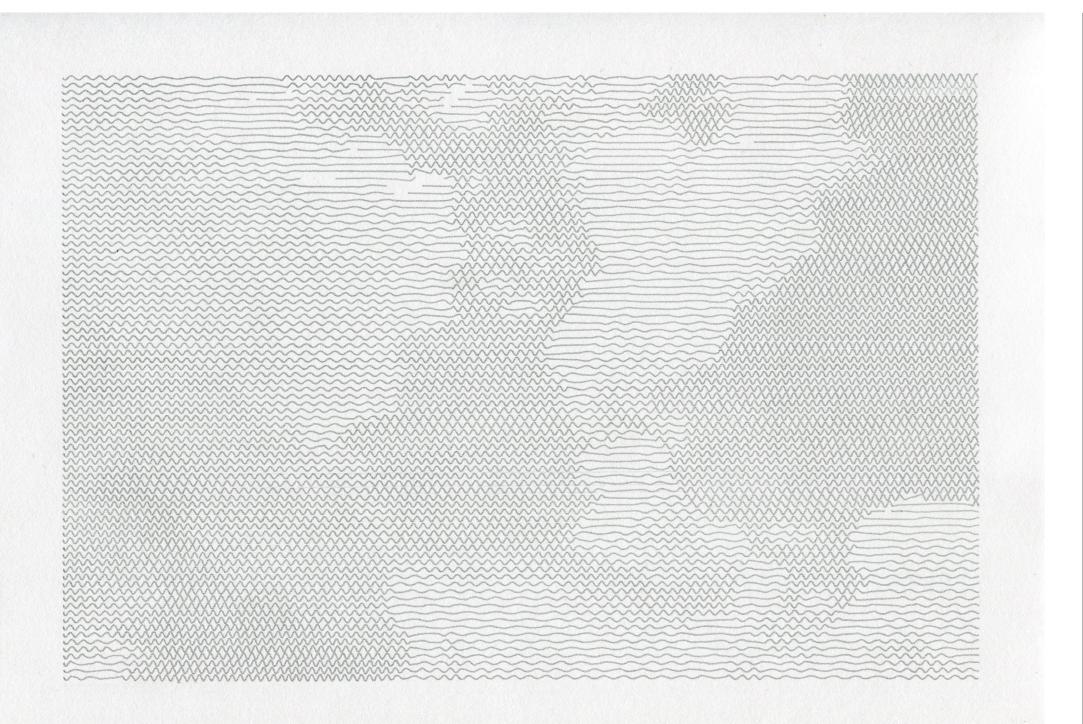
Exhibitions: Kunst forscht, Kunstverein Wolfsburg, Germany Feb-May 2022

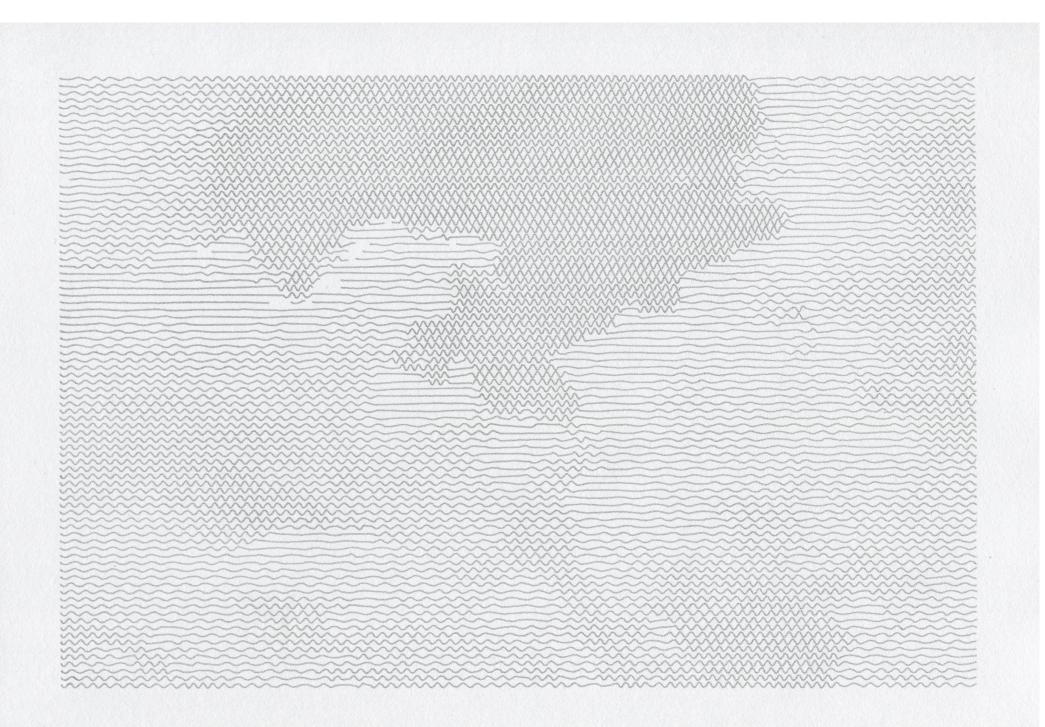
Klangmoor Schopfe, Gais, Switzerland September 2021



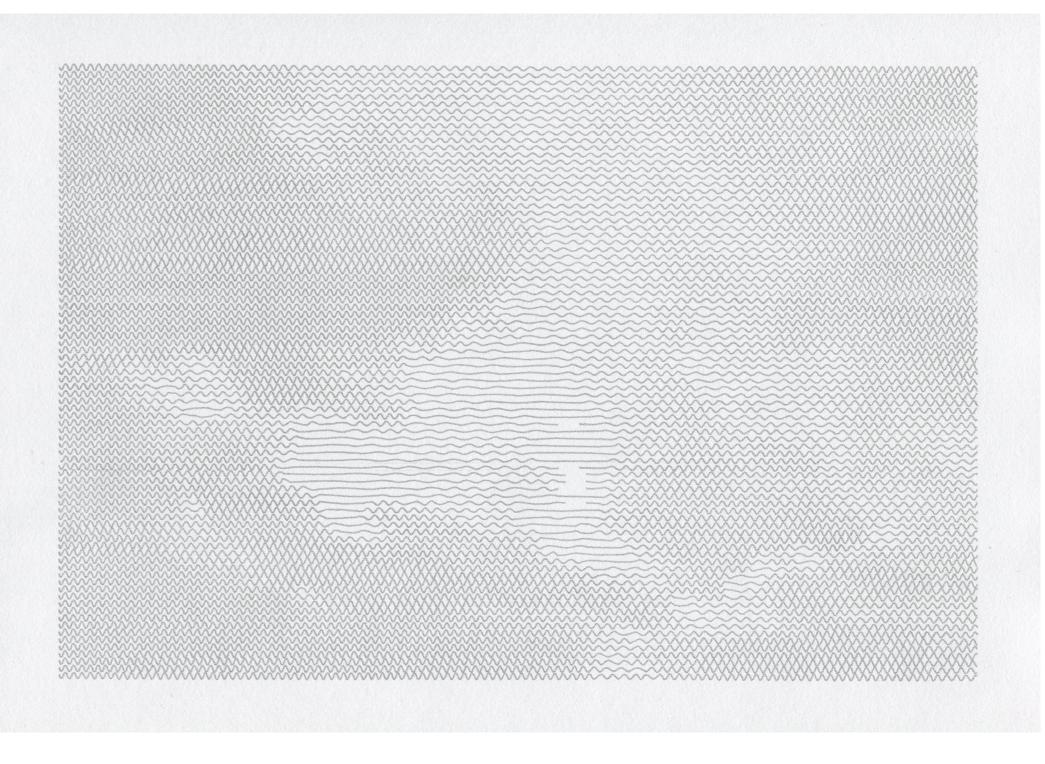


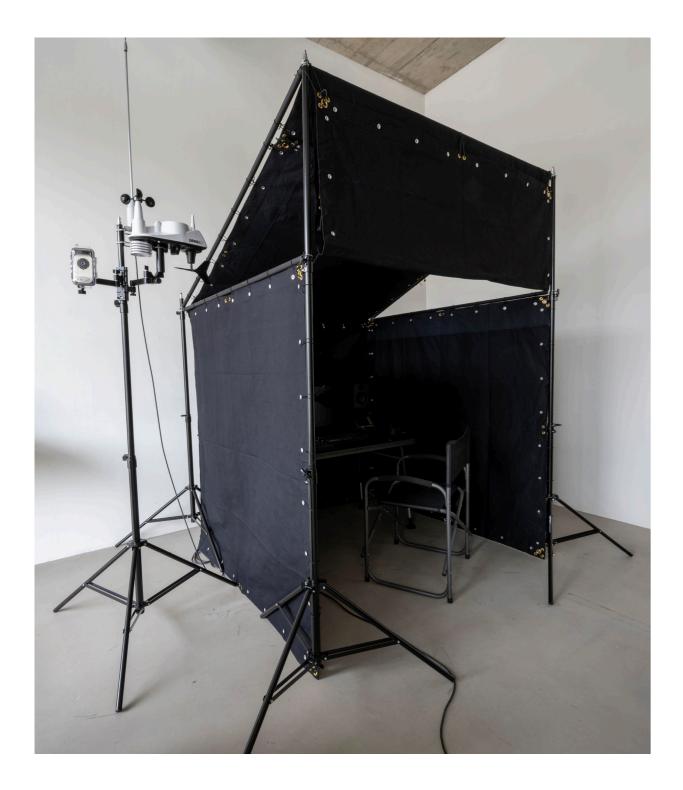












*posterity Installation 2021

Posterity* is an artistic-scientific listening post that observes the soundscape of Nantesbuch near Bad Heilbrunn in southern Bavaria. Five automatic recorders have been placed in the landscape, recording the local soundscape at hourly intervals. If you turn on the radio on the posterity homepage, you will hear a sound stream of the environmental sounds from Nantesbuch. The hourly, five-minute recordings from the automatic recorders are crossfaded without interruption and the radio jumps from one location to the next every five minutes. This creates a spatiotemporal compression of an acoustic landscape experience – like traveling through time and flying from one place to the next. The acoustic visit to the landscape of Nantesbuch is retrospective: what can be heard are the last three months (and further back), since the recordings have to be read out manually each time and uploaded to the server.

The foothills of the Alps in southern Bavaria are shaped by the glaciers that flowed here from the inner Alpine region into the lowlands tens of thousands of years ago. They left behind a humid landscape with many moors and lakes. Although the landscape of Nantesbuch is sparsely populated, it was nevertheless intensively used by man. The nutrientpoor, humid soils did not allow much: agricultural activities were limited to grass farming, cattle and forestry; peat was cut. Many moors and wet meadows were drained, and fast-growing spruce forests were planted along the edges of the moors. This landscape is now beginning to change. On the one hand, areas on the property of the Art & Nature Foundation in Nantesbuch have been re-naturalized in recent years: Meadows are no longer cultivated, are re-wetting, and the Haselbach stream has been given a natural, meandering course; livestock farming is practiced in small and sustainable units. On the other hand, however, effects of climate change are beginning to manifest, even in the previously damp and cool foothills of the Alps: Moors dry up during heat periods, the microclimate gets too hot and dry

flora changes.

The acoustic observation of a landscape is always a holistic one: An audio recording contains everything that can be heard. A soundscape is structured into geophonies (sounds of inanimate nature such as wind or rain), biophonies (sounds of animate nature such as animal sounds) and anthropophonies (sounds of humans and technology). These sound sources overlap and influence each other. The noise of a road can have an influence on the song of birds; the sound of a river shapes the basic tonal character of a landscape. Acoustic ecology is devoted to the scientific and aesthetic study of soundscapes. And as the name suggests, it examines the ecological implications and connections behind the sounds we hear in a landscape.

ones?

This is symbolized by the picture on the posterity homepage: Are we seeing a sunrise or sunset? Twilight marks a period of transition: from day to night, from night to day. From a cultural perspective, we are also in a time of transition. What is required is a new relationship with nature, which must be

for spruce trees – they are attacked by bark beetles and die. Extreme weather events such as heavy rain on the one hand or long drought periods on the other reshape the landscape. As temperatures rise, the composition of local fauna and

The focus of this long-term artistic-scientific project is on what is to come: As an acoustic observatory, *Posterity monitors the dynamics of the soundscape in Nantesbuch over several years. Are there different, more or less numerous animals heard in selected areas over longer periods of time? Is biodiversity increasing or decreasing? What influence does human noise have on the soundscape? As vegetation changes, do its sounds change? How often does it rain? How does a meadow, a forest, a moor, a stream, a permaculture garden sound in three to five years compared to today? What is the relationship between climatic/meteorological conditions and the sound sources in the Soundscape of Nantesbuch? Do positive changes outweigh the negative

reflected in a radically different way of dealing with the natural environment. Only in this way the sunset of the impending climate catastrophe and the loss of global biodiversity may become the dawn of a newly perceived and lived participation in planetary and local ecosystems.

The sonic confrontation with the environment may be helpful here. Sound creates intimacy and immersion - things come close to us through our hearing, we become immersed in the sounds of the landscape when for once the visual experience is not the primary focus. On the one hand, because recorders amplify environmental sounds, we hear more than we would with our ears in the landscape. On the other hand, we do not disturb wild animals by our presence and can listen to them unobtrusively with technical help. This is the most important keyword: Listening, learning to listen to nature. Even experienced ecoacousticians have to learn this over and over again. What is the nature of the recorded material, which sound sources can be identified, what do they mean, how do they influence each other, how do they affect us? *Posterity is a public research tool where the participation of all interested listeners is requested: Do you notice anything special in the sound flow? Do you discover a connection between certain sounds, differences between places? The blog on the homepage is intended to provide space for this exchange – in addition to the artistic-scientific journal that is kept in it, a public dialogue about the soundscape Nantesbuch is to be created.

At the center of the recorder network in Nantesbuch, near the Karpfsee estate, there is a weather station that measures the weather conditions in minute intervals. The measured data comes to the *Posterity server, which sends it to the browser, where the most important weather data is sonified. If you select music on/off in the menu on the right of the homepage, you will hear a generative music flow along with the environmental sounds.

The music is controlled by the weather data you see in the menu - this is called data sonification: series of measurements, of numbers are used to control parameters like volume, pitch or timbre in the automatic generation of sounds or music. The sonification in *Posterity is especially elaborated and adapted to the expected weather conditions in this region: Depending on temperature, humidity, air pressure or wind strength, different sounds, chords and sound patterns are played. You may thus hear the current weather conditions and changes in the music and, with some practice, also discover connections with environmental sounds, with diurnal cycles and seasonal progressions.

*Posterity is also present from time to time in the non-digital public sphere. As a sound installation and mobile, analog FM station, which can also be received in cars or in completely unexpected places where it has a radio - with a special program or livestreams.

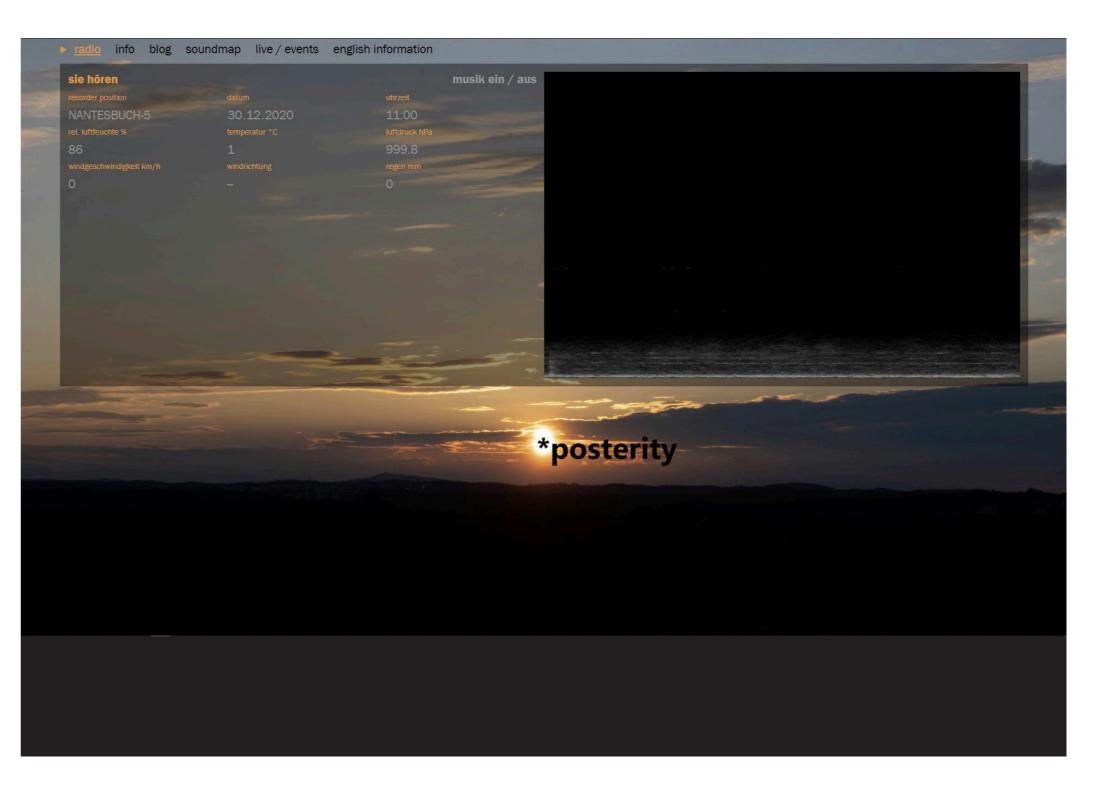
Programming: Ken Gubler

www.posterity.de

Exhibitions:

LiteraturFest, Nantesbuch, Sept 2021





Edaphon Braggio

Sound installation, 2019/2020 Collection Haus der Elektronischen Künste, Basel

"The terrestrial is defined precisely by the subversion of temporal and spatial levels and boundaries. This power works everywhere at the same time, but has no unity. It is political, but not state. (...) It is unlikely that this territory coincides with a classical, legal, administrative or geographical spatial unit. On the contrary, its configurations will run across all spatiotemporal levels."

Bruno Latour: The terrestrial manifesto (2018)

The concept of the edaphon was formulated at the beginning of the 20th century by the Austrian botanist and microbiologist Raoul Heinrich Francé and describes the totality of all soil organisms. Edaphon also includes the word part "phon", which in Greek means voice, sound, sound or tone. The soil ecosystem is still an unknown realm for most people - especially acoustically. Who would ever imagine if and how it sounds in soil? Out of sheer curiosity, two years ago, I plugged a self-made contact microphone, which I had originally developed to listen to plants, into the soil of a meadow. And what I heard made me sit there and listen for hours and days. A realm full of strange sounds: crawling, buzzing, humming, chirping, rumbling - I never expected such a diverse soundscape. The sounds come from soil animals, who not only make noise when they move through the ground, but apparently also communicate acoustically. That makes sense - you can't see anything in the ground and have to orientate acoustically: Conspecifics, territories, sounds from food sources and prey - all this may be percieved by the acoustic organs of the soil dwellers.

Listening to these sounds is not possible without technology The sounds of the soil fauna and flora are much too quiet; they have to be amplified a thousand times. With special preamplifiers it is possible to hear the sounds of millipedes, stone creepers, woodlice, spiders, mites, springtails and ants. The roots of plants also produce sounds, especially when it is dry and the plants suffer from drought stress. In addition, above-ground sounds can also be heard: Animals on the surface, wind that blows through vegetation - and noise caused by humans: roads, construction sites - even aircraft noise can be heard in the soil.

Listening to soils has become an official research project in which five Swiss institutions* are exploring the soundscape of the ground: It's truly uncharted territory that is virtually unexplored. The "Sounding Soil" research project will attempt to measure soil biodiversity acoustically. In addition, the aim is to raise awareness of the soil ecosystem in an artistic way. How can normally imperceptible processes and life forms in nature be experienced? In the course of the first recordings in the course of the "Sounding Soil" project we also became aware that soils sound very different. A forest soil sounds different from a meadow, and there is one thing we noticed in particular: Intensively cultivated soil is silent. Where the soil is regularly dug up, fertilized and treated with pesticides, the soil fauna disappears and only the wind in the plants above ground can be heard - transmitted into the soil via the roots.

The acoustic structure of the soil of an area - the soil soundscape - reflects not only local communities of soil organisms, but also the influence, the cultural forms and ultimately the human understanding of nature. Thus the soundscapes of soils form a category of their own in the characterization of a landscape: an acoustic topography that is structured quite differently from above-ground landmarks or, for example, the boundaries of plots of land. State territories are as inaudible as municipal boundaries - the soil soundscape suggests a geography that is oriented towards ecosystem boundaries or their interlocking, overlapping, displacements and transformations - and of course towards the human influence between sustainable cultivation and degradation.

Based on these considerations, I have focused on soil soundscape of a community in the Calanca Valley/GR, Switzerland. I was amazed at how the soil soundscapes vary in a relatively small area in the Swiss Alps. Alpine areas are

characterized by a high diversity of biotopes. And so the soil in the municipality of Braggio also sounds very different: from the rumbling in the raised bog to the humming in the rough meadow, from the varied crawling in extensively cultivated grassland to silence in a freshly cut meadow.

The recordings of the soil sounds from Braggio are part of a sound installation made from a black plate that has the outlines of the municipal area and lies on wooden trestles. It is a sound object and an acoustic map at the same time: acoustic emitters/shakers are attached to the underside of the plate, which let the plate resonate. This creates a sound topography where the sound sources can be heard at the corresponding recording locations in the municipal area and overlap, complement and mask each other sometimes. An acoustic geography is created which, in the imagination of the visitors, forms an imaginary landscape: What are the possible sound sources, what is the nature of the landscape, how is it managed? The visitors themselves become researchers and a discourse about landscape, man and nature is to develop.

Documentation video of the installation: http://www.domizil.ch/DSC_3526.mp4

Exhibitions:

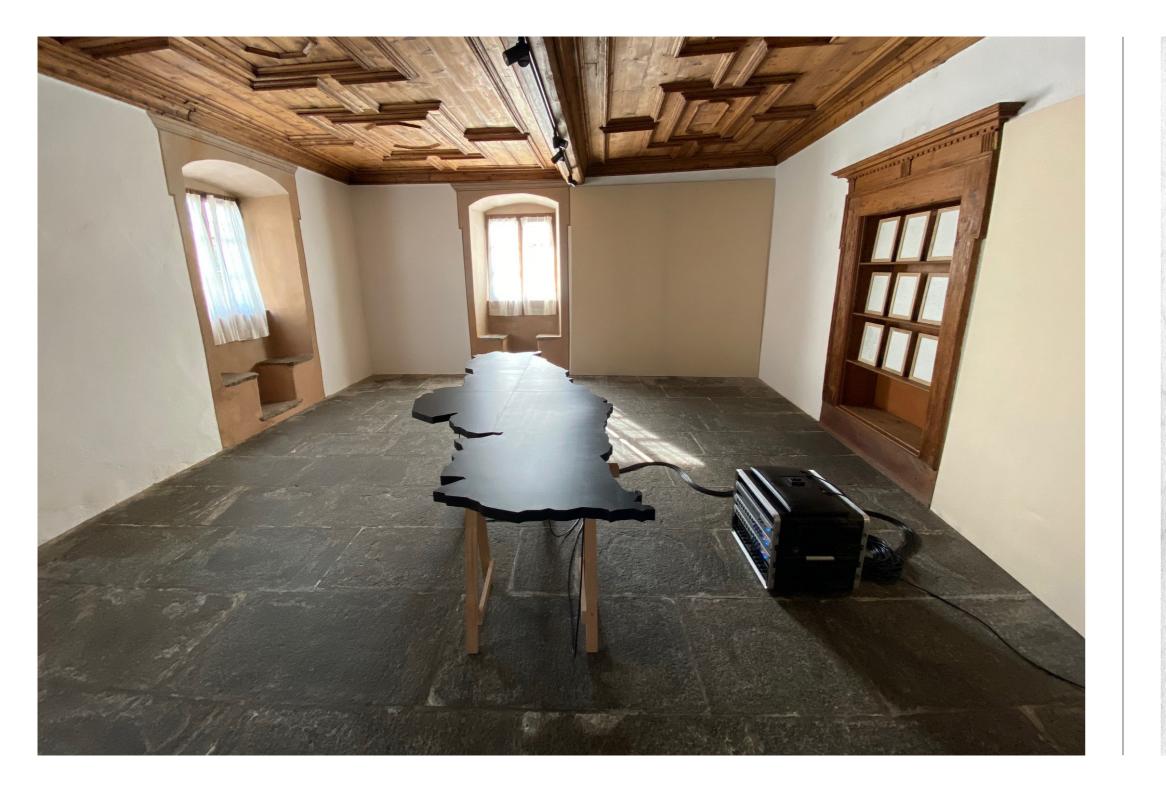
Earthbound, Möllerei Esch, Luxembourg/HEK Haus der Eleketronischen Künste, Basel, 2022

Museo Moesano, San Vittore, Sept - Oct 2021

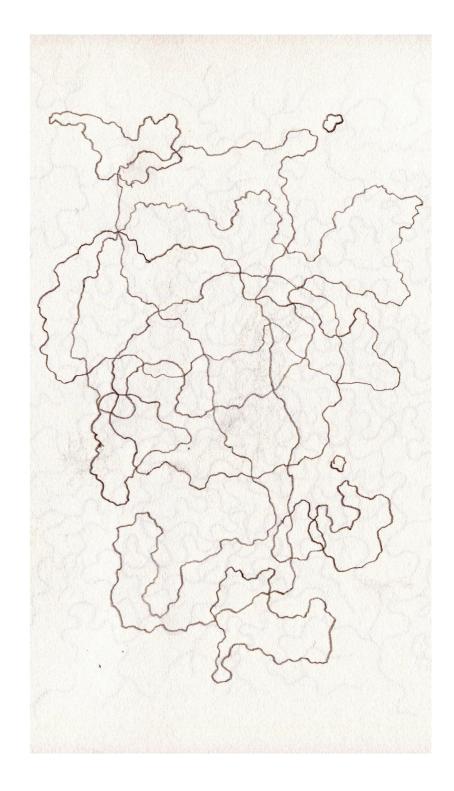
Archivio Calanca, Cauco, Aug - Sept 2021

Electric Flow(er), Fundaziun Nairs, Dec 2019 -April 2020









Perimeter Pfynwald

A soundscape observatory, 2019

The installation "Perimeter Pfynwald" is an acoustic-artistic representation of the ecosystem of a mountain forest in Switzerland. The Pfynwald forest in Valais is already severely exposed to effects of climate change. Due to the mass elevation effect of the Alps, the climatic conditions in the Valais are already very dry. The ever-longer periods of drought and heat are severely damaging the forest: the Scots pines, which make up a large part of the Pfynwald forest, are dying and are being displaced by more robust tree species, including neophytes. It is a climate-induced vegetation change in progress, the progression of which makes it unclear whether the Pfynwald will change from pine to oak and robinia forest in the coming decades or the perimeter will turn into a steppe landscape and the forest in the heart of the Pfyn Nature Park will disappear completely.

The Pfynwald ecosystem can be experienced in the installation in a way that would not normally be possible outdoors in the forest. In the course of the FHNW's "Ecodata-Ecomedia-Ecoaesthetics" research project, Marcus Maeder distributed several autonomous audio recording devices in the forest, which during the heat summer of 2018 automatically recorded the environmental sounds in the forest, the underwater world in a pond and the sounds of the fauna in the forest floor. In the installation, a soundscape consisting of a temporal and spatial compression can be heard: The recording devices were placed several kilometres apart in the Pfynwald forest and recorded environmental sound at intervals of 10 minutes. In the installation "Perimeter Pfynwald", different biotopes that lie far apart in a landscape can be heard simultaneously.

On the other hand, the interval recordings create a timelapse sound track that reproduces events in the environment in a shorter time than would normally be heard. A further element of the installation consists of the sonification of environmental measurement data collected by the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) in Pfynwald as part of its research on forests and climate change. "Perimeter Pfynwald" integrates two microclimatic parameters as artificial sound sources: Measurement data of the air temperature and humidity in the forest control the sound synthesis on the computer of the installation. The result is a sound that is supposed to sound like a voice of the forest. This voice consists of a deep and a high tone - the depth represents the humidity, the height the temperature.

In the installation "Perimeter Pfynwald" it becomes possible to experience how drought and heat have an acoustic effect on the forest in the course of climate change: it becomes quiet. The more intensively the heat and drought period develops in summer 2018, the less can be heard in the individual biotopes: The noise of the nearby river becomes quieter because it carries less water; mountain streams dry up. The fauna retreats, is less active and therefore quieter. The air humidity decreases, the temperature increases, which results in the sound synthesis of the forest voice, that the deeper sound becomes deeper and deeper, the higher one higher and higher, until they lie outside the audible range and the voice silences.

There are different versions of this installation.

Programming: Thomas Peter/Ken Gubler Environmental data Pfynwald: Swiss Federal Research Institute WSL Processing and analysis of acoustic data: Martin Rüegg

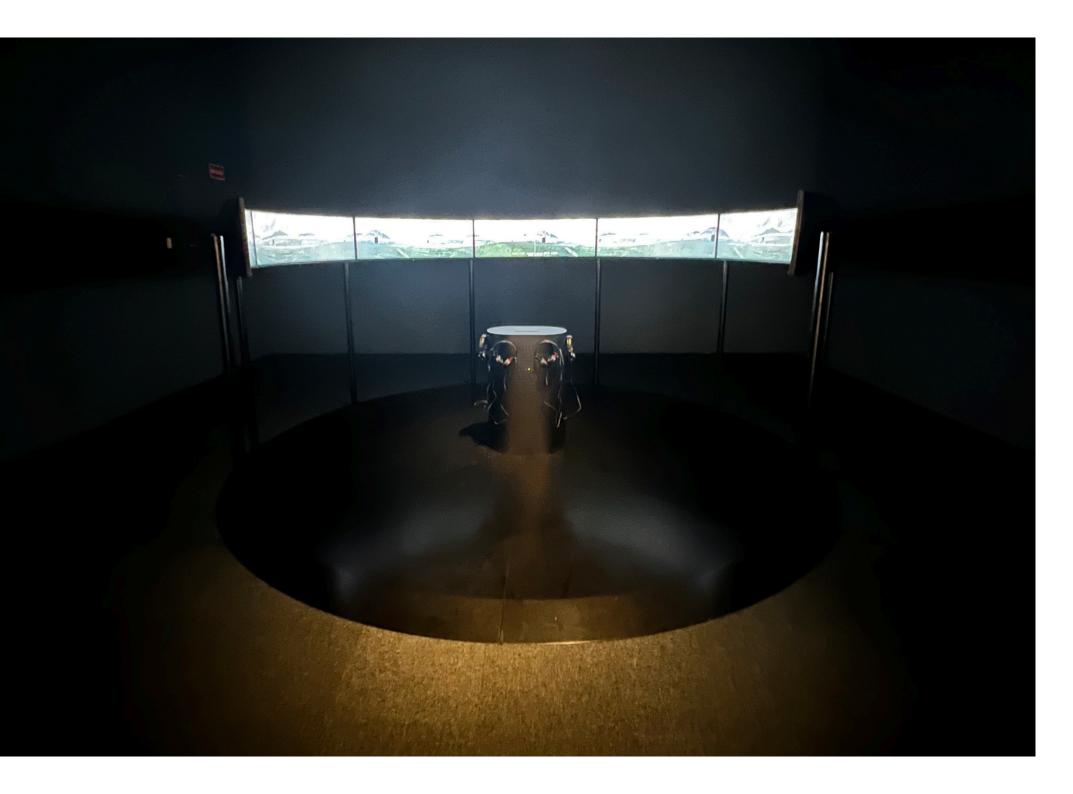
Perimeter Pfynwald" resulted the research project "Ecodata-Ecomedia-Ecoaesthetics", funded and supported by the Swiss National Science Foundation, Institute of Aesthetic Practice and Theory IAeP Academy of Art and Design FHNW, Zurich University of the Arts ZHdK, Institute for Computer Music and Sound Technology.

Documentation video of the installation: www.domizil.ch/Perimeter_Pfynwald.mp4 Exhibitions:

HORIZONTE Y LÍMITE. VISIONES DEL PAISAJE, Fundacio La Caixa, Madrid, Barcelona, 2023-2024

Critical Zones, ZKM, Karlsruhe, 2020 - 2022

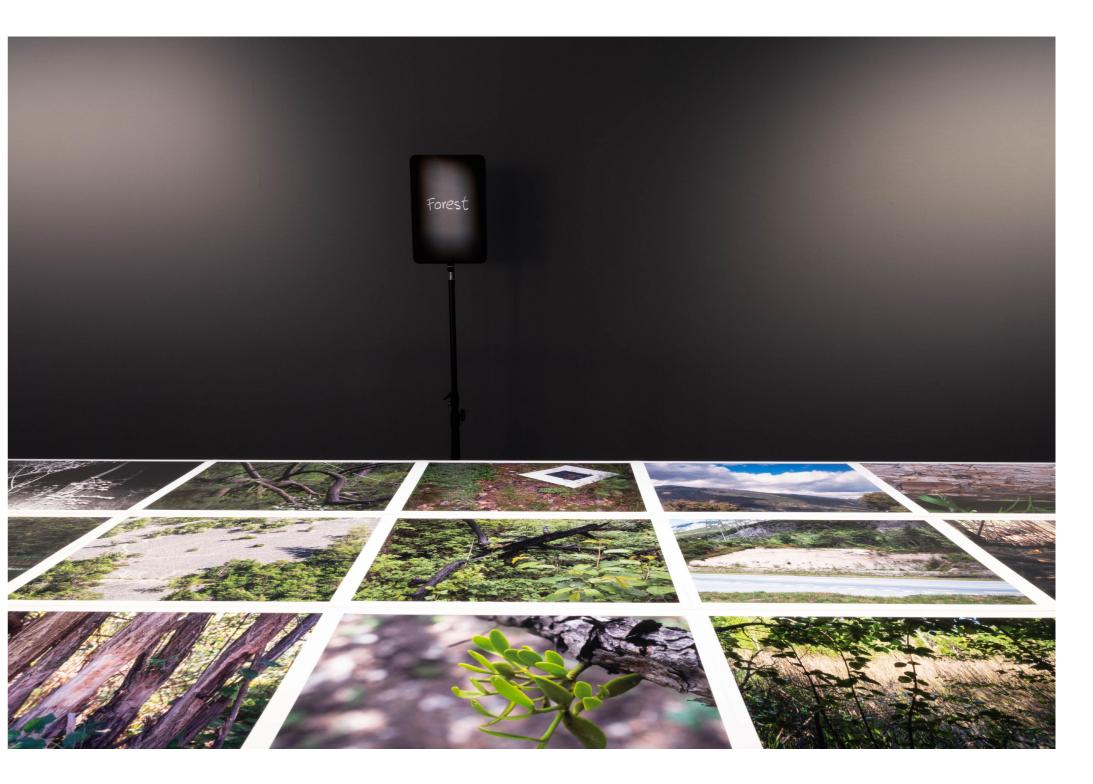
Eco-Visionarios/Eco-Visionaries, Laboral Centro de Arte y Creation Industrial, Gijon/Spain, 2019



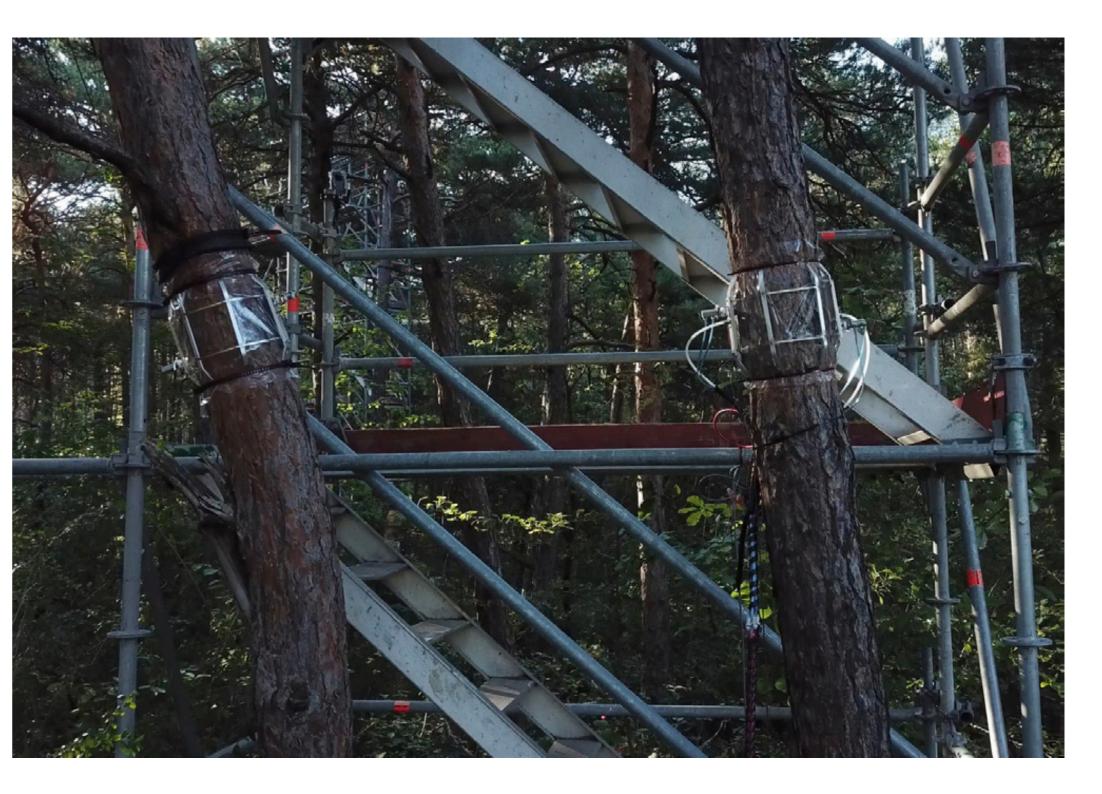








INTERDICTION ABSOLUE DE FAIRE DU FEU SOUS PEINE D'AMENDE E ASSOLUTAMENTE PROIBITO ACCENDERE FUOCHI : PENA DA MULTA ES IST STRAFBAR OFFENES FEUER ZU MACHEN ANY PERSON LIGHTING A FIRE WILL BE PROSECUTED AND FINED







Espírito da floresta/Forest spirit

Artistic-acoustic observatory, 2017 - 2020

AmazonFACE is a free-air CO_2 enrichment (FACE) experiment assessing the effects of increased atmospheric CO_2 on the ecology and resilience of the Amazon forest. The experiment will simulate the CO_2 composition of the future in order to help answer the question: How will rising atmospheric CO_2 affect the resilience of the Amazon forest, the biodiversity it harbors, and the ecosystem services it provides? Carbon Dioxide was discovered by the flemish chemist Jan Baptist van Helmont in the 17th century. He called the gas that evaporated from burning wood "Spiritus sylvestre" "forest spirit." In the installation "Espírito da floresta/forest spirit", a local ecosystem in the Amazon rainforest is represented acoustically.

The acoustic emissions of a tree (Ocotea Sp.) and the environmental sounds in the field station of the AmazonFACE research project were recorded in 10-minute intervals over three days. The sounds of the tree and its inhabitants were recorded using specially developed contact microphones at three positions – in the crown, on the trunk, and at the roots. These sounds can be heard in the installation, together with the environmental noises and the sonification of the CO₂ concentration at three heights in the forest. In the sonification, the CO₂ data flow is used to control the generation of sound in the installation's computer. A flute-like synthetic sound is used in "Espírito da floresta/forest spirit"" for data sonification: this is reproduced for each of the three measurement heights, and the current measured values control the pitch of the three flute-like sounds. By these means the dynamics of the CO, concentration at three different "storeys" in the rainforest are rendered audible.

As a long term objective, we want to analyze changes to the soundscape of the rainforest at an increased CO₂ content in the atmosphere. Here, new acoustic research methods of biodiversity will be tested. The so-called Acoustic Complexity Index ACI is displayed in the video projection. In this

acoustic estimate of biodiversity, the amplitude envelope is being analyzed in a number of frequency bands: the greater the number of different volumes measured over a certain amount of time in specified frequency bands of the audio recordings, the higher the acoustically quantifiable biodiversity – what interests us here is the dynamic of this value over short and long time periods.

The installation "Espírito da floresta/forest spirit" aims to make the processes in a local ecosystem audible and acoustically examinable: the noises in the tree and its immediate environment change, depending on the time of day and the weather, the CO₂ values increase or decrease on the different "storeys" in the forest, and it becomes possible to experience sensually the close connection between environmental conditions and life processes in the rainforest.

Concept and artistic design: Marcus Maeder 2017- 2020. Preparation of environmental data: Alessandro Araujo, Empresa Brasileira de Pesquisa Agropecuári (Embrapa). Implementation ACI: Martin Neukom, ZHdK. Programming: Ken Gubler, Thomas Peter, Philippe Kocher, ZHdK.

Production support sound panels: Thomas Tobler, ZHdK

Video/Sonification excerpt: https://youtu.be/rc8VSc7GCs4?list=PLOiE0-ufMt-0jWVh-hUyRyBStmWEC-OA0Y

Exhibitions:

A bruit secret, Museum Tinguely, Basel, February – May 2023

And the Forests will echo with laughter..., ERES Foundation, Munich, June 2020 - May 2021

National Science Week 2019, Pavilhao da exposicoes, Brasilia, October 2019

Bosque da sciencia, Paiol da cultura, Manaus,

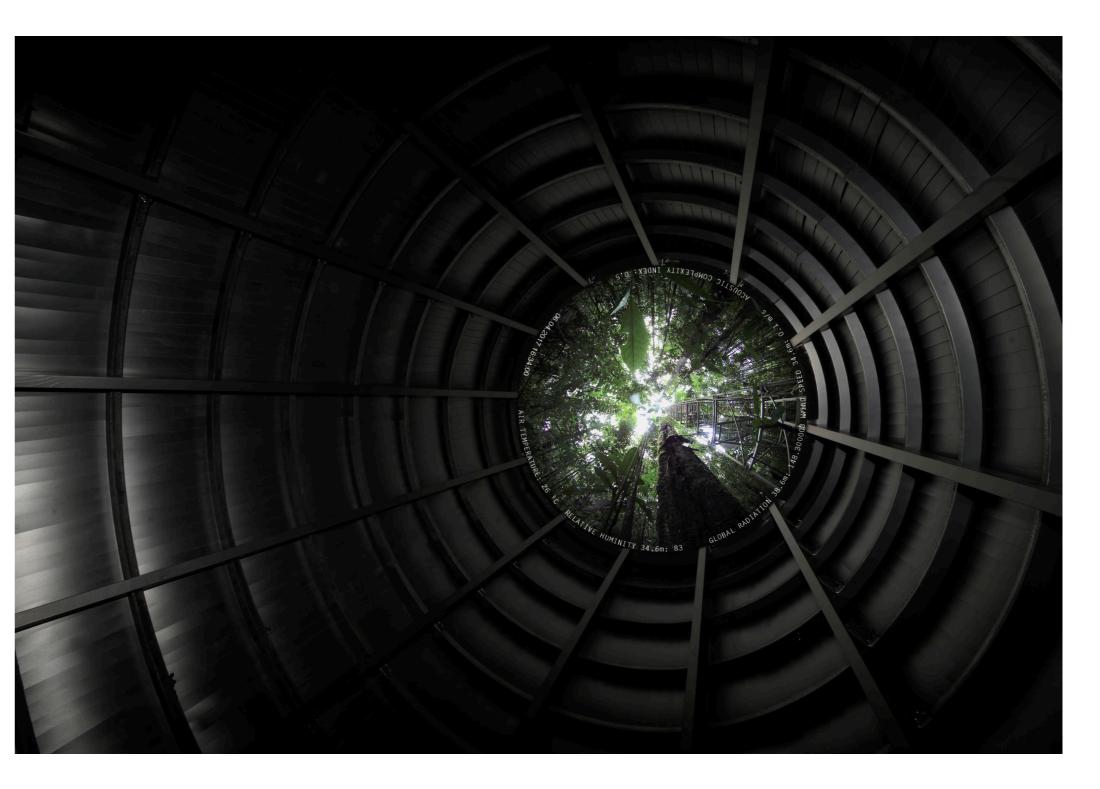
Brasil, September 2018 Inter-American Development Bank IDB, Washington DC, USA. June 2017

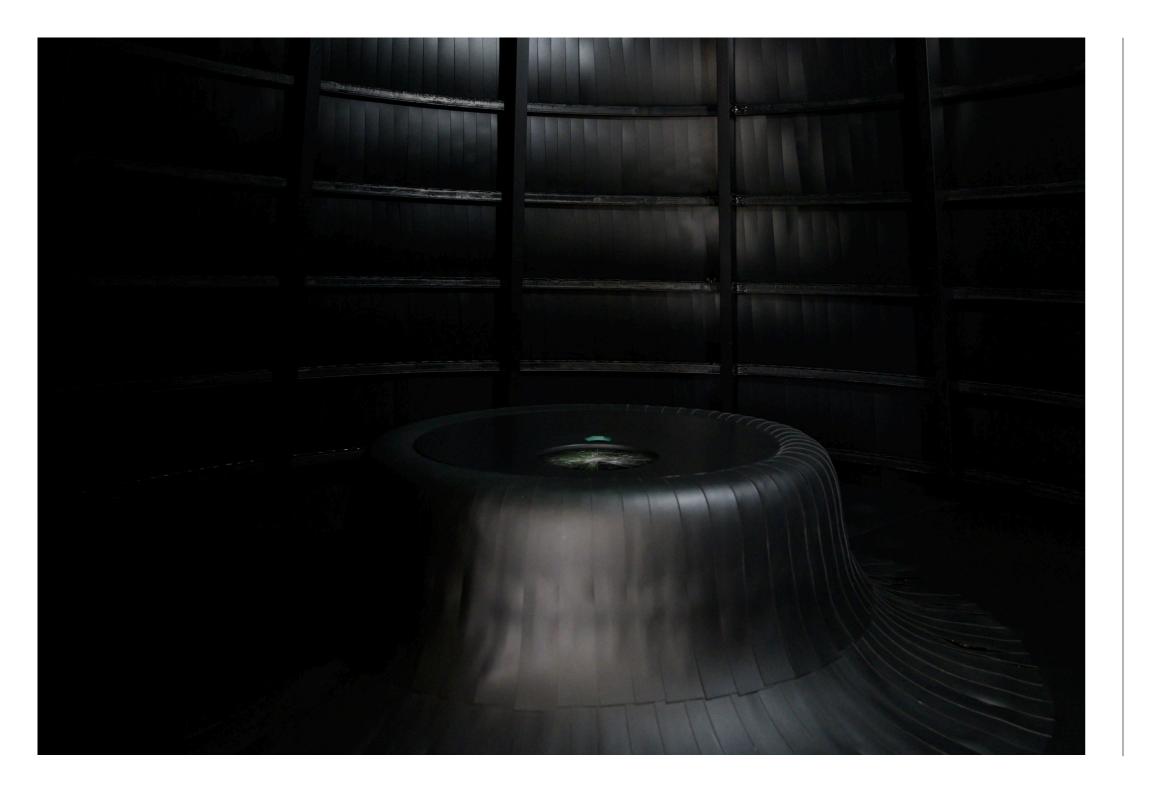
Embassy of Brazil, Washington DC, USA, June 2017

www.amazon-face.org











Voices of the forest/Vozes da floresta/ Voces de la selva

Amazon Interspecies Community Broadcast, 2021

Voices of the forest consists of a stream of the soundscape of the Central Amazon rainforest. The stream is generated from interval audio recordings made in 2018/2019 at the LBA/AmazonFACE research station of the National Institute for Research on the Amazon INPA. Three automated audio recording devices distributed throughout the forest recorded 20 seconds of the rainforest soundscape at ten-minute intervals. These recordings are automatically crossfaded without gaps in the web radio – creating a continuous flow consisting of the diurnal cycles and seasonal changes in the soundscape of the forest.

Vozes da floresta as a radio program is inspired by the first book by Swiss environmental activist Bruno Manser. In "Stimmen aus dem Regenwald" (Voices from the Rainforest) from 1992, he pointed out for the first time the threat to the rainforests of Borneo through deforestation. In addition to his own descriptions, he mainly let the voices of the forest statements and reports from the indigenous population of the Penan, as well as scientists and journalists - have their say. This is to be taken up in our radio project and we seek for the participation of artists, scientists and indigenous communities living or working in the Amazon regions to contribute to a radio program that we will set up as an auditive network of (indigenous, artistic and scientific) knowledge concerned with the Amazon rainforest and its threats. Beyond that, Manser's idea is to be extended to the non-human inhabitants of the rainforest by integrating their voices as well – that is why we call our radio an interspecies community broadcast.

One essential aspect distinguishes the soundscape of a tropical rainforest from temperate forests. Because the biodiversity of audible animals is extremely high, the soundscape is structured much more densely and intensively than in other forest types. And yet, the rainforest soundscape is highly organized: The hearable animals each have their acoustic niche in which they communicate, mark their territory, warn of enemies, attract sexual partners. This means that the auditory spectrum of the rainforest is structured into precisely defined frequency bands within which animals of individual species communicate to each other and thus the frequencies of their sounds practically do not overlap or interfere. And if individual animals do communicate in the same frequency bands, they are active in different time windows. This discovery was made by the eco-acoustician Bernie Krause in the 1970s.

Human voices – artificial, artistic or musical – are to be integrated into this mesh of acoustic information, supplementing the rainforest soundscape with audible human thought and action. An easy to use schedule and upload function enables project contributors to play their acoustic contributions once or several times in the broadcast stream. Any form is possible here: a piece of music, a manifesto, scientific findings and texts, personal thoughts and observations, and so on. The only and most important requirement is that what is produced integrates harmoniously into the soundscape and does not interfere with the other sound sources, be it the sounds of the animals or the other contributions. The focus is on an artistic, scientific and social practice that sees itself as (even if only metaphorically) part of the soundscape and thus of the rainforest ecosystem.

From time to time, however, the virtuality of the web radio shall also find manifestations in the analog world: The extended rainforest soundscape is to be used in live performances in various festivals.

Vozes da Floresta/Voices of the forest was made possible by the Openlab/The Witness festival in Zurich/Switzerland.

Core team:

Yara Costa - Dancer/Choreographer, Manaus, Brazil Chico Dub - Curator Novas Frêquencias Festival, Rio de Janeiro Lilian Fraiji - Curator Labverde program, Manaus, Brazil Ken Gubler - Programmer/Sound artist, Zurich, Switzerland David Lapola - Scientist UNICAMP, Campinas, Brazil Marcus Maeder - Acoustic Ecologist ZHdK/ETHZ, Artist, Switzerland

Guely Morató Loredo (Bolivia) - Director of Sonandes Plataforma de experimentación e investigación Víctor Mazón Gardoqui (ES/DE) - Researcher and artist

www.voicesoftheforest.net

VOICES OF THE FOREST

OZES DA FLORESTA

Amazon Interspecies Community Broadcast

NOW PLAYING: TRISTES TROPIQUES AUTHOR(S): ANDREW PEKLER, DURATION: 35:14 Remaining: 32:05

NEXT PROGRAM

REPECHÓN CAVES: INTERSPECIES DIALOGUE OF 5 TYPES OF BATS, SONANDES: GUELY MORATÓ & VICTOR MAZÓN GARDOOUL 10.08.22, 10.10

DIO RUNNING

Vozes da floresta/Voices of the forest

Audio-visual performance, 2019 - 2022

The Amazon rainforest is under threat. Logging and land clearance have increased dramatically again in the last months at one hand. At the other, it is likely that the forest will turn into a seasonal rainforest or even into a forestless steppe with the increasing atmospheric CO2 concentration and temperature caused by the worldwide combustion of fossil fuels - possibly already within the next decades. The local socio-economic and global climatic consequences would be devastating.

The largest rainforest of our planet, which not only supplies half of Latin America with water, but also has a big influence on global weather and climate and stores enormous amounts of CO2, is increasingly exposed to drought and there is a danger that the forest will change from a CO2 sink into a CO2 source. The AmazonFace research project, in which more than 30 international institutions are involved, is investigating the effects of increased atmospheric CO2 on the rainforest and its ability to adapt to rapidly changing climatic conditions. The indigenous inhabitants of the rainforest are resisting the intrusion of loggers, farmers and miners into their territory. Among other things, they use short-wave transmitters with which they exchange information and coordinate over long distances. Short waves are reflected at the ionosphere and may also be received in Europe. The voices from the rainforest are an important part of the performance: they illustrate that the indigenous population protects the rainforest as their habitat with their resistance and thus plays a major role in the fight against climate change.

Video of the performance: https://www.youtube.com/watch?v=9wBC5aO6ag4

Performances: Ranfter Klimagespräche, Flüeli-Ranft, May 2022

CultureScapes, Don Bosco, Basel Nov 2021

Sonic Ecologies, Kunstraum Walcheturm, Zurich, March 2020

Semana nacional de ciencia e tecnologia, Brasilia, October 2019

Premiere at DigitalSwitzerland, Kraftwerk Selnau, Zurich, June 2019

The performance "Espírito da floresta/Forest spirit" was developed in the framework of the AmazonFace research programme:

https://amazonface.inpa.gov.br/en-US/home.html



Espírito da floresta/Forest spirit

Performance with choir, 2021/2023

The performance described on the previous pages is performed in its current version including the choral piece "Espirito da Floresta". Here, a ninevoice women's choir sings the data sonification of the CO2 data from the sound installation "Espirito da floresta. The concert is followed by a discussion with the audience on the state of the Amazon rainforest and possibilities for action.

"Espirito da floresta" is a commission of the Klimakotor Basel. Composition: Marcus Maeder Conductor: Jakob Pilgram Choir: Larynx Choral Ensemble, Basel Dramaturgy: Anne Schöfer and Barbara Ellenberger

https://klimakontor.ch

A recording of the choir piece is available here: http://domizil.ch/Premaster_Espirito_da_floresta_Don%20 Bosco_251121.mp3

Performances: Akademie der Künste, Berlin, Aug 2023

Klanglandschaften Festival, Hobrechtsfelde, Juli 2023

Don Bosco, Basel, Nov 2021

Ref. Kirche Allschwil, Nov 2021





Sounding Soil

Sound installation, 2018 - 2020

The Sounding Soil installation consists of a white 10" freight container with a small garden on its roof, a touch screen console with a sound map and a spatial audio system in its dark painted interior. In the sound map, over 20 recordings from soils in Switzerland are selectable and played back in surround audio. The soil of the garden on the container's roof controls a generative music part which is played when no soil recording is selected.

Soils and their perception

Soils present themselves to us mostly as differently composed surfaces, with that which is underneath escaping our perception. Soil ecosystems are complex and their biotic interactions closely interwoven. Soils are highly sensitive to any disturbances, be they human farming systems or forest management. Healthy soils are of key importance, because they provide indispensable ecosystem services; soil systems filter and regulate water, provide nutrient cycles, deplete toxic substances etc. Sustainably managed soils enhance the resilience of agricultural systems and are better able to adapt to changing climatic conditions while also contributing to the reduction of greenhouse gases in the atmosphere by carbon sequestration. In contrast, soil degradation has increased over recent decades - not only in its spectacular form in the tropics, with immense land loss through deforestation and erosion, but directly at our front door, on the fields where our food is being produced, through pollution with mineral fertilizers, pesticides and antibiotics, and through soil compaction with increasingly heavy machinery.

There seems to be a basic perception problem behind these environmental issues; the pedosphere and its functions or state of health cannot easily or instantly be translated into a sensual experience. It is a black box that needs to be opened up and interpreted by experts, and their findings must then be mediated to "nonexperts." For the most part, the ground at our feet is not an object of our observation or contemplation; it is just there and is being treated like some dead mass, because it eludes our direct perception. Increasing awareness of soil ecosystems is therefore an important issue.

In ecoacoustics, soundscape ecology or acoustic ecology, audio recordings are used to analyze ecological relationships. Almost every organism produces sound waves as its life manifestation. Be it movement activity or communication, we can potentially hear which organism does what under which circumstances on the one hand, and we may contextualize the organism's activity with the sounds of the environment on the other.

What can you hear in the soil?

A healthy soil is home to a wide range of fauna and flora. It ensures the basic soil functions such as the decomposition of vegetable litter and nutrient cycling. The more diverse the creatures living in the soil are, then the higher is the functional redundancy of the ecosystem, i.e., if individual species are missing, their function can be taken up by other species in the soil. Soil fauna come in different sizes - ranging from bacteria and nematodes (roundworms), known as microfauna, to macroand megafauna, such as beetles, earthworms and moles, thereby spanning a complex network of interactions and nutritional dependencies. With our acoustic equipment, we can primarily hear the meso- and macro- soil fauna, i.e. all the animals larger than half a millimetre. Mesoand macrofauna perform important functions in the soil - these organisms shred plant residues, prey on other soil fauna and loosen the soil by burrowing. A large diversity in meso- and macrofauna reflects a healthy ecosystem.

The sound map on the installation's console contains the recordings of soil fauna such as springtails, mites, centipedes, beetles, isopods, fly larvae, earthworms, spiders, orthoptera (grasshoppers) and cicadas. We took soil samples all the recording locations of the research project (large dots, see screenshot of the sound map) and identified and counted the animal species. The majority of soil fauna make noises when moving through the soil or eating. A few also make use of the soil to communicate with each other. Some of the animals live in the litter layer - the decomposing plant material lying on the surface of the soil. In addition, animals can also be heard who live on the soil, using it as a communication medium by generating vibrations that can be picked up by their conspecifics via the legs or body. Soil fauna produce different noises – according to the size and structure of their body as well as their behaviour: the greater the variety of animal sounds you can hear in a recording, the more diverse is the soil fauna. This can also be acoustically measured and statistically evaluated.

In the Sounding Soil research project, we have attempted to acoustically measure soil biodiversity based on what are known as acoustic indices. We have already been able to identify distinct differences at the various locations of this sound map. For example, conventionally managed arable land is quieter and exhibits fewer different noises than an organically managed meadow. Forest soil is also rather quieter, since this type of soil is generally cooler and the soil fauna there are less active than in a sun-kissed meadow.

Often it is not only the noises of soil fauna that can be heard but also physical sources, such as rain as it hits the ground and seeps away, or wind moving the vegetation on the soil surface that is audible as a rumbling in the soil. Furthermore, other environmental noise can also be heard in the soil. Thus the vibrations from building sites and the proximity of roads adversely affect acoustic recordings and measurements in the soil – this is particularly the case with aircraft noise, the deep roaring sound of which can drown out the noises made by soil organisms. The effects of acoustic environmental pollution on the distribution, activity and composition of soil fauna remain totally unexplored. Nevertheless, however, it must be assumed that environmental noise produced by humans not only has a negative impact on aboveground and maritime fauna but also on the animal communities living in the soil.



A further element of the Sounding Soil installation is the music that starts to play when no soil sounds are selected in the sound map to listen to. It consists of sound patterns that are distributed at three levels of the loudspeaker system in the container. The individual sound patterns are controlled both by sensors in the soil and the weather station on the roof of the container. Readings such as the intensity of the sunlight, the amount of rain, the surface and soil temperature as well as the soil moisture control the music while making it possible for the microclimatic factors and their interactions, which influence the activity of the soil fauna, to be heard and experienced. In this way, depending on the time of day, weather and season, a generative composition is created, which only changes extremely slowly - in analogy to the soil matrix, which acts as a buffer by reacting very slowly to environmental changes.

The research project Sounding Soil

Sounding Soil is an inter- and transdisciplinary research and art project that investigates the acoustics of soil ecosystems. In this study, methods to record and measure the acoustic activity and composition of soil organisms are being developed with the objective of assessing biodiversity in soils rapidly and affordably by acoustic means. Recordings of the soil fauna will be part of a participatory art installation and a citizen science project. The project aims to create a first-hand experience of soil ecosystems and increase soil awareness in broader parts of society, be they the urban population, agricultural producers or political decision makers.

Sounding Soil is carried out as a cooperation between the Zurich University of the Arts (ZHdK)/the Institute for Computer Music and Sound Technology, the Swiss Federal Institute for Forest, Snow and Landscape Research WSL, the Swiss Soil Monitoring Network (NABO), the Institute for Terrestrial Ecosystems as well as the USYS TdLab at the Swiss Federal Institute of Technology (ETH) in Zurich and Biovision Foundation for Ecological Development. Project Team:

Martin Gossner (WSL – Forest Entomology). Martin Grossenbacher (Biovision – Public Relations). Sabine Lerch (Biovision – Project coordinator). Marcus Maeder (ZHdK/ICST – PI, Ecoacoustics, Artistic Research). Michael Müller (NABO/Agroscope – Modelling & Monitoring). Martin Neukom (ZHdK/ICST – Implementation Acoustic Indices). Thomas Peter (ZHdK - Programming). Sébastien Schiesser (ZHdK/ICST, Micro-Engineering). Doris Schneider Mathys (WSL – Entomological lab). Marco Walser (WSL – Field measurements, coordination LWF plots)

Scientific supervision: Armin Keller (NABO/Agroscope). Michael Stauffacher (ETH – USYS TdLab). Marcus Schaub (WSL – Forest dynamics unit). Rainer Schulin (ETH – Institute for Terrestrial Ecosystems)

www.soundingsoil.ch

Exhibitions: OLMA, St. Gallen, October 2019

Scientifica, ETH Zurich, September 2019

Zentrum Paul Klee, Bern, 2018







treelab

Spatial audio/stereo sound installation 2015 - 2018

The link between trees and various climatic processes is usually not immediately apparent. Trees and plants do not live merely on moisture from rain, sunlight (which drives gas exchange) and nutrients from the soil: they absorb carbon dioxide from the air and produce the oxygen that we breathe, maintaining our climate and biosphere. Gathering ecophysiological data by measuring the local climatic and environmental variables and the physiological processes within a plant in response to changes in these variables has become an important method of researching climate change and vegetation dynamics. It helps to determine physiological thresholds of plants in terms of increasing temperature and consequently drought stress.

Plant physiologists have known that plants emit sounds for several decades now. Many of these sounds are of transpiratory/hydraulic origin and are therefore related to the circulation of water and air within the plant as part of the transpiration process. Each plant species - in fact each plant individual – has its own acoustic signature, related to its anatomical structure and to the local climatic conditions. Investigating the acoustic emissions of a tree in response to dynamically changing climatic conditions might reveal biological or physical properties that place these emissions in a broader ecophysiological context and enable us to explain processes that are not yet fully understood.

In our observation system «treelab» we combine recordings of acoustic emissions of a tree with sonic representations (sonifications) of ecophysiological data in one single auditory expe-rience, enabling the visitor to experience and comprehend cause and effect of the plant-atmosphere relationship. The installation replays measurement data from early summer 2015, the peak of the growth period of a Scots pine (Pinus sylvestris) located in the central Swiss Alps in Salgesch in the canton of Valais.

Scots pines in Valais have experienced high mortality rates for some decades now: this phenomenon is believed to be caused by the effects of climate change, e.g. longer drought periods. A downy oak (Quercus pubescens), for example, is Earth Beats, Kunsthaus Zürich, Okt 2021 - Jan 2022 able to better withstand the current climatic conditions whereas a Scots pine is pushed beyond its physiological limits despite the fact that both tree species have coexisted there for thousands of years. Consequently, shifts in the abundance of tree species are observed. The ecophysiological knowledge acquired is used to explain the underlying processes: Hence the cooperation between a biologist and an artist opens up new ways to study the complex relationship between tree physiology and climatic conditions on the one hand and to explore the possibilities of acoustic and artistic representations of ecophysiological processes in trees on the other.

"trees: Rendering ecophysiological process audible" was a research project conducted by the Institute for Computer Music and Sound Technology ICST of the Zurich University of the Arts ZHdK, in collaboration with the Swiss Federal Institute for Forest, Snow and Landscape Research WSL. "trees" was funded by the Swiss National Science Foundation (SNSF) and the Zurich University of the Arts ZHdK.

Artistic realization and programming: Marcus Maeder. Scientific data and analysis: Roman Zweifel (WSL). Programming support: Philippe Kocher, Thomas Peter (ICST). Technical engineering field measurements: Jonas Meyer (ICST, decentlab).

https://www.researchcatalogue.net/ view/215961/215962

Video/sonification excerpt: http://www.domizil.ch/trees.mp4 Exhibitions:

Examples to follow, Uferhallen Berlin, May-Aug 2023

Im Wald, Kunsthaus Grenchen, Jul-Aug 2020

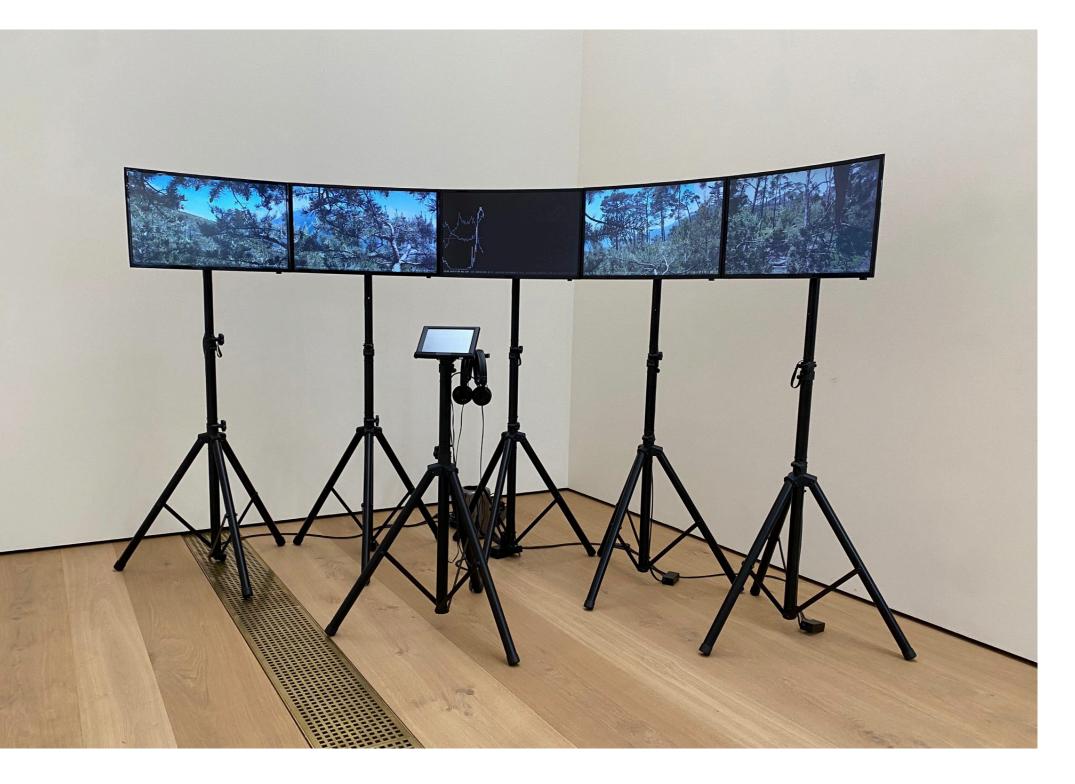
Of plants and people, Deutsches Hygiene-Museum, Dresden, May 2019 - May 2020

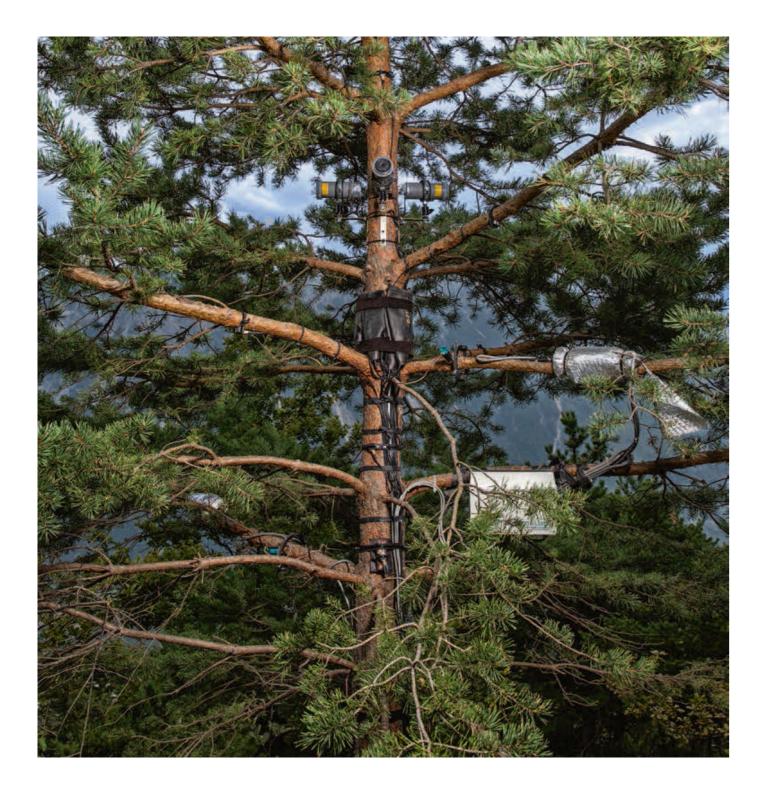
Eco-Visionaries, Haus der Elektronischen Künste HEK, Basel, August - October 2018

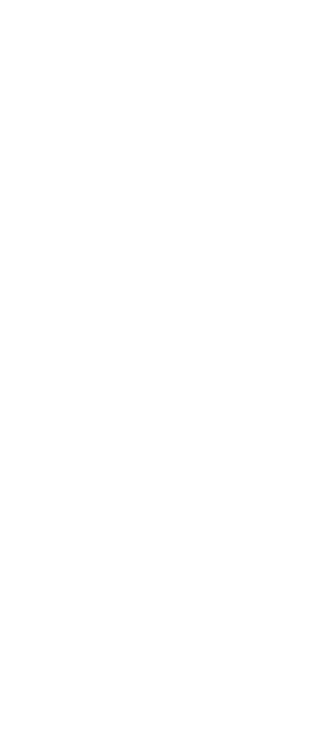
Ars Electronica Festival 2017, Linz September 2017

BOZAR Palais des Beaux-Arts, Bruxelles September - October 2017

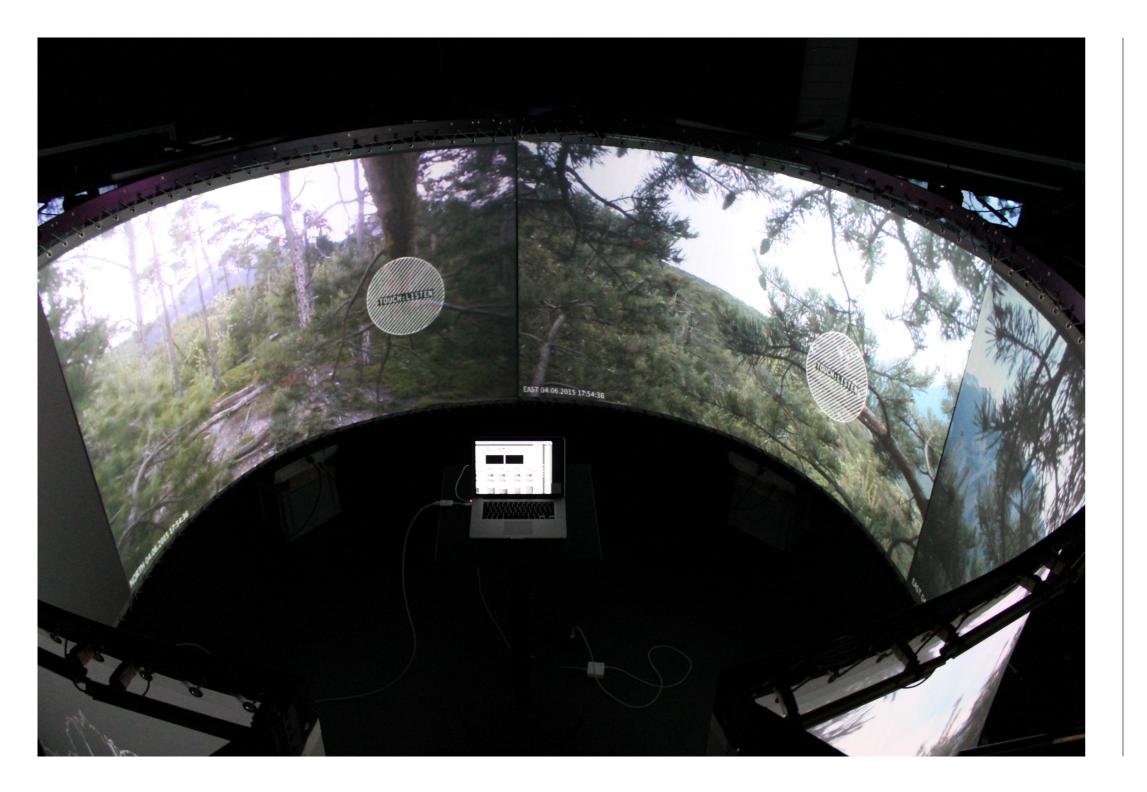
United Nations Climate Change Conference COP21, Paris, 2015













Marcus Maeder is an artist, researcher and composer of electronic music. As an author, Maeder has written on a number of topics in the fields of sound art, acoustic ecology, artistic research and digital media.

Maeder studied Fine Arts at the Lucerne University of Applied Sciences HSLU, Philosophy at the Fernuniversität in Hagen and completed his PhD in Environmental Systems Science at ETH Zürich. He runs the music label domizil together with Bernd Schurer. Maeder has worked as an editor and producer for the Swiss radio station SRF and has been working as a curator, researcher and lecturer at the Institute for Computer Music and Sound Technology (ICST) of the Zurich University of the Arts ZHdK since 2005. He is visiting scientist at the Swiss Federal Institute for Forest, Landscape and Snow Research WSL and currently holds a position as Humboldt Research Fellow at Freie Universität Berlin.

In his research, Maeder is working on bioacoustic and ecoacoustic investigations of areas, communities and organisms under the influence of climate change and other environmental issues. He contextualises his artistic and scientific work in the fields of Acoustic and Soundscape Ecology, as well as Artistic Research.

On an invitation by French President François Hollande, Maeder presented his sound art installation trees: Pinus sylvestris at the 2015 United Nations Climate Change Conference COP21.

In 2017 Maeder presented his installation AmazonFACE: Ocotea at the Inter-American Development Bank in Washington – the same year where he and Roman Zweifel received an honorable mention from the STARTS Prize by the European Commission at the Ars Electronica Festival in Linz/ Austria for their works under the moniker treelab.

In 2021, Marcus Maeder presented his Installation Silva (commissioned by the Goethe Institute Tallinn and in cooperation with Roman Zweifel) at the Estonian National Museum;

Estonia's President Alar Karis visited the exhibition and gave the opening speech.

In 2023, Maeder presented his installation Growth model on invitation of the Swiss embassy at the Tokyo Biennal at the University of Creativity in Tokyo. The installation was visited by the state secretary for science and education Martina Hirayama and the president of ETH Michael Hengartner.

www.marcusmaeder.ch

Exibitions and projects

2024: Spreepark Multispezies Bau. Park Einsichten. Vier Positionen aus der künstlerischen Forschung. Spreepark Art Space, Berlin

2024: Edaphon Acla, Wälder. Von der Romantik in die Zukunft, Romantikmuseum, Frankfurt

2024: Imeall an chosta. Disguiet Frequencies, Goethe Institute, Dublin

2023: EER X Chimoichi-cho, Performance with the EER collective, Chimoichi-cho/Tokyo, Japan

2023: Growth Model, Tokyo Biennal 2023, Tokyo, Japan

2023: treelab, Examples to follow/zur Nachahmnung empfohlen, Uferhallen Berlin

2023: Speculative Botany, Art and about. Artistic Research at Spreepark, Spreepark Art Space, Berlin

2023: Espirito da floresta, A bruit secret. über das Hören in der Kunst, Museum Tinguely, Basel

2022: Edaphon Braggio, Earthbound, HEK Haus der Elektronischen Künste, Basel

2022: Acla, Art Safiental, Versam/Tenna

2022: Growth Model, Touch Wood, ZAZ Museum Bellerive, Zurich

2022: Edaphon Braggio, Earthbound, Esch 2022/Möllerei, Luxembourg

2022: Nephoscope, Kunst forscht, Kunstverein Mannheim

2021: Silva, Estonian National Museum, Tartu

2021: treelab, Earth Beats, Kunsthaus Zürich	Alpen Adria University Klagenfurt, with Ch. Kubisch, B. Trau- beck, W. Ritsch	Discograp
2021: On Land, Landliebe, Bündner Kunstmuseum, Chur	2012: trees: Downy Oak, swissnex San Francisco, Work-	2020: Crep
2021: Nephoscope, Klang Moor Schopfe, Gais	shop in Muir Woods	2017: non-l
2020/2021: <i>Perimeter Pfynwald,</i> Critical Zones. Observato- ries for Earthly Politics, Zentrum für Kunst und Medien ZKM,	2011: Der Pfad zur linken Hand/the left-hand path, a topo- graphical play with Jan Schacher/Jasch, Musikprotokoll Graz	2015: Proge
Karlsruhe	and Shedhalle Zürich	2013: topoç
2020/2021: <i>Espirito da floresta/Forest spirit,</i> And the FO- RESTs will echo with laughter, ERES Foundation, Munich	2010: Curating of the exhibition Milieux Sonores, Grey Area Foundation, San Francisco and Kunstraum Walcheturm,	2010: anne
2019: Perimeter Pfynwald, Eco-Visionaries, Laboral Centro	Zürich	2009: Wire
de Arte y Creation Industrial, Gijon	2008: Sonifications and compositions for the Nova light object by ETH Zurich, main train station.	2009: subs
2019: treelab, Of plants and People, Deutsches Hygiene-		2008: Oper
museum, Dresden 2018: <i>treelab,</i> Eco-Visionaries, Haus der Elektronischen	2008: <i>Die Wunschmaschinen</i> , Surround radio play after Deleuze/Guattari's Anti-Oedipus, 40 Jahre 1968, Frankfurt and Kunstraum Walcheturm, Zürich	2008: Die V cords
Künste, Basel		
2018: Sounding Soil, Zentrum Paul Klee, Bern	2007: <i>Davos Soundscape,</i> a topographical composition with Jan Schacher/Jasch, Davos Festival 2007	2007: This :
2018: Espirito da floresta/Forest spirit, Bosque da Sciencia,	2004: Transient Travels, Installation and compositions, World	2005: Trans
Manaus	New Music Days 2004	2004: domi pilation)
2017: <i>Espirito da floresta/Forest spirit,</i> Inter-American De- velopment Bank IDB, Washington DC	2003: Electronic Music Archive, an exhibition by Gianni Jet- zer and Norbert Möslang (Voice Crack), Kunsthalle St. Gallen	2004: Club
2017: <i>treelab,</i> Ars Electronica Festival, Linz; BOZAR, Palais des Beaux-Arts, Bruxelles	2002: Music and sound design for Expo.02, Expoagricole, Murten	2004: La Si
2015: <i>trees: Pinus sylvestris,</i> United Nations Climate Change Conference COP 21, Paris	1998: We Are Somewhere Else Already – Swiss Institute, New York	2003: Bees (Remix)
2014: <i>trees: Pinus sylvestris,</i> SoundReasons Festival, Outset India, New Delhi		2002: Quice
		2001: Poisc
2014: trees: Downy Oak 2, Baum/Klang/Kunst/Mensch,		

aphy

repuscule, Cassette, domizil 48

n-human, CD, domizil 45

ogeny, CD, domizil 41

pographie sinusoïdale, CD, domizil 38

nex, Mini CD, domizil 33

'ire Tapper, CD/The Wire (Compilation)

bsegmental, CD, domizil 32

pera Calling, CD (Compilation)

e Wunschmaschinen, DVD, domizil 30/ZHdK Re-

is ship in trouble, CD/online, domizil 24

ansient Travels, VA, CD, domizil 23 (Compilation)

omizil vs. Antifrost life, - Live CD, domizil 19 (Com-

ub Transmediale, CD, Data Error (Compilation)

a Suisse, CD, SME (Compilation)

ees & Honey, Andrey Kiritchenko, CD, Zeromoon

uiconque, CD, domizil 17

visonhats, CD, Arts Centre Dublin (Compilation)

2001: Substrat CD, CD, Stattmusik (Compilation)

2000: Institut für Feinmotorik: Verschiedene, CD, IFFM (Compilation)

1999: solipsistic_motion, LP, domizil 10

Bibliography

Marcus Maeder (Hg.): Kunst, Wissenschaft, Natur. Zur Ästhetik und Epistemologie der künstlerisch-wissenschaftlichen Naturbeobachtung. Bielefeld: Transcript Verlag, 2017, ISBN 978-3-8376-3692-5

Marcus Maeder & Roman Zweifel: trees: Pinus sylvestris, an artistic-scientific observation system at the COP 21. Zurich: domizil; ISBN 978-3-033-05381-6

Marcus Maeder (Hg.): Milieux Sonores – Klangliche Milieus. Klang, Raum und Virtualität. Bielefeld: Transcript Verlag, 2010; ISBN 978-3-8376-1313-1

Bruno Spoerri (Hg.): Musik aus dem Nichts. Die Geschichte der Elektroakustischen Musik in der Schweiz, Zürich: Chronos Verlag, 2010, ISBN 978-3-0340-1038-2

Contact

Zurich studio: Marcus Maeder Wright-Strasse 74d CH-8152 Glattpark

Berlin studio: Kottbusser Damm 29/30 DE-10967 Berlin

studio@marcusmaeder.ch