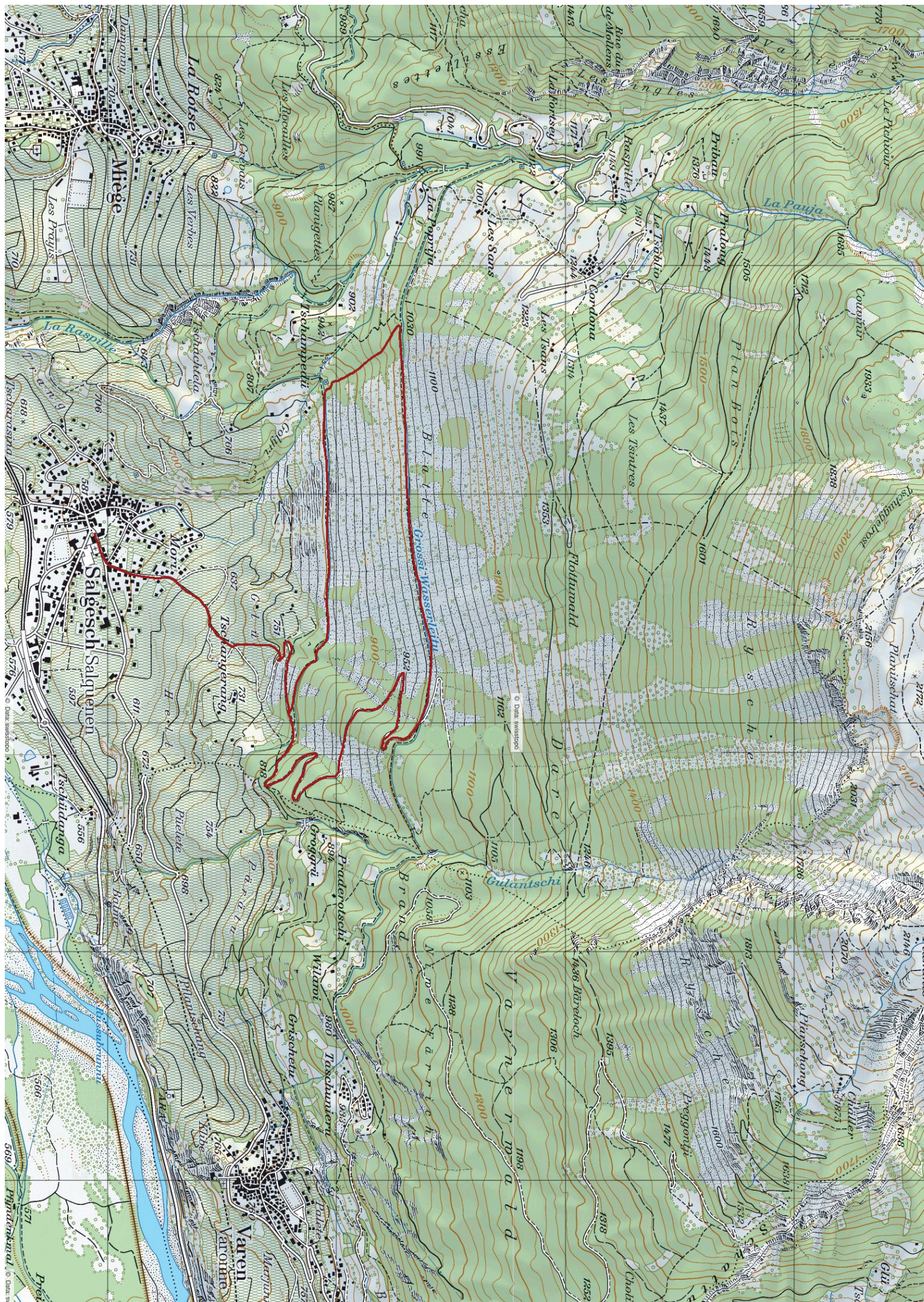


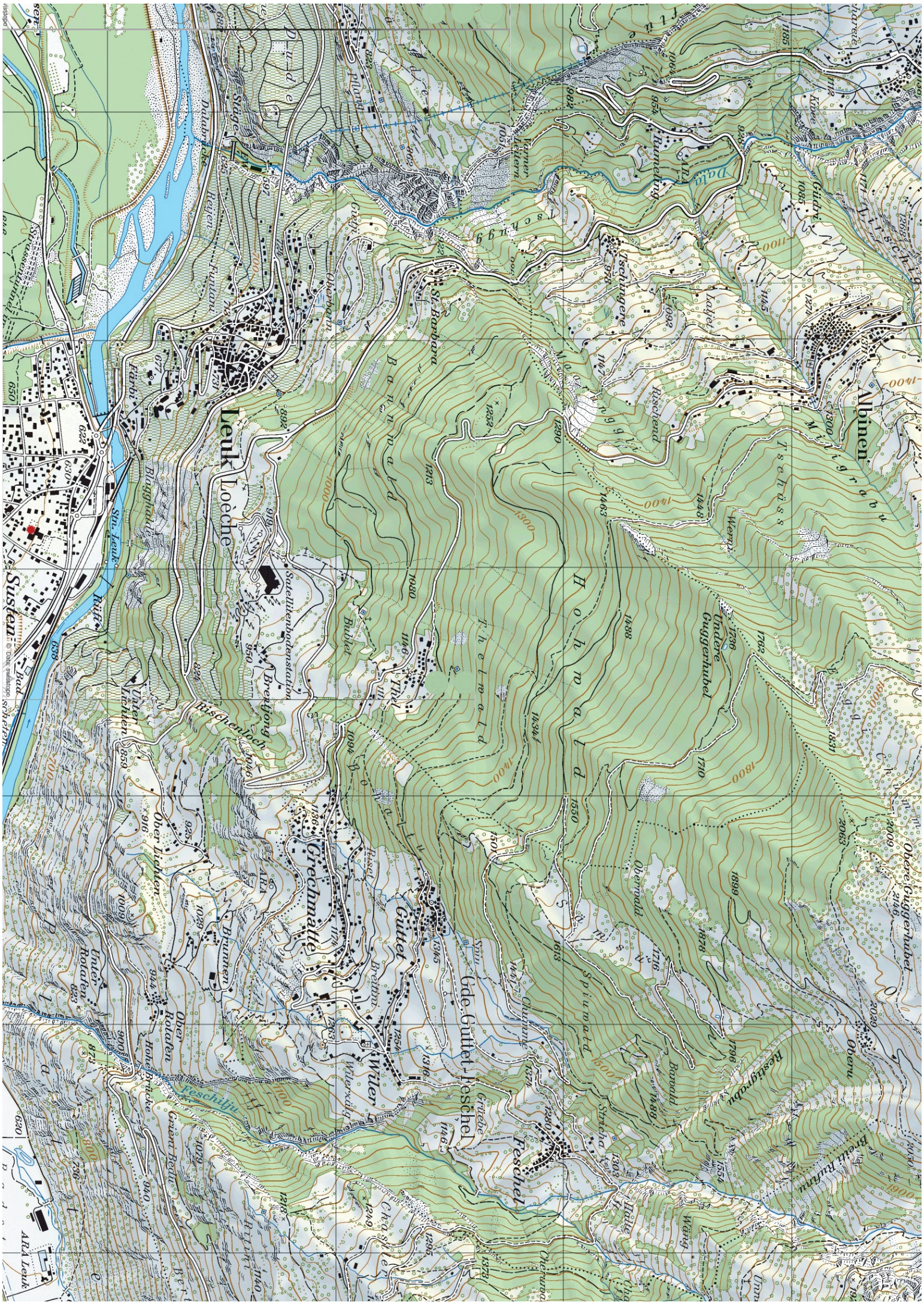
you are variations
01/02

wir sii d'Böüm

to Matthias and the Pine Trees (*Pinus sylvestris*) in the Vallais

April 2015
Christina Della Giustina





'you are variations'
version 01/02

wiir sii d'Böüm

scoring scientific methods, sounding water's cycles, listening to trees

How can we meet a tree?

Is it possible to get to know Pine Trees?

To listen to them, and to hear them?

How, under what conditions, and through what forms of knowledge

do we experience and engage with Pinus sylvestris in the Vallais?

That is: with "creation" in general, including ourselves?

How can we relate (anew) to the environment?

Linking the scientific and the aesthetic 'you are variations' turns long-term monitoring data sets of tree activity into events of sensory experience .

It is an attempt to make data tangible by reconnecting them to what they are referring to.

In its focus on linking the research draws a wide arch:

Can the inclusion and interaction of scientific and aesthetic forms of knowledge change our experience

and our engagement with creation? And could such collaborations and transformations lead to new modes of relating to ourselves and the environment?

That is creating (the condition for) an attitude of *perceiving oneself together (with ...)*.

Entangled with these epistemological probing

- what forms of intimacies with the organic do our known approaches distinguish, prevent, suggest, envision, and enable? -

are further questions that speak to a common querying across disciplines concerning our ways of being with ourselves and the world.

'you are variation' examines the environmental sensitivity of this 'being'.

In probing the interface, the meeting points, and the fault-lines of a series of different knowledge forms, oscillating weavingly between the scientific and the aesthetic, what is set in motion are relationships between these modes of exploration and understanding, and in doing so the possibilities for something hybrid, something else, something maybe new.

The method is composing and performative, testing - in the process - forms of meeting and relating to trees, we create molecular polyphonies, electro-acoustic polyrhythms, and oral as well as written poetry.

The results of these different experimental processes of engaging is a collage of sorts, a kind of material intimacies, in which the formal interlacing of diverse types of material (digital, acoustic, poetic)

performs a fertile heterogeneity, a conscious disorganization and re-organization.

The performances, installations, and books realized so far are affected and inspired by trees, building a cluster of experiments that test the possibility, the quality and the degree of intensity in experiencing trees.

Its resonations can be seen as attempts to convert distance into intensity, focusing on a qualitative transformation of distance into immediacy of relation to tree and self.

The working of these pieces though depends on their capacity to create contact zones,

and mediate between worlds; acting as ladders or bridges, similar to the water climbing trees.

It is in this mediating capacity that 'You are variations, version 01/02' is dedicated to Dr. Matthias Dobbertin.

Dr. Matthias Dobbertin had a lifelong interest in forests. For almost twenty years Matthias worked at the Swiss Federal Research Institute WSL, where he investigated forest ecosystems with an exceptional passion.

While conducting the Swiss Forest Health Inventory from 1995 on, Matthias was deeply involved in the Swiss Long-term Monitoring Programme LWF and became its leader in 2009.

He placed great emphasis on the multidisciplinary of his research field in order to gain an profound understanding of the influences of environmental changes on the processes taking place in forests.

His formidable statistical skills, combined with his distinct curiosity, allowed him to discover new connections and relationships between trees and their environment.

Matthias introduced me to the LWF project in 2011.

I feel very grateful and highly privileged to have been able to work with Matthias.

The questions listed above can be seen as a direct result from the award and residency at the Institute for Forest, Snow and Landscape Research WSL, CH.

I was invited as artist in lab to study eco-physiological processes within trees (i.e. scientific processes) and creative processes within me (that might be leading to aesthetic processes) during the year 2011.

What I mainly did during the residency period was to study the language, the subjects, and the different methods the institute works with, while closely observing my reactions, reception, and response to it.

The idea was to compare scientific and aesthetic processes, exploring the very manner of connections and disconnections between them, querying if evolving processes comment, inform, or reflect each other?

Can aesthetic and scientific practices be brought into relation?

And what might be the adventure, the difficulty, and the value of doing so?

Getting to know microscopy, using dendro-chronological methods, and being introduced to data collecting, -modelling, and -distributing technologies as instrumental and operative in the LWF project was challenging, interesting, and constitutive.

In the working methods leading to the score - as well as in the actual performances resulting so far - the assembly of different systems, aggregating various organizational, compositional, and instrumental cultures, is employed so far in the following way:

- *the periodic table the standard tabular arrangement of the chemical elements as organisational basis for a frequency scale*
- *the molecular formula as metric structure for the rhythmic organisation*
- *the use of scientific long term monitoring data as artistic material*
- *energy circulation as index of the overall timing/tempo (e.g. amount of solar radiation as accelerating/decelerating pulse)*
- *meteorological data as articulation devices (e.g. amount of soil humidity as indicators for the choice of mallets)*
- *the composition itself conceived as a statement of organisation*
- *the incorporation of electronic (laptop, loudspeaker) and acoustic instruments with diverse musical backgrounds*
- *the collaboration with a core- and a varying group of divers musicians (professional instrumentalists, amateur choirs, children, etc.)*

'You are variations' takes place against the backdrop of concerns with the observable trends in climatic change, and the related known and unknown modifications, both globally as well as in our own microclimates.

It may not be an easily graspable subject: 'You are variations' draws attention to the complex water cycling and sophisticated energy balance of trees under different environmental conditions.

Its queries are relevant for contemporary regimes of scientific knowledge, especially those concerned with climate futures;

as well as for queries regarding art's capacity to cultivate a set of environmental dispositions that cause pause for thought, and at the same time might move us,

for the sake of all human and non-human others we would like to get to know and live together with.

April 2015

Christina Della Giustina

we are the trees

Climate change is an urgent topic and concern.

Its effects and consequences on a global scale are extensively discussed in the media, but rarely are they brought in relation to the own immediate environment and surrounding.

In the project „Wier sii d'Böüm" - „we are the trees" - the observable climatic modifications are discussed locally, where the experimental scientific data are made tangible through the sensory experience of music.

The development and implementation of this unconventional interpretation and transposition of scientific data into music is based on the longterm collaboration between the artist Christina Della Giustina and the scientist Dr. Andreas Rigling of the Federal Institute for Forest, Snow and Landscape Research WSL. In the frame of the project week from April 27 until May 1 2015 at the primary school Leuk the children of the forth class get to know, experiment, and rehears the water cycle through the trees, and its relevance and relation with their region.

The artist developed a system, with which to translate the scientific data into a musical score. The composition is developed playfully together with the children and allows an in-depth involvement with ecophysiological processes, in trees and humans.

The data the project works with are supplied by several experimental plots in the Vallais of the LWF project, WSL. By means of this project week, the data generated in the Vallais, assessed in the labors of the WSL, and interpreted internationally on a global scale, are brought back to their place of origin, and given to the future generation for their own detailed understanding and creative interpretation.

The children acquire up-to-date knowledge on trees and their relevance in relation to complex questions regarding the observal trends in climate change, and get hands-on experience with sciences and art's capacity, impact, and significance in their region.

On Friday May 1 the ensemble 'you are variations' together with the children from class 4 present their interpretation of *Pinus sylvestris* in a performative concert at the dance centre SOSTA in Leuk.

The project week „wier sii d'Böüm" - „we are the trees" - takes place in the frame of the Agora Research Project „State of the Art – Science and Art in Practice", and is made possible through the support of the Swiss National Science Foundation (SNF), with additional funding from the Swiss Mercator Foundation.

wiir sii d'Böüm

Der Klimawandel ist für viele Kinder ein Thema, dessen Folgen zwar oft als globales Thema in den Medien diskutiert wird, jedoch nicht direkt mit der eigenen unmittelbaren Umwelt in Verbindung gebracht wird. Im Projekt „Wiir sii d'Böüm“ wird der Klimawandel auf lokaler Ebene diskutiert und die erhobenen Daten sinnlich durch das Medium der Musik erfahrbar gemacht.

Die Entwicklung und Umsetzung dieser unkonventionellen Vermittlungsform einer wissenschaftlich abstrakten Thematik durch die Musik basiert auf einer langfristigen Zusammenarbeit der Künstlerin

Christina Della Giustina und dem Umweltforscher Dr. Andreas Rigling der Eidg. Forschungsanstalt für Wald, Schnee und Landschaften (WSL).

Vom 27. April bis zum 1. Mai 2015 wird im Rahmen einer Projektwoche an der Schule Leuk den Schülerinnen und Schülern der 4. Klasse durch das eigene Musizieren der Wasserkreislauf der Bäume und dessen Zusammenhänge mit der Umwelt näher gebracht.

Hierfür hat die Künstlerin ein Interpretationssystem entwickelt, mit dem sie wissenschaftliche Daten in eine Komposition übersetzt. Die Komposition wird mit den Kindern spielerisch erarbeitet und erlaubt eine vertiefte Auseinandersetzung mit ökophysiologischen Prozessen, in Bäumen und in Menschen.

Die Daten für dieses Projekt werden von der WSL bereitgestellt, die im Wallis mehrere Messstationen betreibt. Durch die Projektwoche werden die wissenschaftlichen Daten, die im Wallis erhoben, im Labor der WSL Birmensdorf ausgewertet, und international auf globaler Ebene interpretiert werden, an ihren Ursprungsort und einer zukünftigen Generation zur eigenen kreativen Interpretation zurück gegeben.

So können sich die Kinder einerseits das Wissen um Bäume und deren Bedeutung im Zusammenhang mit dem Klimawandel aneignen, wie auch die Bedeutung von Forschung und Kunst in ihrer eigenen Umgebung erfahren.

Am Freitag 1. Mai präsentiert das Ensemble 'you are variations' zusammen mit den Kinder ihre Auseinandersetzungen und Beobachtungen in einem öffentlichen Konzert im Tanzzentrum SOSTA in Leuk.

Die Projektwoche „wiir sii d'Böüm“ wird im Rahmen des Agora-Forschungsprojektes „State of the Art – Science and Art in Practice“ durchgeführt und ist ermöglicht durch die Unterstützung des Schweizerischer Nationalfonds (SNF) und der zusätzlichen Förderung der Stiftung Mercator Schweiz.

LWF plots Visp *

*list of parameters measured in the ecosystem
with reference to the orchestration*

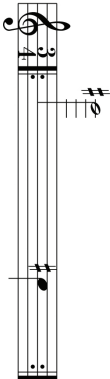
- atmosphere	<ul style="list-style-type: none">• relative air humidity [%]• precipitation [mm]	dynamics H ₂ O articulation H ₂ O	wind instruments (flute, clarinet, etc) percussive instruments
- plant	<ul style="list-style-type: none">• global solar radiation [W/m²/s]• photosynthetic active radiation [micro-mol/m²/s]• evapotranspiration [mm])]	tempo [bpm] articulation [staccato - legatissimo] length of breath H ₂ O	tutti string instruments (viola, cello, etc.) wind instruments (flute, clarinet, etc)
- soil	<ul style="list-style-type: none">• soil humidity [m³/m³ at 80 cm depth]	dynamics H ₂ O	percussive instruments (marimba etc.

- * • date of installation: 13 March 1996
- altitude: 657-733 m
- mean slope: 80%
- size of the plot: 2 ha

- geological structure: Permianium, Jura, Bundernschiefer, Kalkphyllite, Hängeschutt
- soil type: Calcaric Cambisol
- monogement system: high forest
- Silvicultural system: unmanaged

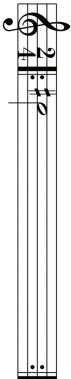
- Main tree species:
- top-height diameter
- number of trees
- maximum tree age:

Pinus sylvestris
(quadratic average diameter of the 100 thickest trees per ha): 53.9 cm
BHD >= 12 cm (2011): 650
Pinus sylvestris unevenly-aged 45-85 yr



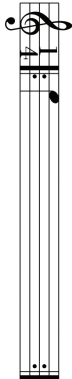
H₂O

Musical notation for H₂O: Treble clef, 3/4 time signature. The melody consists of a whole note G₄ (one ledger line below the staff) and a half note A₄ (first line).



O₂

Musical notation for O₂: Treble clef, 2/4 time signature. The melody consists of a single half note G₄ (first line).



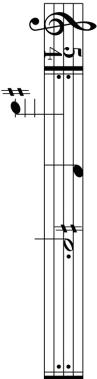
C

Musical notation for C: Treble clef, 4/4 time signature. The melody consists of a single whole note G₄ (first line).



SiO₂

Musical notation for SiO₂: Treble clef, 3/4 time signature. The melody consists of a whole note G₄ (first line) and a half note A₄ (first line).



CaCO₃

Musical notation for CaCO₃: Treble clef, 5/4 time signature. The melody consists of a whole note G₄ (one ledger line below the staff) and a half note A₄ (first line).



CaAl₂SiO₈

Musical notation for CaAl₂SiO₈: Treble clef, 13/4 time signature. The melody consists of a whole note G₄ (one ledger line below the staff), a half note A₄ (first line), and a whole note B₄ (second line).



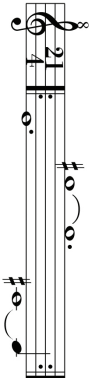
KAlSiO₈

Musical notation for KAlSiO₈: Treble clef, 13/4 time signature. The melody consists of a whole note G₄ (one ledger line below the staff), a half note A₄ (first line), and a whole note B₄ (second line).



NaAlSiO₈

Musical notation for NaAlSiO₈: Treble clef, 13/4 time signature. The melody consists of a whole note G₄ (one ledger line below the staff), a half note A₄ (first line), and a whole note B₄ (second line).



C₆H₁₀O₅
cellulose

Musical notation for C₆H₁₀O₅ cellulose: Treble clef, 21/4 time signature. The melody consists of a whole note G₄ (first line), a half note A₄ (first line), and a whole note B₄ (second line).



C₅H₁₀O₅
xylose

Musical notation for C₅H₁₀O₅ xylose: Treble clef, 20/4 time signature. The melody consists of a whole note G₄ (first line), a half note A₄ (first line), and a whole note B₄ (second line).

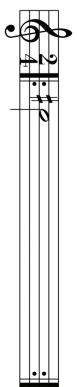


C₉H₁₀O₂
lignin

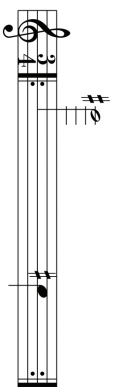
Musical notation for C₉H₁₀O₂ lignin: Treble clef, 21/4 time signature. The melody consists of a whole note G₄ (first line), a half note A₄ (first line), and a whole note B₄ (second line).

sound motif 'tree' [for Cello]

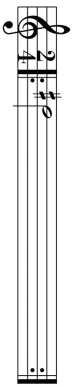
sound motifs 'soil' [for Marimba]



O2

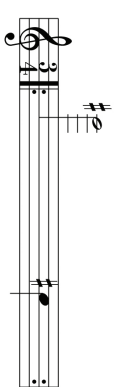


H2O



N2

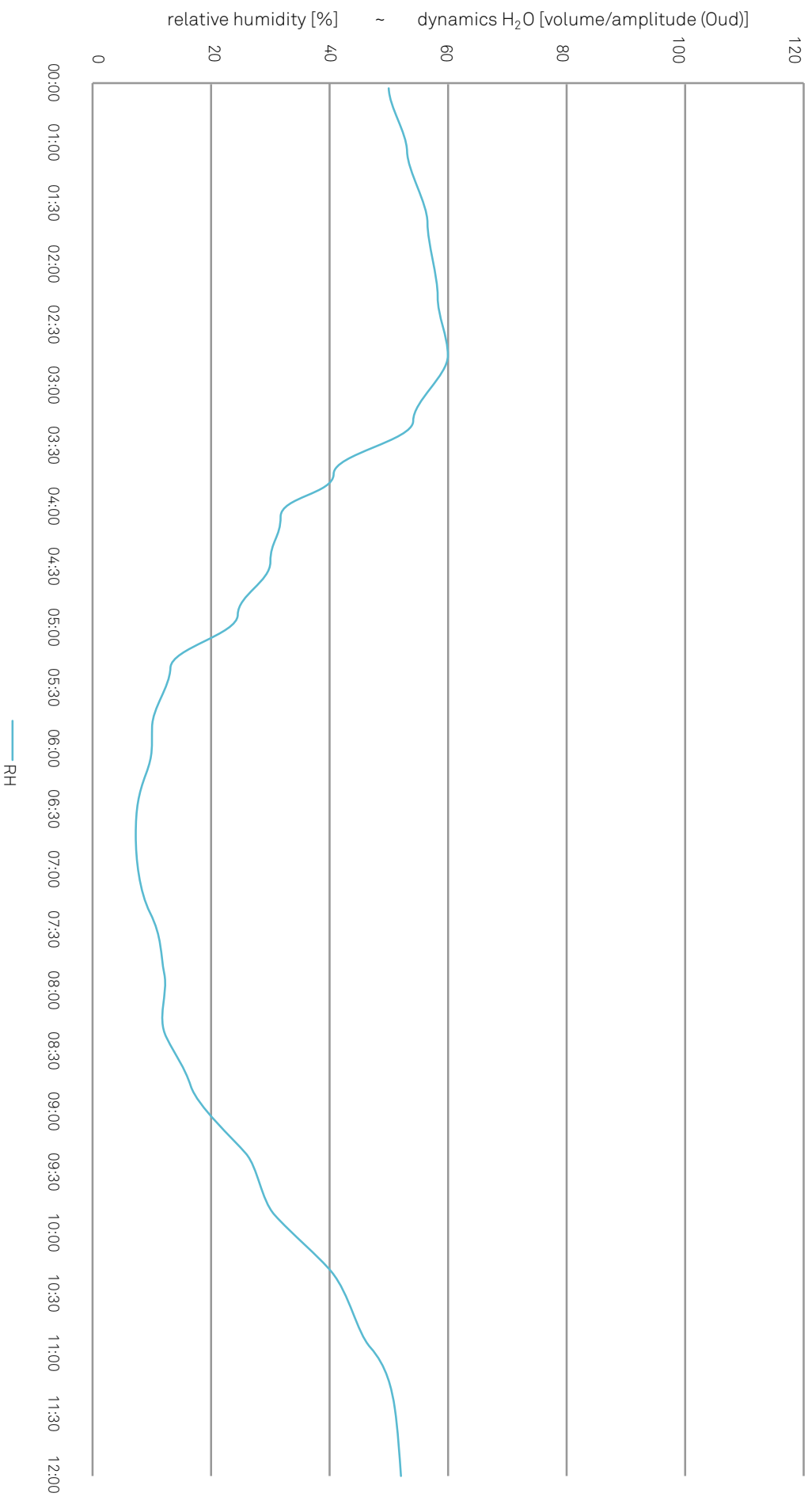
sound motifs 'air' [for Oud]



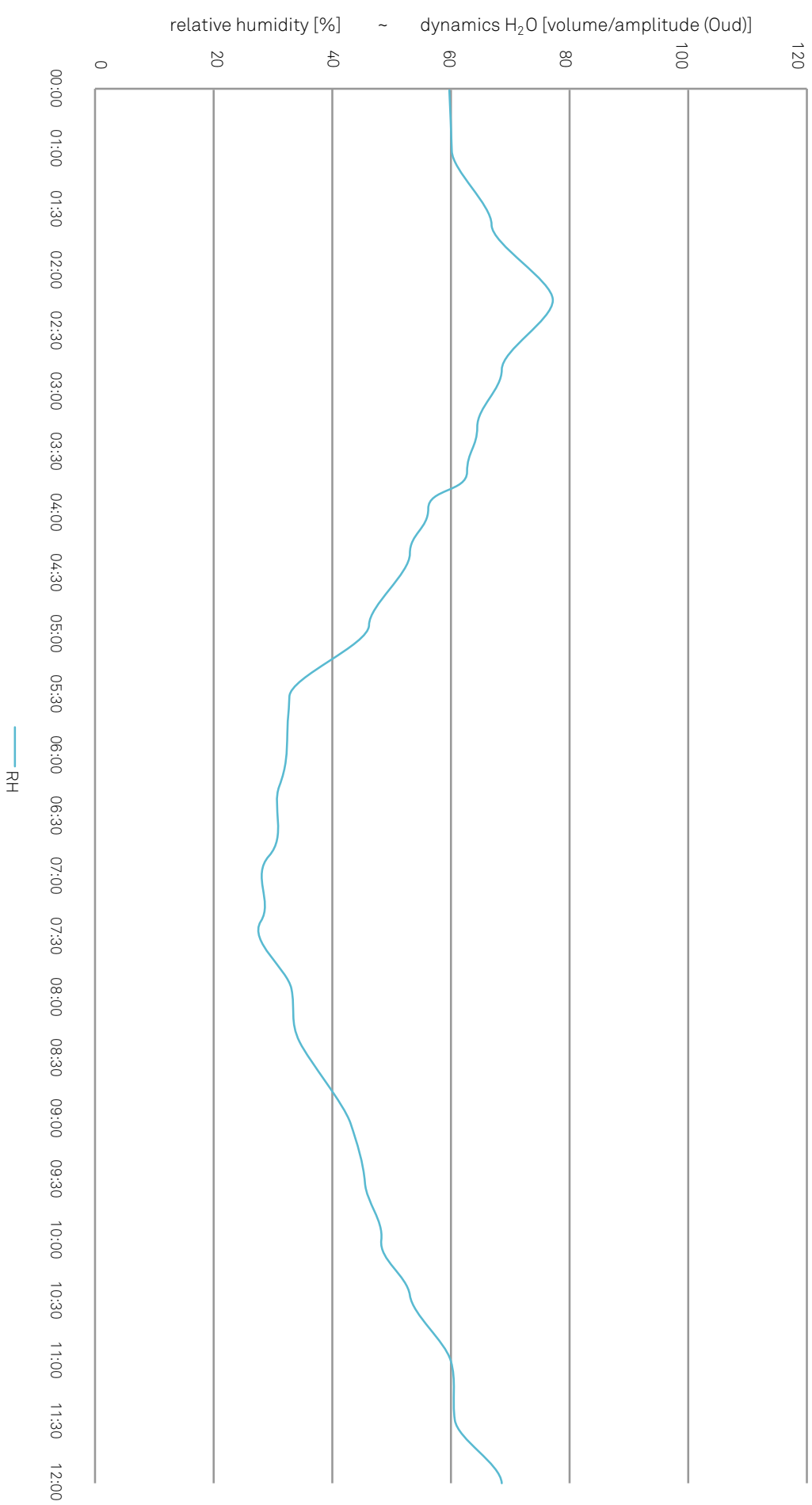
H2O

sound motif 'water' [for Flute]

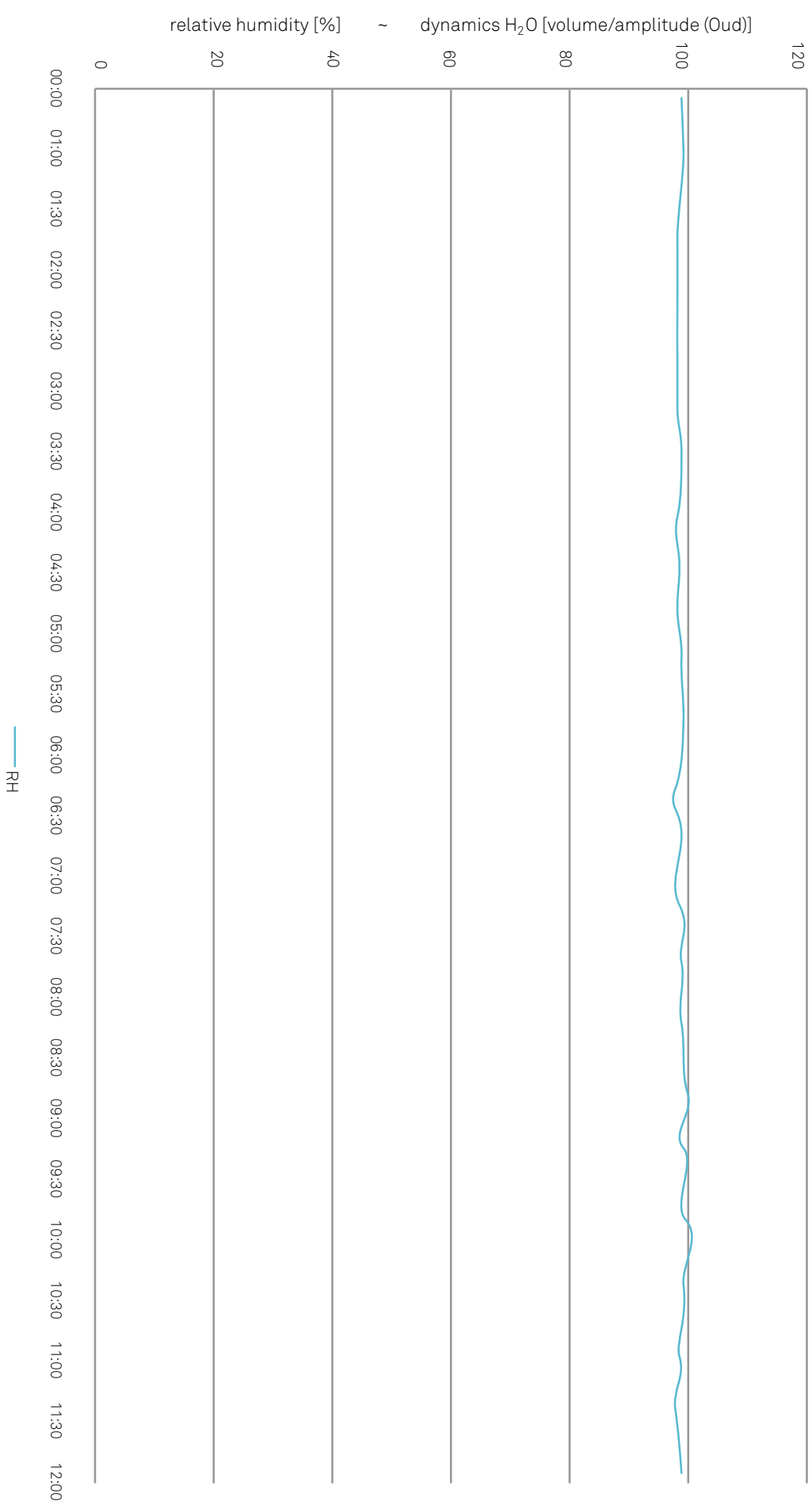
relative air humidity spring



relative air humidity summer

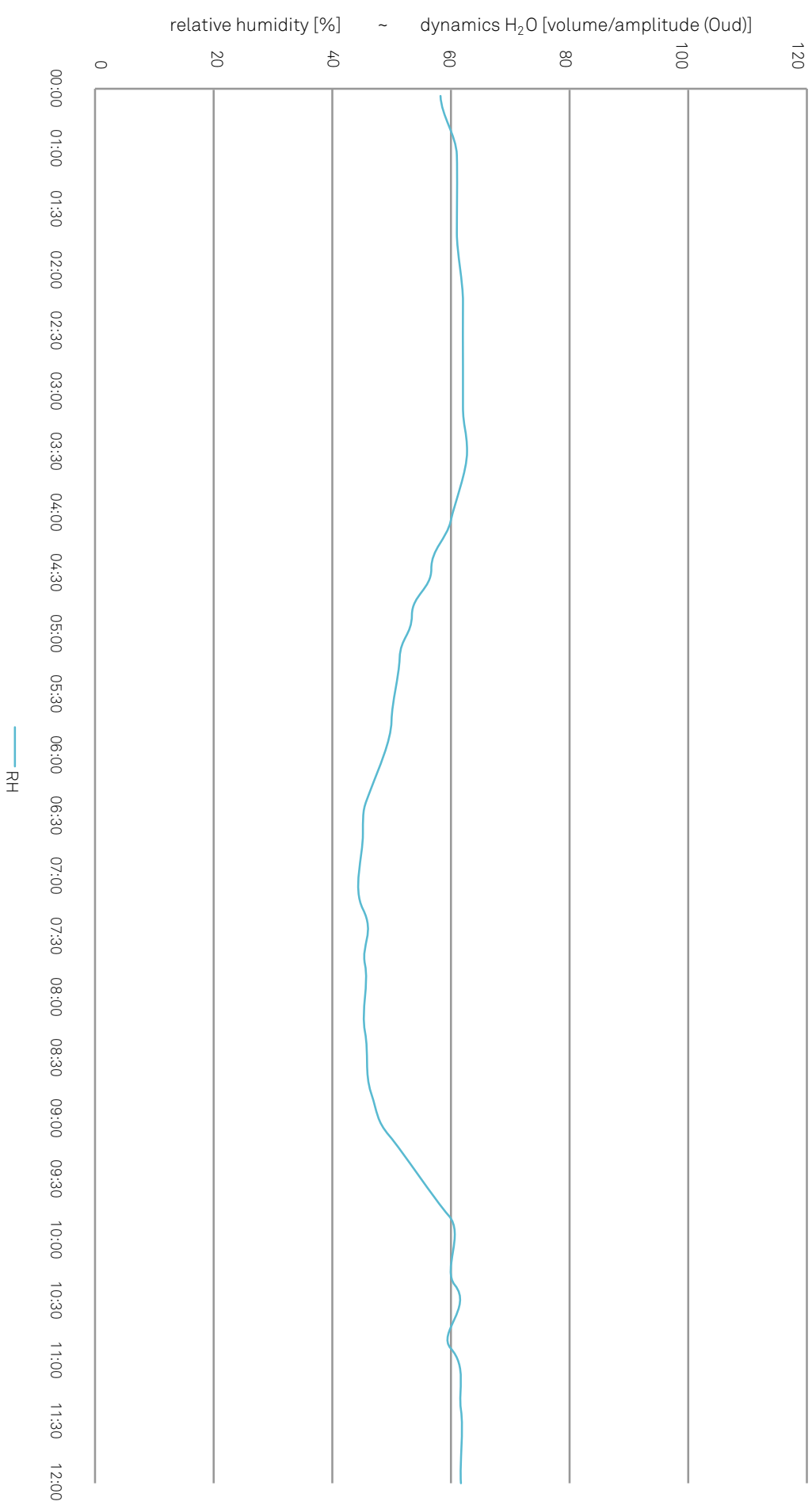


relative air humidity autumn

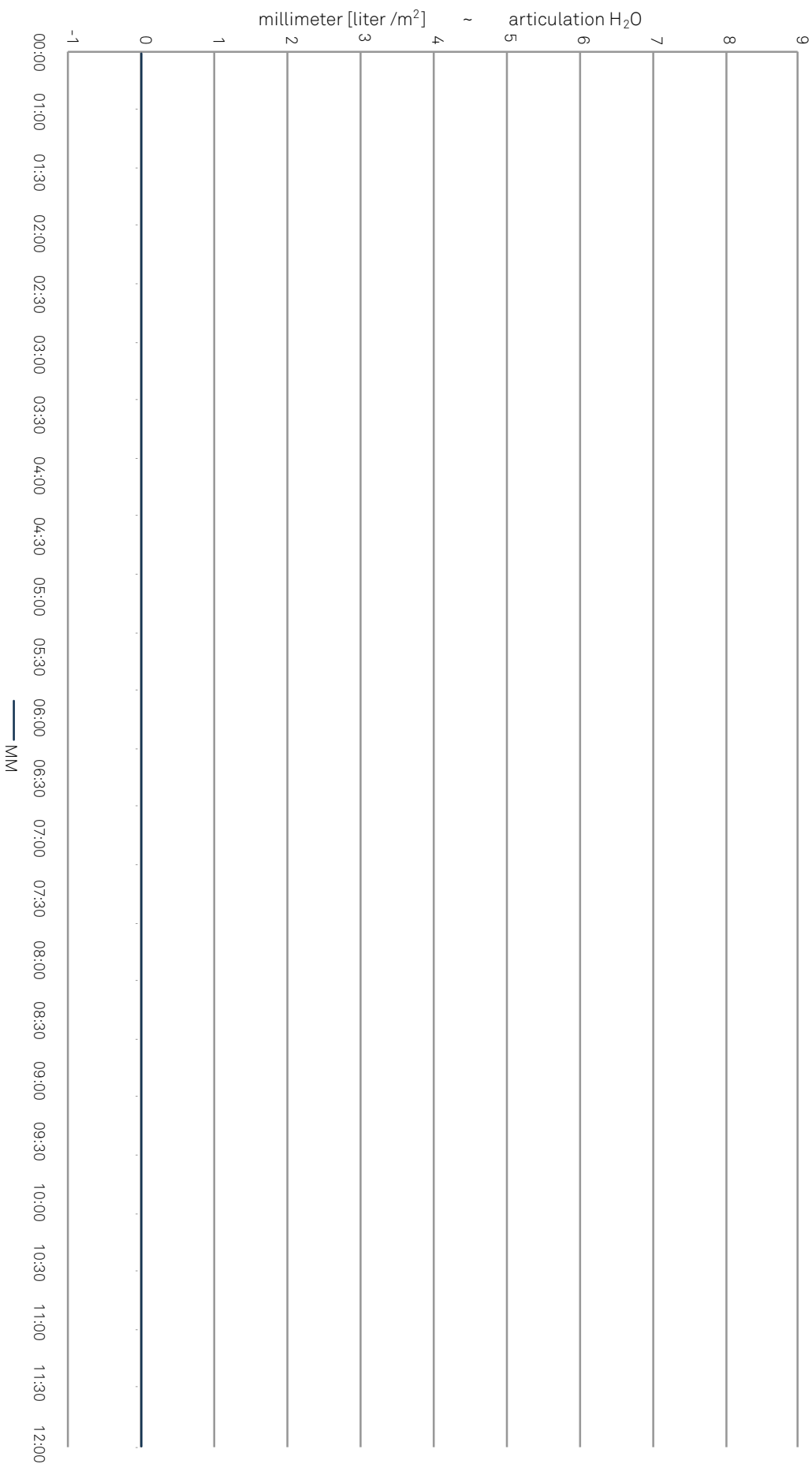


relative air humidity

winter

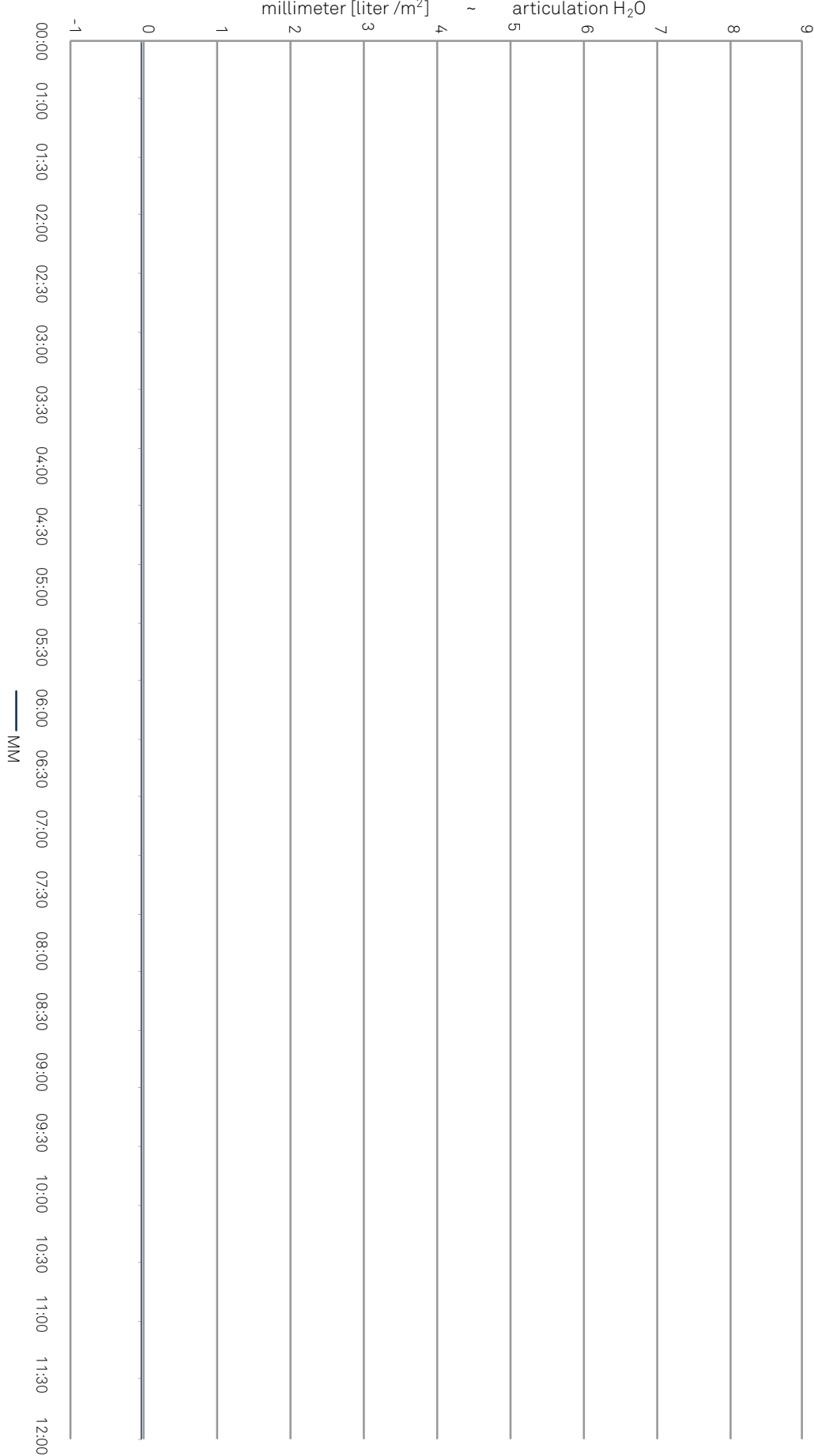


precipitation spring



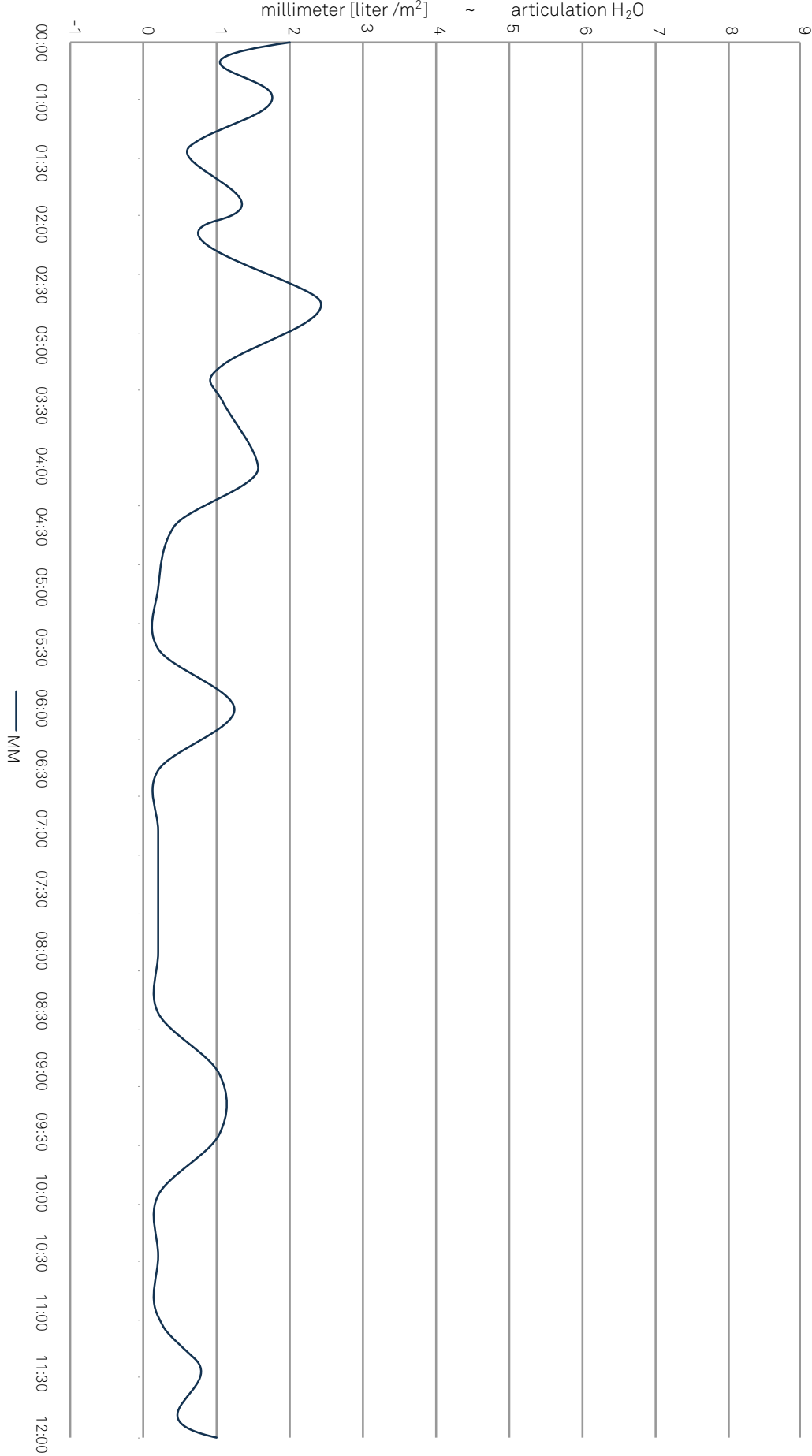
precipitation

summer



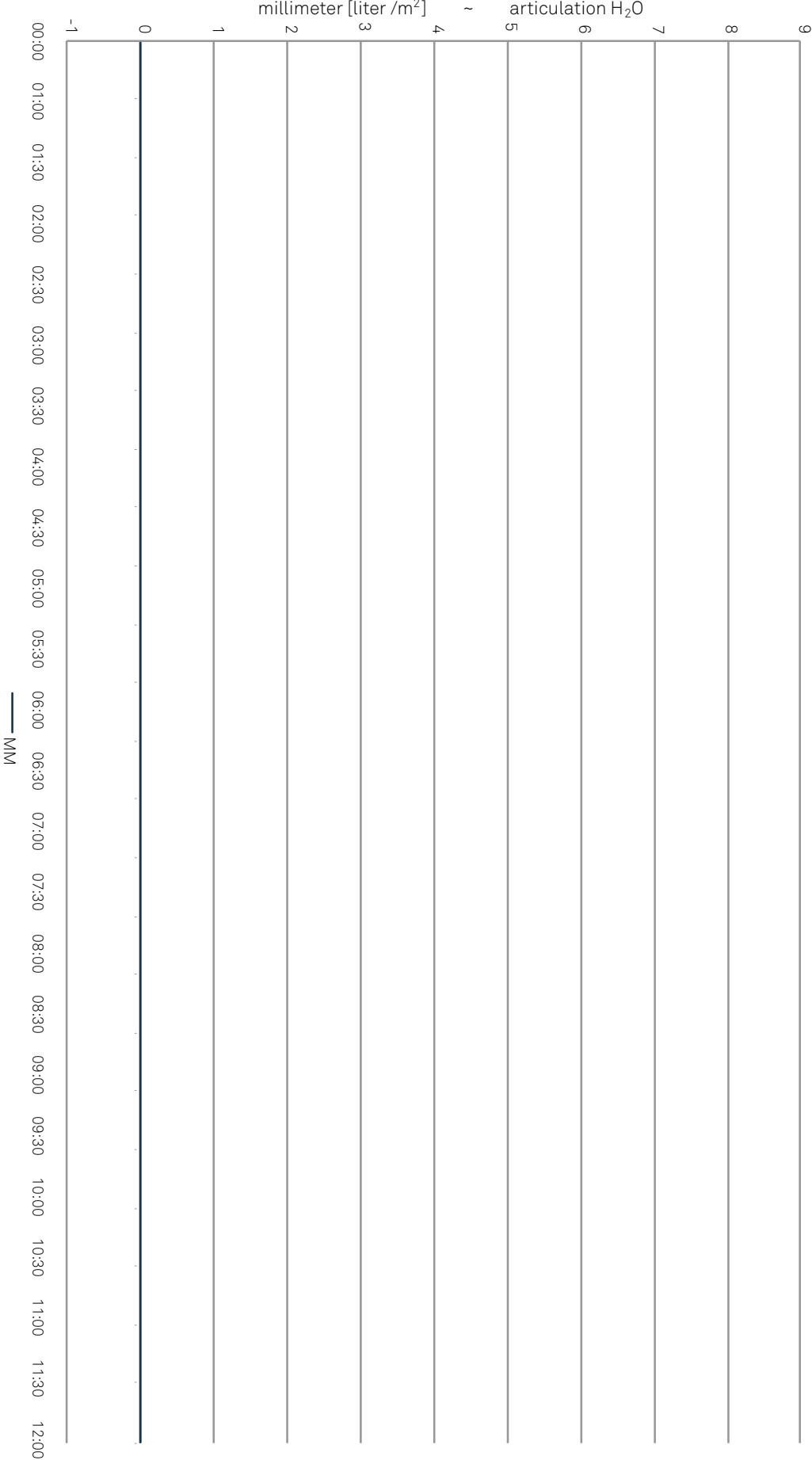
precipitation

autumn



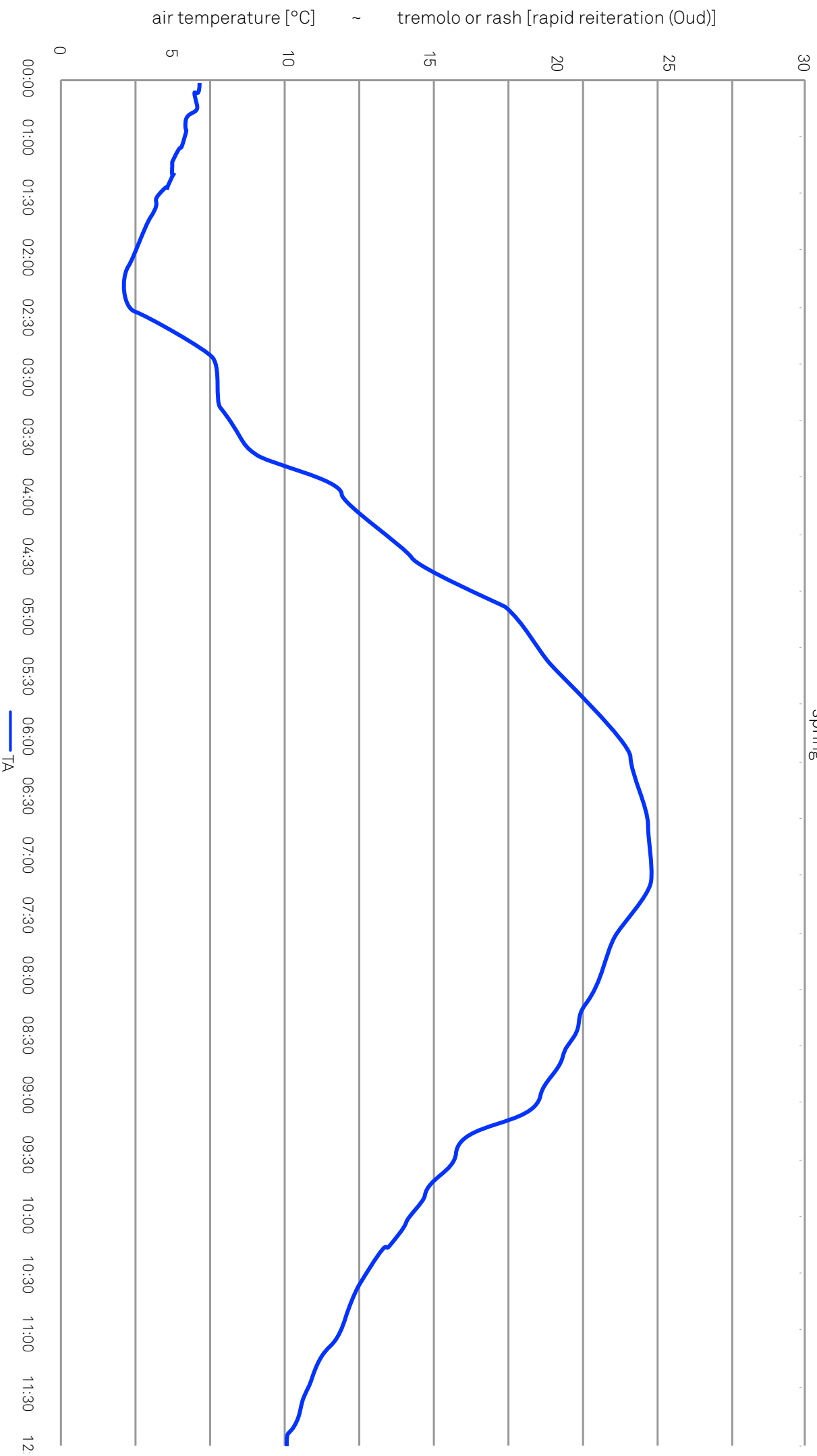
precipitation

winter



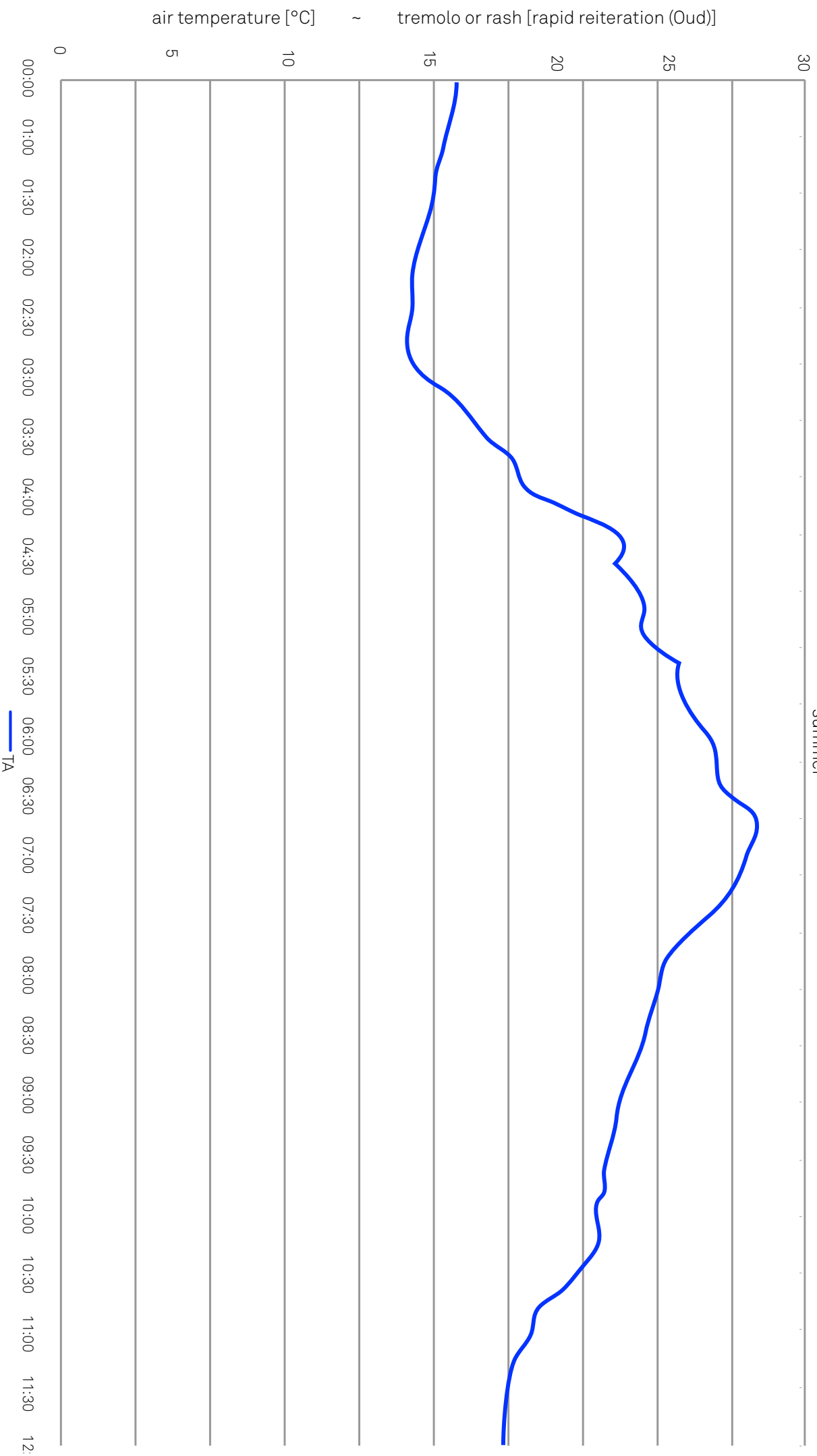
air temperature

spring



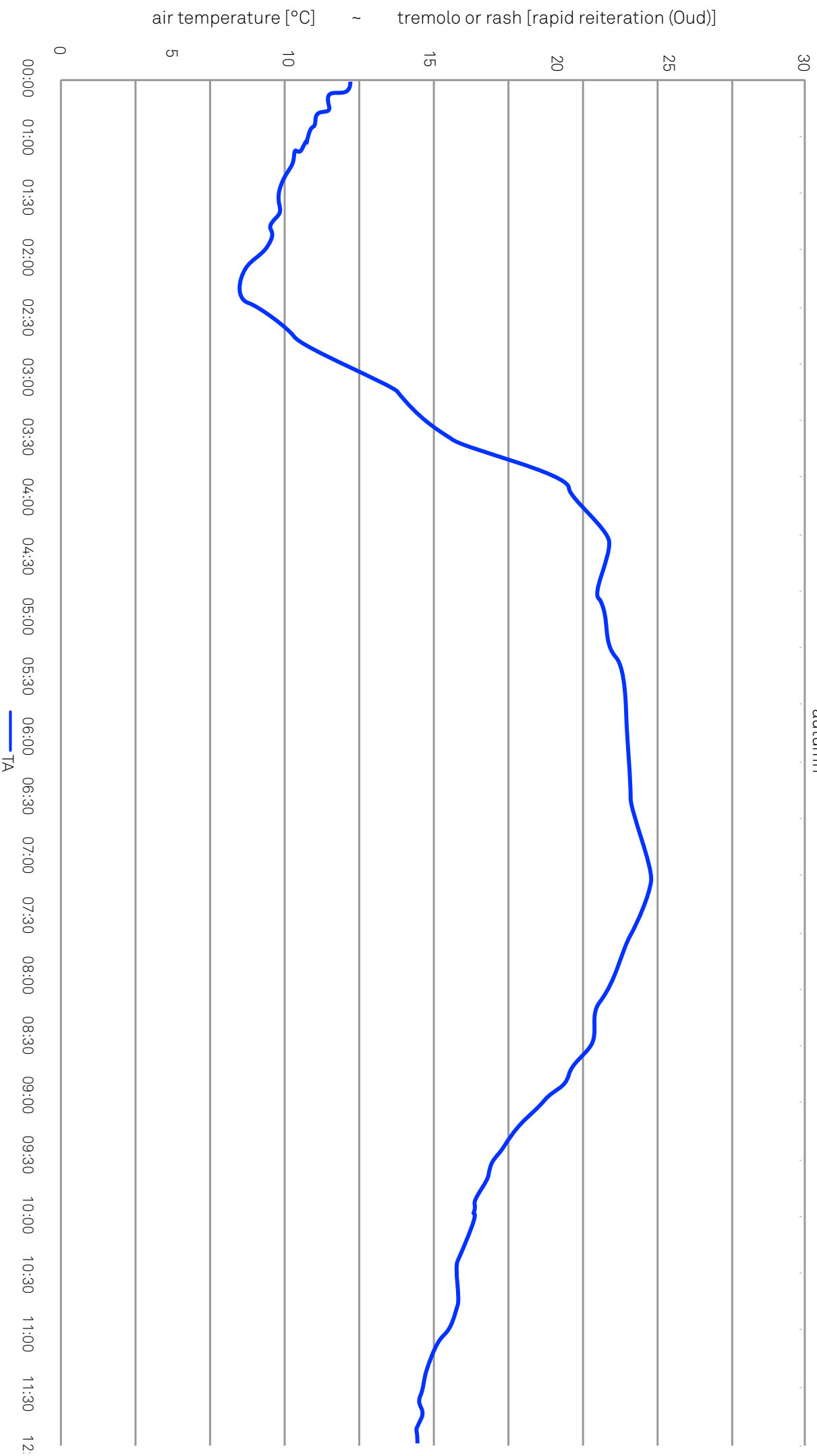
air temperature

summer



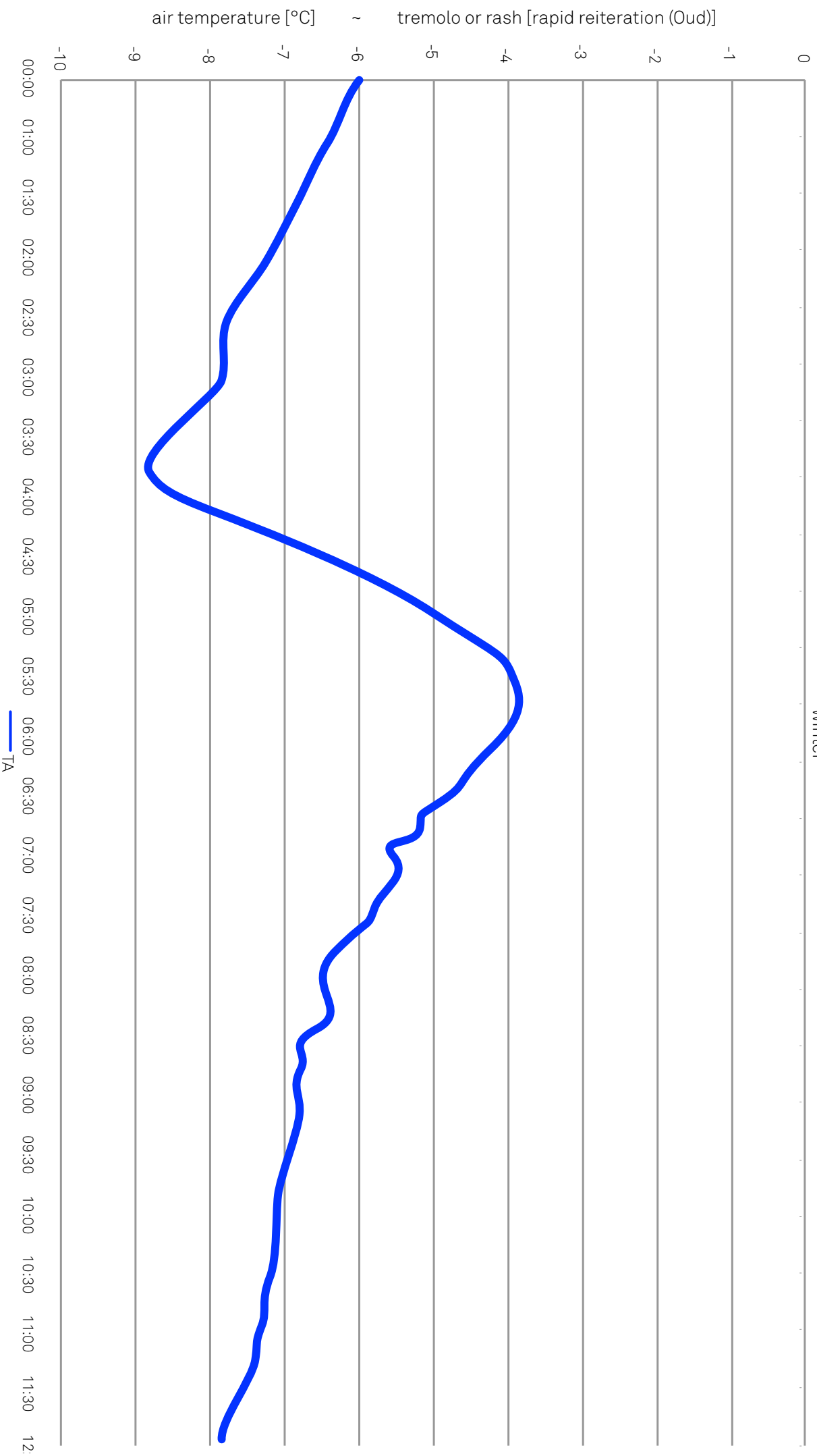
air temperature

autumn

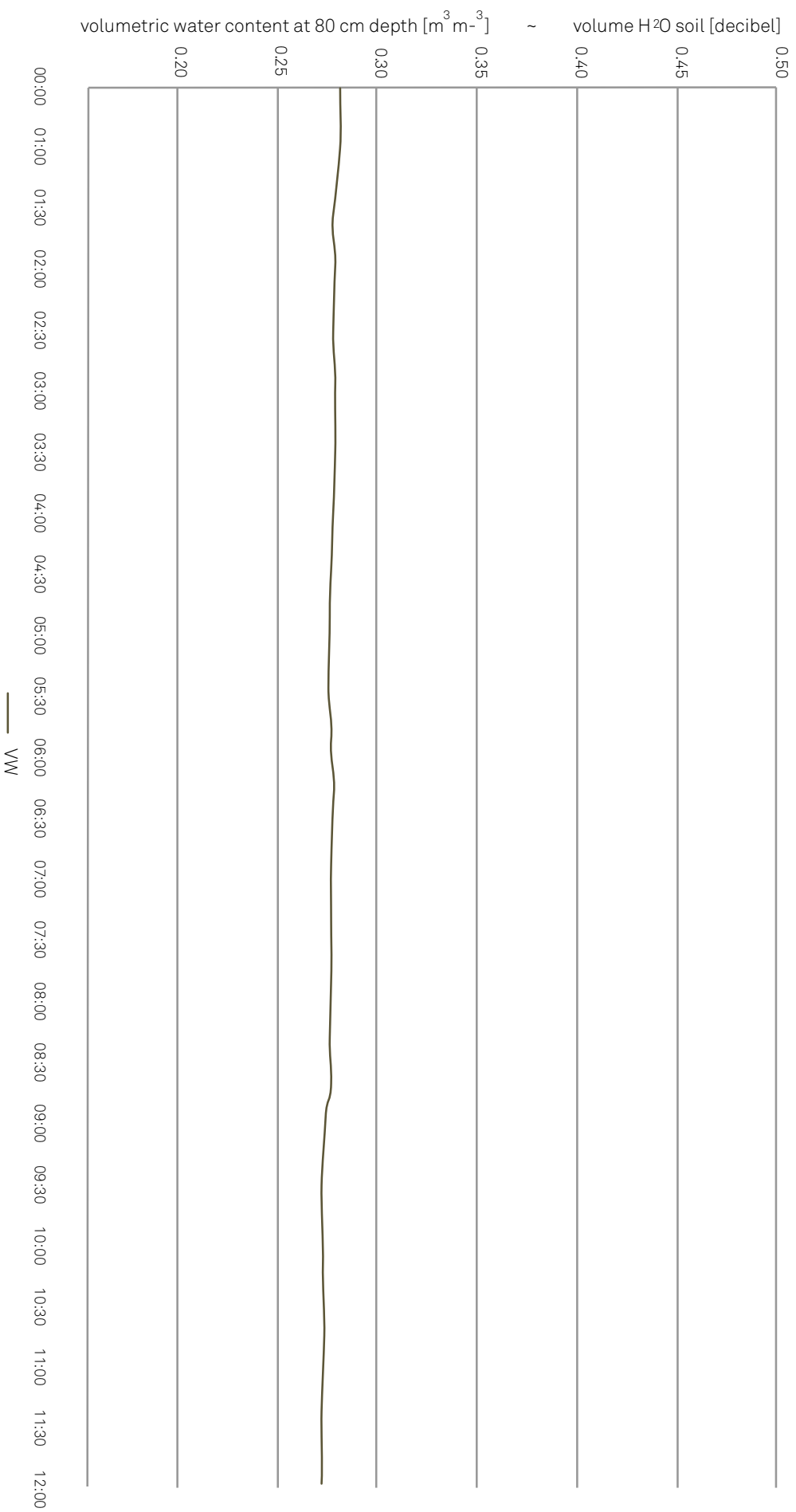


air temperature

winter

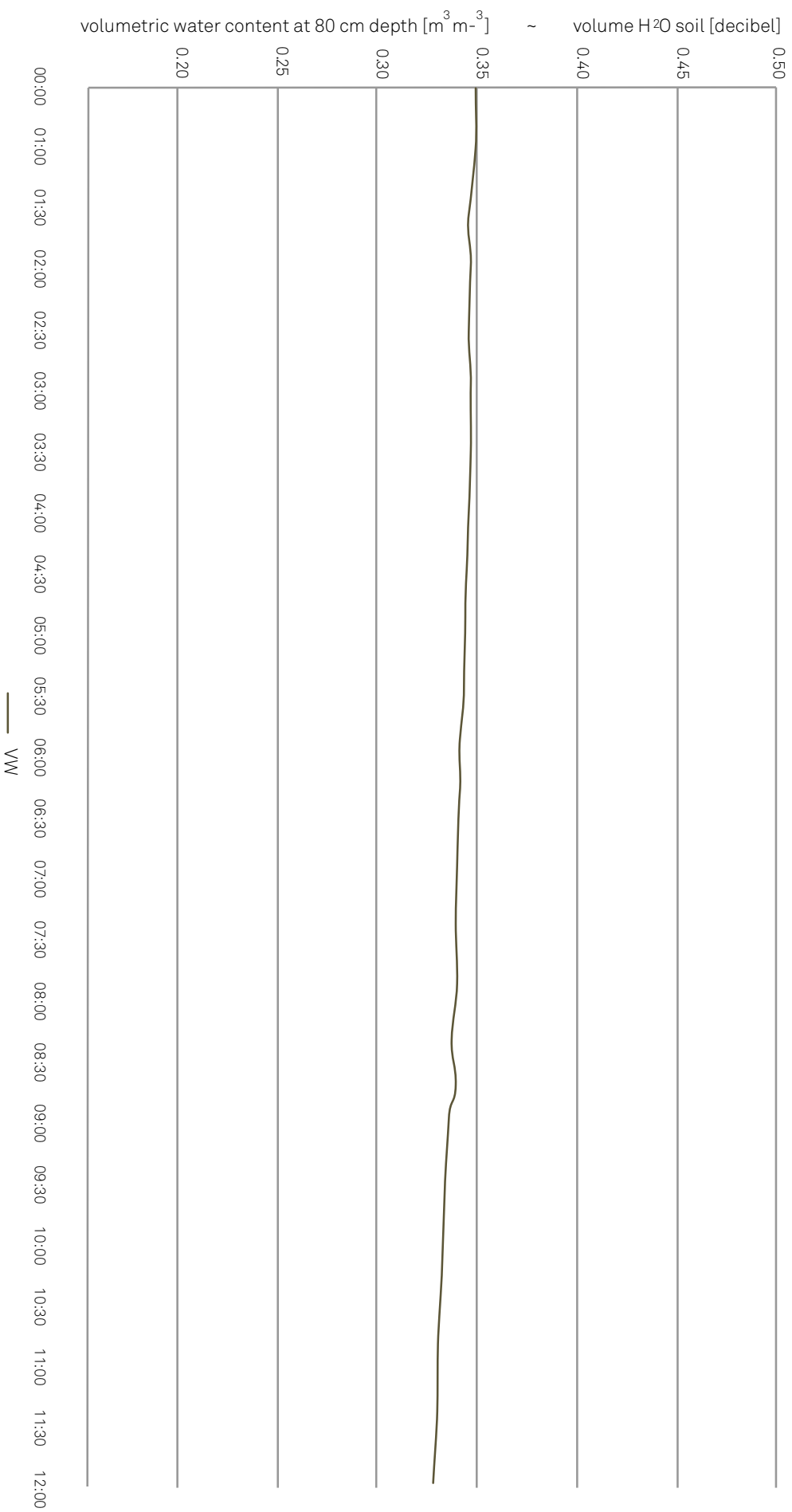


soil humidity spring



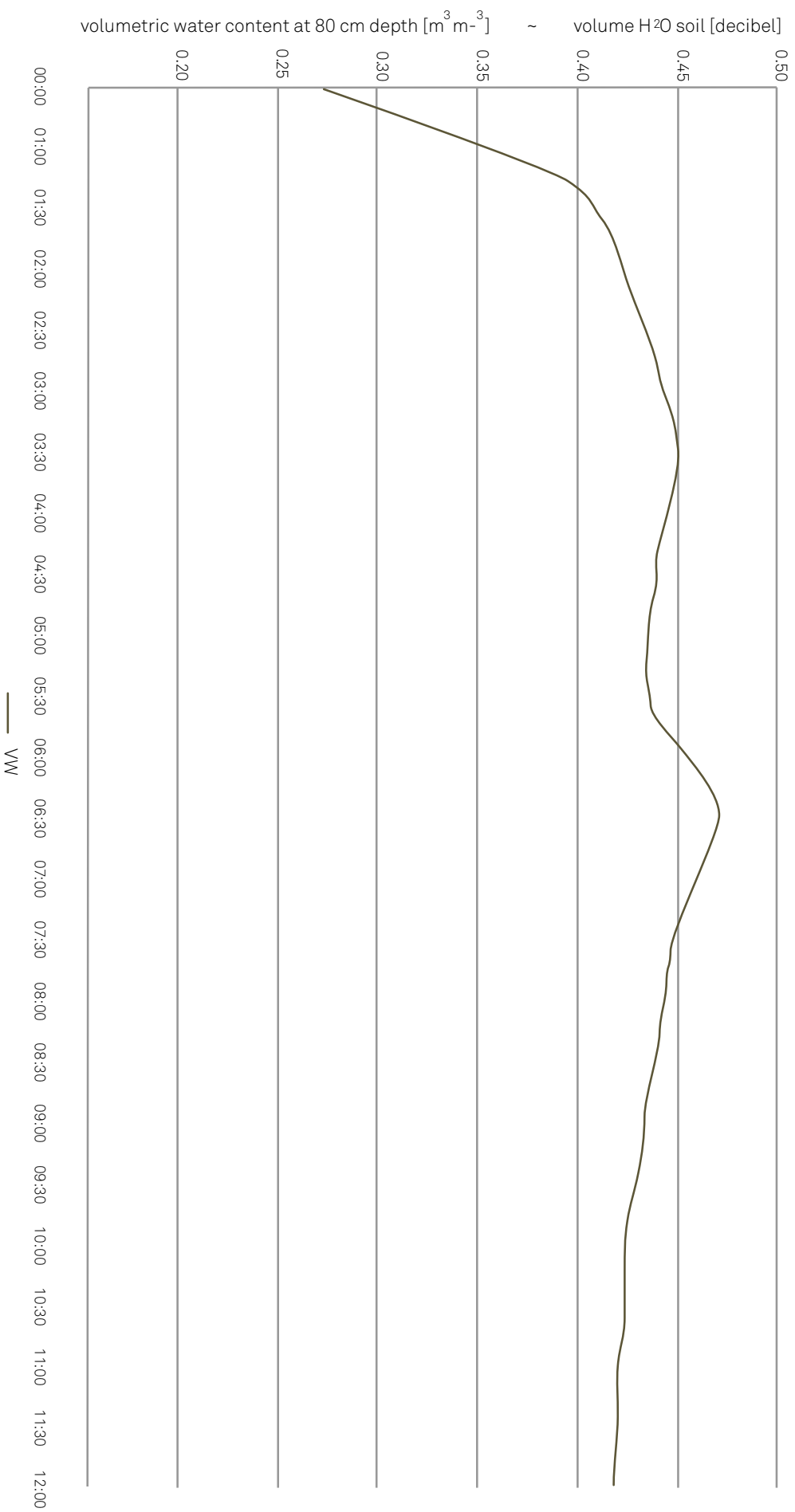
soil humidity

summer



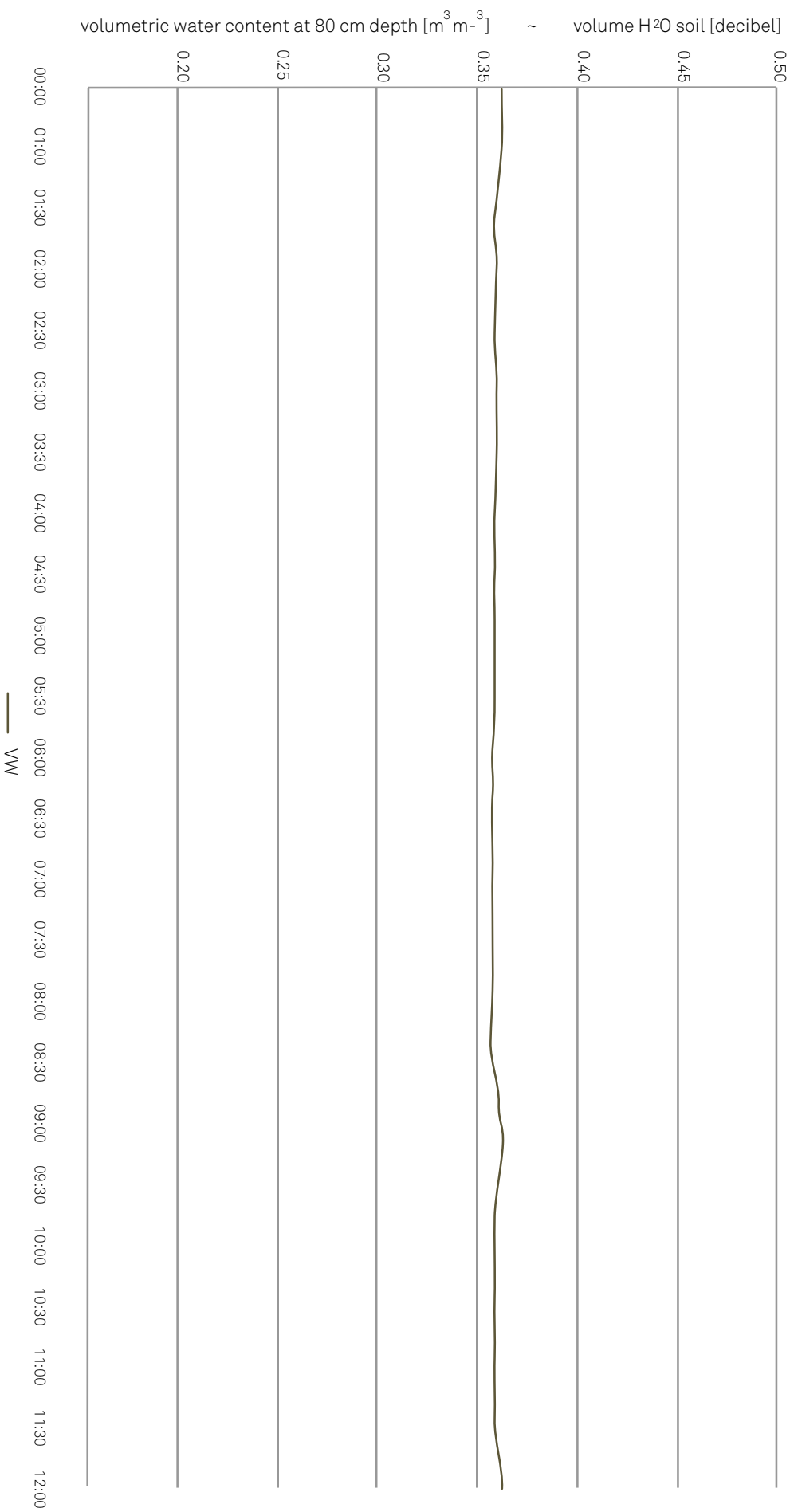
soil humidity

autumn

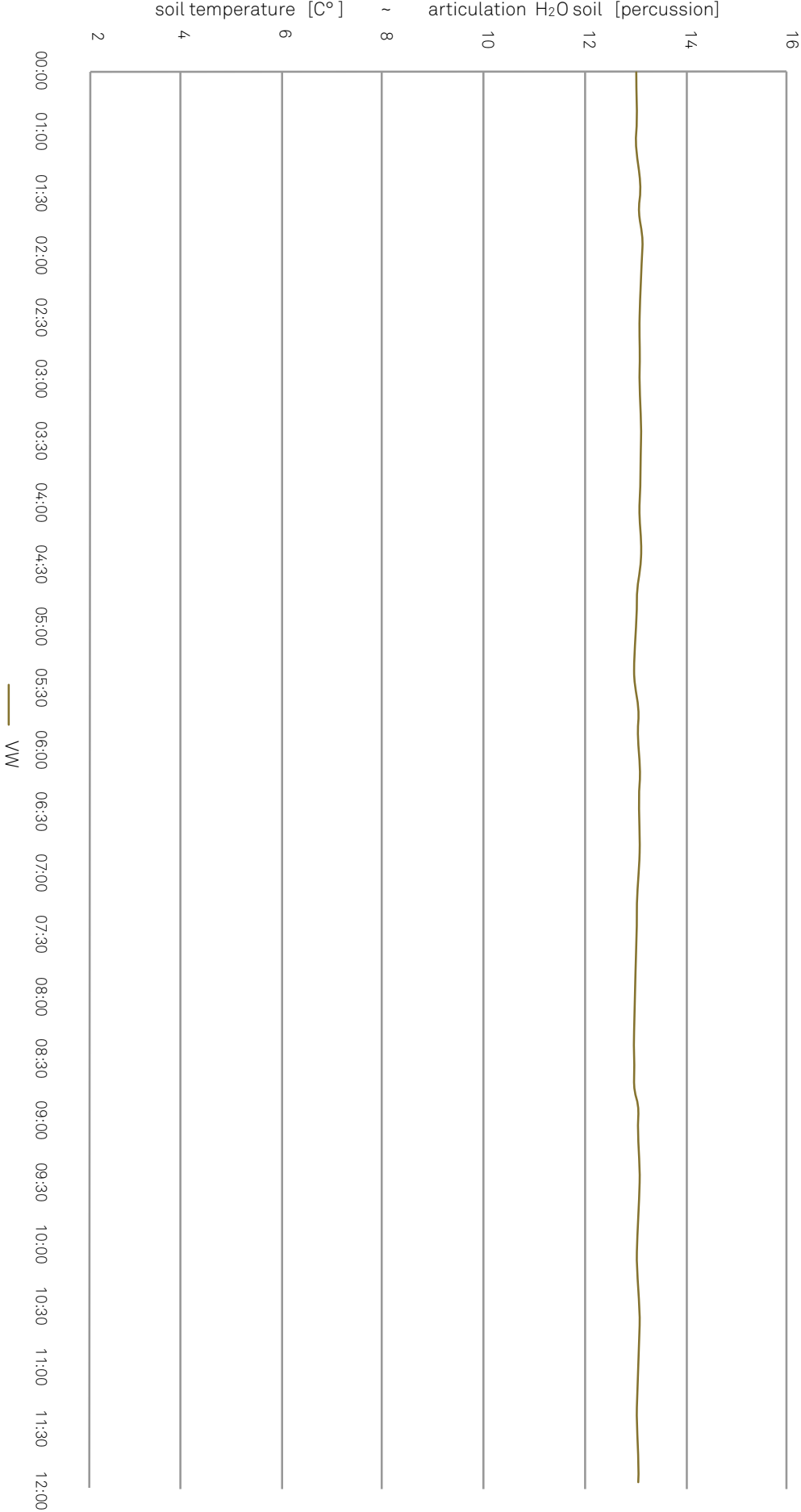


soil humidity

winter

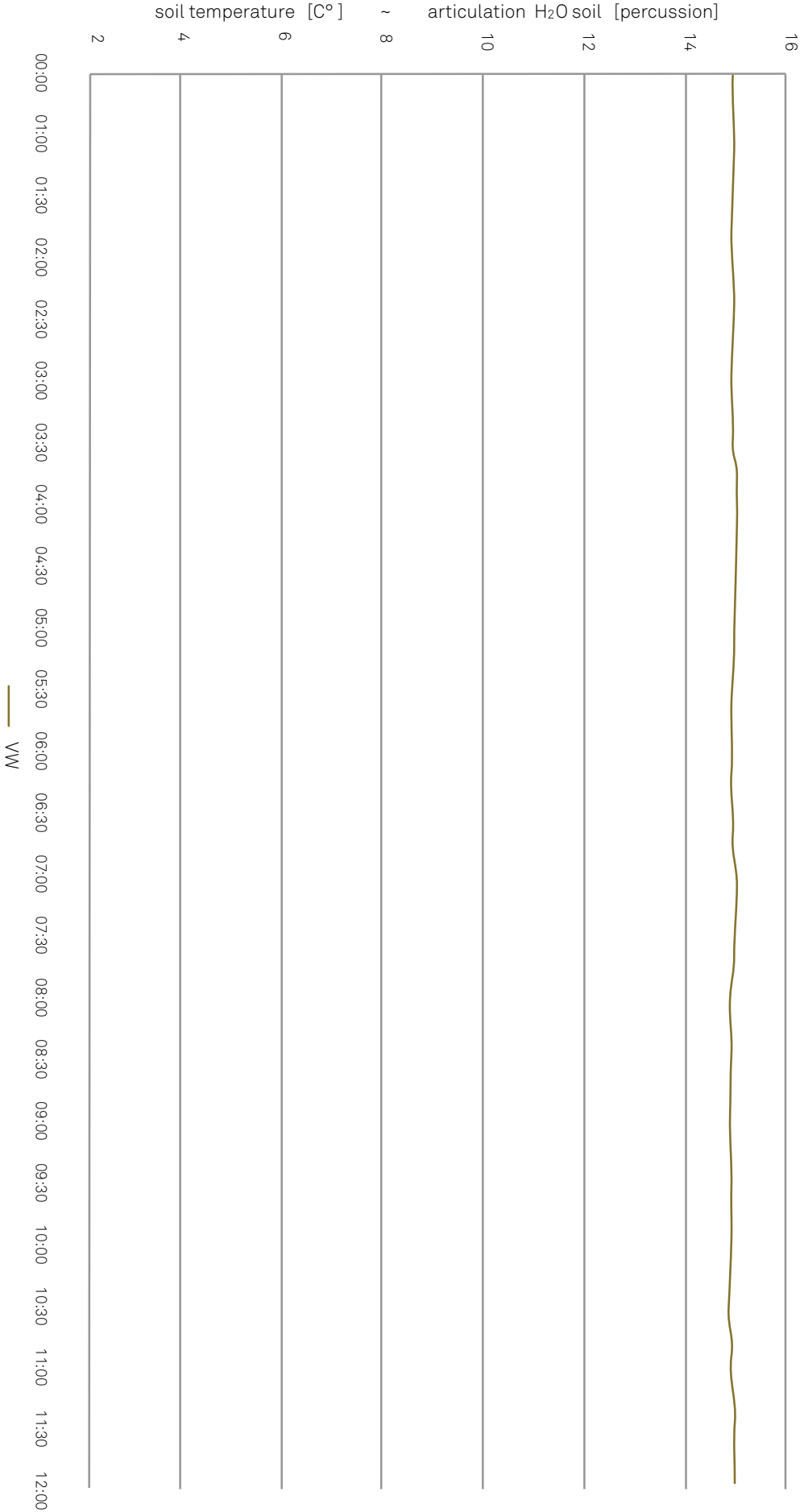


soil temperature spring



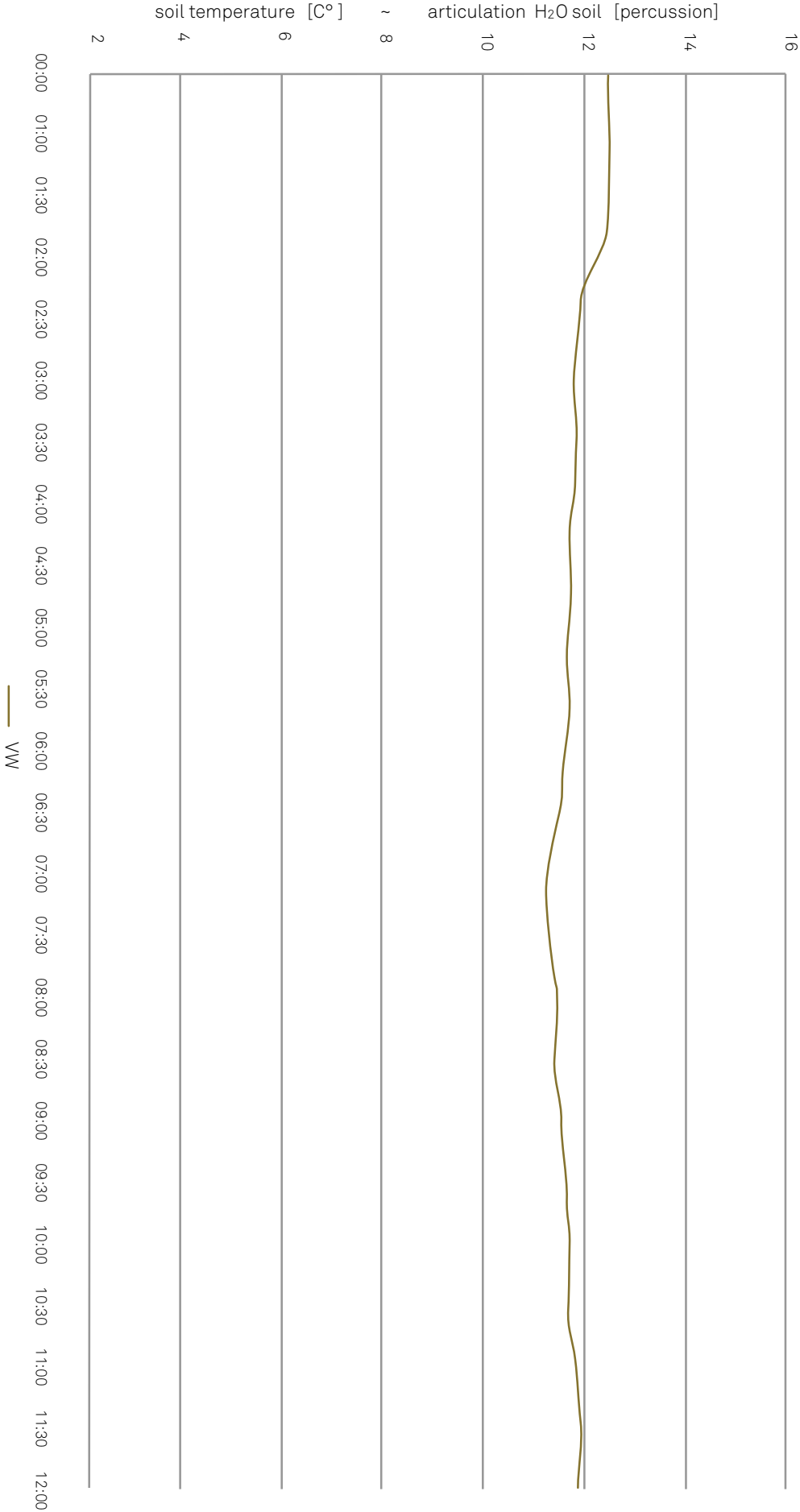
soil temperature

summer



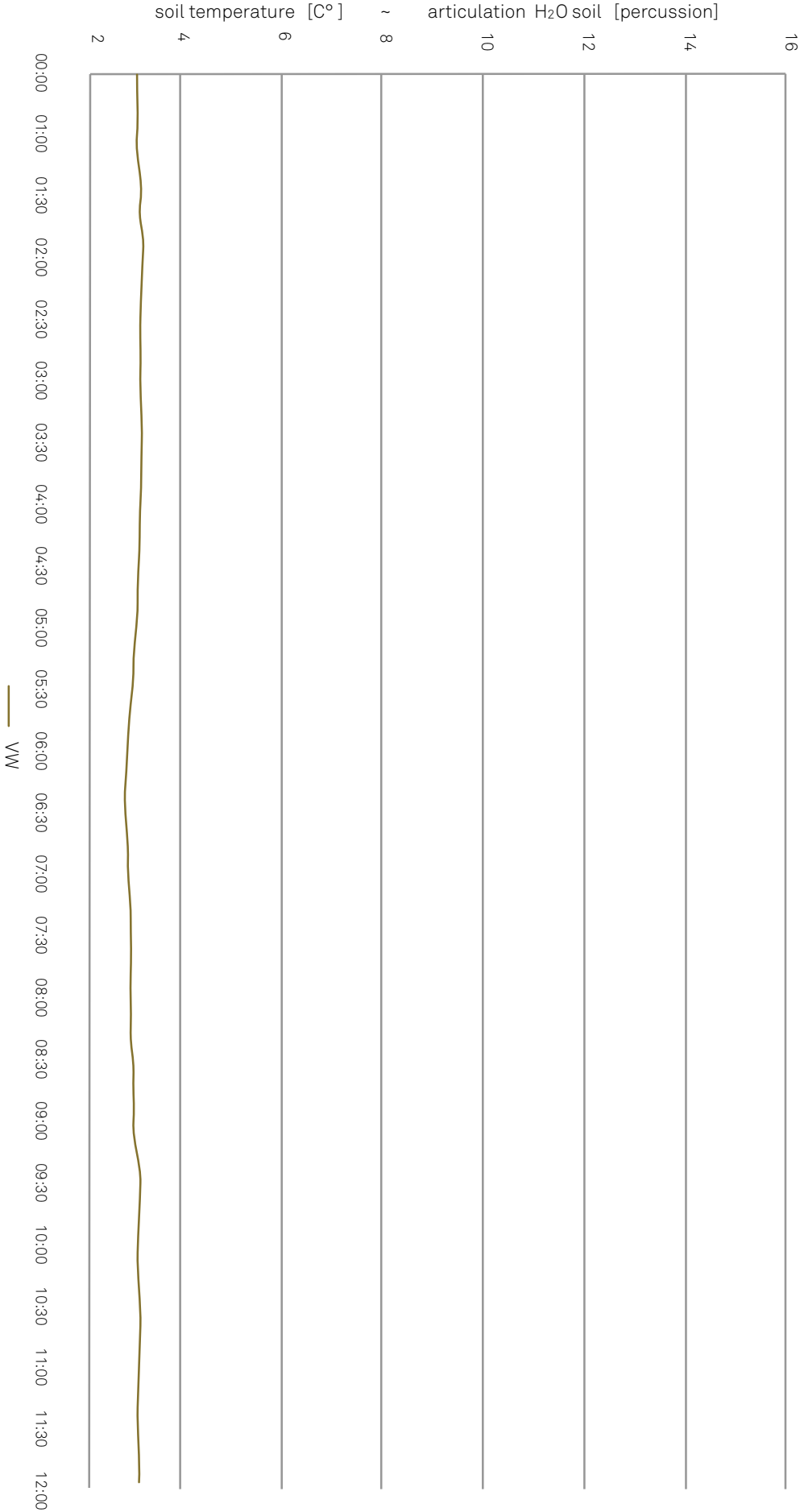
soil temperature

autumn

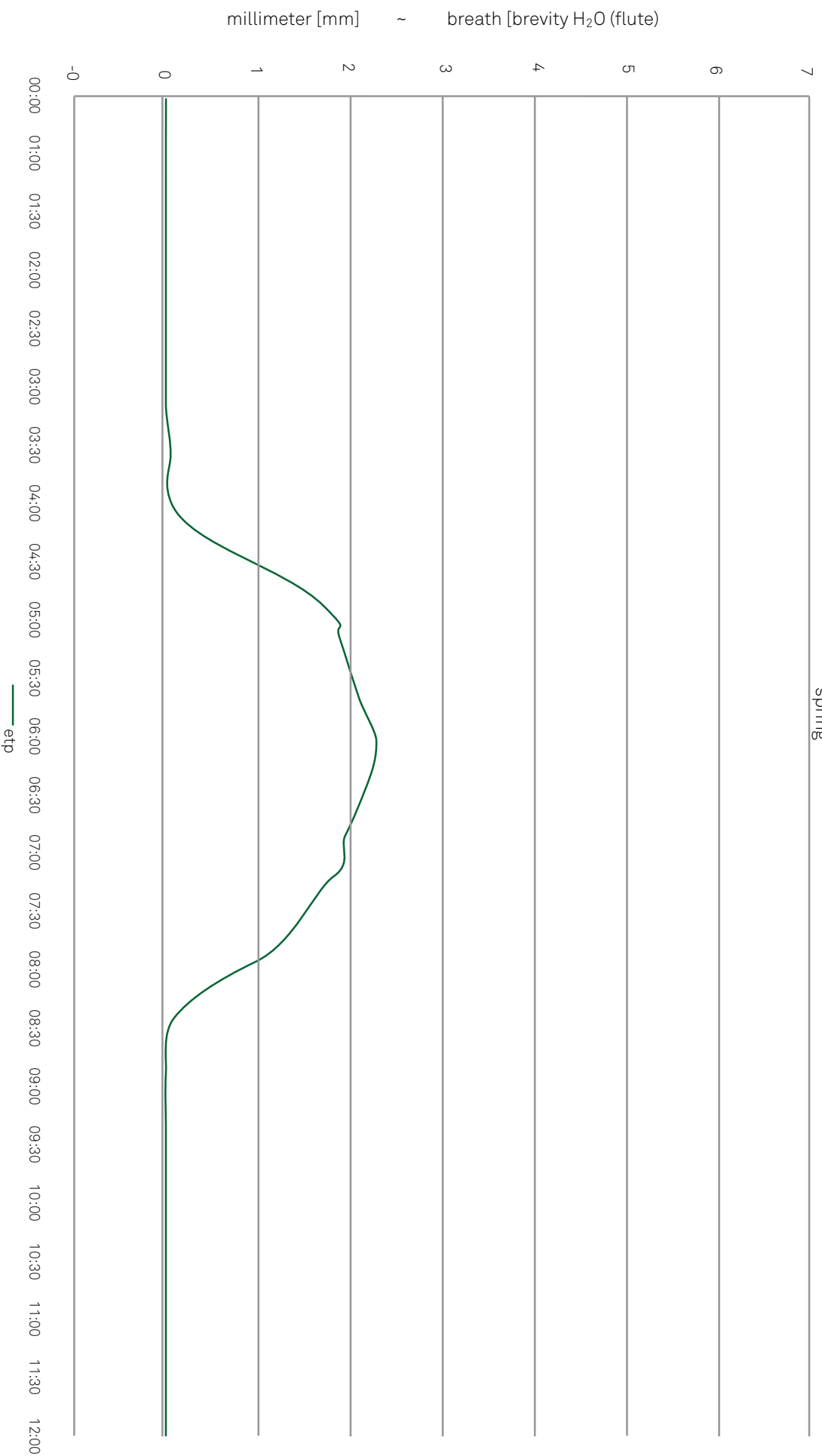


soil temperature

winter

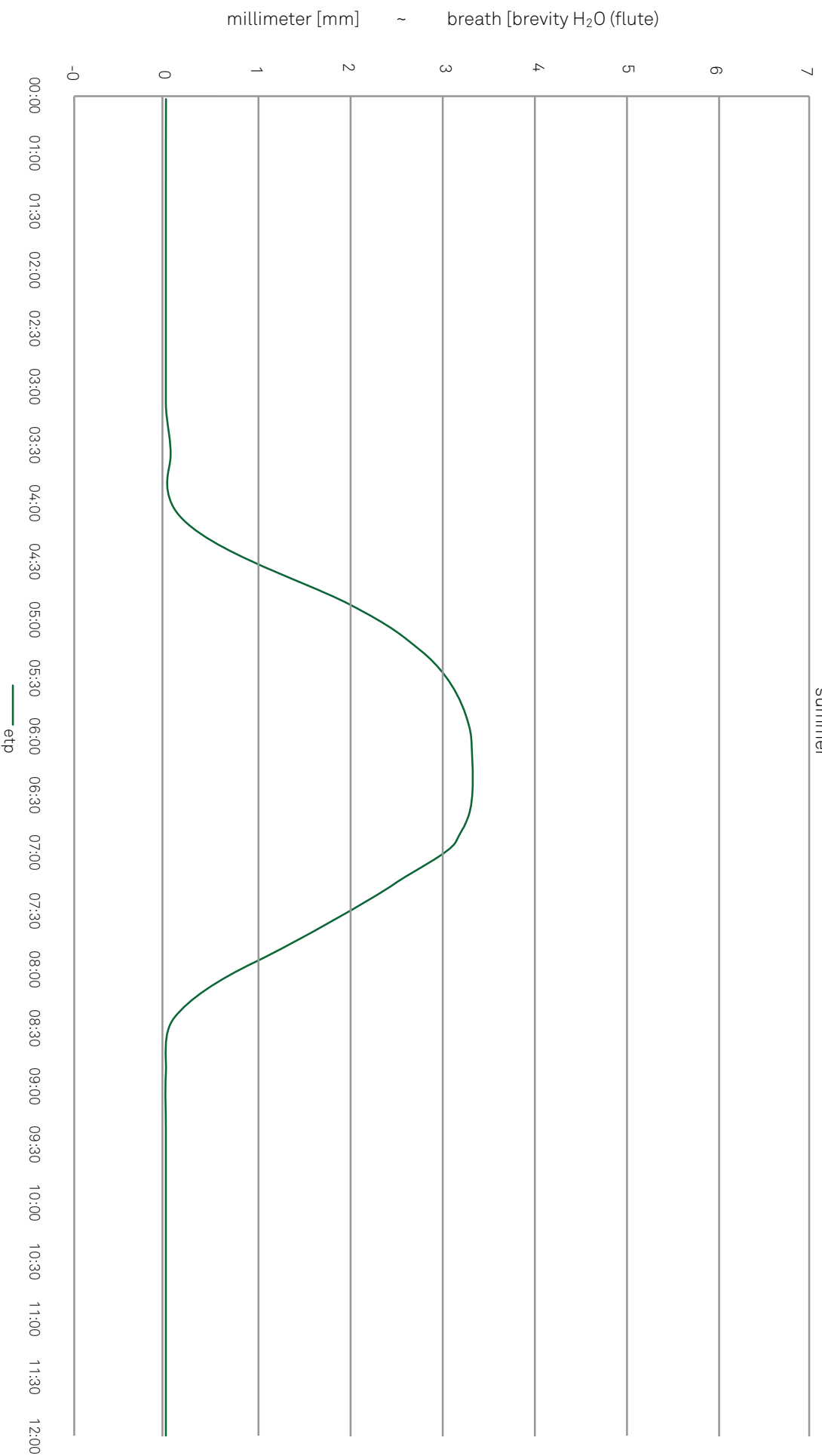


evapo-transpiration spring



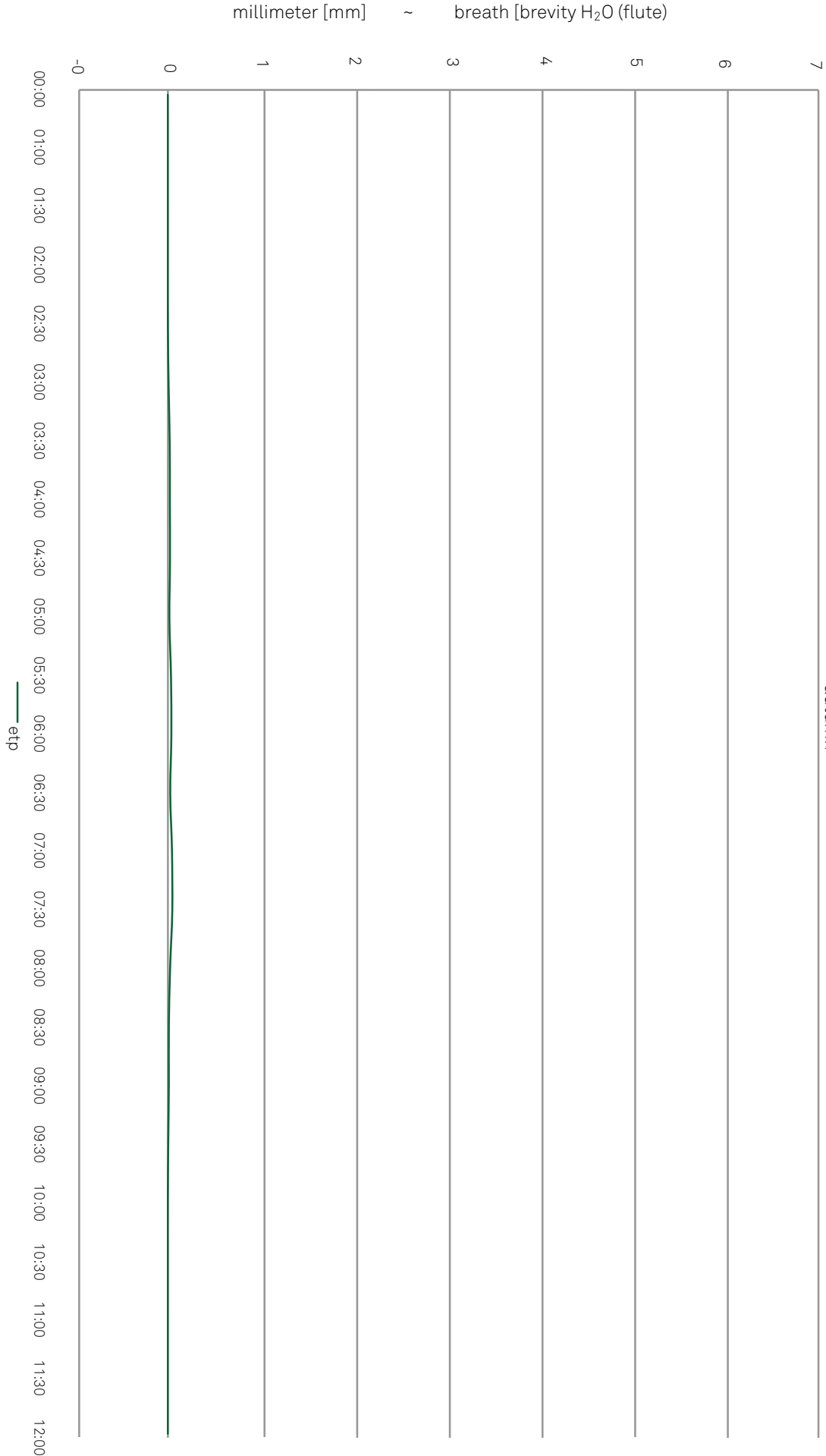
evapo-transpiration

summer



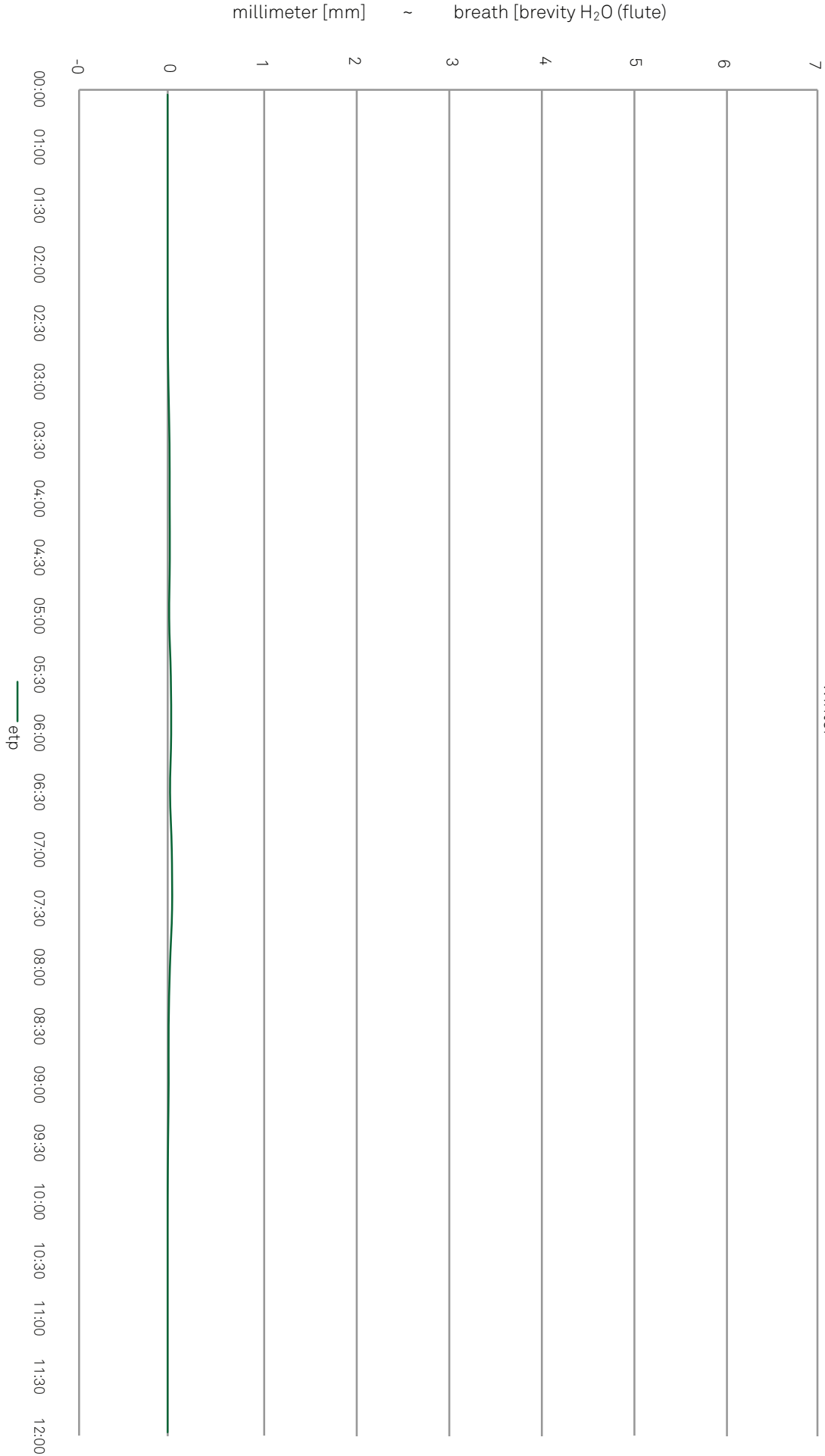
evapo-transpiration

autumn

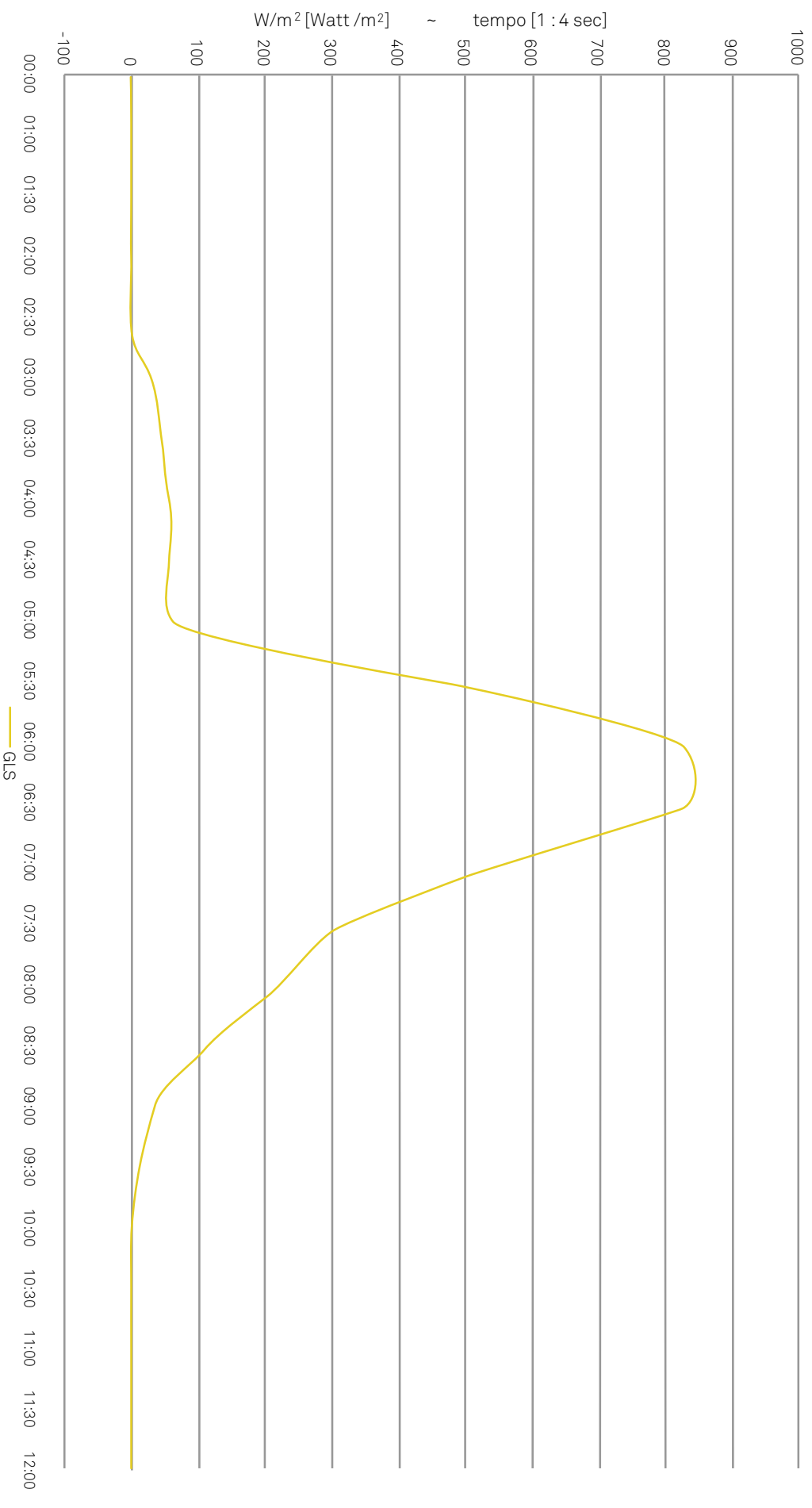


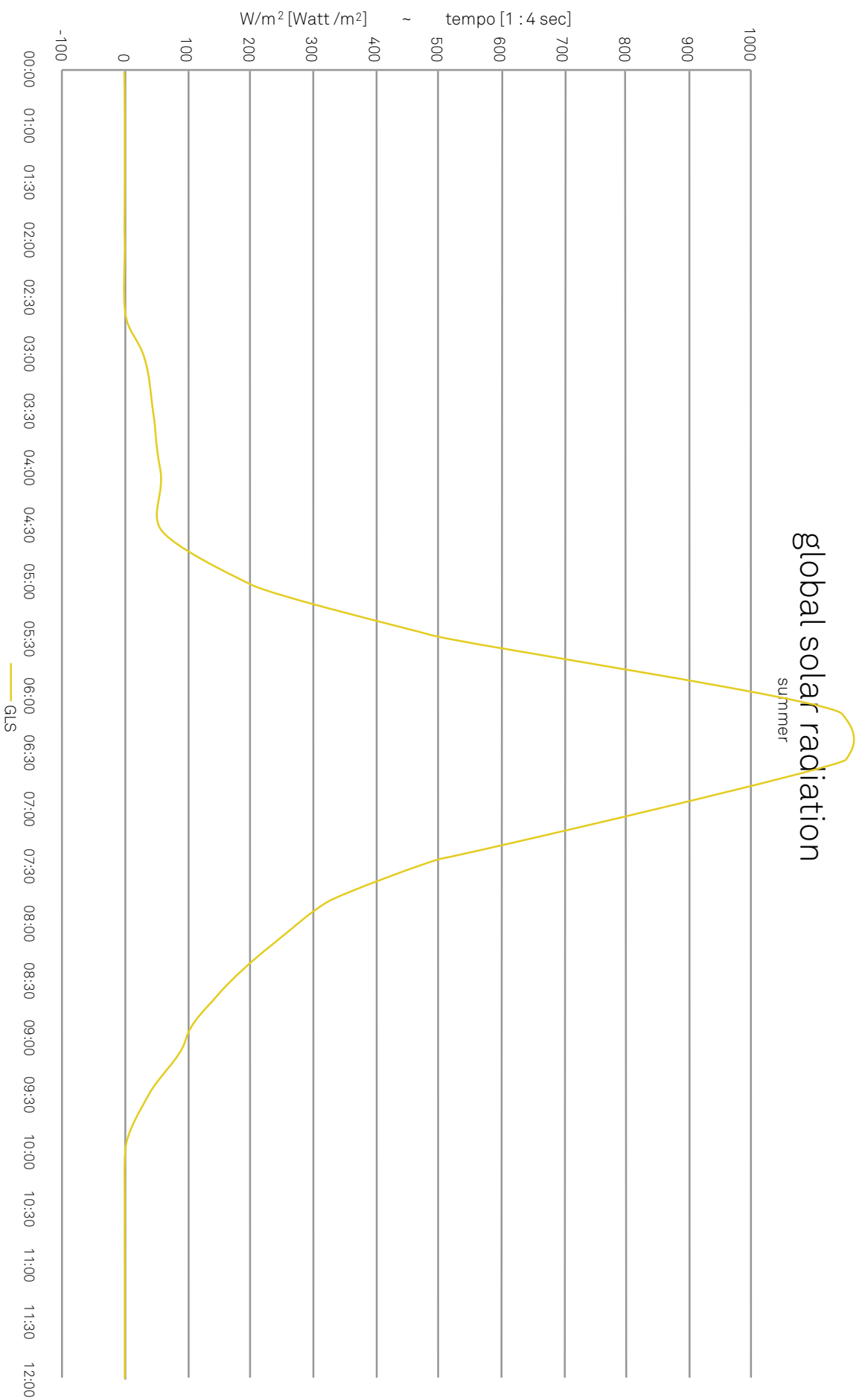
evapo-transpiration

winter

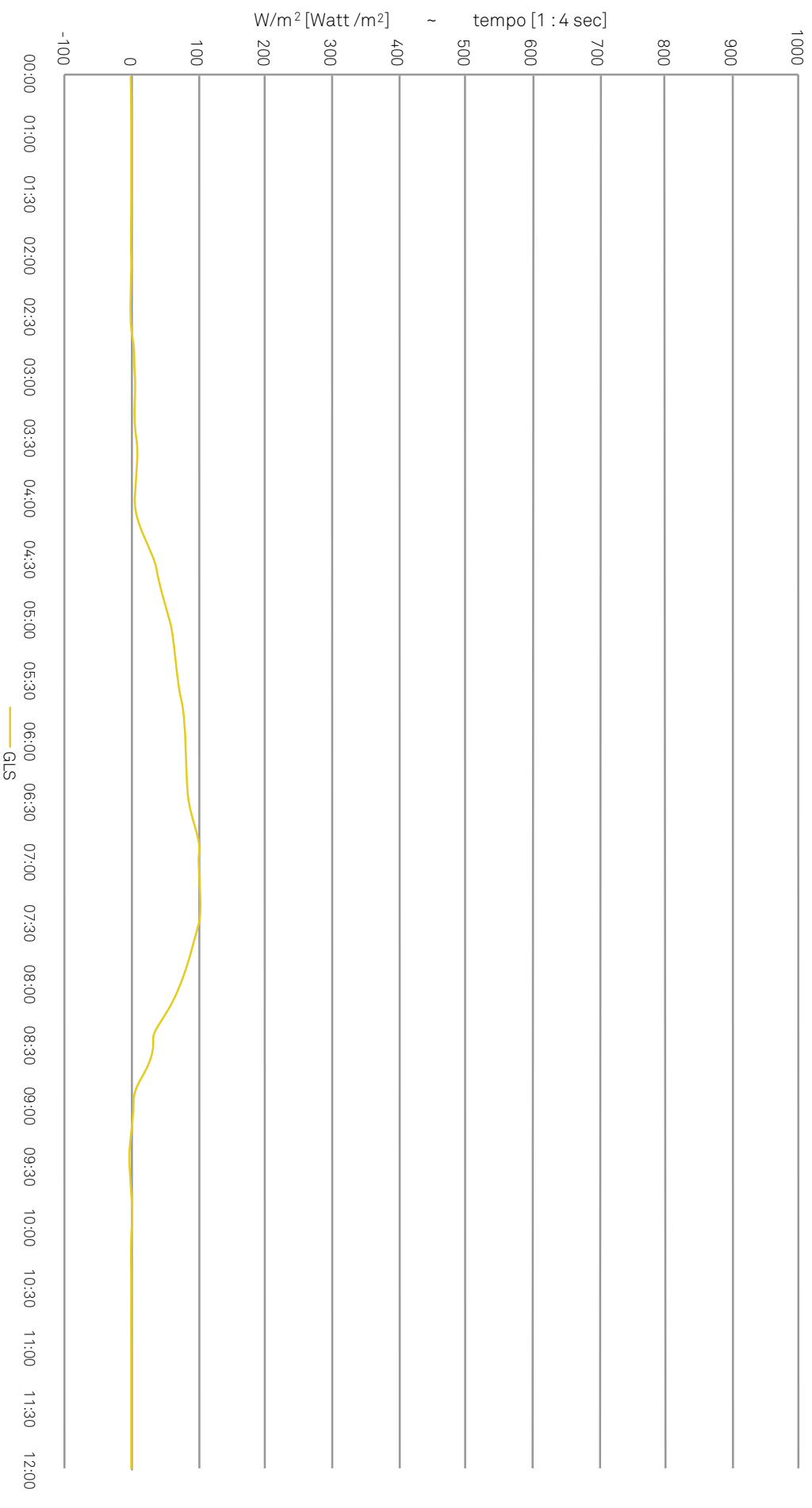


global solar radiation spring

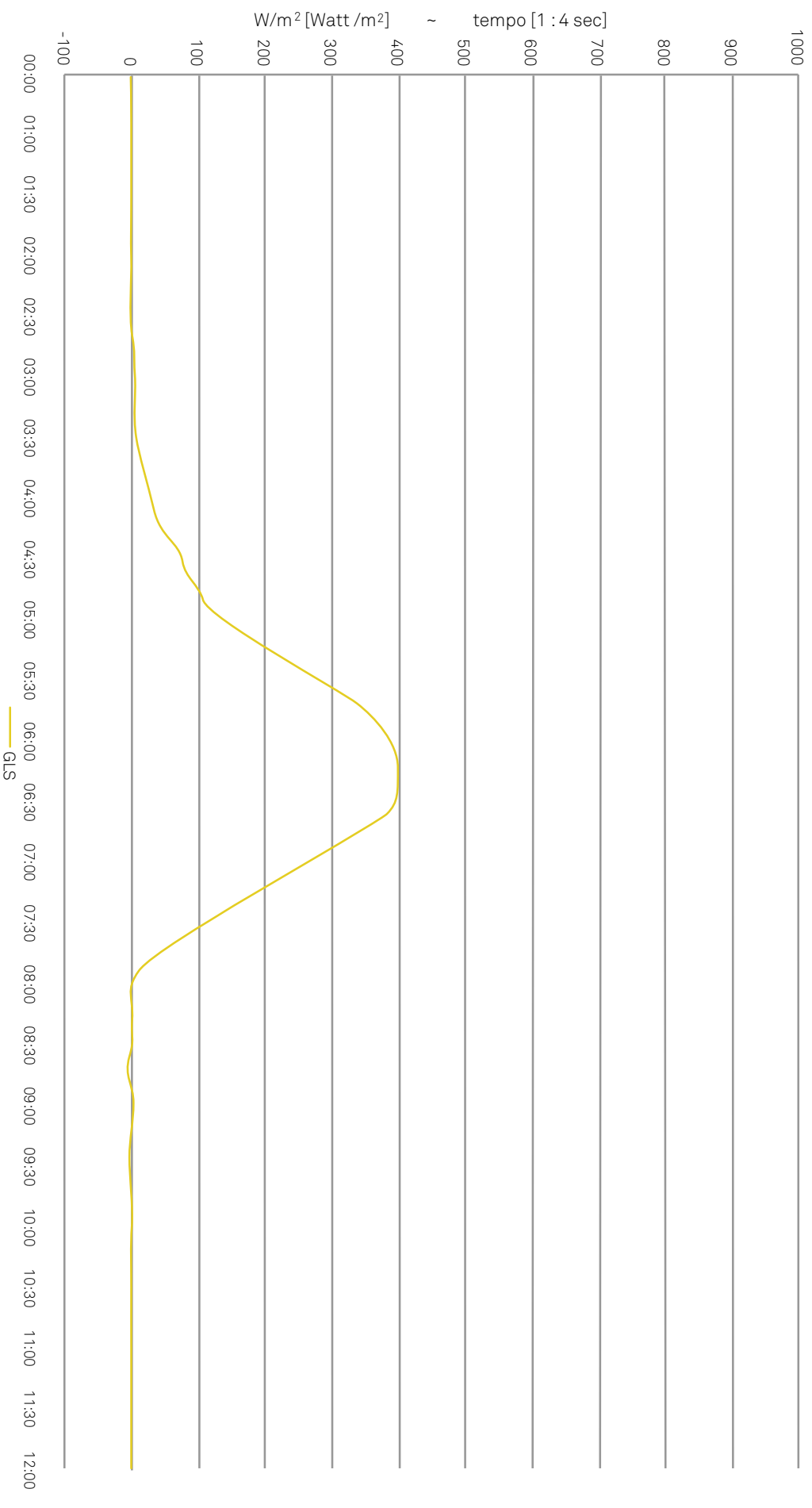




global solar radiation autumn



global solar radiation winter



you are variations
01/02

wiir sii d'Böüm

to Matthias and the Pine Trees (*Pinus sylvestris*) in the Vallais

with special thanks to:

*Barbara Meyer, Joëlle Metry, Fux Bernhard
and the children from the fourth class of the Primary School Leuk*

*Ines de Brito viola, voice
Dieter Buchwalder glassharp, marmbo, percussion
Francis Petter clarinet, bass clarinet
Désirée Senn cello
René Thie electronics*

*Dr. Andreas Rigling Head Research Unit Forest Dynamics; Member Board of Directors, WSL
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Dr. Marcus Schaub and Dr. Peter Waldner Deputies Programme Heads LWF, WSL
Daniel Niedergelt Technical Staff Forest Dynamics, Dendroclimatology, WSL
Marco Walser Forester, Technical Staff Forest Soils and Biogeochemistry, Soil Functions and Soil Protection, WSL*

*Armin Christen Project Leader Environmental Education, Nature Park Plyn-Finges
Sabian Baumann and Robin Wenger audio video documentation*

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April 2015
Christina Della Giustina