Tree Damage from Chronic High Frequency Exposure

Mobile Telecommunications, Wi-Fi, Radar, Radio Relay Systems, Terrestrial Radio, TV etc.

Dr.-Ing. Dipl.-Phys. Volker Schorpp

FIRST SYMPOSIUM

The effect of electromagnetic radiation on trees

The Groene Paviljoen, Baarn, 18.02.2011

www.puls-schlag.org

Today I have absolutely no remaining doubt that weak technical electromagnetic fields (EMF) are able to cause harm to living organisms

In my understanding it is not (it dos not have to be) the weak energy of the EMF that causes damage directly. Instead, certain EMF-configurations are able to change the reaction coordinates of certain, often complex high energy reaction cascades between (quantum) states of biological molecules.

This means that the Energy of the EMF acts not like the energy of a missile or a bullet that may cause direct destruction. The EMF interacts rather like a weak (varying) deformation of the ground of a pinball machine that may lead to a completely different result of the game (i.e. the ball may take completely different trajectories in the game).

Plants are particularly good for studying biological effects of technical EMF

- They are fixed in place (they can not move)
- They do not imagine something (they are not afraid)
- The coupling of the EMF in many important organs is nearly undamped (nearly not attenuated).
  Many living cells and organs are working directly under the surface. Leaves and needles are thin compared to the penetration depth of technical EMF.

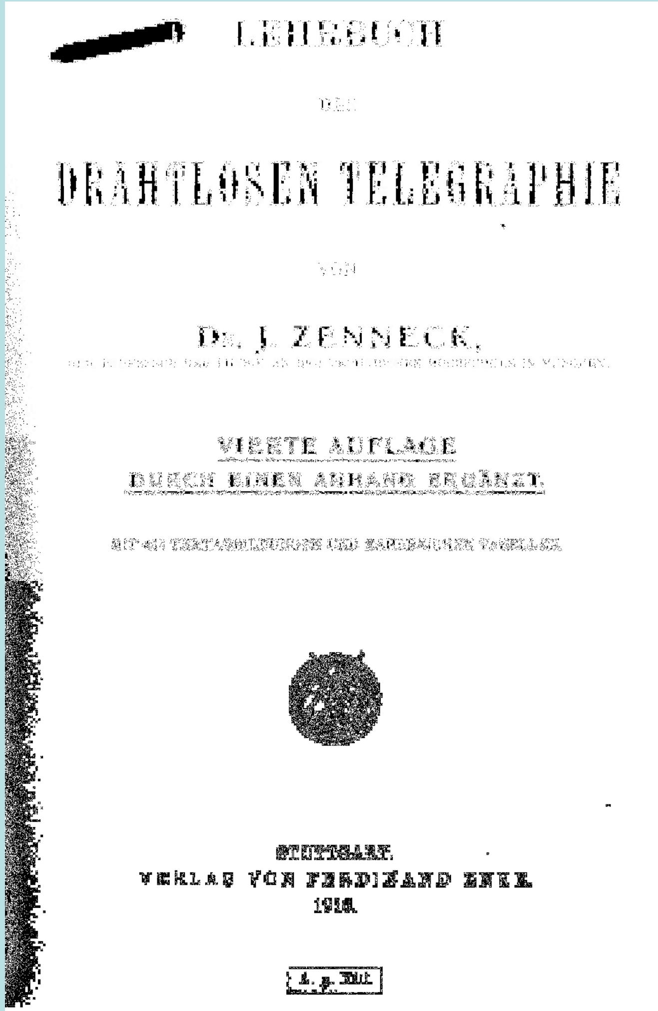
The coupling of the EMF in many important organs is nearly undamped

Some important facts

Liquid water is a broadband antenna

Liquid water is able to receive and to transmit electromagnetic waves in a large range of frequencies.

Simple water beams were used very early as receiving and transmitting antennas for radio waves.


LEHRBUCH

DER

DRAHTLOSEN TELEGRAPHIE

VON

Dr. J. ZENNECK,

VIERTE AUFLAGE

DURCH EINEN ANHANG ERGÄNZT.

STUTTGART.

VERLAG VON FERDINAND ENKE.

1916.

German textbook from 1916 Dr. J. Zenneck cites R.A. Fessenden, a Pioneer in radio communications

Trees are High Frequency Antennas

Trees receive the High Frequency (HF) with their leaves, twigs and branches and conduct it through the trunk towards the ground (while the signal is being damped). Therefore trees are working likely as a “HF-arrester”.

Trees act as a sink for HF-radiation and therefore trees are changing the HF-field characteristics (HF-field configurations) themselves in their surroundings.

Trees are High Frequency Antennas

→ Easy Experiment

Example:
Receiving radio waves
http://www.puls-schlag.org/download/tree-radioantenna01.mpg

Tree Study published first in 2007

Open air observation study, German language

High Frequency Transmitters cause Tree Damage

A conclusive system of strong indications demonstrate a causal relation between tree damage and chronic High Frequency exposure

Download

Tree Study
www.puls-schlag.org/download/Baumstudie-02-2007-high.pdf

Documentary evidence (PowerPoint slides of the lecture)
www.puls-schlag.org/download/Schorpp-StPeter-20070929-online200dpi.pdf

Indications

indicate or contraindicate a (causal) relation between events

The significance of an indication in general is valued with a number between 0 and 1, e.g.

0,0 → no indication
0,02 → very weak indication
0,4 → weak indication
0,9 → strong indication
0,98 → very strong indication
1,0 → absolute proof

Indication values in this study:

0	no indication	?	no appraisal possible
+	very weak indication	-	very weak contraindication
++	weak indication	--	weak contraindication
+++	strong indication	---	strong contraindication
++++	very strong indication	----	very strong contraindication
1	absolute proof	-1	absolute disproof

Most important results

(so far)

Spatially inhomogeneous HF-field distributions cause spatially inhomogeneous damage structures

(especially in deciduous trees)

Today the real HF-field distribution is not uniform within a given space due to the interference of different HF-fields from a very great number of HF-transmitters. The real HF-field distribution is spatially inhomogeneous.

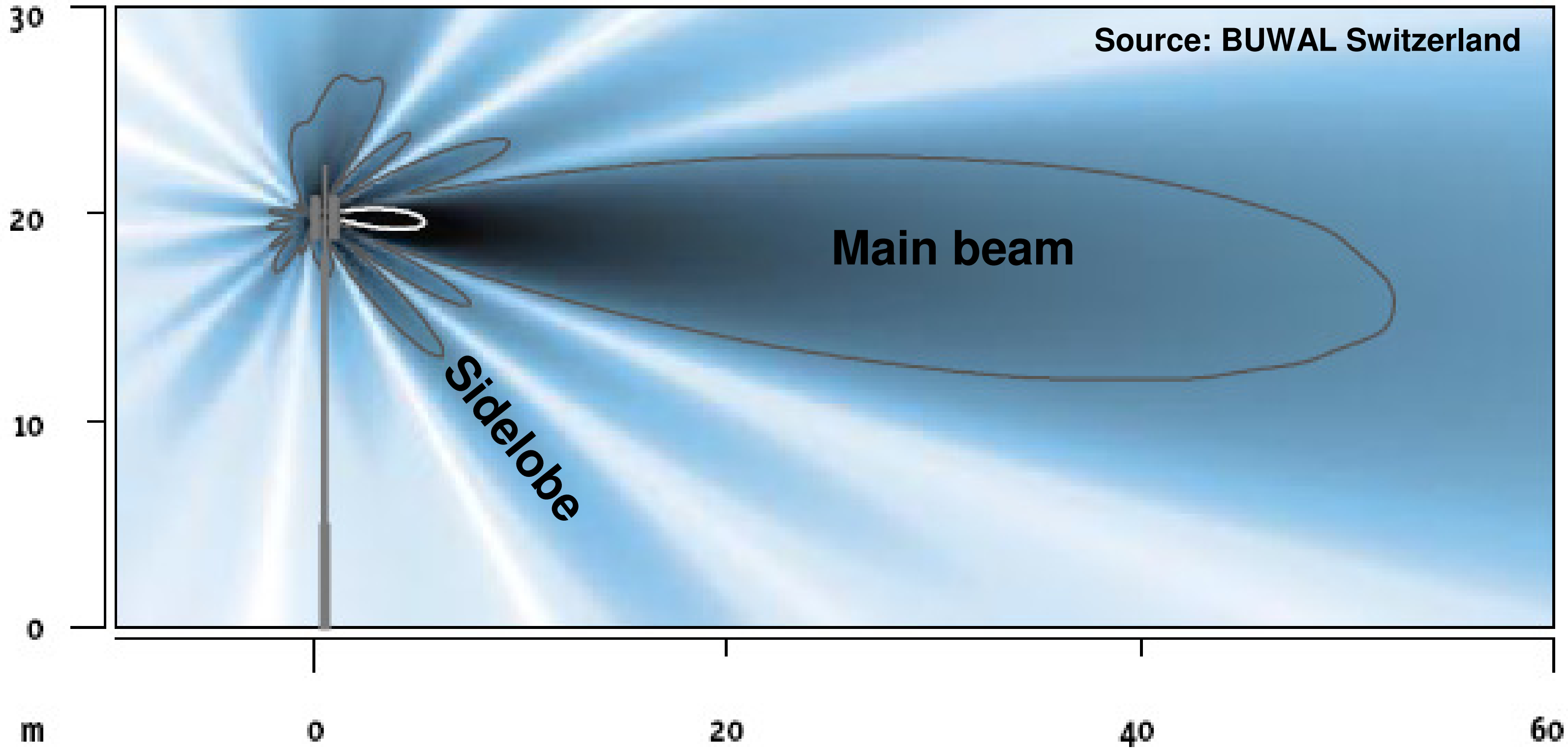
In the built-up environment the interaction between radiation and buildings – reflection*, diffraction* and shading* – leads to much more HF-field inhomogeneities (much less uniformity within the field) and therefore to areas with “turbulent” fields.

* Important physical effects regarding tree damage!

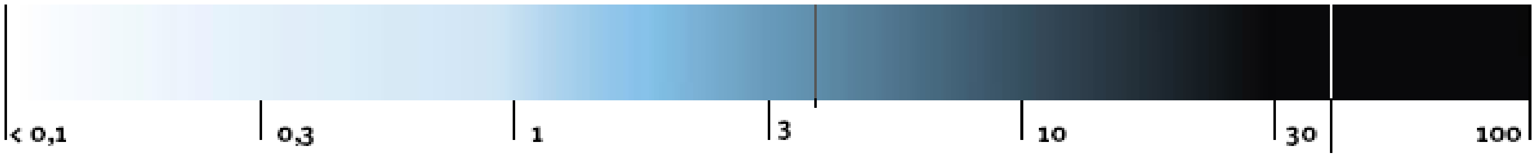
Reflections and diffractions → turbulent fields → more tree damage

Shading → shielding effect → less tree damage

Radiation Pattern of a Sector Antenna



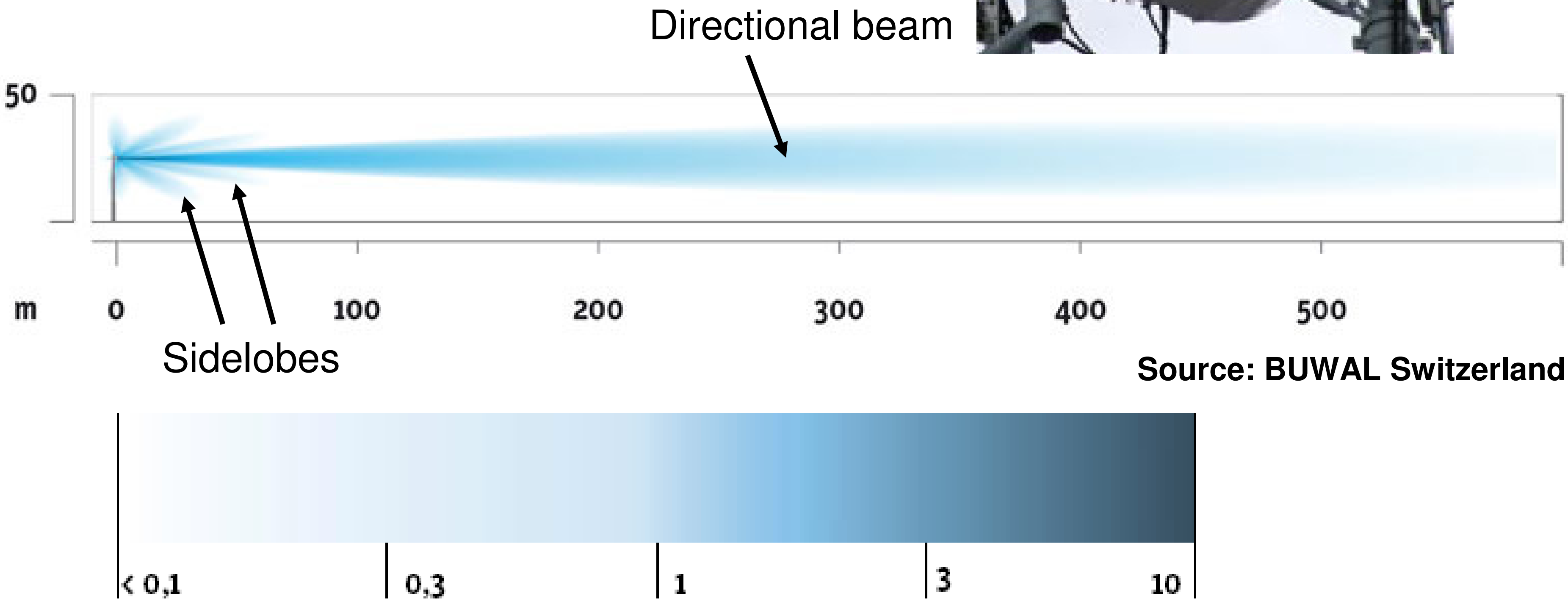
Radiation of a 20 m tall sector antenna for mobile communication (GSM 900 MHz) with an effective radiated power (ERP) of 1000 Watt (Distances in Meters)



Field Strength in V/m

ICNIRP
Exposure Limit

Radiation Pattern of a Point-to-point Transmission System



Source: BUWAL Switzerland

Electrical Field Strength in V/m

Not only the field strength (intensity) is spatially inhomogeneous

Due to the different interferences HF-

- field strengths
- directions
- frequency components
- phase relations
- polarizations
- modulations

→ HF-field configuration

are all spatially inhomogeneous. This leads to an enormous number of different (but stationary) HF-field configurations (HF-field characteristics) in the environment which have different effects on different trees and other living organisms.

The field strength is not the (only) decisive factor relating to the tree damage!

Therefore the most severe damage must not (necessarily) be expected in the area of the greatest field strength.

Some examples* of spatially inhomogeneous damage structures

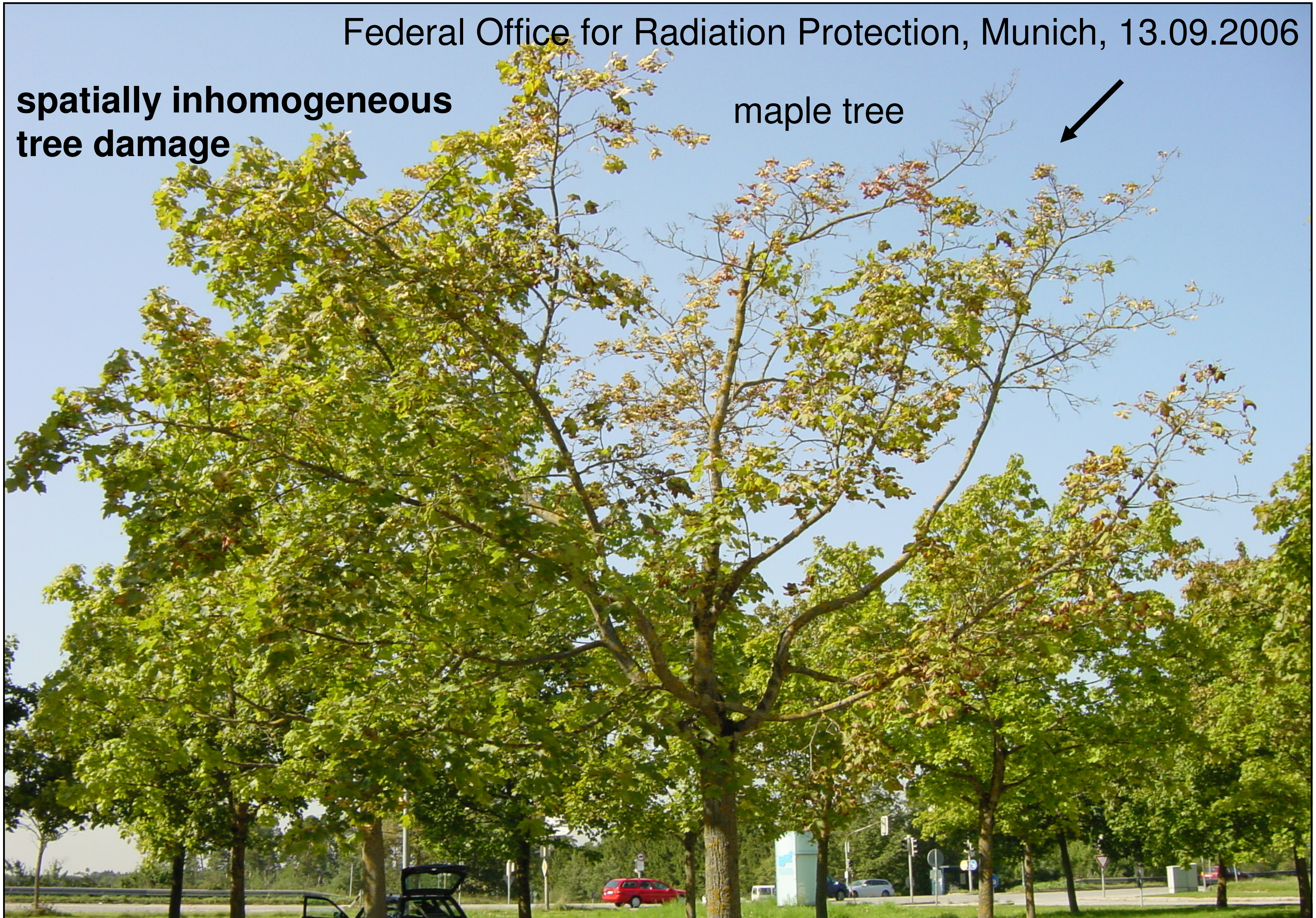
Here especially at deciduous trees

* There are millions of examples in Europe today

Munich, 13.09.2006

spatially inhomogeneous tree damage

Federal Office for Radiation Protection


Federal Office for Radiation Protection, Munich, 13.09.2006
spatially inhomogeneous tree damage
maple tree

27.09.2006 **spatially inhomogeneous tree damage**

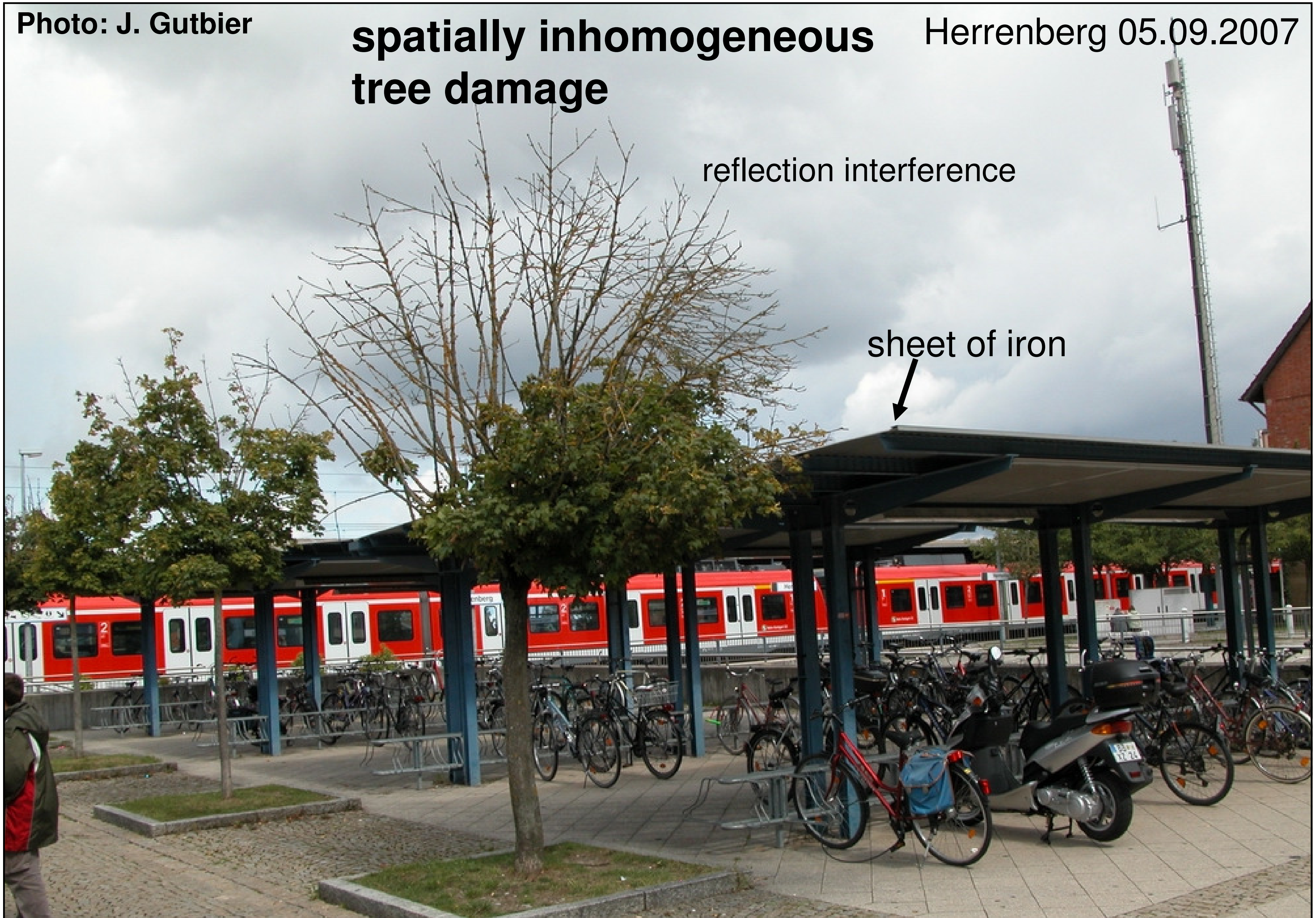
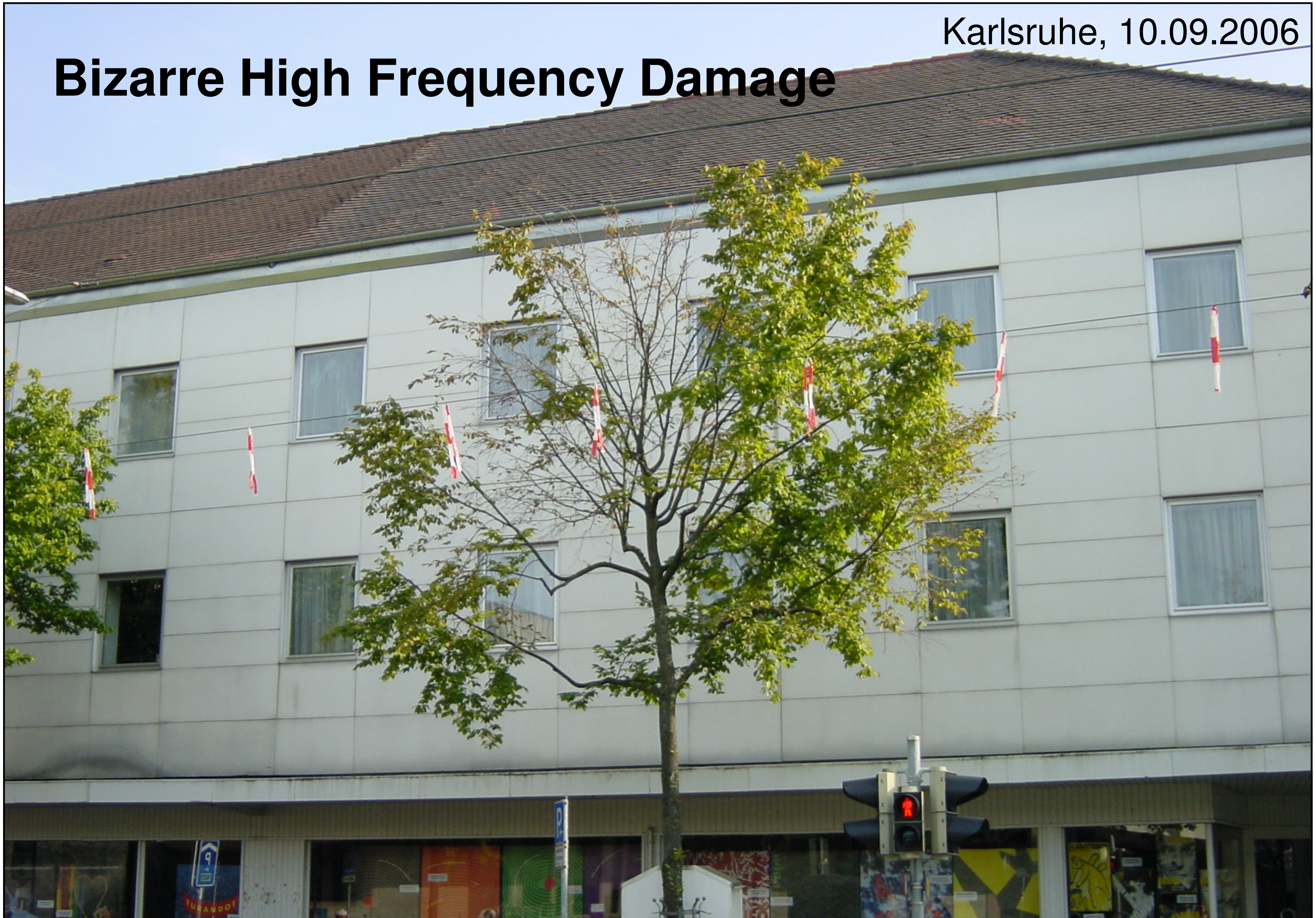


Photo: J. Gutbier
spatially inhomogeneous
tree damage
Herrenberg 05.09.2007
reflection interference
sheet of iron

Karlsruhe, 10.09.2006

Bizarre High Frequency Damage




Hungary, 06.07.2009
spatially
inhomogeneous
tree damage


Hungary, 06.07.2009


France, 14.09.2009
lime tree
spatially inhomogeneous tree damage
Salle Polyvalente
P L´Eglise
ECOMUSÉE
du Lac d´Annecy
Ancien Cimetière
LOCATION
VELOS

Hungary, 10.07.2009

spatially inhomogeneous tree damage


Hungary, 10.07.2009
KAPUBEJÁRÓ
KÉRJÜK
SZABADON
HAGYNI !
SAS u
2 sz
typical leaf margin necrosis caused by HF

Spatially inhomogeneous tree damage

Indication	HF	Drought, Heat	Acid rain	Air Pollutants	Pests
global <u>and</u> new types <u>and</u> most manifold spatially inhomogeneous tree damage	**+++**	**--(-)**	**--(-)**	**--(-)**	**--(-)**
temporal correlation	**+(+)**	**-**	**-**	**-**	**-**
total indication	**++++**	**---**	**---**	**---**	**---**

The combination of global <u>and</u> new <u>and</u> most manifold spatially inhomogeneous tree damages is a strong indication (+++) for a causal relationship between tree damage and HF and at the same time a strong contraindication against all other classical explanations.

The fact, that this kind of damage initially appeared intensively just after the installation of mobile networks (→ temporal correlation), increases the indication value to “very strong” (++++).

Mutual Protection Effect

Trees actually protect each other but do not infect each other

Due to the fact that the first and the biggest trees receive (a part of) the High Frequency at best and conduct it towards the ground (HF-arrester) they protect the trees and parts of trees behind and below them.

This important effect leads to transmitter facing damage* which is often noticeable, i.e. it originates on the side facing the source of the radiation and expands in the direction of the radiation. This effect also indicates that it is an exogenous impact that causes the damage.

* In general and physical more exactly: The damage is facing the interference field

13.09.2006

How can we explain such damage structures?


11.07.2007
transmitter facing damage
HF

Behind the tree island there are damaged trees again

Explanatory Model:

The radiation from the transmitter is (strongly) diffracted around the tree island ("like a flow of water"). Therefore the diffracted radiation interferes behind the tree island and causes a more turbulent field in this area. Hence there are damaged trees again.

Mutual Protecting Effect and Transmitter Facing* Tree Damage

Indication	HF	Drought, Heat	Acid rain	Air Pollutants	Pests
mutual protecting effect and transmitter facing damage*	+++ (+)	---	---	---	---

This physically linked indication-duo is a strong indication for a causal relationship between tree damage and HF and at the same time a strong contraindication against all classical explanations.

* In general and physical more exactly: The damage is facing the interference field

Buildings have great effects on the damage structures

The interaction between radiation and buildings (materials and geometry) have great effects on the tree damage.

Shading: Large walls and houses are able to shadow the radiation and thus shield trees. A less turbulent field behind a large wall (or in a inner courtyard) leads to less tree damage → **protective effect**

Reflection: Metallic surfaces are strongly reflecting the radiation (e.g. metal coated window glass, aluminum foil in roofs, metal fabric in facades etc.)

Diffraction: The radiation is diffracted by roof ridges, edges and openings of walls and buildings

Both effects – reflection and diffraction – generate areas and swathes with turbulent interference fields and more tree damage in these areas
→ **reinforcing effect**

Effects of buildings on the tree damage

Indication	HF	Drought, Heat	Acid rain	Air Pollutants	Pests
less damage by shading the radiation and more damage by reflecting and diffracting the radiation	++++	---	---	---	---

The effects of buildings are a very strong indication for a causal relationship between HF and tree damage and at the same time a strong contraindication against all classical explanations.

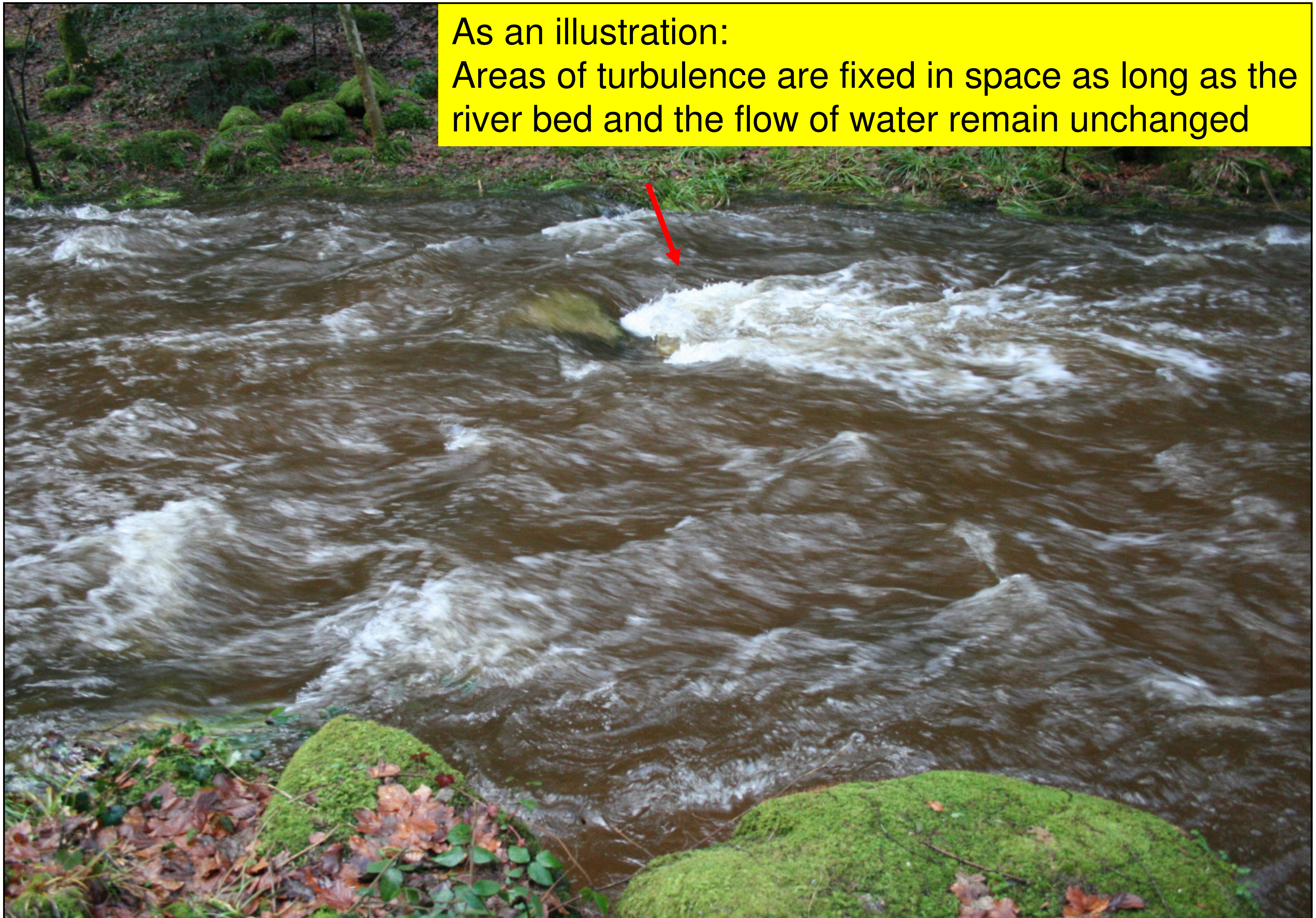
To understand the manifold real open air damages

HF-transmitters and buildings are stationary (they do not move). The interference of the HF-fields from a great number of HF-transmitters and the interaction of the radiation with topography and buildings cause any number of spatially inhomogeneous HF-field configurations.

In this way stationary damaging areas and swathes occur in the environment. Since the trees are fixed in place some are more and some are less affected, depending on their position. Sometimes just a (small) part of a tree is affected.

Not every type of HF exposure (HF-field configuration) is affecting every kind of tree in the same way. Different tree species show different reactions on different field configurations.

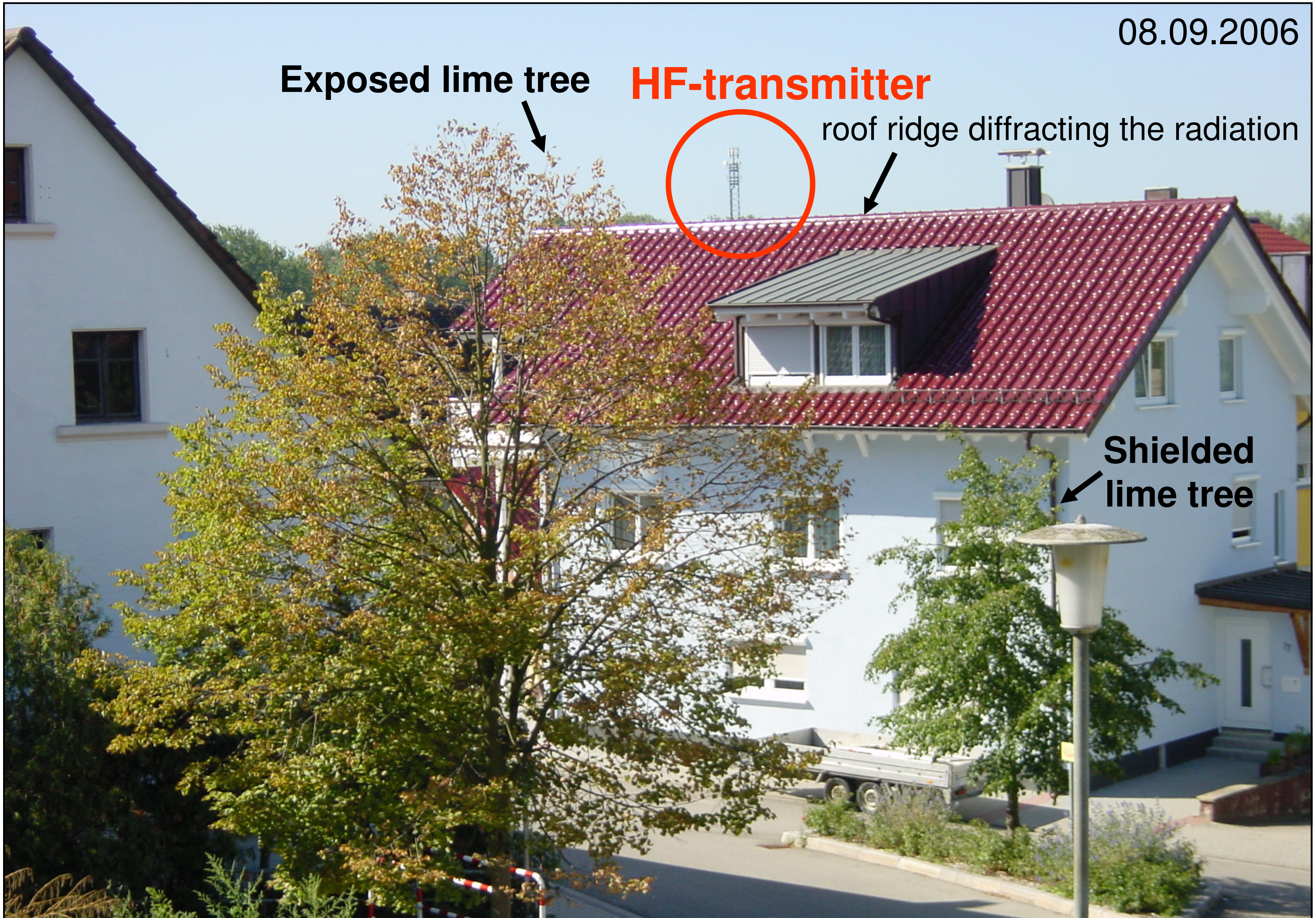
The field strength is not the (only) decisive factor relating to the tree damage! Under special conditions extremely weak HF-field components may lead to a damaging interference – long-distance effect – while other much stronger components (close to a HF-transmitter) show less or no effect.

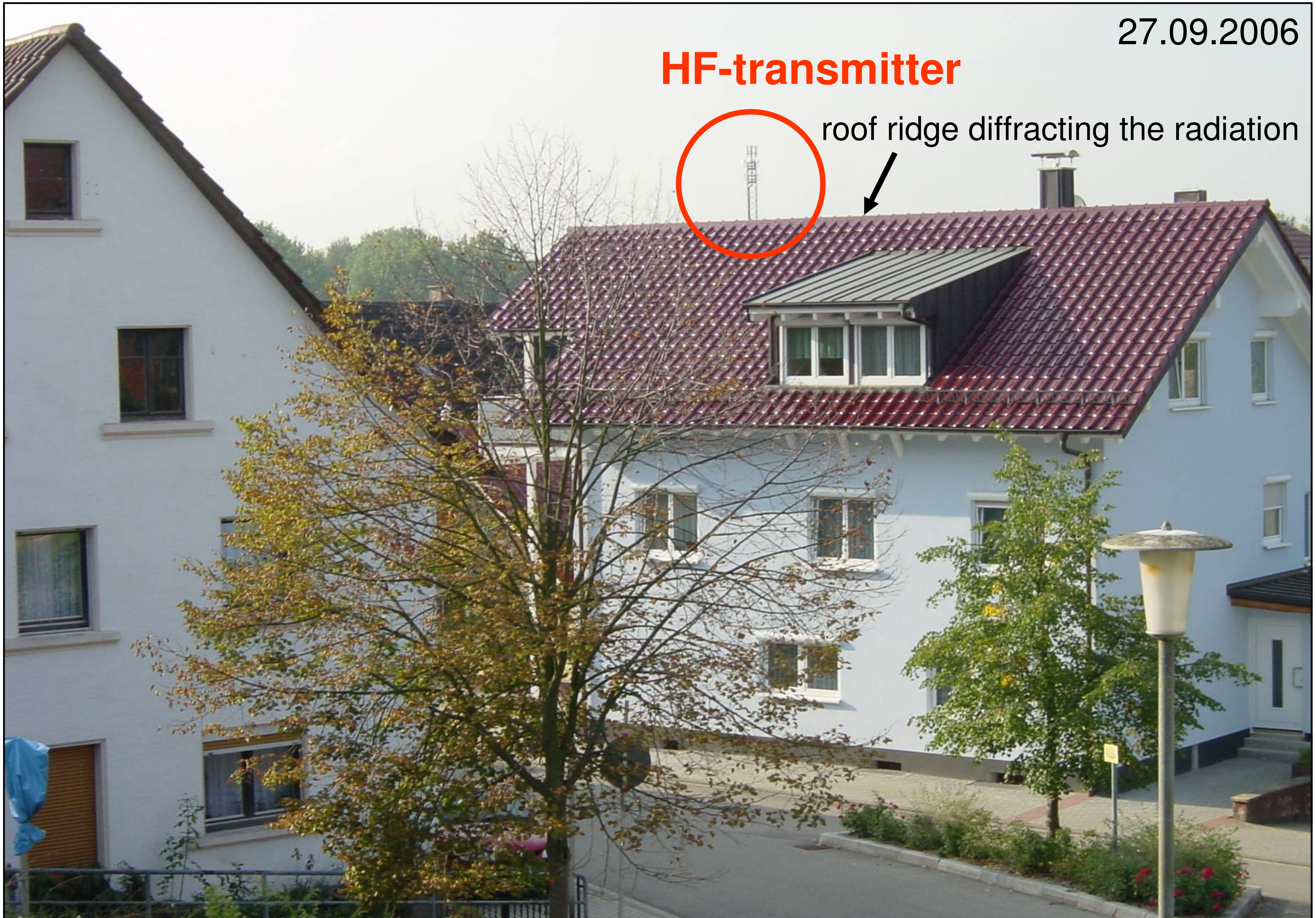

As an illustration:
Areas of turbulence are fixed in space as long as the river bed and the flow of water remain unchanged

More Examples and Explanations

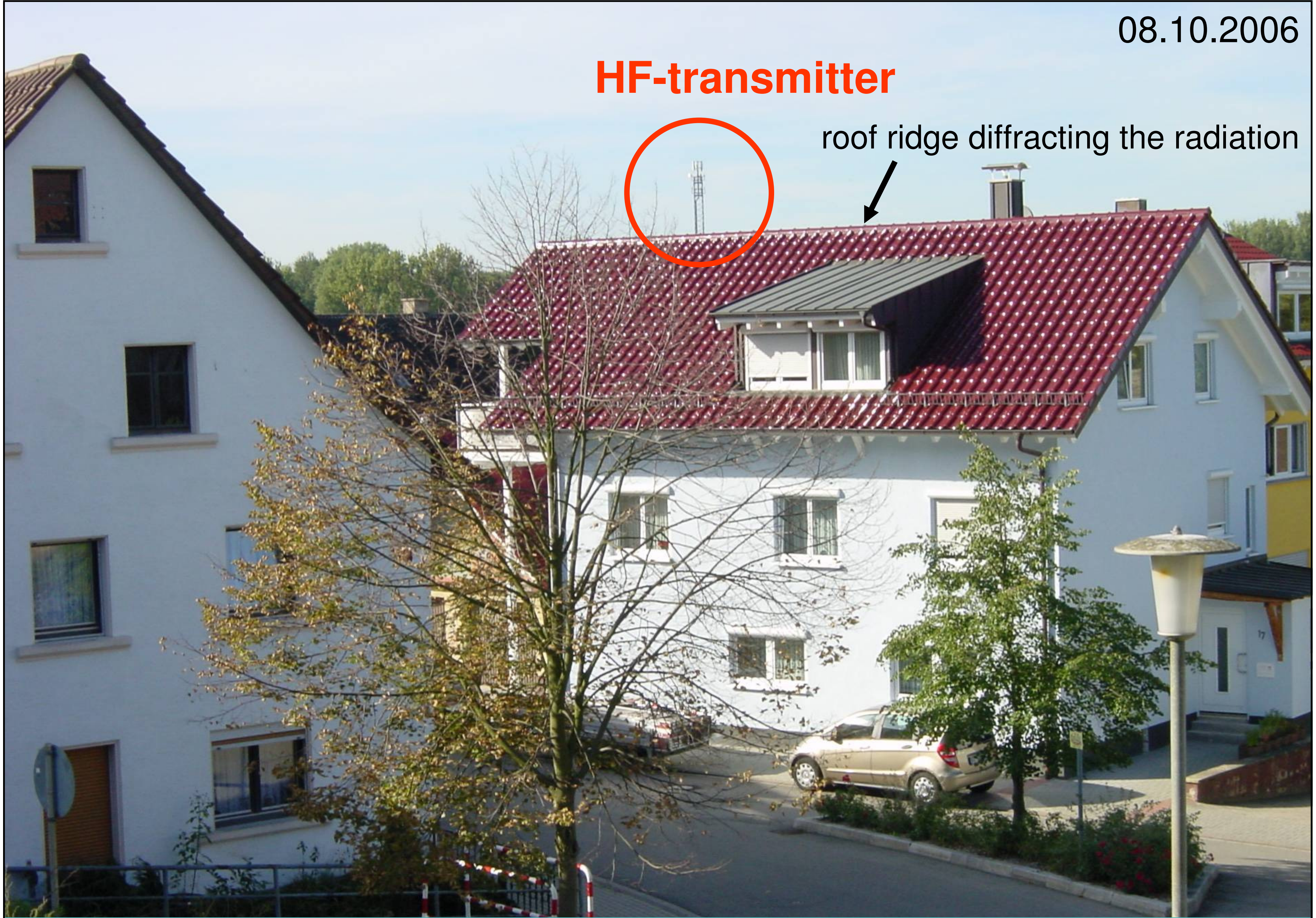
The Three Lime Trees

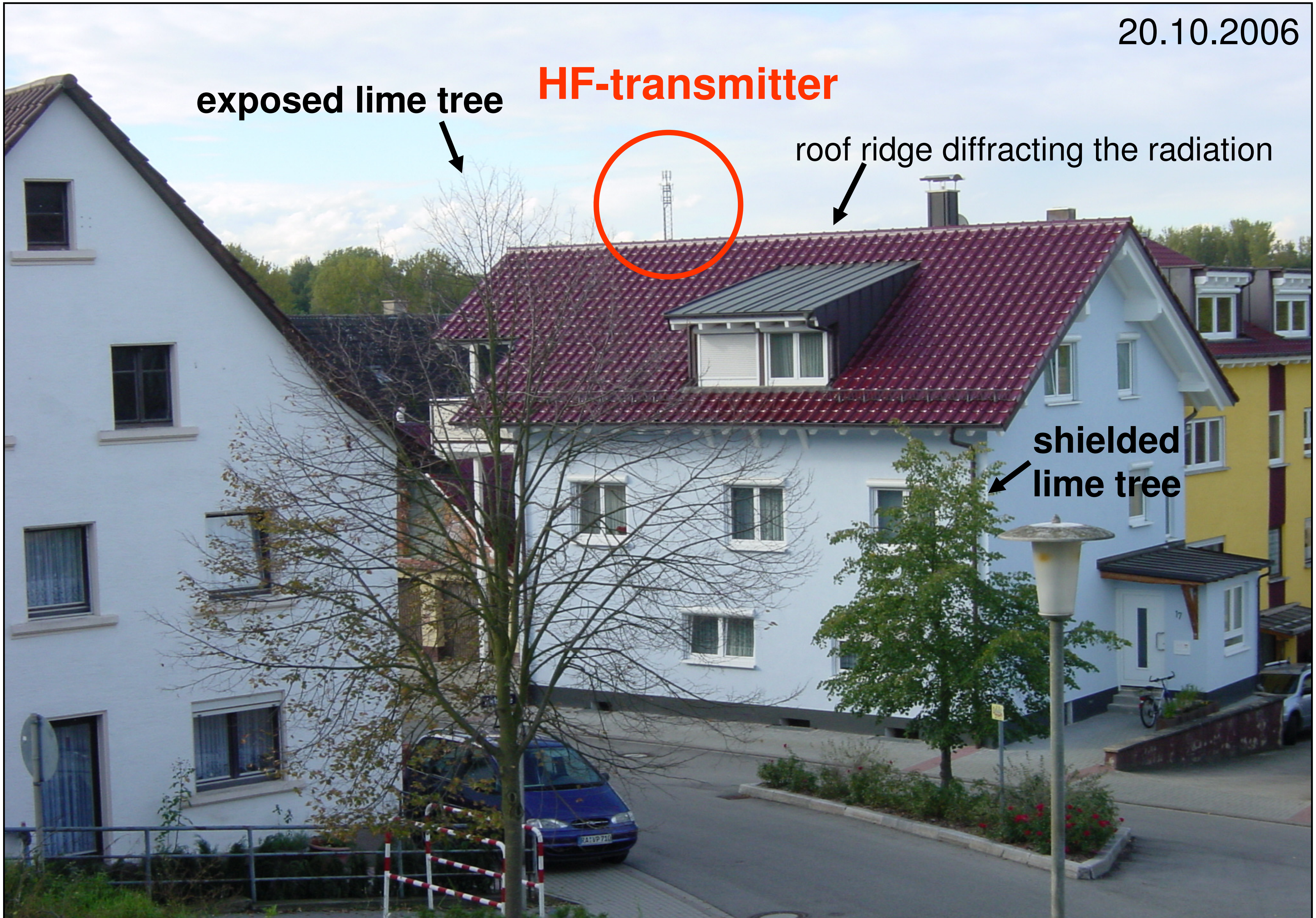
Could you think of any better way for the trees to point to the cause for their disease?

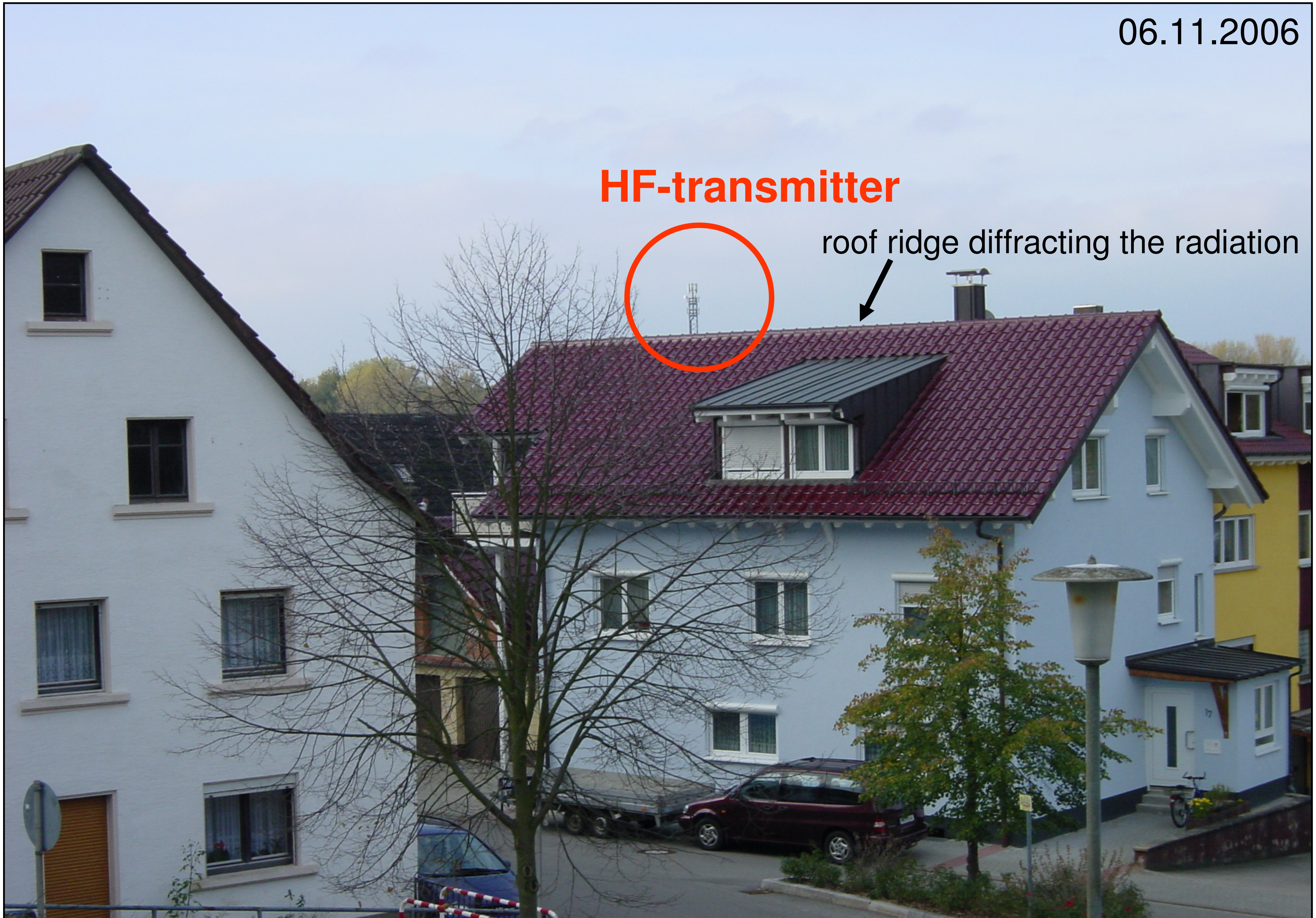

08.09.2006
Exposed lime tree
HF-transmitter
roof ridge diffracting the radiation
Shielded
lime tree


27.09.2006
HF-transmitter
roof ridge diffracting the radiation

08.10.2006



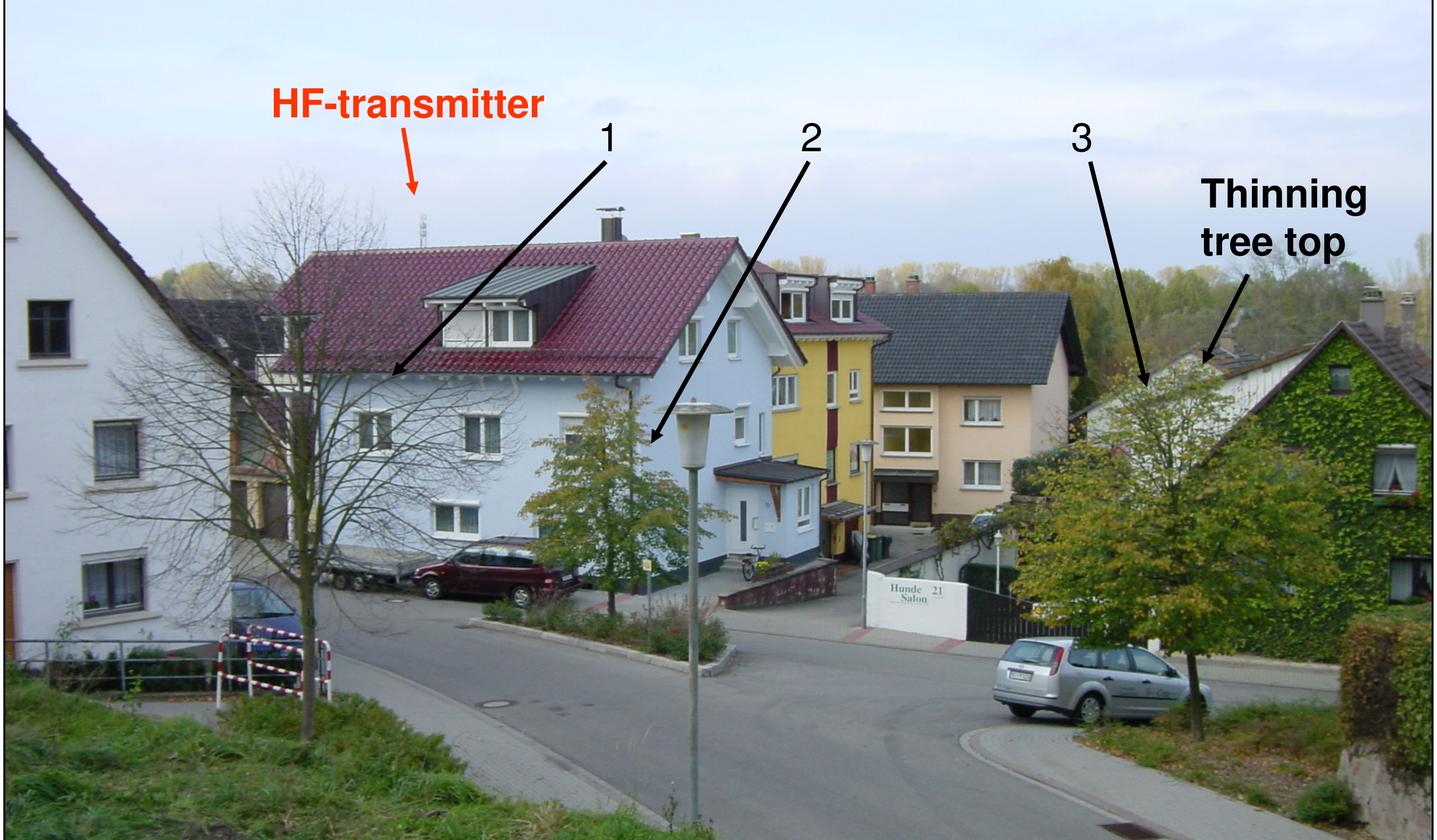

20.10.2006
exposed lime tree
HF-transmitter
roof ridge diffracting the radiation
shielded
lime tree

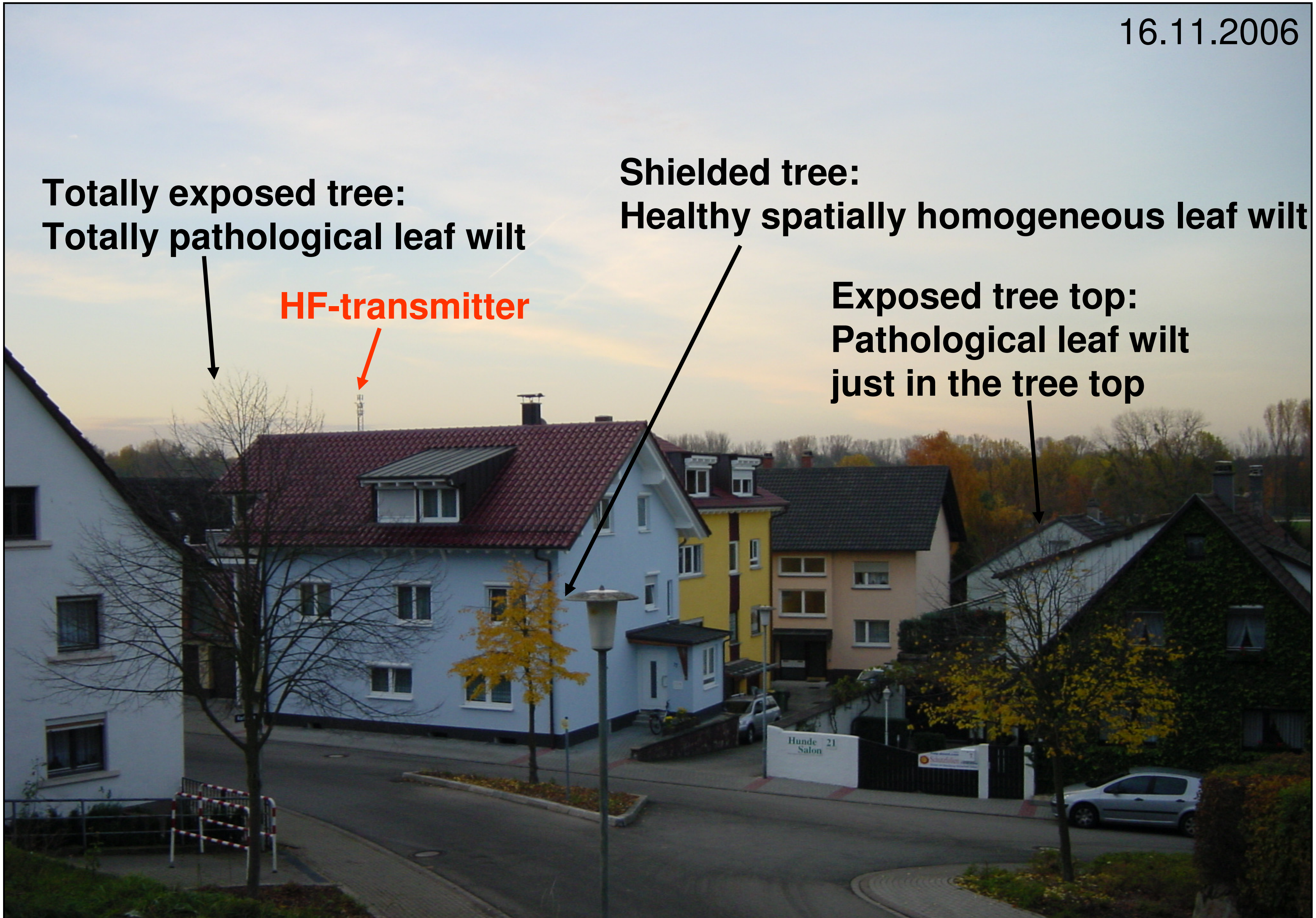


06.11.2006
HF-transmitter
roof ridge diffracting the radiation

Three lime trees under three different high frequency exposure conditions exhibit different spatial damage structures with different temporal sequences.

06.11.2006




16.11.2006
Totally exposed tree:
Totally pathological leaf wilt
HF-transmitter
Shielded tree:
Healthy spatially homogeneous leaf wilt
Exposed tree top:
Pathological leaf wilt
just in the tree top
Hunde 21
Salon

Explanatory Model for the Timeline Sequence „The Three Lime Trees"

Mainly due to their position within the built-up environment, the three lime trees are exposed in different ways. They exhibit spatially different damage structures with different damage timelines. The exposure conditions in this case are simple and straightforward for anyone familiar with the propagation of high frequency radiation:
The radiation is diffracted (bent downwards) by the roof ridge of the light blue house.
Lime tree number 1 (left) has the highest position. Its transmitter facing side suffers full height exposure to the interference of the diffracted radiation. Therefore the damage begins at the transmitter facing side and expands exactly in the direction of the diffracted radiation – the sequence of the damage shows the diffraction angle.
The smaller lime tree number 2 has the lowest position and is shielded by the buildings. The propagation path of the diffracted radiation goes straight past its tree top. This tree does not exhibit any transmitter facing damage and sheds its leaves (yellow, soft, elastic leaves) only in mid-November and with a regular pattern of wilting.
Due to the buildings only the top of lime tree number 3 is exposed to the interference of the diffracted radiation, while the lower part of the tree is shielded. Therefore this tree exhibits damage just in its tree top, expressed by the unnatural premature (pathological) "wilting" of the leaves.

The White Chestnut

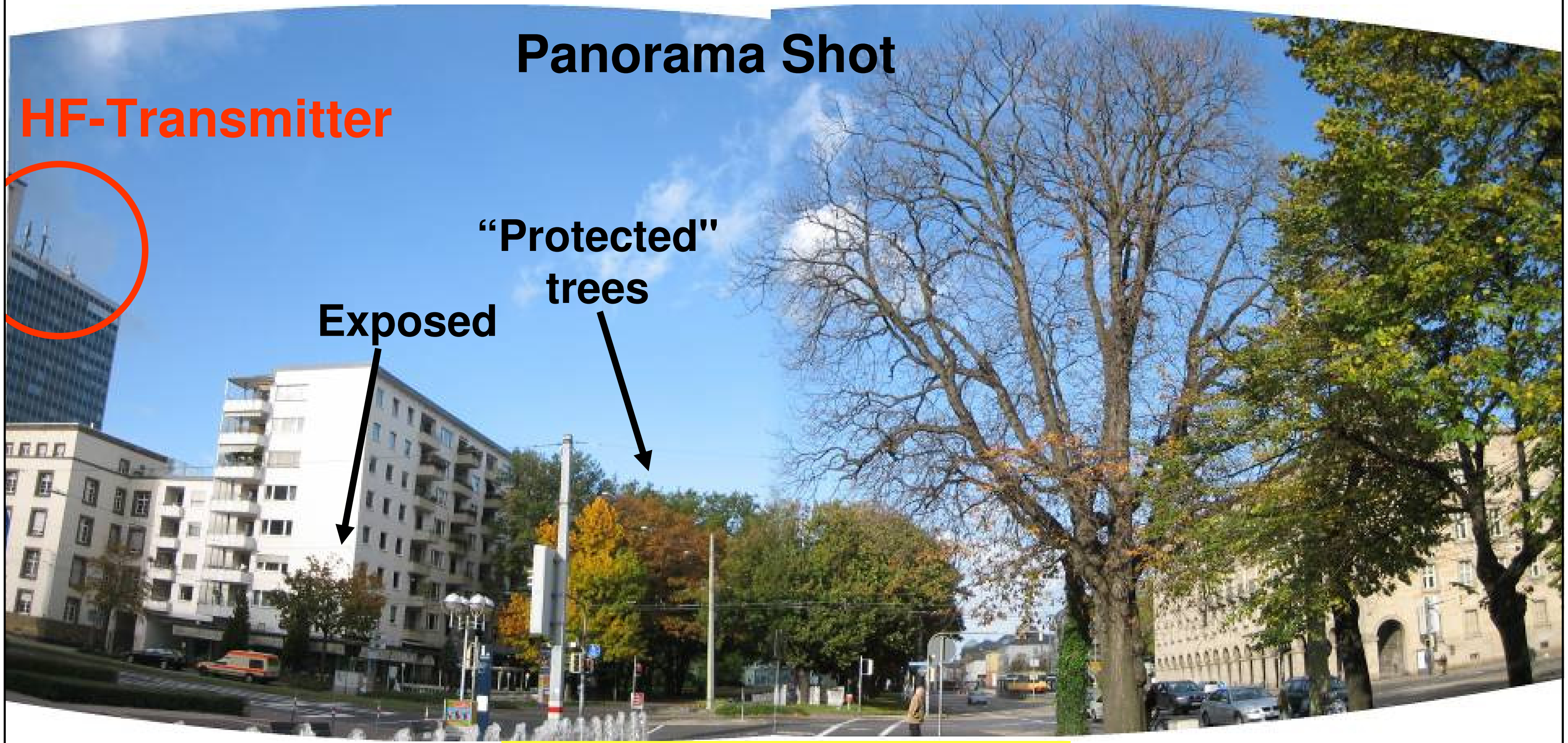
Where is the transmitter ?

From which direction comes the radiation-interference?

Why would any pest attack trees just at that side were they are exposed to an HF-interference field?

Karlsruhe, 08.10.2006

2 months later



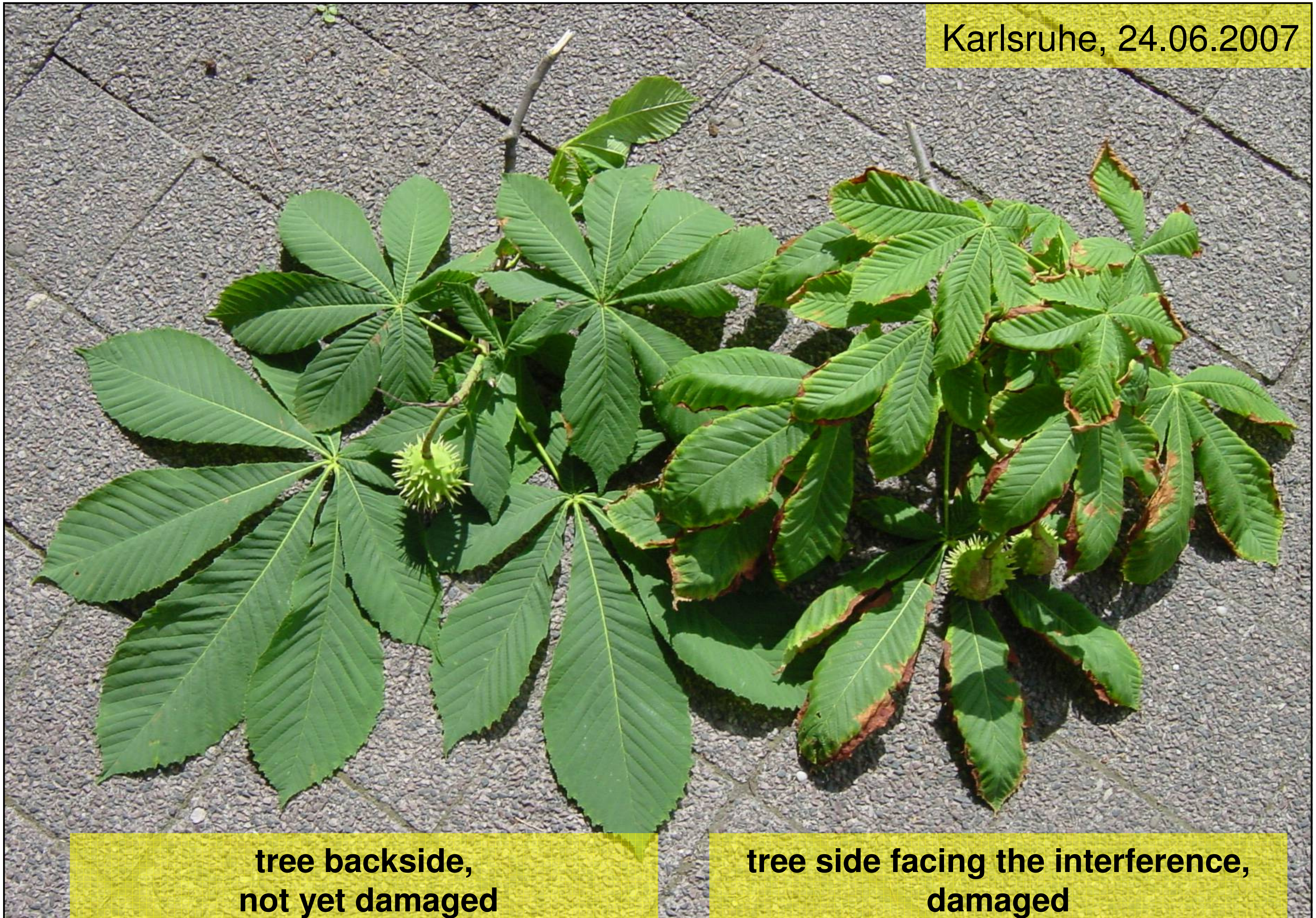
Another 3 weeks later

Karlsruhe, 24.04.2007

completely new healthy leaves → a strong indication against draught
The April 2007 was the driest April in Karlsruhe ever measured

next spring (2007)


Karlsruhe, 24.06.2007
visible beginning of typical leave margin necrosis caused by HF



V. Schorpp © PULS-SCHLAG e.V. Karlsruhe www.puls-schlag.org

Same procedure as every year effect

As long as the trees and branches are alive and the transmitters are not changed and the buildings are not changed, every year nearly the same damage pattern and damage time course will appear.
But just one further installed transmitter or a (slight) turning of a transmitter or a changing of the signal characteristic of a transmitter may change the situation significantly.

If a tree or a part of a tree is getting sick and branches and leaves are getting dry, the HF-field configuration in this area changes. Because dry wood and dry leaves are no HF antenna and nearly transparent for the radiation (nearly no interaction with the radiation).

Comments to the white chestnut

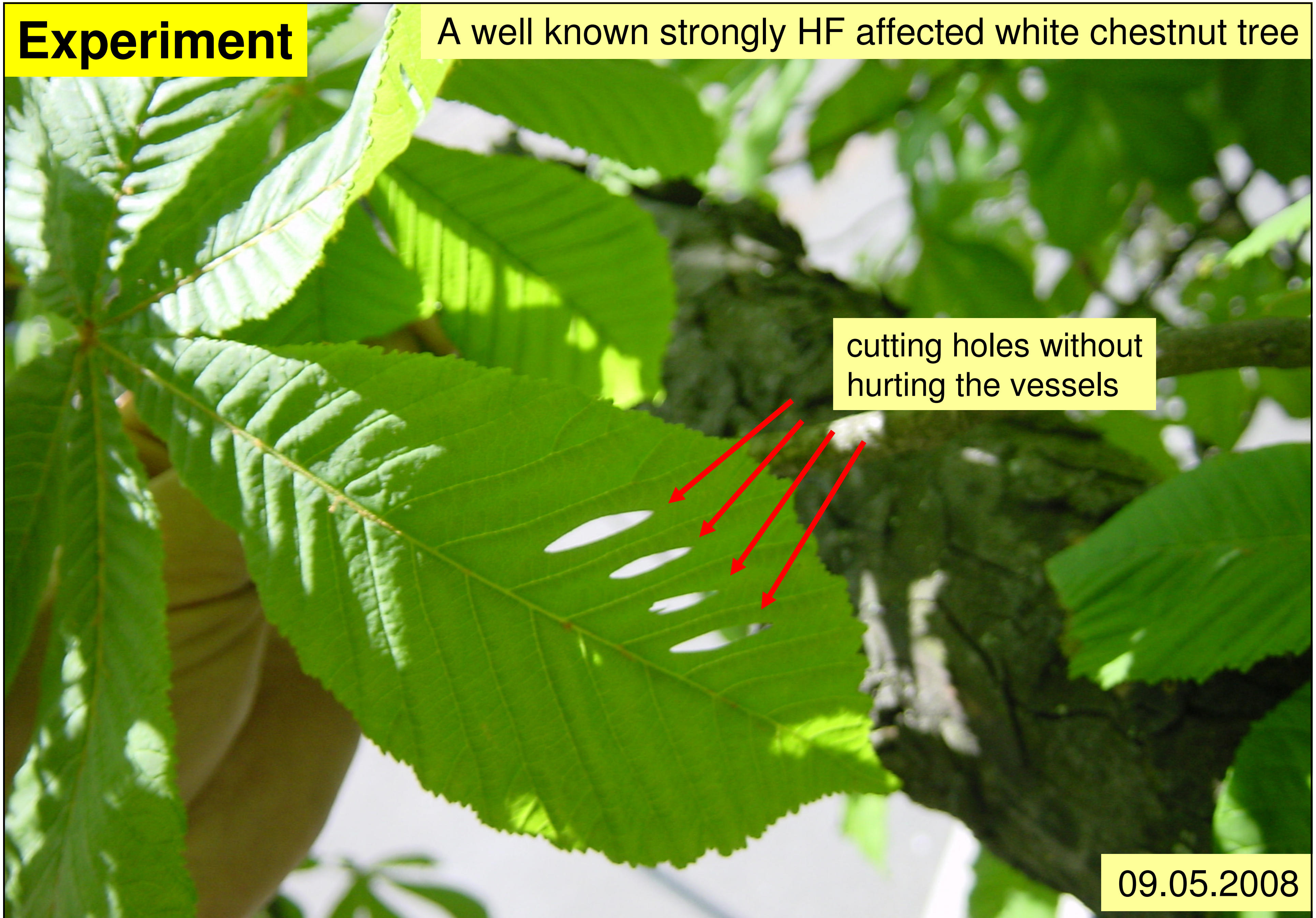
Already in summer, the large white horse chestnut tree exhibits damage at the side of the radiation-interference in the form of brown coloured leaves which later fall off. The damage grows in the direction of the radiation-interference until the tree is completely bare.

The browning of the leaves is not patchy as it would be due to an infestation of horse chestnut leaf-miner (cameraria ohridella), but instead it starts at the edge of the leaves and expands towards the leave stems. The leaves appear to be literally “burned” at their margin → typical leave margin necrosis caused by HF.

The trees behind the tall building, which are more protected from HF exposure, exhibit a later and spatially more homogenous wilting behaviour.

Experiment

A well known strongly HF affected white chestnut tree




no necroses appear at the rim of the holes till the leaf margin necroses grow inward and touch the holes
20.06.2008

Comments to the leaf margin necrosis

A leaf is very thin and has a sharp leaf margin. Due to this geometry HF likes mainly to couple into (and out of) the leaf margin (HF tip effect*). Therefore the result of the experiment suggests that the leaf margin necroses is primarily not a result of any pest.
The dry (necrotic) edge of the damaged leaves has nearly no interaction with the radiation. Therefore it is the green, "effective electromagnetic edge" that moves gradually to the leave stem.

Thesis: In my (present) understanding the necroses may be caused by a real kind of "burning" whereas the destroying energy is supplied by the sunlight, which the leaves originally want to catch and correctly built into their molecules. However, particular HF-field configurations are able to change some bio-molecular reaction coordinates, hence the strong quantum energy of the sunlight gets into the wrong molecule states.

*HF also likes to couple into (and out of) the (tip of) thin twigs.

Inhomogeneous (bizarre) growth at different coniferous species.

healthy straight homogeneous growth (protected trees)


27.07.2009
beginning of deformed growth

05.10.2009

The very early important results of I. Brauer* and C. Harte* could explain this deformed inhomogeneous growth in conifers in our EMF contaminated environment

*Forest Botanic Institute of Freiburg together with the Frauenhofer Institute of Freiburg, Germany

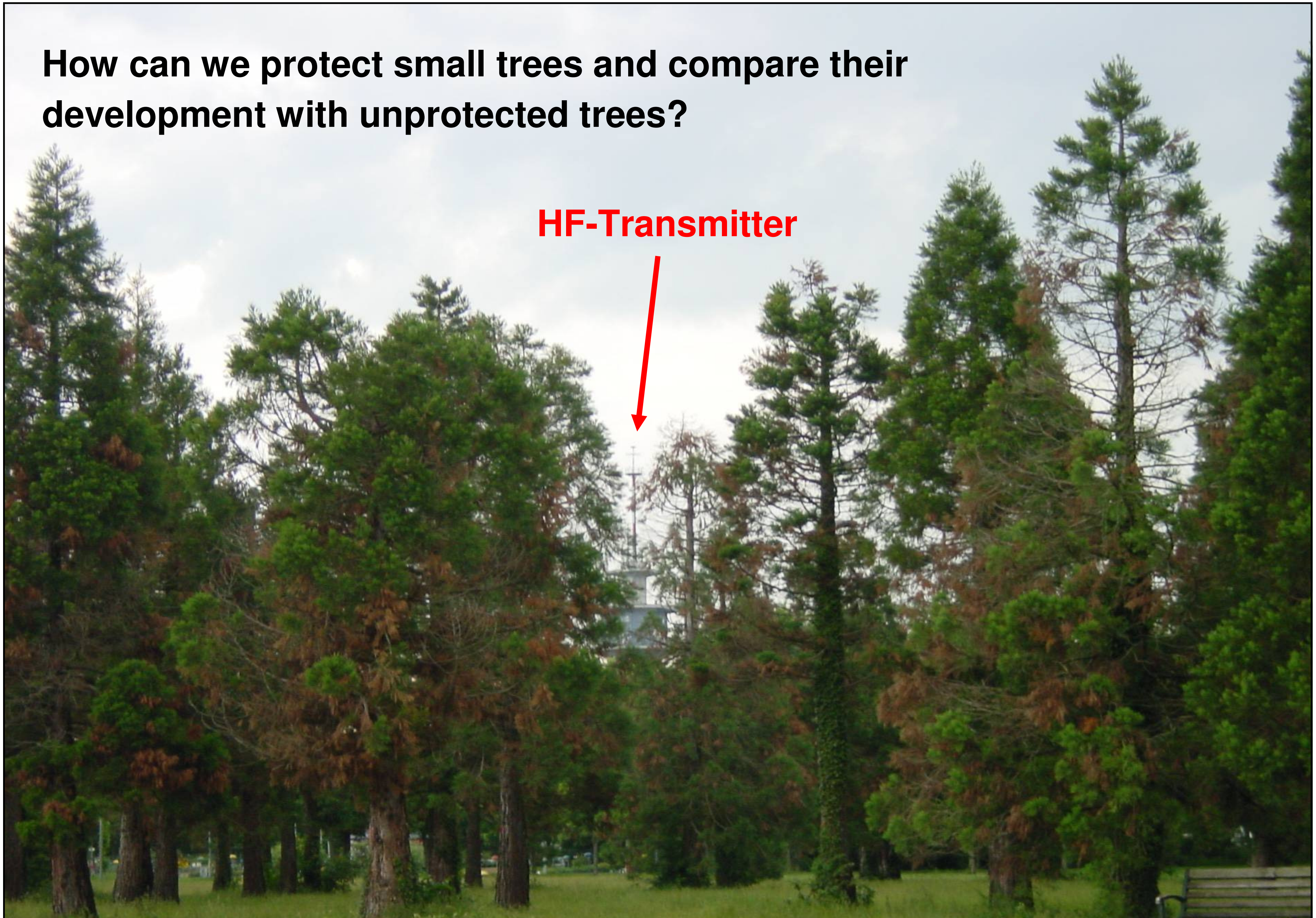
They found a significant influence of HF radiation (f = 200 MHz) on the cell nucleus division frequency (at root tips of vicia faba) even beginning at a field strength of 0,0001 V/m (0,03 nW/m^2) up to 1,6 V/m

Harte also proved a lot of HF induced mutations and investigated them for decades. She observed the development of the mutated plants for several plant generations. She also proved HF induced mutations in the free area with the help of the North German Broadcasting Corporation.

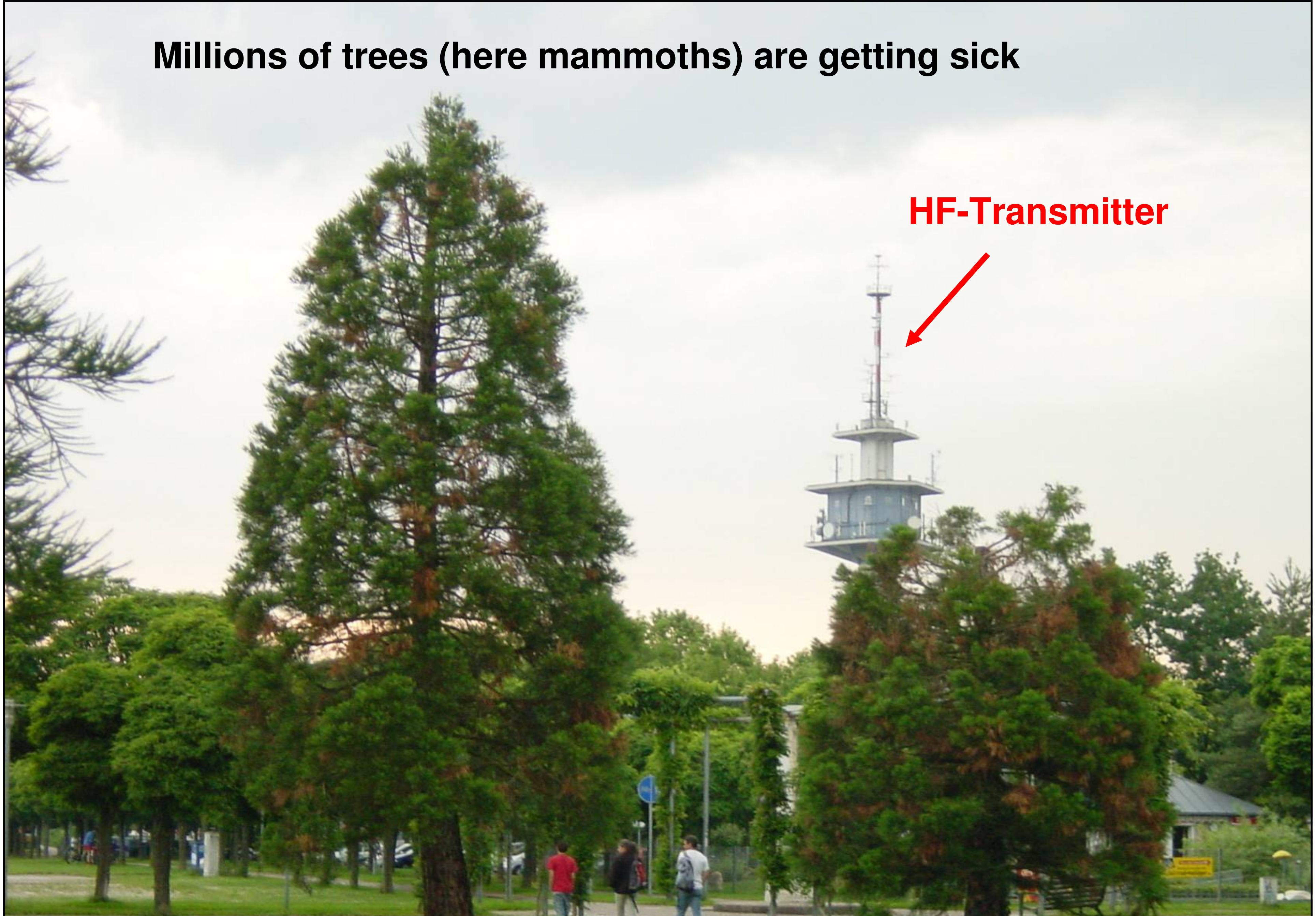
C. Harte has documented und published her results very exactly in several scientific articles from 1949 to 1973. But today they seem to be forgotten.

How to protect small free area trees from technical HF

How can we protect small trees and compare their development with unprotected trees?

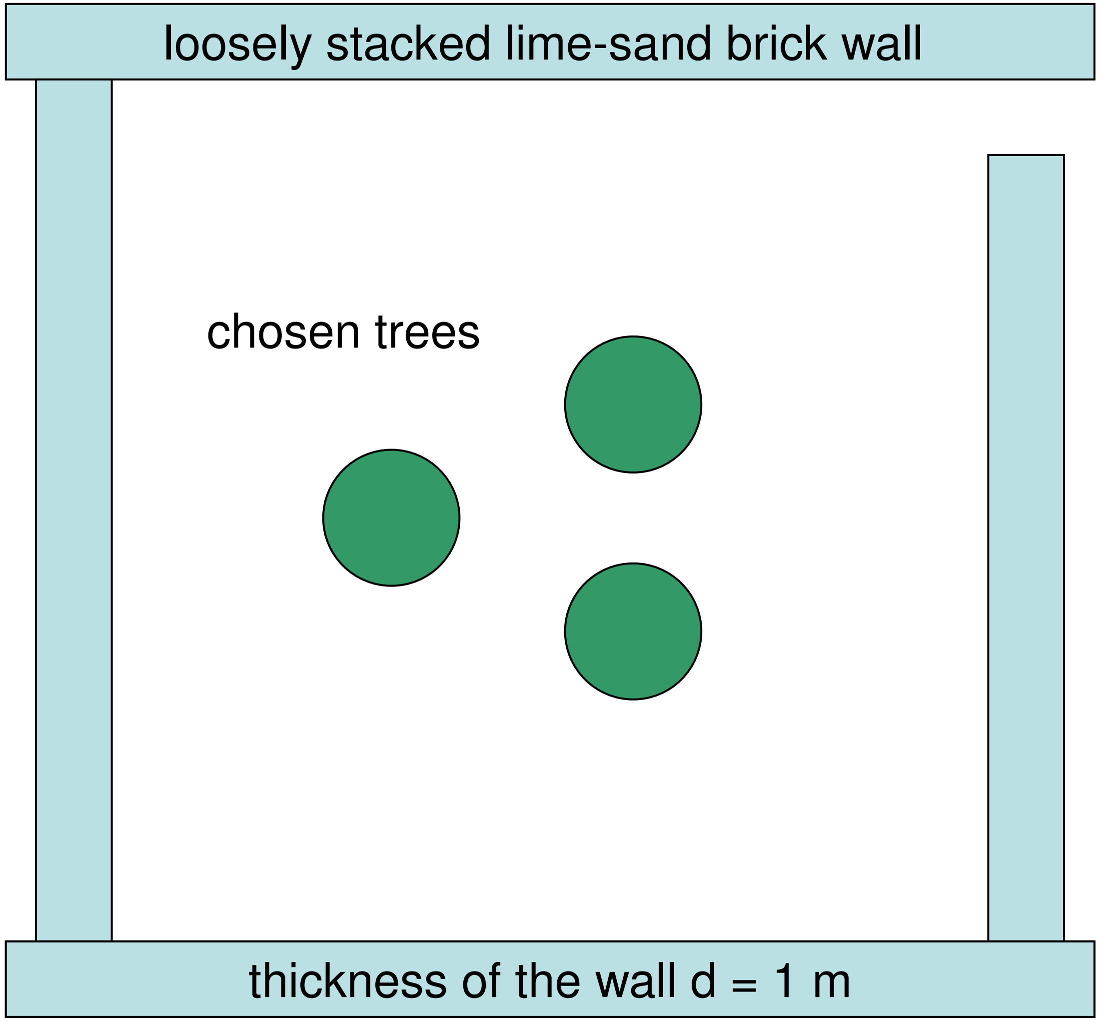


Millions of trees (here mammoths) are getting sick




Loosely stacked lime-sand brick walls h = 6m (up to 10 m)
Verwaltung
Betriebsleitung
Warenannahme
Versand
Achtung Staplerverkehr
10

Tree HF-protection



A solid foundation needs to be provided for the walls.
The trees should not be shadowed from the sunlight, but from the HF.
The stones of the walls are reusable after the experiment.

I look for somebody to realize this experiment with different kinds of small trees (h < 6 m)

Thank You

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