Humming noise phenomenon - Taos hum - infrasound

Part 1

Parallel measurement to governmental control measurement by Eidgenössische Materialprüfungs- und Forschungsanstalt, EMPA, on behalf of the Bundesamt für Umwelt, BAFU, (FOEN) for the proof of infrasound emissions of an industrial plant.

Audio - video - personal condition

Part 2

Sound provocation test for proof of an unnatural/changed sound environment of the industrial plant.

Audio - video

Part 3

Proof of ground motions in the entire Swiss, triggered by sound emissions of the industrial plant

Audio - video - seismic records

In order to mute the booming world a bit, marketing strategists would suggest to plate the entire world with carpet, instead of recommending a pair of simple felt slippers to the people.

Willy Meurer (*1934)

One day, mankind will have to fight noise just as the cholera and pest.

Robert Koch (1834 - 1910)

Notice:

For this anonymised issue, names of persons, places etc. have been garbled as far as possible. The industrial plant of the emissions is known by name to the public authorities and institutions involved.

Bundesamt für Umwelt, BAFU = Federal Office for the Environment, FOEN

Eidgenössische Materialprüfungsanstalt, EMPA = Swiss Federal Laboratories for Material Science and Technology

Contents

1. Preface

The author herself massively suffers from the humming noise phenomenon. It would be inappropriate here to list the many physical and mental symptoms which come along with it. Besides symptoms such as hearing a variable deep sound, waking up because of an electric shock like sensation, followed by a permanent physical electric feeling, the sensation of physical vibrations, the feeling of pressure waves, and the feeling of pressure on ears, head and body, particularly the influence of the spatial thinking have been resulted in the disability which lasts up to this day.

Her unperturbed awareness regarding the reality of her irritations, her knowledge - amongst others, from Internet forums - that hers is not a singular case, but that many persons are concerned, her power and determination, as well as her years of professional expertise in the field of material trace analysis, method developing and documentation, have led to this report.

Her motivation for this is to live again a dignified and self-determined life.

In view of her very distinct, very abruptly starting physical perceptions, she was able to make a multitude of *objective* observations in her environment during the now more than two years lasting acute illness.

- phenomenons in nature which can exclusively be traced back to pressure waves.
- crackling noises in buildings, immediately with/upon the start of strong sensations of electric/vibration.
- Many (unconscious) physical reactions of fellow men.
- Reactions of animals.

She sees herself as an extreme case.
She is absolutely sure that many people are affected, whose quality of life and/or health is degraded.

2. Explanation

This report was prepared with the same competence, care and reliability with which the author carried out e.g. the annual obligatory VOC measurement (volatile organic compounds) for official institutions during her years of professional life, as well as the multitude of methods developed in the years before.

Amongst others, one of these methods was published at the WHO (World Health Organization), another at the DFG (Deutsche Forschungsgemeinschaft).

3. Reason for this report

After submission of the previous two reports to the BAFU, Federal Office for the Environment (FOEN), official measurements were commissioned by BAFU through the EMPA.
At the same measurement period, own measurements were taken.
In order to fortify and confirm the received results, further measurement of unusual kind were taken.
The results of the measurements of the EMPA are not known to the author up to this day. The exchange of information is envisaged. The content of this report is not affected by this.

4. Results summary part 1 to part 3

4.1. Part 1, measurement parallel to EMPA

- The sound environment of the investigated company is unnaturally altered in a large region.
- The noise of large sound sources (aircraft, loud vehicles) is altered in this environment and/or it changes the sound environment.
- The spectra of the aircraft noise in the environment of the source* look very different without exception than comparable aircraft noise at other, very remote places.
- During the measurement period, motorcycles passed the source. In 8 km distance, signals of these passing noise sources are clearly visible.
- At the source as well as in 8 km distance, aircraft noise was recorded. The time frames for the noise are always identical for all aircraft at both recording locations after sound propagation time correction of the sound tracks, and correspond to the sound propagation time of recording location source - recording location 8 km distance.
  There should be time differences between slow and fast aircraft when the aircraft noise reaches the recording location 8 km away from the source.
  However, it appears as if the altered sound, coming from the source, would generate these signals at the recording location 8 km away.
- Cows were startled by several deep-sound events.

  * when looking at these spectra, a leading sound specialist asked whether these were little owls.

In order to provide evidence for an altered sound environment, a sound-provocation test was carried out in the next step.

4.2. Part 2, provocation test

Sound propagates equally in all directions.
At the source, and in a distance of 3 km and 8 km to the source, one very loud cannon cracker rocket was accordingly ignited in still air.
Within the 3 km radius, the sound propagation speed is on the same level; outside of this radius, it is significantly different. The intensities are differing. There were further abnormalities.
The sound environment of the source is altered.

4.3. Part 3, ground motions

As mentioned, the author wakes up by a sensation of electric shocks.
Exactly at the times of waking up, ground motions are registered by the online real time seismograms of the SED, Swiss Seismological Service, at all depicted earthquake measurement stations in Switzerland.
It could be shown that exactly at the instant of time of such a ground motion, strong emissions started at the source.

4.4. The following notes are mandatory to consider:

During presence of an electric- /vibration sensation and/or other irritations, the irritation decreases upon approaching of a noise source (car, motorcycle, truck, train, ...) proportionally to the approach, and increases accordingly with increasing distance.
A slammed door, short loud noises from TV and the noise of falling objects in the neighbor's flat induce the same effect. For the fraction of a second, the irritations pause.

The aircraft noise of the aircraft passing in 5 km apart from the recording location 2 is far too muted in order to produce this effect. The changes of irritations which are documented in the personal condition log are not being caused by the aircraft noise of the aircraft flying in this distance.
The author can be situated at remote locations without any signs of change at airports, in aircraft, or in any distance, - from tangible to far away - , from passing aircraft.

5. Objective of this report

- This report shall provide evidence that prove that the industrial plant emits infrasound in a previously unknown scale.
- The results of this second report regarding the humming noise phenomenon shall and must give cause for the forced interdisciplinary research.
- Particularly against the background that the proven emissions and their effects do not stop at the country's borders, action must be taken.
- The subjects of infrasound (acoustics?, suitable measurement devices and methods), and the border-crossing ground motions effected by this infrasound (seismology), as well as the border-crossing pressure waves effected by this infrasound (e.g. avalanche research?) must be examined uniformly and interdisciplinary in close cooperation of the areas of expertise.
- Safety values must be checked, adjusted, or created, respectively.
- "Environmental pollution" of this magnitude must be evaluated and regulated in the context of "responsible care" with the highest possible responsibility.

  This must take place with regard to the up to date highly disputed effects of infrasound to the public, as well as with regard to the unnatural, frequent and country-wide caused vibrations/accelerations and their effects and risks, and also in view of an increased danger of avalanches due to pressure waves.

Description of the identified industrial plant

special waste incineration plant. Very large electrical aggregates, air intake 12.000 m^3 / hour, washer - the water is drawn directly from the close river, sieves for shaking-off the fly-ash - these are powered with infrasound, dosing systems.
Obvious characteristic of this plant is a chimney which is, compared to other incineration plants, very high and slender, and not encased (metal).
This could result in a tuning fork effect.
On the web site of the operating company, the plant is advertised as being one of the world most modern ones.
It is run in continuous operation, 24 hours a day, 7 days a week, 365 days per year.

Description of the location of the identified industrial plant
Idyllic between the Jura mountains, black forest and the Alps, in a dip of an elongated valley, crossed by rivers and brooks, with view of the named mountains. In direct proximity of a small river, very close to the groundwater level.
Foundation soil, soil condition and structure of the ample space seem to have a significant influence here.

6. Method

6.1. Audio recordings

- The consideration, analysis and interpretation of the acoustic recordings in this method differs from the common evaluation and analysis methods of sound recordings by mainstream acoustic laboratories.
  It is qualitative and does not evaluate levels.
- Here, the comparative measurements were interpreted following the method of fingerprinting which is commonly and widely used in material analytics (e.g. in forensics).
  Characteristic signal patterns develop during the simultaneous comparative acoustic recording of sound events at the sound source and the immission/detection location, which can present themselves e.g. by signal level, patterns of signal groupings, as well as patterns of frequencies, all appearing simultaneously on the synchronized timelines.
  The unambiguous identification of the sound source is therefore ensured.
- Due to the positioning of the recording device in approx. 150 m distance to the sound source, as well as due to the limited frequency range of the recording device, the signals captured in the audio recordings can show only delimited inaudible sound/low frequency sound, and can not show infrasound at all.

- Also frequencies in the range of inaudible sound generate harmonic waves. Besides the emitted and recorded audible sound, a number of the detected sound events must therefore be also the result of infrasound.
- An additional finding of the acoustic part also of this report is that the so called broadband "crackling sounds", as stated by the acoustics laboratories in audio recordings, are often the measurable sound event of a (made visible) pressure wave.

6.2. Video recordings

Detection of sound pressure waves inaudible sound
Sudden pressure changes of ambient air (sound events inaudible sound) are made visible in a fog bed. The result in a compression/dilution of the fog and form fog faces.
These are optically detectable and can be documented using a video camera.

The depicted screenshots from a video recording are statically.
They do not come close to properly reproducing the impressive dynamics of the pressure waves.

Very likely, a person skilled in the according field will be able to approximately calculate the energy value of the pressure wave by means of the propagation speed of the fog face, taking into account the specific physical and chemical data of the fog composition.

The author acts on the assumption that the fog faces form in the fog bed just when a certain threshold value of a (sound-) barometric pressure change is reached.
It is unknown to which extent frequency dependencies are present here.
Only spontaneous barometric pressure changes are detected. As long as this increased pressure level is present, the fog bed appears to be homogenous and calm.
Also, the end of the sound emission, spontaneous dropping of the barometric pressure, forms faces.

Different from the situation inside buildings, the pressure waves in the open are directed.
In order to identify sources which are very far away, one closes in on the source by repeatedly following the direction from where the pressure waves come in. If the direction of the incoming pressure waves changes, oneself approaches the source in an ever-decreasing grid.
In a closer environment, one can reliably identify the source for infrasound by as little as 2 to 3 detections.

A subwoofer which is directed towards the detection unit and loud bassy music do not form faces.

6.3. Special considerations

- By means of common acoustic recording devices, sound is registered only in a region above approx. 6 Hz, and when using high quality recording devices, already above 2 Hz; also, only for a certain sound pressure or noise level, respectively.
- Also in the now present measurements, frequencies are visible at some instants of time which lie in the region of 0 Hz.
  This suggests an enormous sound pressure or noise level, respectively.
- On the radius of 3 km around the suspected source, the sensed irritations of the author are always in a very distinct degree, and of a very special quality.
  Therefore, she has the opinion that the sound in question is of a very low wavelength in the region of approx < 0,2 Hz (range of +/- 3 km wavelength).
- The pressure waves which are detected by the fog bed significantly fortify this hypothesis.
  If these pressure waves would be caused by sound of shorter wavelengths, these sound events would probably be commonly and largely audible, because a higher sound pressure or noise level, respectively, is necessary in order to produce such visible pressure waves.

7. Technical equipment, software

Sound recording devices	2 / 3 items H2next mobile phone recorder, manufacturer ZOOM Stereo, no filter
sampling frequency:	44100 Hz
sampling format:	16 bit
recording format:	.wav
Microphone AT 2020	notebook computer
sampling frequency:	44100 Hz
sampling format:	16 bit
recording format:	.wav
video camera:	Camileo x 150, manufacturer Toshiba, Full HD
recording speed:	1 : 1
recording format:	MP4
video screenshots:	VLC-media player, freeware
nebulizer device:	not named
fog medium:	not named
time frame:	radio controlled clocks with date and second indicator
audio software:	Audacity, freeware
thunder bang rockets:	horror bang
manufacturer:	Cn/Germany/2013
distribution/art.-no.:	Bugano AG/2008
weight:	350 g
approval number:	CH-06-V01-III-0210.01
EAN:	7 212686 200815
internet access/PC:	graphics Schweizer Erdbebendienst, SED (Source: http://www.seismo.ethz.ch/)

8. Part 1, measurement parallel to EMPA

Measurement parallel to the measurement by the Eidgenössische Materialprüfungs- und Forschungsanstalt EMPA, on behalf of the Federal Office for the Environment, FOEN, for the proof of infrasound emission of an industrial plant.

8.1. Motive for the present measurement

After personal presentation of the sound measurement reports

Report 1, "proof of sound imission - inaudible sound/infrasound - emitted by company XYZ, in apartment building in XYZ, 8 km beeline distance, with two independent methods, audio and video", measurement date 21 May 2013
and
Report 2, Taos HUM, humming noise phenomenon. Proof of sound immission - inaudible sound/infrasound - at the Basel airport, emitted by company XYZ , with audio fingerprint in 59 km beeline distance and personal condition
in 416 km beeline distance, measurement date 9. to 10. June 2013

at 4. July 2013 at the BAFU, Federal Office for the Environment, FOEN, as well as on 8. July 2013 at the Eidgenössische Materialprüfungsanstalt, EMPA, measurements were commissioned by BAFU at the EMPA.
The measurements took place on 03. October 2013.

8.2. Measurement day 3. October 2013

As appointed, own measurements were carried out overlapping/simultaneously with the official measurements.

- Audio recording approx. 150 m away from suspected sound source, recording device free suspended (ZOOM1, recording location 1)
- Audio recording at the author, bureau, window wide open - shielded with fabric all over against drought, recording device outside, free suspended (ZOOM2, recording location 2)
- Audio recording at the author, living room, for spoken personal condition log (AT2020)
- Video recording at the author, bureau, detection device for pressure waves for the recording of the fog faces.

8.3. Peculiarities at the instant of time of the measurements

Active air traffic was present with only few noticeably longer pauses.

Measurement location 1, source

- The otherwise always common audible siren like signal, having a duration of a few seconds, which can be heard in regular intervals of several minutes even during the previous measurement was not present.
- When comparing sound density and rate of occurrence of significant sound events of the measurements of May and of today, serious differences appear.
  No striking, considerable sound events took place.
  There were no continuous clocked emissions.
  There were no continuous frequencies.

Amongst others, a different workload, alterations of operation aggregates of the plant, or also changes of the method of the incineration can be taken into account as a possible reason for these striking changes.

Already on the eve of the measurements, at the morning of the measurement day during setting up of the recording device, as well as during the demounting of the recording device at the morning of 4. October, workman were occupied with various works at the plant. This is sometimes audible in the recordings.

Measurement location 2, 8 km distance to the source
A field was intensively cultivated with a tractor in close and farther distance to the recording devices over several time intervals of the measurements.

8.4. Common measurement period of the own and official measurements

All measurements of the author started before arrival of the official measurement team.
Arrival of the measurement team at 9:32.

Setting up of the official measurement device at the bureau, directly besides the detection device for pressure waves. Settlement regarding the further measurement locations. Placement of the measurement device at source by means of map material.

A further measurement should be carried out at the 3 km circumferential line/radius away from the source.
The reason for this is:
On this 3 km radius around the source, the irritations are always very special and intense.
Proposed location: church in XYZ .

Departure of the measurement team for installation of the measurement devices at source and in 3 km distance to source at 9:59.
Return arrival of the measurement team at 14:16. Uninstalling of the measurement device, followed by uninstalling at the other measurement locations.
It can be assumed that from approx. 11:00 until 14:16 all, i.e. seven measurement devices in total, were operated in parallel.

Own recordings were further continued.

8.5. Handing over of own measurement data to the EMPA

On Monday morning, 07. October, all respective data files of the three audio recordings as well as of the video recording of the pressure waves were personally handed over on a data medium to the mailing department of the EMPA, together with a cover letter. The receipt of the data medium and the cover letter was announced by email.

8.6. Rating of the measurement period with regard to the irritations

On a scale from nothing = 0 to 10 = extreme, the measurement period is located in the lower region of 2 to 4.
On such a scale, the physical irritations can rather clearly be categorized and ranked.
This is far more difficult for the mental irritations.

8.7. Overview measurement arrangement

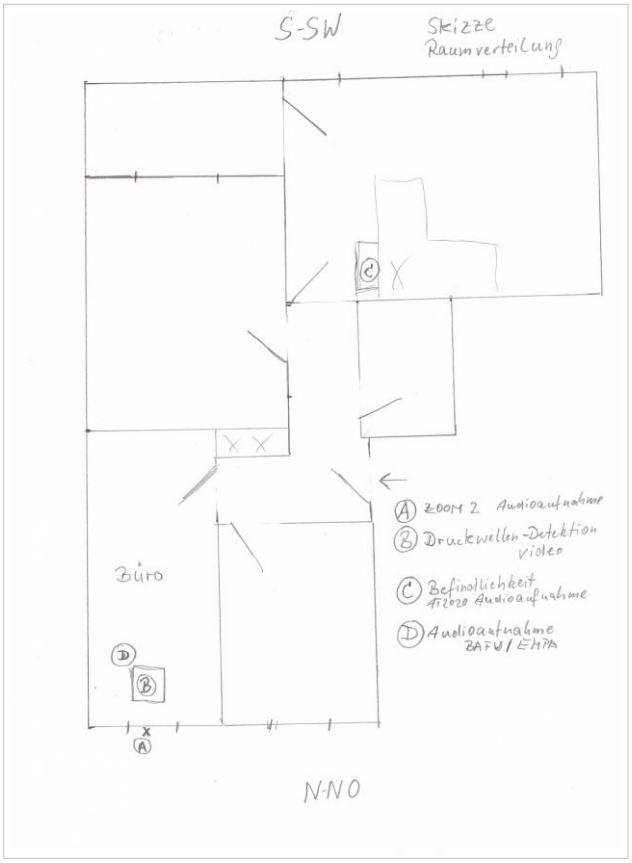
No.	Which recordings	Device	recording location (see sketch of floor plan)	reason	starting time	duration	own measurement	FOEN - EMPA measurement
1*	audio	Zoom1	at suspected sound source	comparative measurement for 2	7:45' exact time announced	> 20h	X	
2*	audio	Zoom2	place of residence, bureau, 8 km distance to 1	comparative measurement for 1	7:45' exact time announced	> 20h	X	
3	audio	AT 2020	place of residence, living room, 8 km distance to 1	personal condition log	1: 09:26 2: 20:11' exact time announced	06h37' 10h02'	X	
4*	video	Toshiba	place of residence, bureau, 8 km distance to 1	visual representation of pressure waves of inaudible sound	7:44' exact time announced	> 20h	X	
5	audio	not named	at suspected sound source	comparative measurement for 6, 7	? estimated not later than 11:00	? approx. 04h15'		X
6	audio	not named	In approx 3 km distance to suspected sound source	comparative measurement to 5, 7, as well as search for signs if any peculiarities can be found on the 3 km radius	? estimated not later than approx. 10:40	? approx. 04h15'		X
7	audio	not named	place of residence, bureau, 8 km distance	comparative measurement to 5 and 6	approx. 09:46	approx. 04h30'		X

Table 1

8.8. Time protocol:

date of measurement		03. October 2013	
number of measurements sites*:		3 x audio recording 1 x video recording	
		<u>start time:</u>	<u>recording location:</u>
ZOOM1, handheld recording device		approx. 07h45'	approx 150 m away from suspected source, measurement location 1
ZOOM2, handheld recording device		approx. 07h45'	apartment, bureau, window bench outside, measurement location 2
AT2020, microphone, notebook		approx. 09h26'	apartment, living room, personal condition
video, recording pressure waves		approx. 09h40'	apartment, bureau
duration of the recordings:		All analyses were limited to the time from 10:00 until 14:30. Recordings until morning of 04. October.	
Location of the author during recording:		Changing. For the two personal condition logs on the sofa, lying, in the living room	
Note*:		Recordings of a further measurement location could not be evaluated. Starting time not clearly visible, handicraft enterprise during measurement period.	

8.9. Spatial arrangement of the measurement devices at measuement location 2



Drawing 1

A Zoom2 Audio record

B Detection pressure waves

C personal conditions audio record, AT2020

D Audio record BAFU/EMPA

8.10 Personal condition during measurement period

On a scale from 0 (nothing) to 10 (extreme), the measurement period from morning until noon is from 2 to 3, from noon on 2 to 4.

8.11. Personal condition log (audio recording)

Evaluated time interval: 10:00 until 14:17, the one-hundredth readings are approximations. Over the entire measurement period, only few pressure waves were sensed. An feeling of electricity was present in various intensities.

Event no.	hour	minute	second	100th part	
1	10	27	23	626	only vibration, left
2	10	49	3	229	sound louder, booming, in-/decreasing, static sound, buzzes more, feeling of electricity more intense
3	11	21	5		extremely muted
4	11	34			fine light feeling of electricity entire body, booming sound, in-/decreasing, restlessness
5	11	39	0	170	Sound is more like a static continuous sound
6	11	40	5	99	could normally never lie like this, oppressiveness, impedes breathing
7	11	56			booming, hectic tendency
8	12	0			just as now abdominal murmur
9	12	3	50		standing sound
10	12	7	6	629	now a short bang in the ear, just such a pressure
11	12	8	40		electric vibration increases
12	12	10	5		coarser feeling of electricity
13	12	11	42	323	wave of coarse feeling of electricity with goose bumps
14	12	12	13	598	left very unpleasant
15	12	12	28		makes very restless somehow
16	12	12	54	51	again wave of goose bumps
17	12	13	11		feeling myself oppressed
18	12	13	18	867	again such a wave
19	12	13	48	782	again such a wave
20	12	15	1	190	again wave
21	12	15	38	9	again wave
22	12	16	25	156	now there was a bang in the ears, something goes through the entire body... much
23	12	16	54	51	in total now more feeling of electricity
24	12	18	29	915	more, intense electricity, very unpleasant, magnetic power, more left, wave
25	12	18	49	632	until
26	12	19	34	504	I feel my heart
27	12	19	32	125	wave through body left
28	12	19	56	601	wave, maybe a bit less intense
29	12	22	21	756	again wave
30	12	22	51	671	Sound appears standing
31	12	24	53	371	again wave
32	12	25	14	448	again some heart thing
33	12	25	50	822	again wave
34	12	35	3	909	very booming
35	12	39	54	561	on the balcony, the electric irritation is stronger, going there for measurements
36	12	52	49	292	more electricity outside, causing restlessness
37	13	12	33	235	standing sound, no more booming
38	13	30	28		little, level just as before the waves, slightly booming sound
39	13	33	30	102	sound continuous-standing
40	13	33	55	641	there is something going on in the left of the body
41	13	35	2	43	there is something, but no so much in the body
42	13	35	51	419	something is going on
43	13	37	32	894	hectic level, but not as before (heart)
44	13	37	58	93	Something is going on
45	13	40	17	367	Something is going on
46	13	40	37	457	left sinde reacts
47	13	41	28	536	Something is going on
48	13	42	9	398	Something is going on

49	13	42	39		Something is going on
50	13	43	3	882	could be more than just before
51	13	43	45	85	Something is going on
52	13	44	20	159	Something is going on
53	13	44	48	82	not loud, but the ears burst soon (pressure)
54	13	45	5	108	Something is going on
55	13	45	23	496	sound changes
56	13	46	13	212	Something is going on
57	13	46	58	842	something is going on, left
58	13	47	29	489	something is going on, queasy hollow feeling, very unpleasant
59	13	48	6	947	leaving
60	13	48	18	524	comes back
61	13	49	22	883	something comes again. Again queasy belly, restlessness, oppressiveness
62	13	50	40	522	Something comes again
63	13	51	18	320	Something comes again
64	13	52	17	911	Something comes again
65	13	53	19	546	Something comes again
66	13	54	34	461	Something comes again, something different
67	13	54	51	146	Something comes again
68	13	55	4	427	Something comes again, something different
69	13	55	44	949	hollow queasy feeling comes again
70	13	56	26	152	a slight crackling in the ear
71	13	56	37	730	Wave left side
72	13	57	13	485	Something comes again, less
73	13	58	0	817	A queasy relaxing feeling
74	13	58	49	512	something comes again left-hand side, sound possible a bit more muted
75	13	59	39	568	Something comes again
76	14	0	19	750	Something comes again, something crackles in the ear
77	14	0	33	31	queasy feeling through the body
78	14	2	5	993	again queasy relaxing
79	14	3	0	477	Something comes again
80	14	3	38	615	there was something with crackling in the ear and queasy relaxing
81	14	4	32	418	slight crackling in the head
82	14	4	38	207	something comes again left side!!! Sound almost inaudible
83	14	5	7	832	much more muted than before
84	14	5	23	837	muted, but pressure on both ears
85	14	5	34	733	something comes again left
86	14	6	5	380	something in head/ears, queasy feeling
87	14	7	11	442	abdominal gurgling
88	14	7	18	852	Something comes again
89	14	8	39	977	Something comes again, left
90	14	8	55	641	again more muted than before
91	14	10	10	216	Something comes again, queasy relaxing belly/body
92	14	10	25	880	abdominal gurgling
93	14	11	54	756	again something, like a slight inner jerk
94	14	12	18	933	something is happening
95	14	14	34	461	very calm, little electricity, less than before
96	14	15	16	0	something is going on
97	14	15	30	647	something is going on
98	14	15	35	755	what can be felt now is more in the retral chest/back
99	14	16	5	380	ringing

Table 3

8.12. Aircraft movements during the measurements

Along nearly the entire measurement time interval, active air traffic was taking place. Details can be found in the following drawings and tables.

8.12.1. Aircraft movements in the region of measurement location 1, source, and measurement location 2, in 8 km distance to the source.

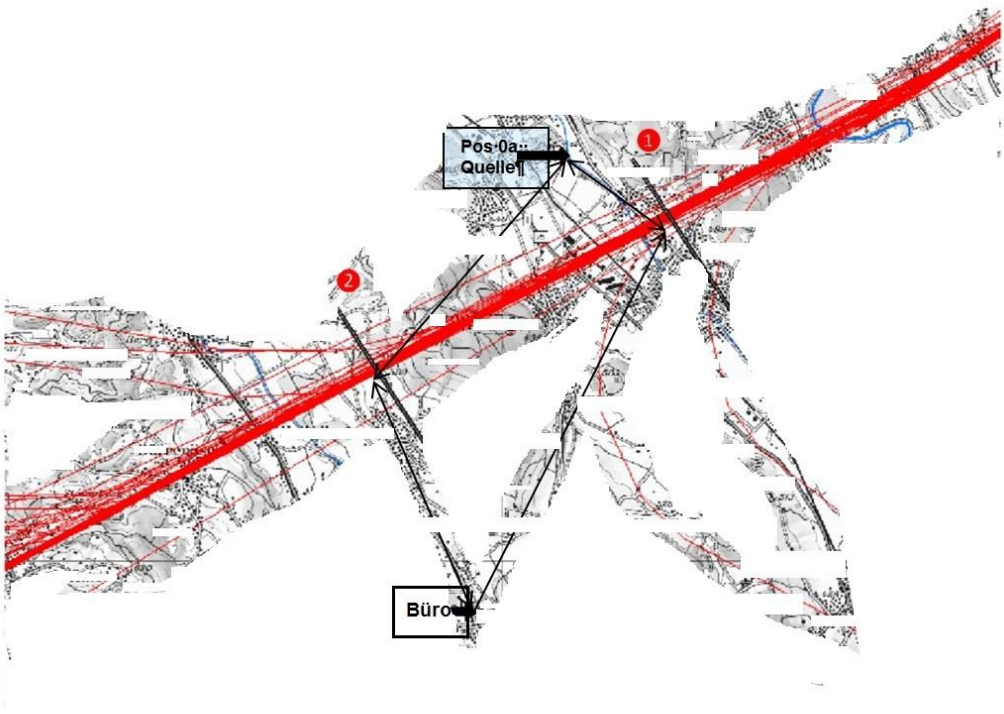


Abbildung 1: Flugspuren (---- Abflüge) am 3. Oktober 2013 zwischen 10:00 Uhr und 14:30 Uhr mit Querschnitt 1 und Querschnitt 2

Source: Zurich airport **graphic with own additions of measurement locations and connection lines**

Drawing 2

The drawing represents the aircraft movements in the regions XYZ and XYZ on 3. October 2013 in the time between 10:00 and 14:00. The aircraft movements are departures from runway 28 and runway 16, respectively, in westward direction. An according cross section was placed through these flight traces in the region of XYZ and in the region XYZ in order to determine the exact times of the cross section breakthrough of the individual aircraft.
In the regions XYZ and XYZ , 16 landings towards the Zurich airport took place during the time in question; however, because of an altitude of above 12.000 feet, these can not be viewed as relevant in the present case.

❶ cross section XYZ – XYZ

On 3. October 2013, between 10:00 and 14:30, the cross section ❶ was penetrated by 54 aircraft.

❷ XYZ – XYZ

On 3. October 2013, between 10:00 and 14:30, the cross section ❶ was penetrated by 52 aircraft.

8.12.2 Altitudes:

Cross section 1

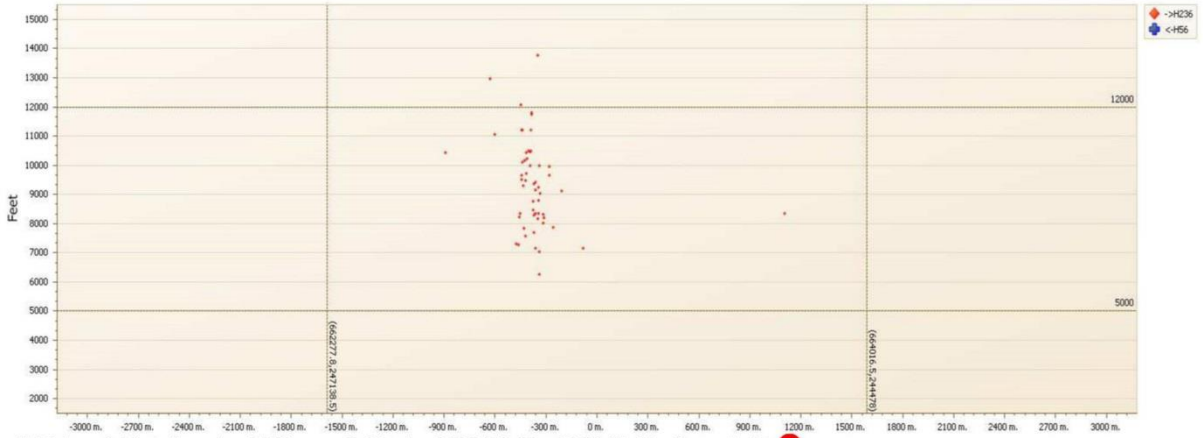


Abbildung 2: Verteilung der Abflüge am 3. Oktober 2013 (10:00 – 14:30 Uhr) im Querschnitt 1

Source: Zurich airport

Drawing 3

Cross section 2

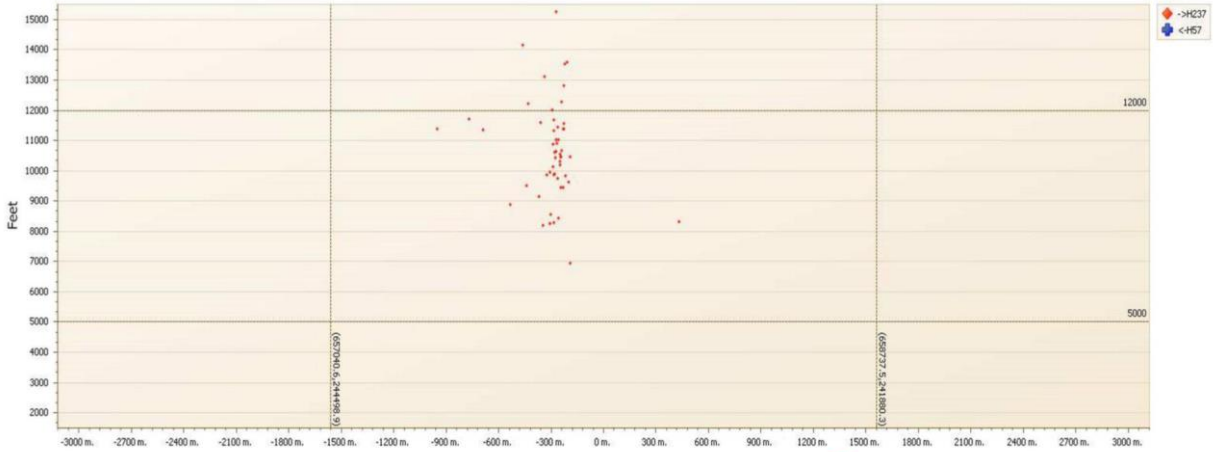


Abbildung 3: Verteilung der Abflüge am 3. Oktober 2013 (10:00 – 14:30 Uhr) im Querschnitt 2

Source: Zurich airport

Drawing 4

8.12.3 Aircraft movement time frame and calculations of the velocities of the aircraft

italic = source: airport Zürich

straight line = own calculations

number	Date	Gate Penetration Time (hh:mm:ss) Querschnitt 1, XYZ	Gate Penetration Time (hh:mm:ss) Querschnitt 2, XYZ	Operation	Runway	fliht-time cross-section 1 to crosssection 2	flight-time from cross-section 1 to 3 km calculated	Average speed in Km/h from cross-section 1 to cross-section 2	
1	03.10.2013	10:02:13	10:02:54	Departure	28	00:00:41		490.48	
2	03.10.2013	10:05:44	10:06:21	Departure	28	00:00:37		543.50	
3	03.10.2013	10:10:25		Departure	28				Other direction
4	03.10.2013	10:18:35	10:19:09	Departure	16	00:00:34		591.46	
5	03.10.2013	10:20:17	10:20:51	Departure	16	00:00:34		591.46	
6	03.10.2013	10:22:00	10:22:37	Departure	16	00:00:37		543.50	
7	03.10.2013	10:23:59	10:24:29	Departure	16	00:00:30	11.70	670.32	max speed
8	03.10.2013	10:25:14	10:25:52	Departure	28	00:00:38	14.82	529.20	Av. speed
9	03.10.2013	10:32:57	10:33:31	Departure	16	00:00:34		591.46	
10	03.10.2013	10:35:27	10:36:04	Departure	28	00:00:37		543.50	
11	03.10.2013	10:42:21	10:42:52	Departure	16	00:00:31		648.70	
12	03.10.2013	10:45:35	10:46:13	Departure	28	00:00:38	14.82	529.20	Av. speed
13	03.10.2013	10:48:44	10:49:22	Departure	28	00:00:38	14.82	529.20	Av. speed
14	03.10.2013	10:52:16	10:52:52	Departure	28	00:00:36		558.60	
15	03.10.2013	10:57:24	10:57:54	Departure	16	00:00:30	11.70	670.32	max speed
16	03.10.2013	10:59:02	10:59:33	Departure	16	00:00:31		648.70	
17	03.10.2013	11:11:44	11:12:25	Departure	28	00:00:41		490.48	
18	03.10.2013	11:13:17	11:13:56	Departure	28	00:00:39		515.63	
19	03.10.2013	11:49:14	11:49:57	Departure	28	00:00:43		467.67	
20	03.10.2013	11:53:33	11:54:06	Departure	16	00:00:33		609.38	
21	03.10.2013	11:55:14	11:55:53	Departure	28	00:00:39		515.63	
22	03.10.2013	12:01:52	12:02:53	Departure	28	00:01:01	23.79	329.67	min speed
23	03.10.2013	12:04:04	12:04:42	Departure	28	00:00:38	14.82	529.20	Av. speed
24	03.10.2013	12:08:27	12:09:07	Departure	28	00:00:40		502.74	
25	03.10.2013	12:11:53	12:12:30	Departure	28	00:00:37		543.50	
26	03.10.2013	12:14:57	12:15:31	Departure	28	00:00:34		591.46	
27	03.10.2013	12:18:38	12:19:12	Departure	16	00:00:34		591.46	
28	03.10.2013	12:20:31	12:21:01	Departure	16	00:00:30		670.32	
29	03.10.2013	12:23:53	12:24:36	Departure	28	00:00:43		467.67	
30	03.10.2013	12:25:51	12:26:31	Departure	28	00:00:40		502.74	
31	03.10.2013	12:28:11	12:28:48	Departure	28	00:00:37		543.50	
32	03.10.2013	12:52:16	12:52:56	Departure	28	00:00:40		502.74	
33	03.10.2013	12:55:26	12:55:59	Departure	28	00:00:33		609.38	
34	03.10.2013	12:57:03	12:57:46	Departure	28	00:00:43		467.67	
35	03.10.2013	13:02:34	13:03:06	Departure	16	00:00:32		628.43	
36	03.10.2013	13:04:29	13:05:10	Departure	28	00:00:41		490.48	
37	03.10.2013	13:06:00	13:06:40	Departure	28	00:00:40		502.74	
38	03.10.2013	13:10:43	13:11:25	Departure	28	00:00:42		478.80	
39	03.10.2013	13:17:03	13:17:46	Departure	28	00:00:43		467.67	
40	03.10.2013	13:20:32	13:21:09	Departure	28	00:00:37		543.50	
41	03.10.2013	13:23:35	13:24:10	Departure	28	00:00:35		574.56	
42	03.10.2013	13:29:10	13:29:55	Departure	28	00:00:45	17.55	446.88	2.min speed
43	03.10.2013	13:36:13		Departure	28				Other direction
44	03.10.2013	13:41:53	13:42:33	Departure	28	00:00:40		502.74	
45	03.10.2013	13:45:53	13:46:35	Departure	16	00:00:42		478.80	
46	03.10.2013	13:47:38	13:48:17	Departure	16	00:00:39		515.63	
47	03.10.2013	13:49:31	13:50:09	Departure	28	00:00:38	14.82	529.20	Av. speed
48	03.10.2013	13:50:51	13:51:33	Departure	28	00:00:42		478.80	
49	03.10.2013	13:56:41	13:57:16	Departure	16	00:00:35		574.56	
50	03.10.2013	13:58:39	13:59:19	Departure	16	00:00:40		502.74	
51	03.10.2013	14:00:36	14:01:13	Departure	28	00:00:37		543.50	
52	03.10.2013	14:10:42	14:11:18	Departure	16	00:00:36		558.60	
53	03.10.2013	14:21:00	14:21:33	Departure	28	00:00:33		609.38	
54	03.10.2013	14:27:11	14:27:54	Departure	28	00:00:43		467.67	
					av	00:00:38		538.94	

Table 4

8.12.4. Calculations of distances of the cross sections to the measurement locations

italic = source Zurich airport straight line: own calculation

sound velocity: 0.302001 km/sec (taken from report 1) 1 Feet ft = 0,3048 m

The value feet (ft) gives the altitude at which the aircraft penetrates the cross sectional area.
The altitude is given in feet (ft) and relates to the altitude above sea level.
The average passing altitude in cross section 1 (Wohlen) amounts to ~9'400 ft, in cross section 2 (Seengen) ~10'600 ft.

Distances	**km distance on ground level**		**km distance in flight altitude**	**sound propagation time in seconds**	aircraft noise up to the bureau?
cross section 1 to source	1.98		**3.48**	**11.52**	
3 km location to source	2.35				
cross section 2 to source	5.47		**6.17**		
source to bureau	8.00			**26.49**	
cross section 1 to bureau	7.40		**8.08**	26.75	exclusion
3 km location to bureau	5.01				
cross sectiion 2 to bureau	3.81		**5.00**	16.54	possible
cross section 1 to cross section 2	5.59				
Cross section 1 to calculated route over 3 km	2.18		**3.90**	12.91	possible ?
route over 3 km to source	2.82		**4.12**	13.66	
sum of seconds cross section 1 to source - source to bureau				**38.01**	

flight altitude in km av. at cross section 1	flight altitude in km av. at cross section 2	flight altitude in km av. in 3 km location calculated		Assumption:	linear climb rate identical speed for both cross sections
2.87	**3.23**	**3.01**			

Table 5

8.13. Audio

correction of the time axis
tracks synchronized at 26,49 seconds (8 km, value from previous reports)

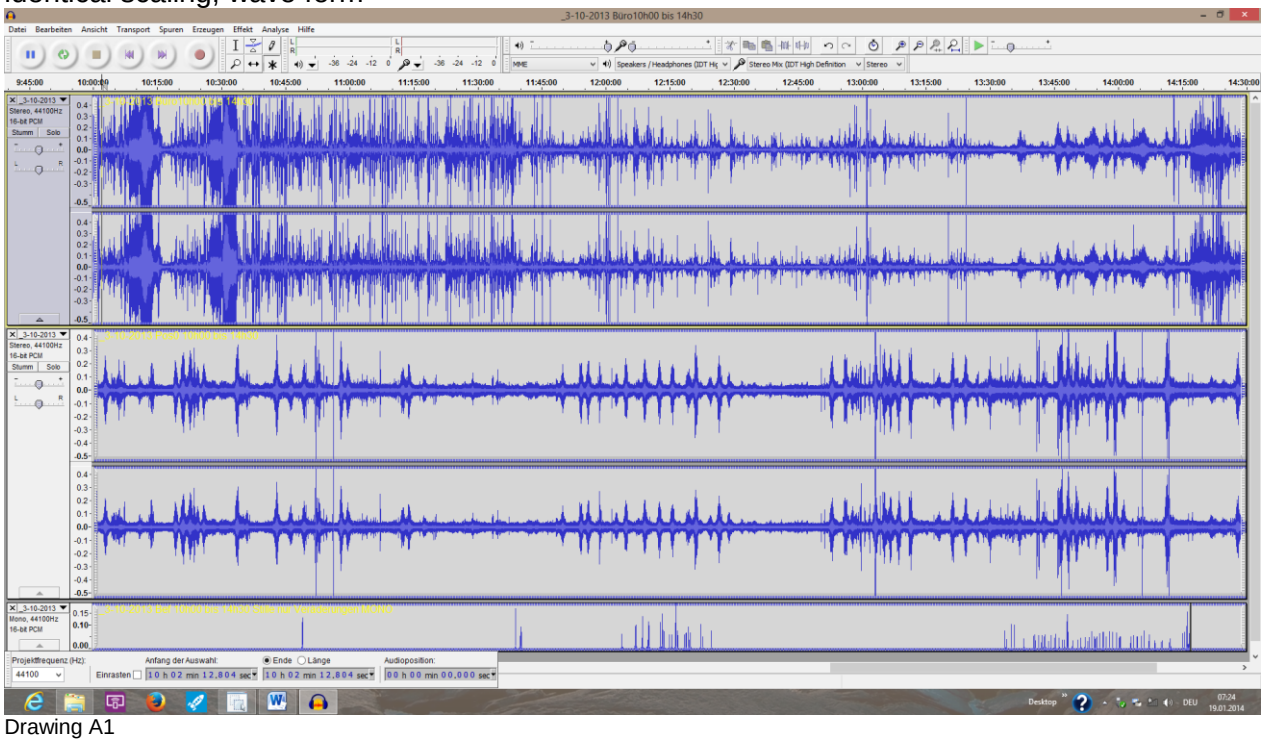
stereo track top = measurement location 2, 8 km from source, bureau
stereo track center = measurement location 1, source
mono track bottom = personal condition log, only start-signals of announcements relating to changes in physical perceptions.

Even when no announcement was made, irritations were present, they have just not been logged in detail.

8.13.1. Entire evaluated time interval

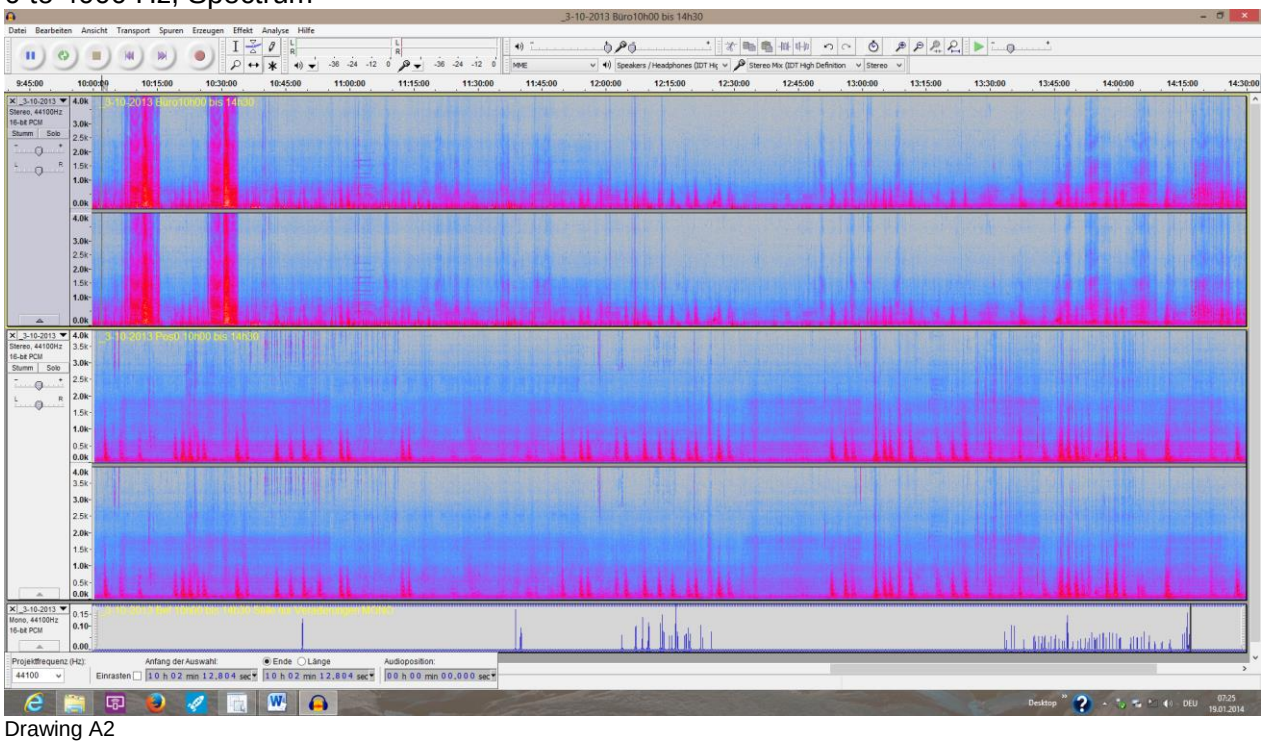
The noticeably many corresponding signals at source and in 8 km distance are aircraft.

Entire evaluated time interval, 10:00 until 14:30
identical scaling, wave form



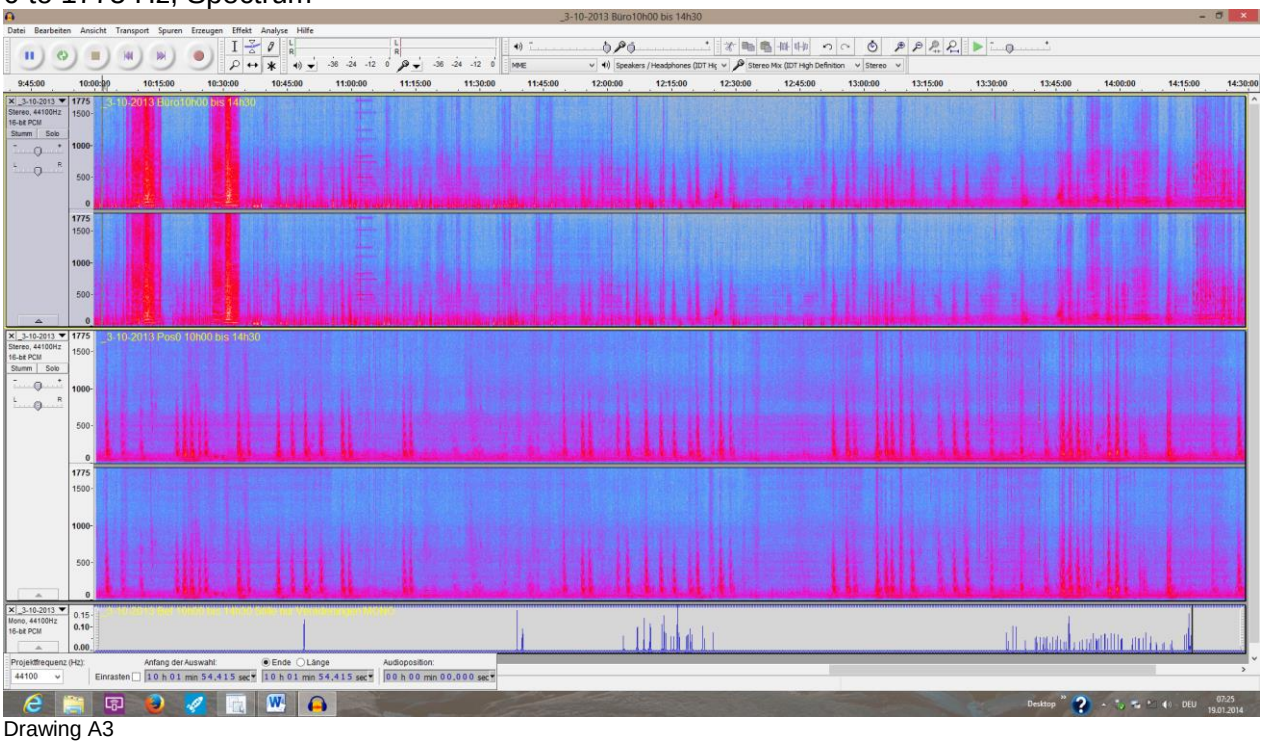
Drawing A1

Entire evaluated time interval, 10:00 until 14:30
0 to 4000 Hz, Spectrum



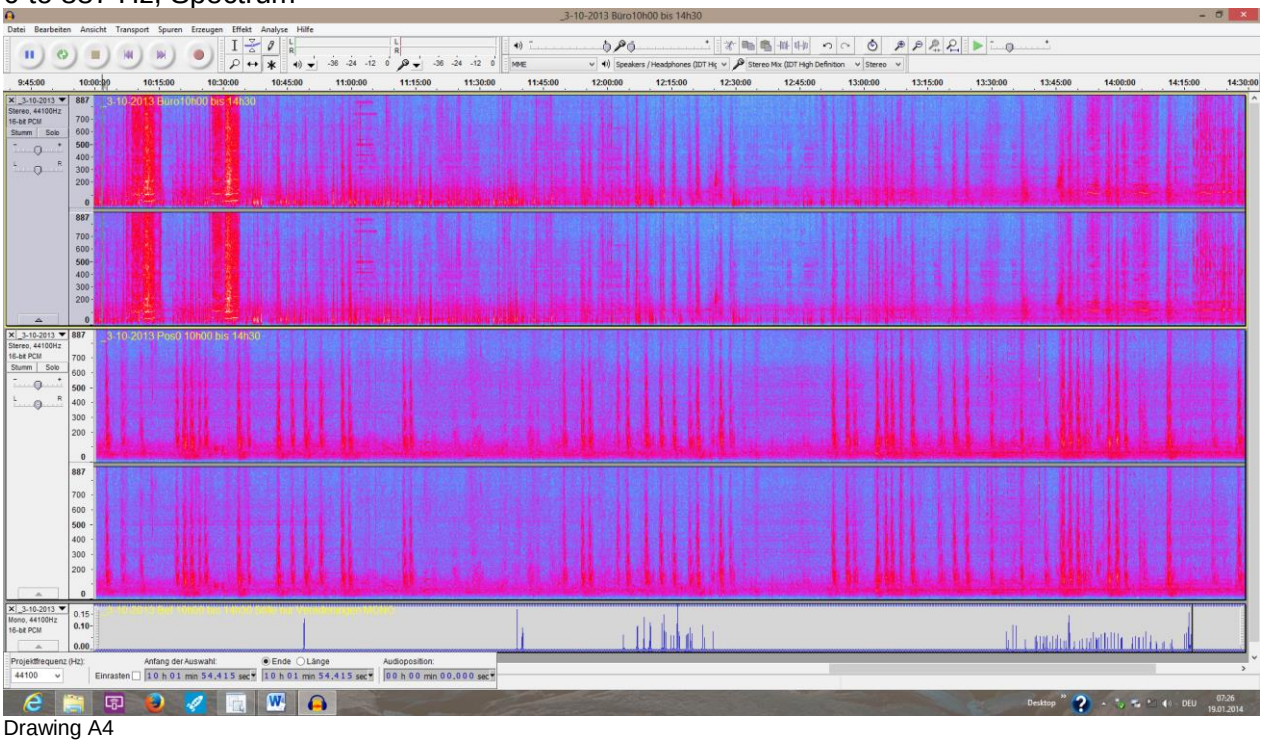
Drawing A2

Entire evaluated time interval, 10:00 until 14:30
0 to 1775 Hz, Spectrum



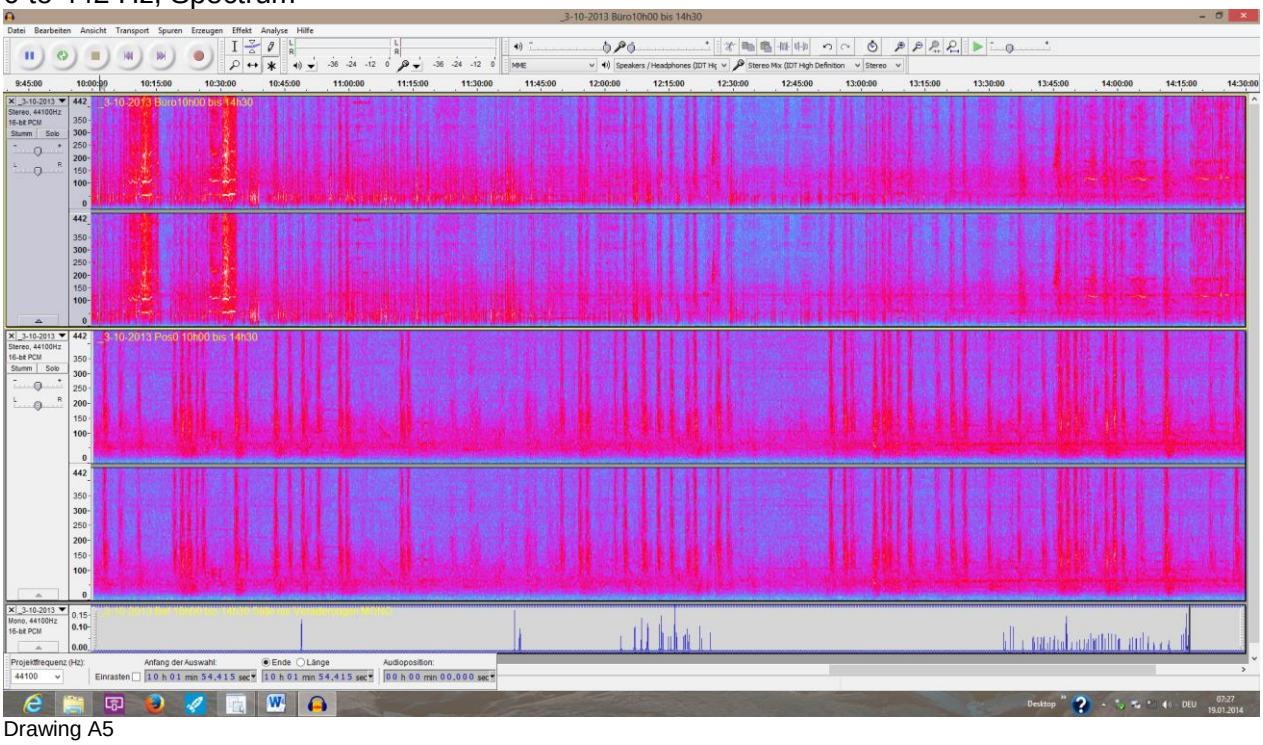
Drawing A3

Entire evaluated time interval, 10:00 until 14:30
0 to 887 Hz, Spectrum



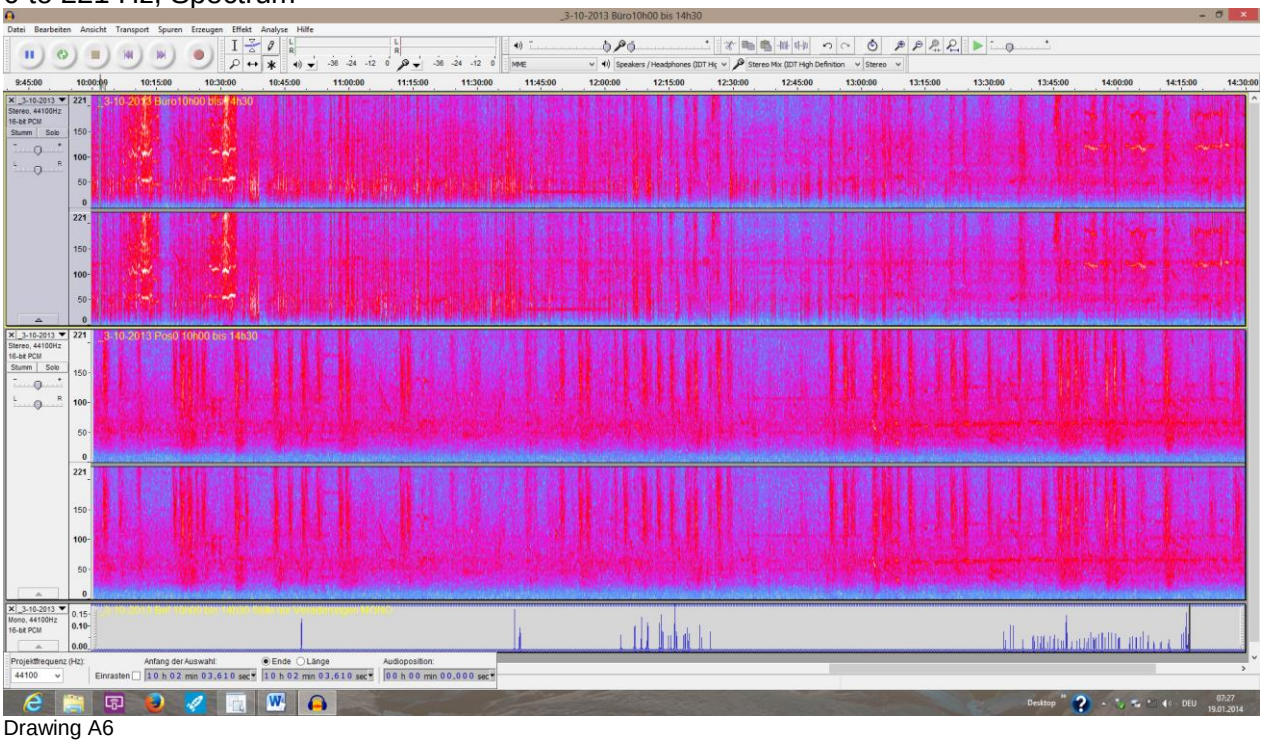
Drawing A4

Entire evaluated time interval, 10:00 until 14:30
0 to 442 Hz, Spectrum



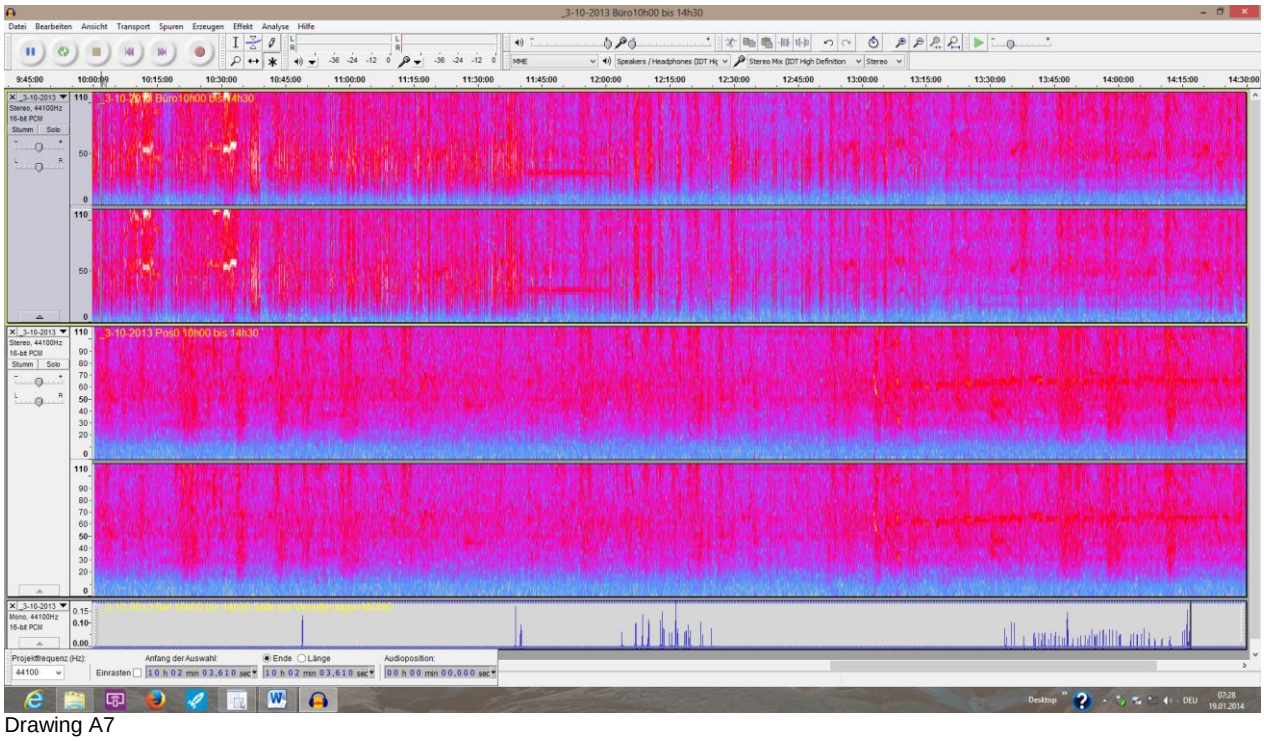
Drawing A5

Entire evaluated time interval, 10:00 until 14:30
0 to 221 Hz, Spectrum



Drawing A6

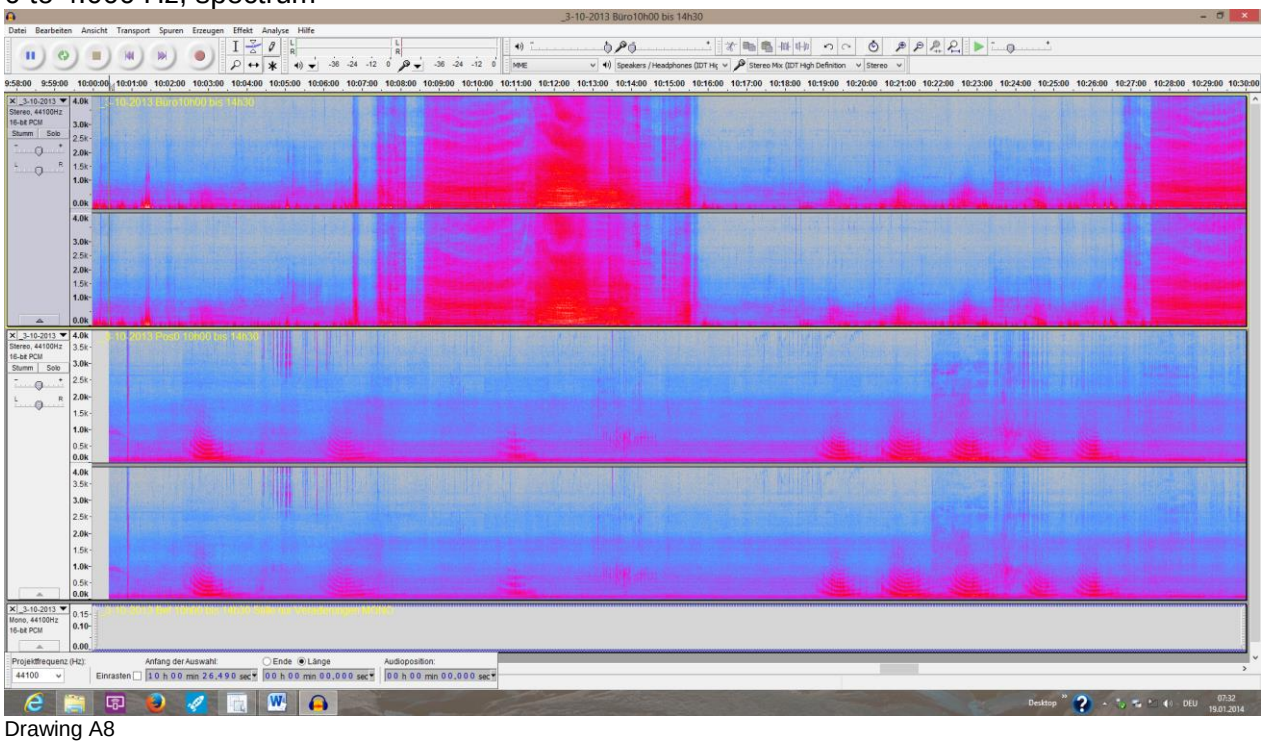
Entire evaluated time interval, 10:00 until 14:30
0 to 110 Hz



Drawing A7

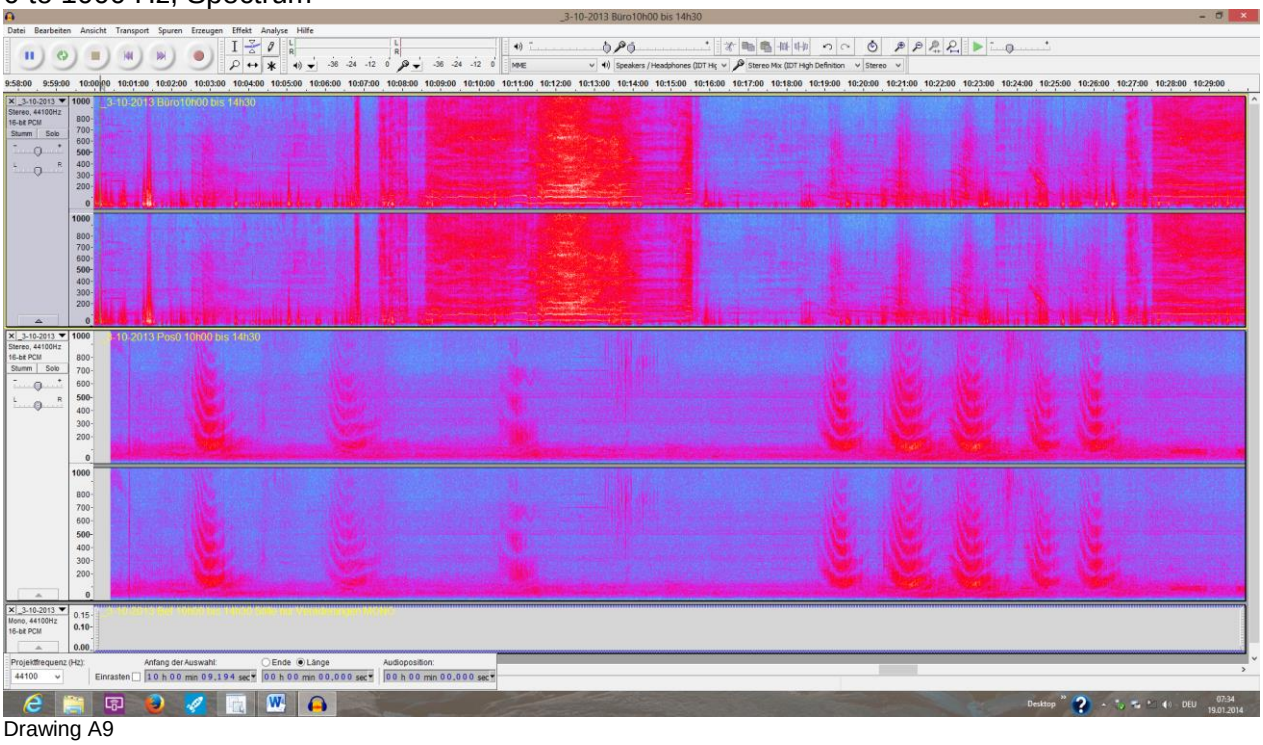
8.13.2. Each view represents 30 minutes

selection 10:00 until 10:30
Intense, continuous sound events at measurement location 2 effected by tractor.
0 to 4.000 Hz, spectrum



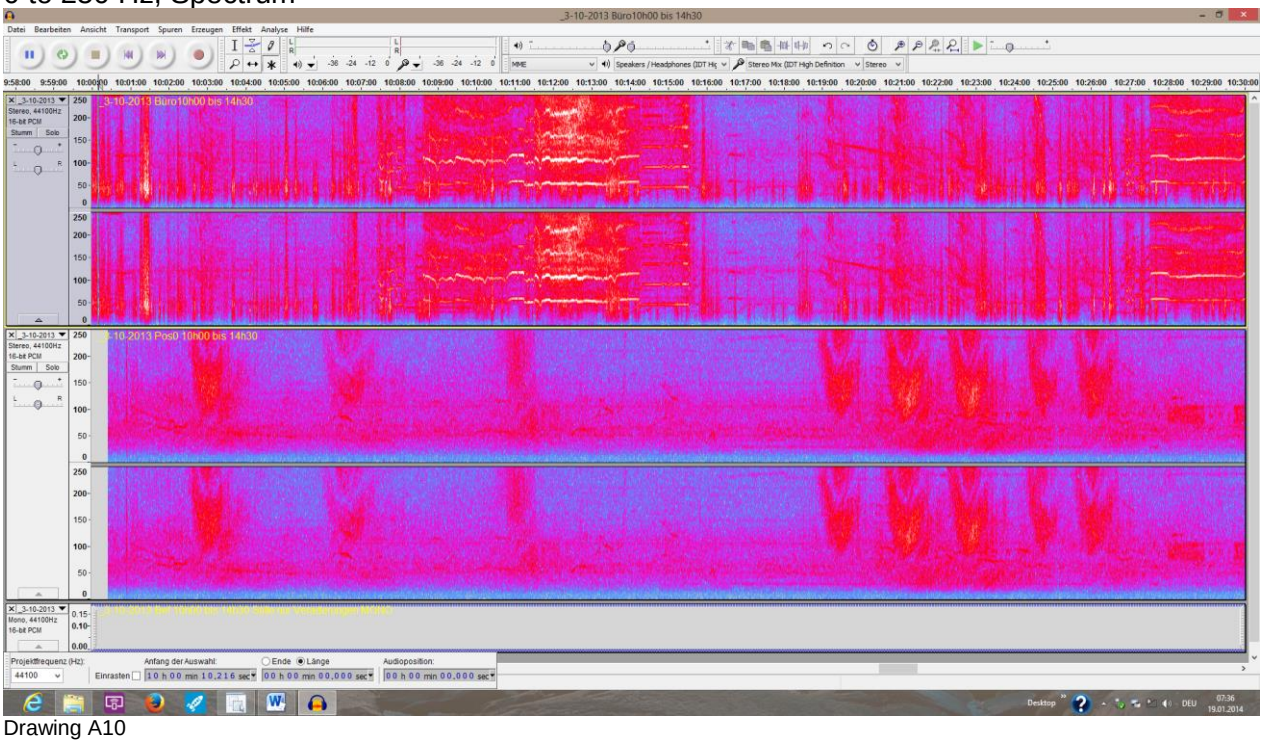
Drawing A8

selection 10:00 until 10:30
0 to 1000 Hz, Spectrum



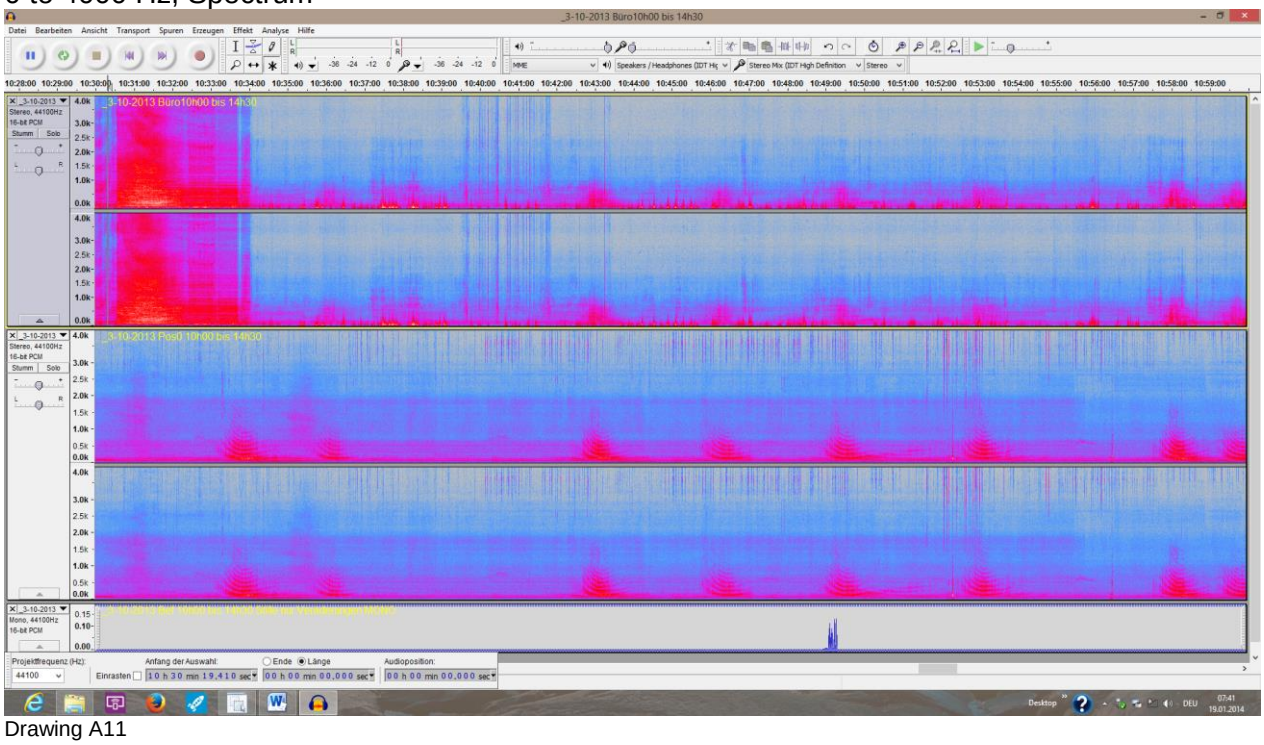
Drawing A9

selection 10:00 until 10:30
0 to 250 Hz, Spectrum



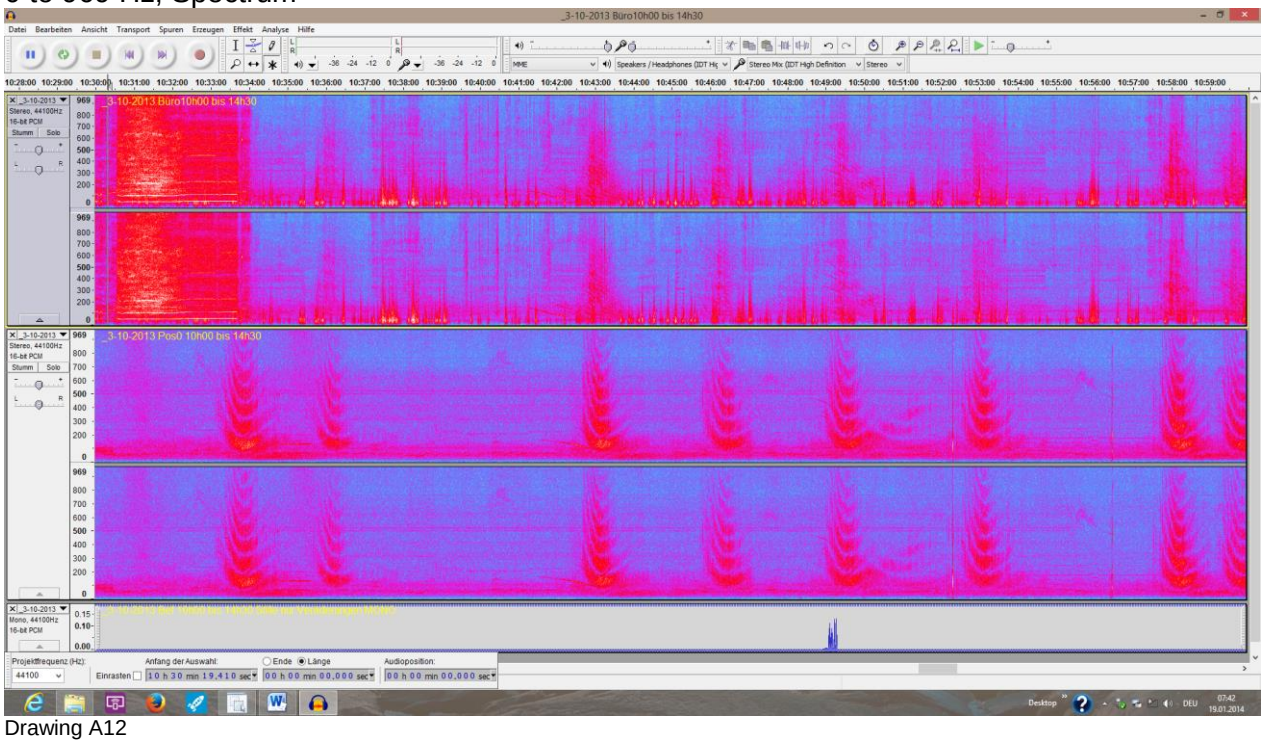
Drawing A10

selection 10:30 until 11:00
Intense, continuous sound events at measurement location 2 effected by tractor.
0 to 4000 Hz, Spectrum



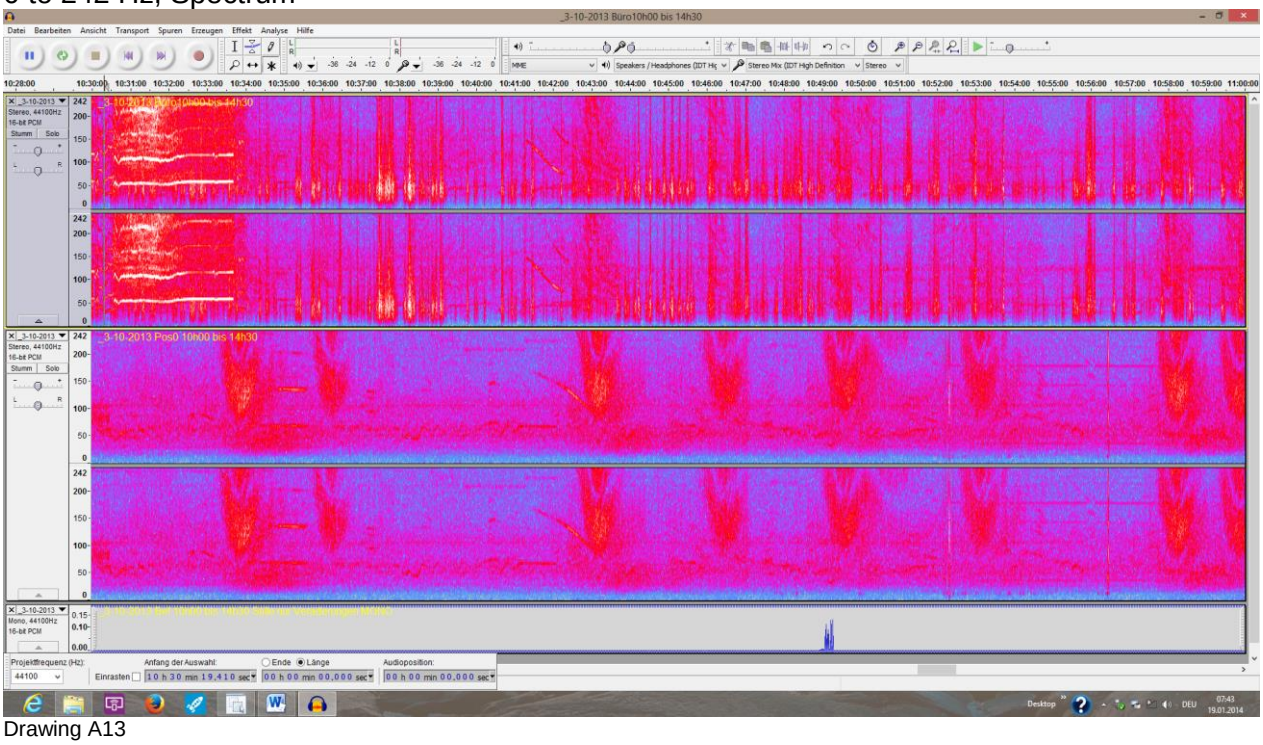
Drawing A11

selection 10:30 until 11:00
0 to 969 Hz, Spectrum



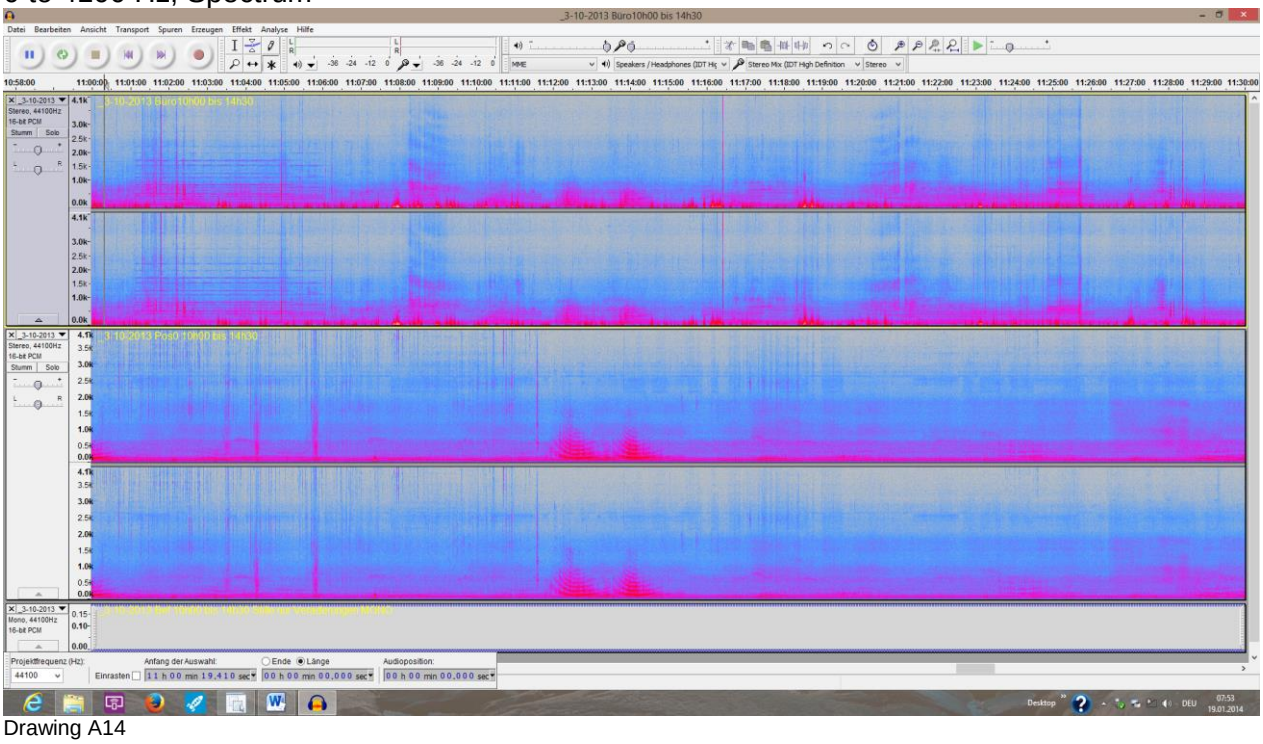
Drawing A12

selection 10:30 until 11:00
0 to 242 Hz, Spectrum



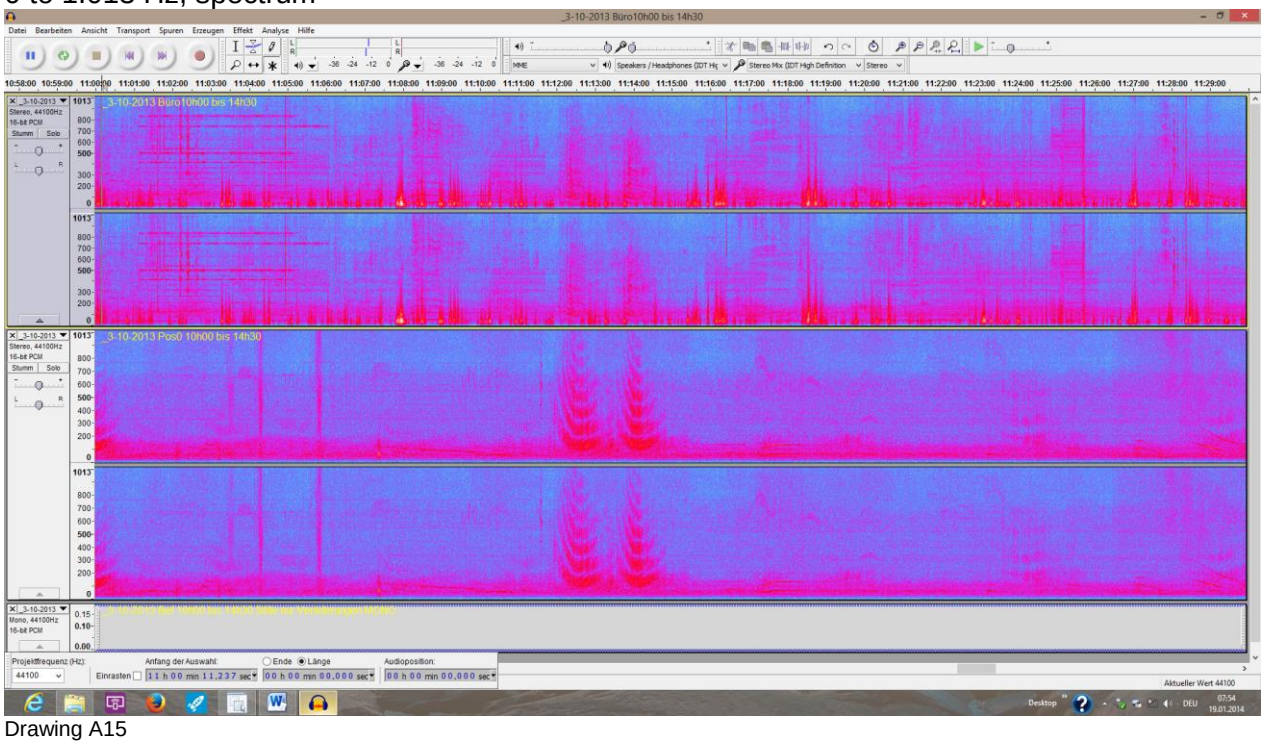
Drawing A13

selection 11:00 until 11:30
0 to 4100 Hz, Spectrum



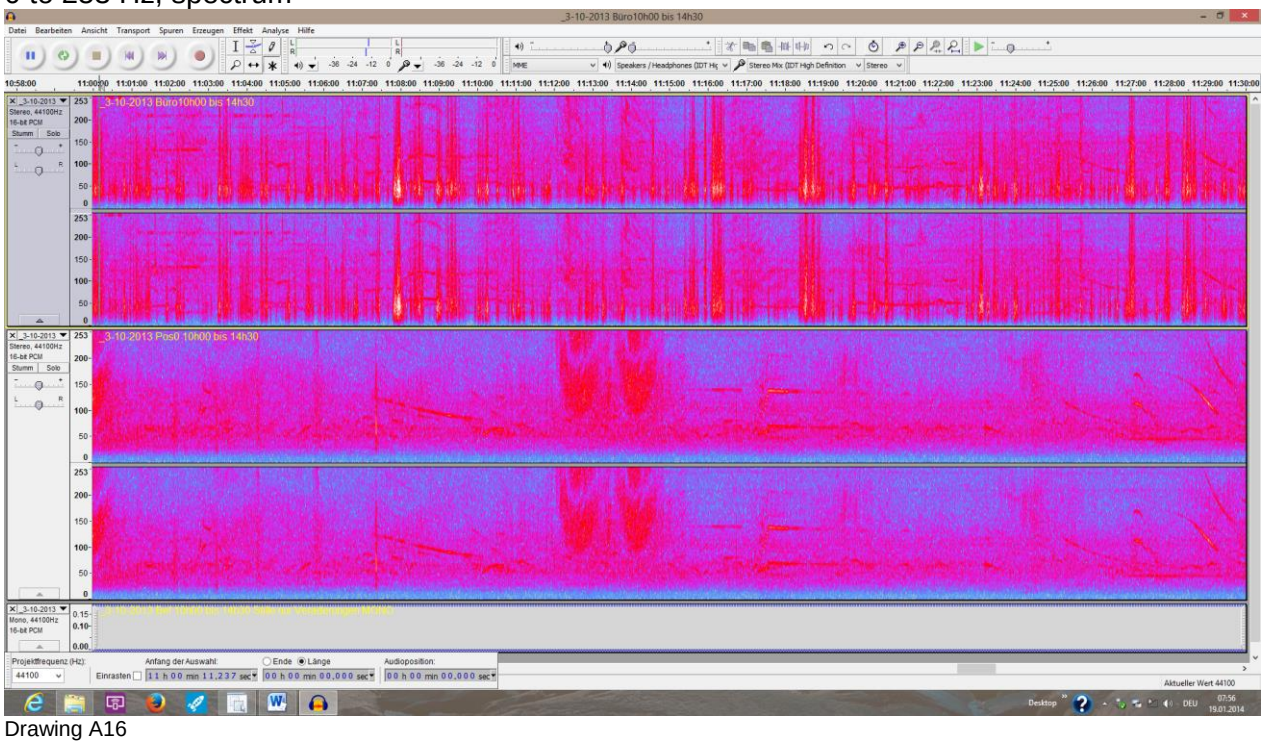
Drawing A14

selection 11:00 until 11:30
measurement location 2 from 11:01 church bells
0 to 1.013 Hz, spectrum



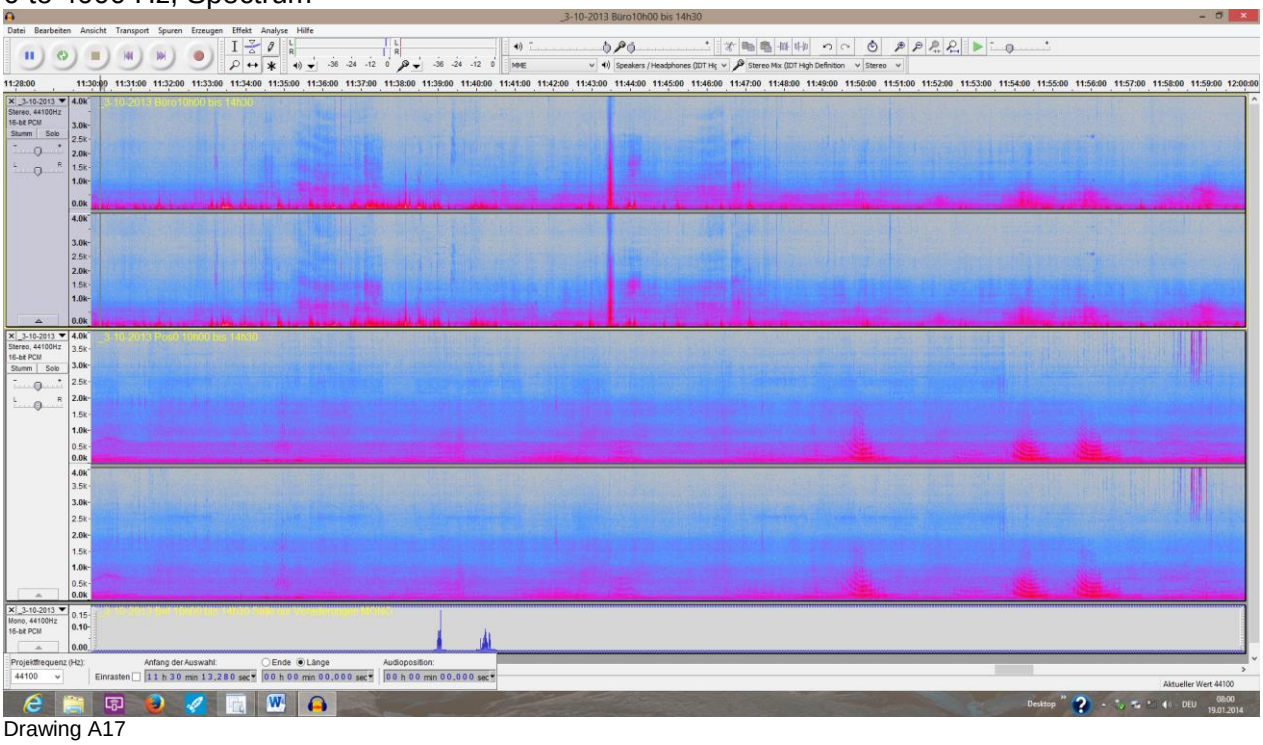
Drawing A15

Selection 11:00 until 11:30. At the time of booming at measurement location 2 clear signals at source.
0 to 253 Hz, spectrum



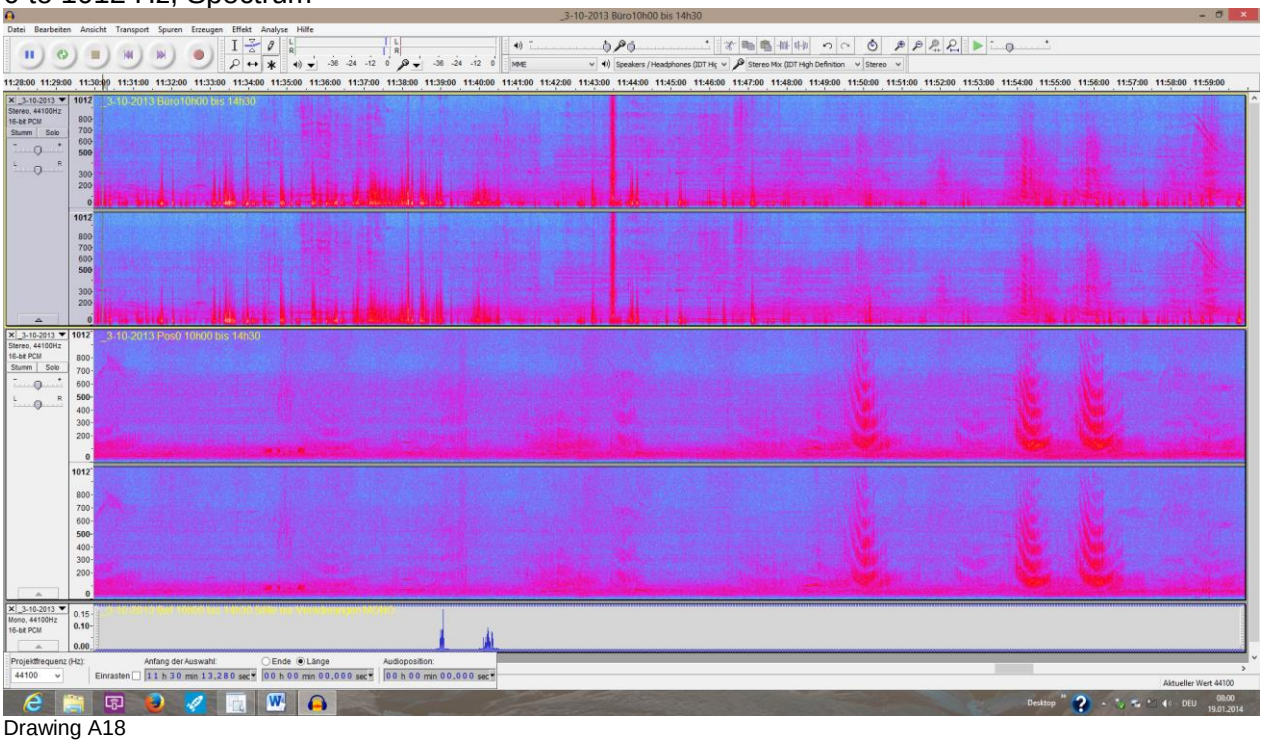
Drawing A16

Selection 11:30 until 12:00
0 to 4000 Hz, Spectrum



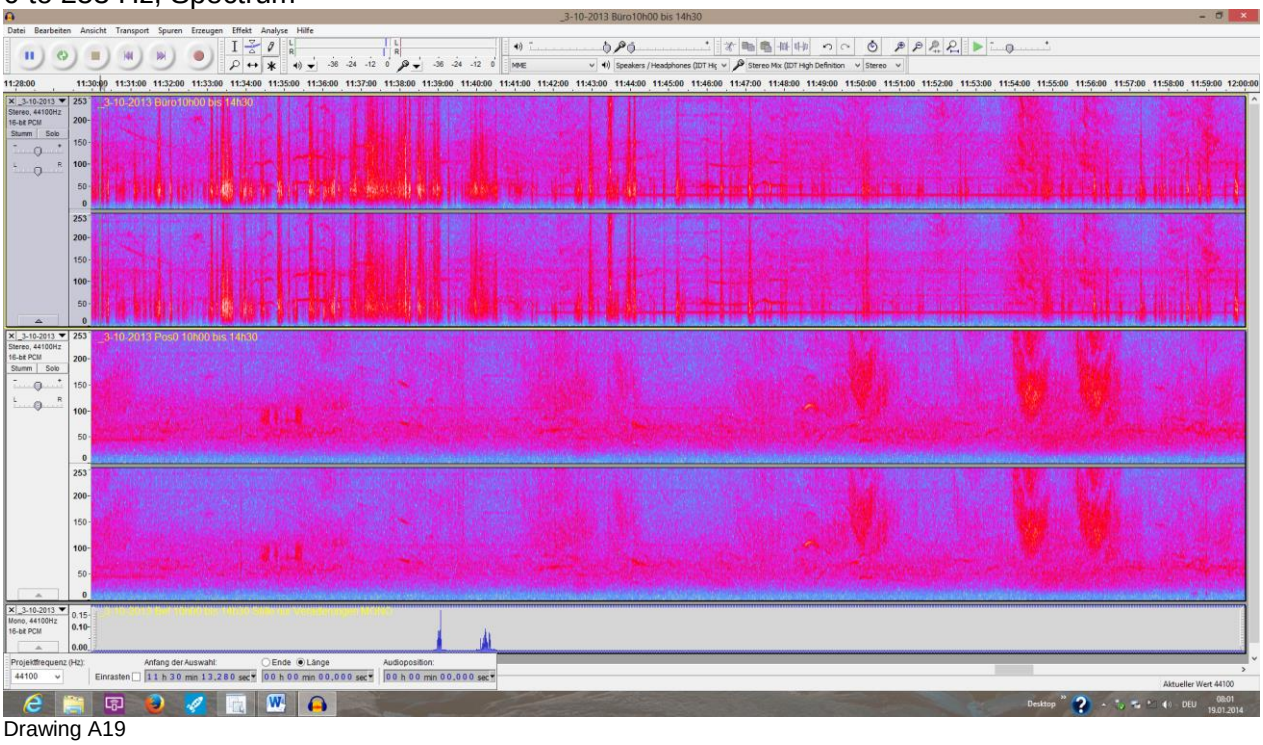
Drawing A17

Selection 11:30 until 12:00.
0 to 1012 Hz, Spectrum



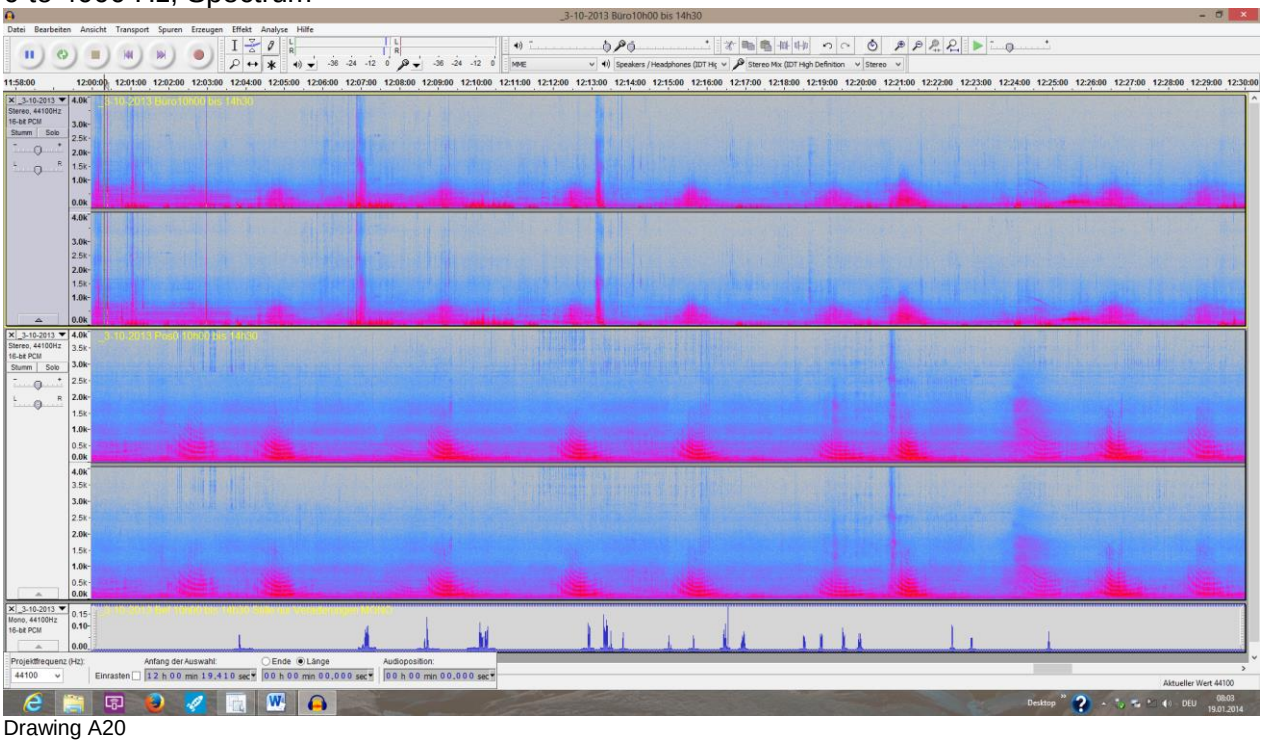
Drawing A18

Selection 11:30 until 12:00.
0 to 253 Hz, Spectrum



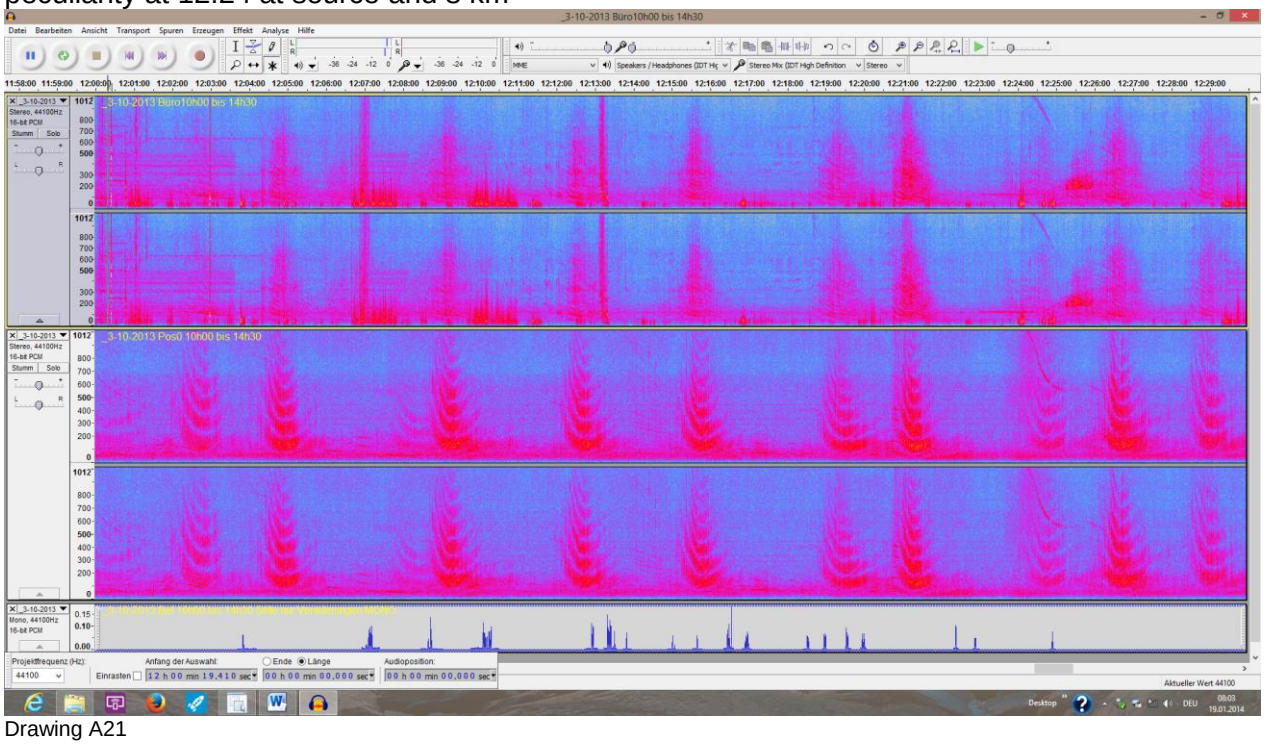
Drawing A19

Selection 12:00 until 12:30.
0 to 4000 Hz, Spectrum



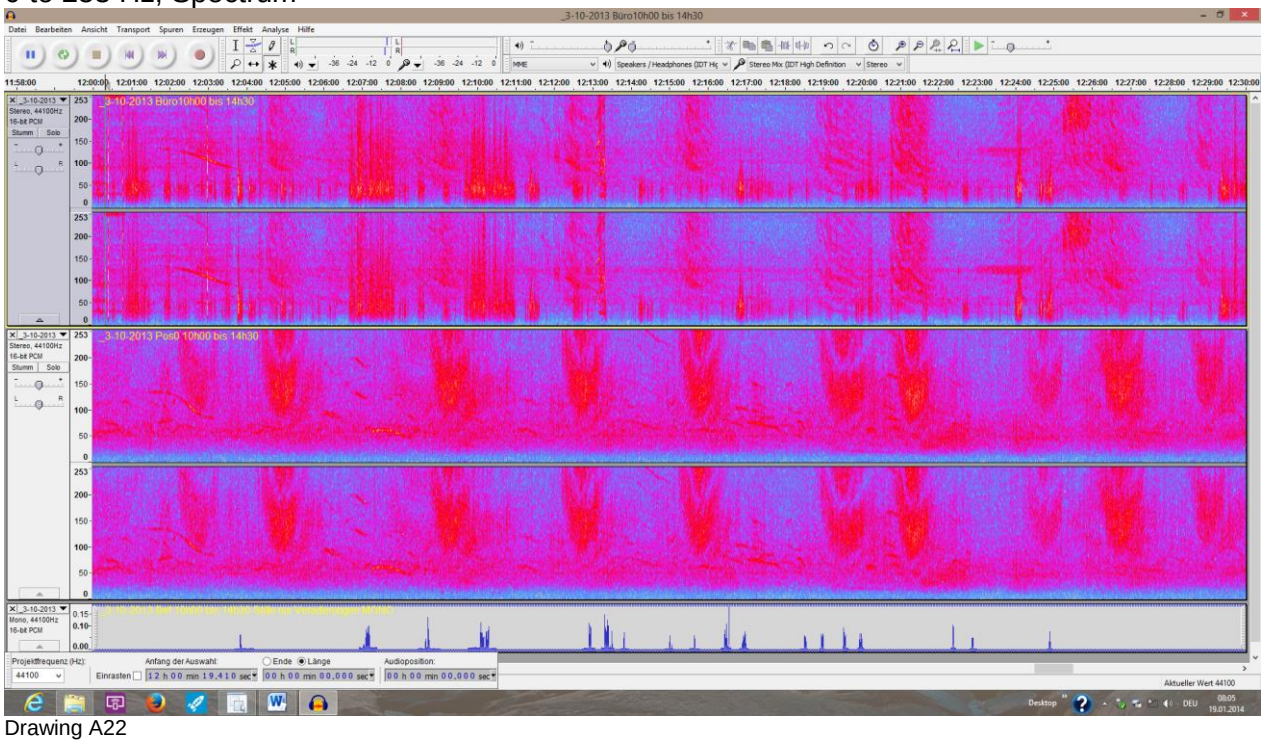
Drawing A20

Selection 12:00 until 12:30.
0 to 1.012 Hz, spectrum
peculiarity at 12:24 at source and 8 km



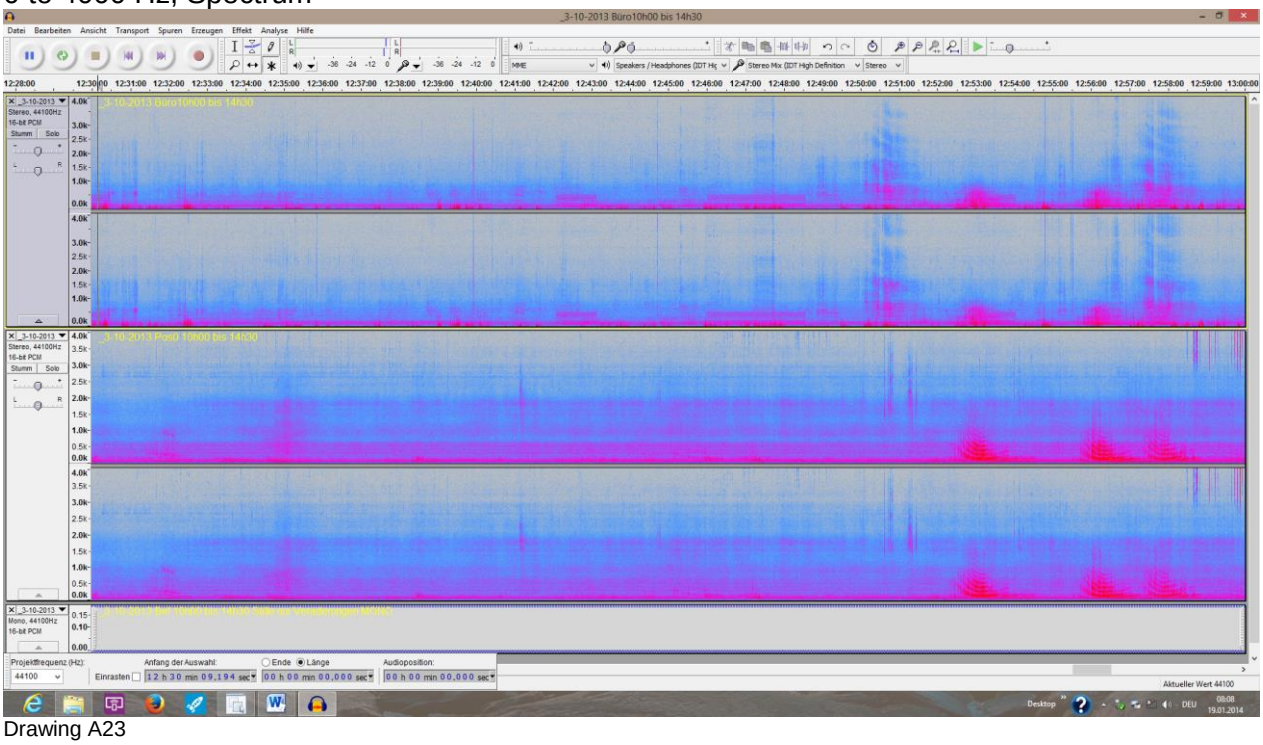
Drawing A21

Selection 12:00 until 12:30.
0 to 253 Hz, Spectrum



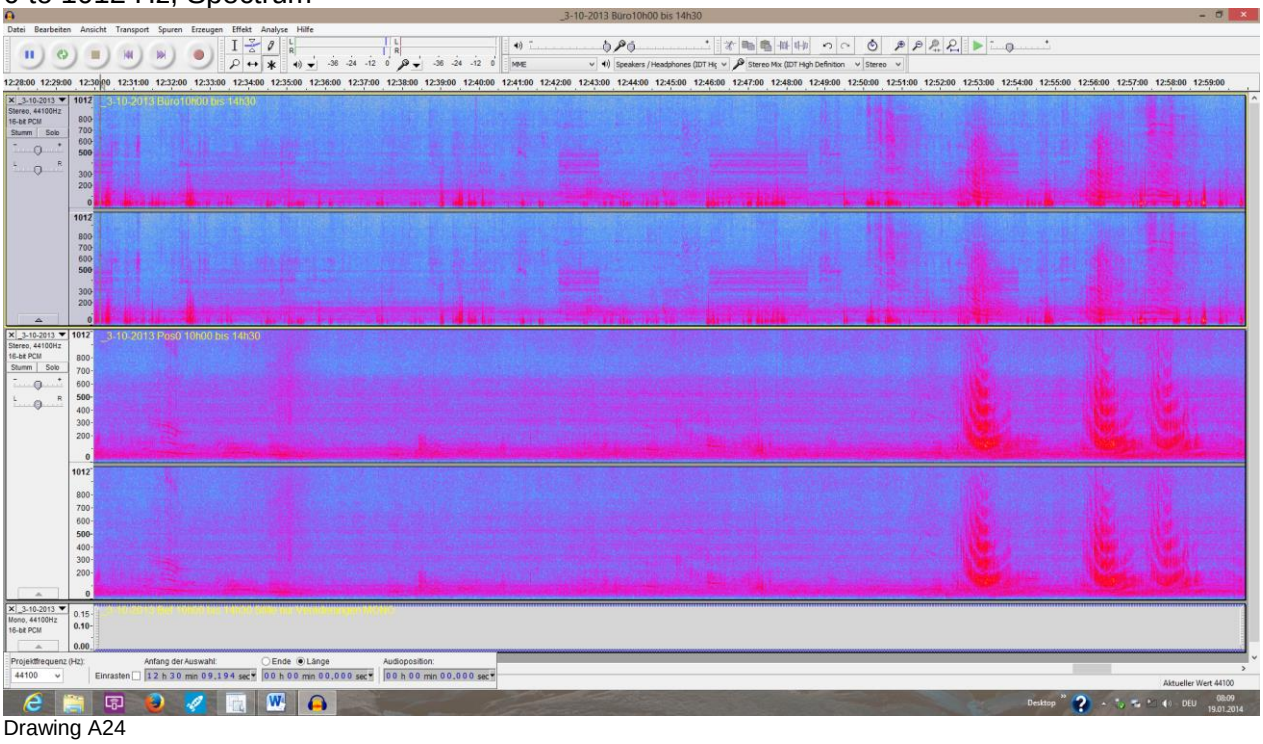
Drawing A22

Selection 12:30 until 13:00.
0 to 4000 Hz, Spectrum



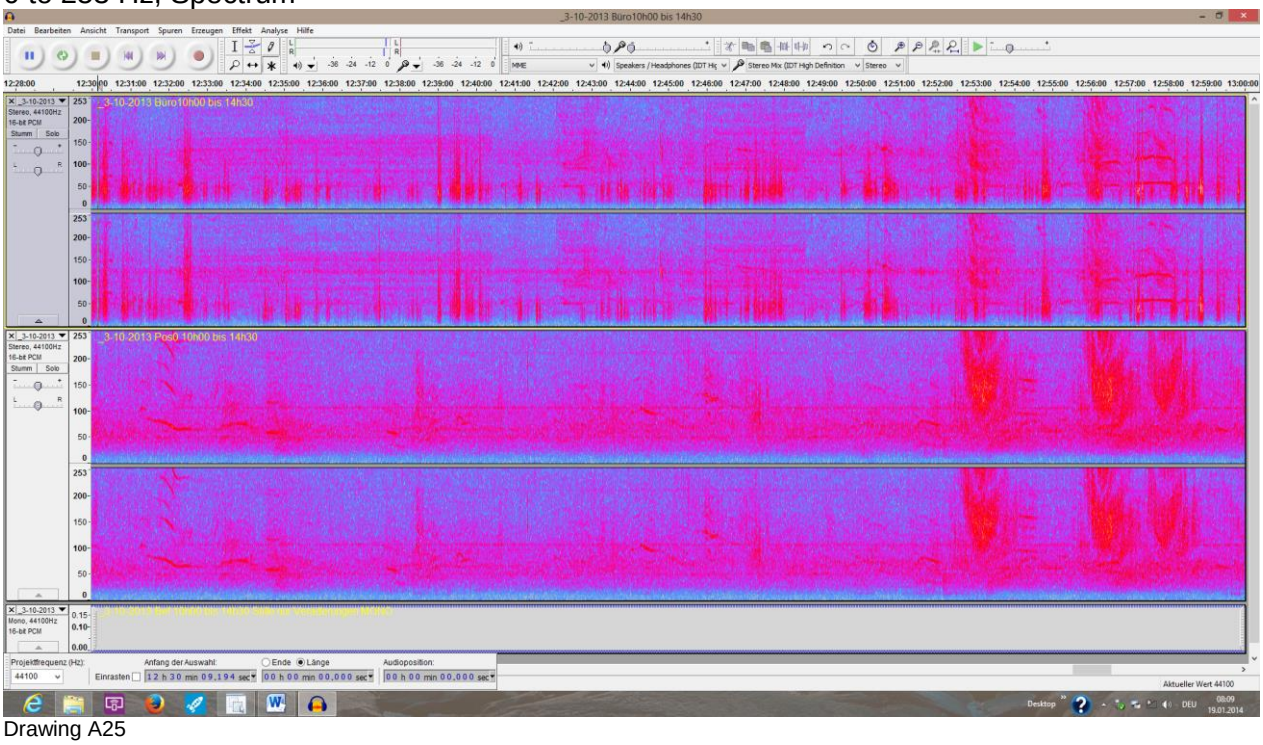
Drawing A23

Selection 12:30 until 13:00.
0 to 1012 Hz, Spectrum



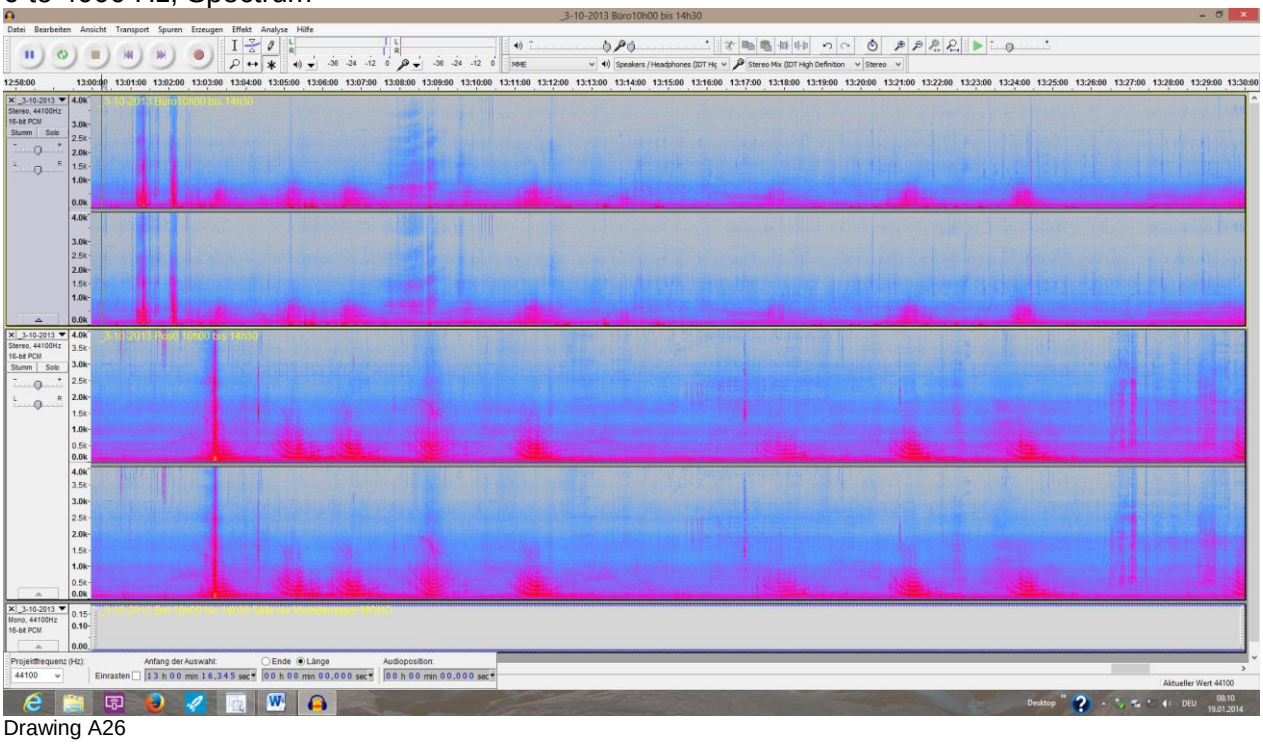
Drawing A24

Selection 12:30 until 13:00.
0 to 253 Hz, Spectrum



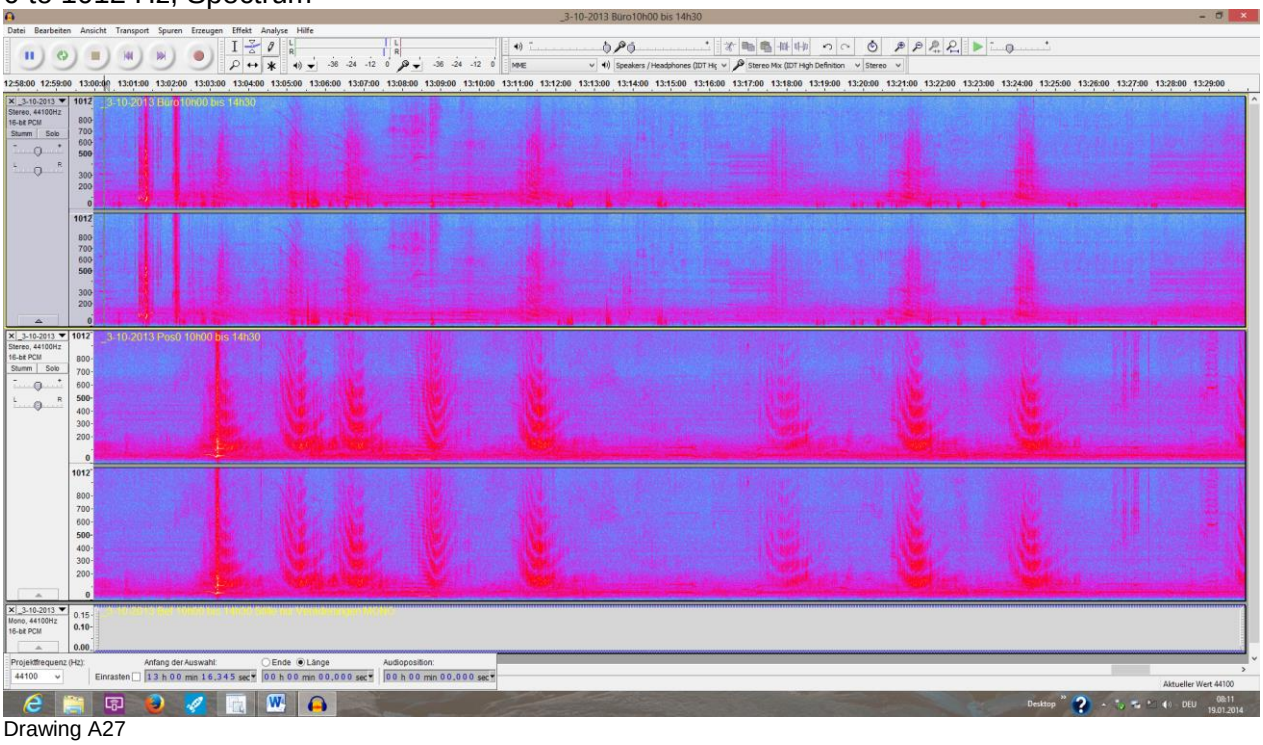
Drawing A25

Selection 13:00 until 13:30.
0 to 4000 Hz, Spectrum



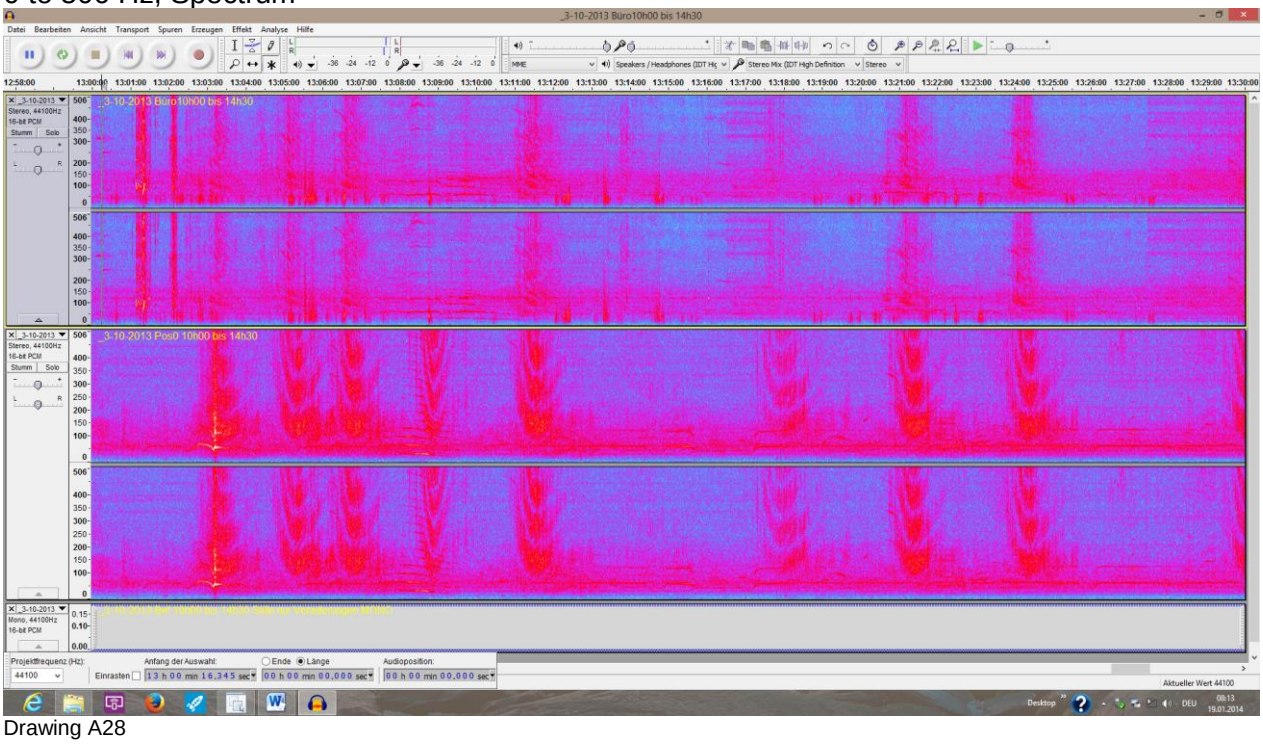
Drawing A26

Selection 13:00 until 13:30.
0 to 1012 Hz, Spectrum



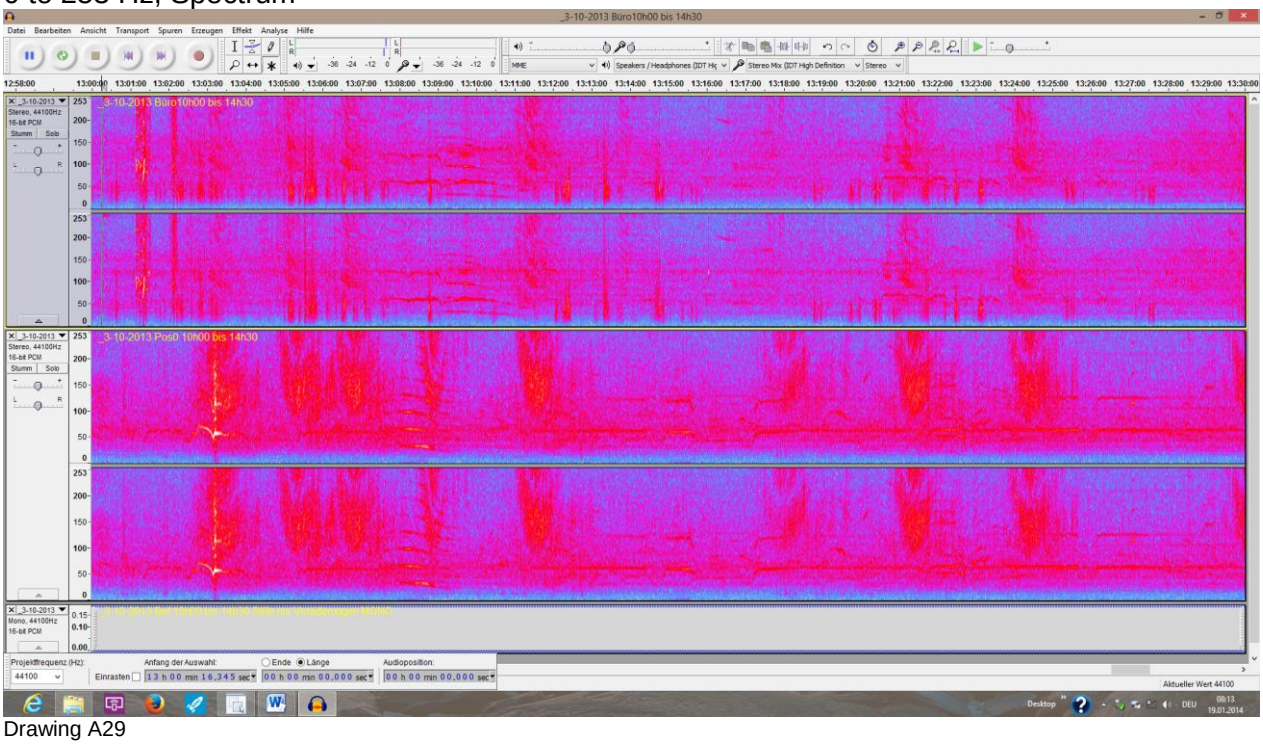
Drawing A27

Selection 13:00 until 13:30.
0 to 506 Hz, Spectrum



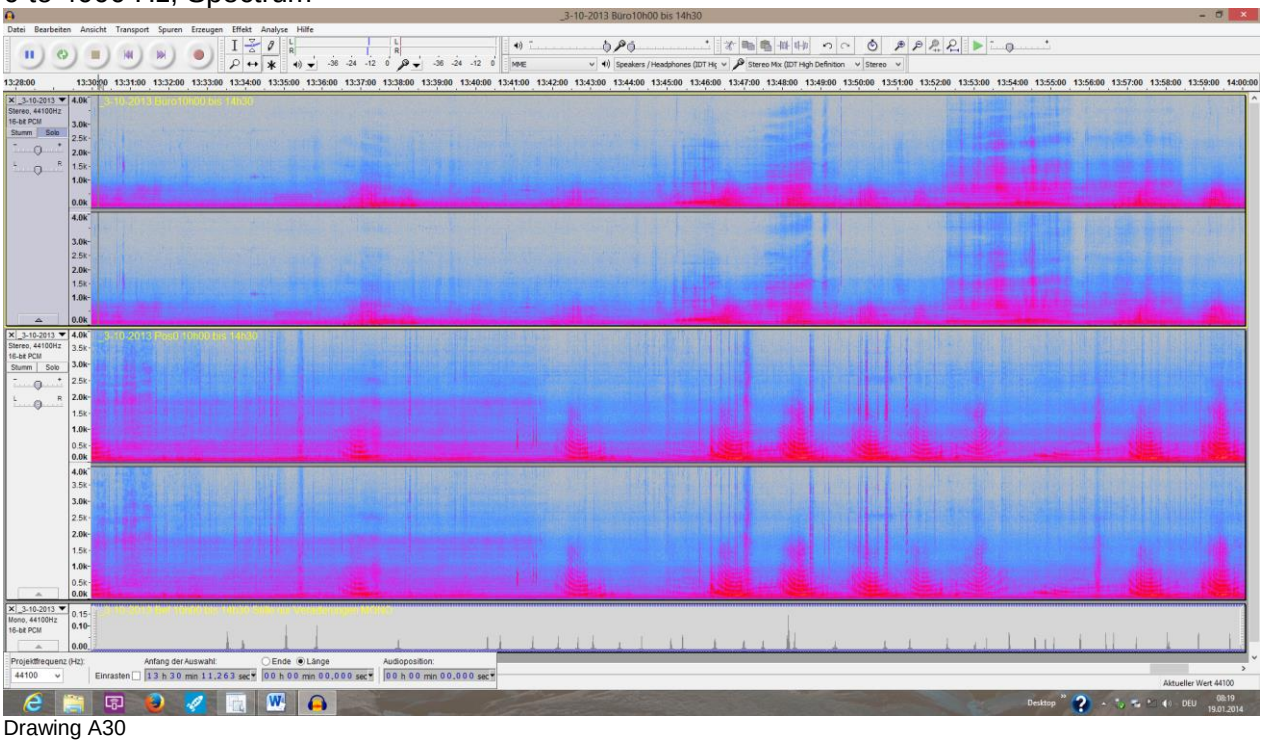
Drawing A28

Selection 13:00 until 13:30.
0 to 253 Hz, Spectrum



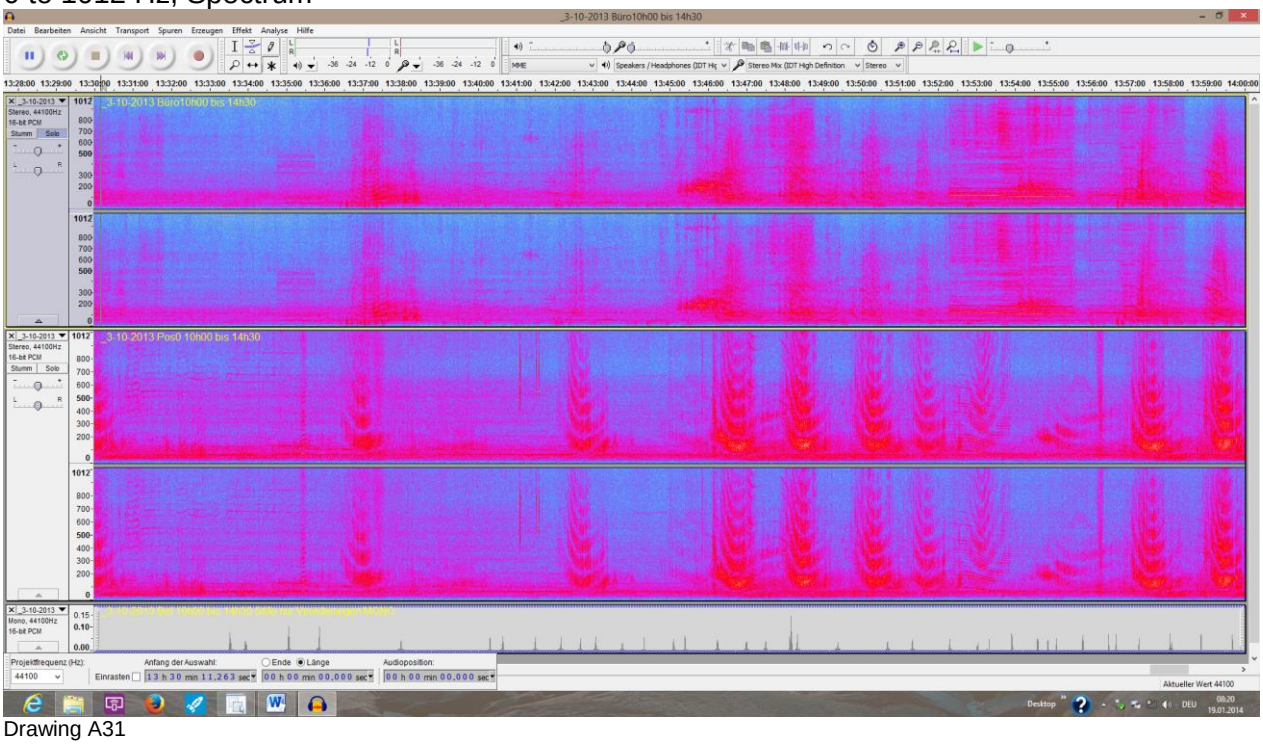
Drawing A29

Selection 13:30 until 14:00.
0 to 4000 Hz, Spectrum



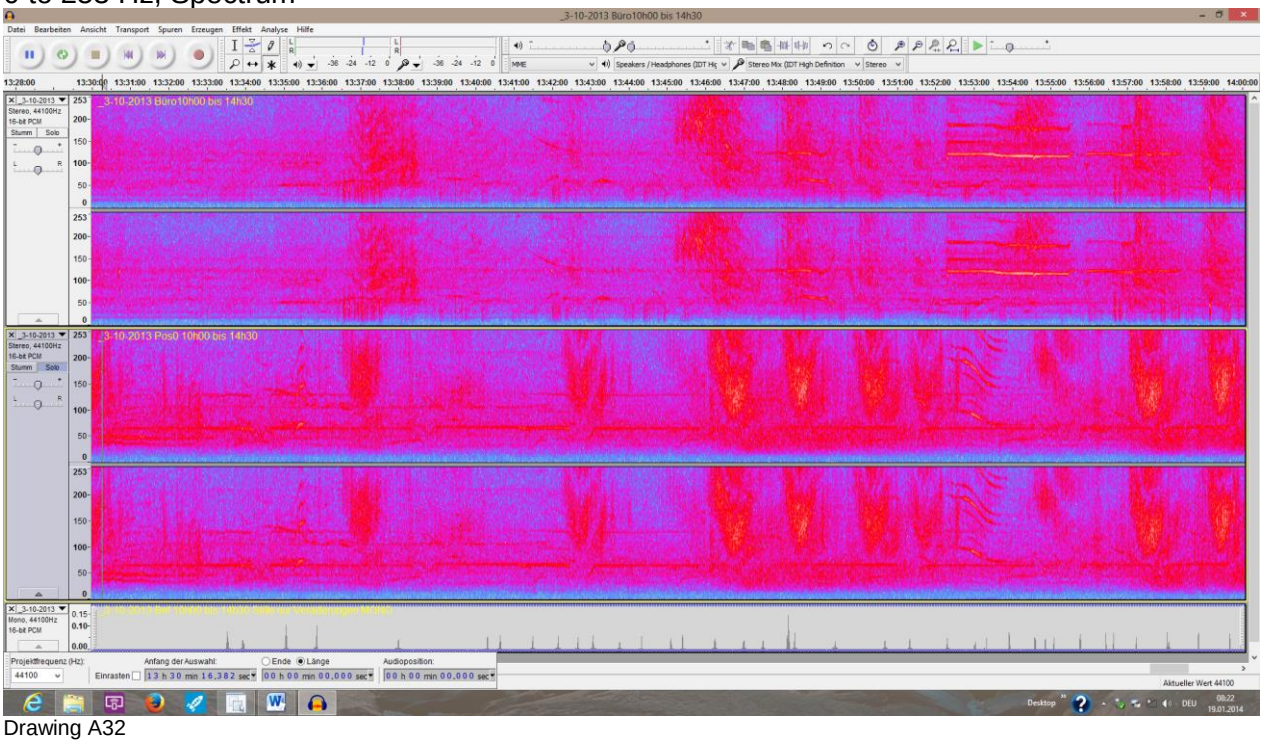
Drawing A30

Selection 13:30 until 14:00.
0 to 1012 Hz, Spectrum



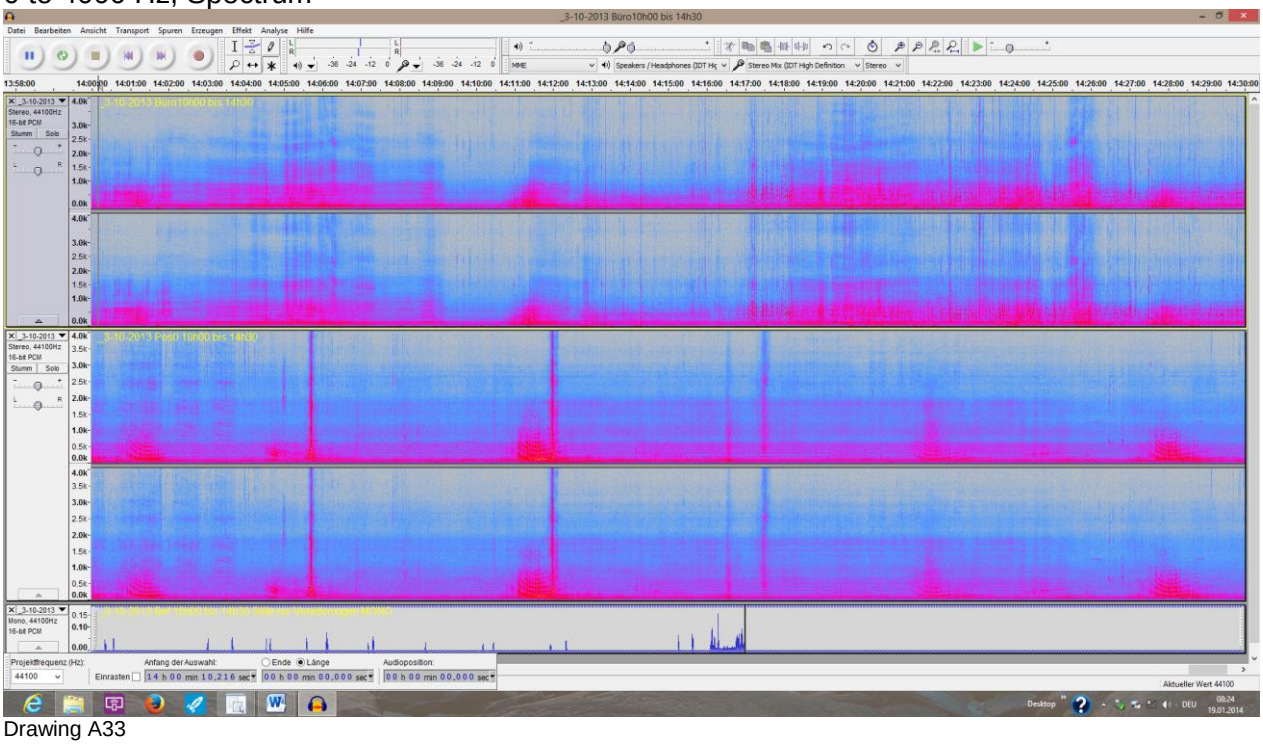
Drawing A31

Selection 13:30 until 14:00.
0 to 253 Hz, Spectrum



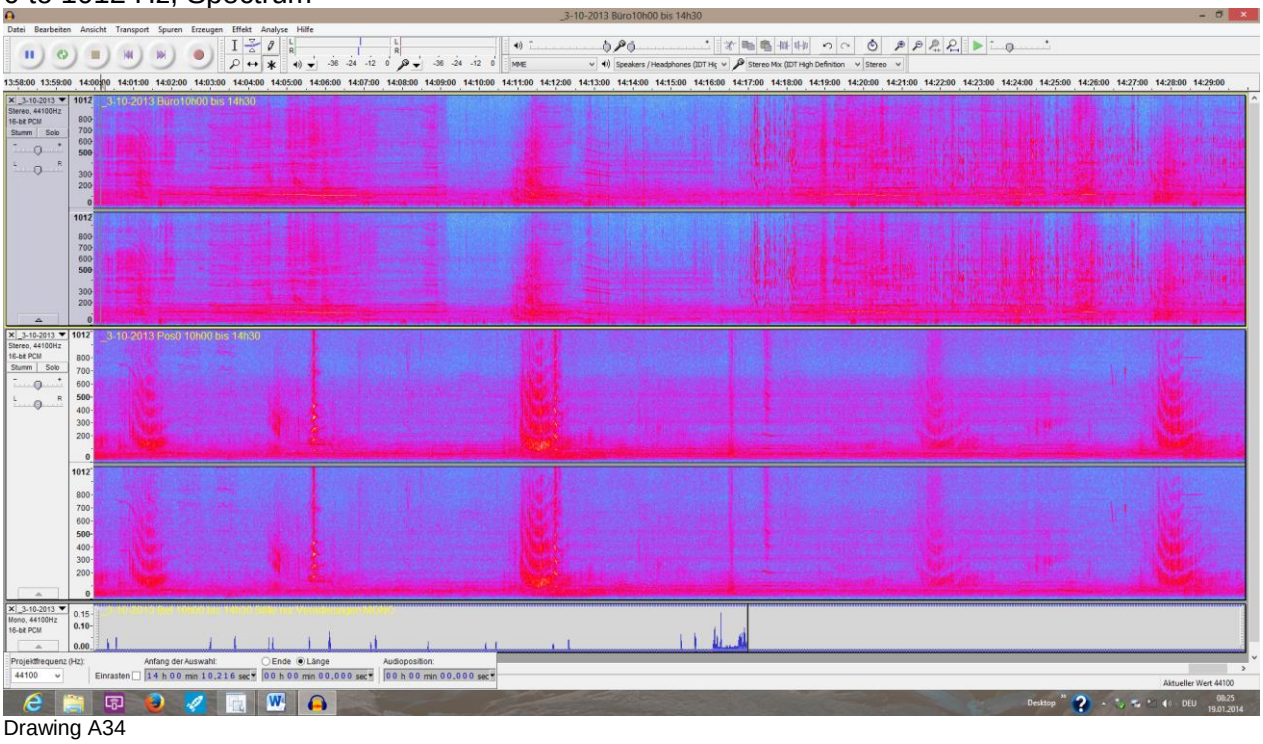
Drawing A32

Selection 14:00 to 14:30 at 14:16:06 ringing, then conversation
0 to 4000 Hz, Spectrum



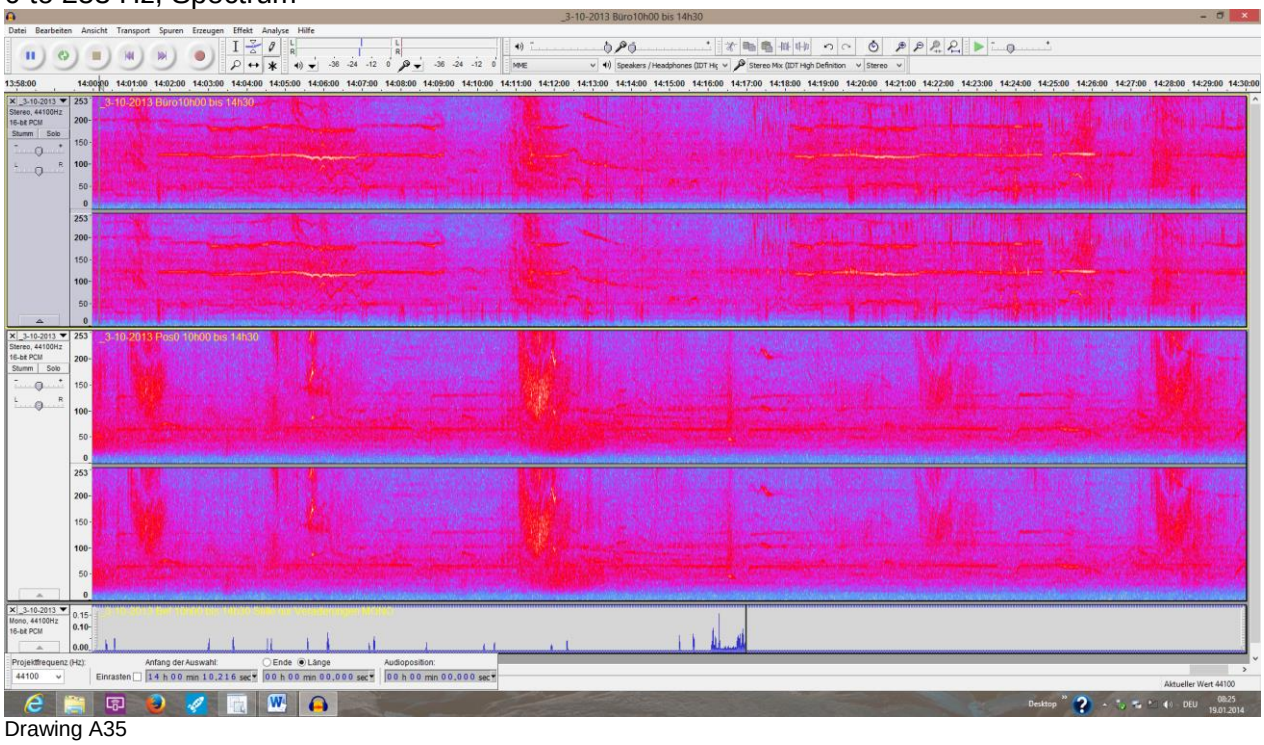
Drawing A33

Selection 14:00 to 14:30 at 14:16:06 ringing, then conversation
0 to 1012 Hz, Spectrum



Drawing A34

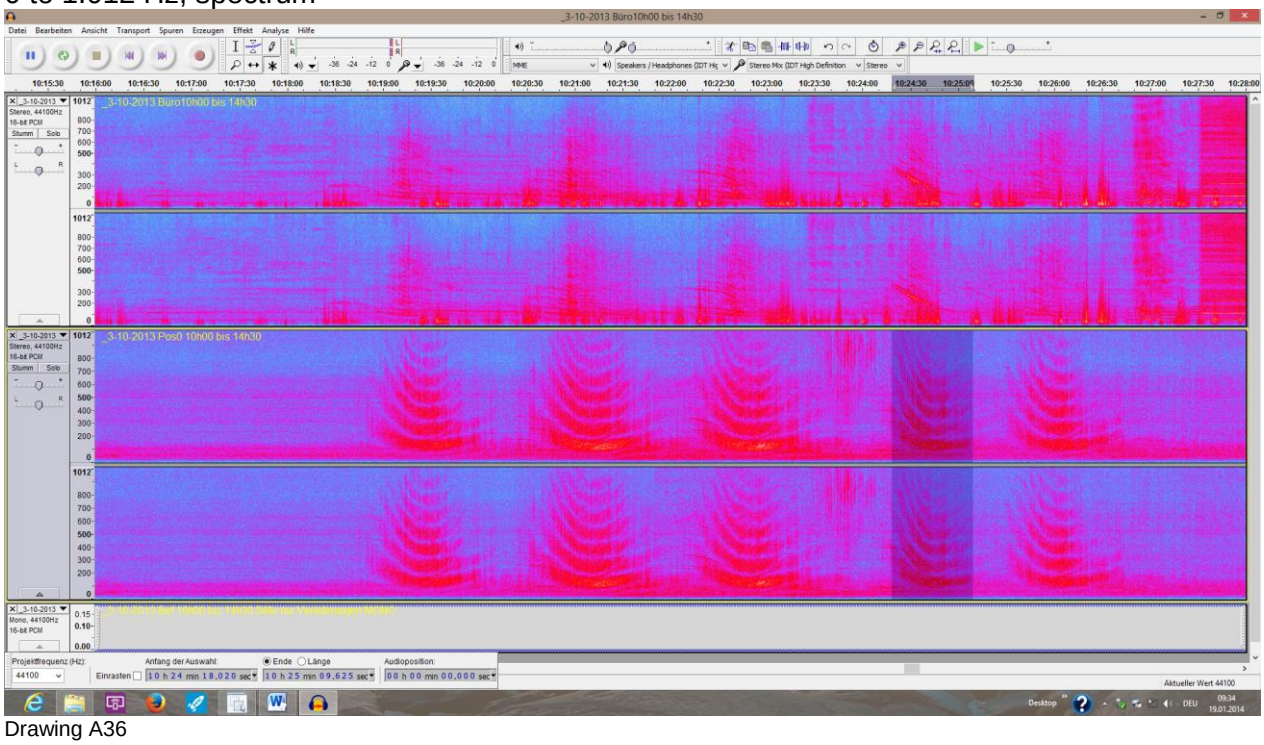
Selection 14:00 to 14:30 at 14:16:06 ringing, then conversation
0 to 253 Hz, Spectrum



Drawing A35

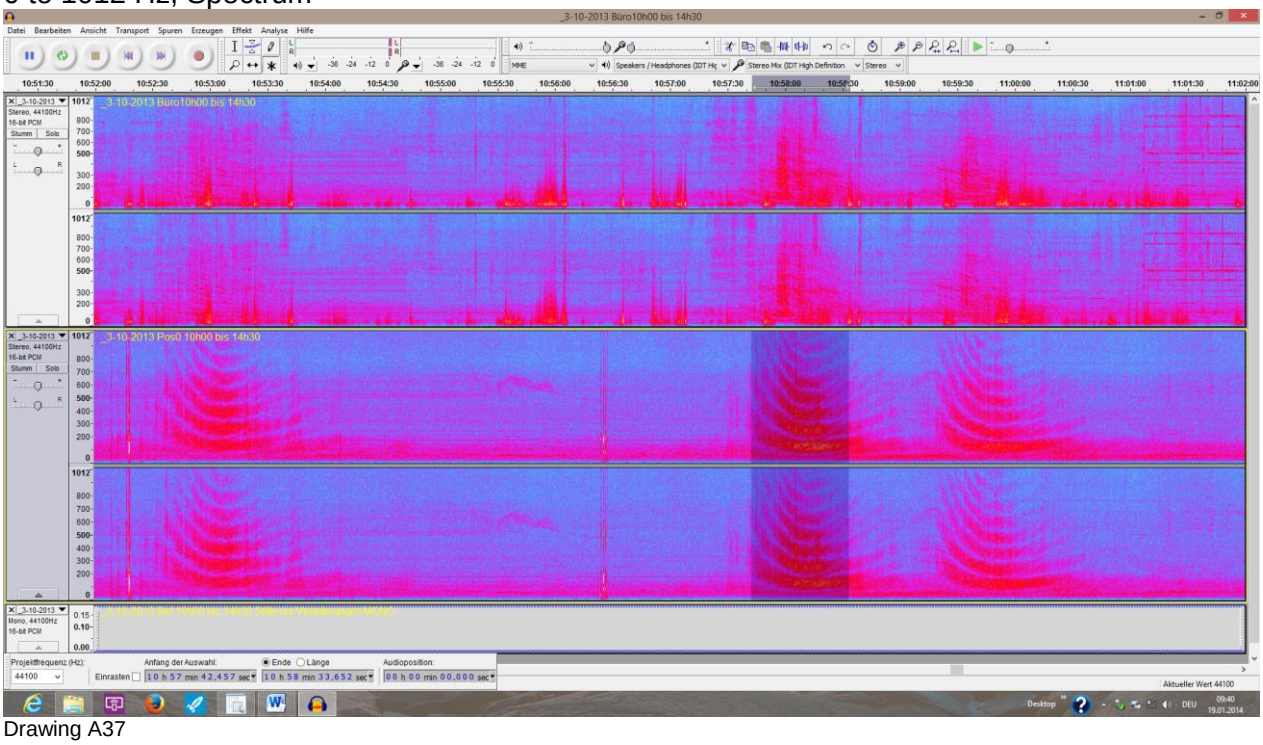
8.13.3. Aircraft

Marking fastest aircraft list no. 7 velocity 670 km/h
0 to 1.012 Hz, spectrum



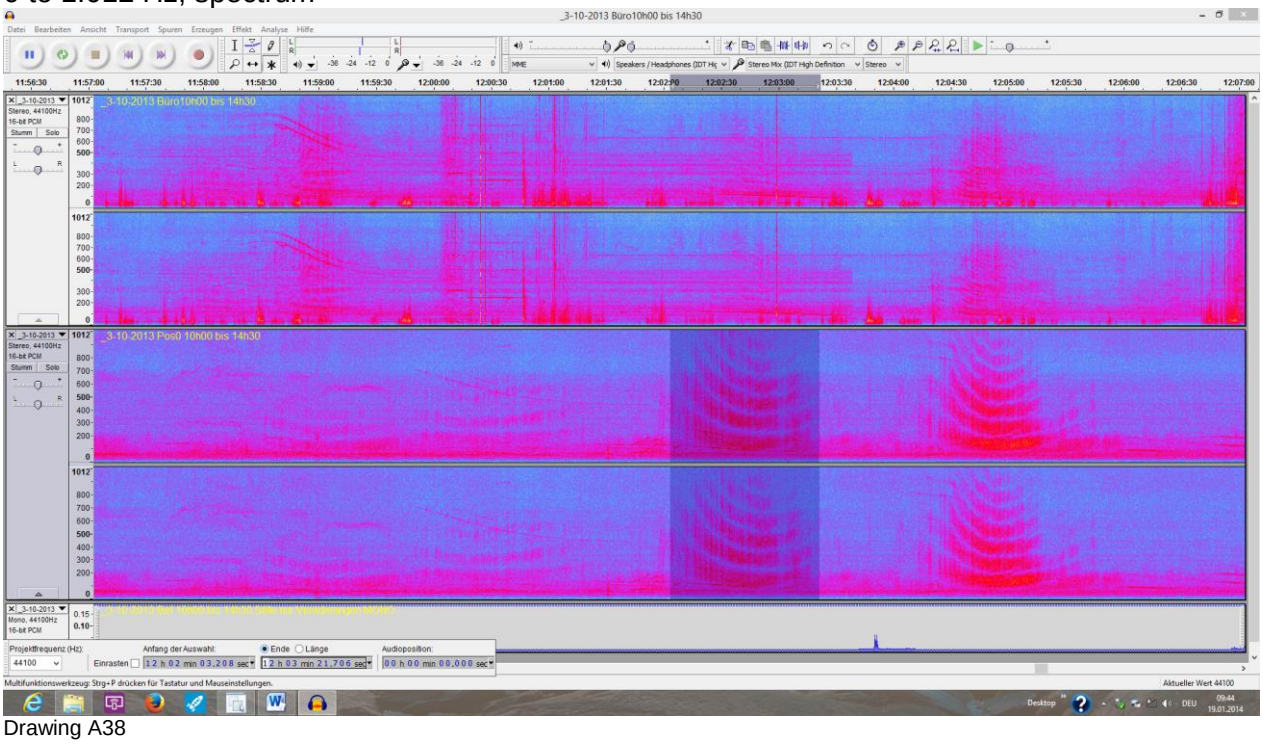
Drawing A36

Marking fastest aircraft list no. 15 velocity 670 km/h
0 to 1012 Hz, Spectrum



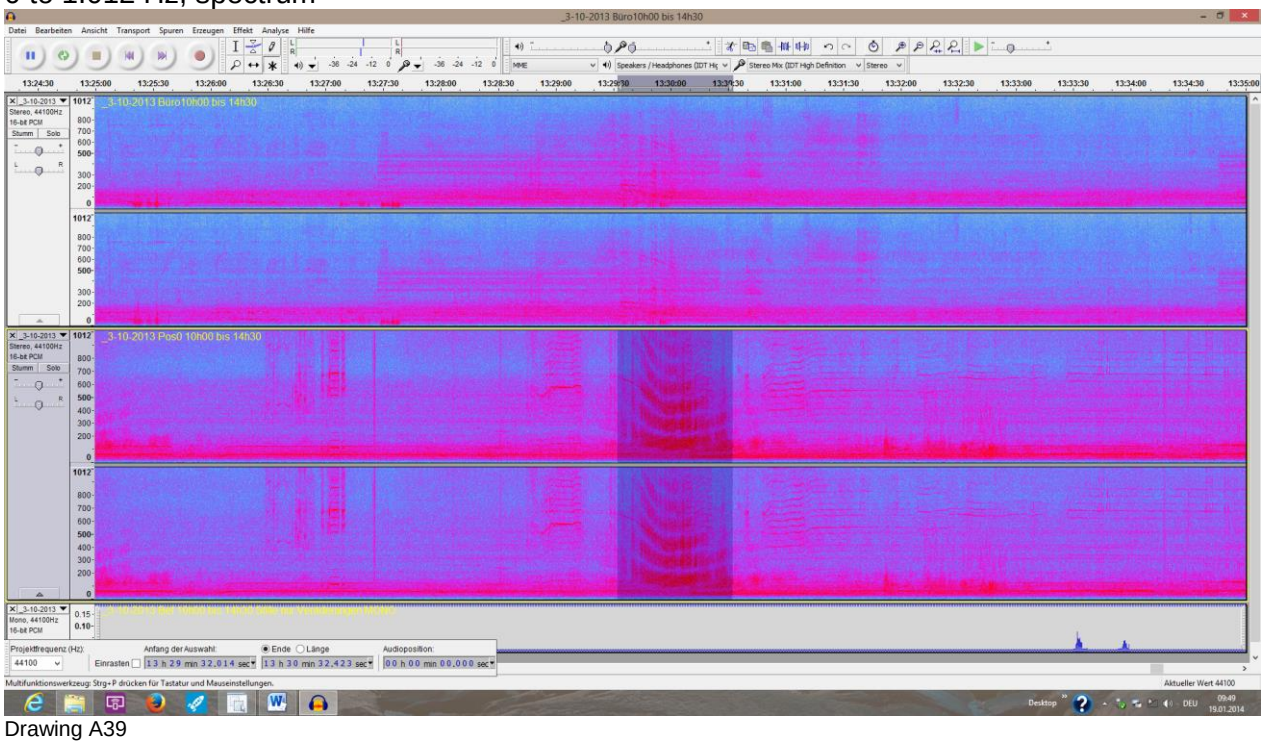
Drawing A37

Marking slowest aircraft list no. 22 velocity 330 km/h
signals at source weaker
0 to 1.012 Hz, spectrum



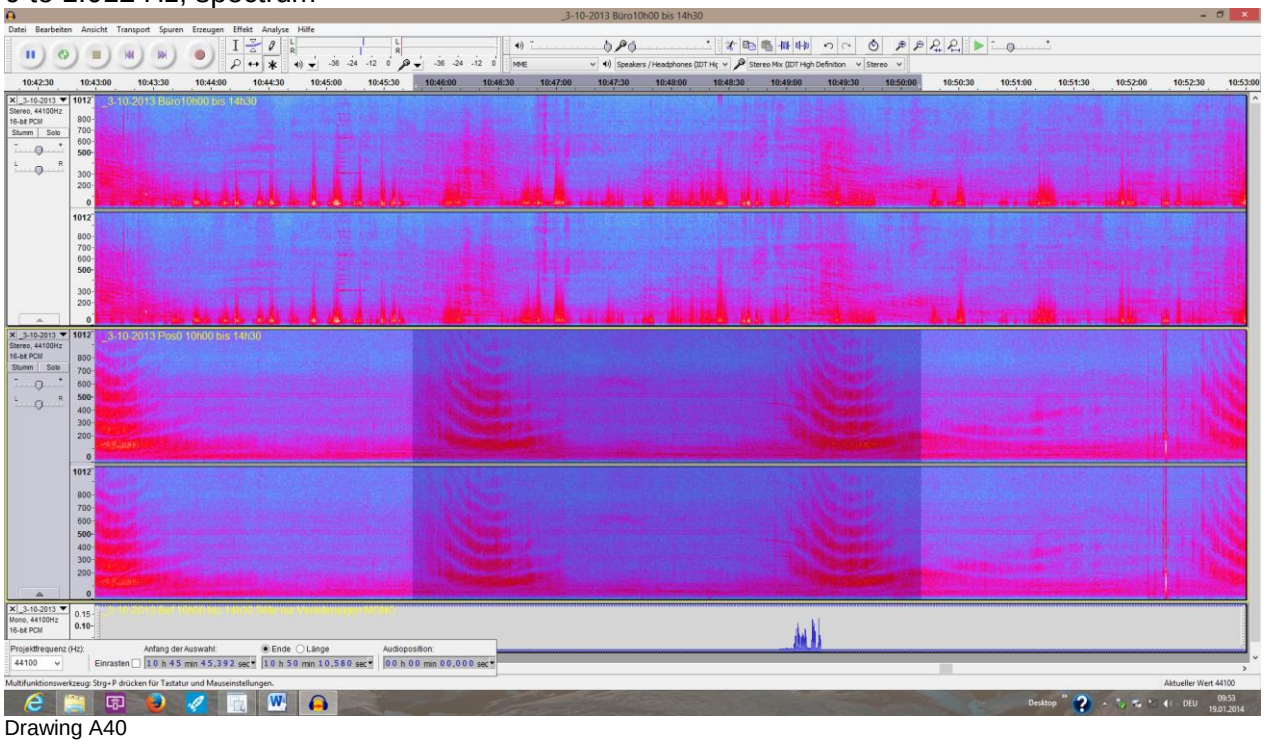
Drawing A38

Marking slowest aircraft list no. 42 velocity 447 km/h
signals at source weaker
0 to 1.012 Hz, spectrum



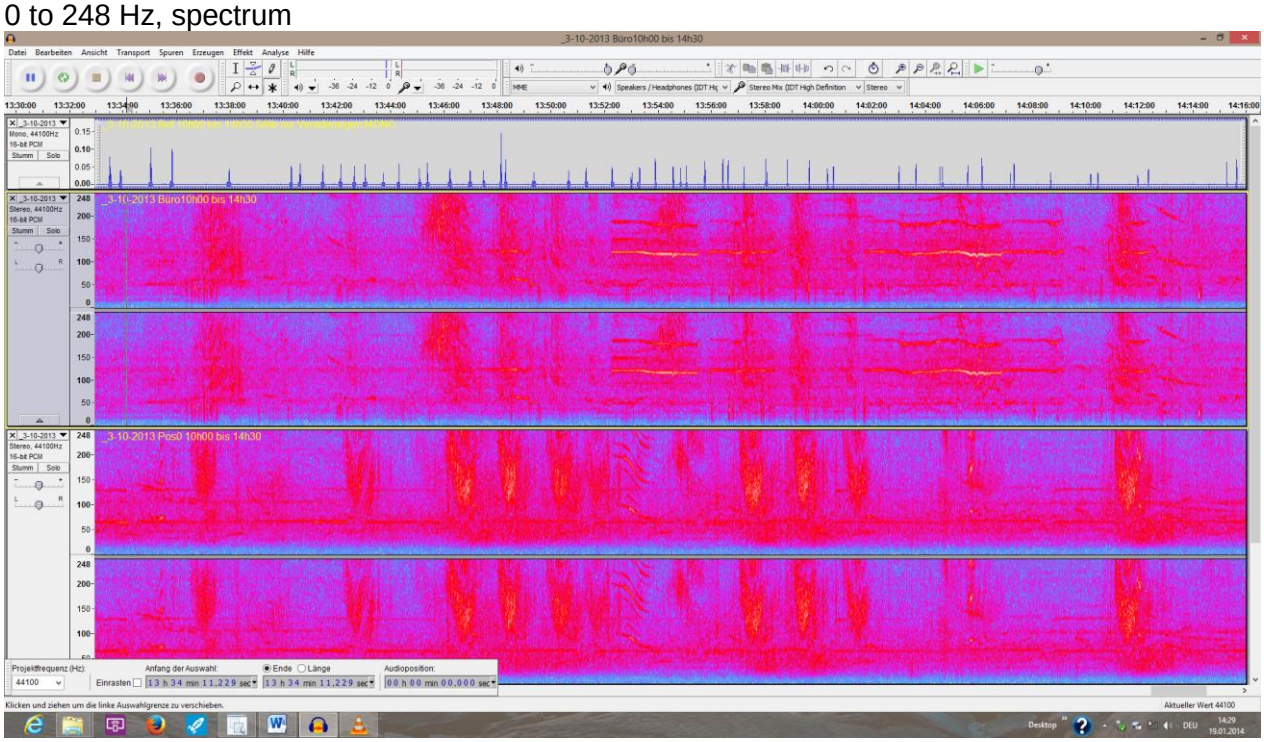
Drawing A39

Marking avarage speed aircraft list no. 12, 13 velocity 529 km/h
0 to 1.012 Hz, spectrum



Drawing A40

The signals 13:52 to 13:55 are a motor plane. This can impossibly be at measurement location 2 after only 26,49 seconds of flight time (propagation time from measurement location 1, source, to measurement location 2).
0 to 248 Hz, spectrum



Drawing A41

8.13.4 Comparison of aircraft spectra in the region of the source and at very remote locations.

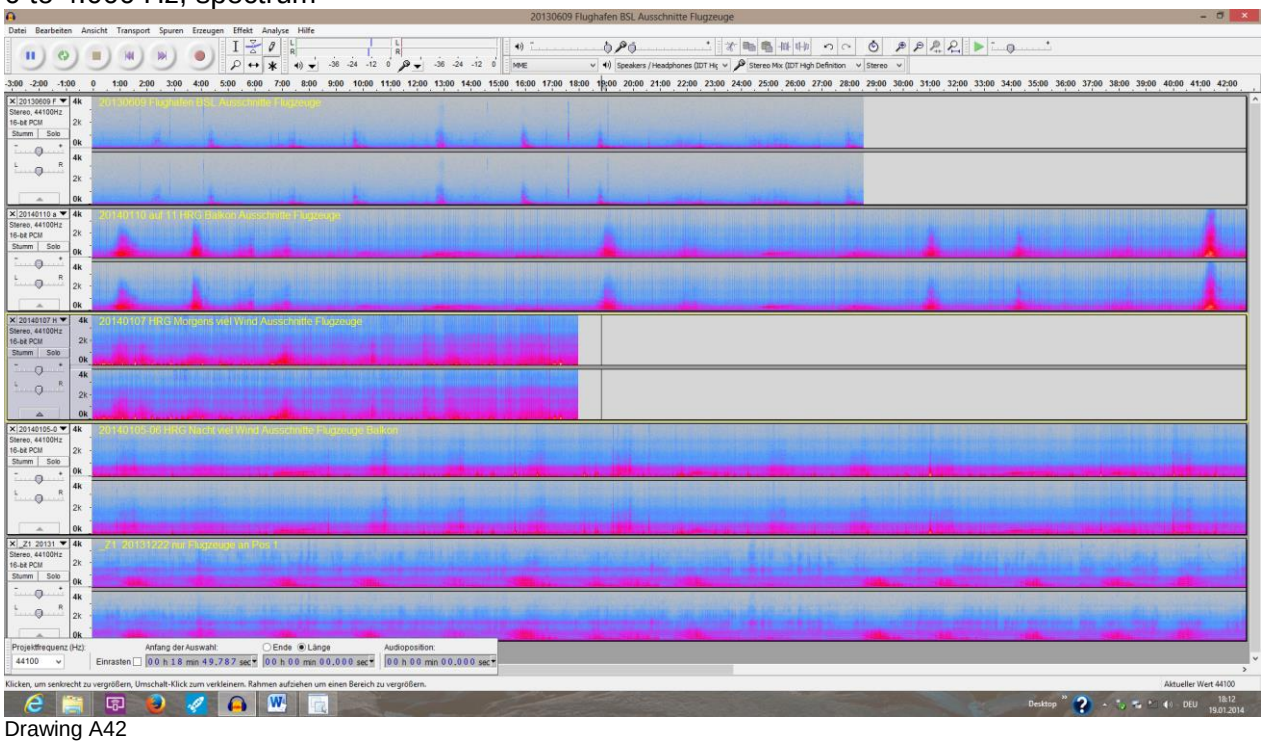
Comparison of audio recordings of staring aircraft at different days, at different locations, in different distances - from tangible to far away.

For this, from different audio recordings, parts of approx. 3 minutes per aircraft were arranged in a cutless sequence.

1st stereo track from top: Top	at the Basel airport
2nd stereo track from top:	Hurghada, Egypt
3rd stereo track from top, center:	Hurghada, Egypt, with very strong wind
4th stereo track from top:	Hurghada, Egypt, wind
5th stereo track from top, below:	pos 0, source

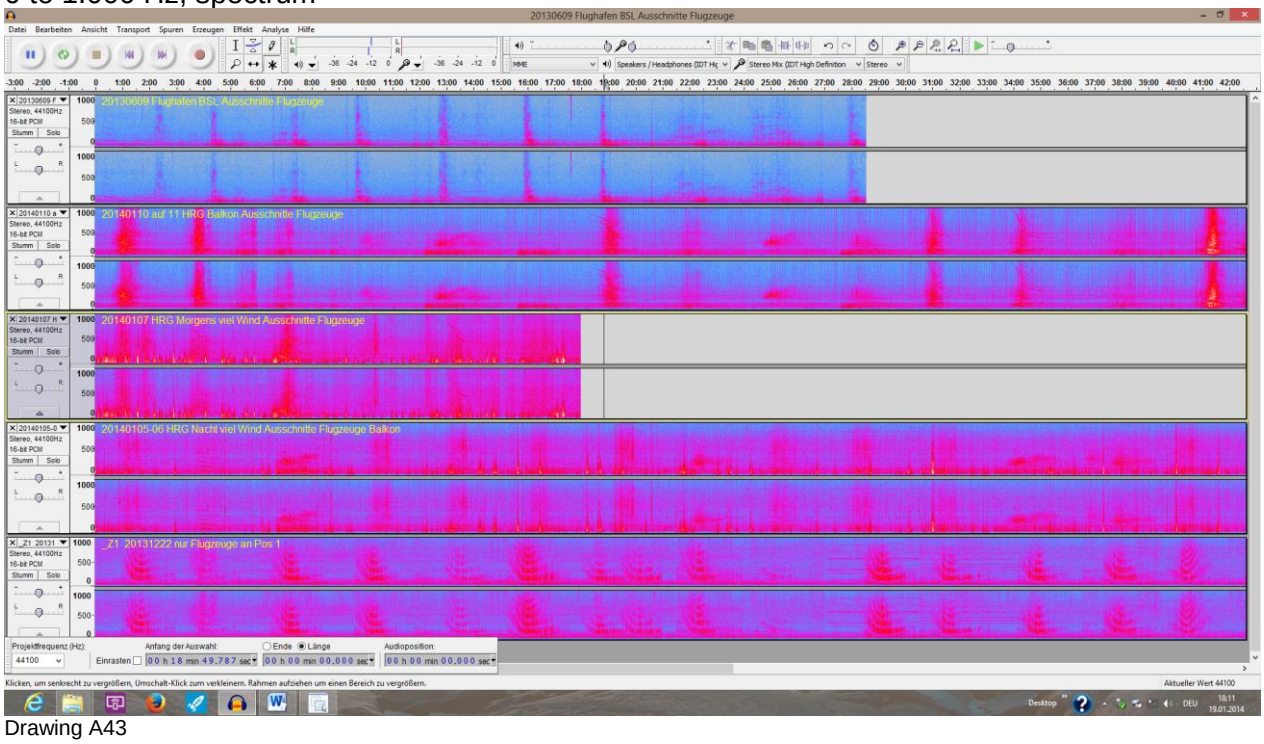
No matter on which measurement day, the structure of the spectra at the source always looks atypical, very differing, and always identical.

Starting aircraft
0 to 4.000 Hz, spectrum



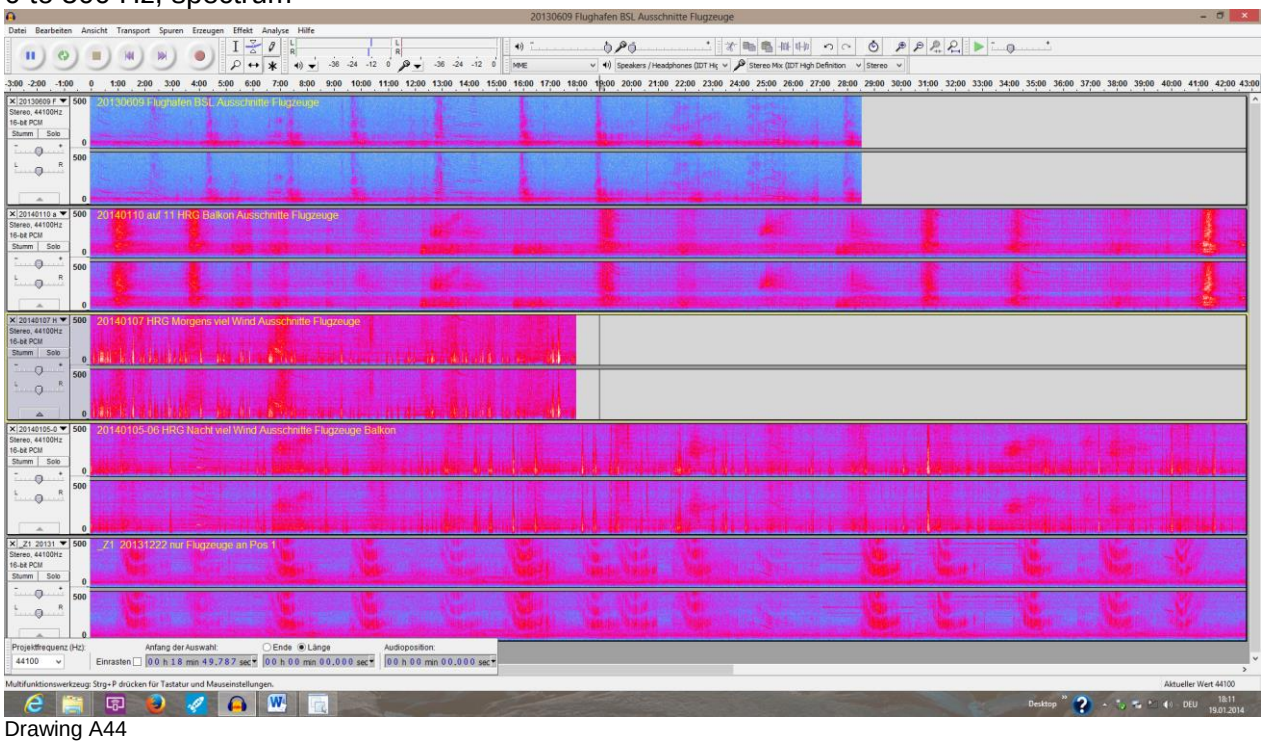
Drawing A42

Starting aircraft
0 to 1.000 Hz, spectrum



Drawing A43

Starting aircraft
0 to 500 Hz, spectrum

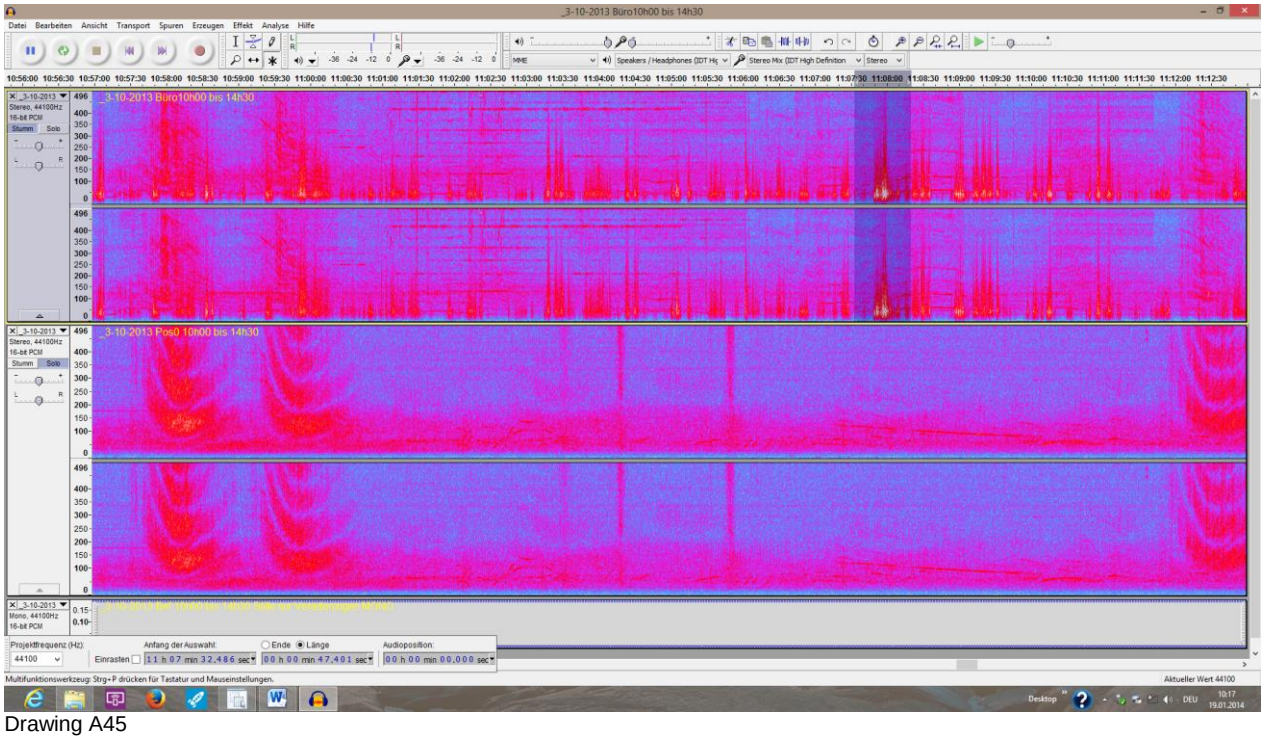


Drawing A44

8.14. Individual sound events

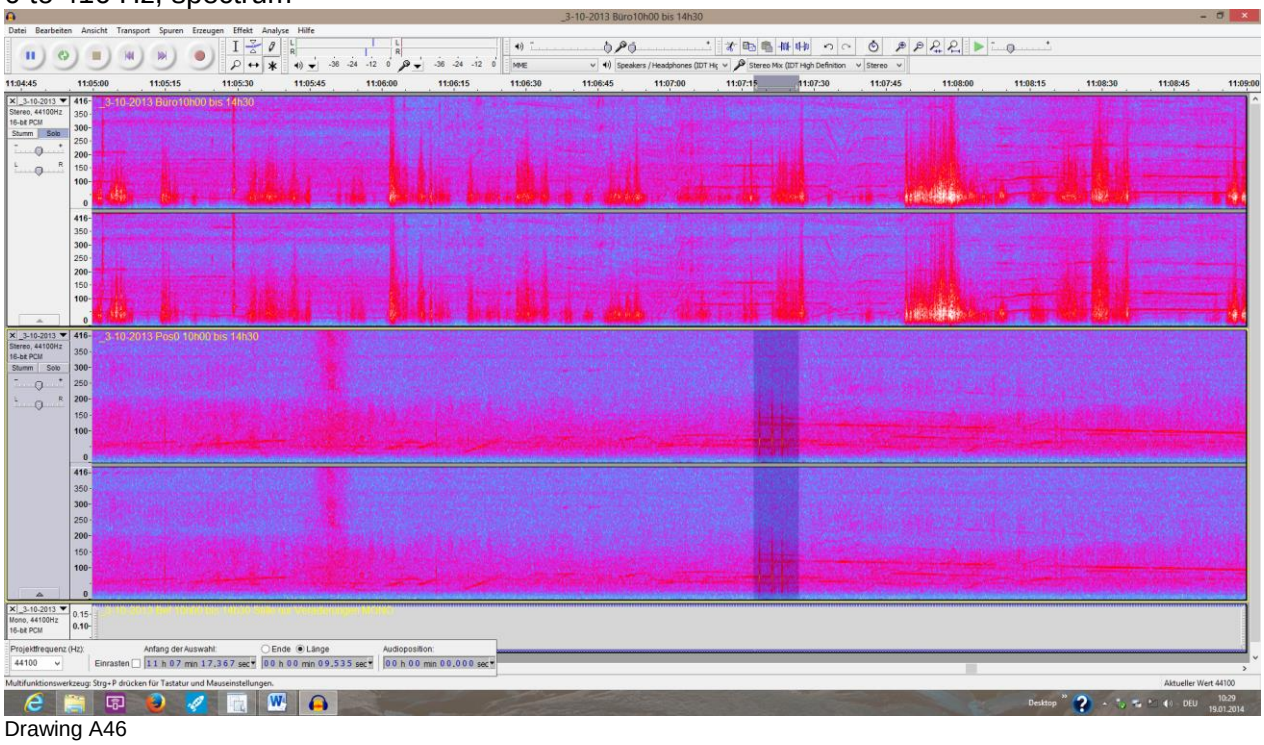
marking 8 km, strong booming, at the end of the booming cows are startled, cow bells shortly before at the source clearly beginning signal
signals at source at 11:04 and 11:05 vehicle

0 to 496 Hz



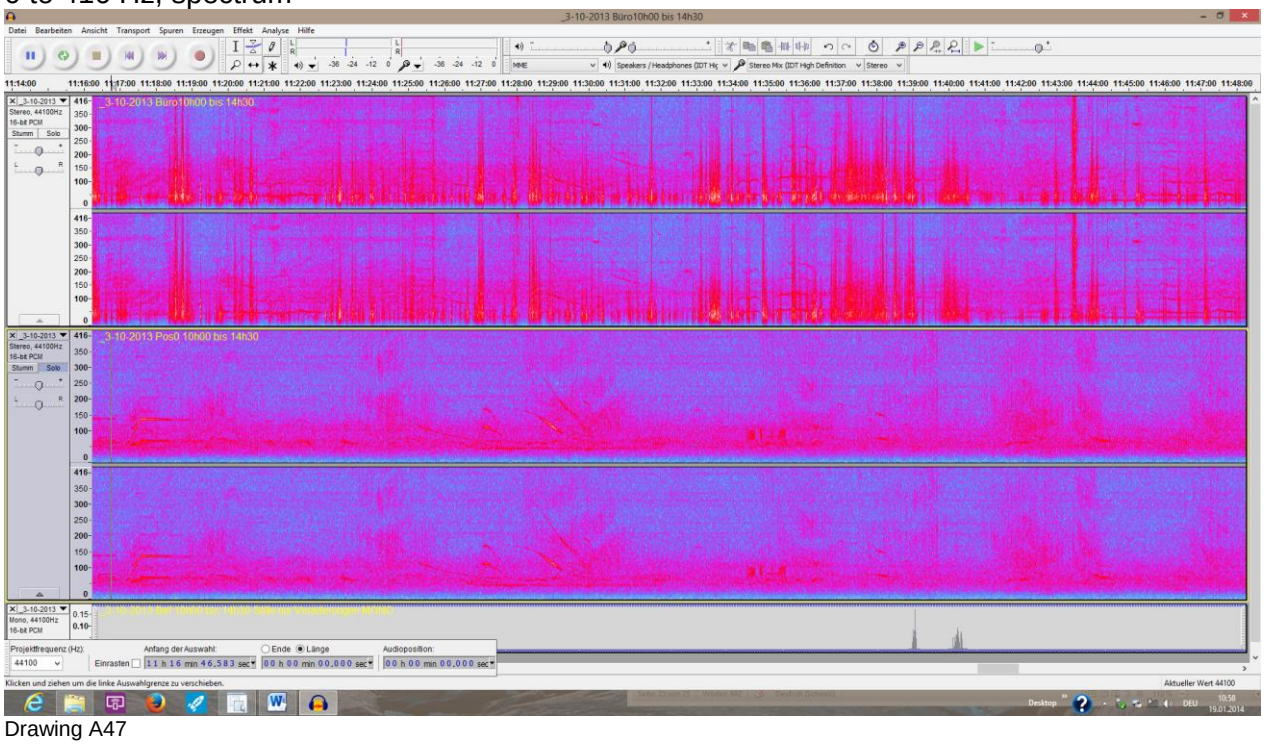
Drawing A45

Marking 3 x rumbling noise at source
during strong booming in 8 km at 11:05:50 until 11:08:05 startled cows, cow bells
0 to 416 Hz, spectrum



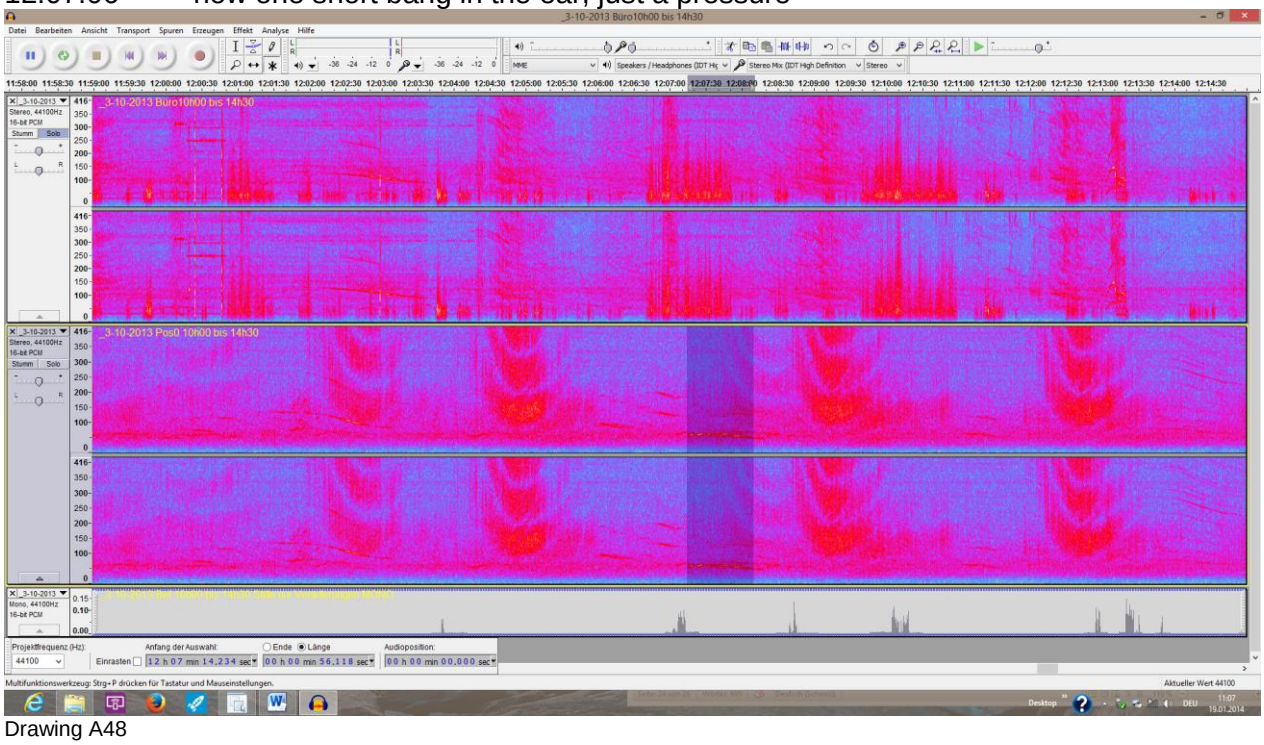
Drawing A46

Repeated, strong booming in 8 km. In the video recording of the pressure waves, an increase of pressure waves is visible from 11:40.
0 to 416 Hz, spectrum



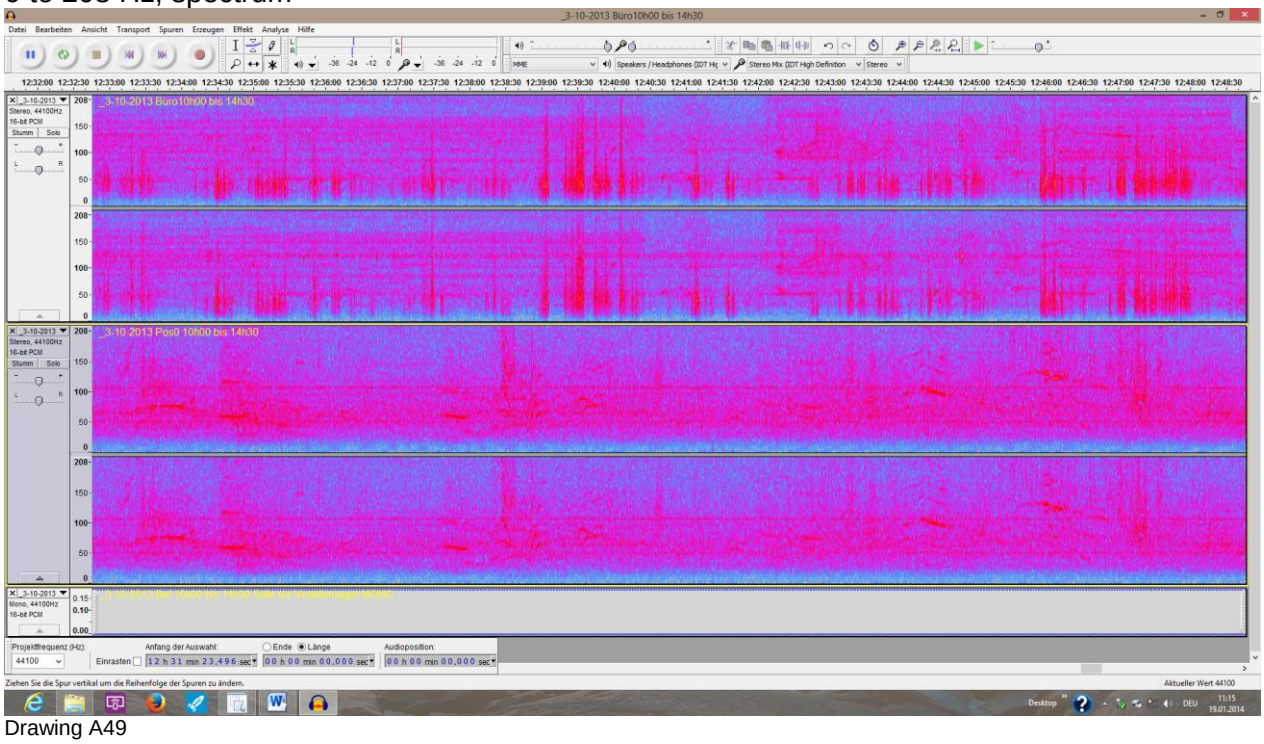
Drawing A47

strong booming at source and 8 km, startled cows, cow bells
personal condition log:
12:07:06 now one short bang in the ear, just a pressure



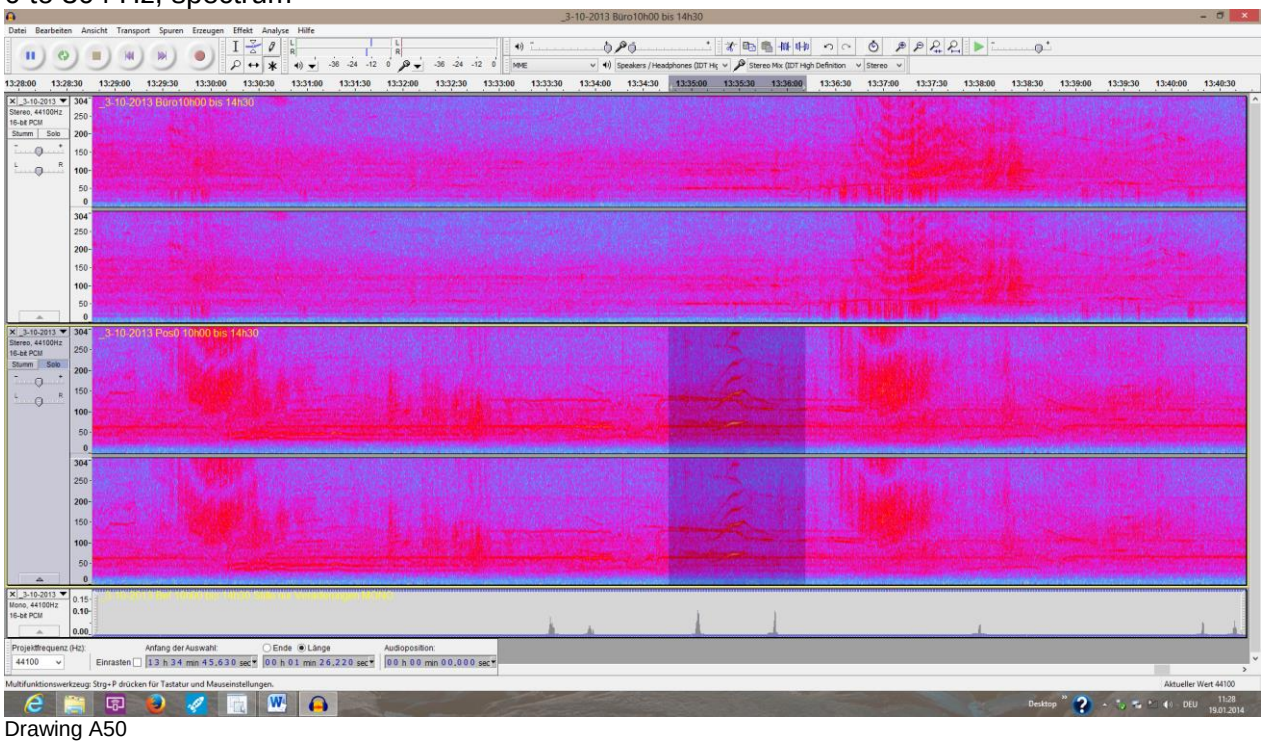
Drawing A48

12:30 until 12:50 at this time on balcony a strong electrical feeling with a feeling of unrest
0 to 208 Hz, spectrum



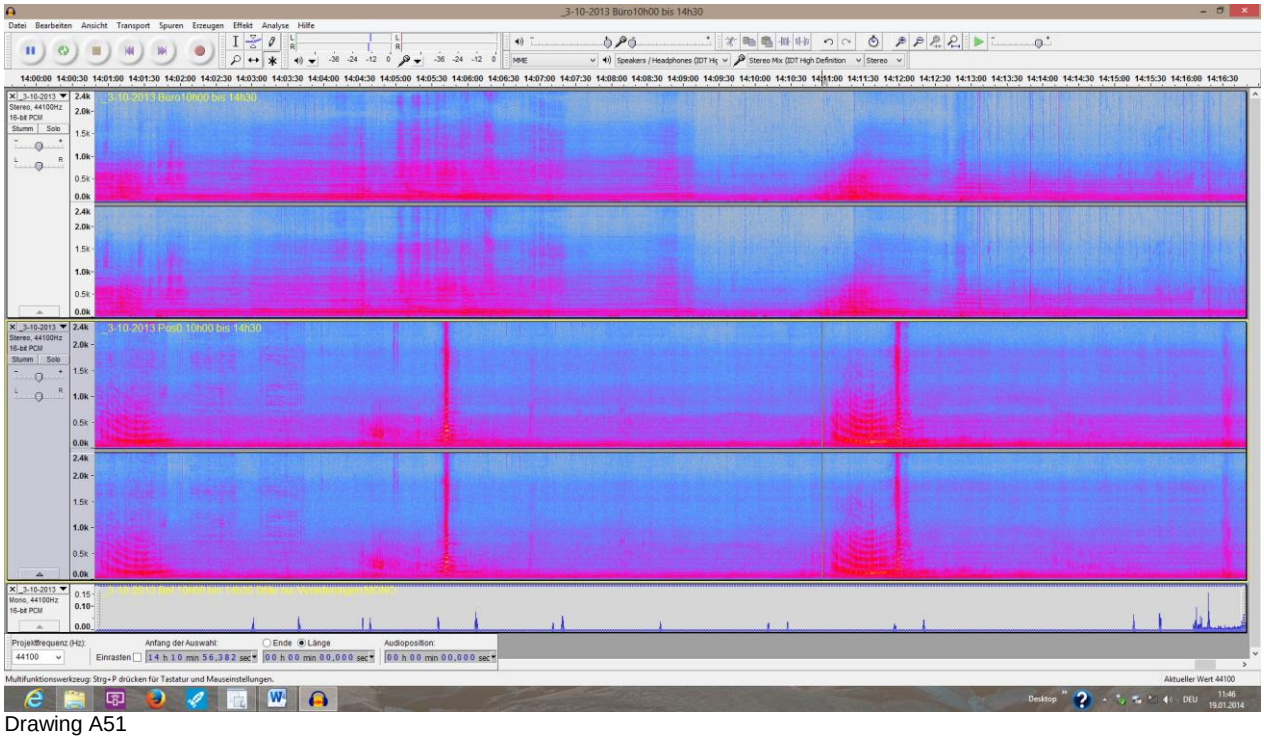
Drawing A49

marking not very loud motorcycle at source, 13:35, clear signal in 8 km
0 to 304 Hz, spectrum



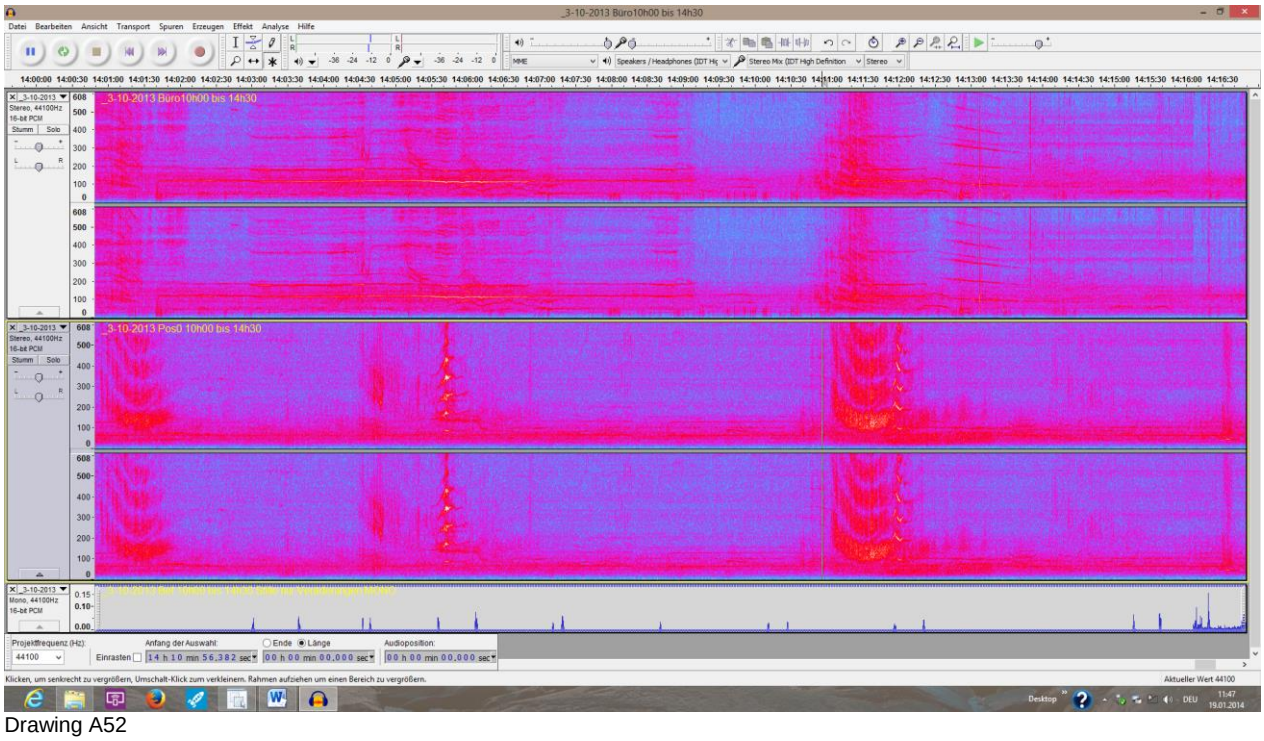
Drawing A50

Both large signals at source very loud motorcycle. 14:05, second motorcycle signal in falling slope aircraft, 14:12
0 to 2.400 Hz



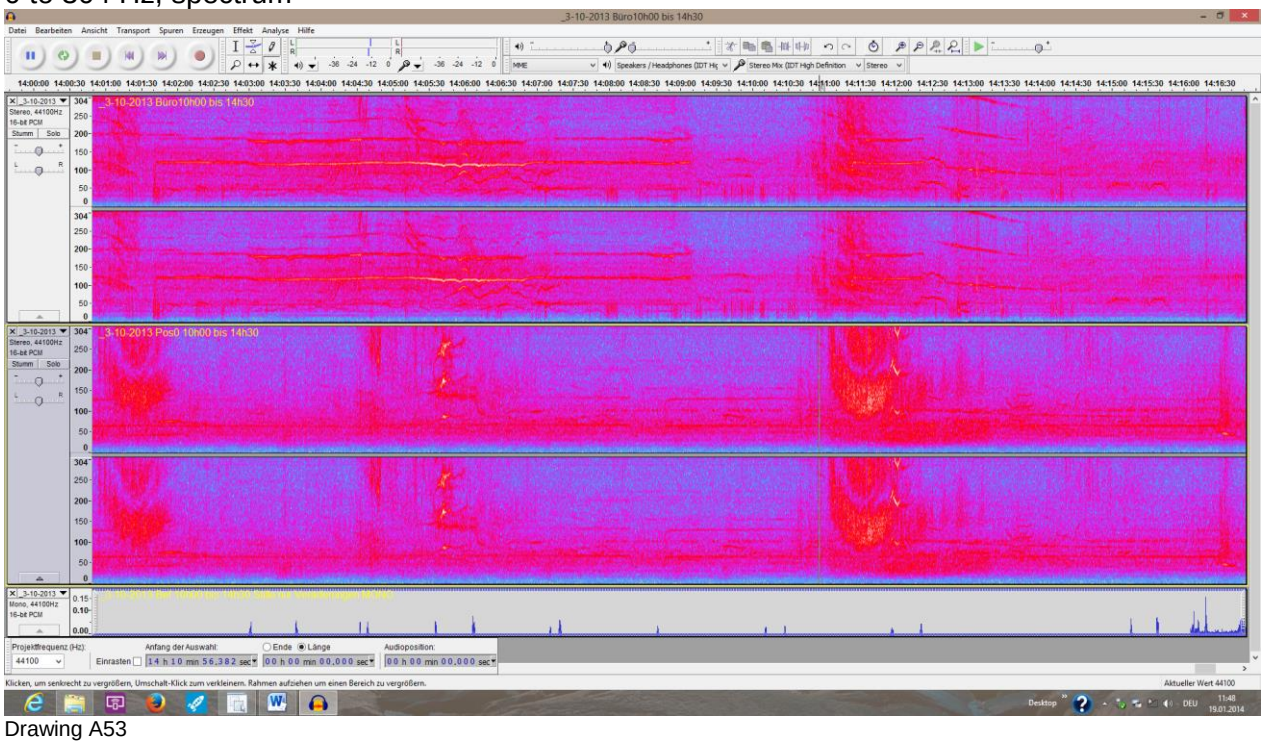
Drawing A51

Both large signals at source very loud motorcycle. 14:05, second motorcycle signal in falling slope aircraft, 14:12
0 to 608 Hz



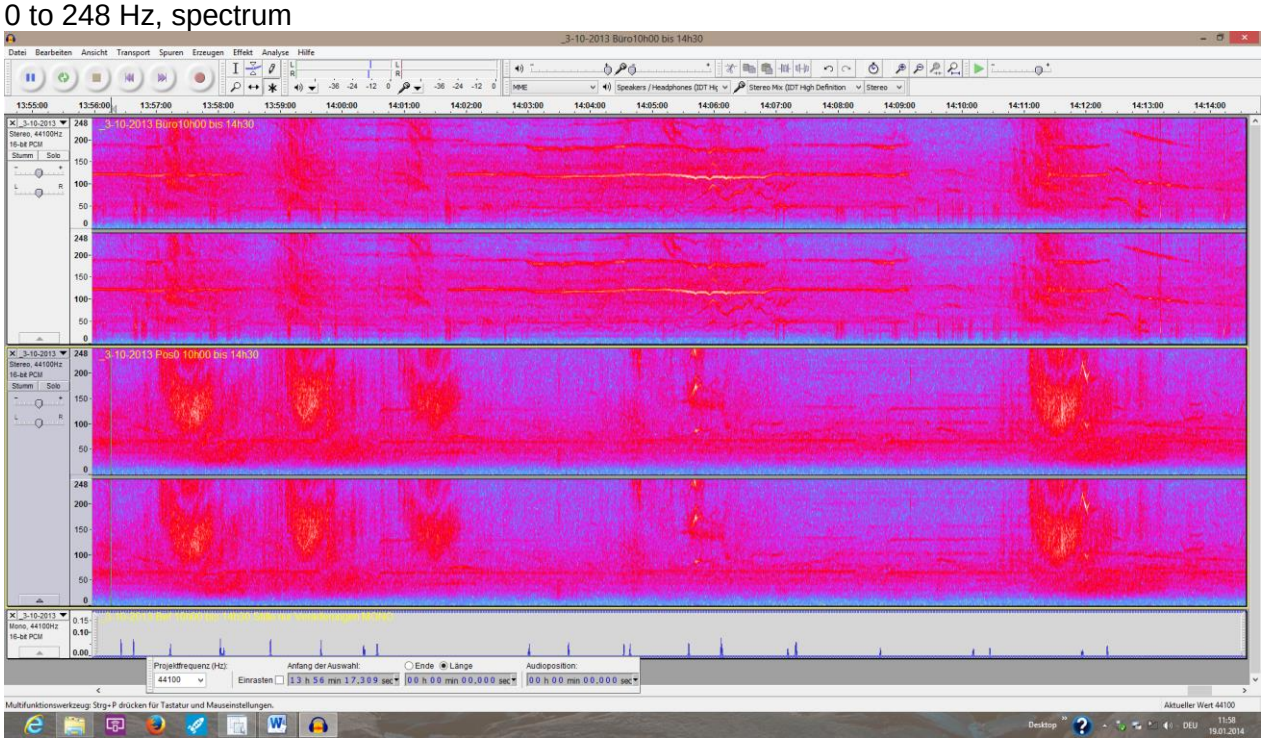
Drawing A52

Both large signals at source very loud motorcycle. 14:05, second motorcycle signal in falling slope aircraft, 14:12
Signals of the motorcycle noise clearly detectable in 8 km at approx. 110 and 170 Hz
0 to 304 Hz, spectrum



Drawing A53

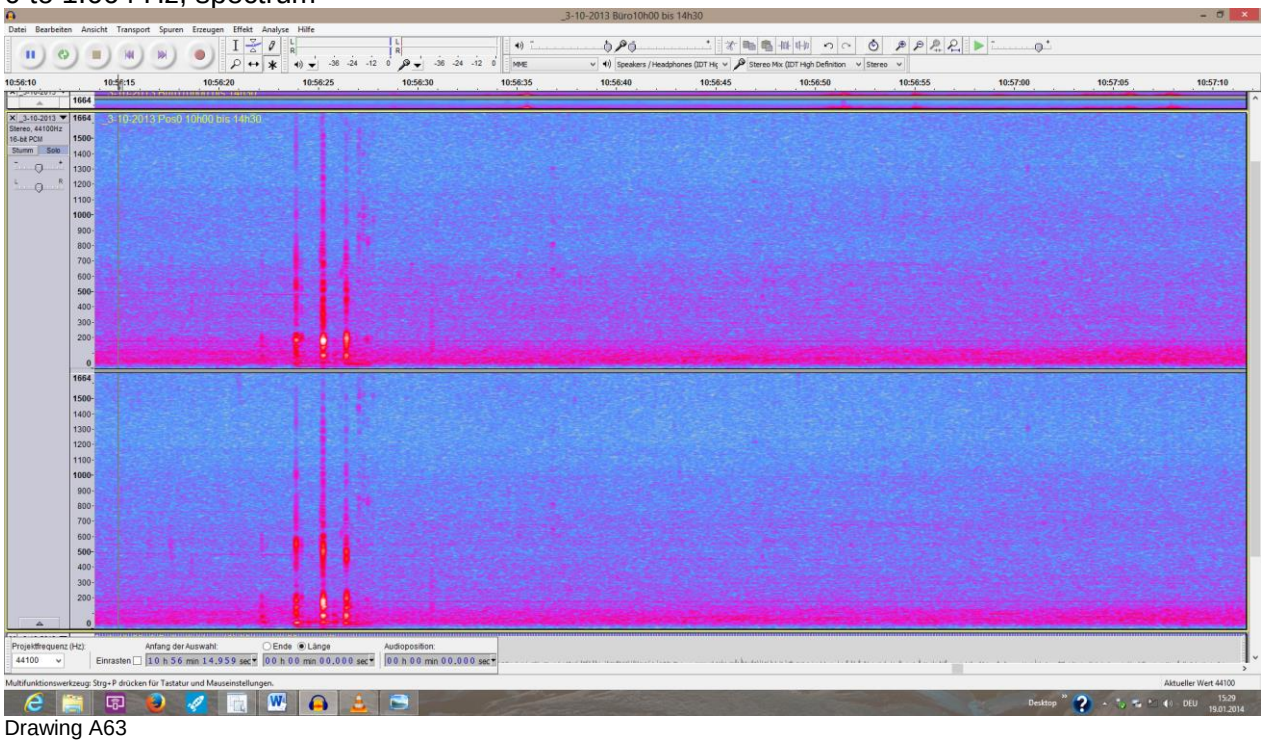
In comparison 2 comparable spectra of aircrafts and of the motorcycle.
The intensity and duration of the signals at approx. 110 and 170 are here significantly weaker developed.
0 to 248 Hz, spectrum



Drawing A54

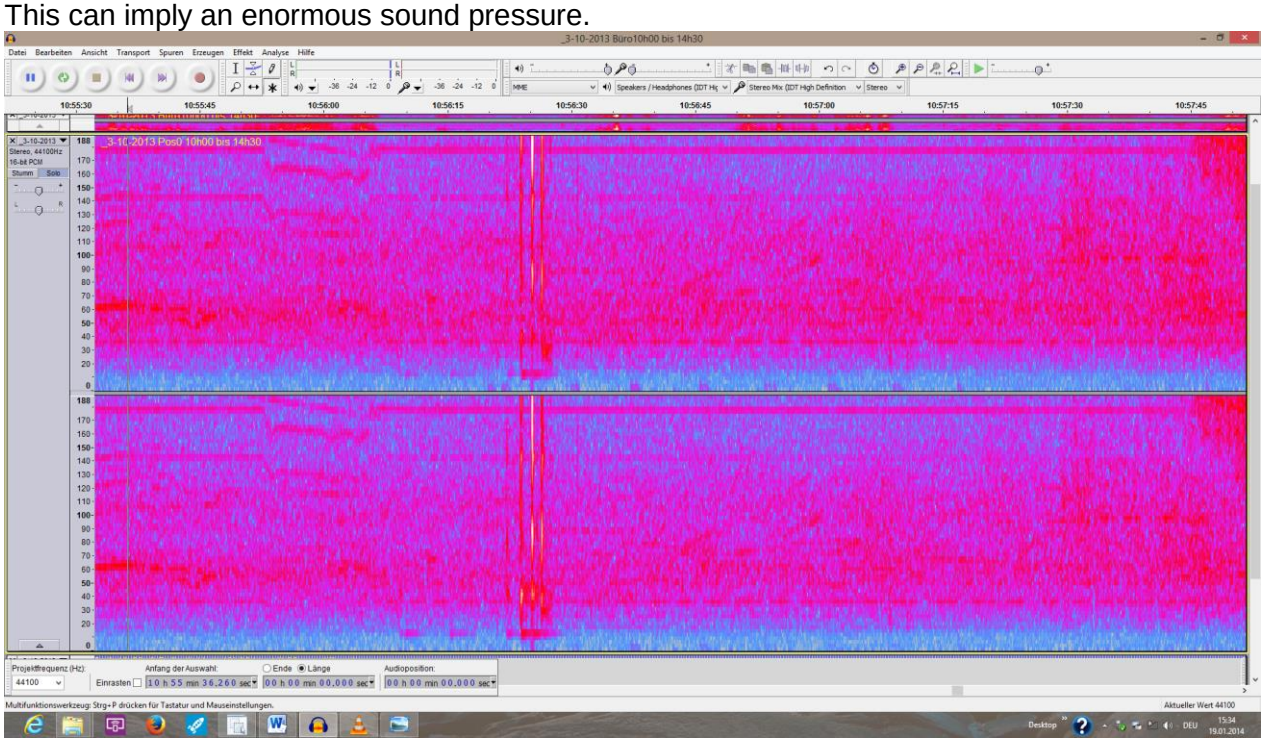
Detail view only source

10:56, rumbling noises at source
0 to 1.664 Hz, spectrum



Drawing A63

10:56, rumbling noises at source
0 to 188 Hz, spectrum
Noticeable are the previously 2 x, subsequently 7 x occurring frequencies in the region of 0 Hz. This can imply an enormous sound pressure.



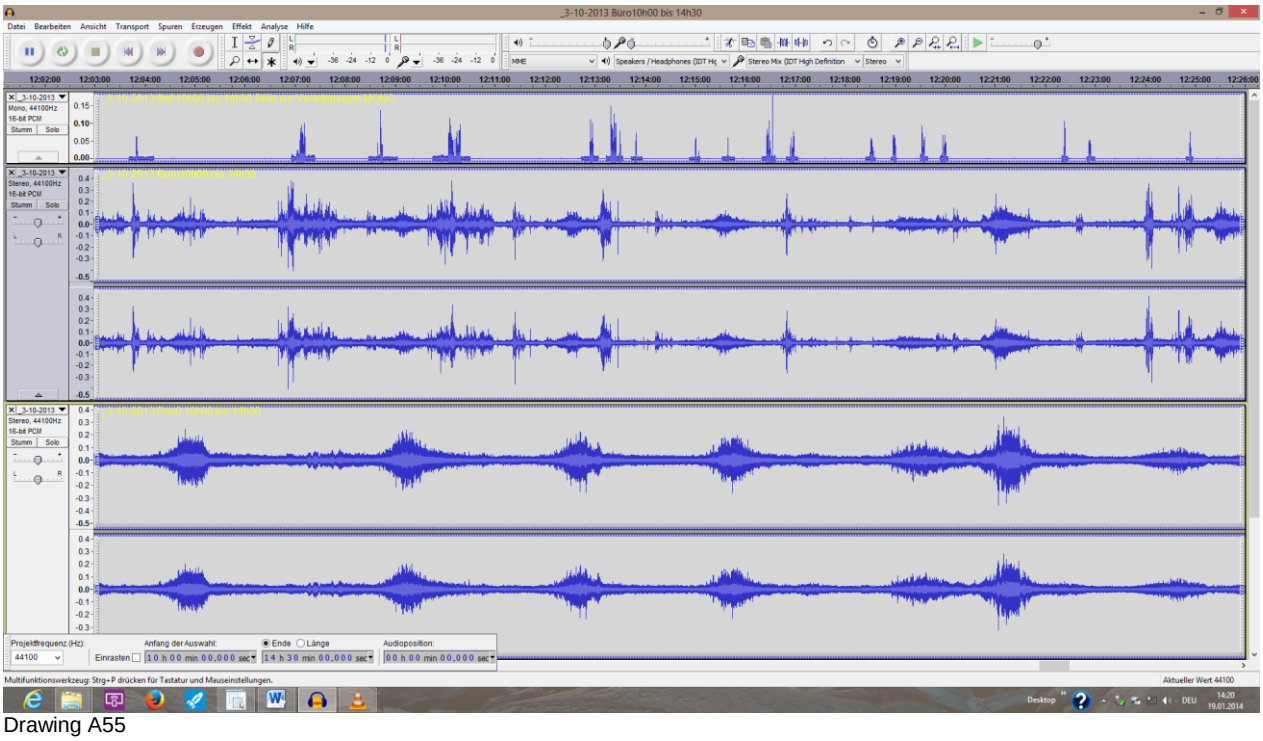
Drawing A64

8.15. Overview of the both detailed kept logs.

mono track top = personal condition log, only start-signals of announcements relating to changes in physical perceptions.
stereo track center = measurement location 2, 8 km from source, bureau
stereo track bottom = measurement location 1, source

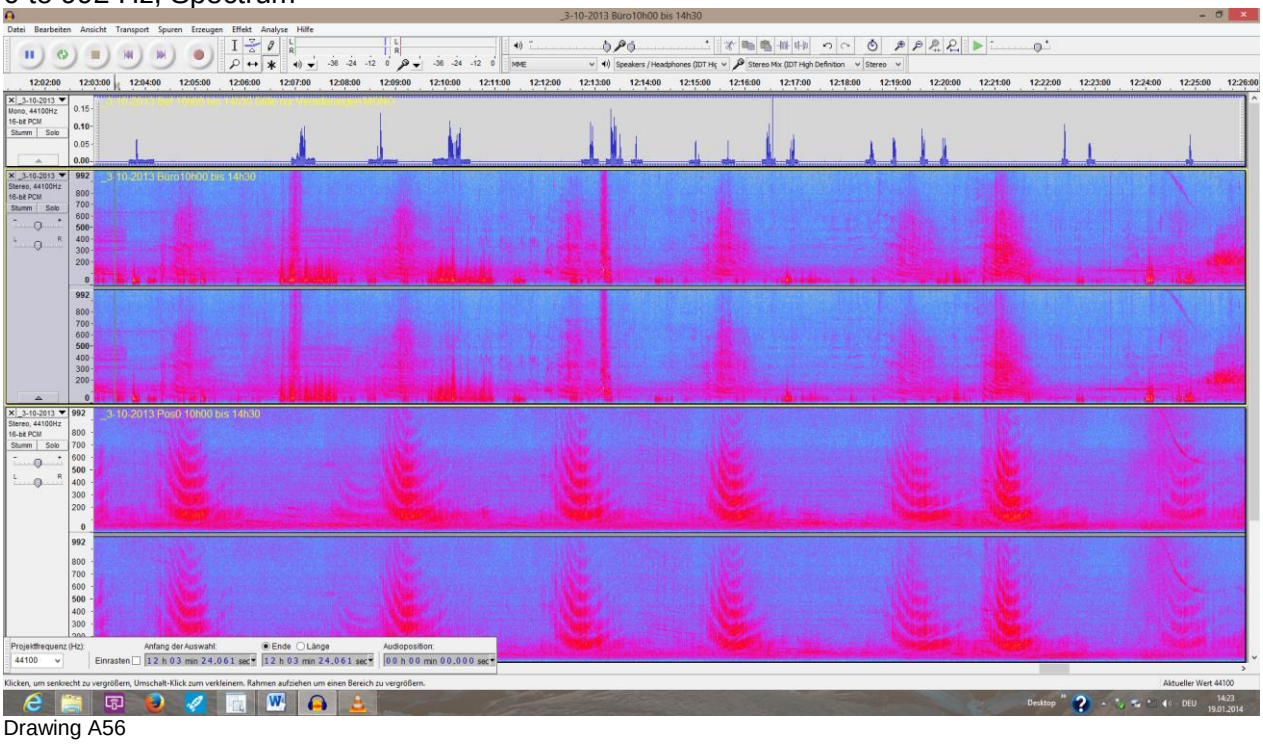
Even when no announcement was made, irritations were present, they have just not been logged in detail.

personal condition 12:03 until 12:26
waveform



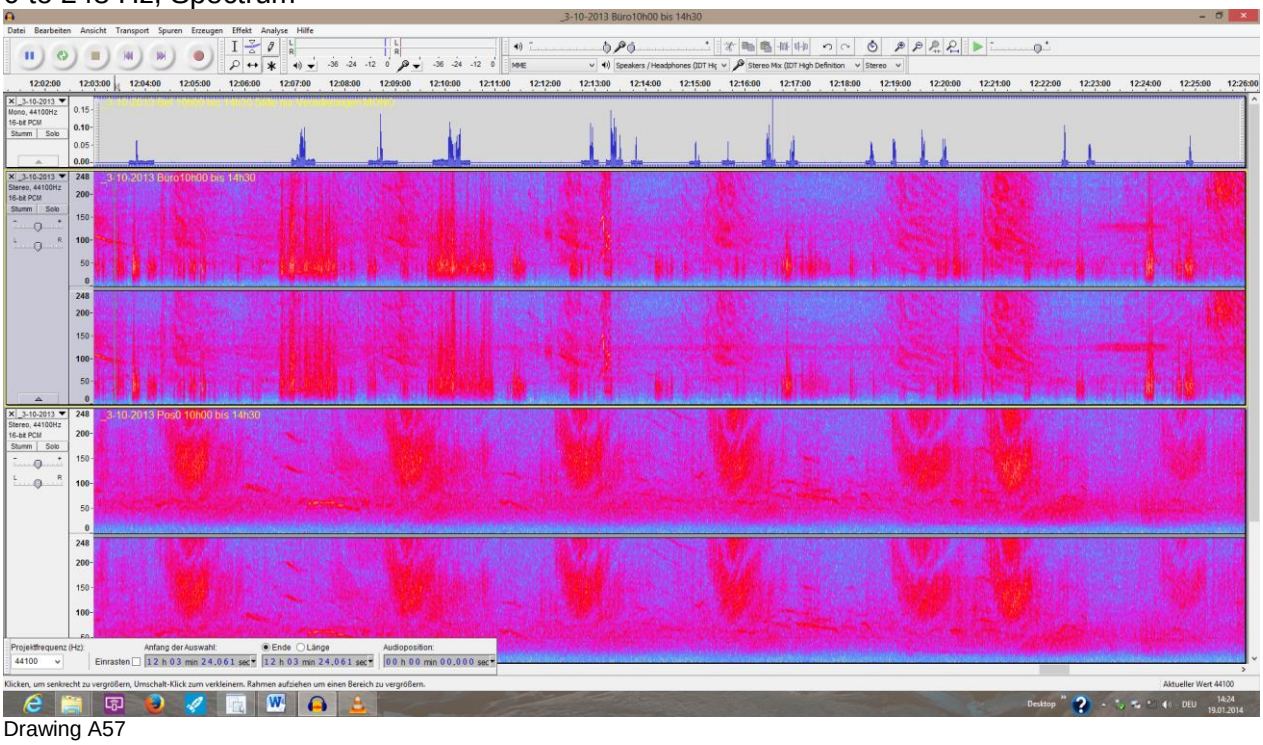
Drawing A55

personal condition 12:03 until 12:26
0 to 992 Hz, Spectrum



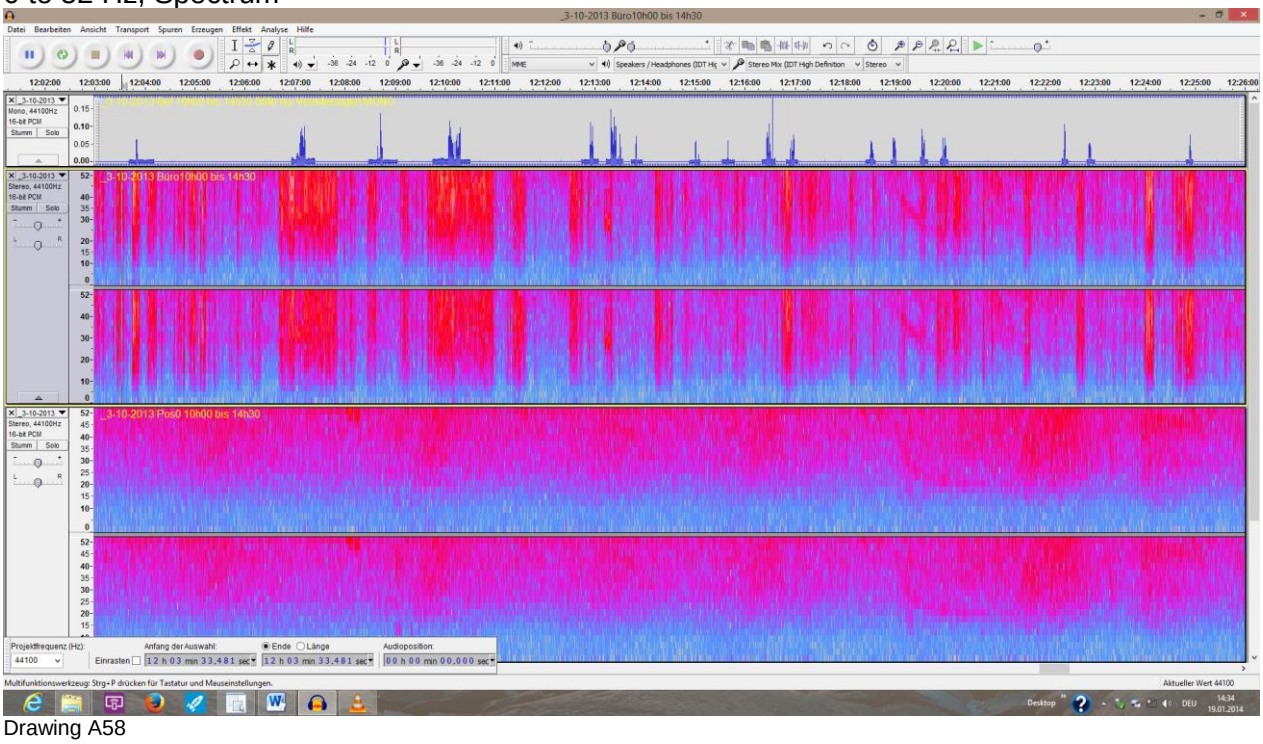
Drawing A56

personal condition 12:03 until 12:26
0 to 248 Hz, Spectrum



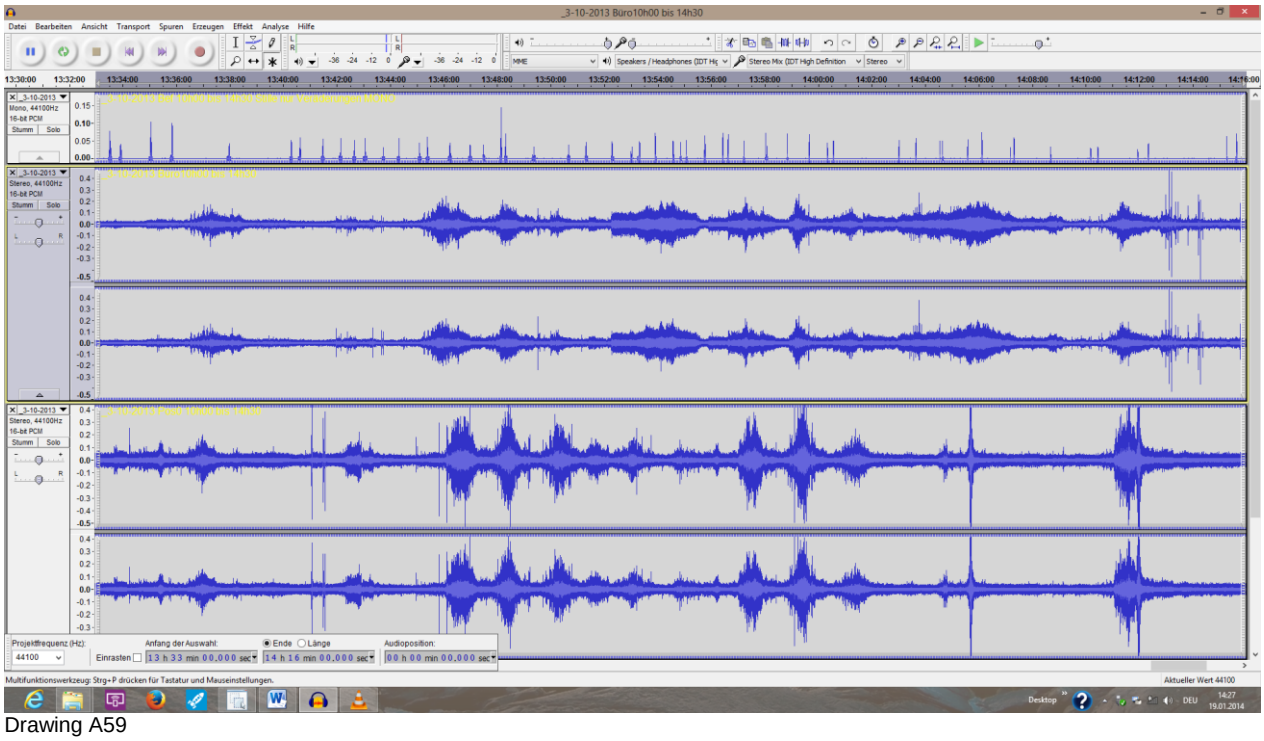
Drawing A57

personal condition 12:03 until 12:26
0 to 52 Hz, Spectrum



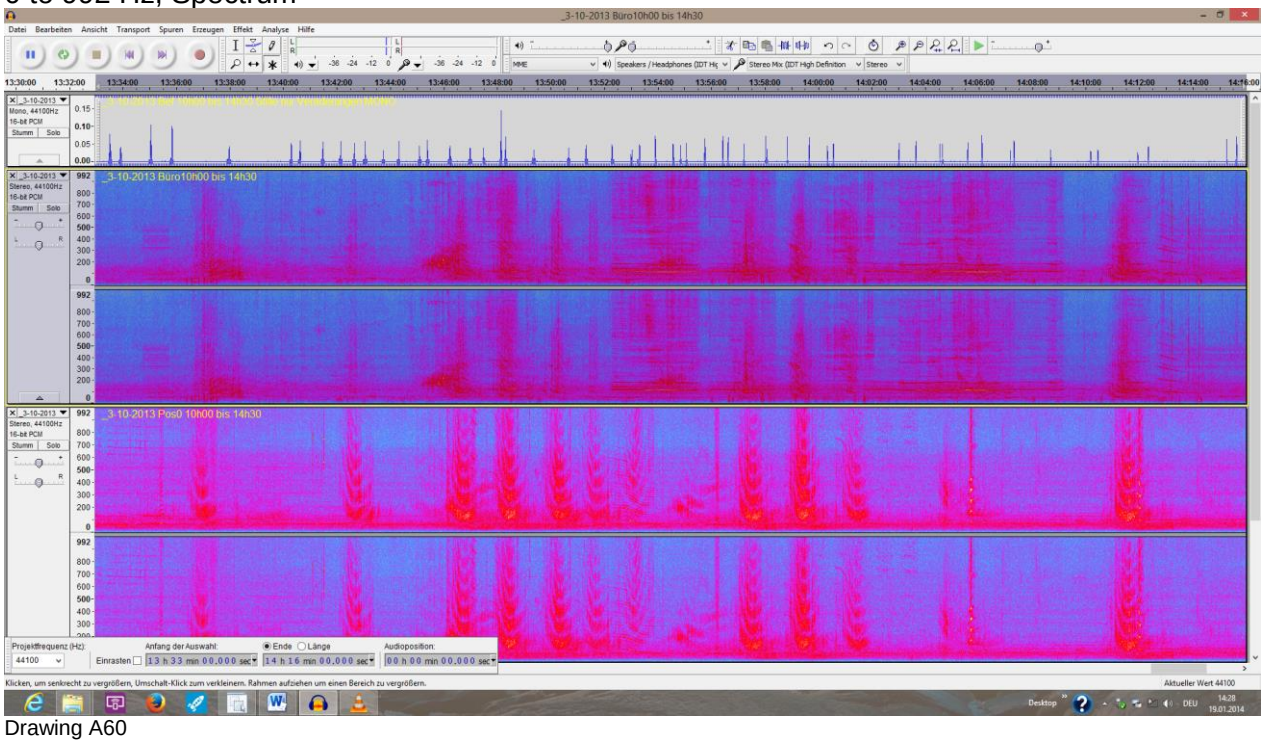
Drawing A58

personal condition 13:33 until 14:16
waveform



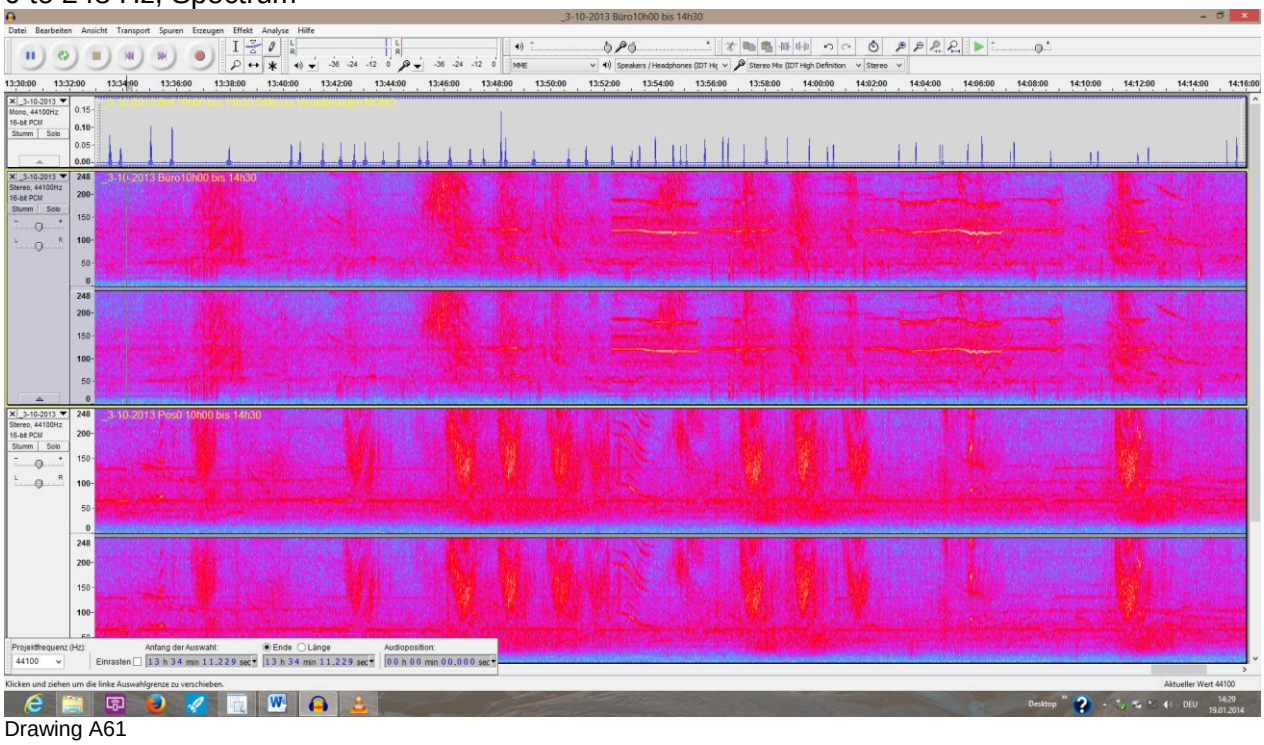
Drawing A59

personal condition 13:33 until 14:16
0 to 992 Hz, Spectrum



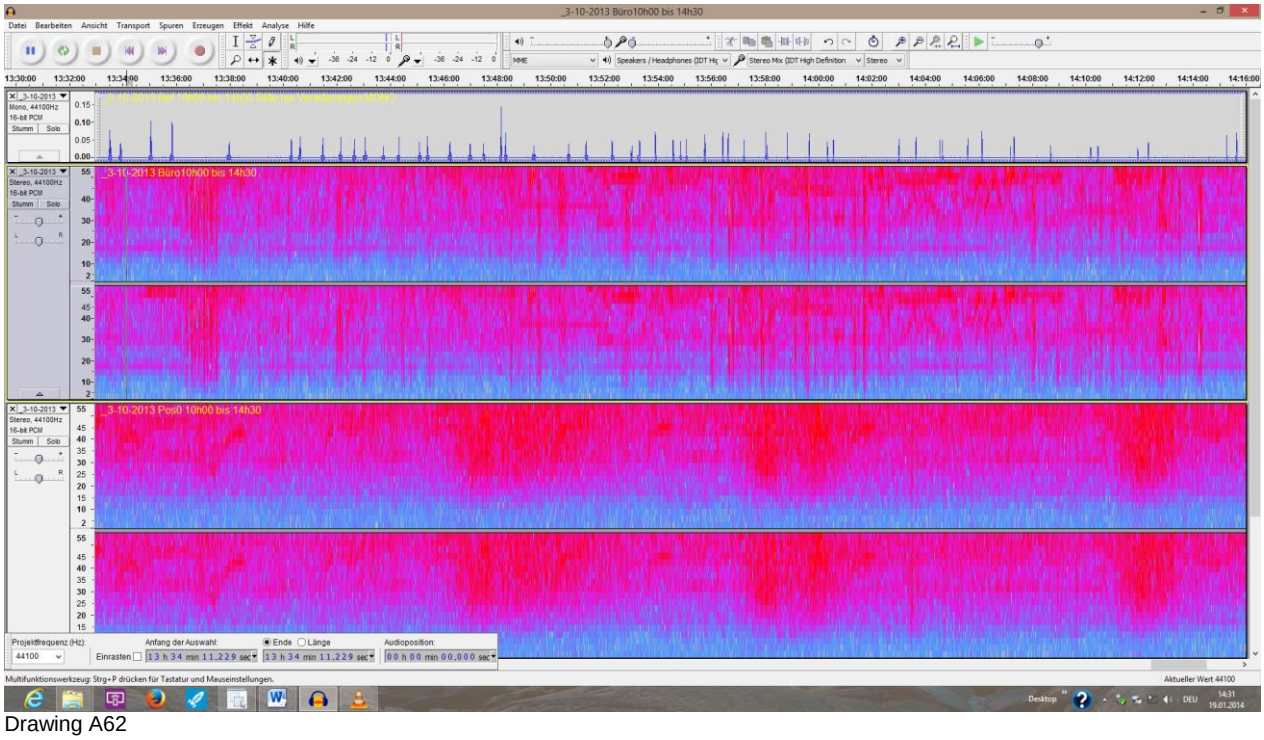
Drawing A60

personal condition 13:33 until 14:16
0 to 248 Hz, Spectrum



Drawing A61

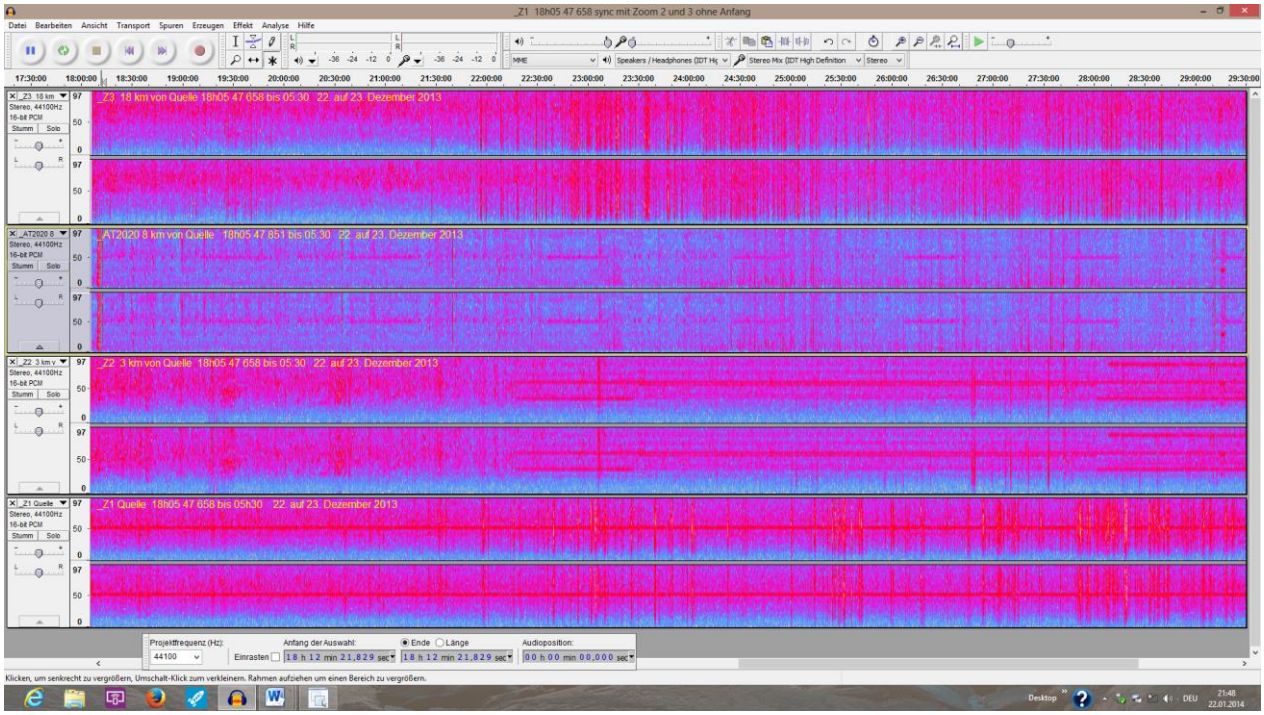
personal condition 13:33 until 14:16
0 to 55 Hz



Drawing A62

At this point a spectrum from part 3 of this report, measurement from 22. to 23.12.2013
In this spectrum, very clearly developed, continuous frequencies are clearly visible at the measurement location 3 km away from the source (3rd stereo track from top).
It is clearly visible that these are generated by sound events at the source (stereo track bottom).
At the measurement locations farther away, 8 km from the source, (2nd stereo track from top) and 18 km from source (stereo track top), the spectra differ significantly.

On the radius of 3 km to source, the author is always doing particularly very badly.



8.16. Video
Detection of pressure waves

Compared to the measurements of May and June 2013, the emission from the source which is audible and, in the drawings, visible, is in total much more invariable and homogenous during the rated measurement period. For instance, no permanent and clearly clocked pulses occur.

Just three subsequent rumbling noises were recorded at the source at 10:56. The bandwidth of the frequencies is narrower than for the previous measurements.
Only during playback of the 2- to 3-times accelerated video, two weakly developed pressure waves are clearly visible.
These are not clearly visible in according snapshots.

Rated measurement period of the videos from 10:00 until 14:17 (until ringing of EMPA)

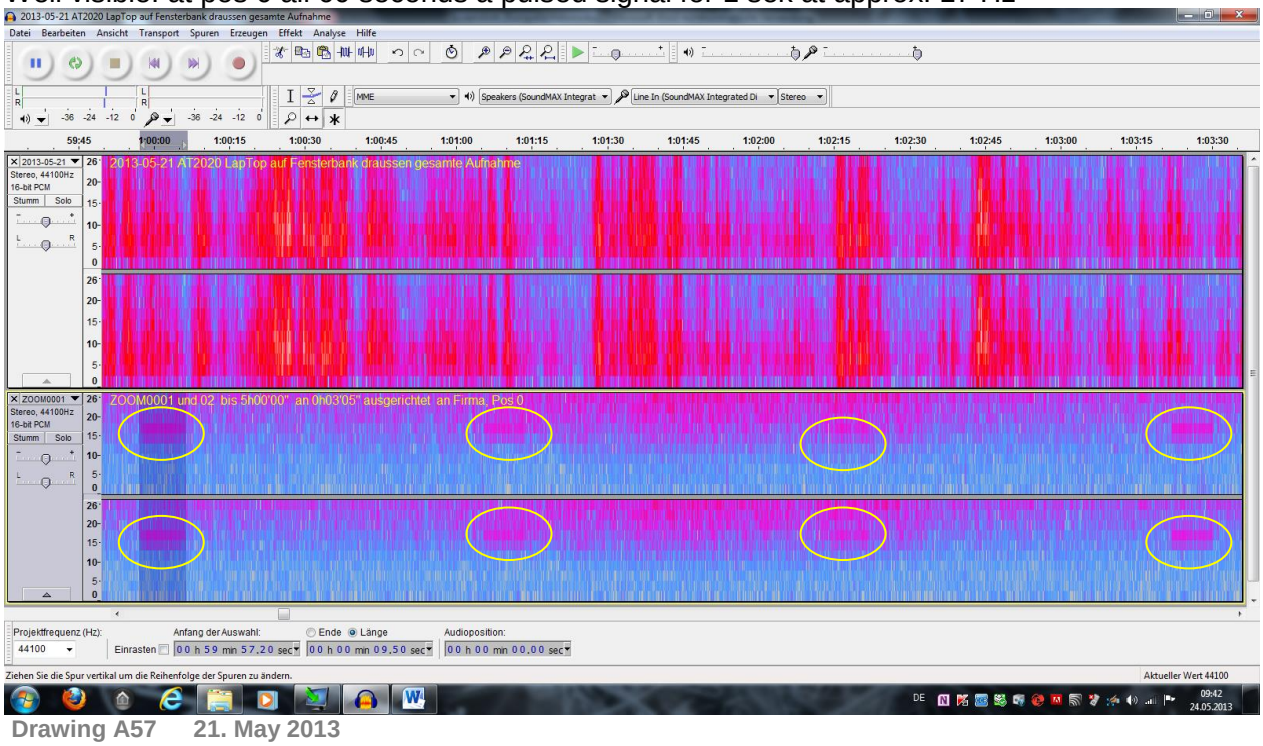
- From 10:00 until 11:40 only few significant and clear pressure waves or effects of pressure waves occur.
- From 11:40, pressure waves are increasingly detected. There, during longer sequences, the tendency becomes visible that in intervals of approx. 1 minute, more/intensified pressure waves are detected.

- From 11:56 slight increase in occurrence and intensity.
- From 12:10 until the end, very clear, strong to chaotic pressure waves are detected.
- Also here, during some longer sequences, the tendency of intervals of approx. 1 minute becomes visible.
- The time frame for the increase of number and intensity of the detected pressure waves correlates with the scale of my personal condition.
  The significant increase of the pressure waves correlates with the according spectra.
- The detection unit was situated inside the apartment. Because of this, the pressure waves are not directed.

In report 1 from measurement day 21. May 2013, pulsing in intervals of 1 minute are clearly proven.
Note regarding parallels:
The pulsed frequencies measured at this measurement day could possibly be harmonics of significantly lower frequencies.

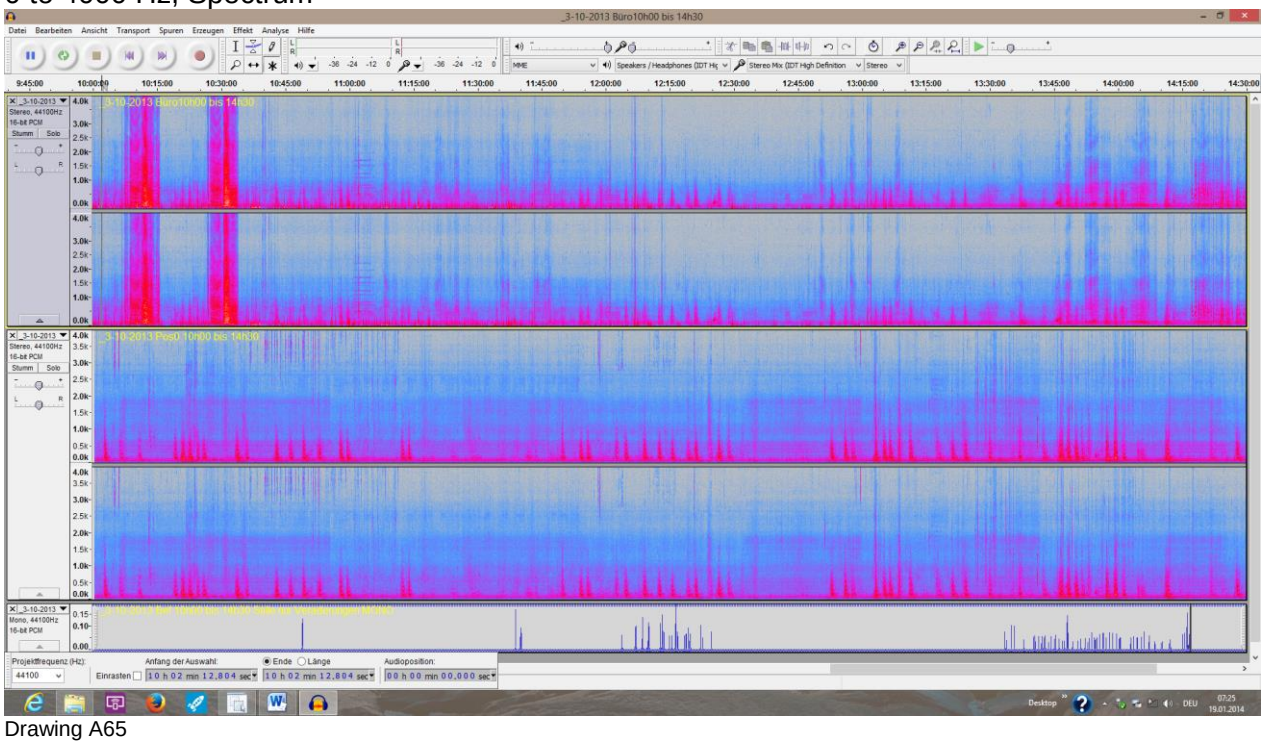
Notable is the interval like time period of approx. 1 minute in the current detections of the pressure waves on 3. October 2013.

Excerpt report measurement day 21. May 2013
Detail from 0h59‘50‘‘ until 1h03‘35‘‘ spectrum 0 to 26 Hz
Well visible: at pos 0 all 60 seconds a pulsed signal for 1 sek at approx. 17 Hz



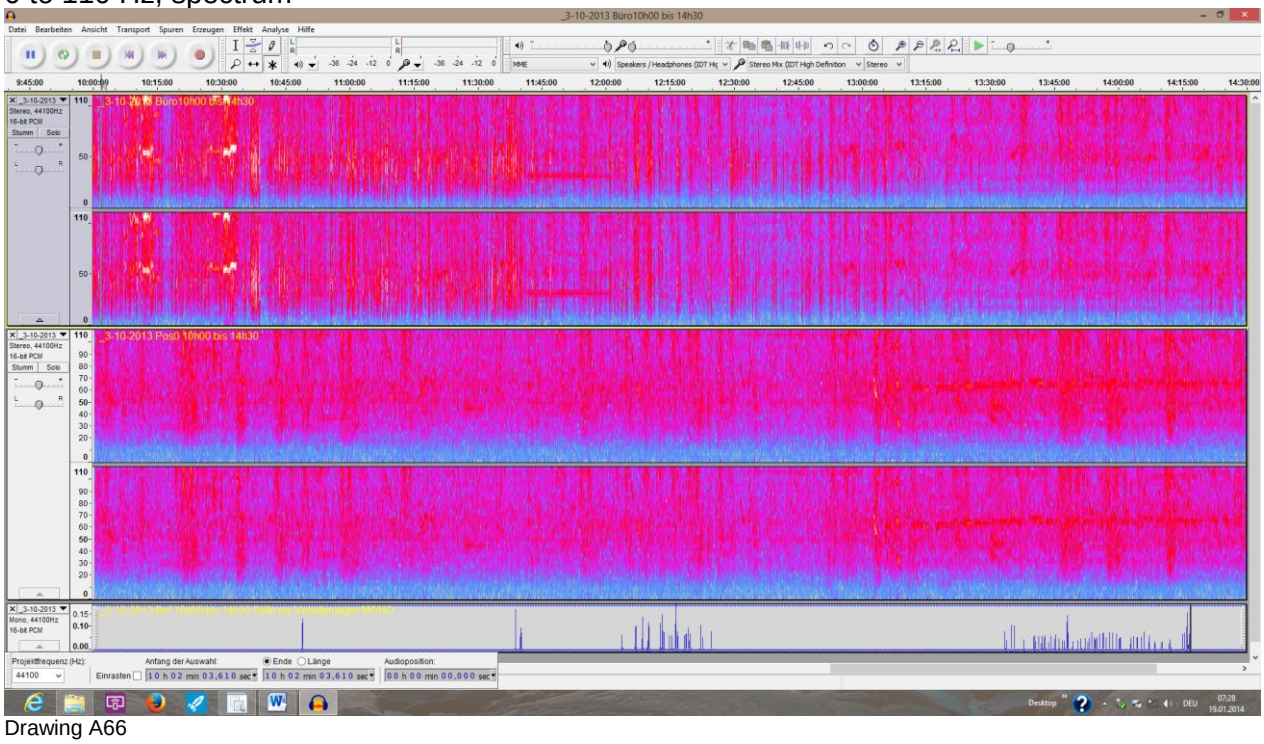
Drawing A57 21. May 2013

Entire measurement period
From 11:40 increased pressure waves, from 12:10 until end very clear pressure waves detected.
0 to 4000 Hz, Spectrum



Drawing A65

Entire measurement period
From 11:40 increased pressure waves, from 12:10 until end very clear pressure waves detected.
Independent of the aircraft noise, a continuous frequency at approx. 60 Hz is visible at the source from 12:45 until the end.
0 to 110 Hz, spectrum

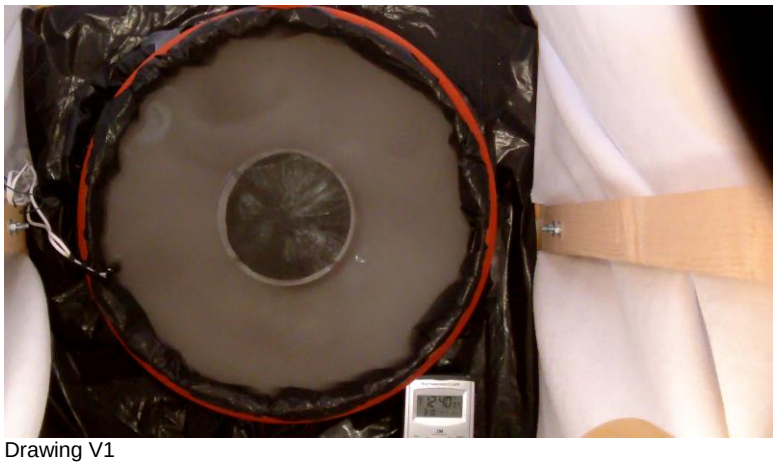


Drawing A66

8.16.1. Example screenshots of the video recordings of pressure waves

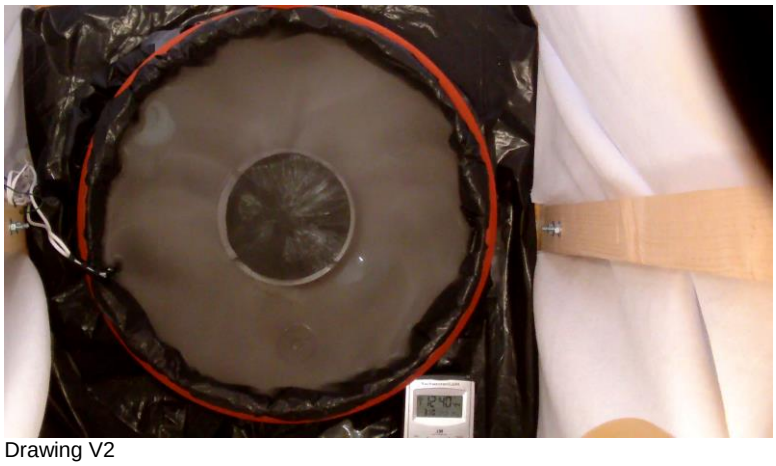
For the qualified evaluation, it is indispensable to watch the videos. Faster playback makes weak pressure waves better visible.

12:40:07



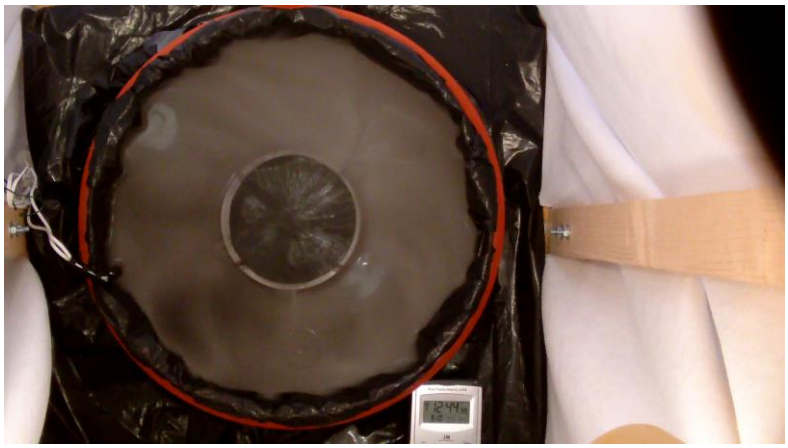
Drawing V1

12:40:44



Drawing V2

12:44:38



Drawing V3

8.17. Rating of the measurement results:

- At measurement location 2, distance 8 km from source, the aircraft noise, coming in from the source, is measured.
  The aircraft are are situated far away from measurement location 2, the sound of fast aircraft reaches the measurement location within the same time frame as the sound of slower aircraft. Because of the different distances and flight times aircraft - measurement location 1, source, and aircraft - measurement location 2, these time frames should be different from each other.
- Loud sound sources, passing the measurement location 1 such as motorcycles generate clear signals at the measurement location 2, 8 km away.
  This is not possible. In this case, at the same instant of time, dozens of signals from e.g. motorcycles would be generated, which accidentally move around somewhere in the diameter of 8 km.
- The spectra of the aircraft noise in the environment of the source look without exception significantly different than comparable aircraft noise at other, farther away measurement locations.
- Occurrence and intensity of the detected pressure waves correlate to sound events.
- In the personal condition log, significant correlations exist with emissions at measurement location 1, source.
- The personal condition log seems to provide relations to the aircraft noise. This must be doubted. The aircraft pass measurement location 2 in approx. 5 km distance.
  The author can be situated at remote locations without any signs of irritations at airports, in aircraft, or in any distance, from tangible to far away, to passing aircraft.
- The frequencies detected at 10:56 in the range of 0 Hz must have an enormous sound pressure, since the measurement device usually does not detect frequencies in this region. This indicates that infrasound beyond the measurement ranges of the measurement devices is emitted from the source also at other than the analysed times.
- At several sound events where booming did occur, cows were verifiably startled. By using this and the previus measurements, coincidence is absolutely excluded.

In order to prove an unnatural/altered sound environment at the sound source, it was searched for a measurement setup which allowed for proof of this altered sound environment.

See part 2, provocation test.

9. Part 2, provocation test

Sound provocation test for proof of an unnatural/altered sound environment of the industrial plant.

9.1. Motive and execution of the test

From part 1 of this report, the result is provided that an unnatural, altered sound environment exists in the environment of the source.

Objective of this test:
By inducing targeted, exactly documentable comparable sound events with large sound volume, it is aimed to prove at different measurement locations that the sound generated by explosion has different characteristics at the different burn-off places.

Sound propagates uniformly in all directions. Thus, the propagation times of the sound must be identical from one measurement location to the other in all directions.

Procedure of provication test:
All audio recording devices as well as the video recording of the detector for pressure waves were started at 22.12.2013 in a time window of 2 to 4 hours before the actual test, and placed at the 4 measurement locations. All recording devices were operating until the morning of 23. December.

At the incident of time of the provocation test, it was still air.

One rocket horror bang was burned off in a most possible short sequence at three different locations. The spatial distances between recording device and burn-off location range between approx. 50 m to approx. 120 m.
Burn-off location = measurement location.

Prior to burning-off of the thunder bang at measurement location 1 and measurement location 2, a mat of ladycracker was ignited 3 x or 2 x per mat, respectively, with short time-lag.
They can not be securely detected at any measurement location; thus, they are not considered in detail.

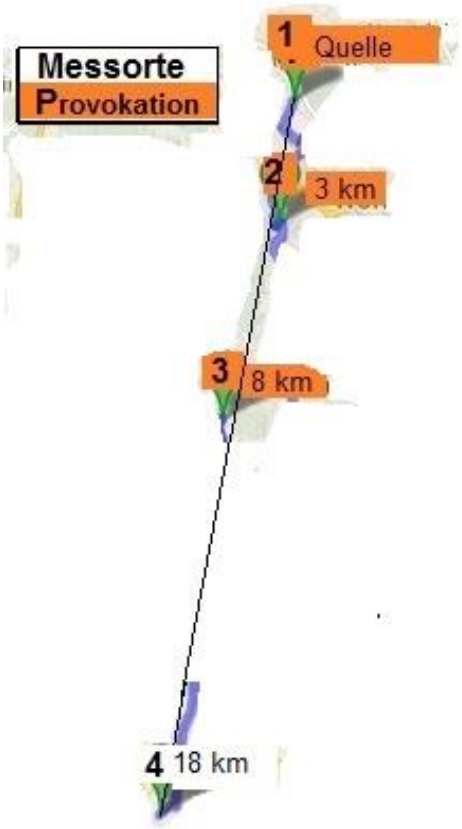
Specific data regarding the rockets were not given by company Bugano AG.
In the sales talk with the salesperson, a flight height of approx. 30 m was mentioned.

On the personal condition rating scale from 0 to 10, the measurement time interval of the provocation test is at 2 to 4.

9.2. Time protocol with personal condition also valid for part 3 of this report

Date of measurement		22. to 23. December 2013	
Number of measurement locations:		4 x sound recording 1 x video recording pressure waves (PW) 1 x online seismograms	
		start time:	recording location:
Zoom 1, audio recording		approx. 17:45	approx. 150 from suspected source
Zoom 2, audio recording		approx. 17:30	3 km location from source
Zoom 3, audio recording		approx. 16:50	17,8 km location from source
AT2020, audio recording		approx. 18:15	apartment, 8 km from source, bureau on bench outside PC in room, battery powered and mains operatio
video, detection PW		approx. 18:15	apartment, in the bureau, PW-detector at level of window bench, window wide open, wind and drought excluded
seismic activity online graphics SED		nearly over the entire time from approx. 16:00	In a 2 hour cycle saving of previous seismograms. Local time = UTC +1
Duration of the recordings:		Each approx. 16 hours. Only selected intervals were analysed.	
Other:		All three Zoom-devices were simultaneously started, and the starting time was announced. AT2020 was started later In the time from approx. 00:05 until 04:00 AT2020 mains operation. Accidentally said 17 instead of 16 o'clock when announcing the start time. Active air traffic.	
approx. weather conditions:		Temperature approx 3°C, dry, cloudy/cloudless, still air, around midnight occasional strong winds.	
My location during the recording:		En route and at home. Sound provocation test at the 3 measurement locations between 20:50 and 21:50.	
Peculiarity:		Around 04:18 well visible signals in seismograms of all displayed earthquake measuring stations.	
time		small personal condition log	
18:15		Muted booming to standing sound, weak fine feeling of electricity, outside slightly buzzing air.	
19:18		Sound as before, slight pressure on head/ears.	
19:56		Very capturing, pressure, restlessness leaving for the provocation measurement	
approx. 22:00		Back again.	
approx. 22:15		Seems to intensify	
0:30		Cracking in the room, don't know whether wind noise or pressure wave. Roller pump feeling, pressure	
approx. 02:10		Strong electric vibration, restlessness, booming sound.	
approx. 03:33		Awake with electricty, than cracking in the ear, electric whirring not so strong, medium loud sound nearly standing	
4:23		Still like this, electric vibrating slightly more, restlessness, standing sound	
5:14		Something happened in the belly, the nose szzling	
6:45		It hums and vibrates on head/ears, very fast out of breath	
9:35		Strong hum, pressure on head/ears	

9.3. measurement locations



Graphic P 1

measurement location 1 and provocation location 1
= source
ignited at 20:56

measurement location 2 and provocation location 2
= 3 km location away from source
ignited at 21:14

measurement location 3 and provocation location 3
= 8 km location away from source
ignited at 21:39

measurement location 4
= 18 km location away from source

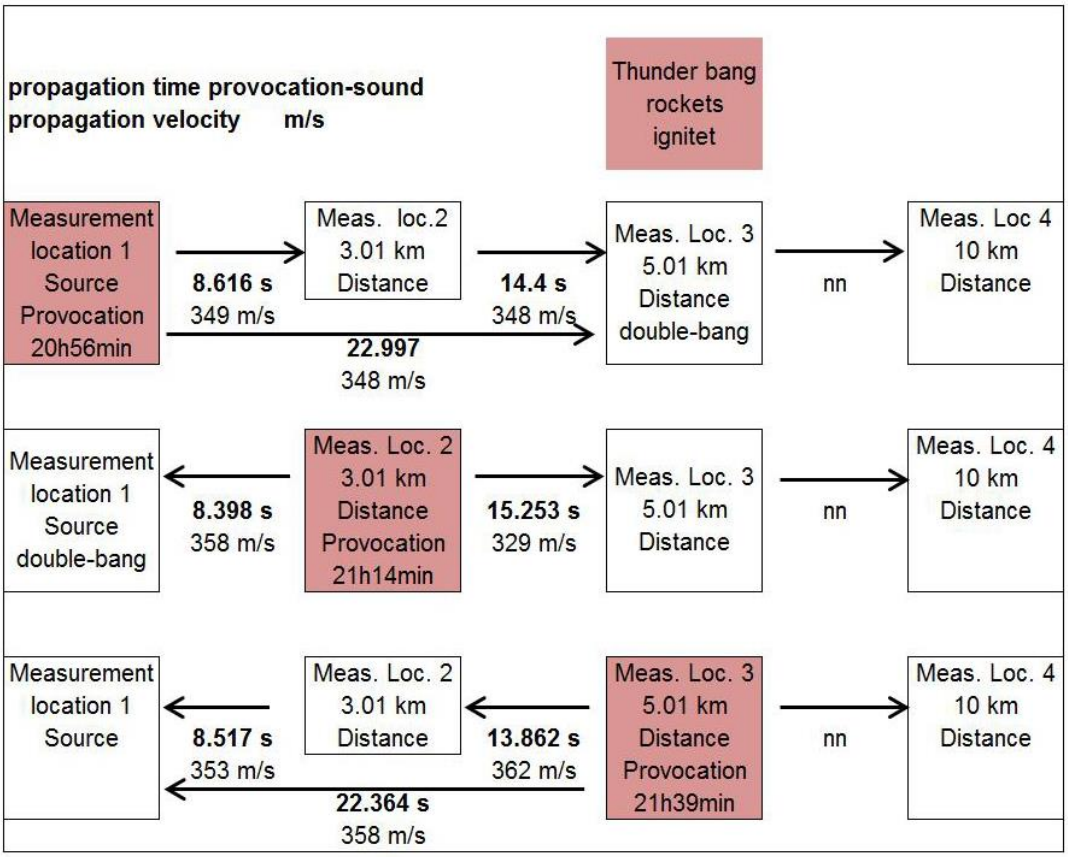
All 4 measurement locations are located nearly on a straight line.

9.4. Distance beeline in km

	source measurement location 1	3 km location measurement location 2	8 km location measurement location 3	18 km location measurement location 4
source measurement location 1		3.01	8.00	17.80
3 km measurement location 2	3.01		5.01	14.80
8 km measurement location 3	8.00	5.01		9.78
18 km measurement location 4	17.80	14.77	9.78	

Table P 1

9.5. measurement results propagation time sound and propagation velocity



Graphic P 2

Note:
During the entire duration of the tests, pressure waves were detected. See 9.8. video.

9.6. audio tests

<table>
<tr><td colspan="4">identification, audio test</td></tr>
<tr><td>measurement location 1</td><td>measurement location 2</td><td>measurement location 3</td><td>measurement location 4</td></tr>
<tr><td>provocation 20:56</td><td>Thunder bang very well audible.

Number of signals: 1</td><td>Identified after amplification by audio test

number of signals: 2
time-lag approx. 0,4 sec</td><td>nuisance due to aircraft noise</td></tr>
<tr><td>Thunder bang loud audible.

number of signals: 2
time-lag approx 0,870 sec</td><td>provocation 21:14</td><td>Thunder bang very clearly audible.

Number of signals: 1</td><td>nn</td></tr>
<tr><td>Thunder bang very loud audible.

Number of signals: 1</td><td>Thunder bang very loud audible.

Number of signals: 1</td><td>provocation 21:39</td><td>nn</td></tr>
<tr><td colspan="2">sound volume appears to be the same</td><td></td><td></td></tr>
</table>

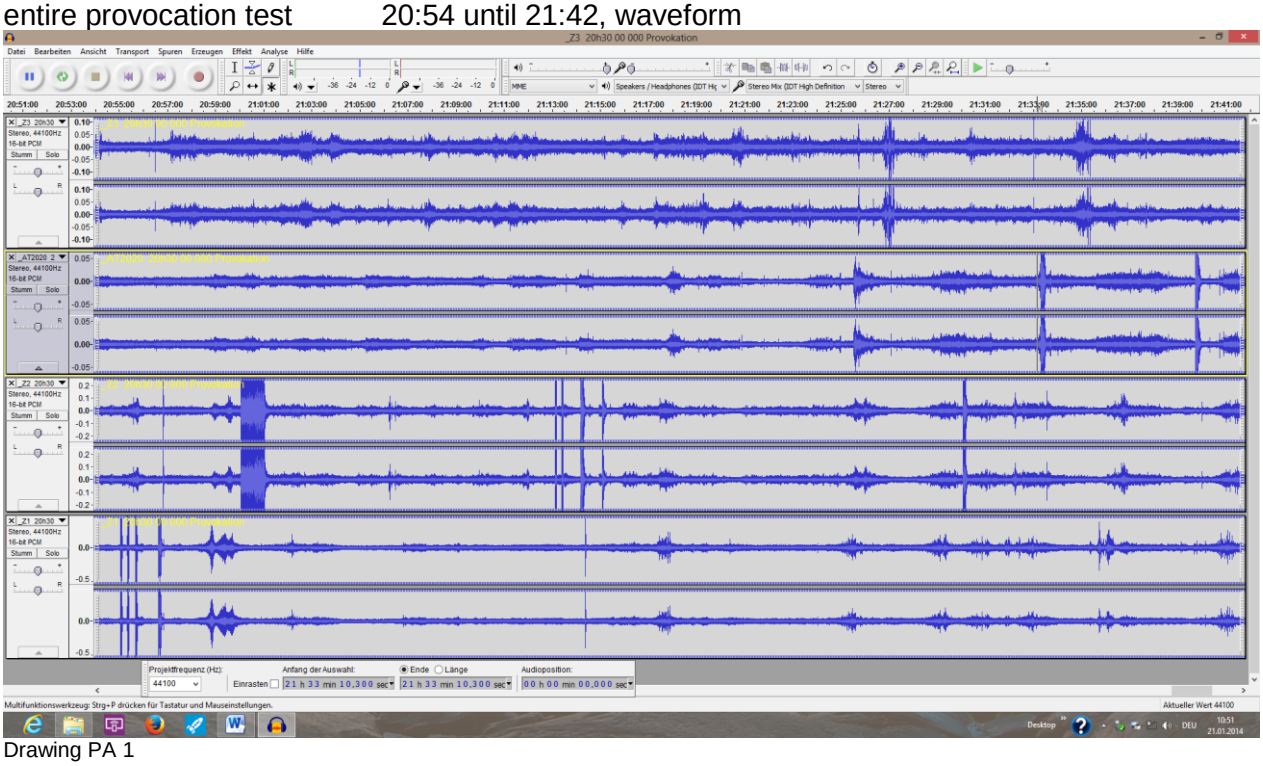
Table P 2

9.7. Audio

Correction of the time axis:
For the evaluation of these audio recordings, no corrections were performed.

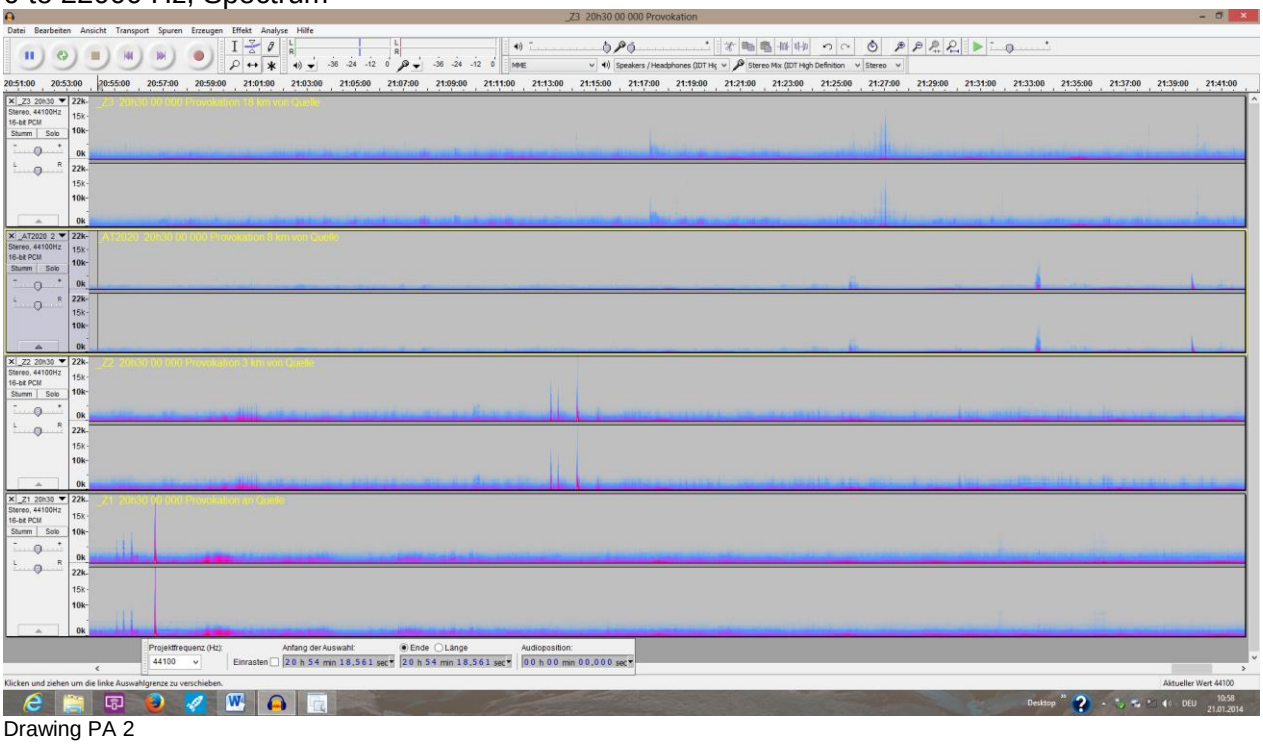
stereo track top = measurement location 4, 18 km from source
stereo track 2nd from top = measurement location 3, 8 km from source
stereo track 3rd from top = measurement location 2, 3 km from source
stereo track bottom = measurement location 1, source

entire provocation test 20:54 until 21:42, waveform



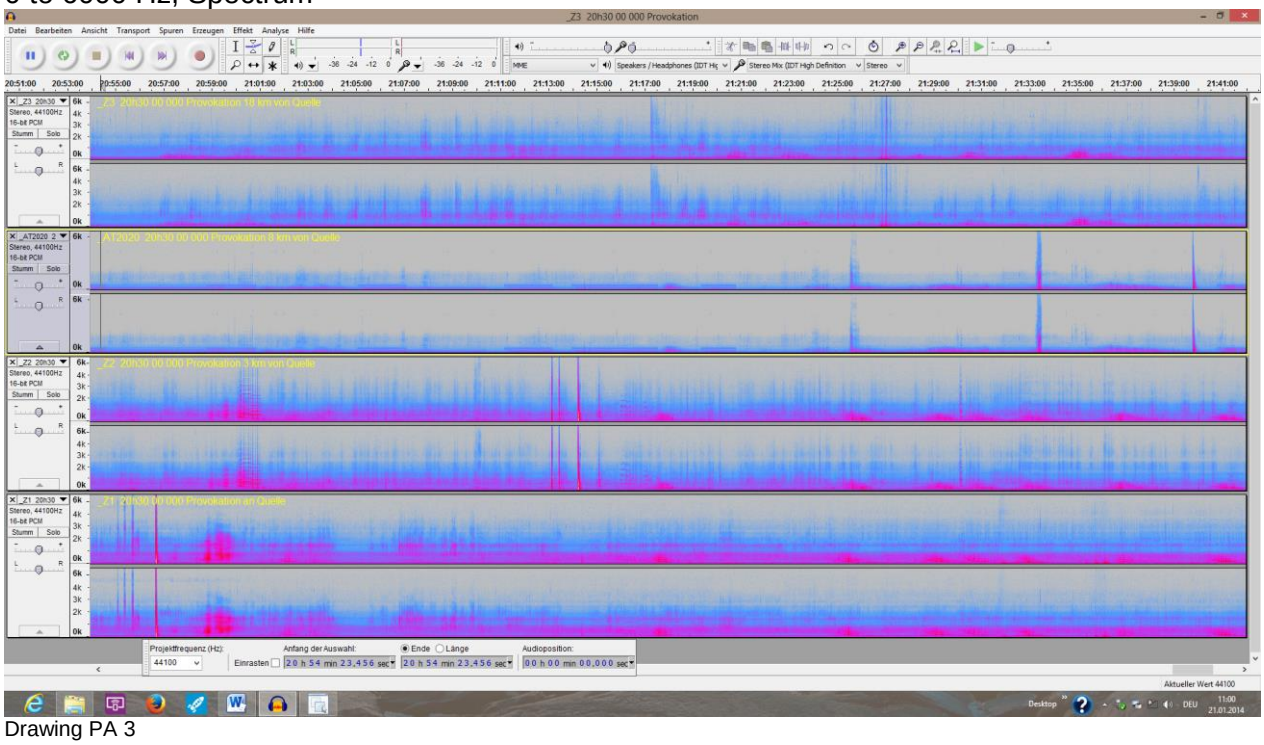
Drawing PA 1

entire provocation test 20:54 until 21:42
0 to 22000 Hz, Spectrum



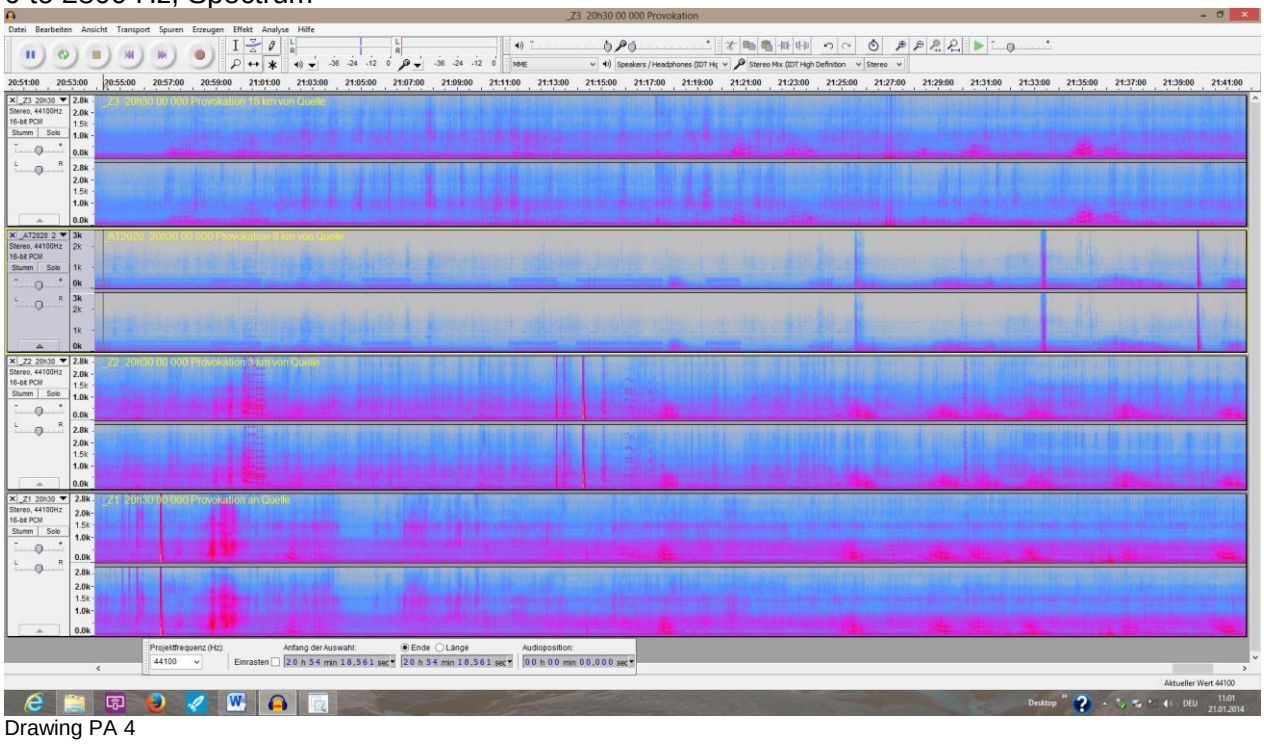
Drawing PA 2

entire provocation test 20:54 until 21:42
0 to 6000 Hz, Spectrum



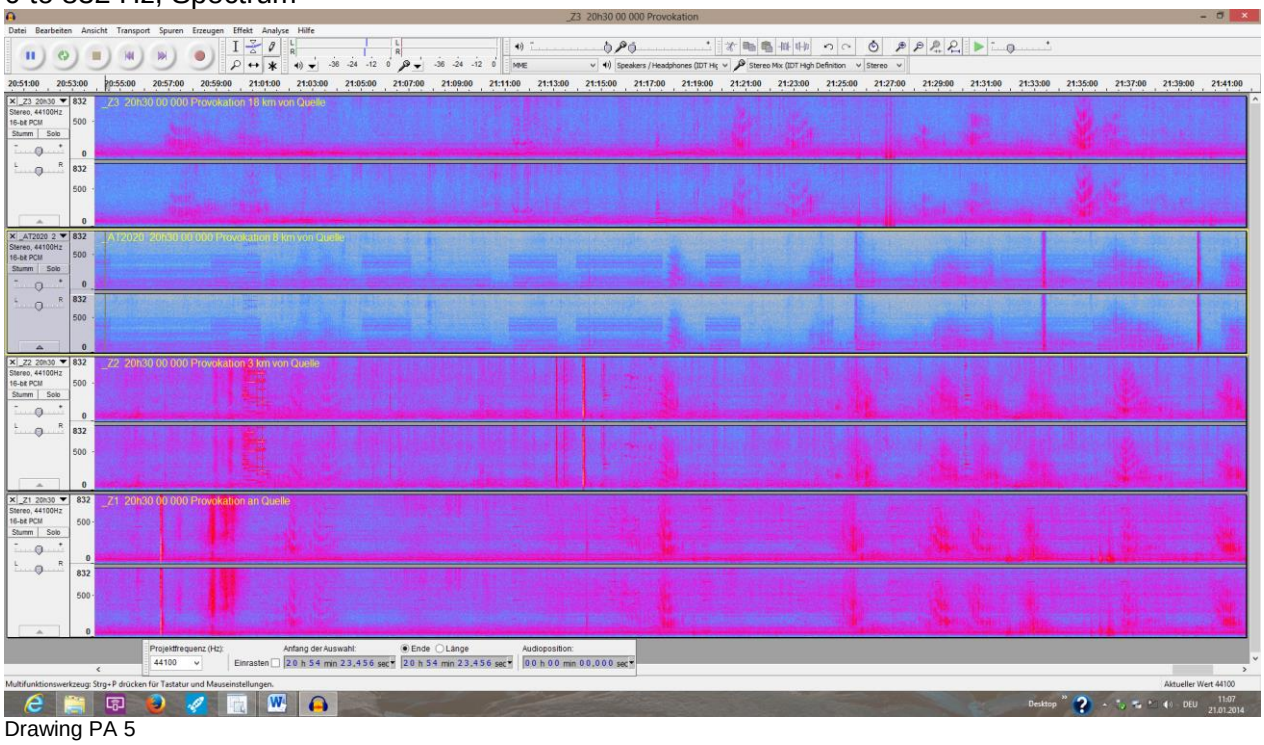
Drawing PA 3

entire provocation test 20:54 until 21:42
0 to 2800 Hz, Spectrum



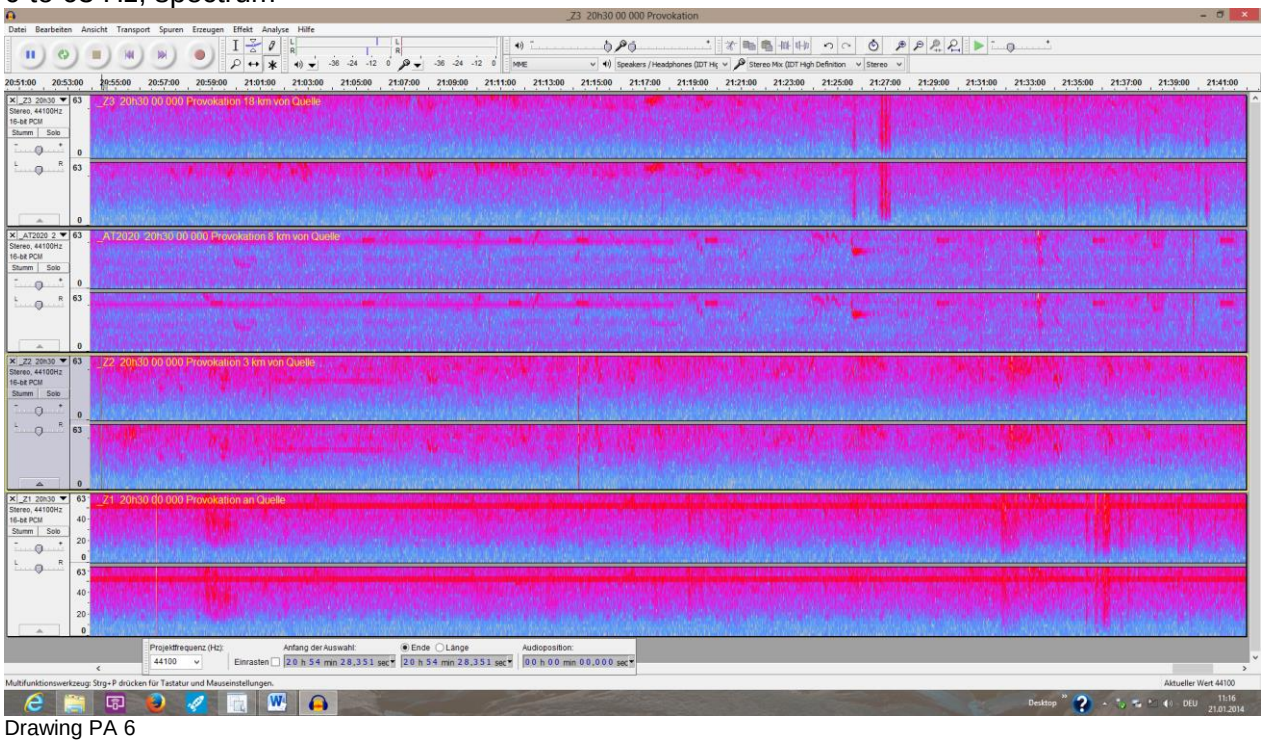
Drawing PA 4

entire provocation test 20:54 until 21:42
0 to 832 Hz, Spectrum



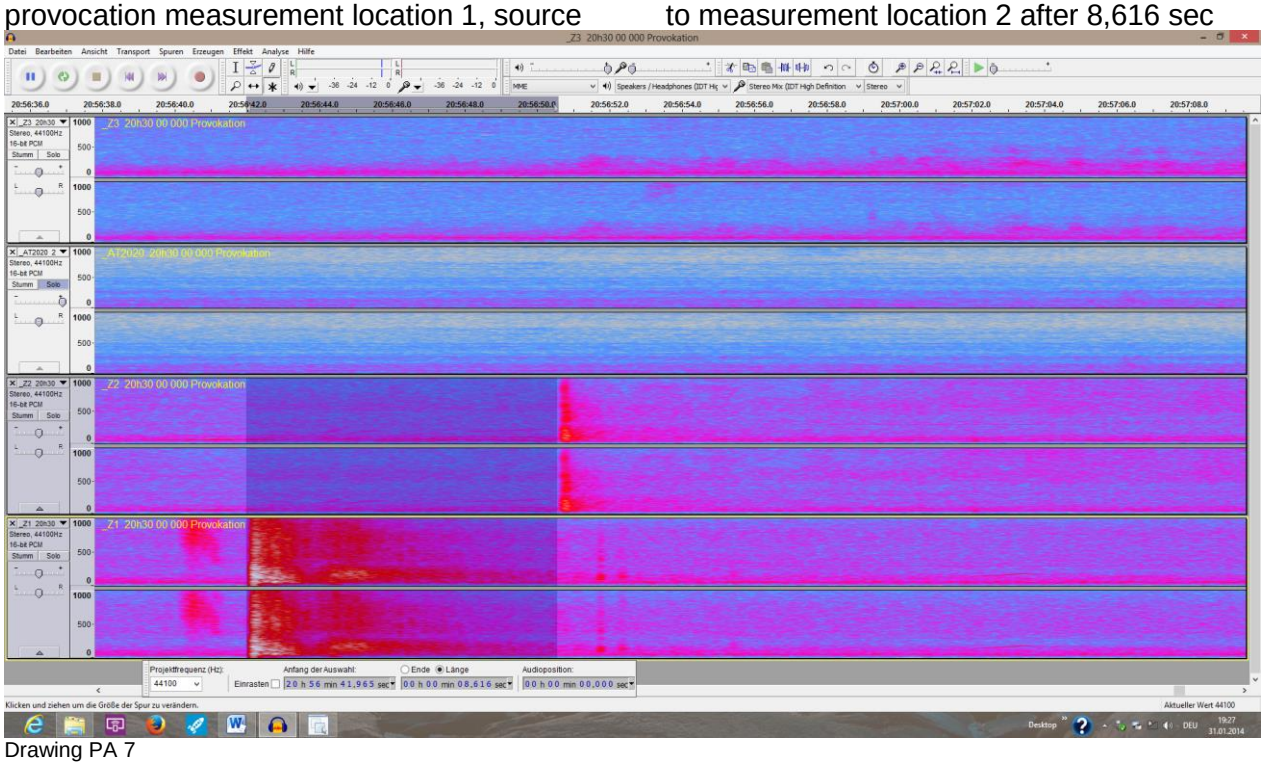
Drawing PA 5

entire provocation test 20:54 until 21:42. Here, furthermore notable is the continuous frequency of approx. 50 Hz at the source.
0 to 63 Hz, spectrum



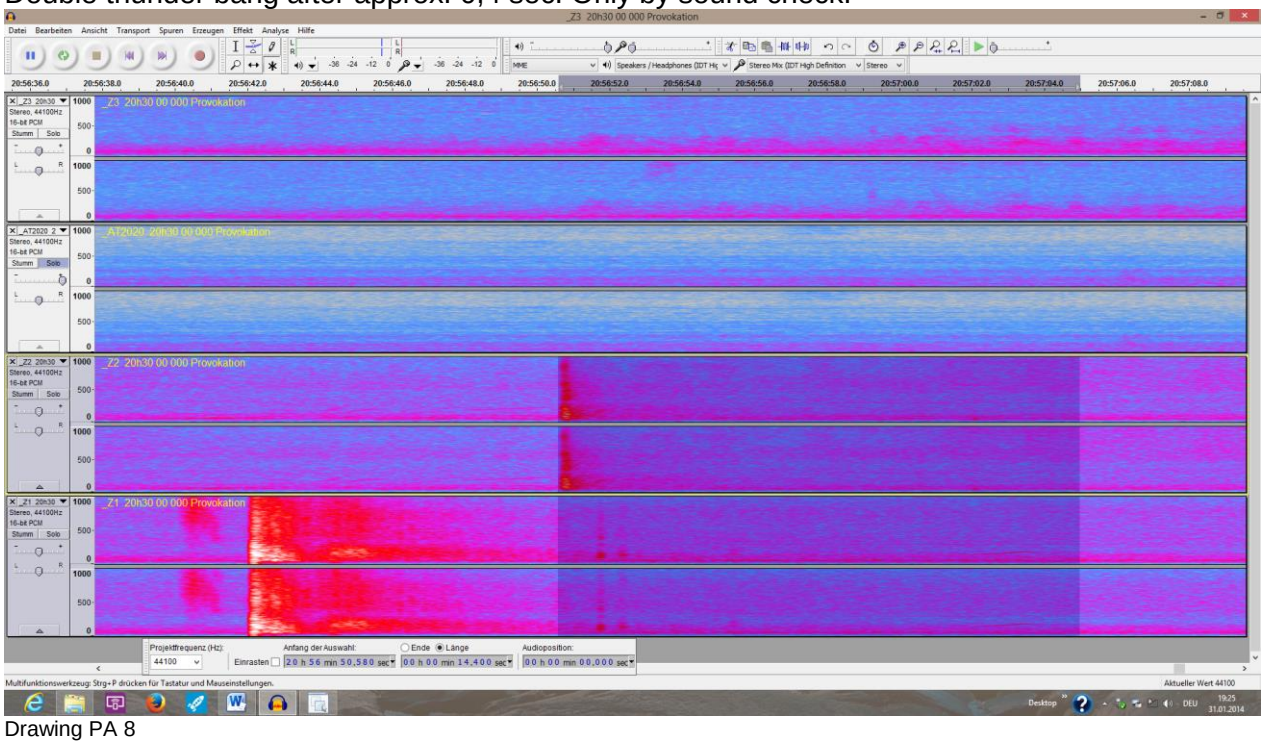
Drawing PA 6

provocation measurement location 1, source to measurement location 2 after 8,616 sec



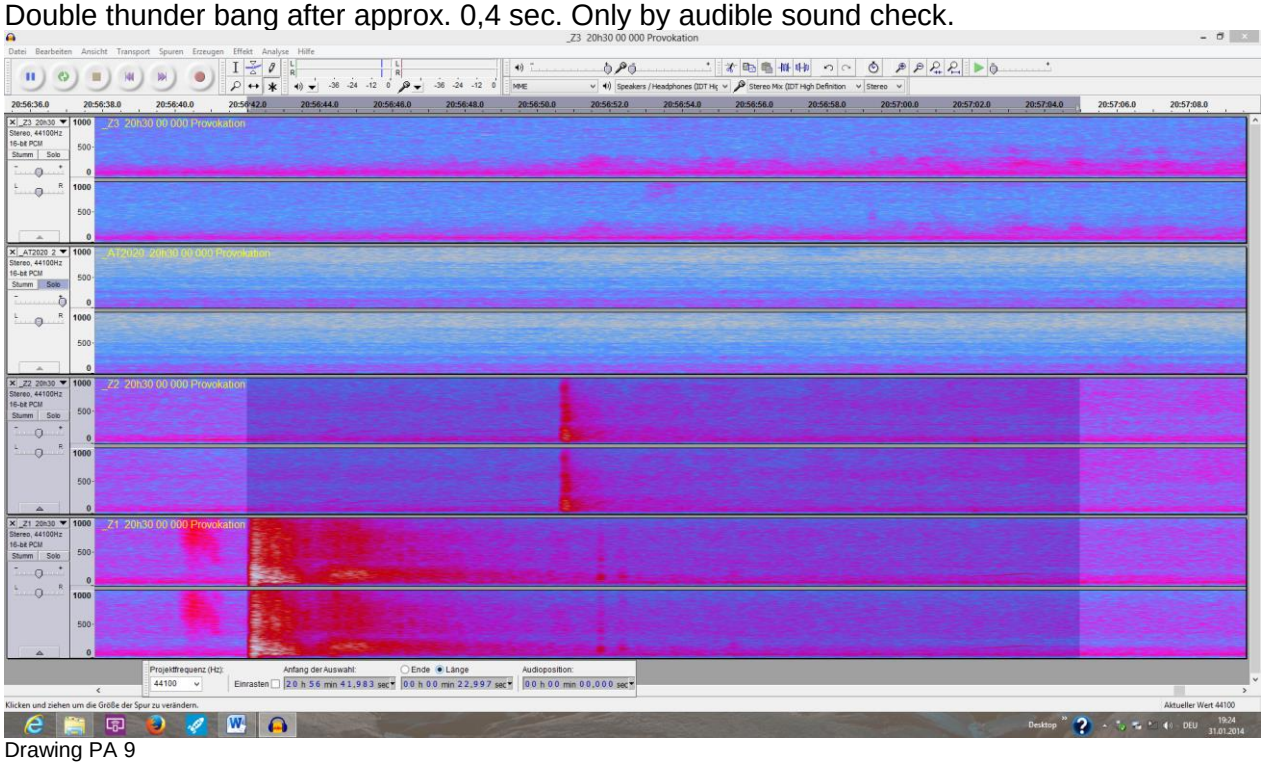
Drawing PA 7

Provocation measurement location 1, source from location 2 to location 3 after14,400 sec
Double thunder bang after approx. 0,4 sec. Only by sound check.



Drawing PA 8

Provocation measurement location 1, source from location 1 to lcation 3 after 22,997 sec.,
Double thunder bang after approx. 0,4 sec. Only by audible sound check.



Drawing PA 9

Provocation measurement location 2 from location 2 to location 1 after 8,398 sec
Particular conspicuous the double-bang at location 1

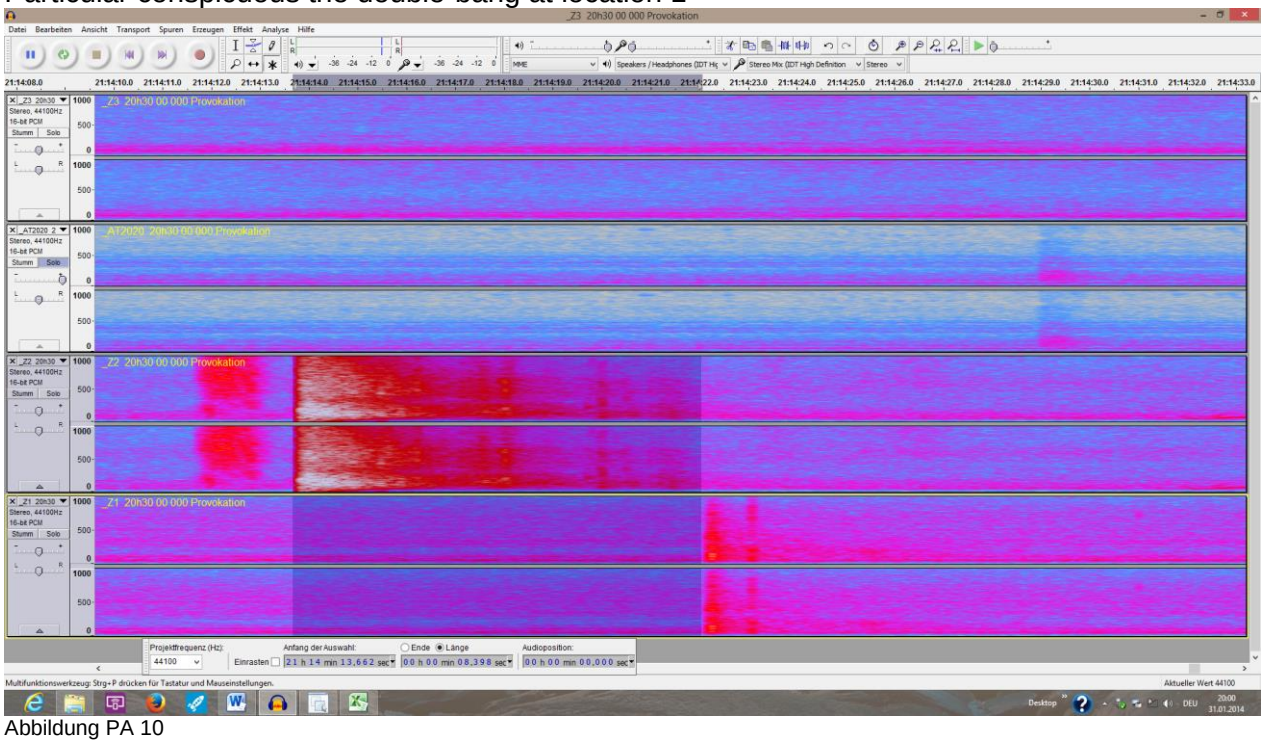
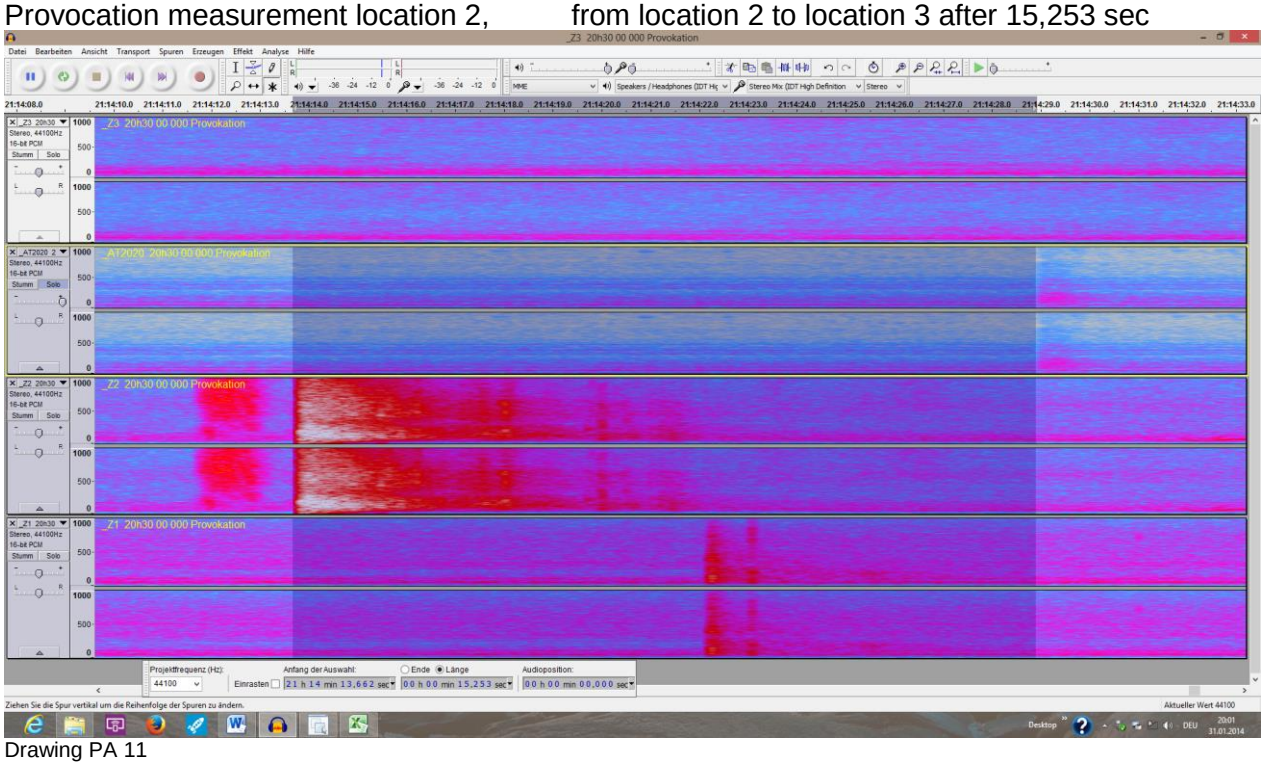


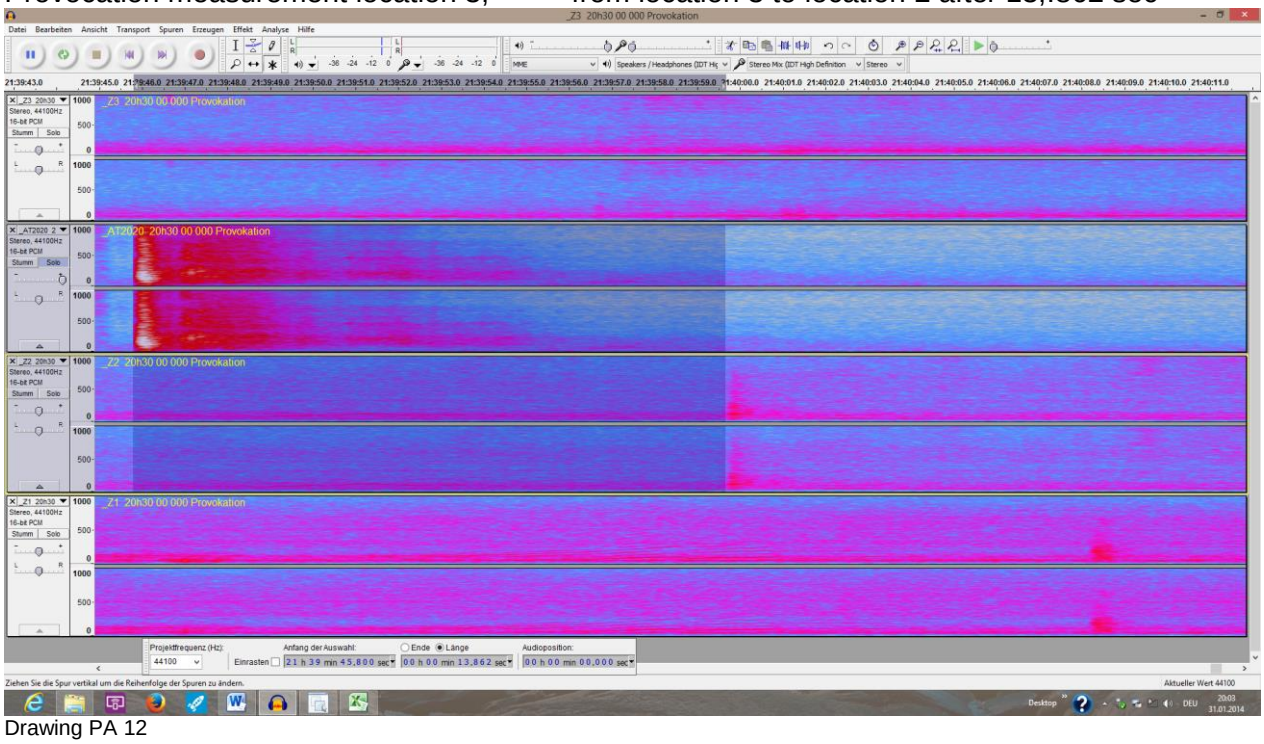
Abbildung PA 10

Provocation measurement location 2, from location 2 to location 3 after 15,253 sec



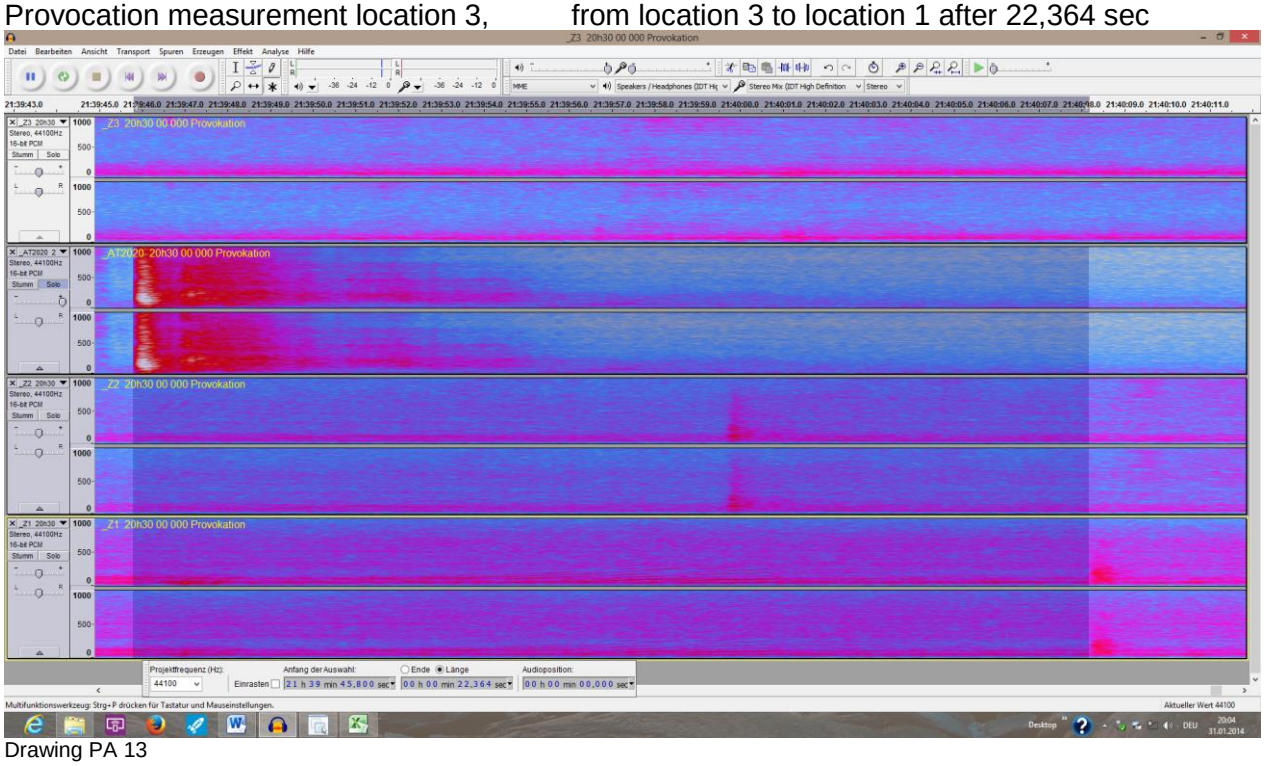
Drawing PA 11

Provocation measurement location 3, from location 3 to location 2 after 13,.862 sec



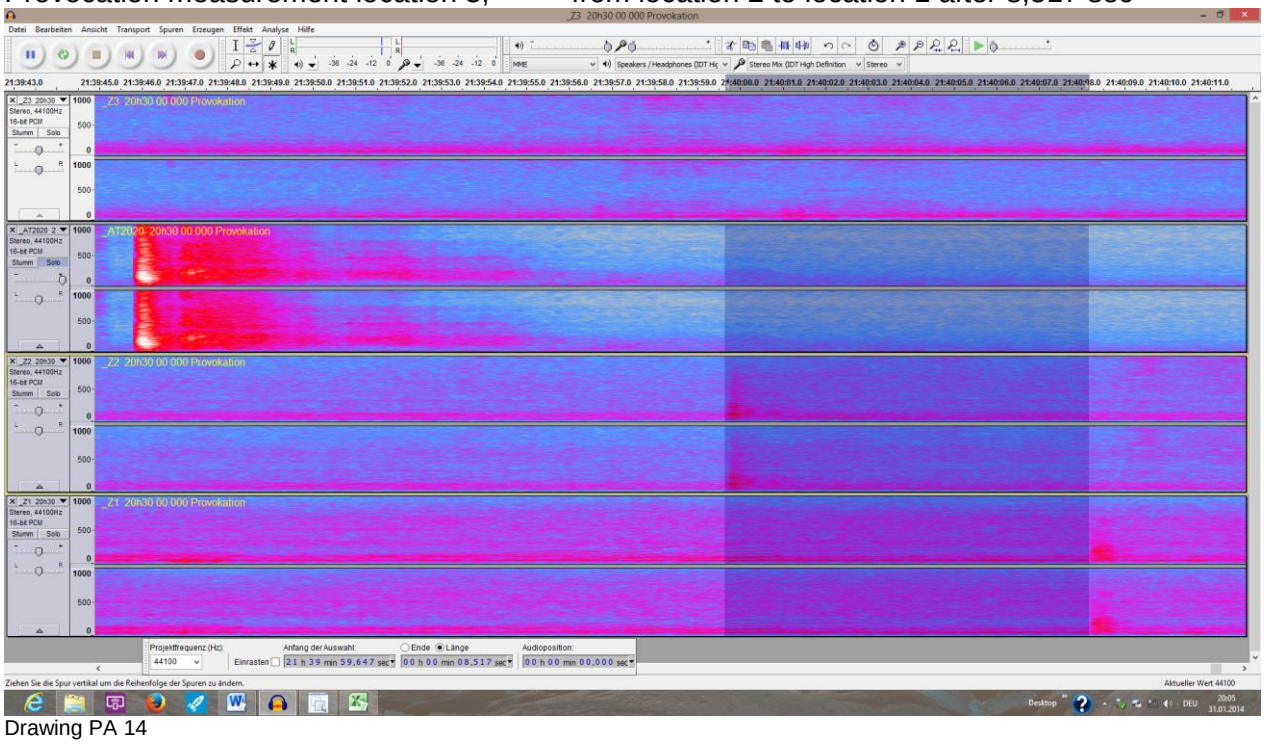
Drawing PA 12

Provocation measurement location 3, from location 3 to location 1 after 22,364 sec



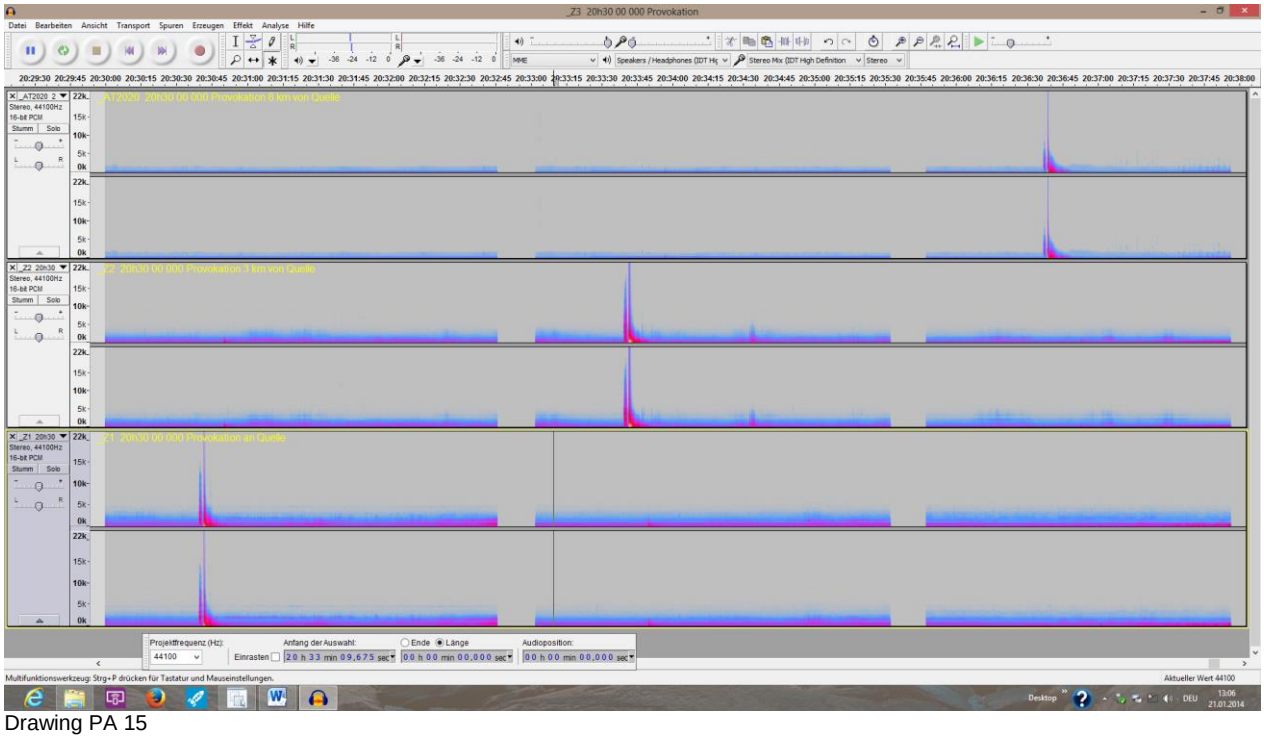
Drawing PA 13

Provocation measurement location 3, from location 2 to location 1 after 8,517 sec



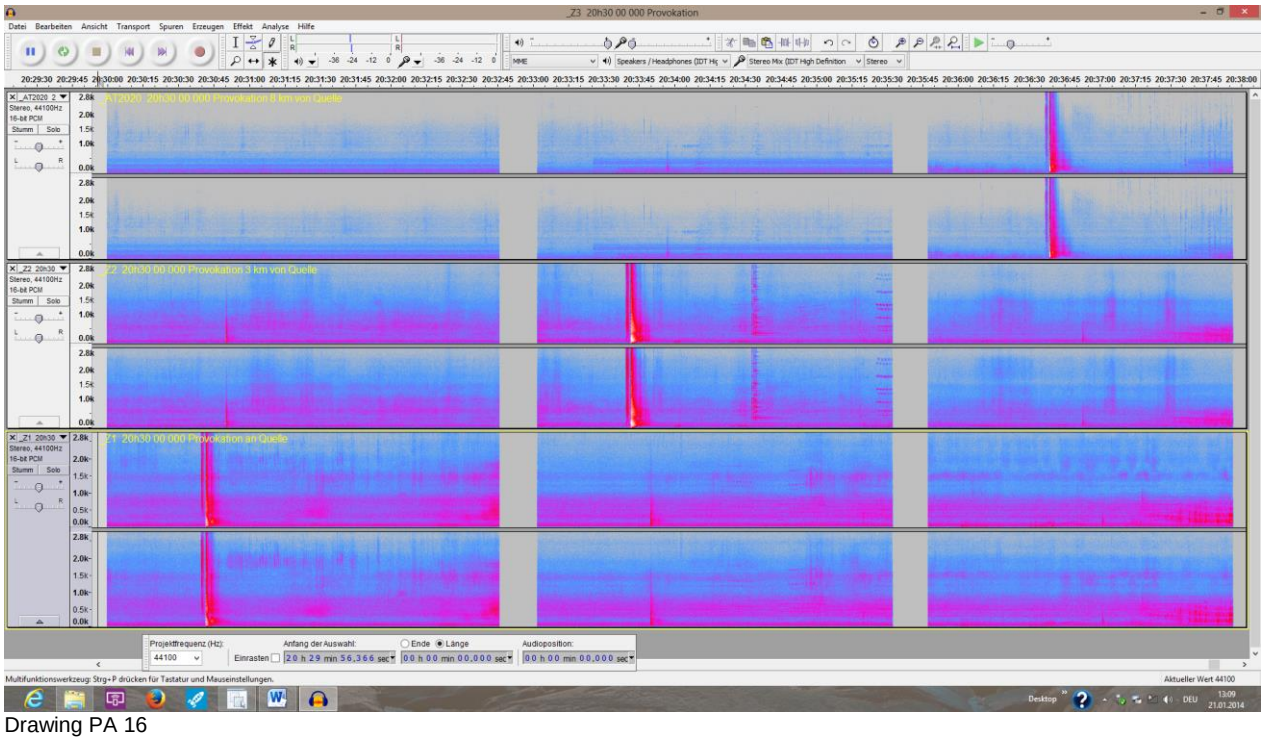
Drawing PA 14

For reasons of comparability here only excerpts of the provocations. The double signal received at measurement location 2 by means of provocation at measurement location 1 is not clearly visible at this resolution.
Prior to the bang, the whizzing sound of ignition.
0 to 22.000 Hz



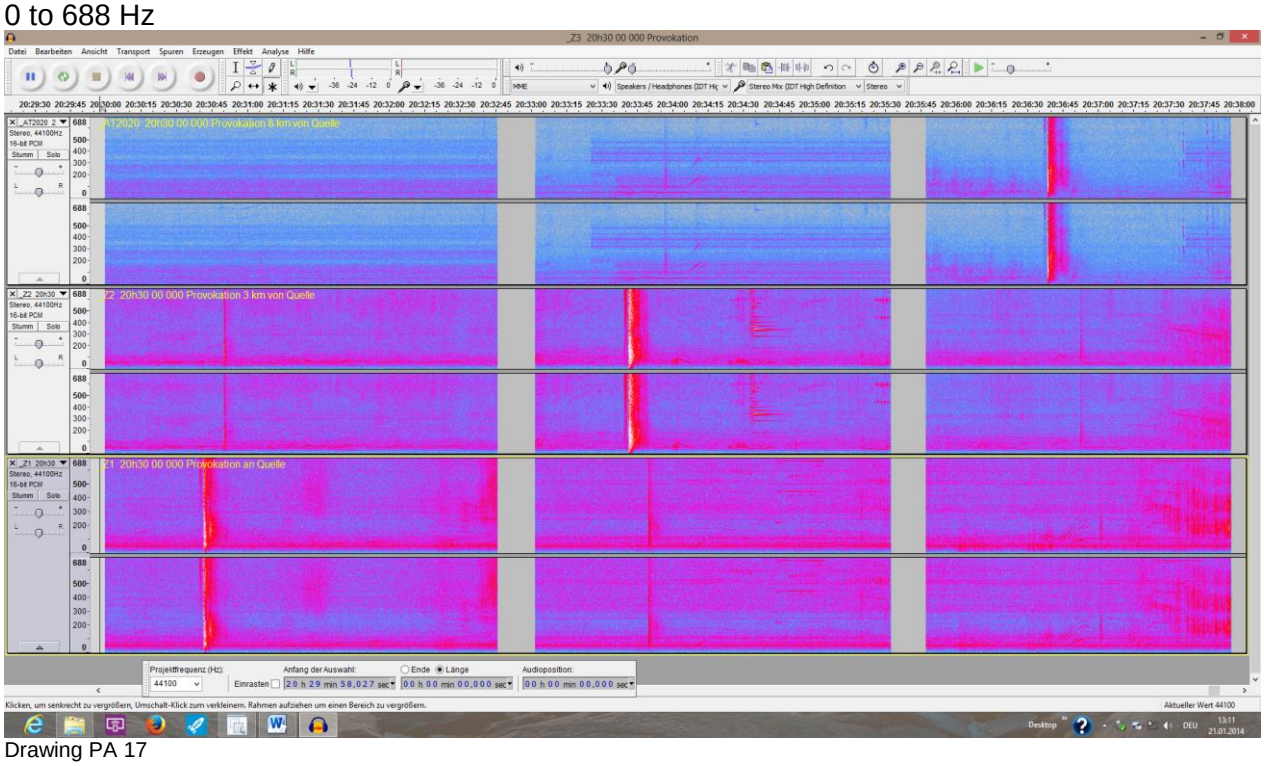
Drawing PA 15

0 to 2800 Hz



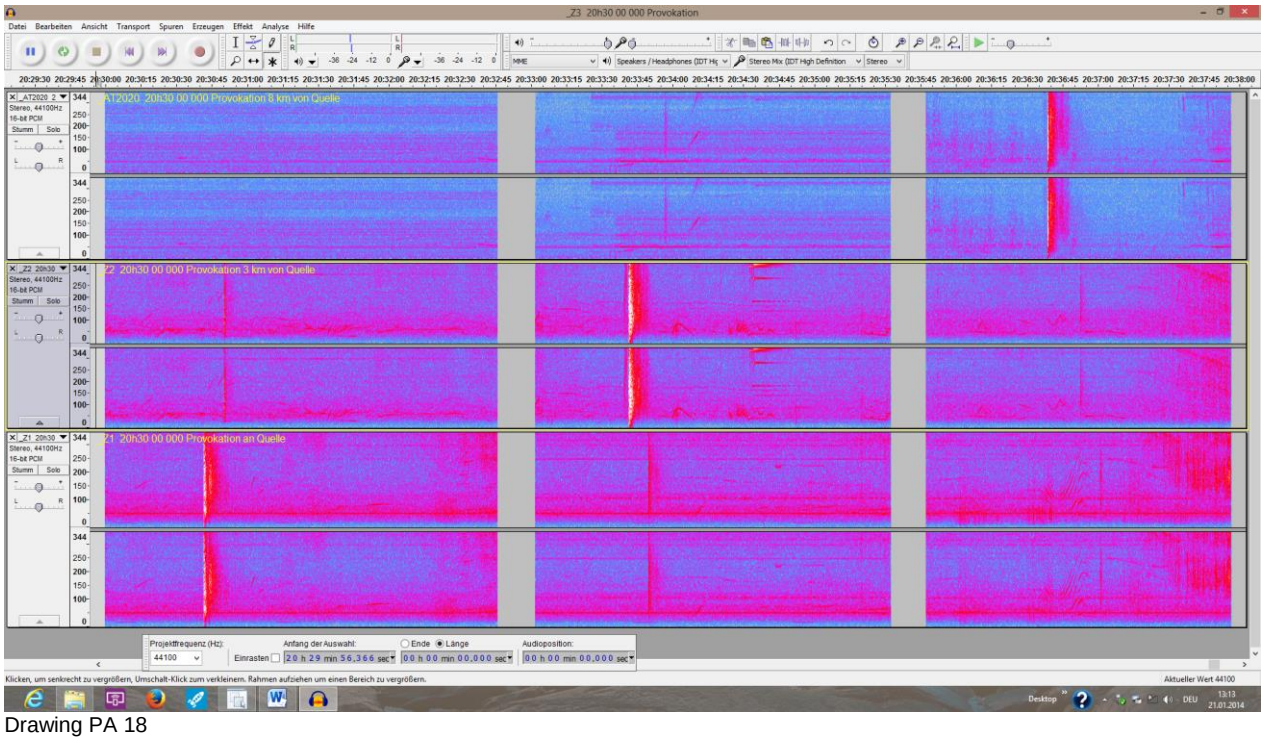
Drawing PA 16

0 to 688 Hz



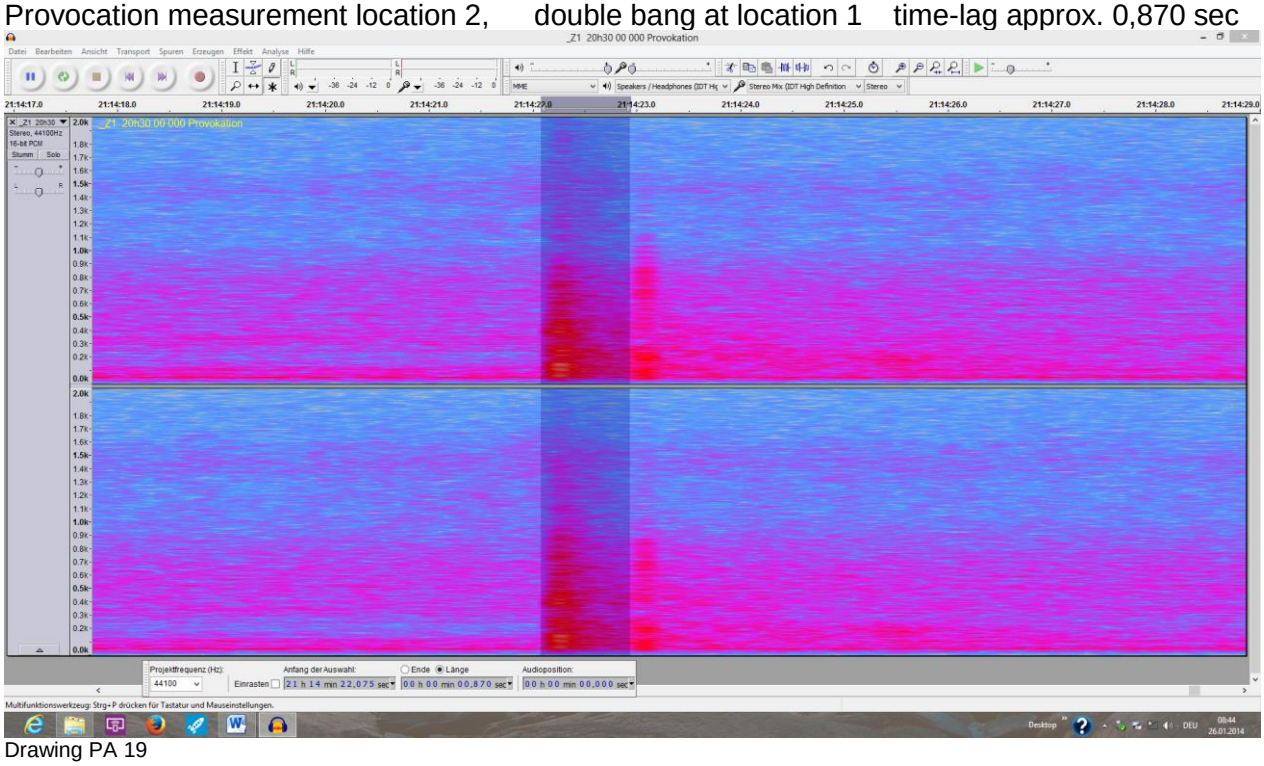
Drawing PA 17

0 to 344 Hz here well visible the comparable intensity of the signals after provocation measurement location 3



Drawing PA 18

Provocation measurement location 2, double bang at location 1 time-lag approx. 0,870 sec



Drawing PA 19

The time-lag of the only audible double bang at measurement location 3, provocation measurement location 1, amounts to approx. 0,4 sec

9.8. Video

Rating time period 20:59 until 21:45.
Pressure waves were detected during the entire time of the provocation test.

20:49 until 21:01	few, weak
21:02 until 21:10	few, stronger
21:11 until 21:17	more often, stronger
21:18 until 21:28	more frequent, stronger, chaotic tendency
21:29 until 21:45	more frequent, strong, slightly chaotic

Pictures of screenshots are omitted.

9.9. Rating of the measurement results

- The different propagation times of the sound clearly indicate that the sound environments are different at the three measurement locations.
- The propagation speed of the sound from measurement location 1, from the source, results in identical velocities at all measurement points.
  The provoked sound runs along direction of the emitted sound waves.
  It must not propagate through possibly present pressure waves, compressed medium air, and thus does not experience any delay.
- The propagation speed of the sound is in the 3 km radius from the source in all directions almost identical. Outside of the 3 km radius different and variable.
- Notably is the formation of a double signal at measurement location 1, source, after provocation at measurement location 2.

- Notable is the formation of a double signal at measurement location 3, 8 km from source, after provocation at measurement location 1.
- Upon provocation at measurement location 3, notable are the similar signal stregth and similar acoustic volume of the signals recorded at measurement location 2 and measurement location 1.

The author cannot provide an answer regarding on which physical effects these results can be traced back. Furthermore, the influences of topographic conditions can not be rated. Here, specialists are required.

10. Part 3, ground motions

Proof of ground motions in the entire Swiss,
resulting from sound emission of the industrial plant.

time log see part 2

10.1. Description event waking up

As already mentioned otherwise, the author wakes up by *feelings of electrical shocks*. These electric shocks vary in quality and intensity. The feeling of electric or vibration, respectively, retains usually for long periods of time. It can also decrease after a few minutes, it can increase, it can change and be sensed in other regions of the body, then come to an end.
The larger the intensity of these electric shocks, the more these are accompanied by further irritations.
Besides the low, then often beating sound, these are in particular breaking outs in a sweat, bangs in the ears, pressure on the head, ears, and body, shaking and restlessness.
All this is then instantly and immediately in the course of waking up.

Shortly after the author is rudely awoken from the sleep, people in the neighbour apartments go to the toilet, babys begin to cry, cow bells can be heard, sometimes birds fly up screaming, sometimes dogs bark without interruption, etc.
This and much more can be taken from the authors hum diary which is kept since the acute outbreak of her illness in December 2011.

The waking up times are several times per night, often over the time period of several nights at the very same minute.
The variations in intensity are felt at the daytime as well. However, these can be sensed in a lying position most intensely and distinguishably.
Often, it is considerably calmer in the morning at around 8:00 until 10:00 for approx. 15 to 30 minutes, so also in the time from approx. 11:30 until 14:00 for approx. 45 to 60 minutes.

For the author, it is certain without doubt that her irritations come from the outside and are not of a natural origin.

Upon waking up, from level 5-6, strong up to very strong, on her personal condition scale, ground motions are detected in the online realtime seismograms of the Swiss Seismographic Service, SED, at all displayed earthquake measurement stations.
If the author would sense natural earthquakes, these would be over after a few seconds.
Furthermore, earthquakes do not occur regularly each day and punctually at the minute, and they do not have breakfast or lunchtime breaks.

It must be assumed that such signals can also be generated by very strong, suddenly occurring emissions which are above a threshold level. Continuous, more or less uniform emissions or slowly increasing emissions probably result only in an increased "ambient noise".
To call these permanent accelerations ubiquitous would be negligent.

It are not the nearest measurement stations which pick up the signals at first.
Besides different frequencies, it seems that also the ground structure/ground condition plays a key role here (different types of feeling of electricity/different frequencies).

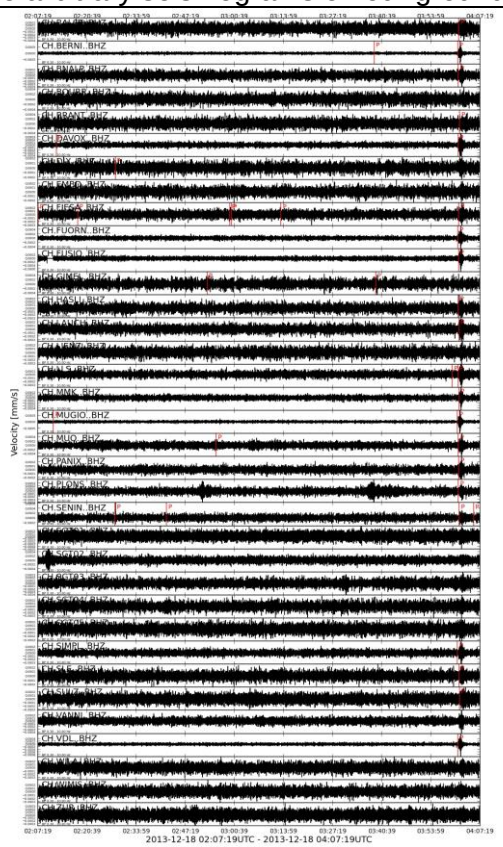
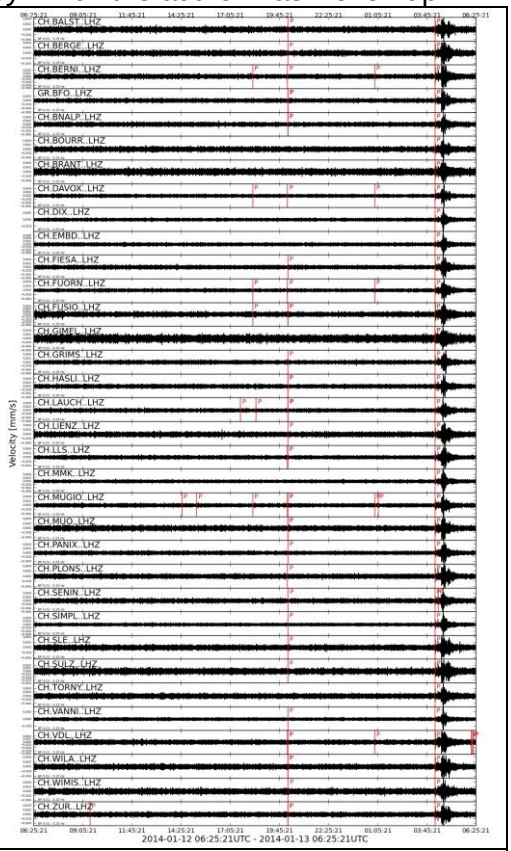
10.2. Seismograms

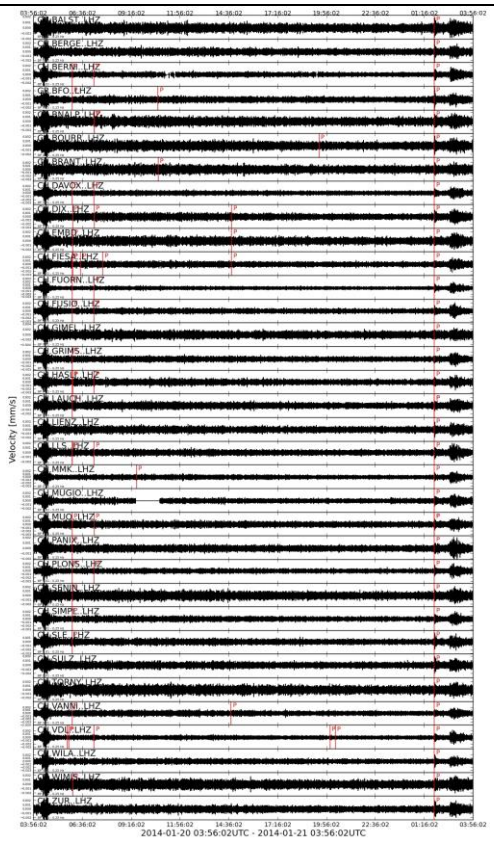
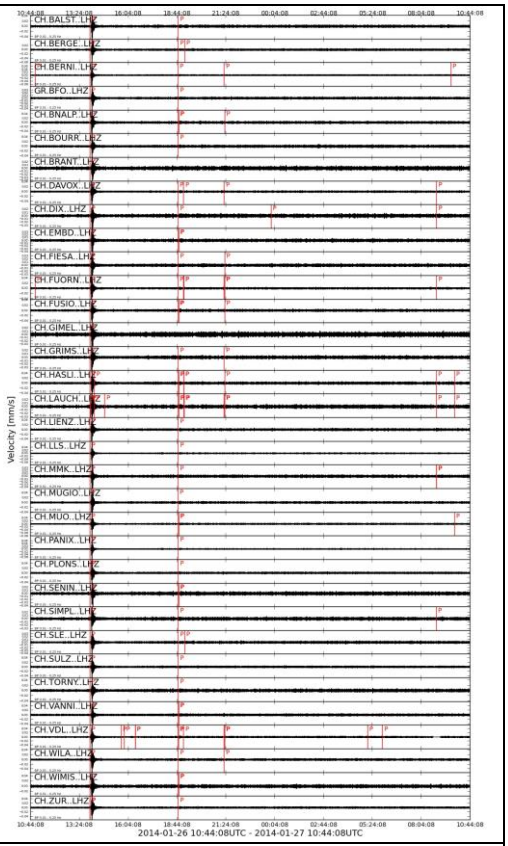
All graphs of the seismograms source: Swiss Seismographic Service, SED
time values: UTC
local time Switzerland UTC +1 e.g. 21:00 UTC = 22:00 CET

Explanations regarding the seismograms can be taken from the website of the SED, if necessary (Source: http://www.seismo.ethz.ch/)

10.3. seismograms wake up time

Here three arbitrary seismograms of four ground motions by which the author was woken up.

	
18.12.2013 2 hours 02:07 to 04:07	12.01. – 13.01.2014 24 hours 06:25 to 06:25

	
20.01. – 21.01.2014 24 hours 03:56 to 03:56	26.01. – 27.01.2014 24 hours 10:44 to 10:44 A very special day. On this day from approx. 11:00 until evening many, sometime very strong pressure waves. Sound of bang in head and ears, often similar with crack noise at the large window face

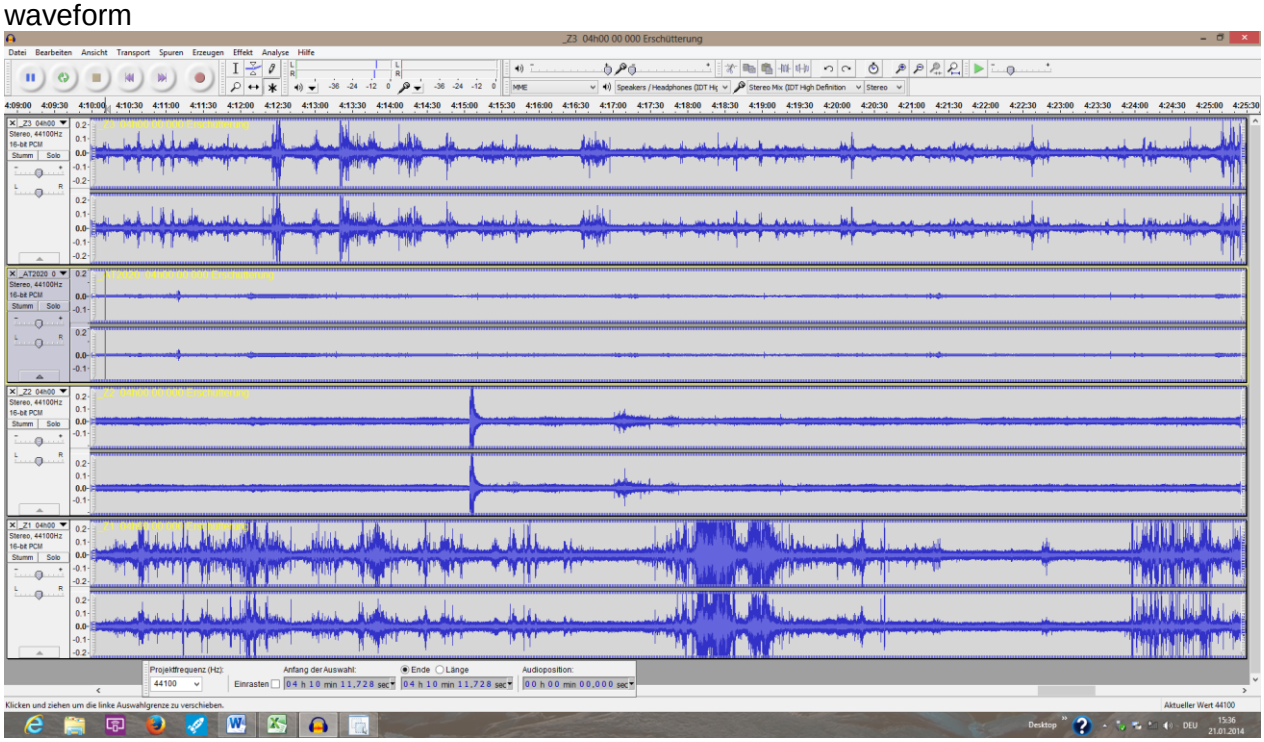
10.4. Audio

Measurement night of 22.12. to 23.12.2013

stereo track top	= measurement location 4, 18 km from source
stereo track 2nd from top	= measurement location 3, 8 km from source
stereo track 3rd from top	= measurement location 2, 3 km from source
stereo track bottom	= measurement location 1, source

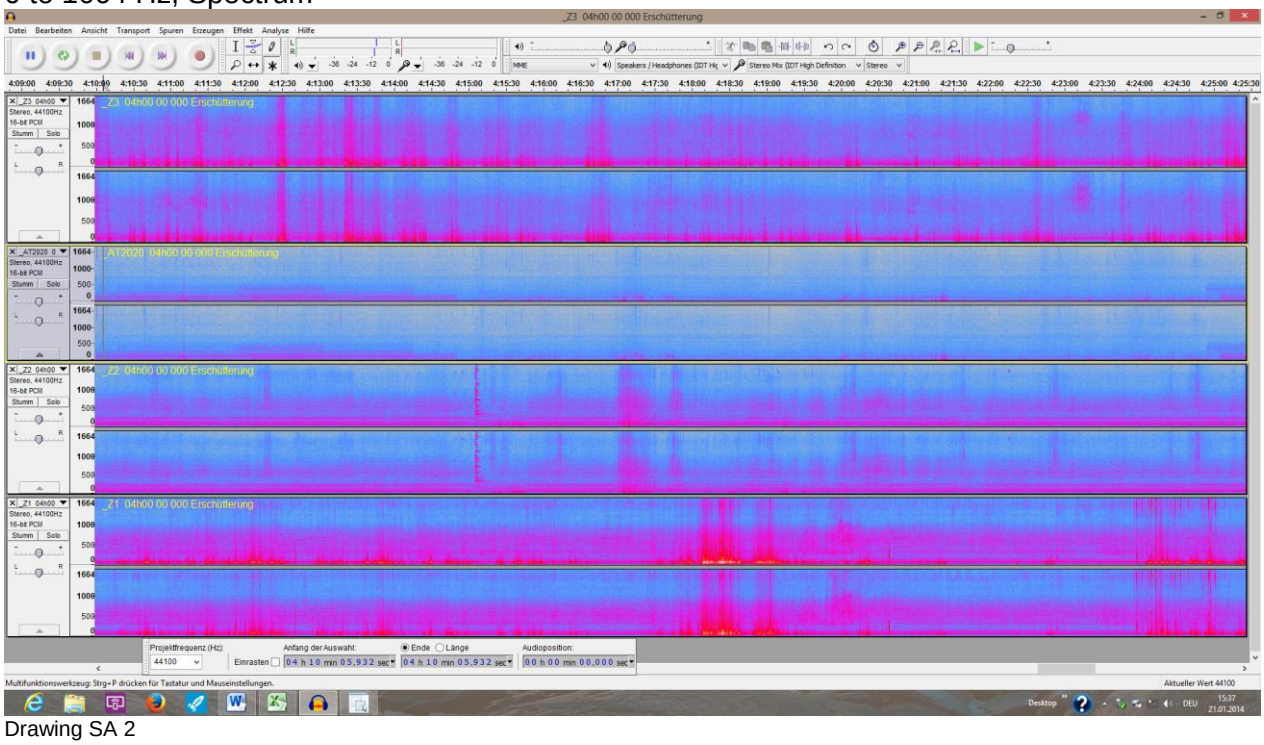
No time corrections have been made.

Excerpt from 04:10 until 04:25
from approx. 04:17:30 begin of strong emissions
waveform



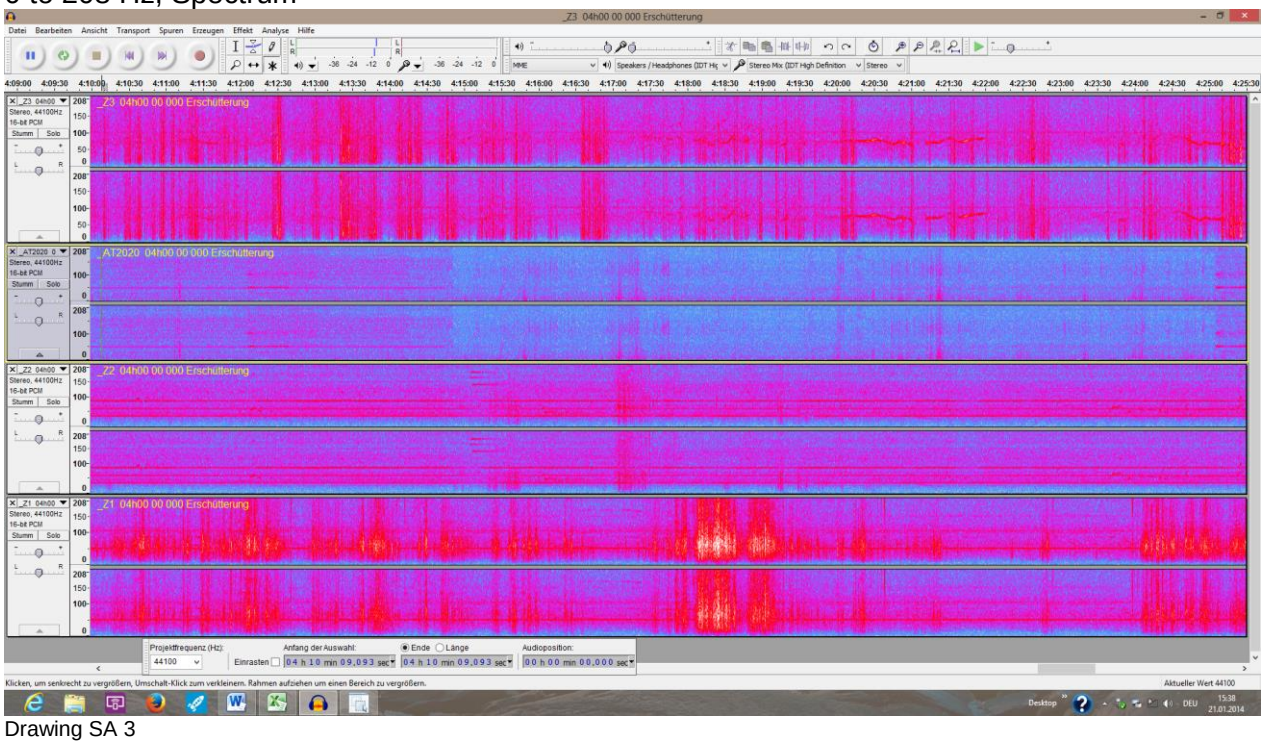
Drawing SA 1

Excerpt from 04:10 until 04:25
from approx. 04:17:30 begin of strong emissions
0 to 1664 Hz, Spectrum



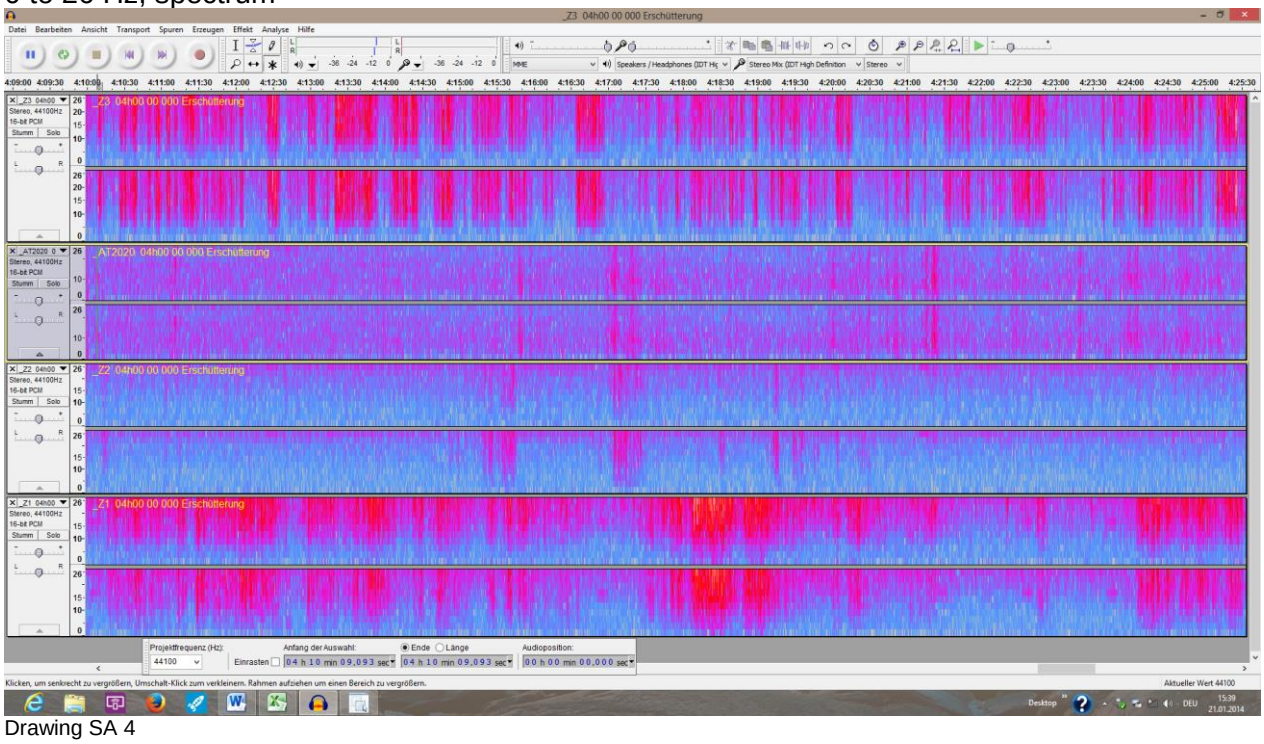
Drawing SA 2

Excerpt from 04:10 until 04:25
from approx. 04:17:30 begin of strong emissions
0 to 208 Hz, Spectrum



Drawing SA 3

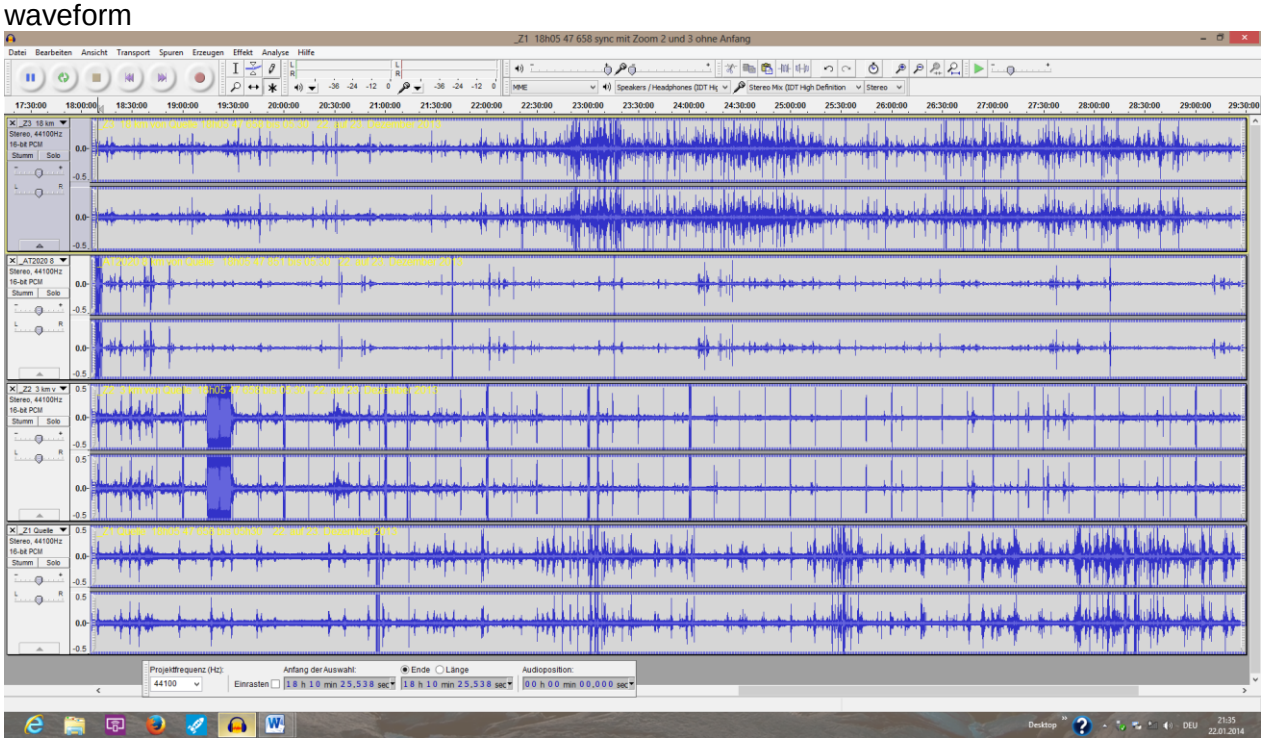
Excerpt from 04:10 until 04:25
from approx. 04:17:30 begin of strong emissions.
Notable are here the frequencies which clearly reach down to 0 Hz, indicating a high sound pressure.
0 to 26 Hz, spectrum



Drawing SA 4

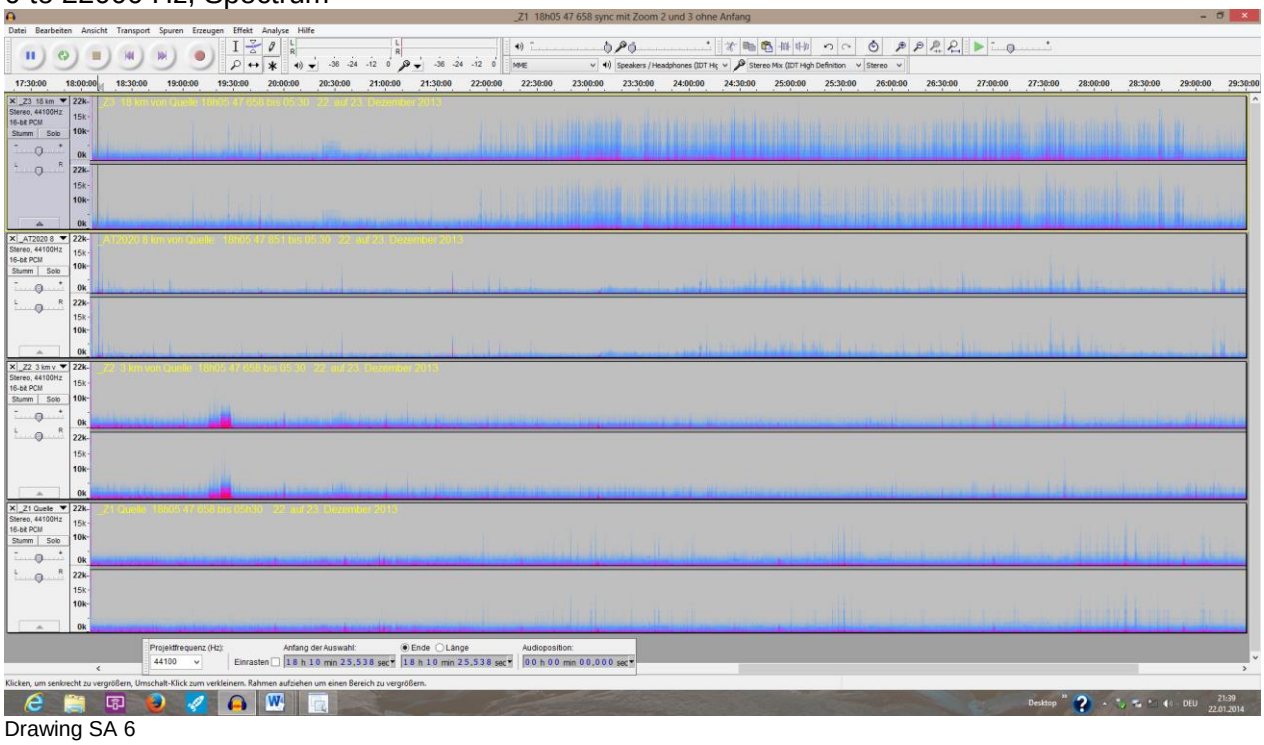
For the subsequent drawings, corrections have been made on the time axis.

Measurement period from 18:00 until 05:30
waveform



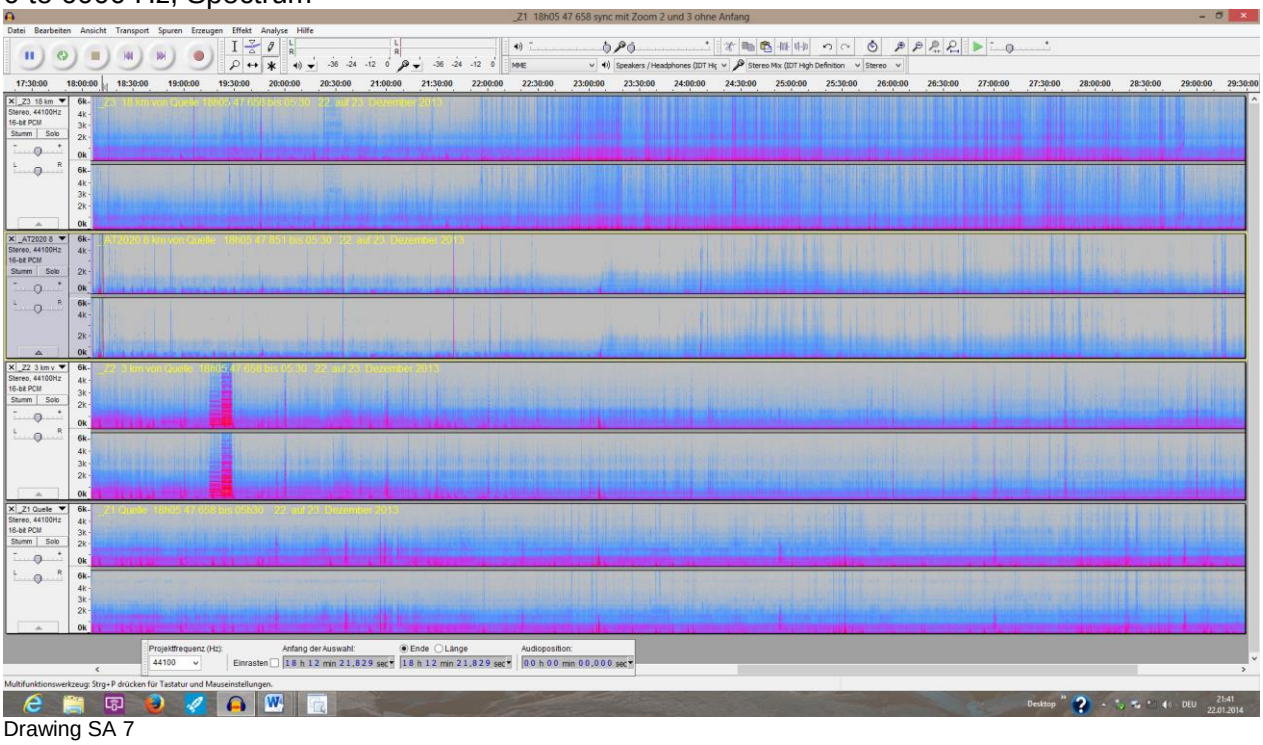
Drawing SA 5

Measurement period from 18:00 until 05:30
0 to 22000 Hz, Spectrum



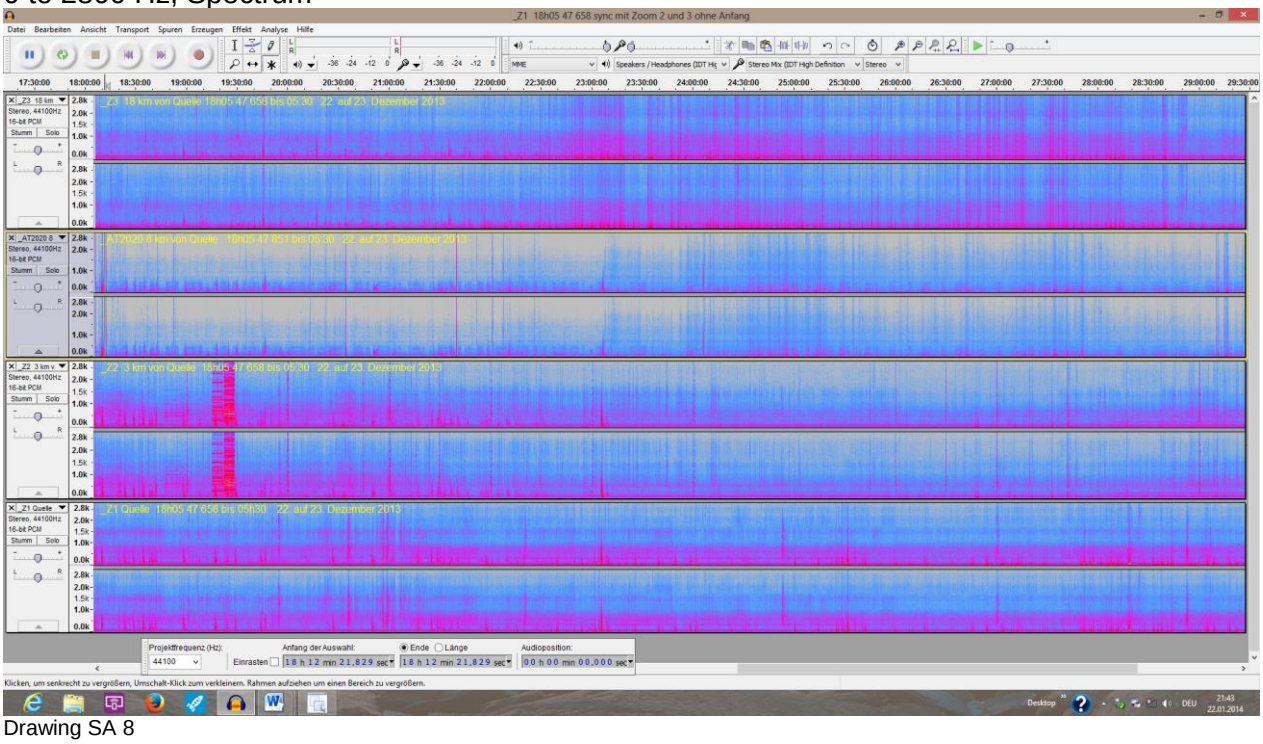
Drawing SA 6

Measurement period from 18:00 until 05:30
0 to 6000 Hz, Spectrum



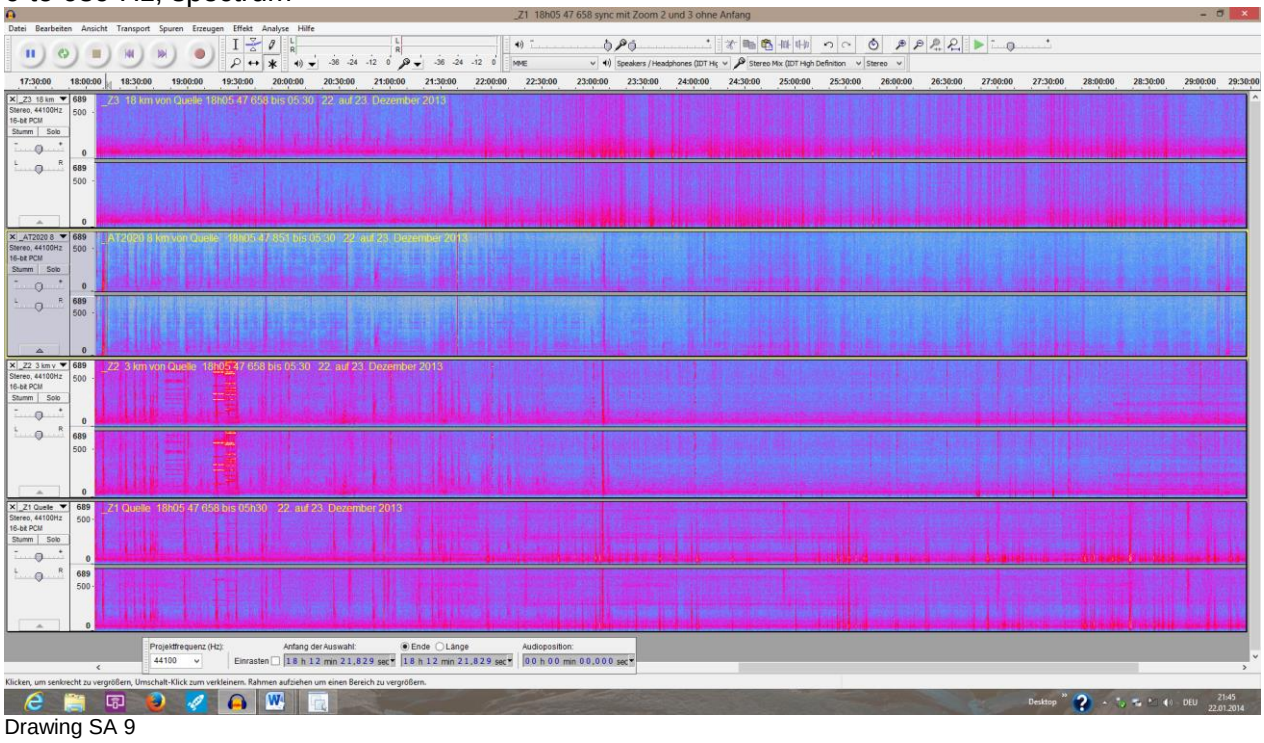
Drawing SA 7

Measurement period from 18:00 until 05:30
0 to 2800 Hz, Spectrum



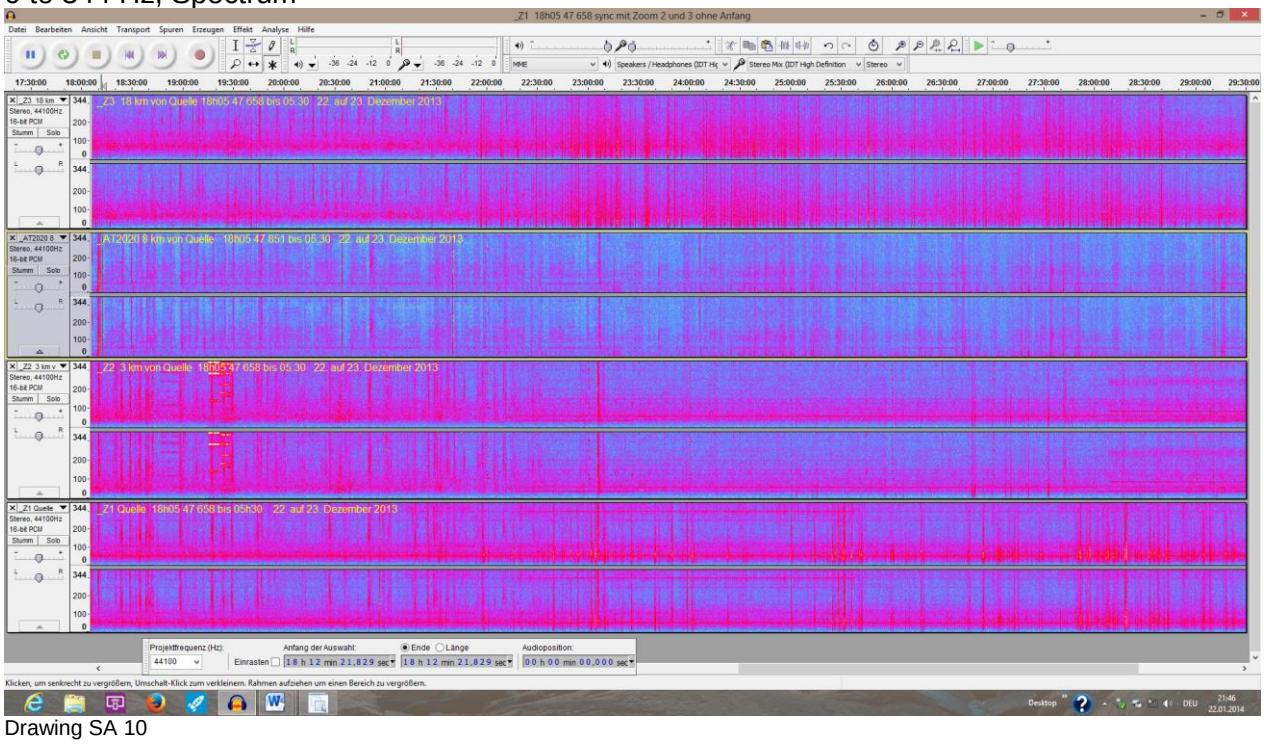
Drawing SA 8

Measurement period from 18:00 until 05:30.
Clearly, several sound events can be seen, which have the highest intensity at the source, and clearly and securely are detected at measurement location 2, 3 km from source, and at measurement location 3, 8 km from source. The increase in the number of low frequency signals at measurement location 4, 18 km from source, correlates with the occurrence and/or intensity of sound events at the source.
0 to 689 Hz, spectrum



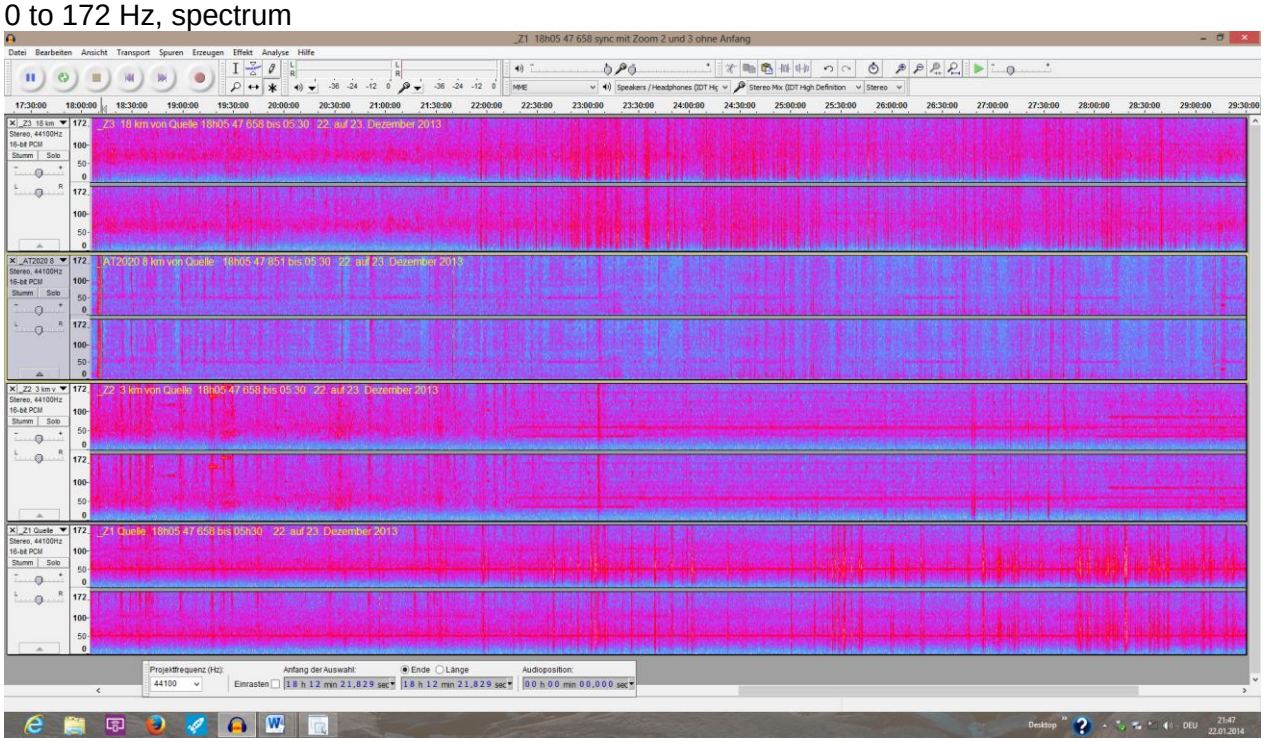
Drawing SA 9

Measurement period from 18:00 until 05:30
0 to 344 Hz, Spectrum



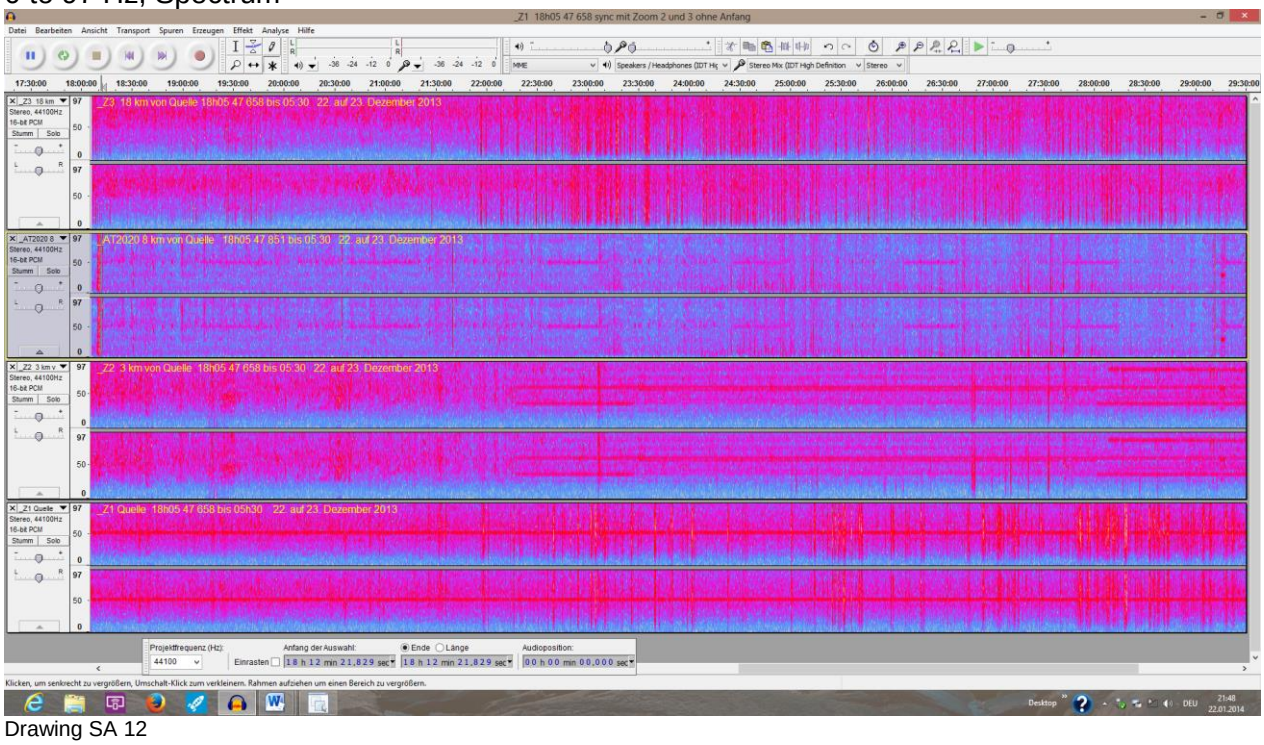
Drawing SA 10

Measurement period from 18:00 until 05:30.
The clearly visible changes at measurement location 3 start few minutes before the emissions which are depicted in the seismograms as ground motions.
0 to 172 Hz, spectrum



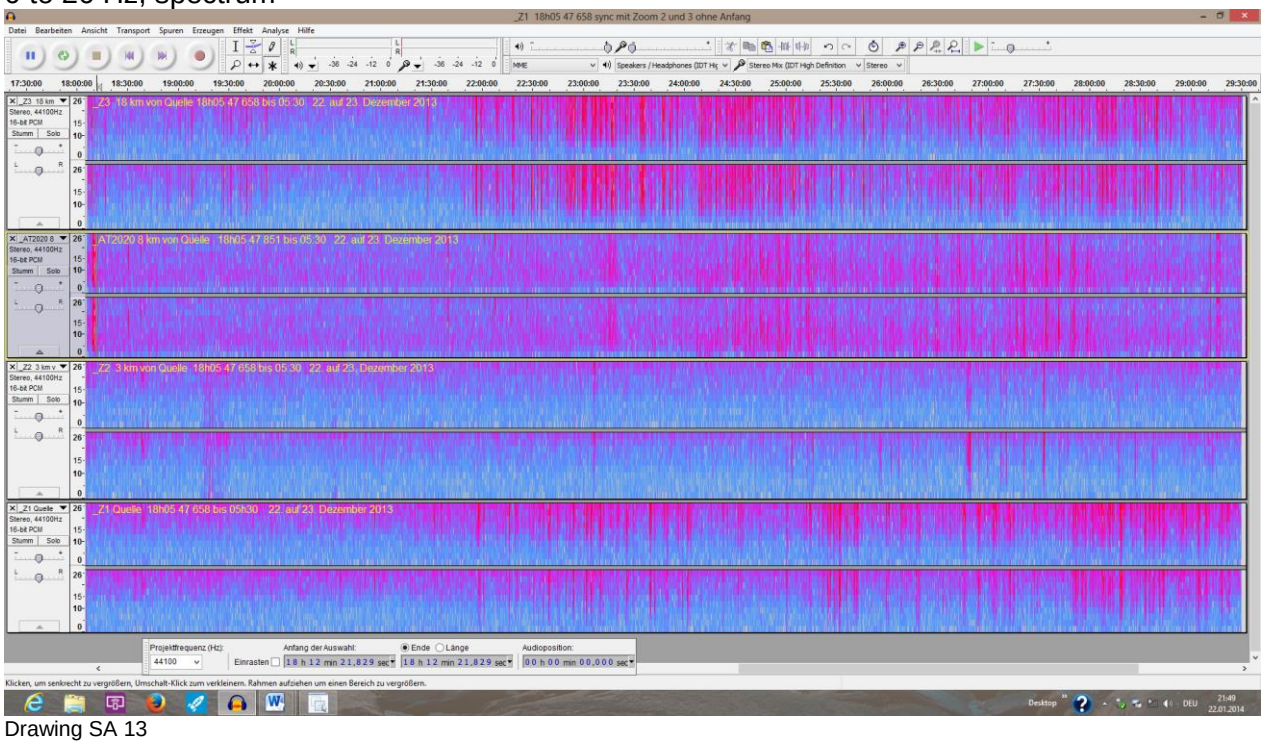
Drawing SA 11

Measurement period from 18:00 until 05:30.
0 to 97 Hz, Spectrum



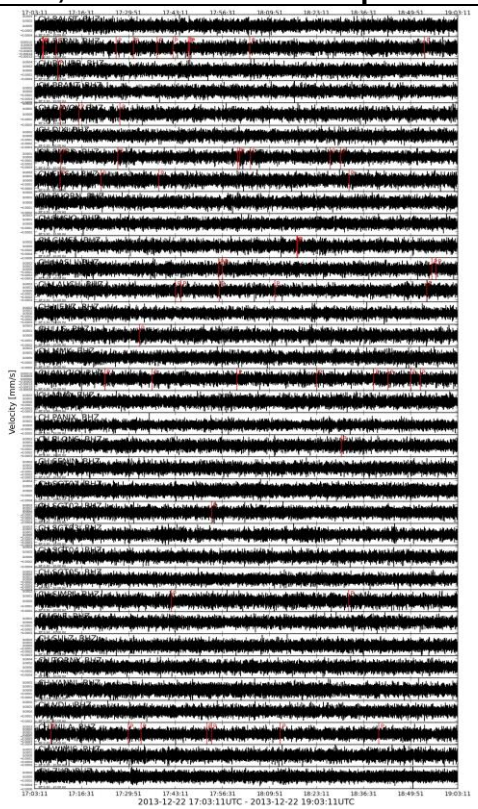
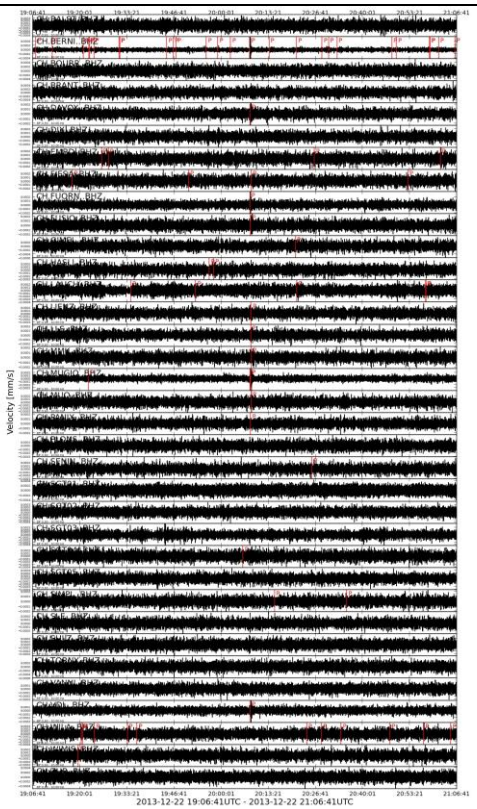
Drawing SA 12

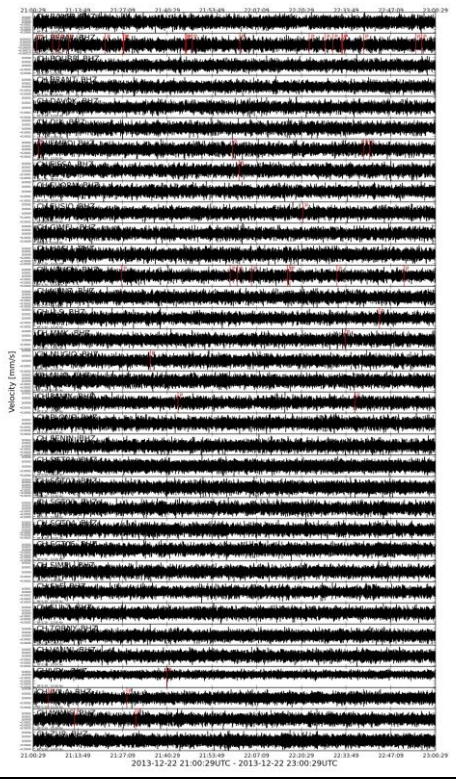
Measurement period from 18:00 until 05:30.
Notably here the occurrence and intensity of the signals which come down to 0 Hz.
0 to 26 Hz, spectrum



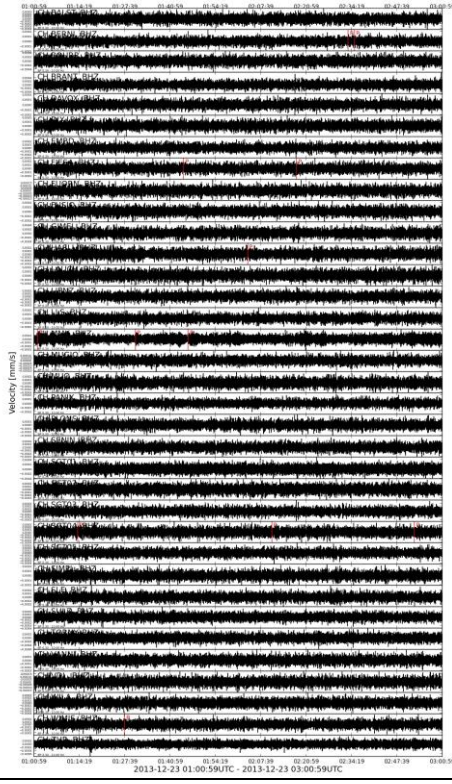
Drawing SA 13

10.5. seismograms, entire measurement period

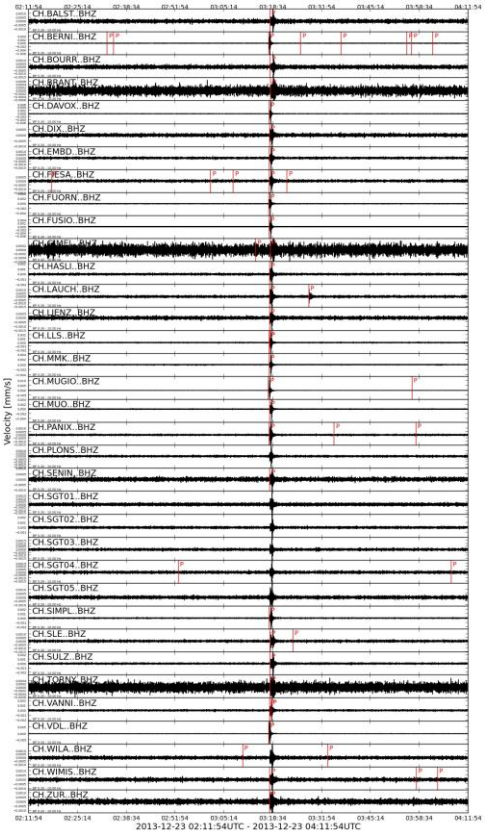
	
22.12.2013 2 hours 17:03 to 19:03	22.12.2013 2 hours 19:06 to 21:06



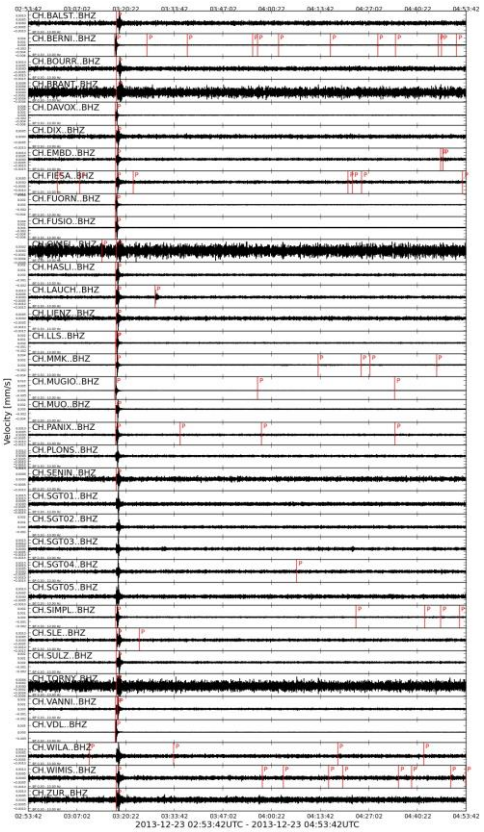
22.12.2013 2 hours
21:00 to 23:00



23.12.2013 2 hours
01:00 to 03:00



23.12.2013 2 hours
02:11 to 04:11



23.12.2013 2 hours
02:53 to 04:53

The recorded ground motions take place exactly at the time at which clear emissions start at the source.
Begin of strong emissions at the source 04:17:30, compare drawing SA 3.

The seismograms impressively show that the author could not find a place up to date where she is free of symptoms.

Ground motions do not stop at the country's border. Even in very large distances, the author senses the described symptoms and irritations.
With increasing distances, however, the symptoms are essentially less intense.

For illustration, here excerpts from report 2 of measurement day from 09. to 10 June 2013. Here, at the source, stereo track bottom, and at the Basel airport, 59 km from source, stereo track top, measurements were taken.

In a distance of 416 km beeline away from the source, in Leverkusen, Germany, the author kept a brief personal condition log during the measurements.
The feeling of electricity as well as the sensed pressure waves fit impressively and very accurately with the intensities of the emissions at the source.

At this time up to December 2013 I had no knowledge about the ground motions korresponding to my personal conditions.

Entire recording from 22:44 until 02:06, same scaling, waveform tracks synchronized

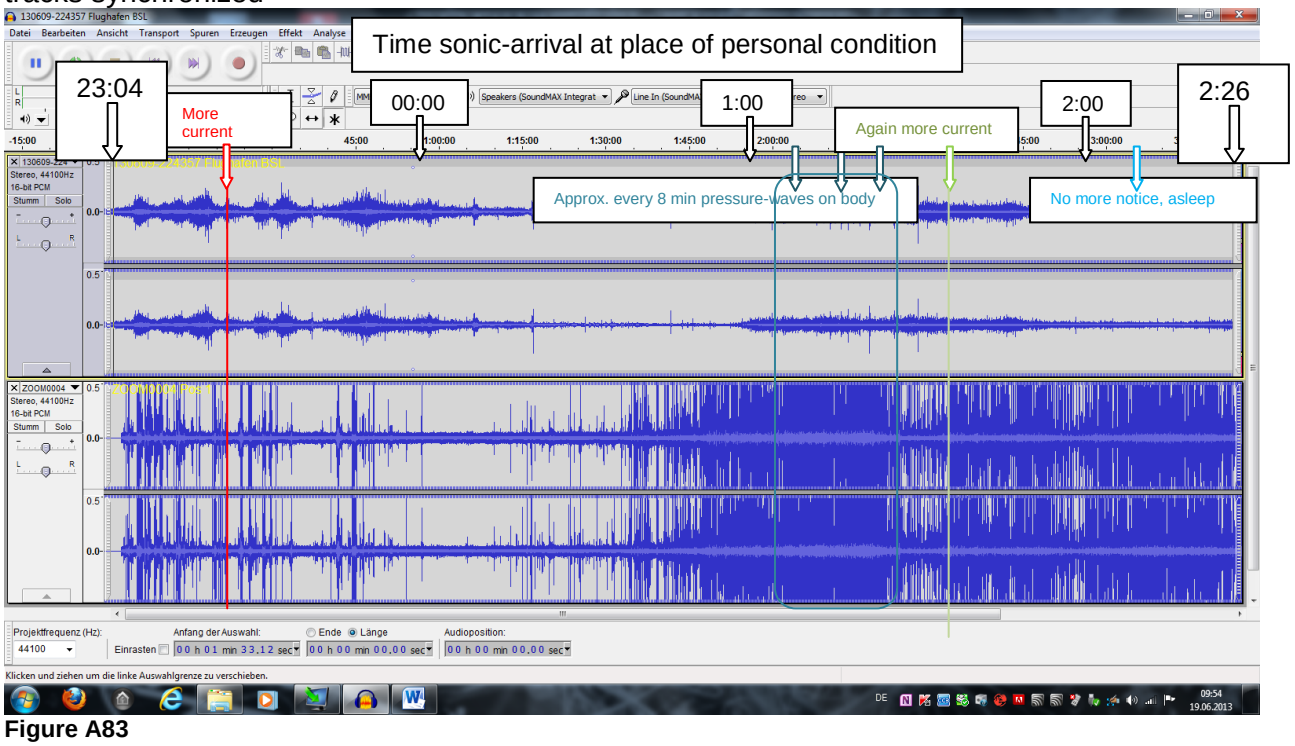


Figure A83

Entire recording from 22.44 until 2.06h, Spectrum from 0 to 13000 Hz

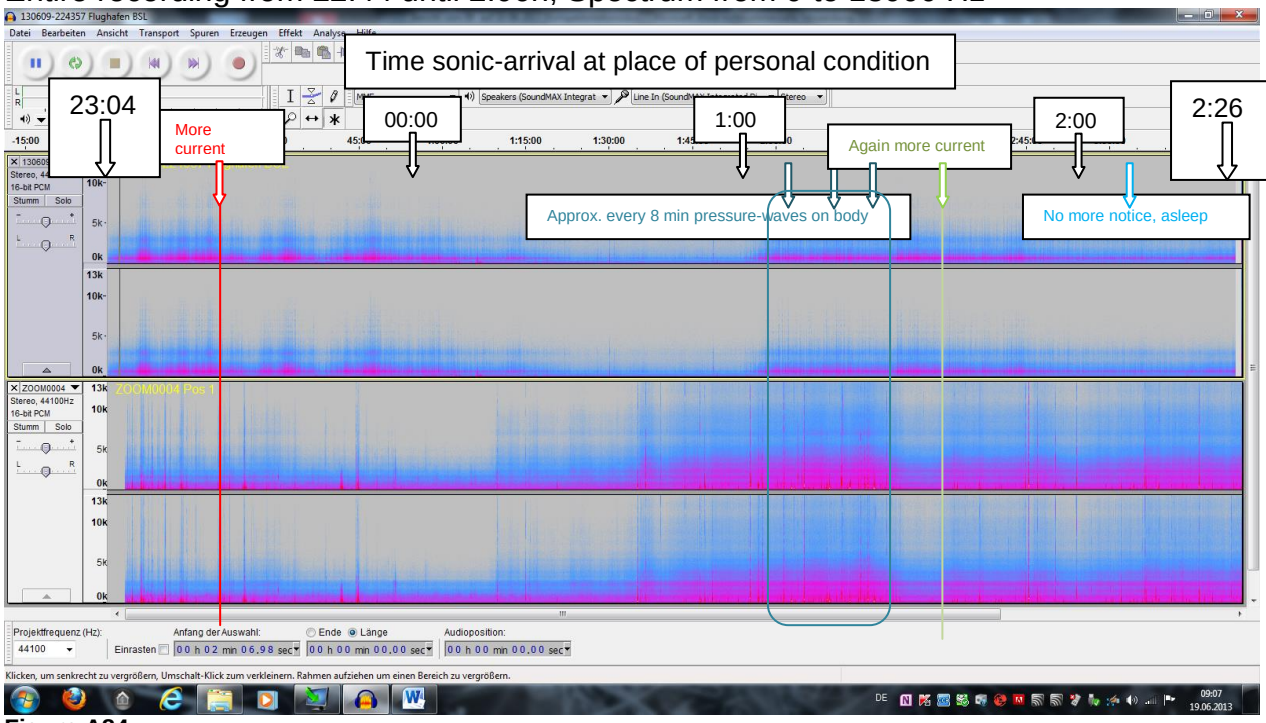


Figure A84

Entire recording from 22.44 until 2.06h, Spectrum from 0 to 689 Hz

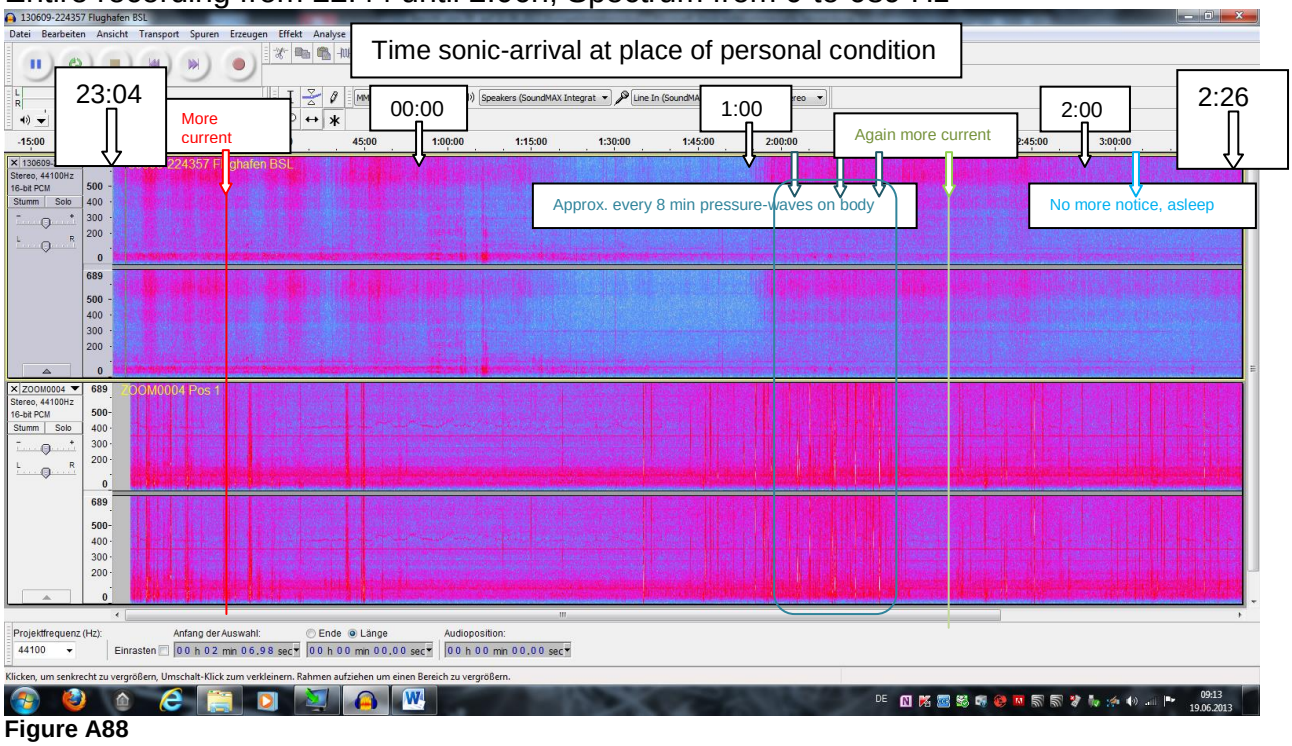


Figure A88

entire recording from 22:44 until 02:06, spectrum from 0 to 26 Hz
Exceptionally notable are the low frequencies reaching down to 0 Hz at the sound source. It must be assumed that here, the sound pressure is particularly high.

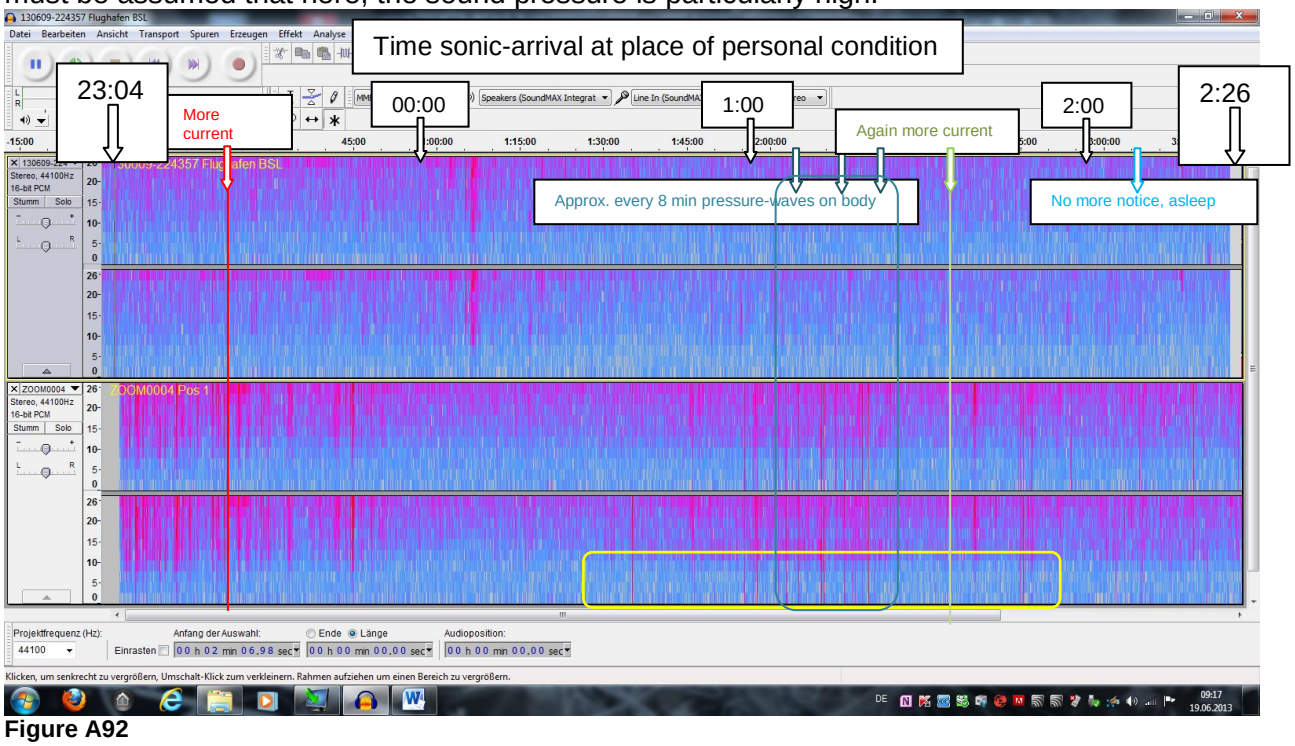


Figure A92

10.6. Video

Rating of the video recording of detected pressure waves at the incident of time of the ground motion from 03:58 until 04:35

03:58 to 04:07	few, weakly developed faces
at 04:08	more often
at 04:10	permanent
at 04:13	more often and permanent
from 04:15 until 04:23	less, but stronger
from 04:24 until 04:35	permanent, often, stronger, tendency chaotic with some very distinctive faces

Notable along the entire length is the significant increase in respective minute intervals.

Pictures of screenshots are omitted.

10.7. Rating of the measurement results

The ground motions recorded in the seismogram often result in waking up.
These ground motions are generated by beginning strong emissions at the source.

Strong emissions of this type have already been proven by a different method in the previous report.

Two measurements with very different methods have been lead to the same result.

11. Rating of results part 1 to part 3

- By these measurements, the results contained in the first two reports were confirmed.
- An altered sound environment of the industrial plant was proven.
- Special conditions were proven in the radius of 3 km to the source.
- Sound emissions were proven which result in wide-ranging ground motions.
- All measurement results are consistent with the experienced irritations as well as with the results of two blind drivings, each of a 2,5 h duration, by means of which the locations of irritations resulted in a circle around the industrial plant.

  If the humming noise is generated by the emitted infrasound, and/or by the permanent ground motions and vibrations of the soil up to large distances resulting therefrom, or by a superposition of these two phenomenons must be reviewed.

  The loudness with which affected persons hear the humming noise must not be dismissed with the term 'annoyance'.
  The mode of action is not based on the inner attitude towards this sound.
  The effect seems to begin right in the brain - without the auditory barrier, without unconscious or conscious rating of the heard.
  It already starts when the sound is still below the hearing threshold level, not yet acoustically recognized.

12. Closing words of the author

There are hundreds and thousands of fellow sufferers affected by the humming noise.
In Switzerland alone, there are dozens of fellow sufferers having a sensation of electricity or vibrations. Often, paraphrases such as prickling, shaking, or power-energized mattress are used. Internet forums such as brummton.de and symptome.ch and -.de illustrate and document this.
Since no medical reasons can be diagnosed, in their desperateness, many of these people start to believe to be externally controlled by extraterrestrials, evil powers etc., or even to be 'chipped', and to be switched on or off as desired.

The priest of a neighbouring community knows two members of the active community who wake up similar as I; - they are then ceaselessly praying.

At the beginning of the occurrence of the symptoms, it is searched for water veins, and in the most cost effective case, beds are relocated. Building biologists are commissioned - often, low frequencies and also vibrations are detected. A source is not found. The sectors are booming.

But the price is high.

At times of an exceptionally loud humming noise, in the surrounding, people with tinnitus often complain about exceptionally strong tinnitus. After nights and on days with loud sound and/or permanent strong vibrations, many people are particularly tired, aggressive, nervous, and lack concentration.
Simultaneously, when I feel bangs and cracks in the ears due to pressure waves, there are often cracking noises in buildings. Simultaneously, when I suddenly start to feel a strong sensation of electric/vibration, tummys of present people start to rumble.

Such observations of fellow men and observations in nature are inaccessible for people which do not suffer from the unspeakable feeling of electricity/vibration, and the feeling of pressure and pressure waves.
They do have no relation.

Looking back, I can say today with absolute certainty that my disease started already long before the acute outbreak with feelings of electricity and sensation of vibration.

By means of the presented reports, I have identified one, if not the, source for the humming noise.

By means of the method specifically developed for this purpose, the industrial plant was securely identified by detection of directed pressure waves as the source of the pressure waves.

An altered sound environment of this industrial plant was proven.

Emissions of this industrial plant let me provably feel pressure waves and an electricity-like sensation in a distance of 416 km.

Emissions of this industrial plant effect ground motions in a large surrounding.

Is all this believed to be phantasms or coincidences?

How much more evidence is necessary in order to give belief to all this?
Who can still take the responsibility for not looking into this.

If one wants to go fishing, he does not climb onto a dry rocky mountain peak.
In order to find infrasound, one must also look for it.
With suitable measurement means and methods.
One only must want it. Infrasound does not start above 2 Hz.

I only want to be woken up by the tweeting of birds and feel to be rested.
I want again rest at pretty rivers and be able to hike without being caught by sensations of electricity and vibrations.
I do not want to be forced to mask the sound with additional noise.
I do not want to be forced to travel in order to get some sleep.
I want to sit on my sofa without being shaken.
I want to be able to read a book again.
I want to function again.
I want to participate in life again.

To prepare this report has demanded infinitely much power from me. I did it mostly in Egypt. Later at home I benefited from a time with very little symptoms from 17. to 20. January 2014. In times of less symptoms I am more productive.

My savings are now, upon finishing of this report, used up. The results from the pension checking are not yet present.

In the case of serious interest, I am available as 'living detector' and with a wealth of information.

Everything for and in this report was prepared to the best of my knowledge.

Date:

Originals are signed
Petra Biedermann