

## Research article

# Investigations in Meteorosensitivity- Human Statistics and Parallel Impact Tests by Emitted Atmospheric Weather-Related Electromagnetic Fields

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## Abstract

Since decades physical, meteorological, medical studies were made independently around the earth's atmosphere, weather. Evidences for the existence and causes of human meteorosensitivity were able to be collected only epidemiologically. A recently completed investigation part I (2012 until 2014) in mood disorders via 73 weather-sensitive subjects contained medical history form surveys and approximately 16 months days of accountancy. As part II furthermore times were made physical / TCM short-term reaction measurements over 46 separate organ health constitutions. This study part included a total of 90 volunteers with and without a synthetically nature copied "nice weather electro-magnetic alternating field exposure (named sferics) which was emitted during locally given different bad meteorological weather condition times. As a result of the study allows the following thesis: The three majors described in the literature meteorological parameters air temperature, humidity and air pressure are probably not the only trigger factors for negative mood disorders by biotropic weather conditions for humans. This was confirmed by bio-statistical data analyzes having all volunteers sorted six groups each 15 probands.

Keywords: meteorosensitivity, biotrophy, bio-statistics, TCM meridian feedback, atmospheric spectrum analyses, nice weather field.

## Introduction

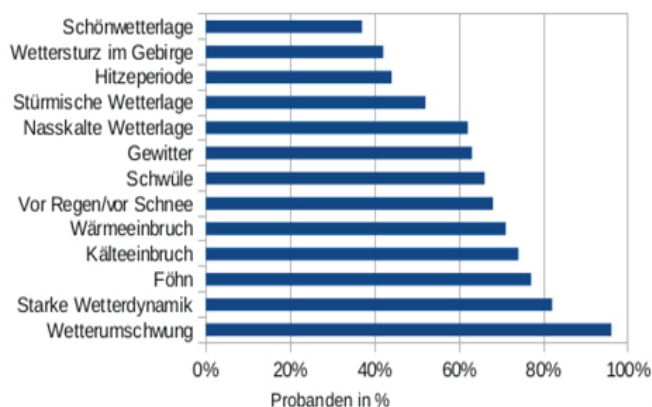
The recent discussions about aspects of meteorosensitivity have been transferred within the last 30 years more and more away from its origin areas in central Europe to USA and Asian parts of the world. Nevertheless, in times of increasing impacts of climate change several meteorological parameters like extreme air temperatures, humidity and short time amplitudes of air pressure or the intensity of thunderstorms with lightnings are becoming important especially for people suffering from migraine and meteorosensitivities. Regardless of this, the outdated views still hold today in the public science that the sensitivity to meteorosensitivities should have to do with fluctuations in air pressure, temperature and humidity (possibly infrared / ultrasound effects). Logically and superficially, this could possibly be a partial factor, how-

however, especially in the winter months with almost constant air conditioning of domestic interiors incomprehensible when subjects indoors and outdoors in the wild nature (mutually restraining) have the same phenomena causally derived from biotropic weather conditions. Consequently, it can be assumed that the trigger or the malicious trigger as a penetrating medium toward the human object crosses walls, windows, etc.! So, there is an urgent need to take the focus onto new points of view about explicit triggers causing discomforts and severe symptoms of illness and/or aches.

On the other hand, earth's living evolution is based on global weather and natural atmospheric as electro-magnetic field (EMF) conditions over millions of years stored at our neural system; as well at human creatures. It is well

known, that electro-magnetic technical and natural VLF/ELF fields are able to influence the human health condition with ULF to VLF/ELF frequency ranges since the time of Nicola Tesla and first steps on magnetic field therapy modes [1]. It is well known today that main animal and human living things have neuronal or bio-electric signal transmissions as we know it from EEG's as brain activities plus nerve burst signal interactions or TCM (hint: Traditional Chinese Medicine and it's acupuncture). Hence electro-sensitivity or meteorosensitivity are more and more wellknown facts. Many investigations have been made to show how weather can influence the "well-being"; painful symptoms like headache, migraines, depression, tinnitus, epileptic seizures were documented to be triggered in correlation to "only" in high/low barometric pressure, temperature, humidity (the common standpoint of science). The directly corresponding atmospheric near / far field thunderstorm discharges or so called "sferics" where less observed due to bio-medical and meteorosensitivity discussions [2-4].

Hence on this context it was investigated mainly by two dissertations [5, 6], which attested the existence of sferics and first results for positive health and wellbeing supporting natural fields: The "nice weather field" or sferics. This EMF form is proposed to be transmitted as a selected digital EMF copy of the nature, if negative meteorological circumstances or "low frequency electro-mag" depress the human body since 2001 (Figure 2).



**Figure 2.** Response frequencies of subjects (proband) in % to 12 selected main weather situations. Ordinate as a listing of weather conditions stacked: Starting with "Schönwetterlage" = nice weather as slightly problematic weather condition, weather upheaval at the mountains, heat period, stormy weather cold and damp conditions, Thunderstorm, sultry weather, upcoming rain / snow, heat burglar, cold snap, dry foehn, strong weather dynamics and at least as "Wetterumschwung" = weather upheaval as main problematic.

## New Subject-Related Biostatistical Investigations about Human Meteorosensitivity

### Methods – part I

Biometeorological researches concerning specified impacts of synoptic constellations and their concrete weather effects onto comfort or discomfort of human

being had been started yet more than hundred years ago. Several European scientists can be listed of German speaking institutes, especially the publication about prevalence of meteorosensitivity in Germany [7]. The main part of similar researches is up to now concentrated at the Zentrum für Medizin-Meteorologische Forschung Freiburg as part of the German weather service so called in German "Deutscher Wetterdienst".

The main problem to get significant results by convenient biostatistical methods is how to get and organize the quantitative range of probands, willing to take part at differentiated epidemic surveys with personal data about live costumes and individual health. To manage it correctly was engaged as consultant in advance the "German Research Center for Environmental Health, Epidemiology II represented by Dr. Alexandra Schneider and Dr. Susanne Breitner and furthermore a research supervisor Prof. Dr. Andreas Matzarakis from the "Institute for Meteorology and Climatology".

Caused by the estimated fact of very heterogeneous data pools it was decided to use the descriptive data analysis. The following steps can be summarized as following:

1. Design of an appropriate standardized questionnaire with all useful biometeorological and 72 extracted medical symptoms (so called "Anamnesebogen") and individualized diaries based on personal biomed-screening scores (so called in German "Wetterfühligkeitstagebuch").
2. Multimedia PR strategies with callings via radio, television, print and an own created and hosted webpage for potential meteorosensitive candidates identically named; focus on metropole areas in southern Germany, like Nürnberg-Fürth-Erlangen-Bamberg, München-Rosenheim-Salzburg.
3. Coordination and continuous evaluation of the diaries by a meteorologist (Dipl.-Met. Zsuzsanna Reichmann).
4. Biostatistical analyses of the returned diary data and occasionally comparison with special biosynoptic weather constellations occurring central Europa [8].
5. Testing's and correlations of unusual (bio-) statistical methods to combine several daily data sets from august 2012 until November 2014 to find out new ways of possible combinations between measured lightnings around central Europa, classified negative, neutral or positive bio-synoptic weather (high and deep pressure zones and their positions) and data from the at least 41 proband's left over, who made continually notations of discomfort in their diaries.
6. Evaluation of psychological character pools, based on the "big five method" [9], concerning comfort or discomfort impacts due to bio-synoptic positive-neutral-negative constellations.

## Data and Results

Reviewing the time scale of only two years for the study, assigned and restrictedly financed by a registered research foundation in Germany (see acknowledgements) there was only a small corridor of a little staff (three persons), planning's, managing and finally evaluating the selected usable data. So, all the results have to be considered in times

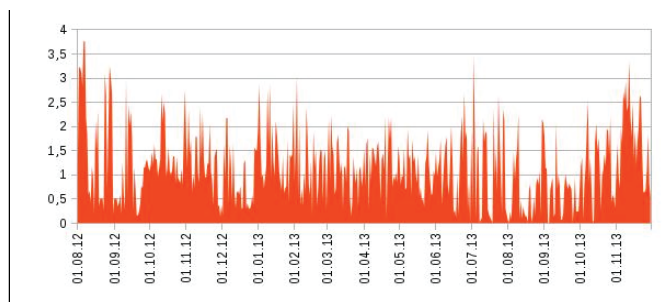
of increasing impacts of climate change on extreme weather conditions as a kind of flash impulse to renew and push bio-meteorological investigations, especially in its primary areas in the middle of Europe.

The bio-synoptical data (positive/negative macro weather situation), the biomed diary data (hint: symptoms of meteorosensitivity) and the lightening data (local and global frequency of occurrence) based all on a time slot of 487 days (01-08-2012 until 30-11-2013). From the origin pool of more than 100 proband candidates remained only 41 seriously keeping their individual biometerological diary (maximum 74 indicated symptoms), with low rates of variability mostly day by day or within biostatistically usable periods. To get a better overview within the time slot it was made a subdivision of 4 groups of symptoms, which could be merged: ache, cardiovascular, general condition, and other disorders.

As to be expected, there were a lot of difficulties and imponderabilia regarding the subjects and how to complete their individualized biomed diaries, as: effective point of time of the occurring symptom, intensity of the symptom (demand: medium / strong; no symptom = no notation), combination of symptoms, description of diffuse, subjective symptoms, days of time off, continuously voluntary willingness, taking medicine because of spontaneous illness, way of making diary (hardcopy, online). So, during the time slot of data acquisition the probands pool had to be motivated several times by phone calls, mailings or especially to the elder people by conventional letters.

The results can be summarized: The age pattern of the selected 41 subjects had its core area between 45 and 70, mostly between 50 and 67 years. Taking the larger pool of 73 probands, the figure of percentages responding to 13 selected priory biotropical weather situations shows the usual distribution pattern: nearly 100% react to weather upheaval or changings, 82% to severe weather dynamics, and still 77% to Fohn (Figure 2). Among the offered 74 medical symptoms there were headache, exhaustion, tiredness and less productivity the most mentioned ones. Among the 4 defined symptom groups the largest frequency of named symptoms concerned "General Condition", followed by Ache, which correlates with the absolute number of subjects of each symptom group. The approach to compose several daily quotients between sum of all symptoms / number of offered symptoms (74), symptoms Cardiovascular / number of offered symptoms (6), symptoms General Condition (CD) / number of proband's named CD (24), symptoms ACHE (A) / number of proband's named A (20), symptoms Other Disorder (OD) / number of proband's named OD (24) didn't show resilient correlations as well as daily quotients calculated equally like above, but with the number of kept diaries. Exemplarily it is reproduced by figure 3.

To try an approximately independent, unconditioned quintessence, it was created and implemented a so called



**Figure 3.** Daily quotient sum of all symptoms beginning in August 2012 until end of November 2013 (abscissa); number of each run diaries (ordinate).

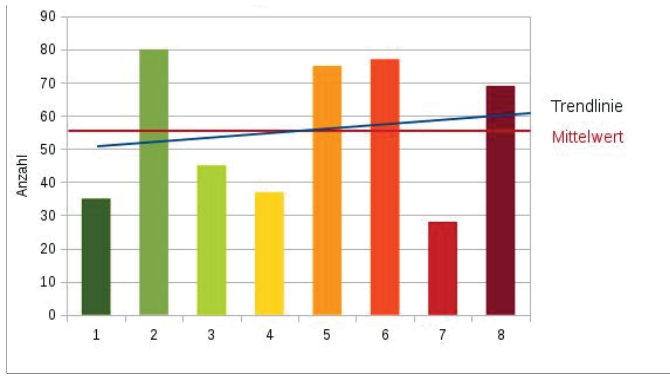
"Triple-Variation-Matrix" (SBW), based on a binary code Zero and One making possible a certain statistical evaluation of the three used parameters, mentioned above: bio-synoptic (S) / lightening data (B) and biomed diary (W). The input parameter W consists of the delta quantity of meteorosensitive symptoms. In this special case the time slot had to be determined on 446 days because of the reduced lightening data availability.

The following figure 3 shows the evaluation of the potentially 8 combination possibilities among the binary listed parameters S, B and W, in which "plus S" (+) means increasing rate of lightnings, "minus S" (-) lower rates of lightnings compared to the day before. Regarding the parameter B, "plus B" means bio-synoptically positive determined macro weather situation (non biotropical) and "minus B" bio-synoptically negative or transitional macro weather situation (biotropical). The parameter W "minus W" is related to an decreasing absolute number of named meteorosensitivity symptoms by the subjects, compared to the day before, "plus W" in contrast an increasing number. Regarding the 8 combination possibilities, on which is based the underlying matrix, there are the following ones: MSS1 = "---" / MSS 2 = "+--" / MSS 3 = "-+-" / MSS 4 = "--+" / MSS 5 = "++-" / MSS 6 = "+-+" / MSS 7 = "-++" / MSS 8 = "+++". MSS means steps of meteorosensitivity. It is to add, that the increasing ranking of the parameters  $S < B < W$  is due to the empirical presumption of higher impacts of biotropical macro weather situations than daily rates of lightening on meteorosensitive people.

As a result of the calculated SBW-Matrix is placed the figure 4. It can be seen, that the red-dominated columns (biotropical prevalence) concerns 249 of totally 446 cases; instead of that the green-dominated columns offer only 197 cases. The hypothesis could be, that meteorosensitive probands are apt to name more symptoms in their diaries compared to the day before, if either a biotropical macro weather situation is coming up or just going on nearby, or the lightening rate is increasing compared to the day before. Hence the discussion of potential impacts by sferics rates on meteorosensitive aspects should be continued again.

### Sferics bio-effects on humans Overview of the experimental setup





**Figure 4.** Bar graph in 8 meteorosensitivity steps (abscissa) due to its quantity (quantity, see ordinate “Anzahl”; mean & trend lines inserted, see “Trendlinie” and “Mittelwert”).

Related to the chapter 1 it was necessary to find a very sensitive device to detect short time organ constitutions and its short time healthy variability. We found an electro-medical device based on Traditional Chinese Medicine (TCM) just as a hand meridian-feedback measurement table with segmented data grouped by various parts of the body distinct 46 body reaction differences at graphics or data sheets. This device motivated this work twice to conduct live comparison tests (within minutes sequenced each individual proband test situation) during different weather and meteorosensitive or not sensitive test persons based on this established hand table multi sensor so called BIOPULSAR (hint: www.auramed.de; certified as an electro-medical device class type 2A). This hand table element is used in various medical practices [10].

The investigations [11] had 6\*15 test candidates in the live experiments during different weather conditions and time / moments: 75 subjects SFERICS-ON-OFF-tests plus 15 persons for PLACEBO experiments. Each subject was screened by the BIOPULSAR sensors (right hand side) before we started as reference health constitutions (hint: neutral conditions = no influences = reference case) and after it by an additional sferics or electro-magnetic field emission for all 75 human test candidates (so different proband groups at different test & weather conditions).

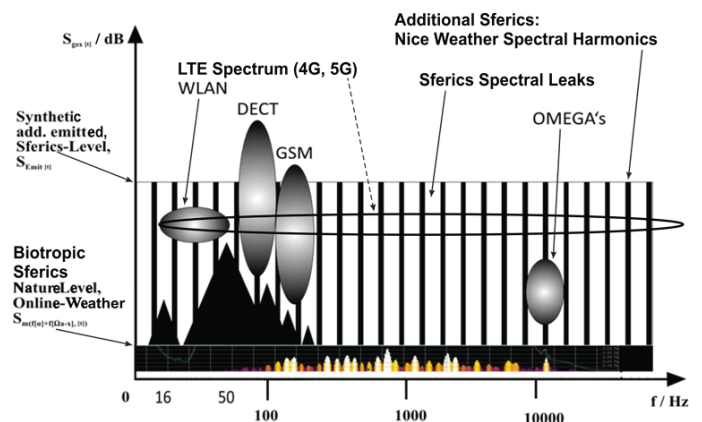
This BIOPULSAR hard-/software unit measured the TCM & meridian body feedback on 43 organs (plus 3 mean body values) in parallel impedance fluctuation observations; in total 46 health constitution values by organ graphics [11]. Here are the organs sequential arrangements (see organ number 1 to 46): Cerebellum, cerebrum, forebrain, temporal lobes of the brain, occipital lobe, occiput, forehead, hypothesis, ear, eye, nose, mouth, thyroid, neck, shoulder, armpit (lymphatic system), upper arm, esophagus, lung, heart, thymus, stomach, pancreas, spleen, liver, duodenum, small intestine, transverse colon, descending colon, sigma loop, colon, rectum, pelvis/buttock, lower abdomen, the genitalia, urethra, kidneys urethra, bladder, adrenal gland, reproductive organs, spinal column, hip, feet, knee, elbow, leg, forearm, aver-

rage head area, average abdominal /chest, average abdomen / legs.

Some other investigations procedure informations: Each organ feedback interval is measured in 0.5 second intervals to show 46 dynamic responses. In these comparison tests (reference measurement each subject and later following measurements plus EMF stimulus) it was possible to show the serial results as connected “A-B/-C” blocks just to compare united graphic values visible differences via horizontal continued lines over all visible measurement chapters. Each individual test session needed around 30 to 40 seconds. In cases of test systematic errors via organ values they were corrected by the value “0” (means no result).

**Methods part II - Bio-statistical calculation procedures**

Thus, it was investigated [11] in the human body’s short time feedback for > 75 human subjects by additional synthetic sferics against varying LIVE weather-related EMF’s (see figure 1). The synthetically emitted field exposure influences on humans were observed via a normal and weather-sensitive pool of test candidates. Parallel were generated pre-anamneses-questionnaires plus writing an individualized diary of biotropic symptoms as explained in chapter 2 independently from this study part II.



**Figure 1.** A simplified overview presentation of different artificial electro-magnetic fields (EMF) (like LTE, DECT, GSM envelope) and natural sferics or atmospherics EMF as function to levels (S/dB) via frequencies (f/Hz) seeing naturally given, lower-level "biotropic weather sferics", higher leveled synthetically added & emitted "nice weather sferics" plus nowadays typical urban technics.

One main background of this study as basic thesis was to realize a biostatistical calculation to figure out a probable positive organ reaction by additional “nice weather field conditions” at for instance meteorological bad weather moments (biotrophy) for meteorosensitive subjects. A mathematical procedure was to realize as a percent organ values vectoring between

- 0.00 as “minimum energy flux, blocked et cetera” until
- 6.00 (ideal value = max. healthy = by TCM medical

named as “homeostasis”) and 6.01 until 9.99 (maximum, too much energy, inflammation et cetera) were defined from the hardware and software developer of a so-called sensor system Biopulsar (hint: company Auramed).

The Biopulsar software tools offered a direct value export for instance into Excel table calculations. The value range went from 0.00 to 9.99 (as 0 % to 99 %). At 60 % the subject’s organ values are more or less “healthy” (see balance or homeostasis); the head or brain activity values “could or should have” higher values or value increase as the 6.0 (60 %).

Therefore, it was not correct to use only the received datas just to calculate a “Delta” = “difference” and statistical calculations over each organ measured values relatively (no Ohm’s or Voltage as unit indications given). The Biopulsar hard-/software unit was additionally to relate on its organ value interpretations based on medical or TCM backgrounds: A positive or increasing Delta values was a positive organ value development if the graphic curves went to the value 6.0 or was decreasing positive due to 9.99 again to 6.0 during the named tests. The opposite negative organ Delta value developments were given if the results were decreasing lower 6.0 and increasing higher than 6.0.

At this context needs was realized a TCM-related rating of positive / negative tendencies plus an additional evaluating point system [11] for each organ values tendencies directions. So, the rating went from most positive +3 / +1 / 0 (no differences) until -1 / -3 as most negative validation) of the organ value developments. Finally, to make it most simple this assessment scheme or procedure was reduced only to a positive validation + 1 and all the rest ZERO (compare to a digital BIT mode “0/1”) just to extract a probable positive effect by additional sferics EMF exposures. It is to point out this evaluation process in organ value fluctuations shows calculated relative organ tendencies. Statistically! The brain activities had a separated calculation method, which isn’t explained in detail here; more details at [11].

The documentation of the whole study offers calculation “positive and negative body reaction tendencies” results for each 15 subjects groups blocks as the following paragraphs illustrated by figure 5:

- Called “2012 group (15 volunteers)” measurement block at biotrophy day or not individualized time scheduling for “individual meteorosensitivity subjects” and its individual biotrophy weather conditions plus “nice weather field emission OFF/ON”.
- Called “4.2013 group (15 volunteers)” measurement block at each individual biotrophy day or exact time scheduling for each “individual meteorosensitivity subject” and its individual biotrophy weather conditions measured plus “nice weather EMF’s OFF/ON”.
- Called “5./6.10.2013 group (2\*15=30 volunteers; 2

blocks)” measurement block at a time scheduling for “NOT individual meteorosensitive subjects (all existing available subjects during a symposium)” related to NO individual biotrophy weather conditions plus “nice weather EMF’s OFF/ON”; weather conditions was a low pressure time at a cyclone (permanent rain) over Germany and the test locations near to Ulm / Germany.

- Called “Placebo” measurement block at a neutral weather (not pleasant not bad, no cyclone, no high pressure time), not given defined “meteorosensitive subjects”, but “nice weather field exposure OFF/ON”.
- Called “individual case (Sa.Du.)” measurement block at a time scheduling for this “individual meteorosensitivity subject” and its individual biotrophy weather conditions plus “nice weather field emission OFF/ON” (6 times measured during 2012-2013).
- Called “acoustic disturbing noise influence tests” during the 27. TMT / Sound Eng. Convention in Nov. 2012 [10]. Apart from this were made comparison tests regarding “pleasant music” contra “disturbing noise” [12].

### Investigations data and results

In reduction of the studies main content herewith it makes sense to summarize some main results, because the whole study [11] could offer around 25 biostatistic analysis graphics each type of 15-person measurement blocks (subjects meteorosensitive or not) plus meteorological background or not (placebo) included. For this purpose, it is much comfortable to select the simple and reduced “only positive validation by + 1” calculation instead of the much more detailed “+3 / +1 / 0 / -1 / -3”. All measurements were integrated into one graphics as shown in figure 5. In such case of a short overview fortunately and not expected became visible the main results better: In short words summarized where extracted as overall organ typical value abnormalities like

- hypophysis (8), thyroid (13), lymph (16), pancreas (23), descending colon (29), reproductive organs (39) and the spine (40) as striking graphics positive tendencies too.
- The total brain value area was activated as more or less overloading positively graphics. A graphics peak “fingerprint” is visible for each 6 measurement types or questionnaire group and at least some typical bio-statistic effects covering all 6 groups.

An obvious exception is the blue graphics course of the test group or subject "Sa.Du." with only six repeat measurements. With respect to the above named 6 measurement groups its block-averaging was not enough, but showing tendencies of an “individual fingerprint” of the individual meteorosensitivity by organ reactions having the “nice weather field (hint: SFERICS ON)” and masking the “bad weather EMF conditions” for this person. In detail the organ pancreas 23, descending colon

Coming back to figure 5 summarizing the study results herewith an extract of all six measurement blocks in conspicuous positive reacting organ value tendencies:

- The “2012 measurement block” underlines the following positive organ reaction tendencies by SFERICS EMF ON biotrophy masking main organ peak effects at urethra 34, hip 41 as well clear positive eye 10, neck 14, lymph 16, transverse colon 28.
- The “4.2013 measurement block” shows different peak results as hypophysis 8, pancreas 23, descending colon 29; as well clear positive organ values much more given like mouth 12, thyroid 13, neck 14, lymph 16 (or skin, sweating).
- The two blocks “5./6.10.2013 measurements” shows peak results as thyroid 13, spine 40 and as well clear positive organ values much more given like hypophysis 8, thyroid 13, lymph 16, pancreas 23 (see TCM: A symbolic organ for stress and life pressure), sigma loop / colon 30, ureter 36, reproductive organs 39, spine 40; remarkable: it was a rainy first biotrophy 24 hours day (second day ending rain) under cyclone low pressure meteorological situation near Ulm / Germany). All 30 (two measurement days and block) were not evaluated as meteorosensitive subjects.
- The “placebo measurement” block shows instead of organ 16 as lymph system a typical noise up-down curve without sense and peak organ results.

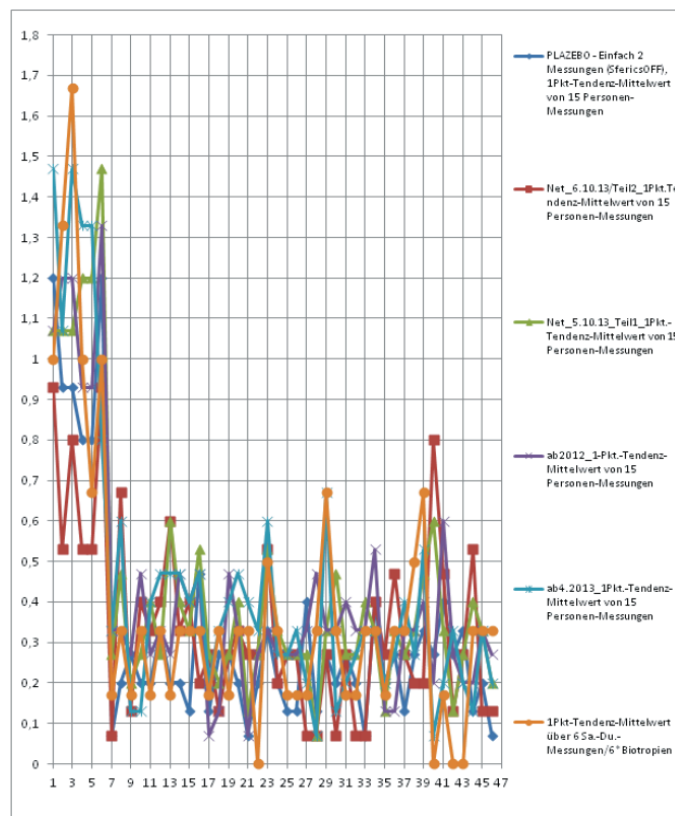
Just to complete the studies investigation results are presented the „acoustic disturbing noise” test results (more details at [13]).

**Discussions**

Probably the weather-related atmospheric discharging EMF’s are one more and perhaps main factor to induce human meteorosensitivity; why: Indoor exists this well-being or health damaging phenomena more than outdoor seeing a much more varying climate (see temperature, humidity, pressure; apart from probable “infra acoustic waves” [14]. Finally, a given industrialized environmental civilization forces an intelligent adaptive solution for meteorosensitive persons offered by a portable small “nice weather field emitting device”.

Regarding the discussed bio-statistical data analyses material around 46 human meridian feedback organ short time reactions values via 90 subject cases (plus pre-anamneses questionnaire over all subjects) it seemed to be effective significantly to mask this “unpleasant man-made or weather EMF’s” (Figure 1) by near-field emitted “nice weather sferics EMF’s” within minutes spontaneously. It is guessed to repeat this study twice as well under new conditions to make sure reproducible sferics / meteorosensitive indicator results.

On the view of only this study well known stress indicating organs seem to be involved at the bio-statistic feedback like the hypophysis, lymph, pancreas, descend-



**Figure 5.** Statistically rated body organ reactions (ordinate) via purely positive trends by “+1” (otherwise “0”) versus 6.0 as ideal organ value (numbers 1 to 47 represent all 46 organs at the abscissa). The graphics show 6 different measurement blocks based on differing subjects, not and individual weather conditions with or without subjects meteorosensitivity.

ing colon and more or less the adrenal gland (see figure 5). In other words, one of the studies hypotheses were confirmed and it was refuted the thesis, that “meteosensitivity doesn’t exists at humans” one more time! Just promising seem to introduce six times repeated tests at one individual subject by an individual meteorosensitivity human case, that there exists a typical or “individual contra-meteorosensitivity finger print” over all evaluated 46 organ values. Also, this type of several re-trying measurements on ONE meteorosensitive subject related to a 15-person group has to be repeated to get a higher significant study research quality.

**Conclusions and Outlook**

The results allow emphasizing a certain “finger-print” due to visible individual body stress or a typical weather situation at humans which triggers against meteorosensitivity effects on humans as investigated in chapter 2. Hence weather upheavals or the so called FOEHN or FÖHN were the most frequented imponderabilia weather conditions (Figure 2). Probably the rate of lightnings could be another main factor due to the empirical presumption of higher impacts of biotropical macro weather situations for meteorosensitive humans.

Finally related to these presented results new investigations have to be realized, because the thesis, that only temperature, humidity, air pressure to be not the only

biotropic factors or trigger element is not tenable anymore. Never mind, that meteorosensitivity isn't existing can't be maintained in principle. It should be repeated this investigation design to prove the extracted masking effects by additional natural electro-magnetic field exposures seeing Sferics EMF's in the future by labor studies plus a correlated epidemiological questionnaire on subjects.

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