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Title:

Premeteo Index 2009 to 2016:
Development of Long-Term Forecasts of Weather Conditions over Southwest Germany on the Basis of Astronomical Space-Time Structures

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Summary:

As a result of rising and falling air masses heading towards and away from the gravitation in high- and low-pressure regions, the thesis was postulated that to account for the existence of these pressure systems, one should also consider the time-space geometry of the cosmos surrounding Earth.
In terms of practical implementation, this means first ascertaining historical daily states of the spatial order of the solar system in relation to Earth (geocentrically) and then establishing a reference to these with occurrences of cyclonal and anticyclonal flows over the region of southwest Germany. The mathematical interdependencies found led to the development of an index which is calculated daily, the Premeteo Index. To date it has been evaluated in forecasts over the course of seven years and visualizes the special characteristics of space.

1. Introduction

1.1 Natural sciences and philosophy

When Albert Einstein said that it is the theory which determines what we can observe (1), he was with this line of thought following Immanuel Kant and his Copernican revolution in philosophy (1781).

With his *Critique of Pure Reason* (2), Kant showed that all the objects we are able to perceive and research may well exist but are only apparitions for our empirical perception and conscious knowledge. Apparitions which are dependent on the function of our sensory organs, of our measuring instruments, on our position or movement in space and time and, most importantly, also on the questions we pose them in order to gain insight.

According to Kant, knowledge of a "thing in itself" which is independent and neutral with regard to the knower is impossible. In Kant's *Metaphysical Foundations of Natural Science* (3) and in the writings in his Opus Postumum (4), it became evident that an atom-orientated physics needed to be supplemented by a more comprehensive physics of space which would fundamentally overcome the "thing in itself". It was to take more than 100 years for Kant's thinking regarding the transcendentality of space and time to be met with initial brilliant resonance in Einstein's theories of relativity. In this physics, there was no longer any absolute coordinate system to which all processes were objectively related. Instead it was based on dynamically changing relationships of space and time, which were viewed in the context of movement and the geometric distribution of material bodies in space. It was now possible to represent gravity as time-space geometry.

Thus the assumption of the physical reality of geometric spatial structure flows is substantiated by Einstein's theories of relativity. Bodies and atoms do not move in a neutral empty space, as Kant already postulated, but instead on the space-time geodesics of a defining, active space. It changes its movement behaviour in compressions, extensions, convergences and divergences. The proof of the existence of gravitational waves in the years 2015/2016 impressively confirmed Einstein's Theory once again. The research approach presented here is therefore based on the assumption that spatial structure flows which result from the movement of astronomical bodies around Earth penetrate highly mobile atmospheric gases and influence their flow behaviour locally and regionally. The aim of Premeteo's research is to clearly demonstrate this influence.

At present, Premeteo's research focuses on the field of meteorology with creation of regional long-term prognoses of atmospheric flows over the area of southwest Germany.
Premeteo GmbH was founded in Offenburg in February 2008 as a research organization for the "promotion of science and research on a cosmogeometric basis" and was recognized as a charitable research organization in May 2013.

1.2 Earth and cosmos

Research on Earth's atmosphere begins with consideration of Earth as a subordinate part of a higher-level system of cosmic space, the solar system with its planets and dwarf planets. For universities' physical meteorology, it is primarily the astronomical relationship of Earth to the Sun which is of critical importance since the Sun is the largest source of heat energy which fuels Earth's weather conditions.

A possible influence of other planets on weather patterns has not yet been investigated since, unlike the Sun, planets appear to contribute no known weather-relevant physical parameters.

Life on Earth is connected, forming a unit through the atmosphere, as we now know as a result of climate change, and is surrounded by the interplanetary space of the solar system, which is structured by the orbital rhythms of the astronomical bodies. This results in a complex space-time geometry whose gravitational forces have continuous impact on Earth. Since gravity is vertical to Earth's surface, it presents in the vertical flow components of high- and low-pressure regions. High-pressure regions (anticyclones) are characterized by descending air masses and low-pressure regions (cyclones) with ascending air masses.

These days everyone is familiar with the media's weather maps, which use lines of equal air pressure, isobars, to show high- and low-pressure regions as cell-like flow regions, e.g. above Europe or Germany. With their rising and falling air masses, they led to the hypothesis that, for their developments, one should also consider the space-time geometry of the cosmos surrounding Earth. In terms of practical implementation, this meant ascertaining the daily states of the spatial order in relation to Earth (geocentrically) and then establishing a reference to these with local and/or regional occurrences of cyclonal and anticyclonal flows.

1.3 Ascertaining cosmogeometric structures

The Premeteo Index, a prognosis index for cyclonal and anticyclonal flows in the bottom layer of the atmosphere, uses astronomical position data as a point of departure. To date it has only been available for the region of southwest Germany and in the case of negative values shows a probability of low-pressure weather conditions; in the case of positive values it shows a probability of high-pressure weather conditions.

The structure of the index is founded on the phenomenon that, in the case of specific angle-based relationships of astronomical bodies to Earth, cyclonal or anticyclonal flows have predominantly occurred above southwest Germany in the past, and on the resulting assumption that this may constitute a regular connection. Angle-based relationships of two corresponding astronomical bodies to Earth therefore comprise the fundamental elements of the prognosis.

Since Kepler, the spatial order from the perspective of Earth has been recorded in so-called ephemerides across eleven angle formations of between 0° and 180° of two planets respectively to Earth, which constitute the harmonious relation in the geometry of the circle. In Premeteo's research, this geometric angle system of the traditional ephemerides is adopted and applied to the positions of 21 astronomical bodies and two galactic centres as well as lunar node and lunar apogee.

Since the investigation treats the Earth-related influence of a cosmically aligned structural field in which Earth is embedded as a result of the relationship of its corresponding position to the Sun and the planets, this relationship can be represented as a projection on a circle around Earth from a geocentric perspective. The geocentrically formed angles are referred to as "aspects" since they in a manner of speaking constitute Earth's view of two respective astronomical bodies. Only the longitudinal coordinates are used for this, represented for a specific point in time in an exact range of ±1°.

In order to investigate a connection between weather systems and astronomical constellations of the solar system above southwest Germany, the following parameters were selected:
Angles: 0°, 30°, 45°, 60°, 72°, 90°, 120°, 135°, 144°, 150°, 180°
Astronomical bodies (in the sequence of their increasing orbits around the Sun)**:** Sun, Mercury, Venus, Mars, Vesta, Juno, Ceres, Pallas, Jupiter, Saturn, Chiron, Uranus, Neptune, Orcus, Pluto, Varuna, Haumea, Quaoar, Makemake, Eris and Sedna
Points in space: Ascending and descending lunar node, lunar apogee
Cosmic centres outside the solar system: Galactic centre of our Milky Way and supergalactic centre M87

For reasons of astronomy, 3540 combinations in total are possible between the specified angles, bodies, points in space and cosmic centres, for which it was necessary to first calculate the points in time at which they became exact in the past. Using the corresponding weather maps, it was then ascertained what the prevailing weather conditions were over southwest Germany at these points in time. A manual analysis was thus conducted to determine whether the isobars of the atmosphere at sea level above the region of southwest Germany were curved toward a high-pressure or low-pressure core.
For this purpose, the reconstructed weather maps starting from 1879, which were made available to the general public by the weather office in Bad Herrenalb (5) and private Berlin weather map collections (6) were consulted. The planned average number of samples per aspect was 20 cases.
If an aspect appeared in approx. two thirds of the cases investigated during low-pressure conditions, it was designated an L aspect, if the tendency appeared during high-pressure conditions, it was designated an H aspect. If an aspect showed no clear tendency to one or the other weather condition type, it was documented as an ambivalent A aspect. L and H aspects were designated as impulse aspects since, with their angle-based relationships, an impulse appeared to be linked to cyclonal or anticyclonal atmospheric flows.
Since the recording of impulse aspects began in 2005, as of 2016 almost 3000 of these angle-based relationships between two astronomical bodies had been investigated in weather maps for a connection to cyclonal and anticyclonal flows over southwest Germany. So far, approx. 12% demonstrated a connection to incidents of low-pressure regions, 28% to high-pressure regions and some 60% behaved ambivalently. All aspects were summarized in tables, forming the so-called Premeteo Weather Key.

2.0 The Premeteo Index

With the conversion of the impulse aspects into numerical values, the Weather Key became the basis for the so-called Premeteo Index.
It was concluded that not only impulse aspects becoming exact every day (Index 1) played a role for the atmospheric flow, but instead that formations of symmetries with impulse aspects (Index 2) also needed to be included in the prognosis system. In addition, angle-based relationships linked to conjunctions (Index 3) were not to be left disregarded.
This means that the structure of the Premeteo Index was initially based on a purely geometrically driven angle system, which was then adjusted for applicable and non-applicable prognoses within the scope of actual practice and experimentation.
The prognosis rules gradually stabilized and as of May 2009 it was possible to publish the Premeteo Index online. The monthly analyses indicate that it could be an instrument which is capable of further development for long-term prognoses of atmospheric flows, which works independent of current physical measured data.

Index 1: Exact aspects

Experiences made with erroneous prognoses during preliminary work showed that the planetary system seemed to be a ranking system. The degree of correlation between forecast and actual weather conditions improved when the planets were given ranking numbers based on the increasing size of the planets' orbits extending into the far reaches of the solar system. Accordingly, the more space a planet's orbit takes up, the higher the planet's ranking. Mass did not play a role for this ranking number. Thus, the angle-based relationships of the dwarf planets of the Kuiper belt have the highest scores in the indices and therefore, as far-distant and small astronomical bodies, seem to be the most intensively linked with Earth's atmosphere.
In the Premeteo forecast process, the planets and dwarf planets were consequently assigned ordinal numbers from 1 to 12 based on the order of their orbits around the Sun. The position of Earth was simply exchanged with that of the Sun due to geocentric orientation. The ordinal numbers now flow into the Premeteo Index as quantitative sizes; as positive values if they form an H aspect to a planet constituting an angle-based relationship, and as negative values if an L aspect is formed.

The Premeteo Index is generated every 24 hours. This means that for Index 1 the aspects becoming exact daily need to be calculated and their assigned impulse from the weather key needs to be added.
For the evaluation of an impulse aspect, the faster-orbiting planet of the two is decisive. Its ranking number determines its numerical value, which is entered as negative in the case of an L aspect and positive in the case of an H aspect. If on a given day a planet forms several impulse aspects with conflicting impulses, the ranking of the second planet is decisive in determining whether the impulse is cyclonal or anticyclonal.
In order to account for the inertia of Earth's atmosphere, the various impulse aspect values of the afternoon of the previous day and of the morning of the day to be evaluated are added together, again with differentiation between fast- and slow-moving bodies.
There are also differentiated rules for lunar node and lunar apogee impulse aspects. Often an alternative index is also generated for rarely occurring and therefore uncertain impulse aspects of slow-moving planets.

Index 2: Symmetries

Index 2 contains the symmetries of the aspects that become exact hourly in an exactitude range of ±1°. Various symmetries are distinguished, albeit the ranking of the planets involved does not affect their score.
As in the case of Index 1, in the case of allocation to a specific day as well, the inertia of the atmosphere is taken into account by means of a time adjustment. Lunar node and lunar apogee are no longer part of the symmetries, and since 2014 the orbit-crossing Chiron is no longer considered in the symmetries.

Index 3: Activated aspects resulting from conjunctions

Index 3 treats the following phenomenon: Viewed from Earth, when a faster moving planet catches up with a more slowly moving one, and the slower planet has a higher-ranking impulse aspect in the almost exact range of ±1°, then this higher-ranking aspect is activated, i.e. it affects the atmosphere and is included in Index 3. Since these are mainly high-ranking impulses of slowly moving bodies whose impulses could not be determined with certainty or at all, they are relatively often the cause of erroneous prognoses.

3. Evaluation of the prognoses

The Premeteo Index was developed in such a way that it assumes positive values if an anticyclonal flow is expected, and negative values if a cyclonal flow over southwest Germany is probable. The prognoses were compiled as daily prognoses for each month, calculated for one to two years in advance and archived in the Notary's office in Offenburg. On the Internet, the current month and following month are always available as Premeteo Index diagrams. After the end of a prognosis month, the index diagram is published on the Premeteo website together with the actual high- and low-pressure weather phases that occurred and a daily description of the weather conditions.

Figures 1 and 2 show the months May 2013 and December 2014 as two examples of successful prognoses.

In the diagrams, the high- and low-pressure phases which actually occurred are entered on the date axis by means of double arrows. The daily Premeteo Index, indicated by the thinner red line with the triangular points, is decisive for the evaluation. The thick red line is the three-period moving average of the Premeteo Index, while the thin violet line shows an alternate score possible in the case of complex constellations. The dotted green line is Index 1, which contains only the exact angle formations of the day with their impulses. In addition, the air pressure curve is entered with the 6:00 UTC values from the Lahr weather station in southwest Germany.

One example of a poorly forecast prognosis month with many erroneous prognoses is shown in Figure 3 for February 2015. This was one of the most unusual prognosis months since the start of the Premeteo Index in May 2009. The unusual effect which occurred was that between 6 and 27 February the air pressure was an approximate mirror image of the Premeteo Index over the course of three weeks. If the Premeteo Index is multiplied by -1 in this period, then an almost identical course of the Premeteo Index and/or its trend line with the air pressure is evident (see Figure 4). This is also an indication of the cosmogeometric link of southwest German atmospheric flows, even though it is not yet possible to understand the inversion principle of the impulses. Since 2016 indications have been culminating that this is inherent to a strong aspecting of planets or dwarf planets with retrograde rotation or as a result of geometric links to planets and dwarf planets which are currently in the retrograde phase of motion of a loop formation in relation to Earth.

Correct and incorrect days
The evaluation of the prognoses primarily depends on whether a positive index was forecast for the actual occurrence of an anticyclonal day and a negative index value was forecast for a cyclonal day. If this is the case, this day is considered to be correctly forecast.

Since the prognoses made using the Premeteo Index did not begin until May 2009, the evaluation covers 92 months in total, and Table 1 shows that correctly forecast days are clearly predominant (only in the case of some 10% of the months were there roughly as many incorrectly forecast days as correctly forecast ones).
For a given year, the average of correctly forecast days with reference to weather condition flow was 69%.

Table 1: Correct and incorrect prognosis days with reference to the Premeteo Index indication as a percentage

Year	Correct prognosis days	Incorrect prognosis days
2009	66.9%	33.1%
2010	67.4%	32.6%
2011	68.8%	31.2%
2012	68.6%	31.4%
2013	69.3%	30.7%
2014	73.4%	26.6%
2015	69.6%	30.4%
2016	70.2%	29.8%

The overall slight increase in the number of correctly forecast days from 2009 to 2016 is due to minor adjustments to the impulse aspects and the forecasting rules, which were possible to perform based on the insights gained as a result of erroneous forecasts. In addition, the individual fluctuations of any given year depend on the number of unknown aspects of very slowly moving astronomical bodies.

If, in accordance with this theory, the angle formations of the planets to Earth actually play a role with regard to the structure of atmospheric flows above southwest Germany, then in the case of the high-pressure weather phases which actually occurred, the average daily Premeteo Index value for each month should have been positive, and in the case of low-pressure weather conditions, conversely, the value should have been negative or at least considerably lower than for high-pressure weather conditions. Table 2 below contains the average Premeteo Index value per day noted in the high- and low-pressure weather conditions which actually occurred for the years 2009 to 2016.

Table 2: Annually averaged Premeteo Index value

Year	Average Premeteo Index in high-pressure weather conditions	Average Premeteo Index in low-pressure weather conditions
2009	+6.55	-2.18
2010	+6.00	-3.20
2011	+5.14	-4.51
2012	+7.17	+2.13 / +0.63*
2013	+7.42	+1.92
2014	+7.98	-0.52
2015	+2.07	-4.89
2016	+6.45	+0.60 / -0.76**

* Without the outlier month February 2012
** Without the outlier month December 2016

The generally poorer scores of the low-pressure weather phases are closely dependent on the fact that cyclones are much more dynamic systems than anticyclones, and mostly move with greater speed, i.e. they cross a region relatively quickly. Therefore, time offsets between the occurrence of a cosmic impulse and its presentation in the bottom layer have an unfavourable effect on the statistics more often in the case of cyclones than of anticyclones.

Table 2 is overall a substantial confirmation that high-pressure weather conditions generally occur in conjunction with a higher Premeteo Index value than low-pressure weather conditions. When low-pressure weather conditions which should have a negative annual average value nevertheless demonstrate a positive value, as was the case in 2012, 2013 and 2016, the amount of the annual average is always considerably lower than in the case of high-pressure weather conditions.

4. Structures of the weather key

The structures of the weather key for southwest Germany are a further indicator of the cosmic interconnection of Earth with the solar system and galactic space.

For every planet, if one looks at the distribution of the total of its L and H impulse aspects via the angles, astonishing structures are evident depending on the bodies and their distance to the Sun, and the Sun as a central body also demonstrates considerable differentiation vis-à-vis the peripheral bodies.

Figure 5 shows the distribution of the number of impulse aspects across the angles summarized for the planets and dwarf planets of space in the proximity of the Sun and of the Sun on the other hand. In the case of the Sun's satellites, a distinct maximum is evident at 45° and a distinct minimum at 135°. These two angles are supplementary angles with a sum of 180°.

The Sun's distribution curve runs inversely to this. One could also say that it behaves complementarily in relation to its satellites. If one disregards the special cases of 0° and 180° and calculates a Pearson correlation only using the real angles, the result is an inverse correlation factor of r = -0.72 with a one-sided significance of 0.0145.

If one goes further into the far reaches of the solar system past Jupiter, Saturn, Uranus and Neptune to Orcus, then the minimum of the aspect distribution curves consistently remains at 135°, while the maximum shifts to 90°, i.e. 45° multiplied by two. Within the far-distant space of the Kuiper belt as well as in the case of the points in space and galactic centres, other interesting impulse angle distribution structures occur, which cannot be elucidated further given the small scope of this article.

5. Looking back and looking forward

For the research work performed, it was of critical importance that for the creation of the weather key from the past in terms of cyclonal and anticyclonal atmospheric flows, attention had only been paid as to which core the weather maps' isobars curved toward above southwest Germany. For evaluation of the long-term forecasts for verification of the cosmic correlation made on the basis of this weather key, it goes without saying that only this curved state of the isobars above the small region can be used in the same manner, and it is necessary to make very accurate observations for every day.

Gravity is a locally dependent factor and its possible impact on the weather could only be related to a small, limited region for investigations in the area bordered on the south and north by Basel and Mannheim, and on the west and east by the Vosges Mountains and Stuttgart. A simple verification of the cosmic correlation with regard to the weather condition classification issued by the German Weather Service, which applies to all of Germany, is not possible since the regional differences are not considered to an adequate extent and the statements refer only to macro weather conditions. It depends on the geometric shape of the isobars, which correspond to the geometry of the solar system, even if the processes of this correspondence cannot yet be described and only indirect statistical indication of their existence is possible.

Physicists such as Lisa Randall (7) from Harvard University, who is amongst the leading theorists in the area of cosmology, already work with hypotheses involving differently dimensioned spaces within an overall space. These are separated from each other by so-called branes and may be where gravitational influences originate, i.e. gravity as an impact of space structure, and not as an impact of mass.

Kant's epistemological concepts and their further development by Karl Jaspers in his work *On Truth* (8) lead to a space-encompassing science of historical moments. Delimited spaces do not mutually exclude each other the way matter does; instead they are penetrated by more extensive spaces in which they are linked. In this case, a typical characteristic of space is demonstrated independent of the mass of the bodies. Physics seems to consummate itself not only within the principle of the conservation of energy, but also under the condition of an extensive, structural unity of space and time. If one must assume a

closed system in the case of the principle of the conservation of energy, the openness of space in the structural unit of every moment in history, on the other hand, is its characteristic feature, which can continuously lead us to new perspectives of interdisciplinary insight. It is not possible to absolutize any of these perspectives. Rather they enable a diversity of scientific work which aims to approximate the diversity of all living things and their cosmic origins.

6. Diagrams:

Figure 1: Premeteo Index prognosis and actual course of the weather in May 2013

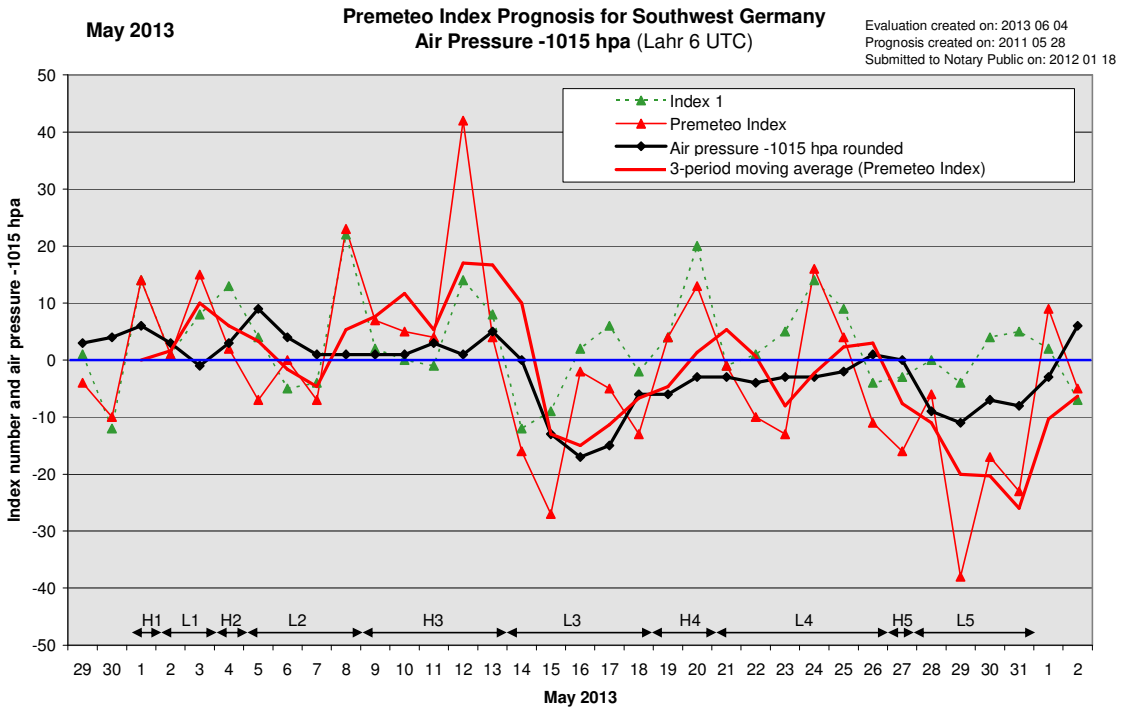


Figure 2: Premeteo Index prognosis and actual course of the weather in December 2014

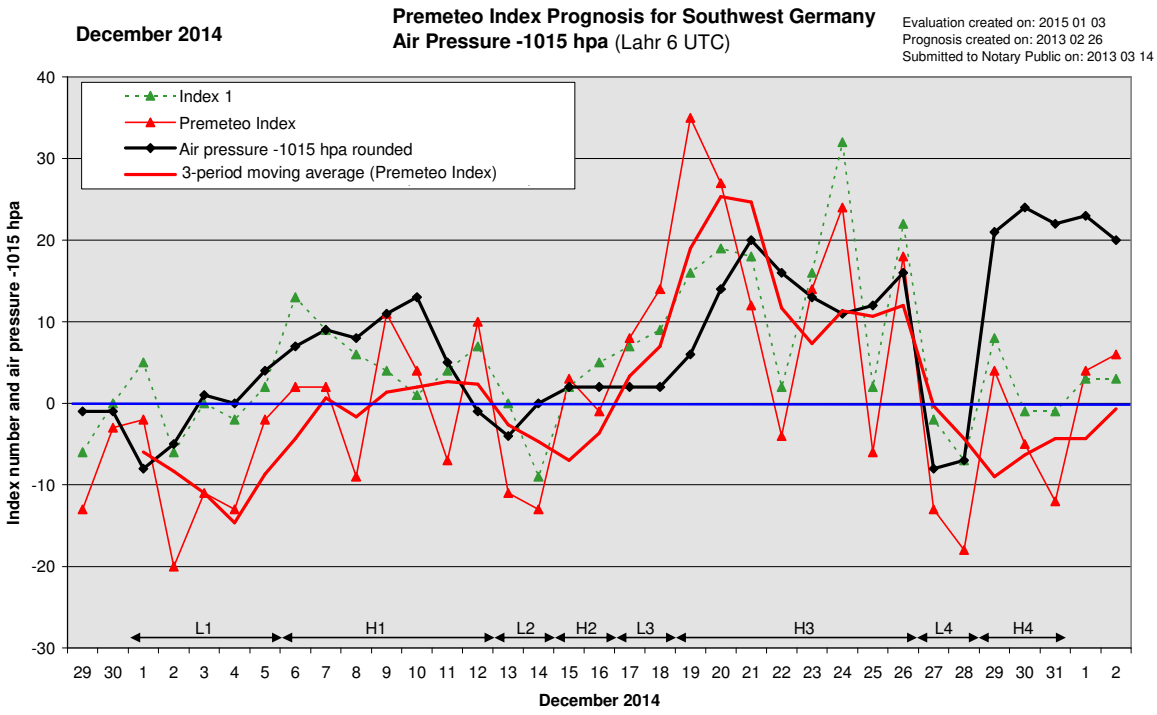


Figure 3: Premeteo Index prognosis and actual course of the weather in February 2015

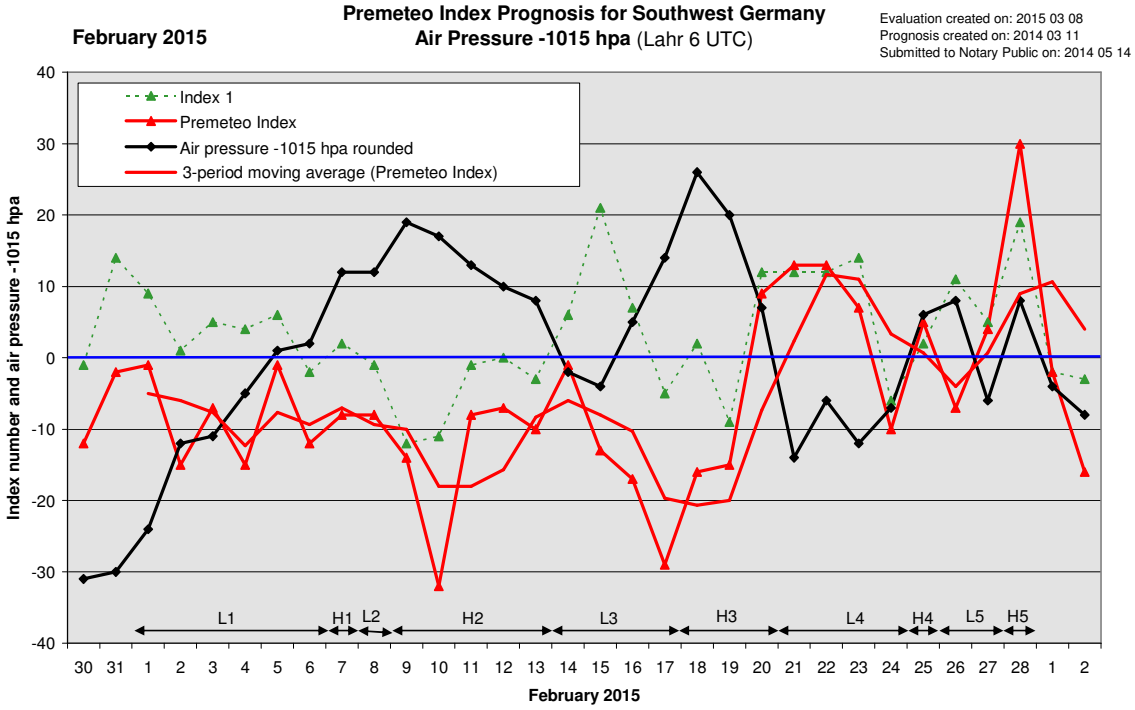


Figure 4: Premeteo Index prognosis multiplied by (-1) from 6 to 27 February 2015 and actual course of the weather

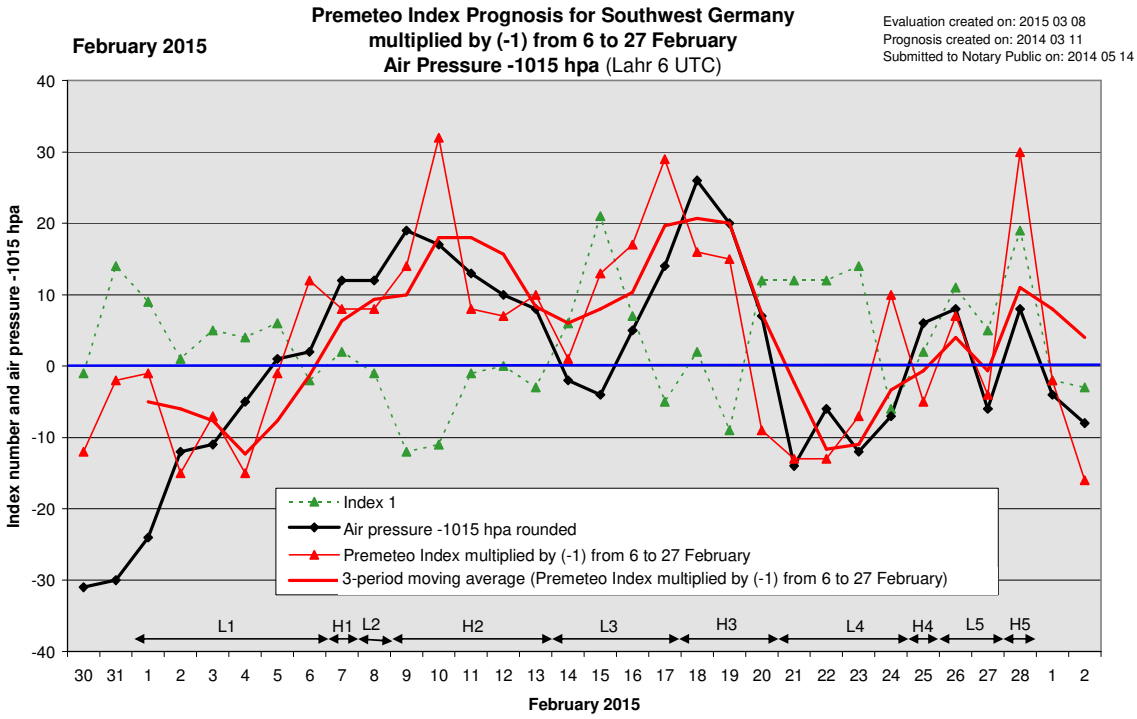
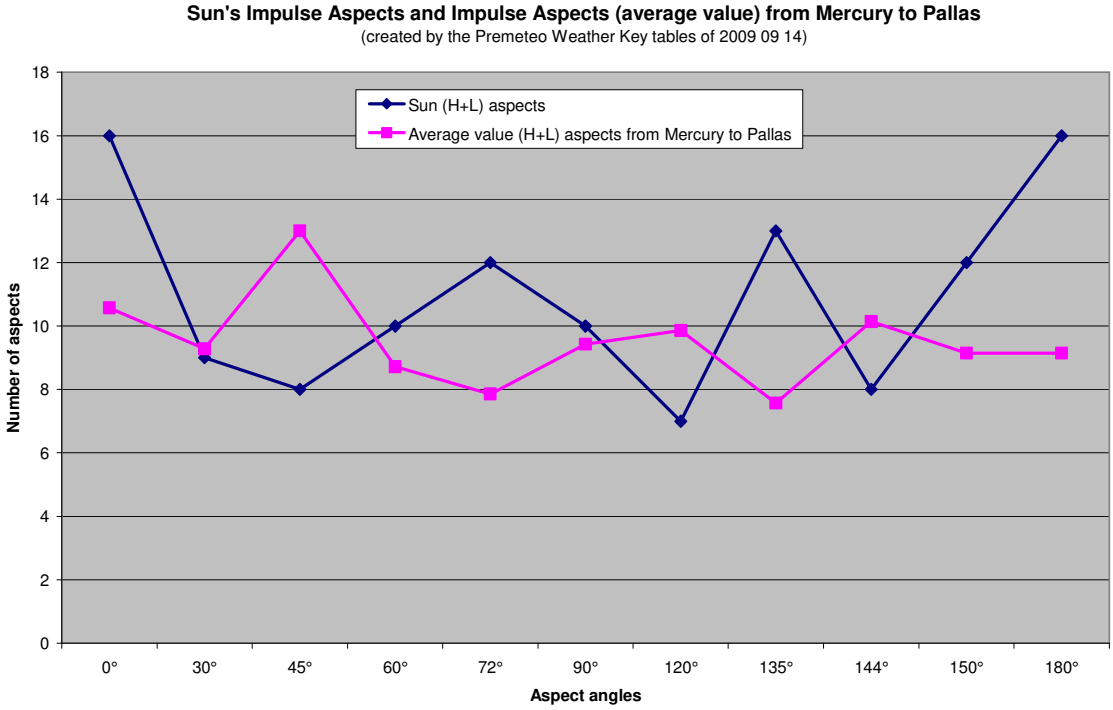


Figure 5: Distribution of the Sun's impulse aspects and the impulse aspects (average value) of the bodies from Mercury to Pallas across the aspect angles



7. Literature and sources

1) From: Richard von Schirach: Die Nacht der Physiker. Rowohlt Taschenbuch Verlag, Reinbek near Hamburg, 2nd edition 2015
2) Kant, Immanuel: Kritik der reinen Vernunft. Könemann Verlag, Cologne 1995, original work published in 1781. Kant, Immanuel: Metaphysische Anfangsgründe der Naturwissenschaft. collection Zenodot, Berlin 2010, original work from 1786.
3) Kant, Immanuel: Metaphysische Anfangsgründe der Naturwissenschaft. collection Zenodot, Berlin 2010, original work from 1786.
4) Mathieu, Vittorio: Kants Opus postumum. Ed. Gerd Held. Klostermann Verlag 1989, Frankfurt am Main
5) http://www.wetterzentrale.de/topkarten/fsreaeur.html. 1 February 2008 to 31 December 2016
6) Berliner Wetterkarte e.V., http://wkserv.met.fu-berlin.de/data/index.php. 1 February 2008 to 31 December 2016
7) Verborgene Universen. S. Fischer Verlag, Frankfurt am Main 2006.
8) Jaspers, Karl: Von der Wahrheit. Wissenschaftliche Buchgesellschaft, Darmstadt 1983.