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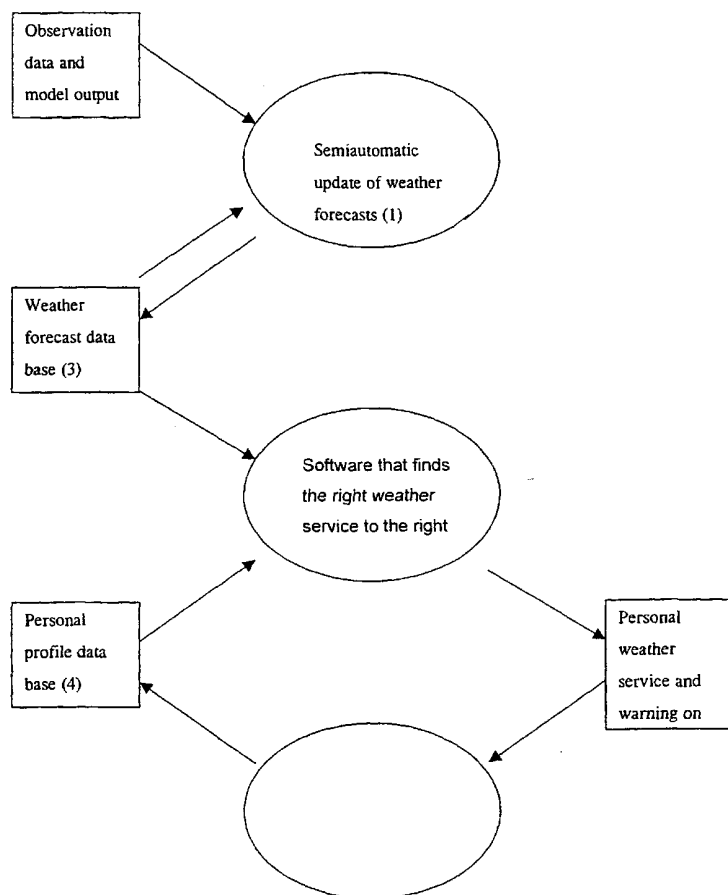
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(54) Title: A METHOD FOR ALERTING USERS OF WEATHER PHENOMENA



(57) Abstract: The present invention relates to a method for correcting or providing weather forecasts and to a weather warning method applicable for alerting a user. Alerting a user is being based on a user profile comprising at least one surveillance parameter to be monitored, such as wind speed, temperature, incident solar radiation and/or humidity, a changeable position parameter governing the geographical position of monitoring the at least one surveillance parameter and a surveillance function prescribing at least one alerting criterion. The alerting method comprising extracting/looking up from the weather forecast, weather characteristic(s) corresponding to the position parameter and to the surveillance parameter(s), and evaluating the surveillance function so as to determine whether the owner of the user profile is to be alerted.



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A METHOD FOR ALERTING USERS OF WEATHER PHENOMENA

The present invention relates to a method for correcting/providing weather forecasts and to a weather warning method. In a broad aspect of the present invention the weather
5 forecast correcting/providing method is utilised in the weather warning method for establishing a higher level of predictability of the weather in the nearest future.

BACKGROUND FOR THE INVENTION AND INTRODUCTION TO THE INVENTION.

10 Today no means exist for automatically alerting people whose possibility of performing their professions strongly depends on the weather. Examples of such professionals are farmers, building constructor's etc.

Large construction sites such as construction sites for building bridges often employs their
15 own meteorologist surveying and forecasting weather. If for instance the work to be performed has a character so that the wind speed should be below a certain limit the meteorologist will forecast time windows in which the speed of the wind is below the limit. The forecast is in these circumstances typically based on the talent of the meteorologist.

20 This solution is not available to the large majority of workers, as such a solution is expensive etc. Therefore, there exist a need for a weather warning system being able to alert a user of the system in case the weather will change so that for instance the work has to be shot down. Accordingly, an object of the present invention to provide methods and system meeting this need.

25

BRIEF DESCRIPTION OF THE INVENTION

In a first aspect of the present invention, a method for alerting a user of weather phenomena is provided. The method is based on a weather forecast, and the alerting of a
30 user is being based on a user profile comprising at least one surveillance parameter to be monitored, such as wind speed, temperature, incident solar radiation and/or humidity, a changeable position parameter governing the geographical position of monitoring the at least one surveillance parameter and a surveillance function prescribing at least one alerting criterion, said method comprising

- extracting/looking up from the weather forecast, weather characteristic(s) corresponding to the position parameter and to the surveillance parameter(s),
- evaluating the surveillance function so as to determine whether the owner of the user profile is to be alerted.

5

The term, monitoring can refer to a direct monitoring at the geographical position, but refers normally to the situation of looking up the characteristics corresponding to position.

By the first aspect of the present invention a method has been provided being able to alert
10 a user in advance of occurrence of certain weather characteristics whereby, for instance, the user in case his/hers work depends on the weather will have the possibility of not going into work - or initiating the work - just for closing down the work before he/she gets started.

15 In preferred embodiments of the method according to the present invention the user profile may preferably further comprise a surveillance function prescribing an alerting service to be executed in case a user is to be alerted. Such a surveillance function may stipulate the kind of service to be provided to the user, that means that while the alerting criterion sets out the criterion for alerting the alerting service sets out the stipulate the type
20 of service to be provided.

In a preferred embodiment of the invention the alerting service may comprise certain measures to be considered by the user. Such measures may typically be based on the magnitude of the extracted weather characteristics and may provide steps to be taken by
25 the user. Examples of such steps could be close down work and secure all building materials and apply suntan lotion to areas of your body being exposed to sun radiation.

The alerting service according to the present invention may preferably comprise instructions for alerting by sending an electronic mail, preferably comprising information
30 requested by the recipient, preferably the user, of the alert, contacting by phone or the like.

In very advantageous embodiments of the method according to the present invention the user of the method is automatically located. This feature is embodied in the method by
35 including into the method the step of locating the user so that the extracting of information

corresponding to the position parameter is based on the present geographical position of the user. This step will typically be executed every 5 minutes, such as every 10 minutes, preferably every 30 minutes, such every 45 minutes or even preferably every 1 hour.

Combinations thereof are of course also possible. As an alternative to this, location of the user takes place in connection with updating of the weather forecast. This alternative may, of course, be combined with the previous alternative. The location of the user may preferably be performed by GPS.

In order to provide fastness and efficiency to the method according to the invention the steps of extracting/looking up and evaluating in case more than one user profile are to be assessed comprises preferably

- extracting/looking up weather characteristics corresponding to all user profiles to be assessed

before

15 - evaluating all the surveillance functions.

In preferred embodiments of the present invention the weather characteristics being extracted/looked up are being extracted/looked up from a database.

20 In a second aspect of the present invention a method for forecasting weather has been provided which is suitable for but not limited to providing a weather forecast on which the alerting method according to the present invention is based. In this aspect the weather forecast may be provided by at least the following steps

- detecting weather characteristic(s), such as wind speed, temperature, incident solar radiation and/or humidity, at geographical locations inside a geographical region,
- selecting at least one geographical amending location inside said geographical region, said geographical amending location(s) may preferably be coincident with the geographical locations at which weather characteristic(s) is(are) detected,
- 30 - assigning weather characteristic(s) to the selected amending location(s), said weather characteristic(s) being typically and preferably amended weather characteristic(s);

and

- determining, such as calculating, weather characteristics at geographic positions belonging to said selected geographical region by interpolating and/or by another

35

mathematical means, such as solving a differential equation, between characteristic(s) being assigned to the at least one selected geographical amending location.

- 5 According to several important embodiments of the present invention the weather characteristic(s) being assigned to the at least one selected geographical amending location is(are) characteristic(s) detected at these location or in the vicinity of this(these) location(s). This procedure may be particular useful in cases where discrepancies are detected between forecasted weather characteristics and the actual detected ones.
- 10 In preferred embodiment of the weather forecast method the weather characteristic(s) assigned to the at least one selected geographical amending location is(are) correction(s) to characteristic(s) detected at this(these) location(s). Such weather correction(s) evolves preferably in a predefined manner, such as being constant in time, such as decay or grow linearly, exponentially, logarithmic or the like. This may preferably apply, that for instance
- 15 a 10% cut off of a detected temperature may be reduced to a 5 % cut off of the next detected temperature etc.

Preferably, the determined weather characteristics are being combined with a former weather forecast in order to obtain a new weather forecast. The combining of weather

20 characteristics may very advantageously be performed by superimposing weather characteristics of the former weather forecast and the determined weather characteristics.

Alternatively or supplementary, the determined weather characteristics may preferably be determined as corrections to the former weather forecast and the combining may

25 preferably be performed by adding the characteristics belonging to the former weather forecast and the weather characteristics determined by interpolation and/or by use of mathematical means.

In a very important embodiment of the present invention, the corrections are corrections

30 provided by a meteorologist to detected weather characteristic, and these corrections are then assigned as weather characteristics to the selected amending locations. In such and similar cases, the determined weather characteristics are typically absolute values and the combining of the weather characteristics of the former weather forecast and the determined weather characteristics is preferably performed by summing up, such as

35 averaging, the two characteristics.

In embodiments wherein summing of characteristics is applied, the summing up will preferably involve weighting of the characteristics to be summed up.

- 5 In embodiments wherein interpolation is applied, the interpolation is preferably performed by linear interpolation. Alternatively, the interpolation may be performed by cubic and/or higher order interpolation. The interpolation is typically preferred as one-dimensional interpolation and/or multidimensional interpolation, such as two and/or three-dimensional interpolation.

10

In an important practical embodiment of the method the geographical region is displayed on a displaying means and said geographical positions are selected by pointing by use of a pointing device on the displaying means.

- 15 In yet another aspect of the present invention the method of alerting a user according to the present invention the weather forecast aspect of the present invention is applied for generating the weather forecast on which the alerting method is based.

In yet another aspect of the present invention a system for alerting users of weather

20 phenomena is provided. This system comprises

- a database comprising forecasted weather characteristics, preferably established by weather forecast method according to the present invention,
 - a set of user profiles, each user profile comprises at least one surveillance parameter and a surveillance function,
- 25 - means, such as computer implemented match ascertaining means, adapted to ascertain matches between surveillance parameters and forecasted weather characteristics
- means, such as computer implemented alerting means, adapted to alert a user if a match is found between the surveillance parameter(s) belonging to said user and the
- 30 forecasted weather characteristics.

In the following the present invention will be described in details by way of examples in connection with the accompanying drawings in which:

35 Fig. 1 is a data flow diagram,

Fig. 2 is a forecast update diagram,
Fig. 3 is a description of the database of personal profiles,
and
Fig. 4 shows an example, probability for a weather phenomenon (thunder), produced by
5 the present invention.

BRIEF DESCRIPTION OF THE INVENTION

In a first aspect of the present invention, a method for alerting a user of weather
10 phenomena is provided. The method is based on a weather forecast, and the alerting of a
user is being based on a user profile comprising at least one surveillance parameter to be
monitored, a changeable position parameter governing the geographical position of
monitoring the at least one surveillance parameter and a surveillance function prescribing
at least one alerting criterion, said method comprising

- 15 - extracting/looking up from the weather forecast, weather characteristic(s)
corresponding to the position parameter and to the surveillance parameter(s),
- evaluating the surveillance function so as to determine whether the owner of the
user profile is to be alerted.

20 The phrase monitoring can refer to a direct monitoring at the geographical position, but
refers normally to the situation of looking up the characteristics corresponding to position.

By the first aspect of the present invention a method has been provided being able to alert
a user in advance of occurrence of certain weather characteristics whereby, for instance,
25 the user in case his/hers work depends on the weather will have the possibility of not
going into work - or initiating the work - just for closing down the work before he/she gets
started.

In a second aspect of the present invention a method for forecasting weather has been
30 provided which is suitable performing a weather forecast on which the alerting method is
based. In this aspect the weather forecast may be provided by at least the following steps

- detecting weather characteristic(s), such as wind speed, temperature and/or
humidity, at geographical locations inside a geographical region,

- selecting at least one geographical amending location inside said geographical region, said geographical locations may preferably be coincident with the geographical locations at which weather characteristic(s) is(are) detected,
 - determining calculated weather characteristics at geographic positions belonging to said selected geographical region by interpolating and/or by another mathematical means, such as solving a differential equation, between characteristic(s) being assigned to the at least one selected geographical amending location.
- 5
- 10 The method according to the second aspect is not limited to be used in connection with the alerting method and may very advantageously be used as a stand-alone method for forecasting weather.

GENERAL DESCRIPTION OF THE INVENTION

15

The aim of the system is to give qualified personal weather service to a large group of users. The weather service can cover a large area and give precise weather forecasts to any single location on the area. The weather service can be offered to an infinite number of users because the users demands are treated automatic. Every single user sets up his/her own personal profile on a password-protected interface.

20

The system comprises two software packets (1, 2) and two databases (3, 4). One software packet (1) is a newly invented procedure for current semiautomatic treating of meteorological data and thereby frequent updated weather forecasts. The other software packet (2) is a programme that current finds matches between the weather forecast data base (3) and the data base of all user profiles (4) and hereby gives every single user the weather service corresponding to a personal profile.

25

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

30

In the following a new procedure/system for current semiautomatic analysing meteorological data is presented.

The system presents the weather forecast on a graphical interface. Input to the system is observation data, model output and/or current corrected weather forecasts. Output from the system is an updated weather forecast.

- 5 In the system a meteorological data set (e. g. a weather forecast) has a graphical representation. If the observations show deviations in relation to the weather forecast, the meteorologist can change data in the weather forecast by using a pointing device on the graphical interface.
- 10 When observations shows that the value for a selected meteorological parameter will be different than forecasted, the meteorologist can change the hole data set by using a graphical interface. The meteorologist chooses a set of correction points using a pointing device. From the set of correction points the system makes an area wide update of the weather forecast for the selected geographical region e. g. a country.
- 15 makes an interpolation of the values between the corrected points and the result is a fast update of the forecasts for all locations. The system is supported by current observations which are used for frequent correcting short range forecasts. The update can be done at all moments, but a suitable schedule for updating is shown in figure 2.
- 20 More specific, the way the system provides the new weather forecast is the following. At the corrections points the meteorologist provides either a change or an absolute value of the characteristic or characteristics, which are to be modified.

For instance, if the meteorologist wants to correct the temperature within the area of
25 interest he/she picks (or selects) a number of correction points and assign either a temperature difference with respect to the former weather forecast or and absolute temperature to the correction points.

After these corrections or specifications of weather characteristics have been made
30 characteristics in the whole area of interest are determined, for instance by interpolating between characteristics assigned to a selected number of correction points.

In a preferred embodiment of the method, the interpolation is based on a selection of at
least three correction points and characteristics within the triangle defined by these three
35 correction points are made by interpolation.

Once the values of the characteristics in the whole area of interest are determined, thereby defining either a correction field or a characteristic field, this new field is a superimposed on the former weather characteristics originating from the former weather
5 forecast whereby a corrected - or updated - weather forecast has been provided.

The interpolation may preferably be performed by a cubic interpolation. Correction will then be most dominant close to the correction points and values being distant from the correction points will then take values closer to the values forecasted by the former
10 weather forecast.

In another preferred embodiment of the present invention in which the field determined is not a correction, but absolute values of the characteristics the weather forecast may be provided by averaging the characteristics belonging to the former weather forecast and
15 the field determined. The averaging may be a weighted average.

In still another preferred embodiment the determined characteristics are used as a weather forecast without including information from the former weather forecast.

20 An additional feature: Expansion function to corrections

When the meteorologist makes corrections he/she can decide that the correction shall work on other data sets than the actual corrected one. He/she shall set for how many hours the correction shall work. The meteorologist shall also set the weight of the last of the expanded corrections on a relative scale. See also example.

25

The advantage of this feature is that the meteorologist can save time when he/she is making corrections.

Example: The model output predicts the temperature to be 12 °C at the time: 001125,
30 0600 (yymmdd, time) at a specific location. The meteorologist decides to elevate it to 16 °C. He/she chooses that the correction shall be expanded for 8 hours and that the weight of the expansion shall be 50% after the said 8 hours:

35

description	forecast time (yymmdd, time)	value (e. g. temperature)
model output	001125, 0600	12
correction	001125, 0600	16
expansion of correction	001125, 1000	15
expansion of correction	001125, 1400	14

The shown expansion example is linear but can be also be logarithmic, exponential or other.

- 5 In the following a programme/method/system that current gives the user a weather service according to a personal profile is presented.

The users set up their specific demands to weather subjects and make their own personal profile. This is done on a password protected interface (e.g. a homepage) and the first
 10 time the user accesses the interface, he/she is given a login name, a password and one or more user licenses per login name. At this level the payment will take place. Login name, password and relations about the licenses can always be altered by the user if wanted. Data given to the interface is stored in a database of all personal profiles.

- 15 A software programme extracts specific weather data for every postal code, municipality and for selected geographic locations, from the weather forecast for a large area. This means that users automatic receive an often updated weather forecast according to their specific personal profiles.

- 20 There are two main menus of services. One is special weather forecast and the other is weather warning.

In the special weather forecast menu, the user sets up his/her own profile by choosing which weather data is most interesting and choosing between specific locations or
 25 location by GPS or other dynamic localisation system. The parameters can be all kind of meteorological data and includes the following examples:

- temperature in different levels
- wind speed in different levels

- gust speed in different levels
- humidity in different levels
- airborne pollution in different levels
- different weather phenomena
- 5 - probability for the different weather phenomena
- uncertainty for the different weather phenomena

More specifically, these parameters are typically:

10 Forecasts:

Precipitation:

quantity

periodical precipitation

Probability for more than 1 mm rain in one hour

Probability for more than 5 mm rain in one hour

Probability for more than 25 mm rain in one
hour

Probability for more than 1 mm snow in one
hour

Probability for more than 5 mm snow in one
hour

Probability for more than 25 mm snow in one
hour

Probability for:

Rain

Hail

Sleet

Snow

Drifting snow

glaze

Wind:

Wind direction

Wind speed

Gust

Wind direction in 50 m

Wind speed in 50 m

Gust in 50 m

Temperature:

Absolute temperature

in 0 m

in 2 m

in 1200 m

maximum and minimum

Probability for:

Freeze in 0 m

Freeze in 2 m

Temperature < 10 °C in 0 m

Temperature < 10 °C in 2 m

Thunder:

Light thunder

Strong thunder

Other forecasts:

Adding up of degree days and forecast
for the next 5 days

Adding up of growing degree days and
forecast for the next 5 days

Relative humidity

Dew point

Potential evaporation

Hours of sunshine

Frost

drifting snow

drifting soil

chill factor

Airborne pollution in different levels

different weather phenomena

probability for the different weather
phenomena

uncertainty for the different weather
phenomena

Observations

Precipitation

Wind speed

Wind direction

Weather (description)

Temperature (2 m)

Soil temperature

Relative humidity (2 m)

Leaf humidity

Soil humidity

Dew point

Airborne pollution in different levels

When the user logs in to the weather service he/she will automatic receive weather data according the personal profile. This profile can always be changed and the data base is automatic updated.

- 5 In the weather warning menu the user can choose to be warned if certain weather situations appear. The user sets up his/her own demands about when to be warned and additional by what probability for a certain weather situation. The criteria's can be all kind of weather situations and meteorological relations. This service is available on chosen locations and locations by GPS or other dynamic localisation system.

10

Examples of weather warning services:

If the possibility for > 5 mm of rain at any time exceeds 80% then send me a warning 2 hours before (specific location or located by GPS). Send warning to my e-mail address.

- 15 If the possibility for frost at 10.00 pm 2 meters above ground exceeds 50%, then send me a warning (specific location or located by GPS). Send warning to my phone.

If the possibility for wind speeds between 7.00 am and 5.00 pm > 10 m/s in 60 meters elevation exceeds 10%, then send me a warning 12 hours before (specific location or

- 20 located by GPS). Send warning to my website.

If the possibility for rain < 5 mm in more than 4 hours between 5.30 am and 8.30 pm exceeds 95%, then send me a warning 2 hours before. Send warning to my phone and to my e-mail address.

25

In the following a number of examples of alerting are presented

Environmental alertings:

storm and flooding

trajectory calculations

air pollution

emission of radioactive material

algae blooms

anoxic events

ozone concentration

UV-radiation

Example: Environmental alert - algae blooms

If there is an algae bloom in the summertime, people going to the beach wants to know about it. The distribution of algae blooms is drawn into a digital map. The information
5 about algae blooms can be presented for example on the Internet as maps or as text information.

For people on the road such as tourists it can be an advantage to have access to the information through a mobile phone. If they for example are intending to go to The
10 Bellevue Beach, they can find it on a list and check whether there is an algae bloom there or not.

Example: Alerting in case of unhealthy weather conditions.

The basis of this example is a service of alerting people of a high concentration of ozone
15 in the atmosphere. Ozone can be a contributor in the development of cancer. Therefore The Ministry for Health or a cancer society could be interested in alerting people of high concentrations of ozone in the atmosphere.

How could it be done in practise?

20 One case of the graphical interface for updating weather forecasts is the ozone concentration forecast. On the interface the meteorologist on the background of observations, model output and his/her knowledge about atmospheric processes gives a forecast of the ozone concentration. He/she can choose between giving absolute values to different places on the chosen geographical area or giving a relative value. The relative
25 value could be high, medium or low health risk.

The actual data can be presented on a map showing different areas with different colours according to the ozone concentration or to a relative risk. Or data can be extracted from the entire ozone forecast and presented for smaller regions or for locations. For example
30 according to municipality, postcode or location by GPS. Data can in all cases be presented on web sites, WAP phones, i-mode phones, PDA's or printed.

Example: A device for surveillance of weather observations and weather forecasts.

The device can be formed like a pager and it can instantly receive information about the development of different observations and forecasts. The device has a screen where the received information can be shown.

5

The device contains a surveillance function. The user can choose some weather parameters which has to be watched. When the value for one parameter reach a limit set up by the user the device gives a signal, for example a beep.

10 Example: Route alerting

When you are going by car, this alerting will help you to be aware of for example slippery roads or bridges or ferry routes closed due to storm. The meteorologist makes his/her forecasts for a selected geographic region. The relevant forecasts will be superimposed on a digital roadmap and data for example for slippery roads will be extracted from the combination of forecasts and roadmap. The extracted data can be presented on a new map that shows for example slippery roads, but it can also be used "smart": The driver keys in his or her starting point and destination on an interface. A programme finds the best route in relation to time and it shows the driver where and on the route he/she can expect for example slippery roads.

15
20

This route alerting system is thought to handle the weather parameters: storm (closed ferry routes, closed bridges, difficult driving), snow, sleet, glaze, frost (slippery roads, difficult driving), heavy rain (difficult driving).

25 In the following a number of use case examples are presented

Case # 1: John is a farmer: John saves money and resources by using forecast2u.com

John planned to spray a crop with a pesticide Monday morning. The pesticide needs 3 hours dry weather to work and the weather forecast predicts rain from the west during the day. According to the yield John want to do the spraying, but he is afraid of wasting both working hours and the pesticide if it starts raining.

Therefore he orders a **rain alert** at **forecast2u.com**. This means that he will get a message on his mobile phone 3 hours before the rain starts. When he has done a bit

more than half of the spraying his mobile phone rings with a message from **forecast2u.com**, that there is now 3 hours until the rain reaches his property.

This means he can drive home in a good mood because he did do a good part of the
5 planned spraying although the weather was changeable and also he did not lose any pesticides. To benefit for John's economy and for the environment!

Case # 2: Paul is a carpenter: Paul saves time and money by using forecast2u.com

10 Previously when Paul renovated a roof for a customer he used to spend two hours every evening to put on coverage and one hour every morning to take off the coverage again. Regardless of it was raining or not.

Today he is a **forecast2u.com** customer and receives a weather forecast which is
15 updated every hour and concerns the specific area where he works. In the afternoon he consults the precipitation forecast for the coming night at **forecast2u.com** and if the probability for precipitation is less than 10 % he does not use coverage. For a secure he chooses that **forecast2u.com** shall alert him if rain will reach his area anyway.

20 Many days he therefore does not cover, but he sleeps well anyway because he can trust that **forecast2u.com** will call him if the probability for precipitation raises.

For Paul this means that he does not waste time with unnecessary covering and therefore he gets the roof finished faster so he can send out a bill.

25

Short use cases:

Farmer on his tractor with spraying device:

Message on mobile phone: *"Rain will reach your position in 3 hours"*

30 Action: Stop spraying.

Benefit: Save for DKK 25,000 pesticides and save the environment.

Leader of an asphalt gang:

Message on mobile phone: *"Unexpected rain will reach your position soon"*

35 Action: Stop trucks bringing out asphalt.

Benefit: Save up to DKK 125,000.

Woman in a car in the winter:

Message on mobile phone: *"Take care - temperature close to freezing point on the road*

5 *you are driving at"*

Action: Drive carefully.

Benefit: Don't crash your self nor the car.

Leader of a construction site:

10 Message on mobile phone: *"Wind speed will exceed 15 m/s in 2 hours"*

Action: Cancel delivering of concrete elements because of too high wind speeds to crane operation.

Benefit: Save manpower for 15 men for one day – save DKK 16,000.

CLAIMS

1. A method of alerting a user of weather phenomena based on a weather forecast, the alerting of a user is being based on a user profile comprising at least one surveillance
5 parameter, such as wind speed, temperature, incident solar radiation and/or humidity, to be monitored, a changeable position parameter governing the geographical position of monitoring the at least one surveillance parameter and a surveillance function prescribing at least one alerting criterion, said method comprising
- extracting/looking up from the weather forecast, weather characteristic(s)
10 corresponding to the position parameter and to the surveillance parameter(s),
 - evaluating the surveillance function so as to determine whether the owner of the user profile is to be alerted.
2. A method according to claim 1, wherein the user profile further comprising a
15 surveillance function prescribing an alerting service to be executed in case a user is to be alerted.
3. A method according to claim 2, wherein the alerting service comprise certain measures to be considered by the user.
20
4. A method according to claim 2 or 3, wherein the alerting service comprises instructions for alerting by sending an electronic mail, preferably comprising information requested by the recipient, preferably the user, of the alert, contacting by phone or the like.
- 25 5. A method according to any of the preceding step further comprising the steps of locating the user so that the extracting of information corresponding to the position parameter is based on the present geographical position of the user.
6. A method according to claim 5, wherein the location of the user is performed by GPS.
30
7. A method according to any of the preceding claims, wherein the extracting/looking up and evaluating steps in case more than one user profile are to be assessed comprises
- extracting/looking up weather characteristics corresponding to all user profiles to be assessed
35 - evaluating all the surveillance functions.

8. A method according to any of the preceding claims, wherein the weather characteristics being extracted/looked up are being extracted/looked up from a database.

- 5 9. A method of providing a weather forecast, which method comprises the following steps
- detecting weather characteristic(s), such as wind speed, temperature, incident solar radiation and/or humidity, at geographical locations inside a geographical region,
 - selecting at least one geographical amending location inside said geographical region, said geographical amending location(s) may preferably be coincident with
10 the geographical locations at which weather characteristic(s) is(are) detected,
 - assigning weather characteristic(s) to the selected amending location(s), said assigned weather characteristics being typically and preferably amended weather characteristic(s);
- 15 and
- determining, such as calculating weather characteristics at geographic positions belonging to said selected geographical region by interpolating and/or by another mathematical means, such as solving a differential equation, between characteristic(s) being assigned to the at least one selected geographical
20 amending location.

10. A method according to claim 9, wherein the weather characteristic(s) being assigned to the at least one selected geographical amending location is(are) characteristic(s) detected at these location or in the vicinity of this(these) location(s).

25

11. A method according to claim 9 or 10, wherein the weather characteristic(s) being assigned to the at least one selected geographical amending location is(are) characteristic(s) correction(s) to characteristic(s) detected at this(these) location(s).

30 12. A method according to claim 11, wherein the weather correction(s) evolves in a predefined manner, such as being constant in time, such as decay or grow linearly, exponentially, logarithmic or the like.

13. A method according to any of the claims 9-12, wherein the determined weather
35 characteristics is being combined with a former weather forecast by combining, such as

superimposing, characteristics of the former weather forecast and the determined weather forecast.

14. A method according to any of the claims 9-13, wherein the determined weather
5 characteristics are determined as corrections to the former weather forecast and wherein the combining is performed by adding the characteristics belonging to the former weather forecast and the weather characteristics determined by interpolation and/or by use of mathematical means.
- 10 15. A method according to any of the claims 9-13, wherein the calculated weather characteristics are absolute values and wherein the combining of the characteristics of the former weather forecast and the calculated weather characteristics is performed by summing up, such as averaging, the two characteristics.
- 15 16. A method according to claim 16, wherein the summing up involves weighting of the characteristics to be summed up.
17. A method according to any of the claims 9-16, wherein the interpolation is being performed by linear interpolation.
- 20 18. A method according to any of the claims 9-17, wherein the interpolation is being performed by cubic and/or higher order interpolation.
19. A method according to any of the claims 9-18, wherein the interpolation being
25 performed is a one-dimensional interpolation.
20. A method according to any of the claims 9-19, wherein the interpolation being performed is multidimensional interpolation, such as two and/or three-dimensional interpolation.
- 30 21. A method according to any of the claims 9-20, wherein said geographical region is displayed on a displaying means and said geographical positions are selected by pointing by use of a pointing device on the displaying means.

22. A method of alerting a user according to any of the claims 1-8, in which the method the weather forecast is provided by the method according to any of the claims 9-21.

23. A system for alerting users of weather phenomena comprising

- 5 - a database comprising forecasted weather characteristics
- a set of user profiles, each user profile comprises at least one surveillance parameter and a surveillance function,
- means, such as computer means, adapted to ascertain matches between surveillance parameters and forecasted weather characteristics
- 10 - means, such as computer means, adapted to alert a user if a match is found between the surveillance parameter(s) belonging to said user and the forecasted weather characteristics.

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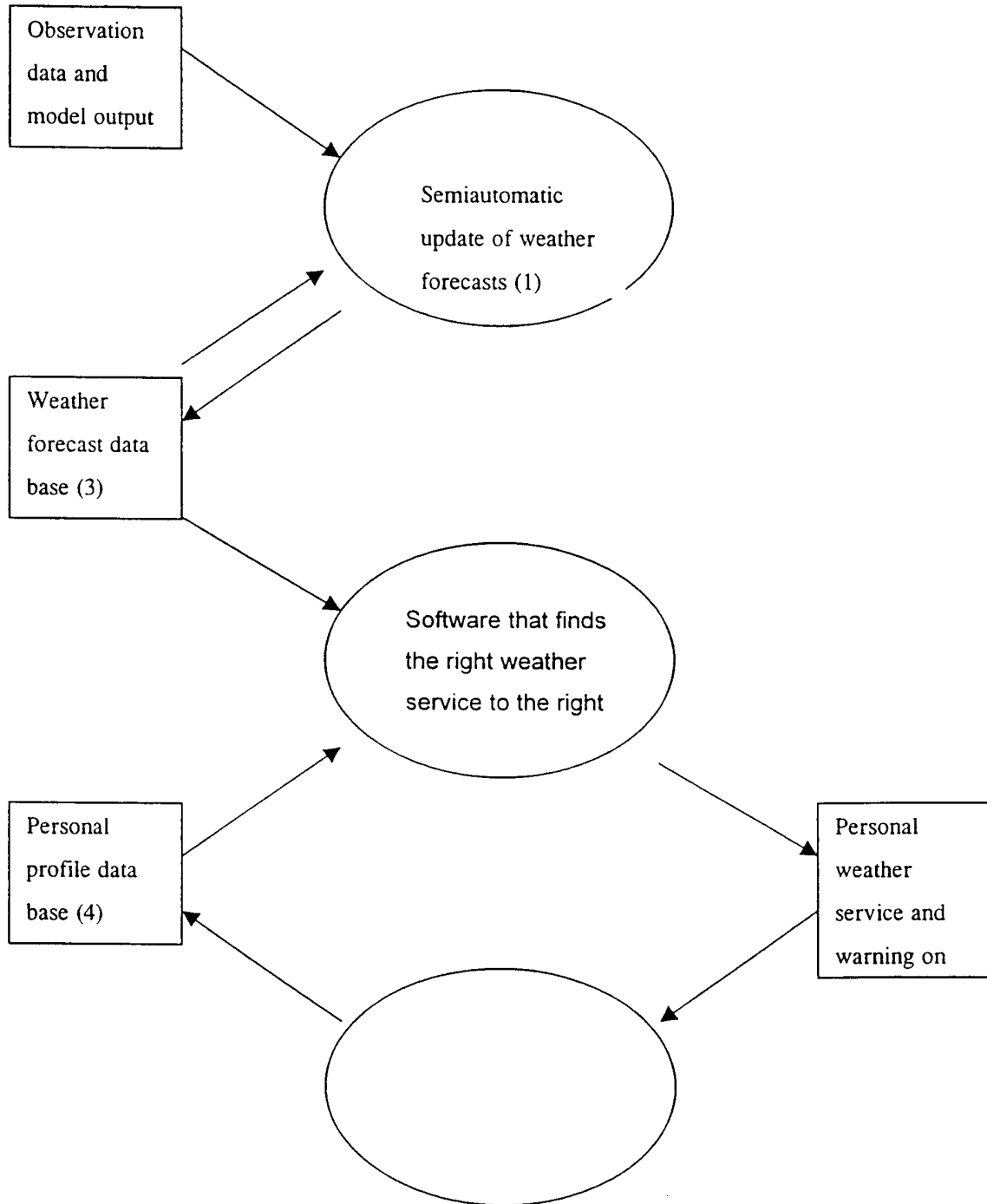


Fig.1

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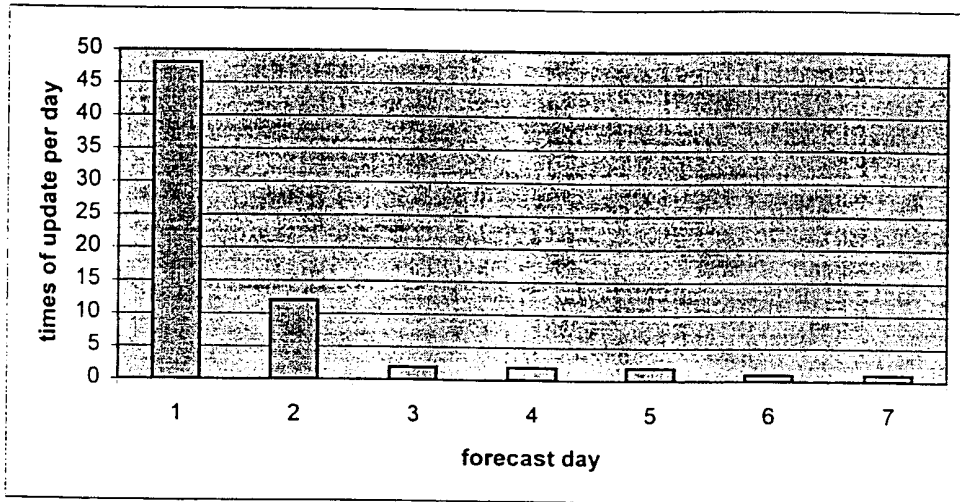


Fig. 2

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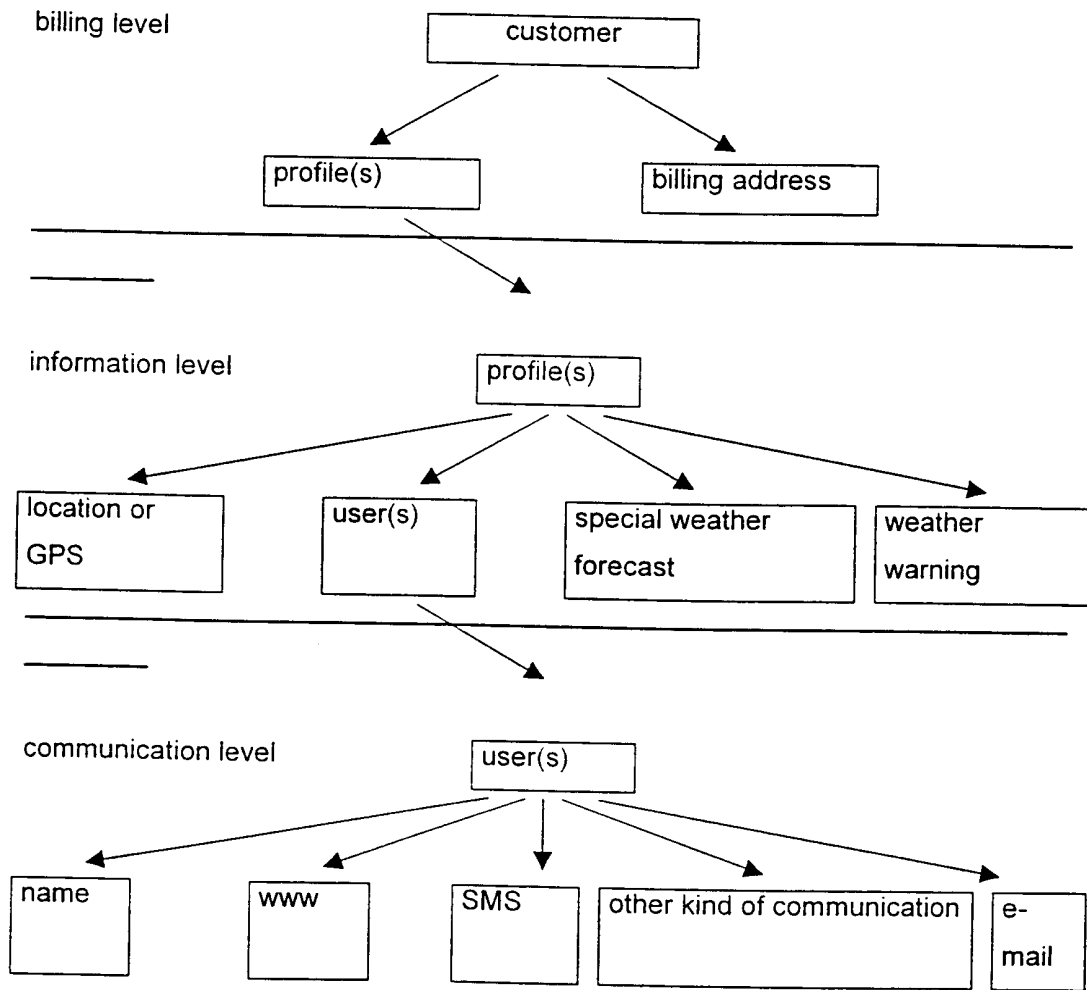


Fig. 3

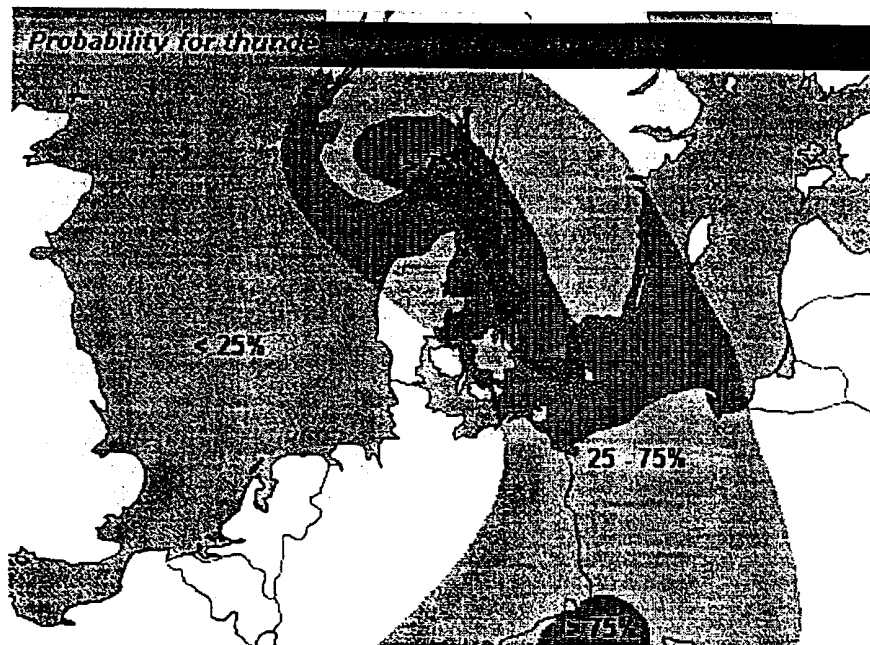


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 00/00650

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G01W 1/00, H04M 11/04
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G01W, G08B, H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5949851 A (S.R.MAHAFFEY), 7 Sept 1999 (07.09.99), column 4, line 18 - column 5, line 44 --	1-23
P,X	US 6084510 A (J.H.LEMELSON), 4 July 2000 (04.07.00), column 4, line 2 - column 7, line 38 --	1-23
P,X	US 6018699 A (R.O.BARON, SR. ET AL), 25 January 2000 (25.01.00), column 2, line 45 - column 4, line 2 -- -----	1-23

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"Γ" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search	Date of mailing of the international search report
6 March 2001	29.03.01

Name and mailing address of the International Searching Authority European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel(+31-70)340-2040, Tx 31 651 epo nl, Fax(+31-70)340-3016	Authorized officer Jerry Vennerholm /itw Telephone No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/DK 00/00650

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
US	5949851	A	07/09/99	AU	4310599 A	13/12/99
				WO	9961033 A	02/12/99

US	6084510	A	04/07/00	NONE		

US	6018699	A	25/01/00	NONE		
