Urban air pollution diffusion status and sports training physical fitness measurement based on the Internet of things system

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Abstract
The sustainable development of modern industrial civilization and modern rapid development have brought many pollution problems. Especially in recent years, especially air pollution has become very popular, with the vigorous development of the Internet of Things system and the popularity of mobile phones and portable intelligent terminals getting higher and higher. This project proposes to combine these two technologies to build a set of air pollution diffusion quality monitoring system based on Internet of Things technology. This paper also uses a CFD method to study the number and pollution distribution of wind turbines in the city. It is hoped that the role and relationship among topography, wind field, and pollution distribution can be discussed in more detail, and the CFD method can be applied to the complex field of urban wind and pollution. The purpose of this paper is to find out the control of urban air pollution and to provide guidance, control, air pollution prediction, industrial zone design, and so on for using the CFD method to deal with urban air pollution. In recent years, with the change of the concept of offensive advocacy, offensive and defensive sides are using more physical violence and have a greater demand for physical fitness. Therefore, good physical fitness plays an important role in the fierce competition, and coaches at all levels pay more and more attention to sports training. However, due to the fact that the current concept of “physical fitness” is not clear and there is no complete division of the overall energy structure, this paper puts forward the definition of physical fitness test. This paper studies the pollution problem of modern industrial civilization and the development of Internet of things system and applies it to improve the physical fitness training, so as to improve the physical fitness of athletes.

Keywords Internet of things system · Air pollution diffusion · Sports training · Physical fitness test

Introduction
The complex topography of the city will significantly affect the diffusion of air pollutants, forming a unique pollution transfer and pollution distribution process (Achang et al. 2017). In recent years, with the development of industry and the rapid development of cities, the air pollution situation has deteriorated day by day. Many scientists have conducted extensive research on urban air pollution. However, these studies have focused more on the characteristics of pollution distribution (Antonino et al. 2015). Some studies have discussed the role and relationship between complex land, wind farms, and pollution distribution, and it is difficult to determine predictable air pollution and pollution reduction in cities (Balsamo and Storti 2011). In theory, the statistical fluid dynamics (CFD) method has unique advantages in urban wind field research and pollution diffusion, but few scientists use CFD methods in related research (Bense et al. 2013). In this article, the current situation of air quality monitoring at home and abroad is first investigated and analyzed, and the Internet of things system technology, Web Service technology, and Android development technology used in the realization of this system are briefly introduced, and then the system’s perception layer, network layer, and the application layer conducted a demand analysis, divided the functional modules of the server and the terminal in detail, and designed the interaction process of the server and the mobile phone and their respective
operating processes (Borradaile 1981). Finally, perform performance tests and recognized system performance tests, and calculate relevant data during system operation. The innovation of this system is that it can meet the requirements of personal air quality monitoring (Bossennec et al. 2018). By using IT technology networks to transmit device data to mobile devices, users can not only access weather data obtained through public monitoring methods (such as the Environmental Protection Agency) but can also install equipment to monitor air quality in various geographic areas (Bouvier et al. 1989). The mobile station can see weather information in various regions, which fully integrates the advantages of the Internet of things and mobile network integration. It can be seen that the integration of these two technologies will bring many advancements in environmental monitoring (Caine et al. 1996). To further analyze the definition of physical fitness, physical fitness training, and the formulation of evaluations in sports training, the basic data of high-level sports of universities in the J area and the use of questionnaire methods are combined with questionnaires from relevant experts and coaches involved in sports training (Caine and Minor 2009). It is the basic index to measure the weight level of Chinese male athletes. The primary selection indicators selected by the mathematical statistics method are used to measure the physical fitness of high-level male athletes in colleges and universities in Province J. The initial selection indicators are analyzed (Chai et al. 2014). Based on the statistical analysis, the indicators used to measure body balance are reviewed, and the disagreement is eliminated. It is hoped that this research can help improve the basic education level of male athletes in colleges and universities in J area and contribute to the development of top athletes in colleges and universities in J area (Cooke et al. 2018).

**Materials and methods**

**Study area**

Figure 1 shows the location of city L and its surroundings. The picture was taken from Google’s satellite map. The study area includes the capital area of city L and the surrounding mountains. It is a rectangular area with a length of 45 kilometers, a width of 15 kilometers, and an angle of 18° from the horizontal: the upper left corner (E103.53668200, N36.20580300), the upper right corner (E104.01713800, N36.07650500), the lower left corner (E103.48798500, N36.09010600), and the lower right corner (E103.96844100, N35.96080800).

**IoT system design**

Currently, the Web object architecture is generally regarded as three levels: from bottom to top, they are the bottom view layer, the middle layer of the network, and the top layer of the application (Du et al. 2002).

The diagnostic layer includes some smart devices that can detect the environment, such as various sensors, controls, readers, and other camera devices. These devices have different network connections and can be obtained through different cognitive technologies (Duan et al. 2017). For the network, in the cognitive domain, the difference between the object network and the traditional network becomes particularly obvious. This is the necessary plane for the traditional Internet of things to expand the physical world (Faerseth 2006).

The network layer is responsible for transmitting the original data from the detection layer to the application layer (Farrell et al. 2014). The software layer uses the real data provided at the lowest level to provide users with a wide range of uses and use in a variety of industries and various personal uses, such as smart agriculture, smart buildings, good transportation, and a good environment, and uses air quality monitoring to solve this problem (Fossen et al. 2007).

**Simulation of urban air pollution diffusion model**

The SIMPLE algorithm is used to solve the pressure-velocity coupling equation, the turbulence model uses the Smagorinsky-Lilly model in the LES model, and the Smagorinsky constant Cs = 0.1. The governing equation of the LES model is

\[
\frac{\partial \rho}{\partial t} + \frac{\partial \rho u_i}{\partial x_i} = 0
\]

\[
\frac{\partial}{\partial t} \left( \rho \bar{u}_i \right) + \frac{\partial}{\partial x_j} \left( \rho \bar{u}_i \bar{u}_j \right) = \frac{\partial}{\partial x_j} \left( \mu \frac{\partial \bar{u}_i}{\partial x_j} \right) - \frac{\partial p}{\partial x_i} - \frac{\partial \tau_{ij}}{\partial x_j}
\]

Among them, \( \tau_{ij} \) is the sub-grid stress, defined as

\[
\tau_{ij} = \rho \mu_s (\bar{u}_i \bar{u}_j - \rho \bar{u}_i \bar{u}_j)
\]

The calculation equation of eddy viscosity in the Smagorinsky-Lilly model is

\[
\mu_s = \rho L_s^2 |S|
\]

The wind speed profile is

\[
v = 1.747 \times \ln \left( \frac{z-1500}{2.5} \right)
\]
Results

Analysis of simulation results of urban air pollution diffusion model

Figure 2 shows the distribution of pollutants under northwest wind conditions, with satellite images at the top and simulation results at the bottom. The satellite image was taken by Google Earth on June 2, 2019. The results of the numerical simulation are calculated using a hybrid model based on the flow field in Chapter 3. It shows the distribution of pollutants 10 m above the ground. The white spots on the satellite image in Fig. 2 are caused by pollutants, which can indicate the distribution of pollutants to some extent. The color of the simulation result in Fig. 2 indicates the degree of pollution reduction, and this value is the ratio of the calculated concentration to the emission center concentration. In Fig. 2, we can see that pollutants are mainly distributed in the direction of the greenhouse gases that cause pollution, indicating that the mountain can prevent pollution and objects can spread for a long time. Affected by the barrier of the mountain wall, pollutants accumulate in the front part of the mountain, which increases the difficulty of further diffusion of pollutants to the mountain, thereby reducing the diffusion of pollutants in the back of the mountain. This manifests itself in the spread of pollution, reduced by 100 times. At the foot of the mountain, the height is about one-third of the unfolded length of the plane. If the simulation result is compared with the satellite image, it can be seen that the pollution distribution area on the left and right under the northwest wind, that is, the pollution distribution layer shown in all satellite images, corresponds to the pollutants, distributes, and simulates calculations and high concentrations in this range. It overlaps with general pollution methods and has a high degree of compliance. This shows that the pollution source is the same, and the simulation conditions and methods are reliable.

The pollutant distribution of satellite images and simulation results is shown in Fig. 3.
The impact of terrain and wind fields on the diffusion of pollutants

Figure 4 shows the distribution of pollutants and wind speeds 10 m above the ground in the north, northwest and east wind directions. The upper part is the distribution of pollutants, and the lower part is the proportional wind speed distribution. The color map on the pollution inventory shows that emissions are decreasing, and this value is the ratio of emissions to average emissions (Francesco et al. 2018). The color in the wind speed distribution chart shows the size of the wind speed in m/s. If these three graphs are compared with each other, we will find that there is a significant difference in the high blood red pollution area with a pressure that the pollution rate is higher than 0.1. The larger concentration distribution in the east wind is greater than the larger concentration distribution in the west wind, reducing the maximum distribution rate. This shows that under the same wind speed distribution and different wind conditions, the difference in pollution is different. The dilution below the easterly direction is less than the dilution below the westerly direction. The decrease rate below the northwest wind direction is slightly lower than the decrease rate below the northwest wind direction. In the three wind directions, the inlet wind speed is the same, and the difference in the degree of dilution should be attributed to the difference in ground wind speed caused by the ground barrier.

Fig. 4 Distribution of pollutants and wind speed at 10 m above the ground under westerly wind conditions
Figure 5 shows the uniform distribution of the contaminated area in the contaminated area 10 m to the left of the ground 10 m below the easterly wind direction. From a statistical point of view, the distribution of pollutants is narrow and long, and there is no pollutant distribution in the same direction. The distribution and movement of pollutants meet in a narrow valley on the left. When observing the horizon, it can be seen that due to the influence of the narrow valley on the left, the wind field in the area shown in the figure shows a connected state, and the horizon merges with the narrow valley. Convenience means that the air on the left enters a narrow valley and the flow of air forces pollutants into the narrow valley on the left (Fu et al. 2012a). In addition, the line enters the polluted area and points to the middle of the polluted area, which shows that the topology forces the air around the polluted area to move in the middle, which also means that the polluter is moving in the middle. The pollutants on both sides of the polluted area must be moved to the center of the polluted area, and the peripheral distribution is restricted (Fu and Zhang 2017). As a result of continuous measures, the pollutant belt generally presents a narrow and long distribution. At the same time, due to the suppression of the uniform distribution of pollutants, the balanced distribution rate of pollutants is low, resulting in a large number of highly polluted areas, which is reflected in the horizontal length and degree of the red polluted area. It can be seen from the above analysis that the main reason for the short-term diffusion of pollutants under east and north wind conditions is that the local wind field appears compact. This phenomenon is more related to the high pressure and wind direction in narrow valleys and canyons. The combination of amplitude state and topography is easy to see.

Figure 6 shows the pollution and uniform distribution of pollution in a humid area more than 10 meters below the southerly direction and pollution related to runoff concentration.

Figure 7 shows the distribution of pollutants in the contaminated area, which is located on the right side of the ground 10 m below the east wind direction. Careful research shows that under the influence of the combined wind field, the wind tunnel and the wind section are connected, and the distribution of pollutants is blocked in all directions. The pollutant belt in this area provides a long and narrow distribution structure, which corresponds to high mountain barrier. The area of the black box has pollutants blocked by mountains and gatherings. The results show that the area can not only change the range and concentration of pollutants by changing the wind field but also change the distribution layer and concentration of pollutants by blocking high mountains.

Environmental impact analysis of pollutants under different winds

In accordance with “the fourth stage of air pollution production (GB16297-1996)” and “the production stage of air pollution in petroleum power plants (GB13223-2011)” and other pollution levels, this article assumes that the SO2 emission is 100 mg/m³ and the SO2 value is limited. The value of 500 μg/m³ is assumed in this document. This value indicates that the air is clean, and a higher value indicates that the air has been contaminated. According to the environmental quality classification given by the method published by Jin Lahua et al., the relationship between pollution is determined. The specific relationship is shown in Table 1.

The excess in the table refers to the ratio of the actual concentration of impurities to the maximum value of excess impurities. According to the correlation between the pollution degree and the reduction rate shown in Table 1, the excessive
pollutant distribution map between different wind patterns can be obtained, as shown in Fig. 8.

**Discussion**

**Physical characteristics of men’s basketball players**

Theoretical research in related sports competitions shows that body balance is an important part of athletes’ competitiveness, and it determines whether athletes can achieve the best results in a given sports competition. Three points are highlighted:

1. **Body function:** the function level and condition of the body will affect the performance of a person’s body function, which is the most basic part of the body’s balance structure. At present, China’s evaluation of the work quality of various athletes still meets the standards of sports work evaluation. However, according to research and modern evaluation standards, it can accurately reflect the characteristics of various athletes, including respiratory function, serum testosterone, cardiovascular and hemoglobin levels, anaerobic metabolism, and anaerobic disease (Fulljames et al. 1997).

2. **Body shape:** arm length, shoulder width, weight, height, etc. are the main characteristics of men. Among them, the height requirement is very important (Fu et al. 2012b). The conditions and size of a strong basketball team have obvious advantages in the game. Yao Ming, a member of the Chinese basketball team, is “the world’s number one center.” At the Beijing Olympics, he posed a serious threat to other men’s national basketball teams. He played a key role and was also the key to winning the game. The size of modern basketball players is becoming more and more important, and even teams with American basketball expertise will accommodate taller players (Gabay et al. 2014). Therefore, the size of basketball players must be a development trend. Only those who are big enough to control the ball in the basket have an advantage. Only by implementing an offensive tactical system can we improve offensive skills, basket quality, and launch quick offenses, but we cannot ignore the...
According to relevant data, the average size of the Chinese men’s basketball team is very close to the size of the best men’s basketball team in the world, and the gap is expressed by weight. Usually, when the players of the two teams use the same technique, the overall balance of the body becomes the key to the game. This is an important reason why we should focus on improving the overall body shape when exercising.

(3) Physical exercise: physical exercise is mainly sports training. Therefore, it is important to understand the role of physical health in sports in advance. This is how we can better understand physical exercise. For basketball players, in addition to many physical characteristics such as strength, endurance, speed, flexibility, and mobility, daily training of the three characteristics of strength, endurance, and speed is particularly important.

(4) Strength quality: mainly provide physical training and build the ability of basketball players, and also provide a fundamental guarantee for the development and change of their tactics. Modern basketball players must receive comprehensive training, which requires all parts of the body, especially the upper and lower limbs, waist, and abdomen, to undergo extensive strength training and muscle strength training before they can participate in ball games. Under special circumstances, the coordination capabilities of all sports relations have been fully utilized.

(5) Endurance quality: this is the ability to perform special movements continuously over a long period of time. For basketball players, endurance quality refers to the ability to perform long-term repetitive, ultra-high-intensity, and repetitive exercises within a short distance. This is if the athlete has better anaerobic endurance, especially with super-high intensity, explosive athletic ability.

(6) Speed quality: the soul of basketball is speed, which determines whether every attack and every defense in a fierce and challenging game are perfect. It is not only stable and confusing but also stable and sudden. This requires athletes to engage in fierce confrontations and to make breakthroughs in defensive basketball in order to achieve high resilience and defensive actions at the same time. This trend also determines that the basketball game will develop faster in the direction of development. The speed training of basketball players includes different speed training, such as defense, offense, activity, and reaction, as well as personal technical movements, offensive and defensive conversion, defensive counterattack, dribbling, shooting, and other speed training. In the game, the speed of attack is the soul, while the speed of counterattack is the guarantee. The ideal game strategy should be a combination of offense and defense. The better the defense, the better the attack, and the more aggressive the attack, the greater the chance of scoring and the greater the chance of victory. However, in the offensive process, it is necessary to enhance the
defensive ability and at the same time increase the offensive and defensive speed in order to achieve a comprehensive tactical and technical game. This requires athletes to observe, judge, and react faster during the training process and have more compact techniques and tactics so that the transition between offense and defense is comprehensive and consistent.

Athletes’ training physical fitness measurement indicators

According to Professor Xing Wenhua’s research on physical health, this article introduces the measurement standards and effective exercise levels: (1) in theory, any original model should be fully studied. (2) Different professionals should choose the old model based on experience. (3) Use statistical methods to screen the baseline assessment results for the second time.

After reviewing the relevant research data, this article introduces the three topics of athletes on sports performance: physical health, physical exercise, and athletics. Then create indicators for testing the physical fitness of basketball players (see Table 2), based on these indicators. According to the results of the questionnaire, the impact of each indicator on the physical fitness of male basketball players can be divided into three levels: generally important, very important, and particularly important. Basketball coaches and experts are required to fill out the form.

According to the needs of research, mental function is excluded from the main selection indicators. According to the above preliminary selection indicators, the physical fitness of high-level basketball players in colleges and universities in Province J is mainly measured and evaluated according to the three aspects of the athlete’s body shape, physical function, and athletic quality. According to Tefel’s method, mathematical statistics are used to analyze the results of the questionnaire and score 5-1 points based on very important, important, relatively important, general, or unimportant points. Calculate the final evaluation result based on the arithmetic mean, and calculate the value exceeding 4. Criteria remain in the auxiliary screening, please refer to detailed information in Table 3, repeat 6 × 25 m; Harvard footwork test, maximum oxygen uptake, bench press, 30 squats in 30 seconds, body weight, blood lactate, 30-m running, squatting, carrying 16 index loads, such as the difference between vertical jump and straight arm height, standing long jump, forward bending, and 10-m running are used as the main indicators to measure the physical fitness and level of male basketball players in Province J.

The construction of modern basketball is high-intensity, high-speed, and superb skills. The height and weight of athletes are competitive and are determined by various activities in the athlete’s physical fitness measurement. The research on height and weight is the most in-depth, which also shows that the current height and weight are very important to basketball players and a consensus has been reached in the industry. After sorting the sample questionnaires and combining relevant research data, it is best to decide to use height and weight as indicators of the body shape of senior basketball players in J universities.

This article focuses on the study of the body’s functional systems, including circulation and respiratory functions, because it is difficult to distinguish the obvious difference between circulation and respiratory function when calm, and the obvious difference can only be seen in high-intensity exercise. Therefore, the measurement methods of male basketball players’ circulatory function and heart rate changes after strenuous exercise should be selected, as well as conclusions about the athlete’s physical recovery degree and physical recovery

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**Table 2** Primary selection index table of physical fitness test of high-level men’s basketball players in colleges and universities in J province

| Secondary indicators                  | Exercise quality | Absolute upper limb strength | Bench press, barbell, push-ups, pull-ups | Body shape | Height, sitting position, flexion, weight |
|---------------------------------------|------------------|-------------------------------|------------------------------------------|------------|----------------------------------------|
|                                       | Absolute strength and explosive power of lower limbs | The difference between weight-bearing squats, standing jumps, and stroking heights | Body function | Finger pitch | Blood lactic acid |
| Speed                                 | 30 m, 100 m      |                               |                                          | 30 squats in 30 seconds | Maximal oxygen uptake |
|                                       | 12-min run       |                               |                                          | Harvard step test |                          |
| Aerobic endurance                     | Full-court variable distance turnback run 6 × 25-m turnback run |                               | Mental function | Calm mood | Reaction speed |
| Anaerobic endurance                   | 10-m round trip cell |                               |                                          | Quality of will |                          |
| Sensitivity                           | Quadrant jump    |                               |                                          |                          |                          |
| Case toughness                        |                  |                               |                                          |                          |                          |
speed, and the assessment of the athlete’s physical condition. In the Harvard University Step Test, 30 squats in 30 seconds and maximum oxygen uptake are the first three criteria for measuring physical function, including the Harvard ladder test, squatting 30 times in 30 seconds, and assessing respiratory function; the standard is the maximum oxygen consumption. Currently, quantitative exercise methods are used to assess the cardiovascular system of athletes. This is a more effective method of measuring exercise function. The Harvard University Walk Test (a simple method) is one of the most widely used quantitative exercise methods. Mainly used to assess cardiovascular function; squatting 30 times in 30 seconds is a simple model developed by the Swedish sports industry to measure the heart rate of athletes. In summary, the physical function test index of senior basketball players in J universities is the Harvard University Step Test Index.

Basketball is an offensive and defensive transition in the area around the ring. It has high requirements on the physical fitness of the athletes. It is an important aspect of measuring and evaluating the physical fitness of basketball players. The preliminary index of exercise quality is the index of absolute upper limb strength-bench press; the index of absolute lower limb strength is squattting to support body weight. The standard of the explosive power of the lower limbs is the difference between the jumping distance and the contact height when standing. The sensitivity standard is 10-meter running; the flexibility index is the forward flexion of the body; the speed index is \(-30\) m; the endurance speed is \(-6 \times 25\) m (repeated running, running on a complete platform, and the aerobic endurance index-running for 12 minutes). Below this are two test indicators used to measure the explosive power and the endurance speed of the lower limbs. In order to avoid repeated tests, from the standpoint of the independence of the test indicators, it is necessary to measure the height difference between the vertical jump and the straight arm in position in this case, that is, the backward rotation (\(6 \times 25\) m) and the standing position. For the long jump, only one standard was selected as an indicator to measure and evaluate the explosive power of the lower limbs and full-speed endurance-reentry mileage under variable distance. After investigation, Zhou Yongping concluded that the heart rate immediately after the Harvard walk test is closely related to the maximum oxygen uptake, the 12-minute running and walk test index \((P < 0.01)\), and the degree of heart rate. The results after the Harvard step test better reflect cardiovascular function and aerobic endurance. Therefore, this article replaces the 12-minute running in the Harvard University footwork test as an indicator of aerobic endurance.

Using 15 main selection indicators to predict high-level basketball players in J colleges and universities, analyze and study the learning evaluation scores, cancel the highest point of the standard, and finally formulate high-level basketball fitness indicators for high-level basketball players in J-level colleges. All provinces and countries, colleges, and universities are shown in Table 4. Therefore, this article points out that in J state, the physical activities of college and university basketball players are upper body strength, lower body strength, back strength, sensitivity, and flexibility.

When assessing physical fitness, an effective way to formulate the final content is to reason and judge based on the reasoning and determination of sports technical content and the skill assessment based on professional knowledge. Therefore, the index selected in this article for testing the physical fitness of male basketball players has good content validity.

The composition of the basketball player’s physical fitness index system is more complex, while the male basketball player’s physical fitness index system is more complex. It is

| Physical Fitness Test Index | Arithmetic mean | Physical Fitness Test Index | Average value |
|-----------------------------|-----------------|-----------------------------|---------------|
| Height                      | 4.44            | 12-min run                  | 4.19          |
| 6 \times 25-m turnback run  | 4.38            | Standing Forward Bend       | 4.11          |
| Maximal oxygen uptake       | 4.33            | 100-m run                   | 3.87          |
| Bench press barbell         | 4.35            | 10-m round trip             | 4.12          |
| Harvard step test           | 4.38            | Standing jump               | 4.15          |
| 30 squats in 30 seconds     | 4.27            | Skin fold test              | 3.86          |
| Body weight                 | 4.19            | Push-ups                    | 3.67          |
| Blood lactic acid           | 4.25            |                             |               |
| 30-m run                    | 4.21            | Pull-ups                    | 3.75          |
| Weight squat                | 4.19            | Quadrant jump               | 3.6           |
| Full-court variable distance turnback run | 4.19 | Sitting forward bending | 3.20 |
| Jump in situ and touch high and | 4.19          | Finger pitch                | 3.38          |
| Straight arm touch height difference in place | 4.19 |                             |               |
a high-level basketball player in colleges and universities established in accordance with relevant regulations. The definition of indicators is based on the establishment of scientific indicators, and each individual indicator must be clearly defined, because each indicator can express the relative state of the current physical health. In addition, the scientific principle of fitness indicators refers to the accuracy and objectivity of fitness indicators. It introduces the main situation of high-level basketball players in colleges and universities from an objective perspective. The rationality mainly involves the following facts: (1) the evaluation index should be evaluated on the basis of fairness and justice. (2) In the principle of measurability, the establishment of evaluation indicators is based on a certain theoretical basis, based on business data and actual data. The creation of this indicator is mainly based on a large amount of literature data, research results, and analysis in sports practice. For some measurement indicators that cannot be measured, although they can be measured in theory, they cannot be measured accurately for practical reasons, so inaccurate information is deleted. (3) In relative independence standards, since the evaluation standards are based on science, there can be more overlapping indicators in content when choosing science. When describing the development of physical health, in order to avoid duplication of work and ensure the reliability of the assessment results, it is necessary to classify and select criteria for sub-requirements. (4) In the principle of objective existence, the criteria for assessing physical fitness should be based on the authenticity and objectivity of the data. It cannot break the law of objective physical exercise and objective existing indicators, so that it can objectively reflect the true level of male physical exercise at a high level.

Conclusion

In this work, by taking the altitude of the capital area of the city L to create a digital terrain of the study area and borrowing Gambit software, a grid model of the complex terrain of the study area is obtained. This model can reflect the actual undulating terrain of city L, and the grid construction method provides a new idea for the numerical simulation of complex valley terrain. Use a complex embossed grid model, read relevant documents, determine calculation conditions and calculation parameters, perform numerical simulations on the wind field in the study area under different wind conditions, and perform numerical simulations on the diffusion of pollutants to obtain the wind field distribution in the study area and pollution. By analyzing the interaction and relationship between topography, wind field, and pollutants, their relationship can be summarized, and preventive measures can be put forward accordingly to control air pollution in the city. Physical exercise is also very important.

Declarations

Conflict of interest
The author declares that she have no competing interests.

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