

STUDY ON AIR QUALITY ASSESSMENT AND ITS INFLUENCING FACTORS IN HANGZHOU

Bachelor's thesis

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ABSTRACT

Based on the daily data of PM_{2.5}, PM₁₀, NO₂, CO, O₃ and SO₂ and air quality index (AQI) in the air quality automatic monitoring stations in Hangzhou from 2015 to 2021, this study analyzed the annual average concentration changes and monthly average concentration changes of these six pollutants and air quality index, and analyzed the spatial distribution characteristics of air quality index (AQI) and main pollutants (PM_{2.5}, PM₁₀, NO₂, CO, O₃, SO₂) in Hangzhou from 2015 to 2021. On this basis, the correlation analysis is used to analyze the influencing factors of air quality in Hangzhou, and the following conclusions are drawn :

(1) From the perspective of time distribution characteristics, the AQI index and main pollutants (PM_{2.5}, PM₁₀, NO₂, CO, SO₂) in Hangzhou from 2015 to 2021 showed a downward trend year by year, and the concentration in spring and summer was low, and the concentration in autumn and winter was high. The concentration of O₃ showed a slow upward trend, and the concentration of pollutants in spring and summer was high, and the concentration of pollutants in autumn and winter was low, showing the opposite characteristics of other pollutants.

(2) The analysis of spatial distribution characteristics shows that the AQI index and pollutants (PM_{2.5}, PM₁₀, NO₂, SO₂) show the distribution characteristics of high concentration in the northeast of Hangzhou and low

concentration in the southwest. The high pollution area of CO is concentrated in the Xiasha area, showing the characteristics of high concentration of pollutants in the middle and low concentration of pollutants around. The concentration of O₃ is high in the southwest of Hangzhou and low in the northeast.

(3) The AQI index and pollutants (PM_{2.5}, PM₁₀, NO₂, SO₂, CO) decreased with the increase of temperature. For O₃, the increase of temperature increased its concentration. Wind speed is conducive to accelerating the diffusion of pollutants and reducing the concentration of pollutants. Relative humidity and pollutants show a strong negative correlation. Among the human factors, the emission of pollutants has the most obvious impact on air quality, which is the main cause of air pollution. The total population, GDP and the coverage area of green belts are negatively correlated with pollutants.